

MHI
Copy 3

*Supers. by FM 11-28
(April '73)*

FM 11-9

DEPARTMENT OF THE ARMY FIELD MANUAL

SIGNAL RADIO RELAY COMPANY

FOR HISTORICAL USE ONLY

**HEADQUARTERS, DEPARTMENT OF THE ARMY
MARCH 1966**

FIELD MANUAL

No. 11-9

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 10 March 1966

SIGNAL RADIO RELAY COMPANY

	Paragraph	Page
CHAPTER 1. INTRODUCTION		
Purpose	1	3
Scope	2	3
Comments on publication	3	3
References	4	3
Definitions	5	3
2. COMPANY CHARACTERISTICS		
Mission	6	4
Assignment and allocation	7	4
Capabilities	8	4
Limitations	9	4
Unit category and mobility	10	4
3. COMPANY ORGANIZATION		
General	11	5
Company headquarters	12	5
Radio relay platoon	13	7
Carrier platoon	14	8
4. COMMUNICATIONS IN THE THEATER ARMY		
Introduction	15	11
Theater army communications system	16	11
Theater army signal command	17	11
5. COMPANY COMMUNICATIONS OPERATIONS		
General	18	12
Employment	19	12
Type system configurations	20	13
Command and control	21	16
Counterinsurgency operations	22	17
6. COMPANY ADMINISTRATIVE OPERATIONS		
General	23	18
Company command post	24	18
Personnel management	25	18
Mess operations	26	18
Equipment maintenance	27	18
Company supply operations	28	20
Company internal communications	29	20
Training	30	21
Standing operating procedures (SOP)	31	23

	Paragraph	Page
7. SECURITY		
General	32	24
Defense measures	33	24
Defense plans	34	24
Destruction of equipment	35	25
APPENDIX I. REFERENCES		26
II. CHARACTERISTICS OF MAJOR ITEMS OF SIGNAL EQUIPMENT		28

CHAPTER 1

INTRODUCTION

1. Purpose

This manual provides information and doctrinal guidance for the employment of personnel and equipment of the signal radio relay company as authorized by TOE 11-377E.

2. Scope

a. This manual covers the organization, equipment, employment, and administration of the signal radio relay company. The essential guidelines presented, when coupled with experience, will provide the company commander and key personnel of the company with information needed in effective communications support.

b. The material presented herein is applicable to all army missions in situations such as nuclear warfare; chemical, biological, and radiological warfare; conventional warfare; and counterinsurgency.

3. Comments on Publication

Users of this manual are encouraged to submit recommended changes or comments to improve this publication. Comments should be pre-

pared in accordance with AR 310-3 and keyed to the specific page, paragraph, and line of text in which the change is recommended. Reasons should be provided for each comment to insure understanding and complete evaluation. Comments should be forwarded direct to the Chief, Organization and Doctrine Division, U. S. Army Combat Developments Command Communications-Electronics Agency, Fort Monmouth, N. J. 07703.

4. References

a. Publications that provide detailed information relating to the material presented herein are listed in appendix I.

b. A summary of the technical characteristics of the major items of signal equipment authorized in the signal radio relay company is provided as appendix II.

5. Definitions

Terms and abbreviations used in this manual are in consonance with the latest issues of AR 320-5, AR 320-50, and JCS Pub 1. Other terms are defined in the text where first used.

CHAPTER 2

COMPANY CHARACTERISTICS

6. Mission

The mission of the signal radio relay company is to install, operate, and maintain radio terminal, radio relay, carrier terminal, and carrier repeater facilities to connect various headquarters and installations within the communications zone (COMMZ) into the theater army communications system (TACS).

7. Assignment and Allocation

The signal radio relay company is a part of the theater army signal command and is normally assigned to a signal operations battalion (theater army). The company may be assigned to a field army. Allocation is one or more per signal operations battalion assigned to a signal operations group of the theater army signal command, or one or more per army signal brigade as required.

