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# FM 11-11

DEPARTMENT OF THE ARMY FIELD MANUAL

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## THE SIGNAL BATTALION ARMORED DIVISION

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RESERVED  
FOR THE SIGNAL OFFICER



HEADQUARTERS, DEPARTMENT OF THE ARMY

APRIL 1958

## THE SIGNAL BATTALION, ARMORED DIVISION

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# CHAPTER 1

## GENERAL

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### 1. Purpose and Scope

*a.* This manual is prepared for use in training a signal battalion, armored division.

*b.* The manual contains information relative to the organization, administration, and tactical employment of a signal battalion as organized and equipped under TOE 11-55 ( ). Chapter 2 of this manual is the principal reference source for divisional commanders and their staffs on the division level communication system and the support provided to division elements.

*c.* This manual also contains an appendix, which covers references.

*d.* The material presented herein is applicable without modification to both atomic and non-atomic warfare.

### 2. Mission

The mission of a signal battalion, armored division is—

*a.* To provide signal communications, to include communications to subordinate units, for division headquarters and the headquarters and headquarters company, division trains headquarters and the headquarters company, and the division administrative center and the administration company. Staff vehicle radio sets are provided for in the TOE of the user.

*b.* To establish and operate an armored division area-type communication system.

*c.* To operate a ground messenger service within the division area.

*d.* To provide photographic services (except air photography) for the division, including ground and air still picture laboratory service.

*e.* To provide signal supply and field maintenance of signal equipment for the division.

*f.* To install and maintain communication facilities connecting the headquarters of the combat commands (CC's) and division artillery headquarters into the division area communication system.

*g.* To install and maintain field wire lines for the combat command headquarters, except for command post wire systems, as required.

### 3. Strength and Mobility

*a.* The authorized strength of a signal battalion, armored division is given in TOE 11-55 ( ) including changes thereto as published.

*b.* The signal battalion is approximately 80 percent mobile.

### 4. Control

Administrative and operational control of the signal battalion is the responsibility of the battalion commander, who is also the division signal officer (DSO).

### 5. Assignment

The signal battalion is assigned to an armored division, which employs an area-type communication system in its operations.

## CHAPTER 2

### EMPLOYMENT AND CONTROL

#### Section I. SIGNAL BATTALION, ARMORED DIVISION

##### 6. Authorization

Personnel assigned to a signal battalion, armored division are authorized by TOE 11-55 ( ).

##### 7. Battalion Components

A signal battalion, armored division (fig. 1) consists of:

Headquarters and headquarters company (TOE 11-56 ( ))

Company A (Command Operations) (TOE 11-57 ( ))

Company B (Forward Communications) (TOE 11-58 ( ))

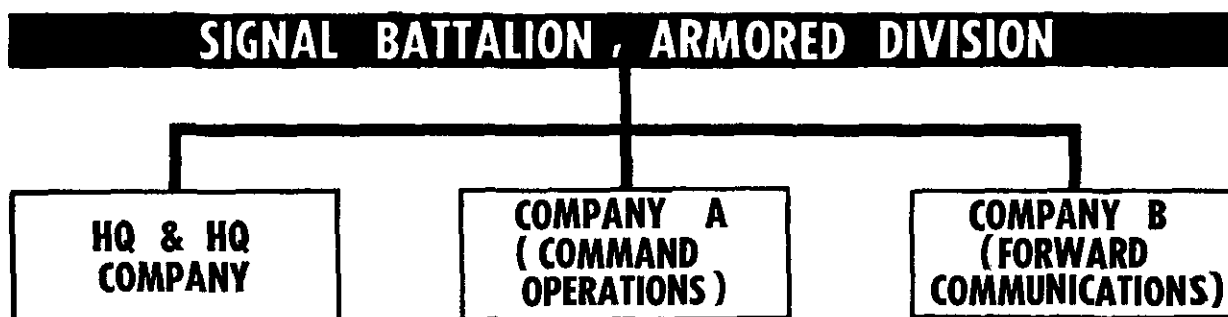


Figure 1. Organization of signal battalion, armored division.

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#### Section II. AREA COMMUNICATION CONCEPT

##### 8. Basic Communication Requirements

The armored division, through its emphasis on operational flexibility, dispersion, and operation over greatly extended distances on a potential atomic battlefield, its incorporation of a division trains organization, and its incorporation of greater mobility and fire power, places increased demands on the division communication system and the division signal unit.

a. Operational flexibility of the division requires an equally flexible communication system. The system must be capable of being quickly reconstituted to meet changes in operational plans and task organization.

b. Dispersal and operation over greatly extended distances require a concurrent dispersal of supporting communication facilities throughout the division area and the primary use of radio with radio relay for division trunk lines. This concept also requires the increased use by divi-

sional elements of multichannel trunk systems on a common-user pool basis in lieu of or to supplement separate organic systems.

c. Supporting operations on a potential atomic battlefield, as well as in nonatomic warfare, necessitate a communication system with sufficiently dispersed facilities and increased capabilities for alternate routing to reduce the vulnerability of the system to disruption by damage to any part.

d. The assignment of support functions to division-level units results in a requirement for increased communications between the forward and rear areas of the division.

e. The establishment of a division trains organization produces a requirement for the communication means for its operation.

f. The frequent attachment of supporting elements from higher echelons and the necessity for providing certain circuits for full-time use by artillery require a division communication system

of sufficient inherent capacity to absorb additional loads placed upon it.

## 9. Division Area Communication System

In order to provide for the requirements listed in paragraph 8, the armored division is furnished a signal battalion, and the concept of a division area communication system (figs. 2 and 3) is employed.

*a.* Under the area system concept, additional signal centers or switching points are established throughout the division area to support the dispersed divisional elements. The signal centers are interconnected by multichannel radio relay and, when the situation permits, by field cable in such configuration as to provide alternate routes between any two points in the system.

*b.* The area coverage capability of the system and the use of multichannel trunks in lieu of field wire facilitate the dispersion and operation of headquarters and supporting units at more extended distances. The provision of dispersed signal centers and alternate routes of adequate capacity between them decreases the vulnerability of the system to damage and increases its flexibility of employment. This system enhances the operational flexibility of divisional units, since elements of the division may be shifted rapidly throughout the division area with greater ease.

*c.* The division area communication system is comprised mainly of common-user circuits; however, to meet special requirements, a specified number of sole-user circuits will be allocated. Sole-user circuits are those circuits which are allocated to an organization, for full-time use, to provide point-to-point communication. The establishment of these circuits is based either on traffic volume or traffic precedence.

- (1) Traffic volume must be sufficient to keep the sole-user circuit busy during most of the 24-hour day. If the circuit is not kept busy for the required number of hours each day, it should be placed in common-user service.
- (2) The precedence of traffic may be sufficiently high to warrant a sole-user circuit, as in the case of air request or fire direction circuits, where normal traffic routing involves several switching points. This normal routing would result in unwarranted delay in transmission.

*d.* The signal centers or switching points in the division area communication system provide—

- (1) Points of entry into the system for the supported headquarters, units, and installations to facilitate their use of the trunk lines and channels in the system.
- (2) Terminal, testing, patching, and switching facilities for the radio relay circuits, field cable trunks, and the local lines in the system.
- (3) Local communication center facilities, to include message center, messenger, cryptographic, teletypewriter, and telephone switchboard service for designated headquarters or other units and installations as required to supplement organic capabilities.

*e.* The trunk lines in the division area communication system provide—

- (1) A means of communication from the echelons of division headquarters to immediate subordinate elements and between these elements.
- (2) Long lines and channels for the use of other divisional elements in lieu of or to supplement organic communications. These may be on a common-user or allocated-channel basis (in the case of division artillery), as required.

*f.* Signal centers in the division area communication system generally are located with or near the major divisional elements. The basic system is extended to other users by field wire or by FM radio/wire integration links.

*g.* The division area communication system is supplemented by AM and FM radio sets of the using organizations and, in the case of artillery, by a separate wire net.

## 10. Command Control

Command control of the signal battalion is facilitated through an internal battalion radio net (fig. 4). The primary purpose of the net is to enable the battalion commander/DSO to maintain direct contact with all elements of the signal battalion.

## 11. Area Signal Center Service

*a.* Except for radio, the division service support units, the armored engineer battalion, and the combat aviation company depend on the division area communication system for communi-

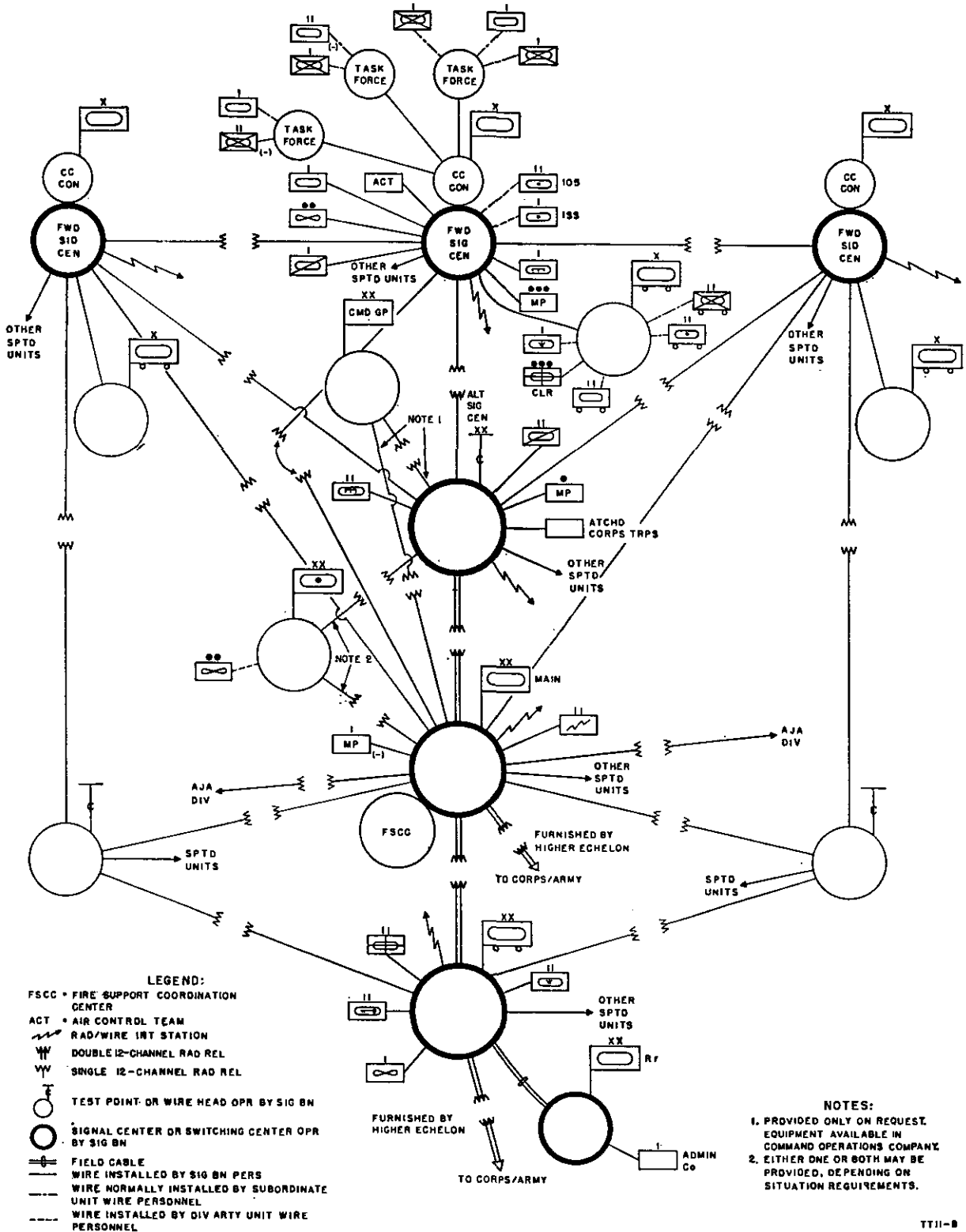


Figure 2. Type armored division area communication system.

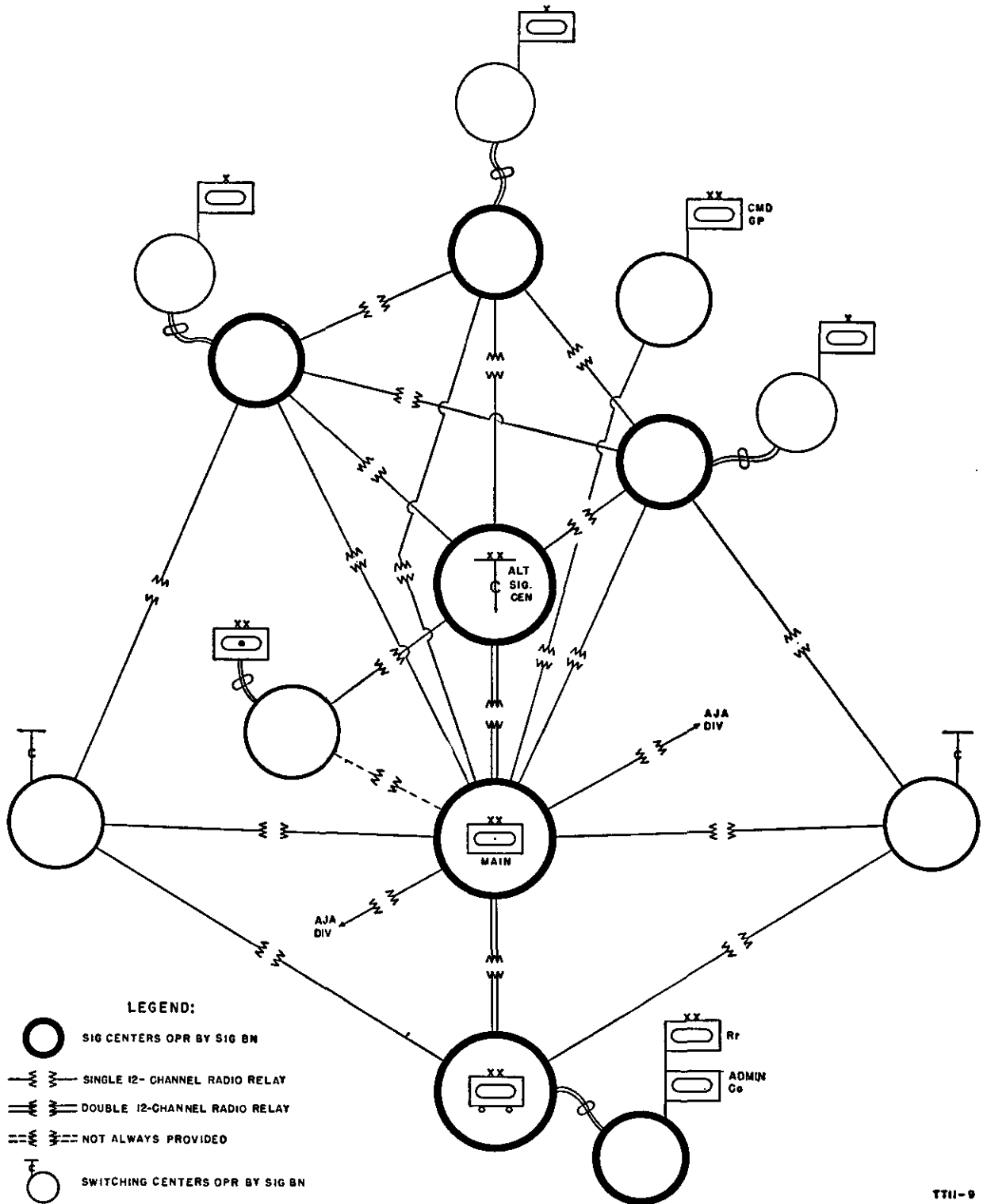
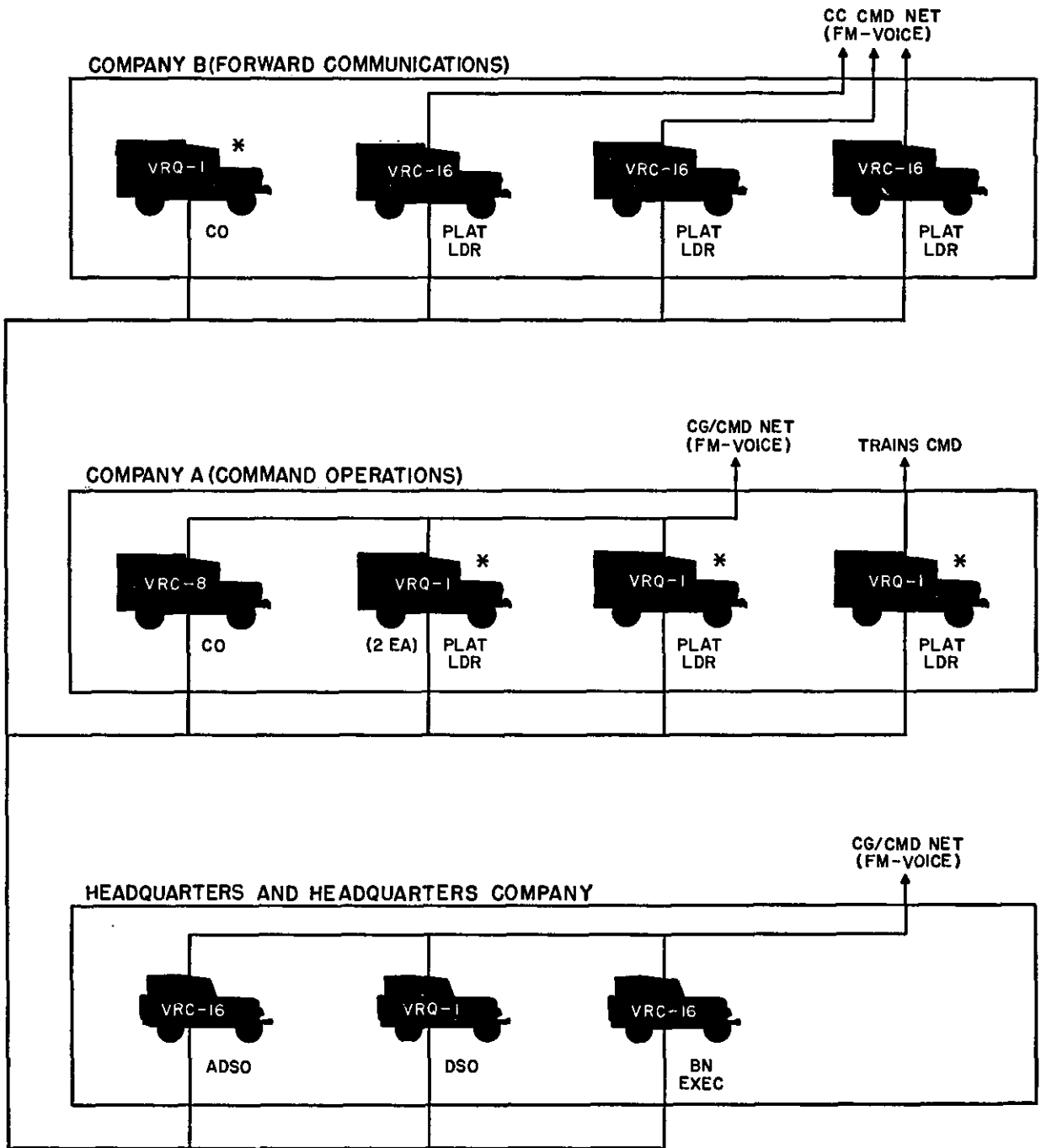