8. Capabilities

a. At full strength, this unit installs, operates, and maintains (including direct support-level maintenance) the following electronic equipment:

- (1) Thirty Radio Terminal Sets AN/MRC-73 each of which is employed as a complete VHF/UHF radio and carrier terminal for a radio relay system providing 12 voice channels. One voice channel per system may be converted to provide four teletype channels.
- (2) Fifteen Radio Repeater Sets AN/MRC-54 each of which is employed either as a complete VHF/UHF radio repeater in a single radio relay system providing 12 voice channels, or as a complete double VHF/UHF radio terminal for two systems each providing 12 voice channels when terminated in a Carrier Terminal AN/MCC-6.
- (3) Eighteen Telegraph-Telephone Terminal Sets AN/MCC-6 each of which is employed to terminate two spiral-four cable carrier systems or two radio re-

lay systems each providing 12 voice channels. One voice channel per system is capable of terminating eight telegraph channels.

- (4) Four Telephone Repeater Sets AN/MCC-3 each of which is employed as an attended repeater in a spiral-four cable carrier system or to connect long spiral-four cable keying lines at a Radio Terminal Set AN/MRC-54.

b. The company provides mess facilities and organizational maintenance of its organic arms, motor vehicles, and power equipment.

c. Individuals of this organization can engage in limited defense against ground attack of the unit's area or installation(s).

9. Limitations

a. This unit depends on signal construction units for installation and maintenance of field cable and unattended repeaters for land lines connecting the various supported headquarters into the theater army communications system (TACS).

b. This unit is dependent upon other appropriate theater units for augmentation of direct support signal maintenance; direct support maintenance for vehicles, weapons, and power generators; general and depot support maintenance; logistical support; medical services; and religious services.

c. This unit will require assistance from local defense units for security against sabotage and guerrilla attack. In a counterinsurgency situation, security becomes difficult and requires special attention.

10. Unit Category and Mobility

This unit is designated a Category II unit (reference Unit Categories, AR 320-5). The unit has sufficient prime movers and vehicles to carry all its personnel and equipment in one movement by road (100 percent mobile). All equipment is air-transportable, making the unit suitable for immediate reaction situations.

CHAPTER 3

COMPANY ORGANIZATION

11. General

The signal radio relay company consists of a company headquarters, three identical radio relay platoons, and a carrier platoon. Each radio relay platoon consists of a platoon headquarters, a radio relay section, and a radio terminal section. The carrier platoon consists of a platoon headquarters, a carrier repeater section, and a carrier terminal section. An illustration of the organization of the signal radio relay company is shown in figure 1.

12. Company

The company headquarters consists of a company commander, a facilities control officer, and enlisted specialists, along with necessary equipment for company command, administration, and facilities control. Company headquarters provides services such as training, mess, supply, and organizational maintenance of organic arms and vehicles. The TOE authorizes the company headquarters personnel and equipment which may be organized functionally into elements to perform specific services for the company. These elements are organized as depicted in figure 2.