Figure 3. Type armored division area communication system, in column.

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\* ALSO MAY BE USED AS FM RADIO RELAY STATION

TT11-10

Figure 4. Signal battalion internal radio net.



cation with unit elements operating away from the parent organization. Unit elements operating in the division forward area depend on the forward signal centers for connection into the division area communication system for telephone communication, and will depend on the signal centers directly for message center, cryptographic, teletypewriter, and local messenger service supplemental to organic capabilities. Included in the telephone service is the installation and maintenance of connecting field cable/wire lines and the furnishing of telephone instruments when required.

*b.* Organic wire and radio communication means are authorized the division artillery to meet functional requirements. Artillery units, both division and corps, will use the division area communication system for administrative and logistic communication on a common-user basis. The signal battalion will provide terminal equipment for division artillery headquarters and connect this equipment to the division artillery switchboard by means of field cable. Artillery units will be responsible for tying into the area communication system at the nearest signal or switching center.

- (1) Sole-user circuits will be required on a continuing basis for fire support control and coordination as follows:
  - (*a*) One circuit from division artillery to division artillery liaison officer at the division FSCC. When the division artillery fire direction center (FDC) is located at the division FSCC this circuit is not required.

- (*b*) One circuit from corps artillery to division artillery.
  - (*c*) One circuit from the artillery liaison officer (FDC) at the division FSCC to the artillery liaison officer at the combat command CP.
  - (*d*) Certain corps artillery units positioned in the division sector may require sole-user circuits to corps artillery headquarters.
- (2) The division area communication system provides sole-user circuits, as required, between division artillery and its assigned or attached units. The number of sole-user circuits will vary with each situation, depending on the artillery organization for combat, the disposition of signal centers and artillery units on the battlefield, and the status of the artillery communications. Figure 5 shows the maximum sole-user requirement for a type situation in which two corps artillery battalions are attached to the division. Depending on the status of the artillery communications, all or a portion of these circuits may be required. Requests for artillery sole-user circuits will be placed with the division signal officer by the artillery communication officer. In addition, corps and army artillery units, or elements thereof, located in the division sector may require sole-user circuits to their parent unit.

### Section III. COMMUNICATIONS EMPLOYMENT

#### 12. Circuit Control

A Communications Patching Panel SB-611/MRC serves as a circuit control facility at each signal center of the division area communication system. This facility is operated by the telephone sections at their respective signal centers. Each panel provides a means for terminating 728 local lines. Switchboard and teletypewriter monitors are also provided with each panel.

#### 13. Telephone Central Office

*a.* Manual Telephone Switchboards SB-86/P are operated at each signal center. Two-position switchboards are provided for the division main

and alternate signal centers, and one-position switchboards are provided for the other centers (fig. 8). The switchboards are used to switch local and trunk circuits at all the signal centers except the rear echelon. The switchboard at the rear echelon is used only for local exchange purposes.

*b.* Manual Telephone Switchboards SB-22/PT are employed to establish forward switches or distribution points where radio relay or field cable is used as an extension from the division area communication system. Where so used, the switchboards are operated by radio terminal and carrier attendants.

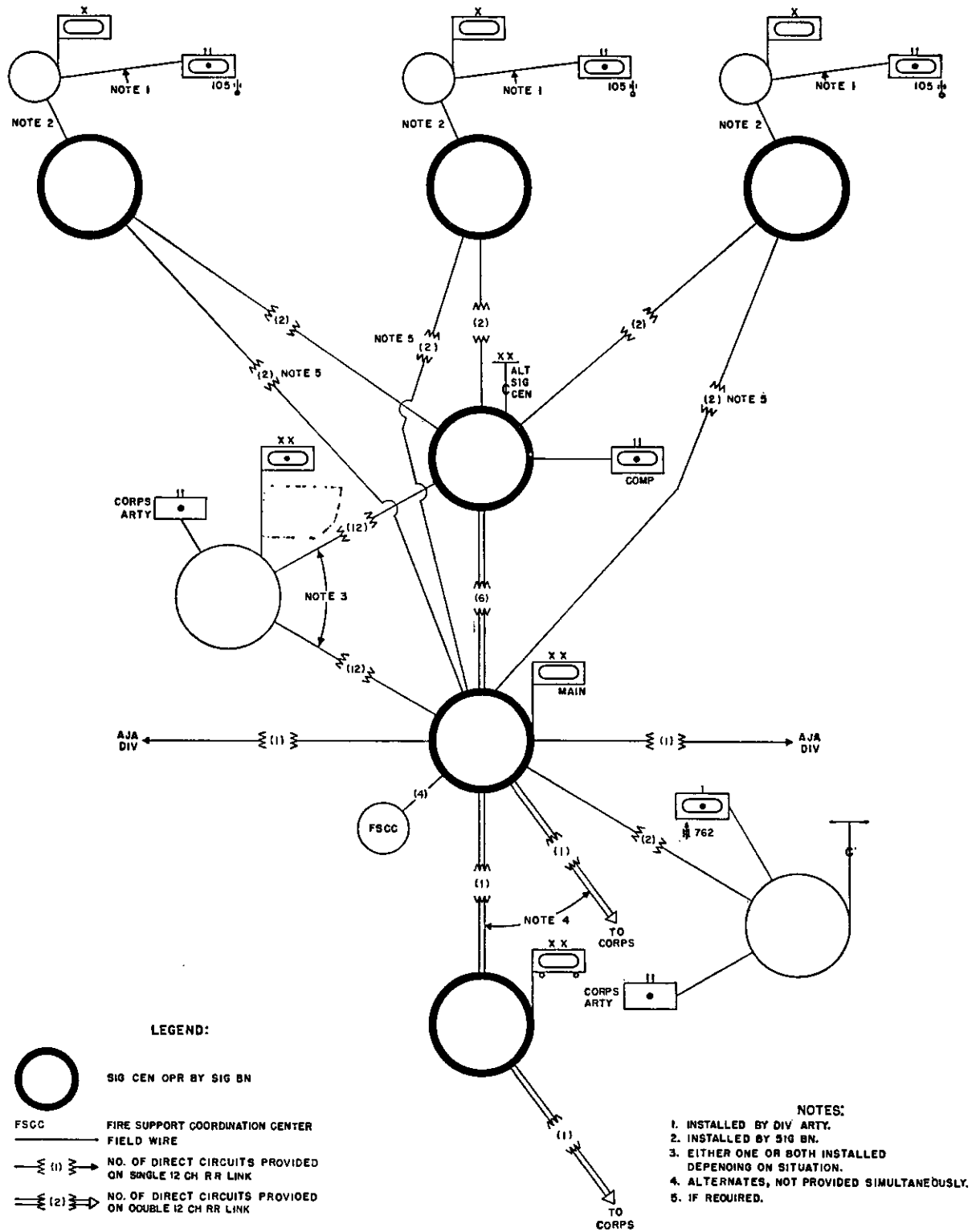


Figure 5. Type artillery sole-user circuits provided by division area communication system.

## 14. Communication Centers

Communication centers are operated as components of each signal center (fig. 6) within the division area communication system. Cryptographic, teletypewriter, message center, and messenger facilities are associated with each communication center. A facsimile facility is provided only at the division main signal center. Communication centers located at division main and alternate, the trains headquarters, and the division rear echelon (administrative center) not only serve those headquarters, but also the units and installations in the vicinity. The communication centers at the forward signal centers serve the units and installations in their vicinity on an area basis as required to supplement the capabilities organic to those elements.

### *a. Cryptographic Facilities.*

- (1) Each communication center is equipped with cipher machines for handling classified messages for the elements served by the center. Personnel operating cryptographic facilities at the division main and alternate signal centers will require cryptographic clearance. Personnel operating at the other signal centers of the the area communication system will require only a security clearance commensurate with the classification of the traffic handled. Communication security will be in accordance with the appropriate ACP.
- (2) Cryptographic material (instruction, key lists, and other items which require cryptographic clearance for handling) will be distributed through normal cryptographic agencies. Cryptographic equipment and maintenance parts not falling into the above category will be distributed through Signal Corps supply and maintenance channels.

*b. Teletypewriter Facilities.* Teletypewriter terminal stations are operated at each communication center, and teletypewriter switching facilities are operated at each center except division rear. The division teletypewriter system is designed to operate on a teletypewriter exchange (TWX) basis. Limited tape relay facilities are provided at division main to handle traffic which may originate outside the division.

*c. Messenger Service.* The division area ground messenger service (fig. 6) is normally pro-

vided by messengers operating in pairs to effect maximum security. If additional messenger service is required, messengers may operate separately; however, personnel other than messengers must be assigned to each messenger to serve as a security guard.

- (1) A total of 21 motor messengers and 10 messenger vehicles are provided in the operating companies of the battalion. Of this total, 10 messengers and 5 vehicles are in the message center section of company A (command operations) for operation of the basic routes in the division area ground messenger service. The remaining messengers and vehicles provide local area service and extensions of the basic routes.
- (2) The capabilities provided for operating the basic routes are based on scheduled and special motor messenger deliveries to each signal center in the division area communication system and to the headquarters of all units immediately subordinate to division headquarters. Deliveries to the rear echelon when located outside the division area proper will be made by corps or army messenger service.
- (3) Air messenger service within the armored division is a responsibility of the division combat aviation company.

*d. Facsimile Service.* Facsimile equipment located at the division main signal center will be used primarily for record communication with corps and army, but it may be used for the transmission of photographs as required.

## 15. Radio Relay

Twelve-channel radio relay is used as a primary means of long lines communication in the division area communication system. Each radio terminal set (AN/MRC-69) which consists of two radio relay terminals is completely mobile and has an independent power source.

*a.* The terminals should be co-located, where possible, to facilitate the initial installation of equipment, to utilize a minimum number of personnel for operation, and to make available personnel if required for radio relay repeater operation.

*b.* If possible, each terminal team proceeding from the circuit control facility at the signal cen-

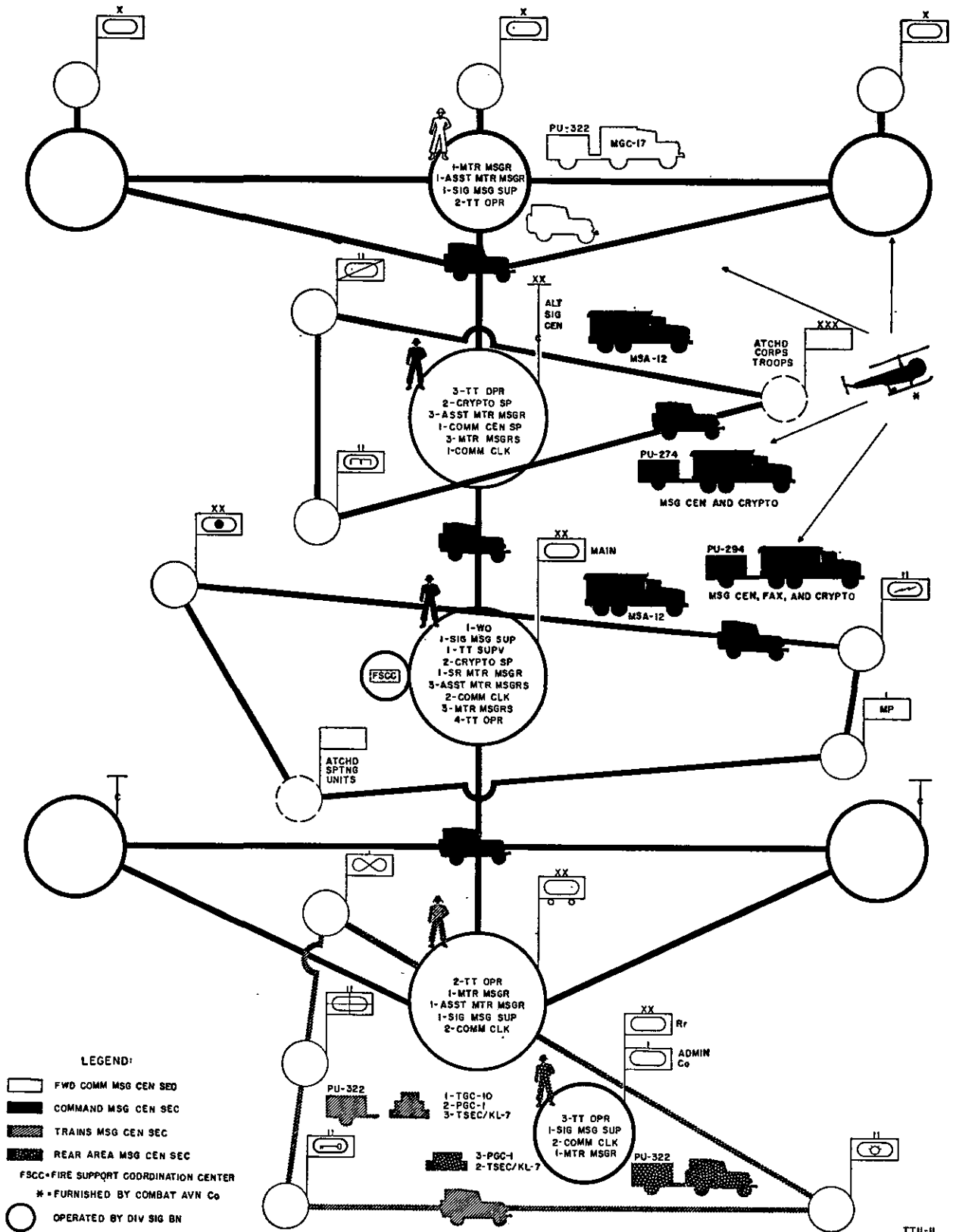


Figure 6. Type division area communication center and messenger operations.

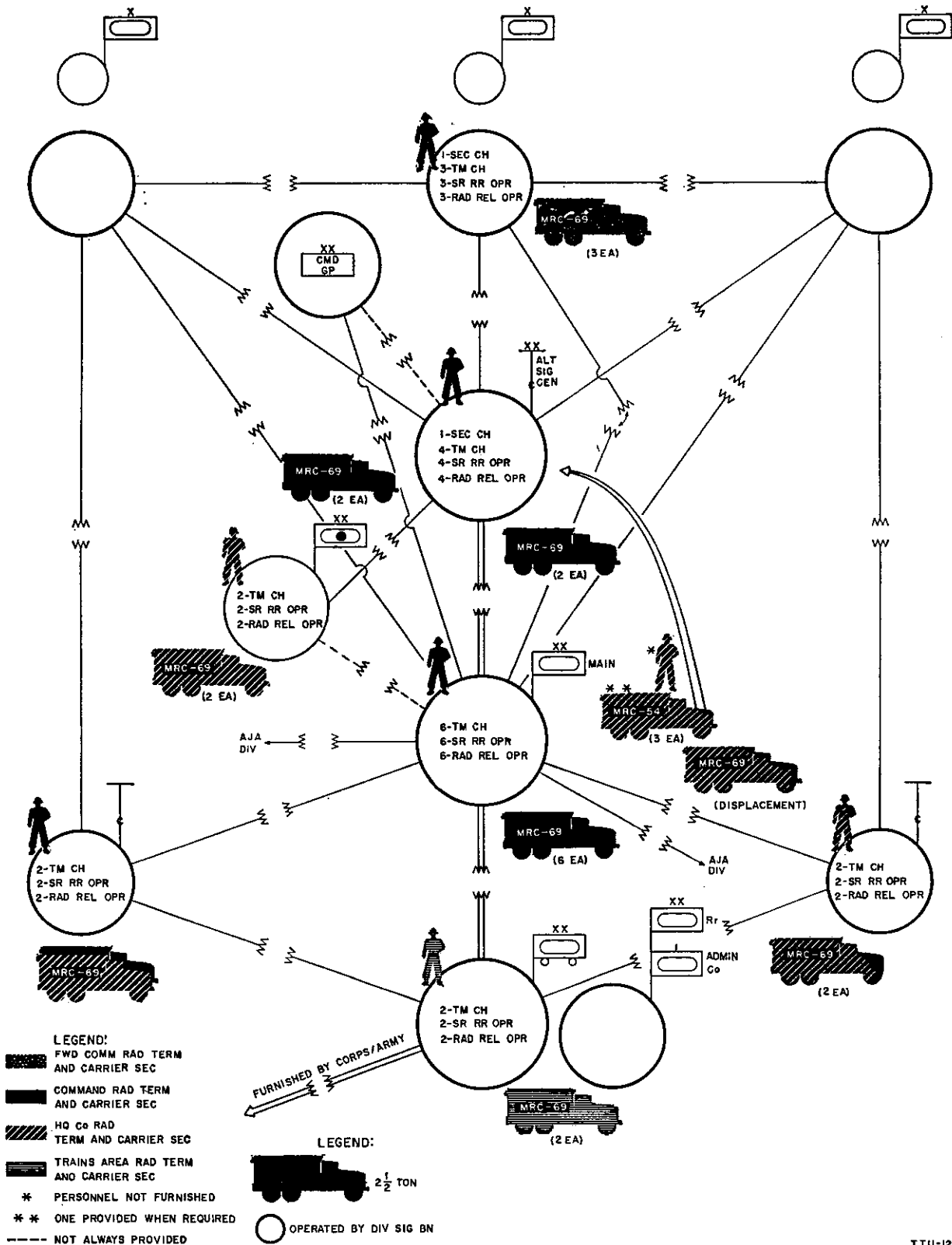


Figure 7. Type employment of radio relay personnel and equipment.

ter to its site will simultaneously lay the cable necessary for remoting the radio relay equipment.

c. The division terminal stations in the radio relay circuits from the corps/army communication system are provided by those units.

d. A type employment of radio relay personnel and equipment is shown in figure 7.

## 16. Wire and Cable Installation

The signal battalion has a relatively light capability for installing field cable, since radio relay is the primary means of trunk-line communication throughout the division area system. Frequent assistance from higher echelons may be required for cable installation. Corps/army units are provided with the capability for supplying the necessary assistance. Wire and cable installation within the division is accomplished by five 4-man and three 8-man installation teams and four 8-man construction teams (fig. 8). Although the allocation of these teams is fixed in the unit TOE's, they may be shifted temporarily from one unit to another for initial installation or pooled for a major construction effort.

a. The installation teams are used primarily to install and maintain field wire lines and multi-pair telephone cables in CP areas and between signal center components. The teams also install telephone instruments.

b. The construction teams, when required and feasible, install and maintain field carrier cable to supplement the radio relay facilities of the division area communication system. The amount of cable authorized by the TOE does not reflect the total cable the battalion may be expected to install. Additional cable may be requisitioned from division signal supply and army signal supply points or depots.

## 17. Radio Nets

a. Radio nets within the division (fig. 9) and divisional units are provided primarily for internal organizational communications and for communication between major divisional units. Additional radio equipment is provided for air warning, air direction, and air request systems and communications with echelons above division. Radio can be used in an emergency or fast-moving situation to supplement a segment of the radio relay system.

b. FM and AM radio sets are used as the initial means of communication, particularly when other

means are unavailable or unsuitable. If other means become available, the use of radio may be minimized and, where possible, radio stations placed on standby or listening silence as the situation dictates. A type employment of radio personnel and equipment is shown in figure 10.

c. The individual radio nets illustrated in figure 9 are discussed in the following subparagraphs:

- (1) *Division command, intelligence, administrative/logistics, and rear echelon nets (AM-RTT).* The signal battalion and other division units are equipped to operate four separate functional radio-teletype nets: one for command operations, one for intelligence operations, one for administrative and logistics operations, and one for communication with the division rear echelon (administrative center). The full operation of all four of these nets represents a maximum capability. Additional sets have not been provided to permit simultaneous displacement of all net stations at any echelon. The apparent shortage of displacement or utility sets results from expectations that full operation of all four nets simultaneously will be required infrequently, that the nets will be combined as the traffic and the tactical situation permit, and that stations or nets will be placed in standby status when other means of communication are available.
- (2) *Division CG/command net (FM-voice).* The division CG/command net is intended primarily for radio communication between the division commander and staff and the commanders of all immediate subordinate units. The number of radio stations in the net dictates restrictions on its use. Specific employment of the net will be governed by the desires of individual division commanders. Lateral radio communication between subordinate unit commanders will be established by the calling commander entering the unit FM net of the called commander. The signal battalion operates a net control station (NCS) in the CG/command net on a 24-hour basis. The battalion is also equipped to



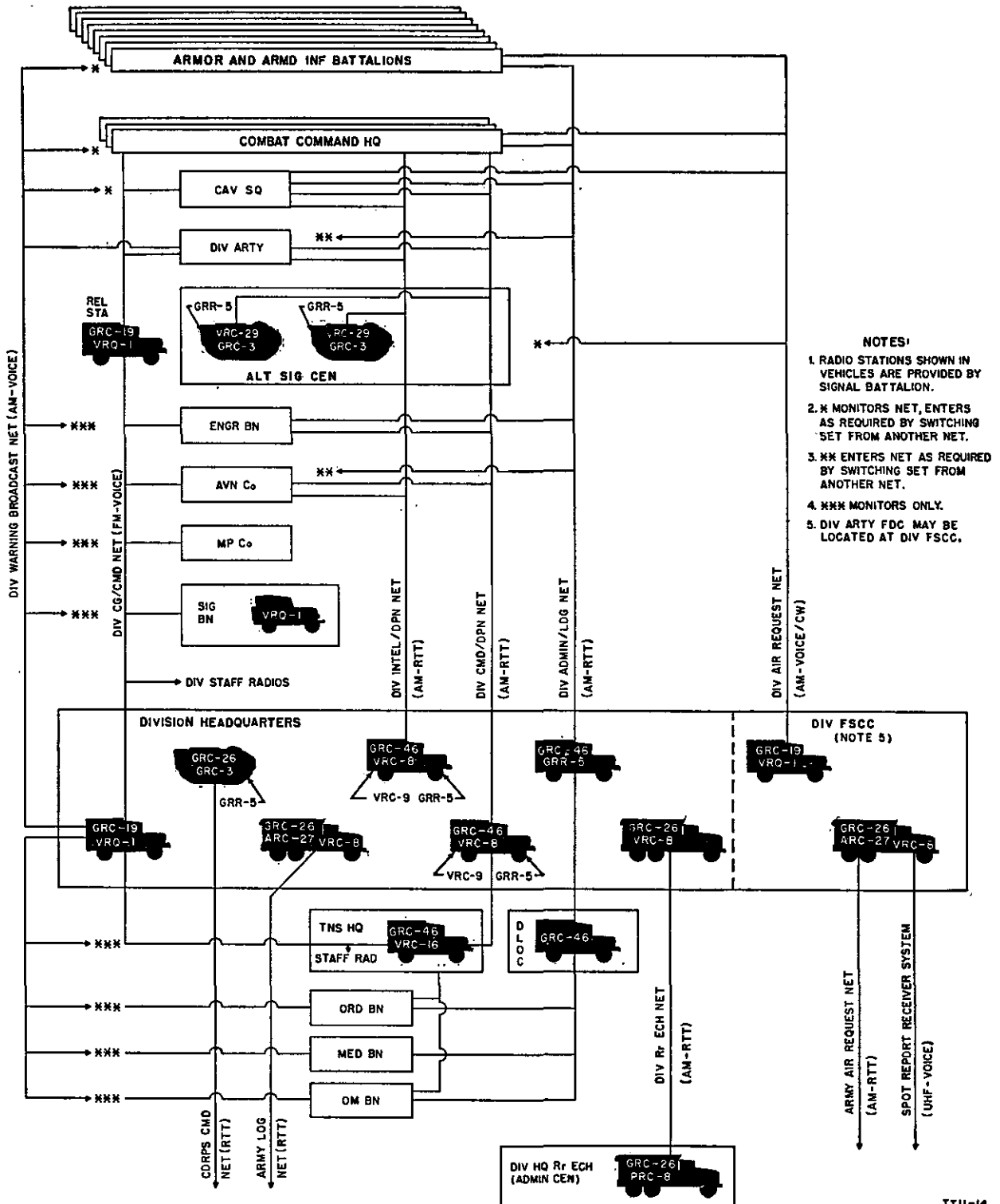


Figure 9. Type radio nets, armored division.

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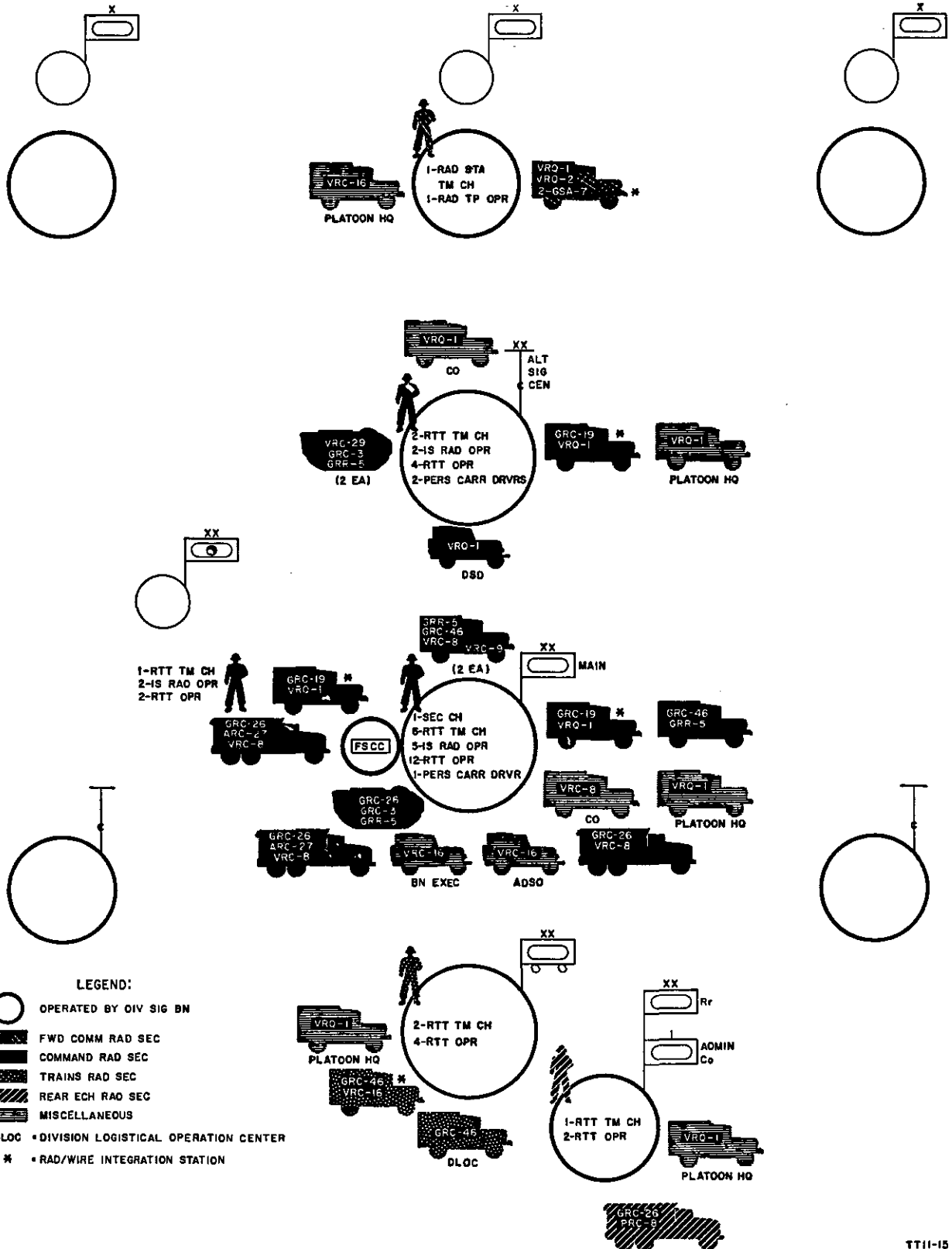


Figure 10. Type employment of radio personnel and equipment.

establish relay stations in the net either by use of AN/VRQ-1 radio sets or by use of the radio/wire integration facilities (par. 18). Airborne relay stations, when required, are established by the division combat aviation company.