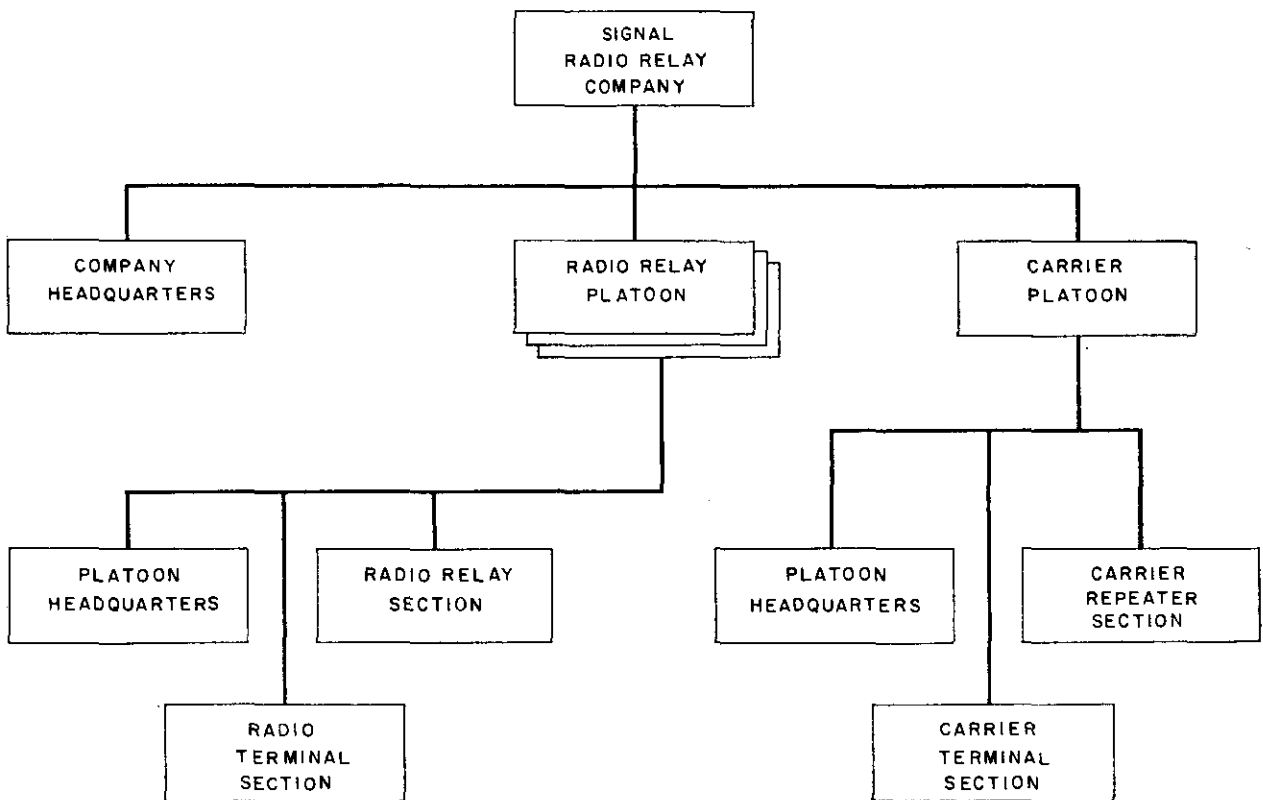


Figure 1. Organization of the signal radio relay company.

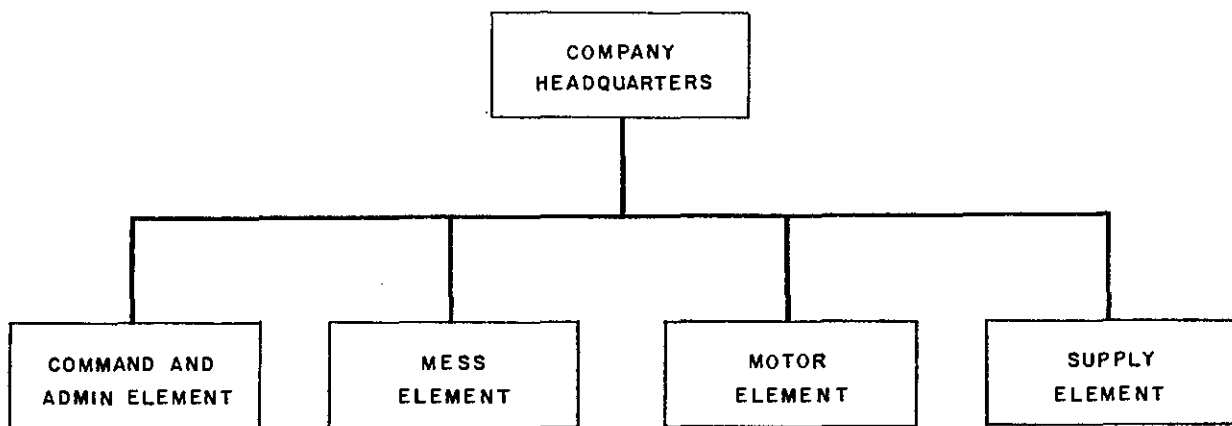


Figure 2. Type organization of company headquarters.

a. Command and Administration Element. This element is made up of the company commander, the facilities control officer, the first sergeant, a personnel records specialist, a pay specialist, a pay assistant, a radio operator, a switchboard operator, and a company clerk. The element is equipped to establish a company headquarters for company command, administration, and facilities control. The company commander is authorized a $\frac{1}{4}$ -ton truck with trailer. A Radio Set AN/GRC-106 is mounted in the $\frac{1}{4}$ -ton truck and provides the company commander with the means to communicate with the operating platoons. The facilities control officer plans and supervises the communications operations. A Communications Operations Center AN/MS-31 is authorized to help perform his mission. This element is equipped with a general purpose tent, safe, typewriters, gasoline engine generator set, and miscellaneous equipment necessary to establish and operate the company CP.

b. Mess Element. This element consists of a mess steward, four first cooks, four cooks, and a cook's helper. The element is authorized a $2\frac{1}{2}$ -ton truck, a water trailer, a kitchen tent, ranges, food containers, and tableware necessary to establish and operate mess facilities to feed the entire company. When one or more operating platoons are located away from the company headquarters, mess personnel may be used to augment the mess facility of the supported unit. Details of mess operations are explained in paragraph 26.

c. Motor Element. This element consists of a motor sergeant, two senior wheeled vehicle mechanics, six wheeled vehicle mechanics, and six

mechanic's helpers. The TOE authorizes a powerman for organizational maintenance of the generator used in company headquarters; for ease of operation he is assigned to the motor maintenance element. The maintenance element is authorized a 5-ton wrecker, a $2\frac{1}{2}$ -ton truck with trailer, a maintenance tent, and automotive maintenance tool kits to service organic motor vehicles and power equipment. The maintenance element is capable of establishing and operating a motor maintenance shop, or providing on-site organizational motor maintenance for the operating platoons or sections when they are away from company headquarters. When one or more of the operating platoons are located away from the company headquarters, personnel from the motor maintenance element may be used to augment the motor maintenance facility of the unit the platoons are supporting. Details of motor maintenance operations are explained in paragraph 27.

d. Supply Element. This element is made up of a supply sergeant, a signal supply-parts specialist, a unit supply specialist, a supply clerk, and an armorer. The TOE authorizes this element a general-purpose tent and a $\frac{3}{4}$ -ton cargo truck with trailer for use in company supply operations and to haul equipment and carry personnel when displacing. The armorer maintains the unit weapons, and for control purposes is assigned to the company supply element. When the operating platoons are centrally located, weapons maintenance is performed at the company supply facility. However, when the operating platoons are widely dispersed, the armorer can perform on-site maintenance, or the maintenance can be

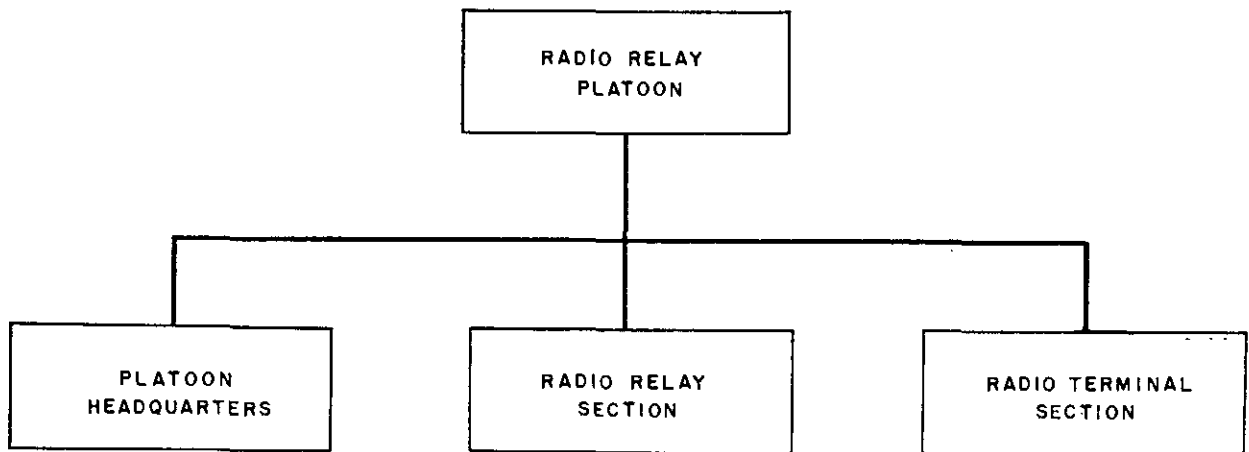


Figure 3. Organization of the radio relay platoon.

provided by the headquarters of the unit supported. Details of the company supply operations are discussed in paragraph 28.