- (3) *Division warning broadcast net (AM-voice)*. The signal battalion operates the NCS in the division warning broadcast net. The net broadcasts air alerts, CBR attack warnings, fallout warnings, rad-safe data,<sup>1</sup> atomic strike warnings, and similar information of an urgent operational nature that applies to the division as a whole or to major divisional segments. This is information that need not be handled through command channels, and for which no immediate receipt or reply is required. The combat command headquarters, the cavalry squadron, and armor battalions have radio sets (normally employed in other nets) that may transmit in the warning broadcast net as required. While use of these stations will be governed by individual division instructions, the cavalry squadron will be authorized to broadcast urgent reconnaissance information of interest to elements of the division with whom they are not in direct radio contact. Division artillery headquarters will operate a station in this net to broadcast air alert status. Each battalion and separate company in the division, and subordinate elements of these units in some cases, is equipped with an AN/GRR-5 radio for receiving information broadcast in this net. In addition, an AN/GRR-5 is provided in each signal center in the division area communication system for receiving warnings from the net for local dissemination. Associated headquarters staffs and installations connected to the centers then are given this information by telephone. The nature of the information broadcast on this net makes the net a prime target for electronic countermeasures; therefore, adequate safeguards should be established, to include abbrevi-

<sup>1</sup> Data transmitted relative to the amount of radioactivity in a specified area.

ated transmissions and limitations on the use of the net.

- (4) *Air request radio nets (AM-voice/CW)*. Radio sets for establishing a separate division air request net are provided in the TOE of the armored division. The NCS is operated by the signal battalion. The combat command headquarters, the cavalry squadron, tank battalions, and armored infantry battalions are provided with radio sets for use in this net. The sets used in the net by the cavalry squadron, tank battalions, and the armored infantry battalions are also used in secondary roles, such as for transmissions in the division warning broadcast net. The signal battalion also operates the division station in the army air request net.
- (5) *Army logistics net (AM-RTT)*. The Signal battalion is equipped to operate the division terminal in an army logistics net. The radio station provided for this net is designed to handle logistical traffic; however, in a fluid situation it will be employed to support displacement of other radioteletype stations in the division as required. Since other means of communication with logistic support agencies usually will be available, this radio station will be used more frequently in its secondary role.
- (6) *Spot report receiver system (UHF-voice)*. The signal battalion is equipped to operate a radio station in the spot report receiver system for monitoring Air Force close air support missions flown for the division. The station is mounted in the same vehicle as the division station in the army air request net. A second UHF-voice radio set is provided as an alternate for the above station. It may be used to monitor Air Force reconnaissance missions flown for the division; however, a separate set is provided in the division headquarters TOE for the use of G2 for this purpose. Both of these facilities are frequently supplemented by similar monitoring sets operated by the division air liaison officer. The division artillery headquarters, armored infantry battalions, cavalry squad-

ron, and armor battalions are also equipped with UHF-voice radio sets for use in the spot report receiver system.

## 18. Radio/wire Integration Stations

a. An FM-voice radio/wire integration station is operated at each signal center (except the rear echelon) (figs. 16, 17, 21, and 22) to connect mobile FM radio stations into the division area communication system (fig. 2) on a push-to-talk basis. The system of integration stations is used to establish communications between mobile FM radio stations and elements connected to the area system by telephone. The system of stations is also used in lieu of FM radio relay stations to establish communications between FM radio stations operating beyond direct FM range. The integration stations are supplemented by similar facilities within some of the division combat units operating on unit net frequencies. Since the Remote Control Sets AN/GSA-7 associated with the radio/wire integration system are not technically capable of being operated directly into the SB-86/P switchboard, it will be necessary to provide an SB-22/PT switchboard between the radio/wire integration station and the SB-86/P switchboard installation. This can be accomplished either by using the SB-22/PT normally associated with the teletypewriter centrals at the division main and alternate signal centers or by installing an SB-22/PT in each radio/wire integration vehicle. The latter solution is considered more feasible, since the radio operator in the radio/wire integration vehicle can monitor the circuit and perform the necessary push-to-talk switching, whereas the former solution would require a teletypewriter operator from the teletypewriter central to monitor the circuit on a full-time basis when in use.

b. The operation of the radio/wire integration system concerns not only signal personnel em-

ployed in the division area communication system, but also a large number of other FM users throughout the entire division. To accomplish a link-up through the integration system, standard procedures for radio operators, integration station operators, switchboard operators, and users should be set forth in the SSI prepared by the DSO's section. Special frequencies for use in the integration system should be listed in the division SOI.

c. The radio/wire integration system may be used—

- (1) By the commanding general and division staff, when operating from a mobile CP, to contact division elements connected to the division area communication system (fig. 11).
- (2) For initial establishment of telephone service from the division area communication system to using units until wire links can be installed.
- (3) For voice communication between mobile combat elements in the division forward area and supporting division logistic elements in the rear area.
- (4) For communication between low-flying army aircraft operating in distant parts of the division area and airstrips or flight control elements connected to the division area communication system when direct FM contact cannot be maintained.
- (5) During displacement of CR's to keep commanders and staff in contact with subordinate and higher headquarters as required.
- (6) For connecting two switchboards and for spanning a break in a wire line between units.
- (7) During river crossings.

## Section IV. PHOTOGRAPHIC AND SIGNAL SUPPLY AND MAINTENANCE SUPPORT

### 19. Photography

Division photographic services are provided by the photographic section of headquarters and service company. These services include black-and-white, still and motion picture photography (except air photography) for the division, and air and ground still photographic laboratory service for all divisional units.

a. The photographic section has the primary

mission of performing ground tactical photography. Photography from aircraft, using ground-type cameras, may be performed on request. This mission will be assigned only when air-type cameras are not essential or available. The photographers in the division administration company at the rear echelon normally will perform the major part of divisional public information coverage.

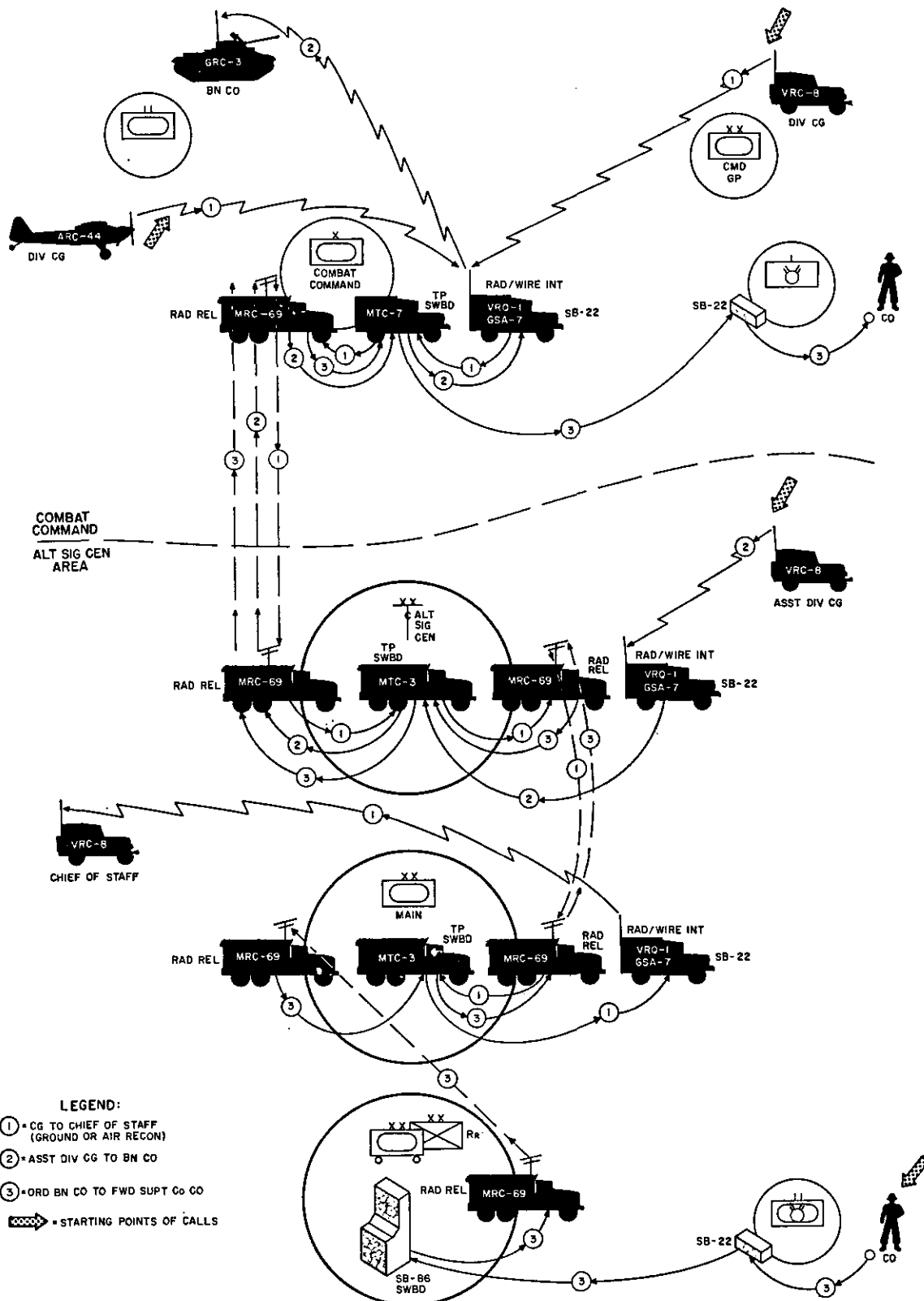


Figure 11. Type utilizations of radio/wire integration systems.

b. Two mobile photographic laboratories are provided for the processing of still pictures. These laboratories will be employed to process coverage by photographers of the photographic section, coverage by the photographers in the administration company, air-photographic coverage by the division combat aviation company, and coverage by other photographers operating in the division area. One of these laboratories will be located at a designated division airstrip and the other will usually be located at the signal battalion headquarters.

c. The photographic section is equipped to take, but not process, motion pictures. The latter service is normally performed for the division by Army. The section is not equipped to process Air Force air photography for the division.

d. Color photography may be performed by the photographic section when materials are available. Exposed film will be sent to the nearest color-processing facility.

## 20. Signal Supply and Maintenance

Division signal supply and maintenance support is provided by the signal supply and maintenance section of headquarters company and the forward repair sections of company B (forward communications).

a. The division signal supply and maintenance section performs supplemental organizational signal maintenance for the battalion and signal supply and field maintenance of signal equipment for the division.

- (1) Maintenance is performed through the operation of five mobile repair shops: one for general signal equipment, including telephone, photographic, teletypewriter, and cryptographic; one for radio and radar equipment; one for radio avionic equipment; one for radio, radio relay, and carrier equipment; and one for radio equipment only (primarily the AN/GRC-3 through -8 and the AN/PRC series).
- (2) Maintenance may be performed either

on-site, by direct exchange, or by repair and return to user. Signal equipment which cannot be conveniently moved, such as radar, radio relay and carrier equipment, larger radio sets, or telephone switchboards, will normally be repaired on-site. Smaller items of wire and radio equipment will be repaired by direct exchange of end items or major components, with subsequent repair and return to stock. In combat, maintenance will not normally be performed on a repair and return to user basis unless other methods cannot be followed.

- (3) Normally, the radio repair element will work in close coordination with the division ordnance battalion to inspect and repair, if necessary, radio sets on vehicles returned for maintenance. The supply element will normally work in close coordination with the division quartermaster company to take advantage of the daily ration and supply runs for the routine delivery of wire, batteries, and other items of supply and repair equipment.

b. The forward repair sections perform second and limited third echelon maintenance of signal equipment for the CC area support platoons, and third echelon signal maintenance for other forward elements of the division. Each section is equipped with a mobile shop van to provide limited field signal maintenance for units in the division forward area. The vans are equipped to provide general maintenance support and will perform it normally by direct exchange of the defective component. As far as possible, maintenance is performed "on call" in the supported unit's area. Physical repair of defective components is performed only in emergencies. Defective components are normally returned to the rear area for repair and return to stock. In addition to the organic maintenance personnel, all operators and supervisors should be trained to perform and/or supervise first echelon maintenance, and certain personnel should be trained to perform and/or supervise second echelon maintenance.

## CHAPTER 3

# SIGNAL BATTALION ORGANIZATION AND OPERATING TECHNIQUES

### Section I. HEADQUARTERS AND HEADQUARTERS COMPANY

#### 21. General

Headquarters and headquarters company (fig. 12) directs and coordinates operations and training of the signal battalion and provides the facilities with which the battalion commander exercises control of the battalion. The company also:

a. Provides consolidated personnel administration and supplemental supply and maintenance support for the battalion.

b. Performs field cable and supplemental field wire construction and augments radio relay terminal and repeater stations and telephone carrier terminals for the battalion.

c. Performs photography (except air photography) for the division and performs photographic still picture laboratory service.

d. Provides signal supply and field maintenance of signal equipment for the division.

#### 22. Method of Operation

a. The DSO's office usually is located at the main echelon of division headquarters. The DSO, however, will normally operate at the same echelon of division headquarters at which the division commander is located. Battalion headquarters and headquarters company will usually operate in

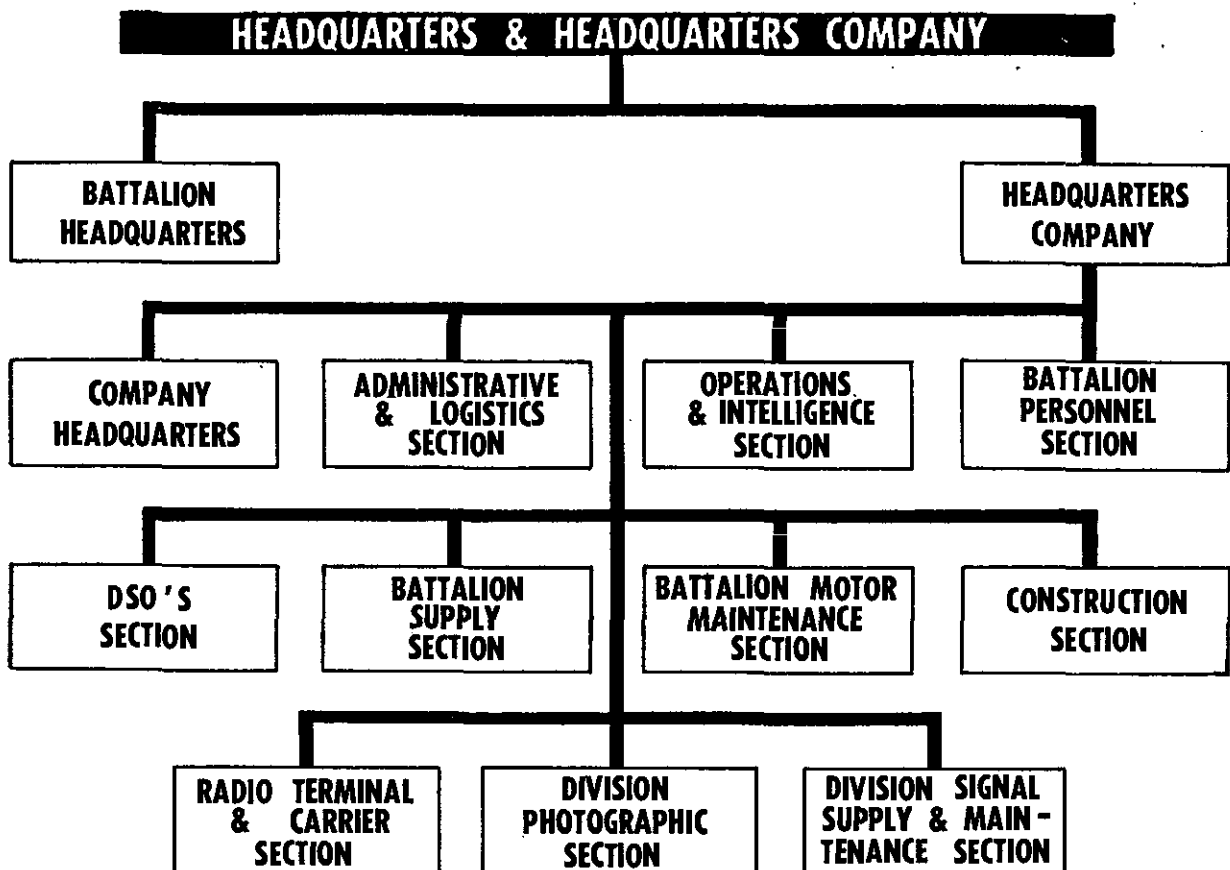


Figure 12. Organization of headquarters and headquarters company.

TT11-2

one echelon at the most suitable place in the division area to perform their mission. This location will be governed by the need for accessibility to the DSO, to the operating companies of the battalion, and to the other divisional elements supported. It is expected that the major elements of the company will usually be located near but not at the main echelon of division headquarters.

b. The assistant division signal officer (ADSO) and the radio and wire officers in the DSO's section provide the immediate staff for the DSO. In addition, the battalion S3, S2/assistant S3, and the officers in the division photographic section and the division signal supply and maintenance section are employed also by the division signal officer as division signal operations officer, signal security officer, photographic officer, and signal supply and maintenance officer, respectively.

c. The battalion executive, the battalion headquarters staff, the administrative and logistics section, and the operations and intelligence section provide the staff and facilities for the battalion commander for direction and coordination of battalion operations.

d. It is expected that the battalion officer next junior to the battalion commander/DSO will be assigned as battalion executive, and will be desig-

nated to succeed the DSO in the event the latter is incapacitated. As far as is permitted by regulation, the battalion executive will act for the battalion commander/DSO on all battalion matters, to assure the latter maximum freedom to devote attention to his responsibilities as DSO.

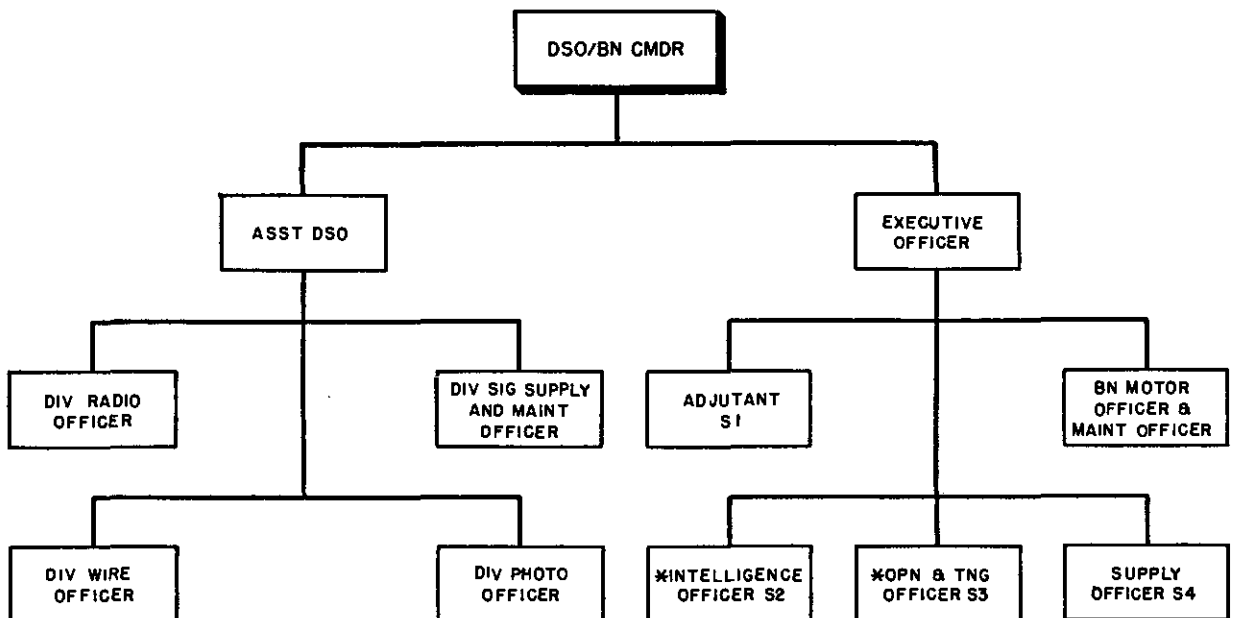
### 23. Battalion Headquarters

Battalion headquarters contains the officer staff (fig. 13) that controls and supervises employment and operation of equipment and personnel of the companies organic to the signal battalion. The assisting staff and staff facilities are contained in the administrative and logistics section, operations and intelligence section, and the battalion personnel section.

### 24. Headquarters Company

(fig. 12)

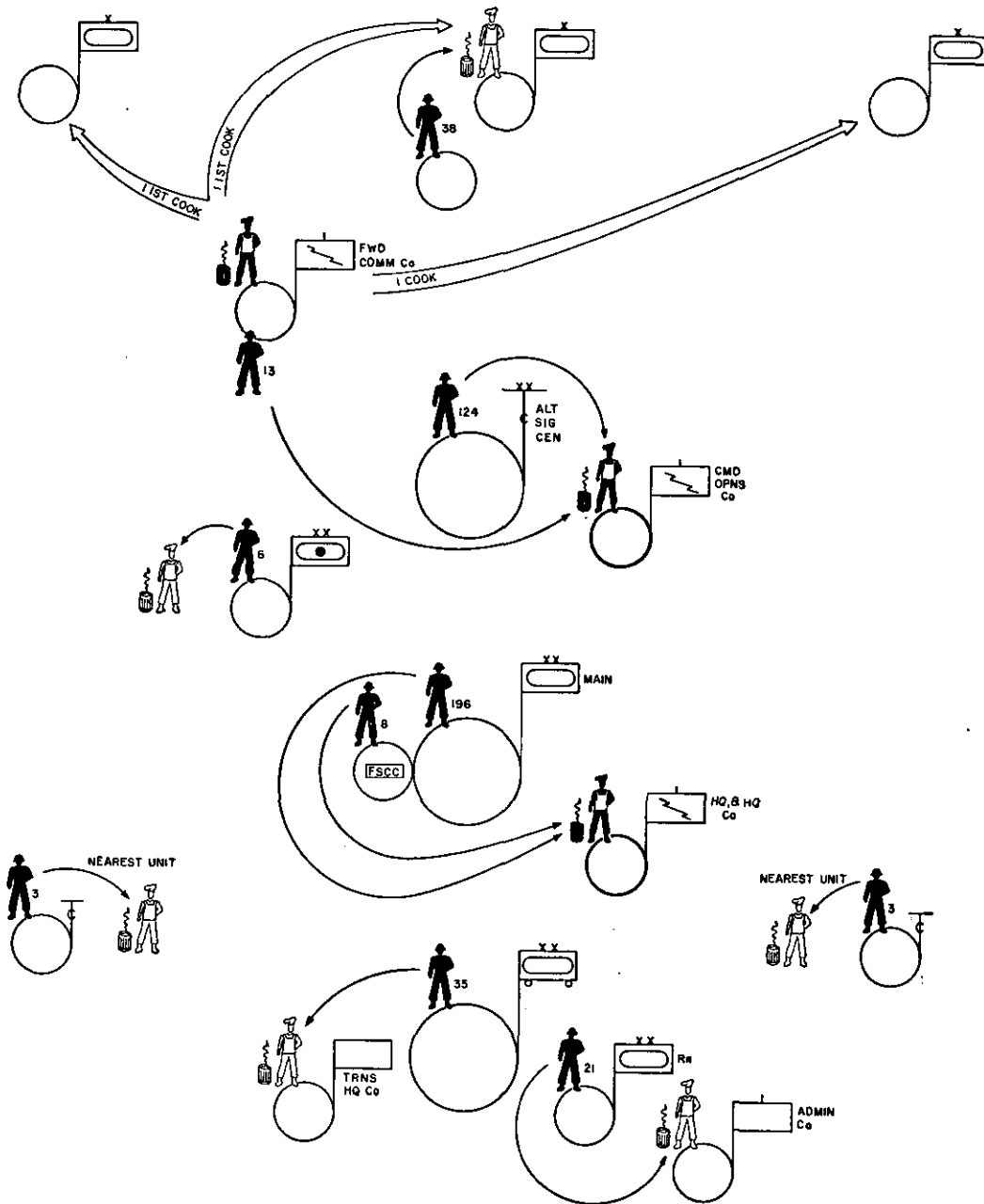
a. *Company headquarters* directs and coordinates the administrative and logistical support for the company, battalion headquarters, and the division signal office. Company headquarters will provide the messing facilities for signal personnel in the division main CP area (fig. 14). Since this will be the largest signal battalion messing facility in the division, additional mess per-



\* MAY ALSO BE EMPLOYED ON THE DIVISION SIGNAL OFFICER'S STAFF.




TH-23

Figure 13. Staff organization of DSO/battalion commander's office.



**LEGEND:**

NUMERALS INDICATE NO. OF SIG BN PERS ATTACHED FOR MESSING.

-  SIG BN PERS
-  SIG BN MESS PERS
-  OTHER UNIT COOKS

*Figure 14. Type utilization of signal battalion mess personnel.*

TTII-17



sonnel may be required. If augmentation is necessary, mess personnel from company A (command operations) may be reallocated to provide the support required.

b. The *administrative and logistics section* provides the enlisted personnel and equipment for the battalion commander/DSO, S1/adjutant, battalion S4, and the battalion motor officer. Additional personnel and equipment for the DSO are provided by the DSO's section.

c. The *operations and intelligence section* provides the enlisted personnel and equipment for the battalion S3 and S2/assistant S3. It also supports these officers when they are operating as a part of the DSO's staff.

d. The *battalion personnel section* provides consolidated personnel administration for the battalion, under the supervision of the S1/adjutant. All personnel records and reports required by higher headquarters are maintained or prepared in the consolidated section. Information upon which these records and reports are based is obtained from the companies on an informal or abbreviated basis only. The section is normally located, with the personnel sections from all other division units, in the division administrative center at the division rear echelon.

e. The *battalion supply section* provides supply support (except spare repair parts) for all elements of the battalion. The section operates under supervision of the battalion S4. It prepares requisitions and supply reports, and receives, processes, stores, and delivers supplies as required. The section is organized on the basis that a minimum of supplies will be held in the battalion, and that rations, water, wire, and cable may be delivered directly to using company elements. The organization of the section has also taken into account that some company elements may be refueled directly by mobile filling stations operated by the division quartermaster battalion in the area of the division headquarters, the division trains area, and at the administrative center. It is expected that the battalion supply section can be employed for one supply round trip per day to requiring battalion elements.

f. The *battalion motor maintenance section* operates under the supervision of the battalion motor officer. It provides motor maintenance for headquarters and headquarters company, and armament maintenance and supplemental second echelon motor maintenance for the operating com-

panies of the battalion. It also provides the ordnance and engine generator repair parts for the battalion. Battalion motor maintenance is performed on site so far as practicable. Tool sets, a wrecker, and a maintenance shelter (not available at company level) are provided for establishing a repair facility to take care of heavier unit motor maintenance. The generator maintenance capability in the section supplements the limited capability of company vehicle mechanics for maintenance of the prime-mover components of engine generators. The maintenance section clerical personnel will prepare requisitions for repair parts, and maintain organizational maintenance records and files.

g. The *construction section* installs, maintains, and recovers field cable in the division area, and assists the operating companies of the battalion, as required, in the installation and recovery of field wire and cable. The construction section is organized into four 8-man teams which operate under the supervision of the battalion S3. The section will be employed as needed to assist the wire teams of the battalion operating companies with initial installation. Conversely, the field wire teams of the operating companies may also lay and recover field carrier cable. When wire/cable installation is beyond the capabilities of the battalion wire teams, assistance may be requested from corps/army units, which are organized to provide the necessary augmentation.

- (1) After initial signal center installations have been completed, the 8-man construction teams will install cable between the division main and alternate signal centers, between the trains area and the main signal center, and between division artillery and division main or alternate signal centers. These lines will be used as emergency backup in the event electronic countermeasures preclude the use of radio relay.
- (2) If time and the situation permit, additional cable installation from the alternate signal center to the forward combat command CP's is highly desirable and will be used as a backup and to provide a more secure means of communication. In establishing priorities for cable installation, consideration will be given to the backup of those radio relay circuits oriented toward enemy-held territory.

This backup will serve as a counter-measure.

- (3) Although the initial installation of signal centers is a responsibility of the platoons which operate them, there will be times when these platoons will require additional support from the construction section. To insure efficient utilization of the construction section, the DSO must closely coordinate the efforts of the section and establish signal center installation priorities. Predetermined priorities are essential to enable the teams of the construction section to move from job to job with a minimum of delay, supervision, and duplication of effort. A probable priority for support by the construction section is as follows:

- (a) Forward signal centers.
- (b) Alternate signal center.
- (c) Division main signal center.

*h.* The *radio terminal and carrier section* operates under the supervision of the battalion S3. It provides a pool of radio relay repeater and terminal stations and telephone carrier terminals for use in the division area as required to supplement capabilities organic to battalion operating companies. Although a total of nine radio relay terminals/repeater stations (six AN/MRC 69's

and three AN/MRC 54's) and four separate carrier terminal equipments (AN/TCC-7) have been included in the TOE, personnel have been provided for operation of only five stations simultaneously (three men per station). It is estimated that the need for additional stations will seldom exceed five at any one time and that a greater capacity may be achieved by reduced manning, by reinforcement from the operating companies to which attached, or by collocation of two or more stations which, once installed, can be operated by a single crew. Station teams from the section, when deployed, are normally attached to the company with which they operate. If the stations are radio repeater stations, the teams will normally be attached to the company operating the control station in the link.

*i.* The *division signal officer's section* provides the officer and enlisted staff and equipment for the DSO and ADSO and their office. Refer to paragraph 22 for details concerning operations of the section.

*j.* The *division photographic section* operates under the direction of the DSO. Refer to paragraph 19 for section operations.

*k.* The *division signal supply and maintenance section* operates under the control of the DSO. Refer to paragraph 20a for section operations.

## Section II. COMPANY A (COMMAND OPERATIONS)

### 25. General

Company A (command operations) (fig. 15) establishes and operates an assigned portion of the division area communication system. It provides signal communications for the echelons of division headquarters, the division trains headquarters, the division administrative center (rear echelon), and the division G3 air. It also provides signal communications, excluding internal radio nets, for the division headquarters company, the division trains headquarters company, and the administration company. Area signal center service is provided to those units located in the vicinity of the above elements.

*a.* The company establishes and operates facilities to connect division artillery headquarters into the division area communication system (fig. 2).

*b.* It provides and operates division net control stations and other stations in higher echelon radio nets as required, to include division and army air

request nets and the division air warning net. The company also operates the division area ground messenger service (fig. 6).

### 26. Company Headquarters

Company headquarters provides command control and coordination of company operations. It also provides mess facilities and second echelon motor maintenance. To perform these functions, company headquarters will normally be located at a major echelon of division headquarters.

*a.* Mess personnel of company headquarters will normally establish and operate mess facilities at the alternate signal center (fig. 14). They may also be required to provide mess support for other elements of the battalion. Through prior arrangement between commanders and mess personnel of signal units and other divisional elements, personnel of company A (command operations) may be provided mess support by the major unit to which they are attached.