13. Radio Relay Platoon

The three radio relay platoons provide the personnel and equipment to install, operate, and maintain the VHF/UHF radio terminal and radio relay facilities for the extension trunks within the area in accordance with mission requirements. The platoons are organized by TOE into a platoon headquarters, a radio relay section, and a radio terminal section. An illustration of the internal organization of the radio relay platoon is shown in figure 3.

a. Platoon Headquarters. The platoon headquarters is made up of the platoon leader, a platoon sergeant, and a radio operator. The platoon leader and the platoon sergeant provide command supervision and operational control of the platoon's activities as directed by the company commander and facilities control officer. The platoon leader is authorized a ¼-ton truck with trailer for supervision and coordination of the platoon activities. A Radio Set AN/GRC-106 is mounted in the ¼-ton truck and provides the platoon leader with the means to operate in the company command net (figure 14). The headquarters is authorized a 2½-ton truck with tank unit, trailer-mounted, used by powermen in

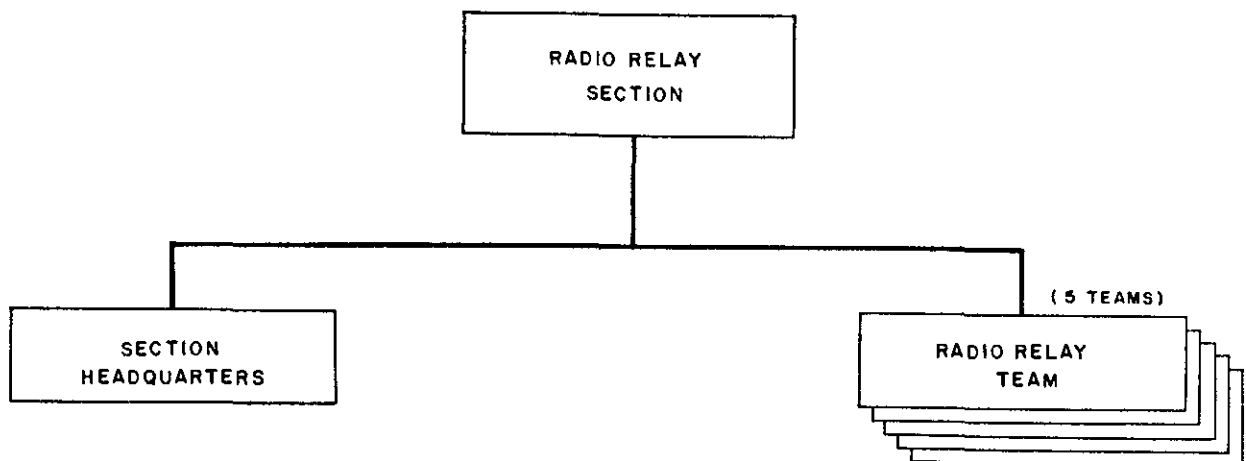


Figure 4. Type organization of the radio relay section.