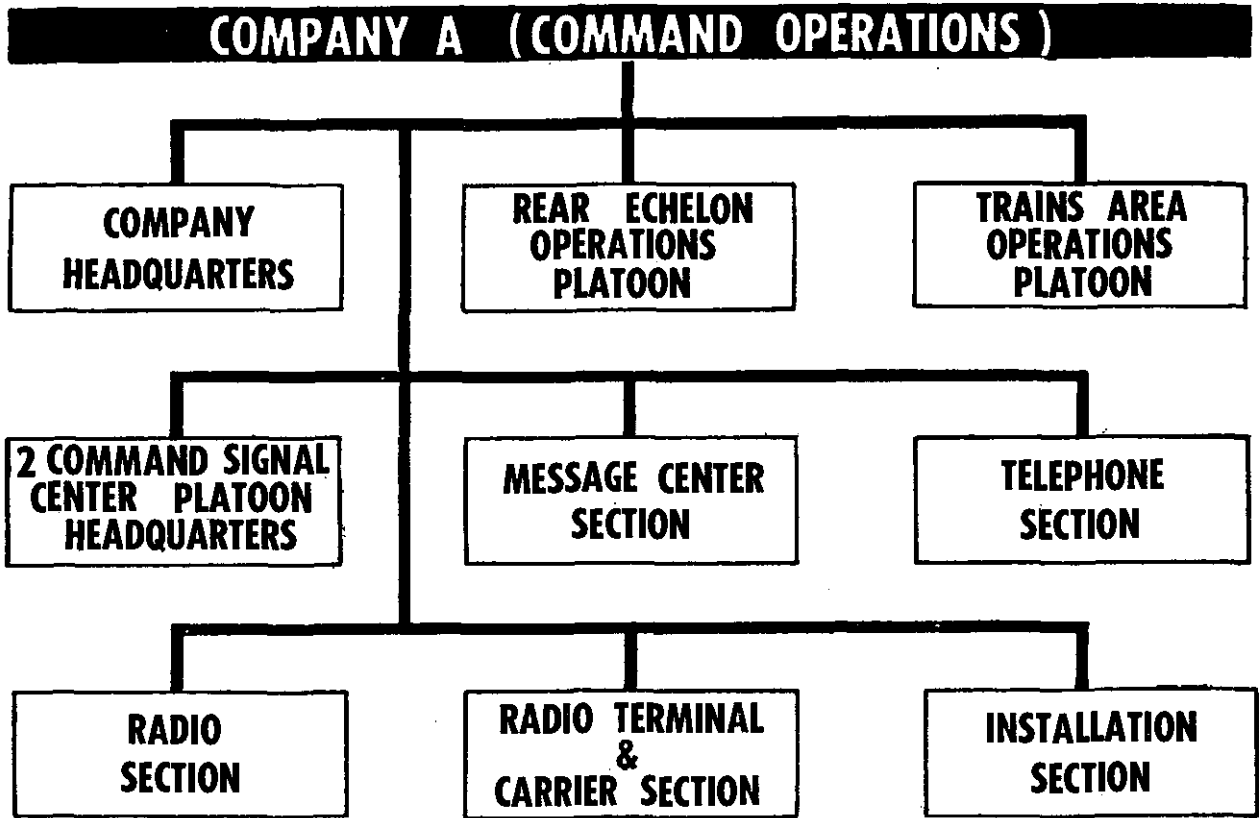


Figure 15. Organization of company A (command operations).

TT11-3

b. Supply support for company A (command operations) is provided by the battalion supply section. This section maintains all battalion supply records, prepares requisitions based on company needs, and normally delivers required supplies on a routine basis. Although the battalion is equipped to deliver class III (POL) supplies to the company, the company elements will normally make joint use of the refueling capability in the division headquarters and headquarters company area. Elements of company A (command operations) may obtain direct delivery of rations, water, wire, and cable from designated supply points.

c. Second and third echelon electronic maintenance support is provided by the signal supply and maintenance section in headquarters company.

d. Armament maintenance and supplemental second echelon motor maintenance support for company A (command operations) is provided by the battalion motor maintenance section. This section also furnishes ordnance and engine generator parts for the company, and supplements

company maintenance of the prime mover component of engine generators.

e. Administrative and logistical reports will be consolidated and forwarded, on a brief and informal basis, to the battalion headquarters for preparation and forwarding to higher headquarters.

## 27. Command Signal Center Platoon (fig. 15)

The two command signal center platoon headquarters, company headquarters (if required), and teams from the separate sections are organized into functional groups as needed to establish and operate signal centers at the division main CP (fig. 16) and alternate CP (fig. 17). Designated signal centers also provide and operate facilities to connect division artillery into the division area communication system, establish and operate the division area ground messenger service, and provide and operate air request radio stations at the division FSOC.

a. *Platoon Headquarters.* Two command signal center platoon headquarters are employed as

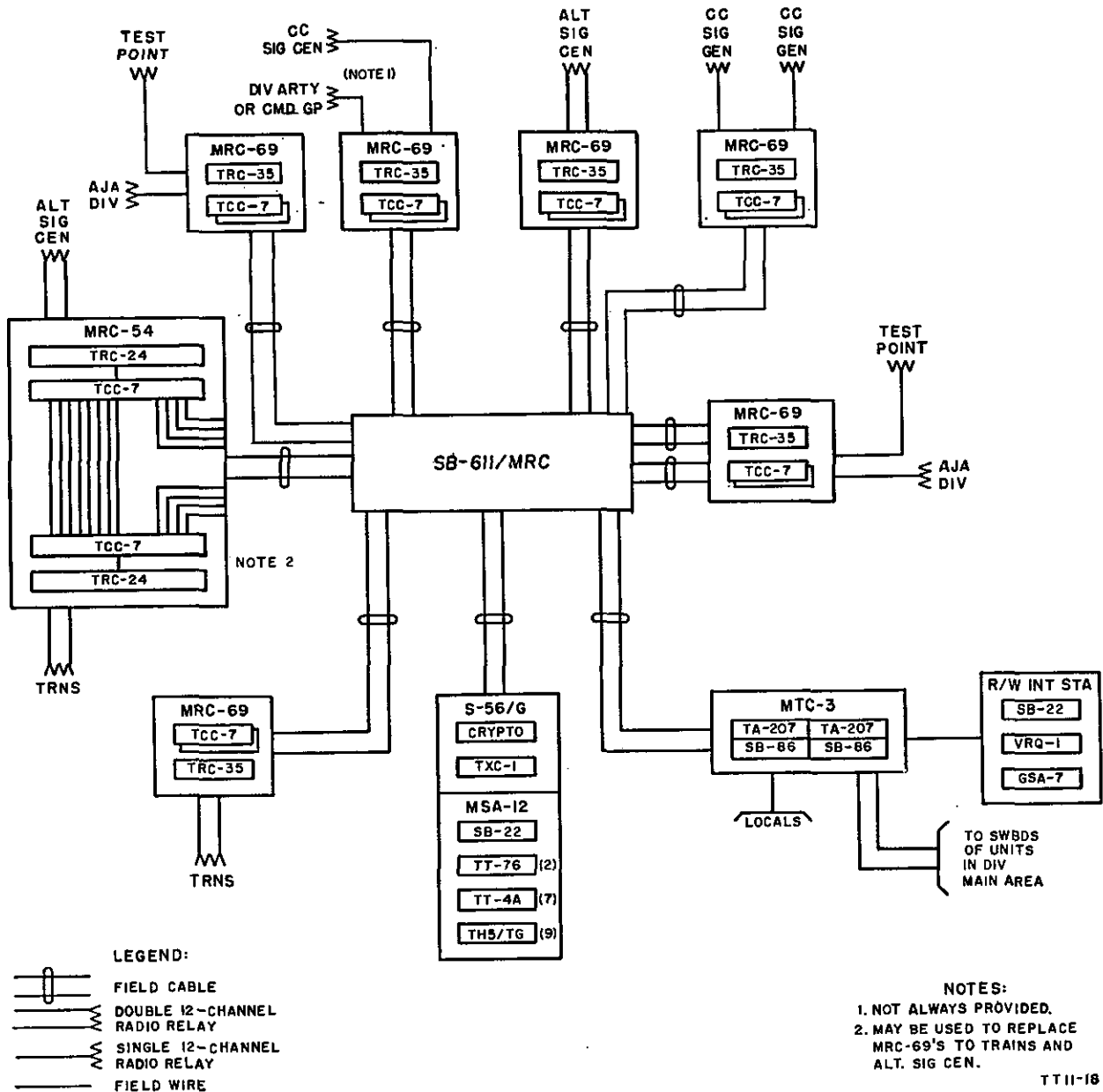


Figure 16. Division main signal center, block diagram.

the supervisory element for the signal centers established by the company at the division main and alternate CP's. Each platoon leader operates a Radio Set AN/VRQ-1 in the Signal battalion internal radio net (fig. 4). This radio may also be used as a relay station in the division CG/command net as required.

*b. Message Center Section.* The message center section provides message center, cryptographic, and teletypewriter service at the division main

and alternate signal centers and for units located in the vicinity of these centers (supplemental to organic capabilities of the units). The section is manned and equipped to operate two mobile centers. Each center consists of a mobile teletypewriter and cryptographic operations group and an S-56/G shelter for a combined message center and facsimile terminal room. However, the facsimile equipment authorized the battalion is sufficient only for operation at the division main

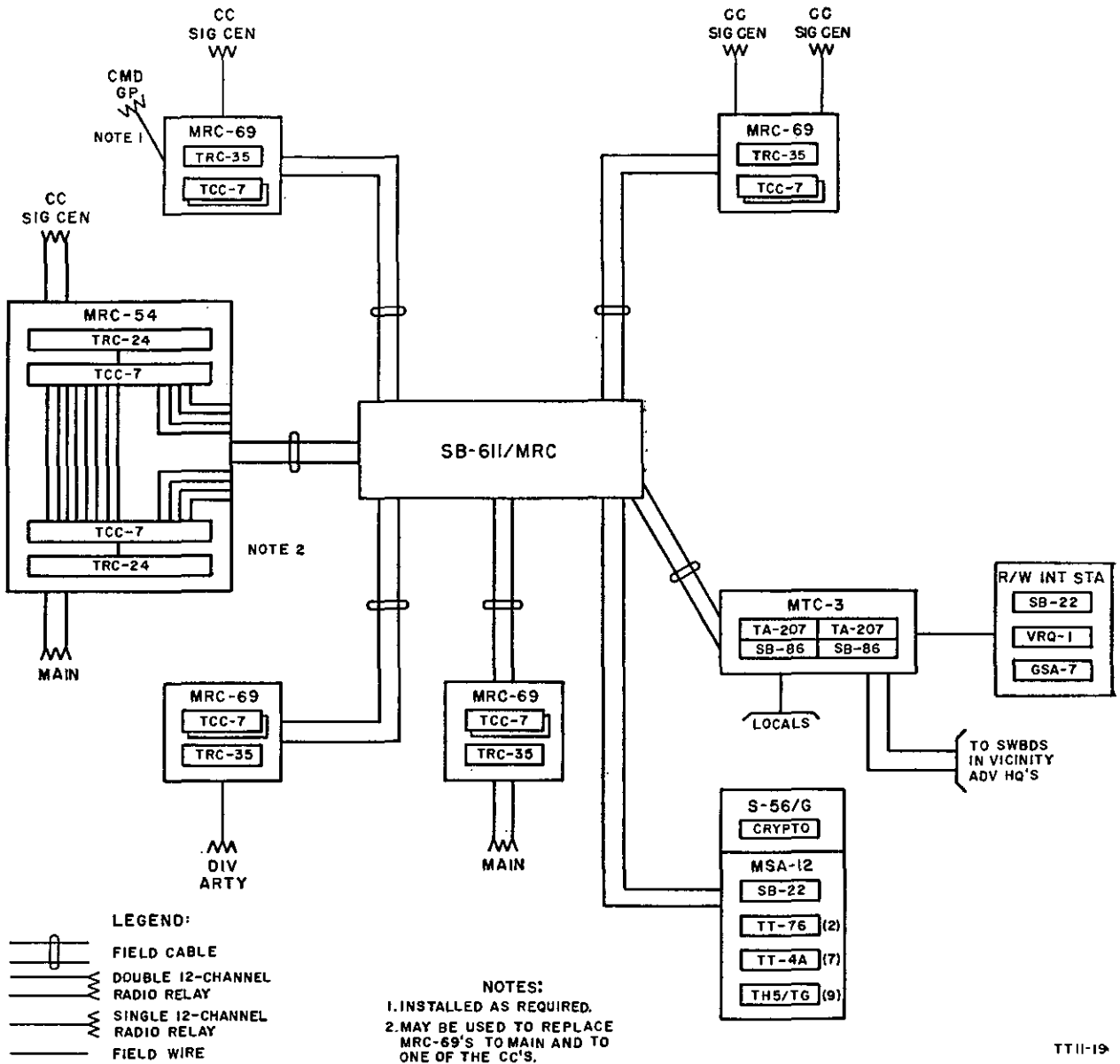


Figure 17. Alternate signal center, block diagram.

signal center (par. 14d). Two CP tents are provided to expand message center facilities and to facilitate displacement.

- (1) The signal center operated by this section will normally be the only location in the division that will use cryptographic systems requiring operators with cryptographic clearances.
- (2) The division area ground messenger service is operated by the messenger center section (fig. 6). To perform this mission, the section is authorized five ¼-ton

trucks and 12 motor messengers. Normally, the messengers will operate in pairs (one as driver and one as guard) on all motor messenger runs, particularly on those routes forward of division headquarters. If the tactical situation dictates, the messenger capability may be extended by providing guards and vehicles from other sources.

c. Telephone Section. This section operates the telephone central offices at the division main and alternate signal centers. It is capable of operat-

ing two mobile, two-position switchboards (AN/MTC-3) simultaneously. Portable switchboards (SB-22/PT) are authorized for alternate operation as required. Normally, the two-position switchboards will be located at division main; one in use and one for displacement. The SB-22/PT switchboards will be located at a forward echelon. When circumstances require operation of both two-position switchboards simultaneously, displacement may be accomplished either by use of the SB-22/PT switchboards, or by use of the displacement switchboards authorized in other elements of the signal battalion. The telephone section also performs the circuit control function in the signal centers at which located, to include patching and termination of trunk lines, circuit testing, and direction of circuit testing and maintenance. To carry out this mission, the telephone section is authorized three circuit control operators and two trailer-mounted communication patching panels (SB-611/MRC).

*d. Radio Section.* The radio section operates the NCS's in the division headquarters radio nets, and subordinate stations at the division main and alternate signal centers. It also operates the radio/wire integration stations associated with these centers. The section is manned and equipped to operate the following sets simultaneously on a 24-hour basis:

- (1) Four AN/GRC-26 radioteletype stations (two equipped with the AN/ARC-27).
- (2) Five AN/GRC-46 radioteletype stations (two equipped with Radio Sets AN/VRC-8 and -9).
- (3) Three AN/GRC-19 radio sets (each equipped with one AN/VRQ-1 and one AN/GRR-5 radio set).

*e. Radio Terminal and Carrier Section.* The radio terminal and carrier section installs and operates the terminals of the radio relay system and associated carrier equipment at the division main and alternate signal centers, and the terminals of a link connecting division artillery into the division area communication system. The section is capable of operating eleven double 12-channel radio terminal sets (AN/MRC-69) with associated carrier terminal equipment (AN/TCC-7). A type employment of these terminal facilities is indicated in figure 7. Personnel allocation to this section is based on the concept of colocation of

terminals, which will permit some reduction over the standard 3-man-per-station criteria for 24-hour operation. Additional savings in personnel and 12-channel terminal equipment may be instituted by using radio relay repeaters (AN/MRC-54) with associated carrier terminal equipment (AN/TCC-7) from the pool located at headquarters company to install the vertical axis of the double 12-channel radio relay system running from division trains to the combat commands.

*f. Installation Section.* The installation section installs interconnecting cable between signal center components, wire and cable in division CP areas, and wire locals to other units in the vicinity of the division main and alternate signal centers.

- (1) The section is organized and equipped to make up two 4-man field wire teams, each equipped with a  $\frac{3}{4}$ -ton truck and Reel Units RL-26 and RL-31. Each team carries a small basic load of wire and cable in a  $\frac{3}{4}$ -ton trailer.
- (2) During the period of installing interconnecting cable between signal center components, the teams of the installation section will require assistance from personnel in other sections of the company. Construction teams from headquarters company will be required to assist the installation teams in situations beyond their capabilities.

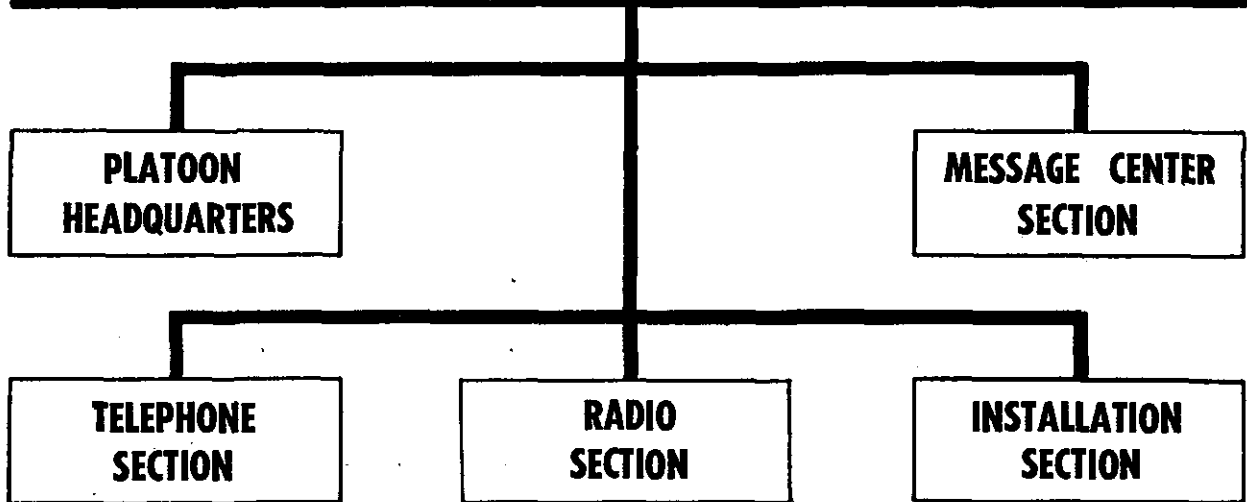
## 28. Rear Echelon Operations Platoon

The rear echelon operations platoon (fig. 18) establishes and operates a signal center at the division rear echelon. It provides communication for that echelon, the administration company, and the administrative center. Radio relay and carrier facilities are not provided in the platoon. Field wire or field cable is considered adequate for connection to the nearest army area signal center (or a division signal center if located in a division area) by the signal center to which connected.

*a. Platoon Headquarters.* Platoon headquarters provides command control and coordination of platoon operations. The platoon leader serves as signal officer for the division rear echelon, administrative center, and the administration company.

*b. Message Center Section.* The message center section provides message center, crypto-

# REAR ECHELON OPERATIONS PLATOON



TT11-5

Figure 18. Organization of rear echelon operations platoon.

graphic, teletypewriter, and limited motor messenger service for the division rear echelon, administrative center, and the administration company. It also operates the rear echelon signal center radio receiver station in the division, corps, or army warning net. The message center section is designed to operate in one echelon only.

*c. Telephone Section.* The telephone section is organized to install and operate a single-position Manual Telephone Switchboard SB-86/PT for the division rear echelon, administrative center, and the administration company. The section is equipped with a second switchboard (SB-86/PT) for use during periods of overload or for displacement. When the division rear echelon is located in the corps/army area, the telephone switchboard will be connected into the nearest corps/army signal center. When so located, one or more trunks will be patched through the corps/army and division area communications system to the switchboard in a division headquarters or trains area signal center.

*d. Radio Section.* The radio section operates a radioteletype set (AN/GRC-26) in the division rear echelon net. The AN/GRC-26 is provided in lieu of a less powerful set due to the distances frequently encountered between the division rear and main echelons. Radio Set AN/PRC-8 is provided for march control during movement of the rear echelon.

*e. Installation Section.* The installation section consists of one 4-man wire team with a  $\frac{3}{4}$ -ton truck

and trailer. The team installs and maintains the telephone system at the division rear echelon.

## 29. Trains Area Operations Platoon

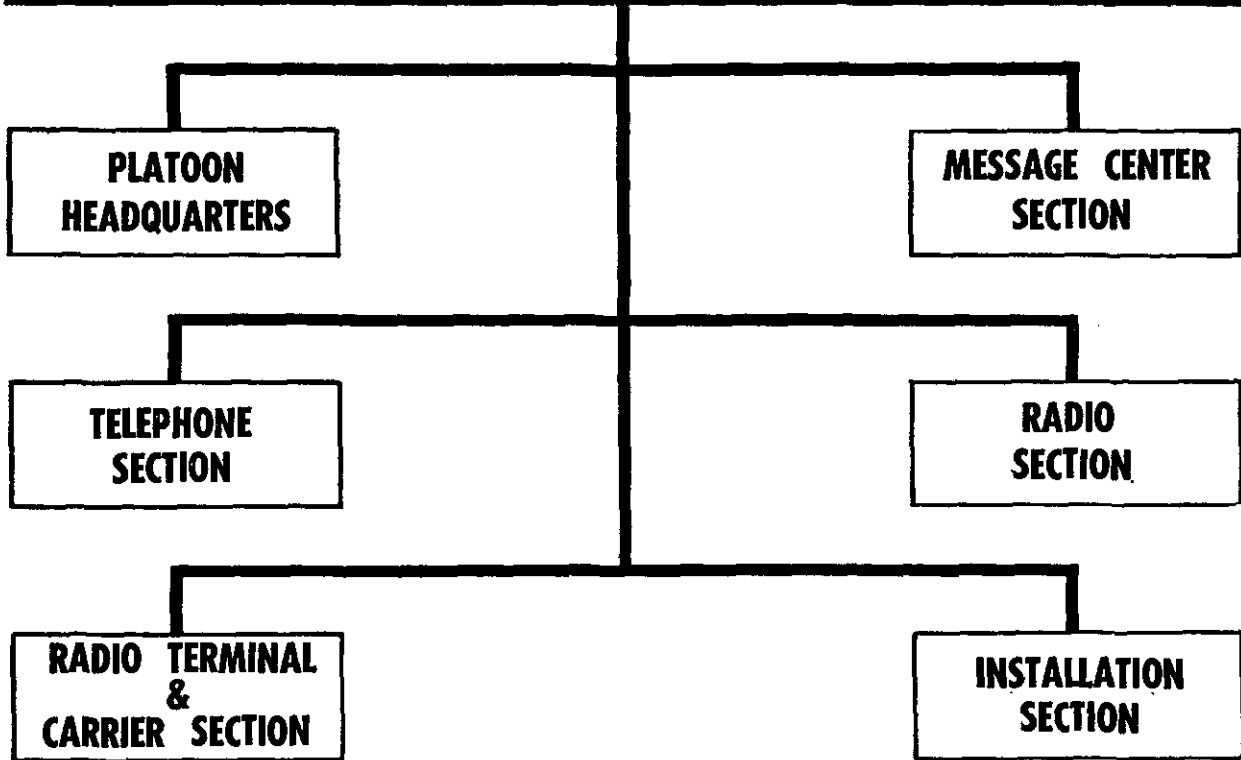
The trains area operations platoon (fig. 19) establishes and operates a signal center at the division trains headquarters (fig. 20). It provides communication for that headquarters and the trains headquarters company.

*a. Platoon Headquarters.* Platoon headquarters provide command control and coordination of platoon operations. The platoon leader serves as signal officer for the trains headquarters and for units served by the platoon.

*b. Message Center Section.* The message center section provides message center, cryptographic, teletypewriter, and limited local area messenger service for the division trains headquarters and for units in the division trains area (supplementary to the organic capabilities of these units). The section operates the trains area signal center radio receiver station in the division warning net. The section is manned and equipped to operate in one echelon only.

*c. Telephone Section.* The telephone section operates a single-position manual telephone switchboard in the trains area signal center. The switchboard provides telephone service for trains headquarters and for units in the division trains area. It also provides trunk-switching service in the division area communication system. A second switchboard (SB-86/PT) is authorized for

# TRAINS AREA OPERATIONS PLATOON



TT11-6

Figure 19. Organization of trains area operations platoon.

displacement and utility purposes. The section performs the circuit control function in the trains area signal center, to include patching and termination of trunk lines, circuit testing, and direction of circuit testing and maintenance. To carry out this mission, the telephone section is authorized two communications patching panels (SB-611/MRC) and two circuit control operators. During operations, one panel is normally in use; the second is used for displacement.

*d. Radio Section.* The radio section operates two radioteletype sets (AN/GRC-46): one in the division administrative and logistics net and the second in the division command net. The radio set normally employed in the division administrative and logistics net usually will be located at the division logistical operation center (DLOC). The section also operates the trains area signal center radio/wire integration station and an FM

station either in the trains net or division CG/command net as required.

*e. Radio Terminal and Carrier Section.* This section installs and operates the trains area signal center terminals of the radio relay system and associated carrier equipment in the division area communication system. The section is manned and equipped to operate two radio terminal sets (AN/MRC-69).

*f. Installation Section.* The installation section consists of two 4-man wire installation teams. The teams install and maintain the wire system for trains headquarters, and the field wire links from the trains area signal center to units in the area. Each team is equipped with a ¾-ton truck, a ¾-ton trailer for transporting a small basic load of field wire and cable, and Reel Units RL-26 and RL-31.



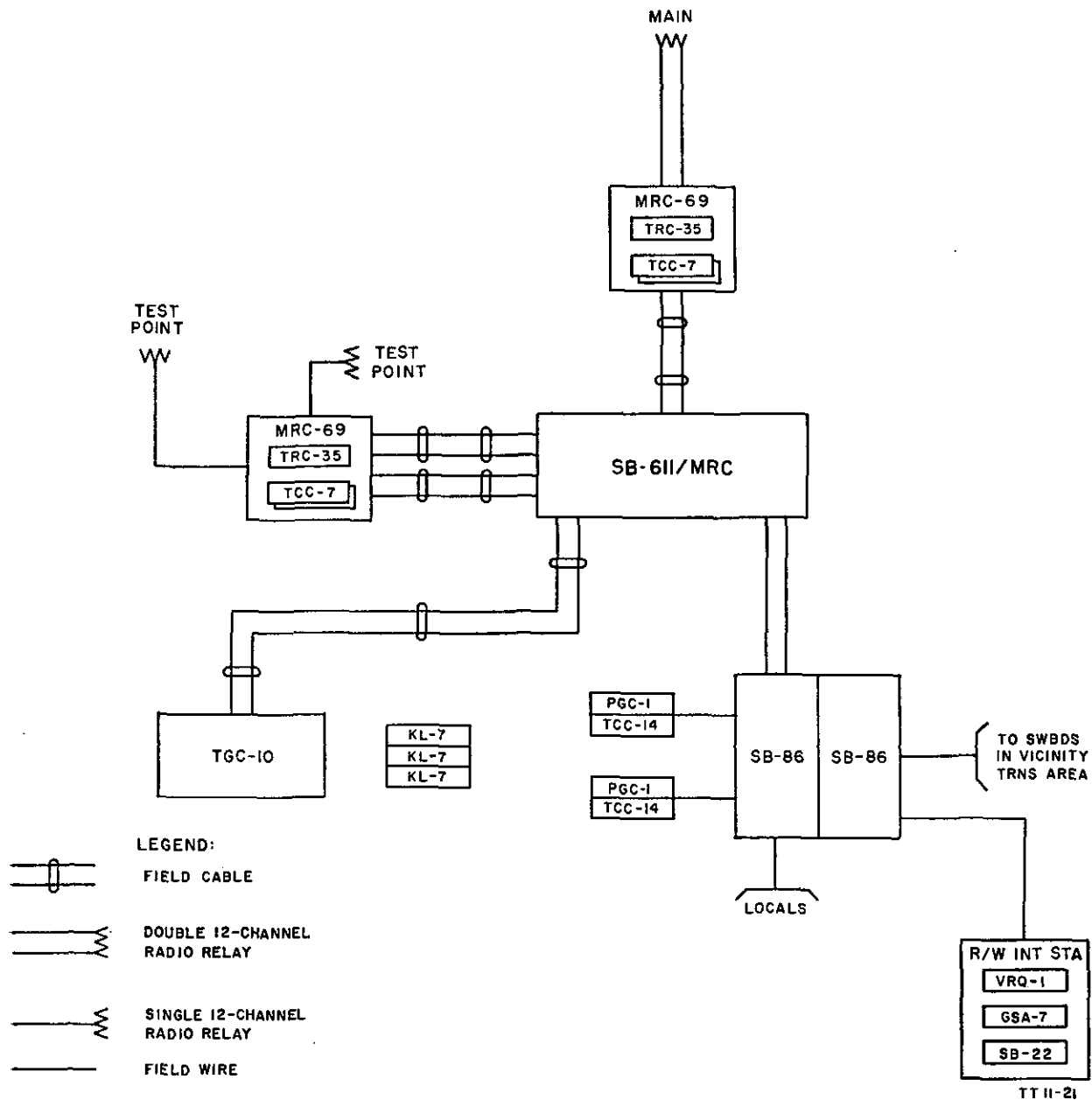


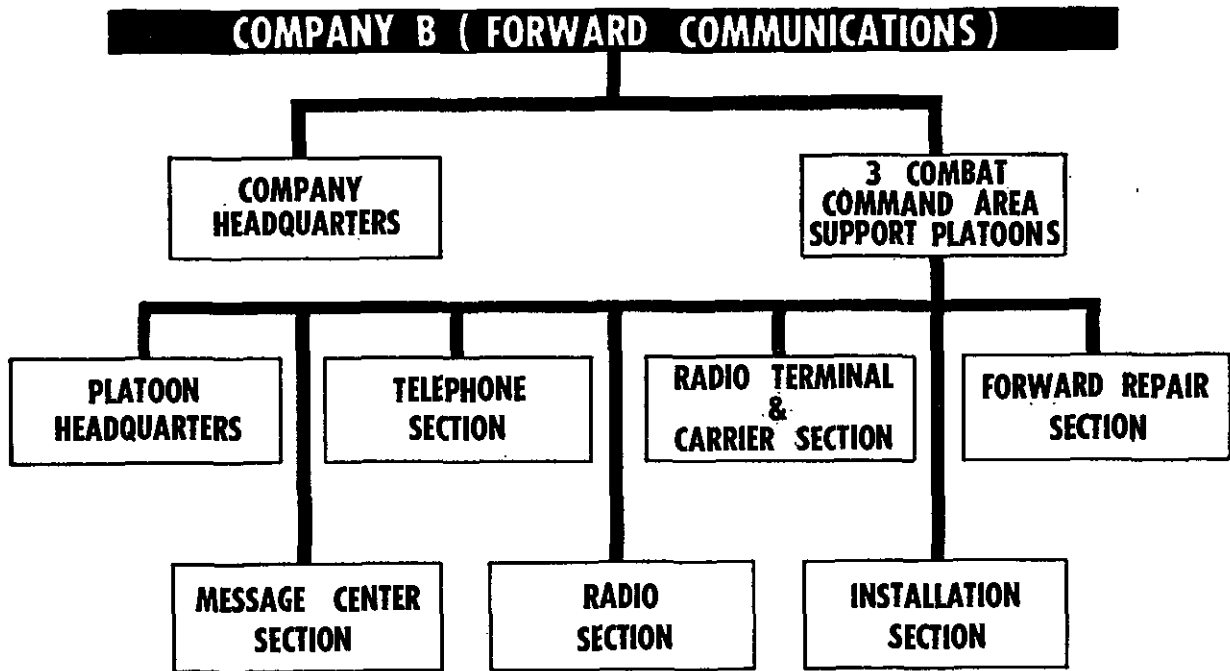
Figure 20. Division trains signal center, block diagram.

### Section III. COMPANY B (FORWARD COMMUNICATIONS)

#### 30. General

Company B (forward communications) (fig. 21) provides area signal center service for the combat commands, and for other units in the division forward area supplemental to the organic capabilities of these units. This includes the installation and maintenance of connecting cable/wire lines. The company establishes and operates

communication facilities to connect combat command headquarters and subordinate battalions, division elements, and other supporting units into the division area communication system. It also provides terminal patching and switching facilities for wire and radio relay trunk circuits, and provides radio/wire integration facilities for the combat commands and units in the combat com-



TTII-7

Figure 21. Organization of company B (forward communications).

mand area. It provides limited signal field maintenance for the combat commands and supporting units, and supplemental organizational signal maintenance for the combat command area support platoons.

### 31. Employment

Company B (forward communications) is organized along functional lines. Each of the three combat command area support platoons is closely associated with a particular combat command. Each platoon operates a forward signal center (fig. 22), and furnishes associated facilities for general and direct communication support of units and unit elements in the combat command area. The signal centers, including the radio relay system and associated carrier equipment, are a part of the division area communication system. The centers provide points of entry into the system for users (including the combat commands), and switching and patching points for channels of the system. In addition, local communication service for units in the combat command area may be provided to supplement the organic capabilities of these units. The company commander and platoon leaders act as signal officers for the service support units in their respective areas.

a. Each platoon provides direct signal support for a combat command, and general signal support, to include limited wire laying and field signal maintenance, for units in the area. Each platoon normally will be included as a part of the combat command team or task force, when such groupings are required, and will accompany the combat command if it is attached to another division. The composition of the platoons so attached may be modified to meet a particular mission by making reallocations among other platoons or other signal battalion elements. When a combat command area support platoon is attached by division order to a combat command or a task force, the unit to which the platoon is attached is responsible for maintaining the integrity of the division area communication system. The degree of system integrity desired in each instance should be specified clearly in the signal portion of the division operations order.

b. The organization of the combat commands is premised on the provision of specific support by the forward communication company. This support must include—

- (1) Installation and maintenance of communication facilities connecting the combat command headquarters into the division area communication system.

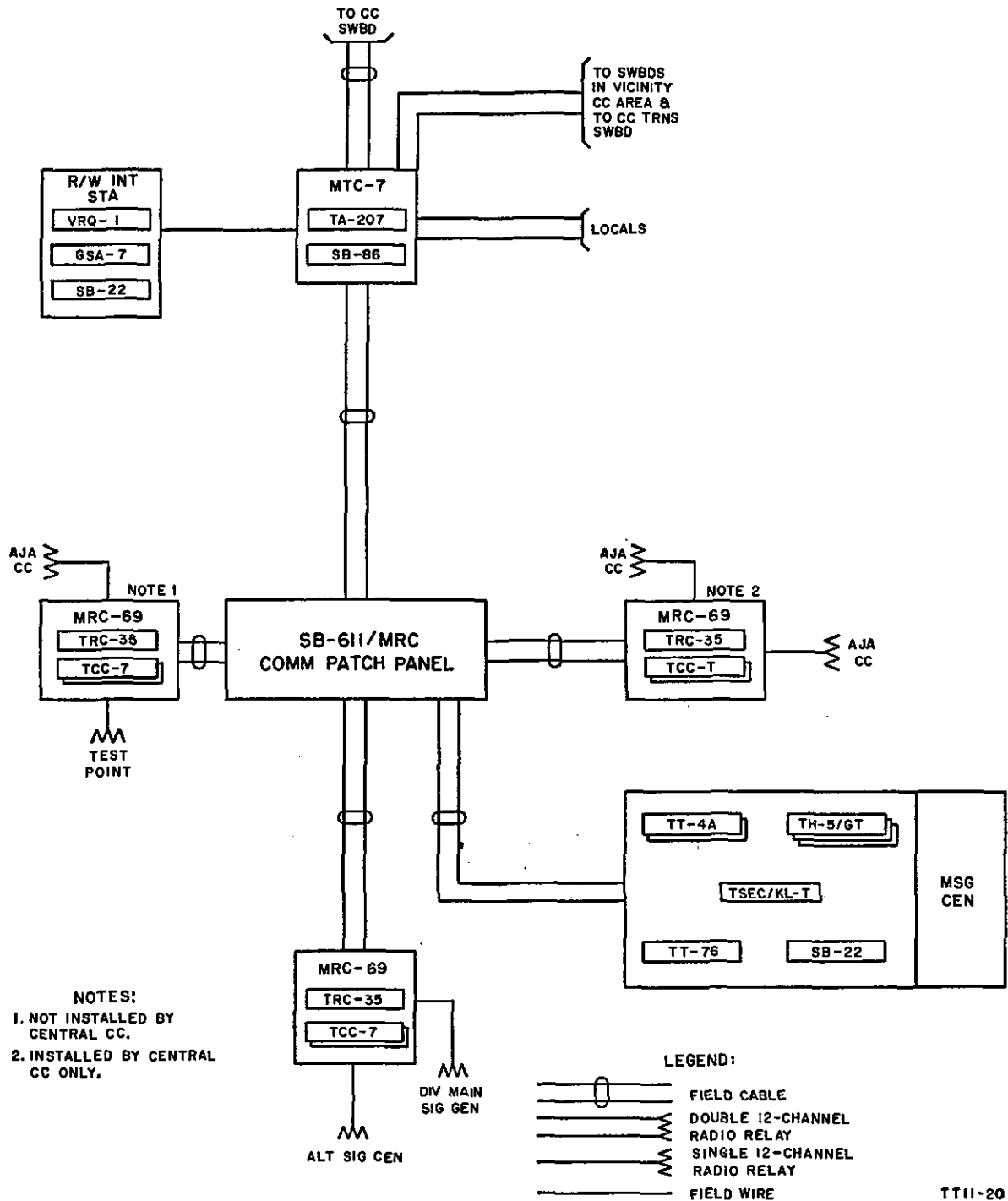


Figure 22. Division forward signal center, block diagram.

(2) Lateral communications (except radio) between combat commands (normally by switching or patching through the area communication system).

(3) Communications (except radio) from combat command headquarters and subordinate battalion headquarters to supporting divisional logistic and adminis-

trative elements. (Supporting combat elements are expected to provide communication to combat command headquarters or its trains in accordance with current doctrine concerning the relationship between supported and supporting units.)

### 32. Company Headquarters

Company headquarters provides command control and coordination of company operations, and mess facilities and second echelon motor maintenance. In order to perform these functions expediently, company headquarters operates at a central location, normally in the division alternate signal center area.

a. Since each of the platoons is assigned to a particular combat command and, as such, will mess and quarter with that command, the cooks in company headquarters may be allocated (fig. 14) in the following manner: one cook or first cook to each of the combat commands; the remaining cooks allocated as required.

b. Administrative and logistical reports to higher headquarters will be consolidated and forwarded, on a brief and informal basis, to battalion headquarters for preparation and submission to higher headquarters.

c. Supply (Class I, II, and IV) will be handled administratively by company headquarters. Physical distribution to the platoons will be effected by a daily supply trip from the supply section of headquarters company. Class III (POL) for the platoons and company headquarters will be made available through mobile gas stations operated by the division quartermaster battalion.

### 33. Combat Command Area Support Platoons

a. Each of the *platoon headquarters* provides command control and coordination of platoon operations, and limited organizational maintenance of platoon power units. The platoon leaders must maintain close coordination with the signal or communication officers and commanders and staffs of the units which they support.

b. The *message center sections* provide message center, cryptographic, teletypewriter, and limited messenger service for the units and unit elements located in their respective areas (fig. 6). This service is supplemental to organic capabilities. Serviced units will normally pick up and deliver

their messages as required. Each section contains one AN/GRR-5 receiver with which it monitors the division warning net. One mobile Teletypewriter Terminal Group AN/MGC-17 is provided to furnish three teletypewriter terminals, two with cryptographic facilities, at each center. The sections may operate in two echelons on a limited basis, primarily during displacement, by dismounting equipment from the authorized teletypewriter terminal group. The sections are manned and equipped, however, to operate in one echelon only. The sections have a limited capability for local area motor messenger service (two messengers, one vehicle) supplementing the division area ground messenger service operated by company A (command operations).

c. The *telephone sections* each operate a mobile single-position 60-line telephone switchboard for both local and trunk-line switching.

(1) Each section is equipped with two mobile Telephone Switchboard Groups AN/MTC-7; however, the section is manned on the basis that only one AN/MTC-7 will be in operation at a time, with the other being used as a spare for displacement or for establishing a forward switch for limited periods as required. The AN/MTC-7's will handle both the local and trunk-line switching requirements placed on the center.

(2) The sections also are responsible for the circuit control functions in their respective signal centers, to include patching and termination of trunk lines, circuit testing, and direction of circuit maintenance. For this purpose, two Communications Patching Panels SB-611/MRC are provided. Each panel is mounted in a 1½-ton trailer; one in use and one for displacement or for establishing forward switches.

d. The *radio sections* operate an AN/VRQ-1 radio set (armored) and an AN/VRQ-2 radio set (artillery), using AN/GSA-7's as a radio/wire integration station in the division radio/wire integration system. These stations are connected by wire to the AN/MTC-7 operated by the telephone section to facilitate operation.

e. The *radio terminal and carrier sections* operate the terminals of the radio relay system and associated carrier equipment at their respective forward signal centers, and at combat command

headquarters or forward switches as required (fig. 7). Each section is manned and equipped to operate three AN/MRC-69 radio terminal sets. When the type installation shown in figure 2 is used, two sets normally will be in operation at each signal center and one set will be held in reserve for displacement. If the tactical situation should require more than one set for initial displacement, the set providing lateral circuits will be removed from operation and the set remaining will be reoriented to provide 12 channels to the division main CP or to the alternate signal center and 12 lateral channels to the adjacent combat command, if needed. To provide terminals for the command group, it will be necessary to use displacement equipment available at the nearest signal center and the alternate signal center. The internal command group terminal will be provided by using equipment from the headquarters company pool. The sets employed at the forward signal centers normally will be positioned as close to the patching facility (SB-611/MRC) as is consistent with security and dispersion, to facilitate cable/wire laying to these equipments. If feasible, units should be co-located to enable a minimum of personnel to operate efficiently and to reduce the number of wire routes to be installed and maintained. The sections are equipped with two portable telephone switchboards (SB-22/PT) for establishing forward switches or patching points on extension links from the forward signal centers. Such switches may be frequently established to extend communications forward of combat command headquarters.

f. The *installation sections* are organized as one 8-man or two 4-man field wire teams. Each section has one 2½-ton truck and one ¼-ton truck, each equipped with a trailer.

- (1) The sections are responsible for wire laying and wire maintenance, and for furnishing telephone instruments as required to the following supported units:
  - (a) Platoons of the forward support company of the division ordnance battalion and the company headquarters.
  - (b) Elements of the ambulance company and clearing company of the division medical battalion and the headquarters of these companies, if located in the division forward area.
  - (c) Collection and evaluation sections of the recovery and disposition platoon of

the division quartermaster battalion.

- (d) Forward supply points, if established by the division quartermaster battalion.
  - (e) Light truck sections of the division quartermaster battalion, if based in a forward area.
  - (f) Traffic control points (TCP's), if established in the forward area by the division military police company.
  - (g) General support flight groups and associated landing fields established in the division forward area by the division combat aviation company.
  - (h) Companies or company elements of the division armored engineer battalion operating in the forward area when in general support, and field wire connections to the battalion headquarters, if so located.
  - (i) Subordinate or attached battalions as required.
- (2) Since this section has many responsibilities and a limited number of personnel and equipment with which to perform its mission, priority should be established for connecting units into the system. Priorities will depend on the immediate situation and should be coordinated fully with the combat command headquarters staff. An SOP should also be established to dictate the number of pairs each unit will receive initially and the necessary augmentation at a later date, if time and equipment permit.
  - (3) Initially, the section has 3.5 miles of CX-162/G cable and 26 miles of WD-1/TT field wire. This is not to be construed as a maximum load for the section, since additional wire and cable will be available from the battalion or other wire teams.
  - (4) In some cases, the organic 8-man wire team will not be physically capable of installing the total circuits within the time limit prescribed. Augmentation of personnel and equipment for the situation of this type is available by attaching all or a portion of the 8-man construction teams from headquarters company to complete the initial installation.

g. The *forward repair sections* operate as described in paragraph 20b.

# APPENDIX

## REFERENCES

### 1. General

This appendix contains a selected list of numbers and titles of publications pertinent to the operations of the signal battalion, armored division. For availability of items listed and publications on additional subjects, refer to DA Pams 310-1, 310-3, 310-4, and 310-7.

### 2. Administration

AR 230-5	General Policies.
AR 220-60	Battalions: Battle Groups—Squadrons. General Provisions.
AR 220-70	Companies: General Provisions.
AR 340-15	Correspondence.
AR 345-15	Policy Governing the Custody, Use, and Preservation of Department of the Army Official Information Which Requires Protection in the Public Interest.
AR 380-5	Safeguarding Defense Information.
AR 380-40	Safeguarding Cryptomatter; Distributing and Accounting for Cryptomaterial.
AR 380-55	Safeguarding Defense Information in Movement of Persons or Things.
AR 611-201	Manual of Enlisted Military Occupational Specialties.
AR 230-10	Nonappropriated Military Welfare Funds.
AR 380-105	Policy and Procedure Governing Use of Code Words, Nicknames, Short Titles, and Similar Devices.

SR 605-105-5

Commissioned and Warrant Officer Personnel, Military Occupational Specialties.

FM 100-10

Field Service Regulations (Administration).

### 3. Training

FM 21-5

Military Training.

FM 21-6

Techniques of Military Instruction.

FM 21-40

Defense Against CBR Attack.

FM 21-60

Visual Signals.

FM 22-5

Drill and Ceremonies.

FM 22-10

Leadership.

FM-22-100

Command and Leadership for the Small Unit Leader.

### 4. Supply and Maintenance

DA Pam 310-21

Index of Supply Manuals: Signal Corps.

AR 735-2

Transfer of Property Accountability and Responsibility.

AR 735-4

Expendable Property.

AR 735-5

General Principles and Policies.

AR 735-11

Accounting for Lost, Damaged, and Destroyed Property.

### 5. Fortification, Camouflage, and Demolition

FM 5-15

Field Fortifications.

FM 5-20 (Series)

Camouflage.

FM 5-25

Explosives and Demolition.

### 6. Miscellaneous

DA Pam 108-1

Index of Army Motion Pictures, Film Strips, Slides, and Phono-recording.

DA Pam 310-1	Index of Administrative Publications.		Army Posters, and Firing Tables and Trajectory Charts).
DA Pam 310-2	Index of Blank Forms.		
DA Pam 310-3	Military Publications:	DA Pam 310-4	Index of Technical Manuals, Technical Bulletins, Supply Bulletins, Lubrication Orders, and Modification Work Orders.
	Index of Training Publications (Field Manuals, Reserve Officer's Training Corps Manuals, Training Circulars, Army Training Programs and Mobilization Training Programs, Army Subject Schedules, Army Training Tests, War Department and Department of the	DA Pam 310-7	Index of Tables of Organization and Equipment, Tables of Organization, Type Tables of Distribution, and Tables of Allowances.

[AG 300.7 (13 Jan 58)]

By Order of *Wilber M. Brucker*, Secretary of the Army:

Official:

**HERBERT M. JONES**,  
*Major General, United States Army,*  
*The Adjutant General.*

**MAXWELL D. TAYLOR**,  
*General, United States Army,*  
*Chief of Staff.*

Distribution:

*Active Army:*

ASA	MDW
CNGB	Armies
Technical Stf, DA	Svc Colleges
Technical Stf Bd	Br Svc Sch
CAMG Bd	USAINTC
USA MP Bd	USAAVNS
TAG Bd, USA	PMST Sr Div Units
USCONARC	PMST Jr Div Units
OS Maj Comd	

PMST Mil Sch Div Units	Units organized under
Ports of Emb (OS)	following TOE:
Trans Terminal Comd	11-55T
Army Terminals	11-56T
USA Sig Tng Cen	11-57
USA Elct PG	11-58T
USA Sig Pub Agcy	17-1
Mil Dist	52-1

*NG*: State AG; units—same as Active Army.

*USAR*: None.

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