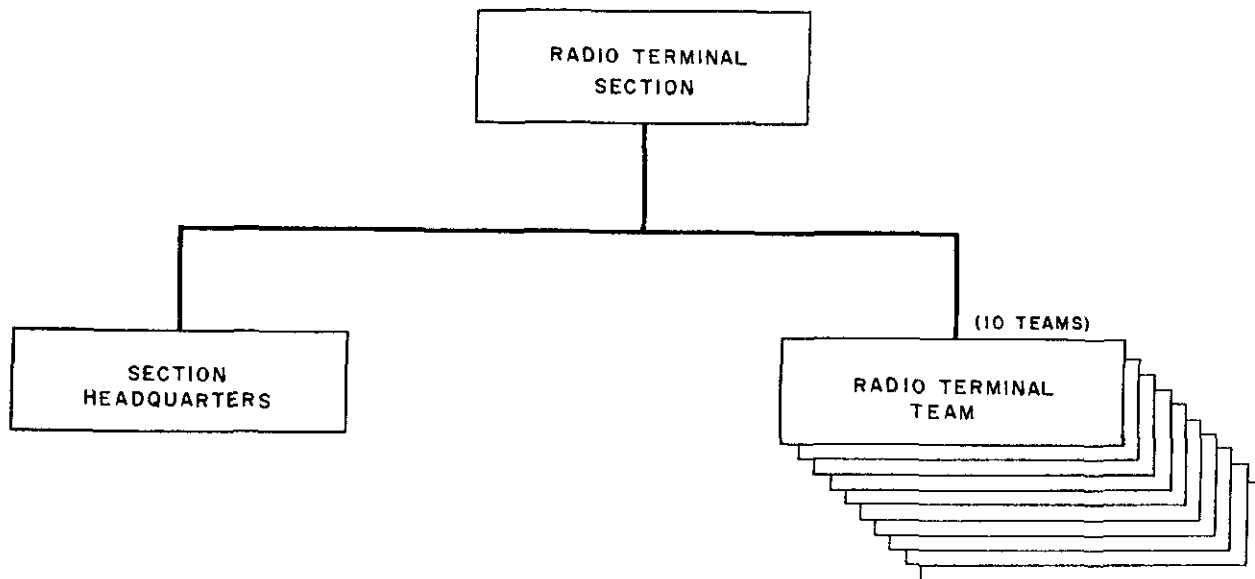


Figure 5. Type organization of the radio terminal section.

the sections for maintenance and resupply of MOGAS for power units.

b. Radio Relay Section. Figure 4 illustrates the internal organization of the radio relay section. This consists of a section chief for supervision of section operations; five 3-man radio relay teams, each containing a team chief, a senior radio relay attendant; and a radio relay attendant to install and operate five Radio Repeater Sets AN/MRC-54. A radio relay equipment repairman is assigned to provide on-site direct support maintenance on the radio relay equipment. A powerman and a powerman helper are assigned for organizational maintenance of the section power equipment. A $\frac{3}{4}$ -ton truck with trailer is authorized for use by the section chief in supervision of the section's activities and for use by maintenance personnel. The TOE authorizes five $2\frac{1}{2}$ -ton trucks to mount the AN/MRC-54 and to tow the trailer-mounted generator set.

c. Radio Terminal Section. Figure 5 illustrates the internal organization of the radio terminal section. The section consists of a section chief for supervision of section operations; and ten 3-man radio terminal teams, each containing a team chief, a senior radio relay attendant, and a radio relay attendant to install and operate ten Radio Terminal Sets AN/MRC-73. Three radio relay equipment repairmen and a teletypewriter equipment repairman are authorized to provide

on-site direct support maintenance of organic radio and carrier equipment. Two powermen and two powermen helpers are assigned this section or perform organizational maintenance on power equipment. A $\frac{3}{4}$ -ton truck is authorized for use by the section chief in supervision of section activities and for use by maintenance personnel. Ten $2\frac{1}{2}$ -ton trucks are authorized to mount the Radio Terminal Set AN/MRC-73 and to tow the trailer-mounted generator set.

14. Carrier Platoon

The carrier platoon provides the personnel and equipment to install, operate, and maintain the telegraph and telephone carrier terminals and telephone carrier repeaters in the extension trunks supporting various headquarters and activities. The platoon is organized by TOE into a platoon headquarters, a carrier repeater section, and a carrier terminal section. An illustration of the internal organization of the carrier platoon is shown in figure 6.

a. Platoon Headquarters. The platoon headquarters consists of the platoon leader, platoon sergeant, and a radio operator. The platoon leader and platoon sergeant provide command supervision and operational control of the platoon's activities as directed by the company commander and facilities control officer. The platoon leader

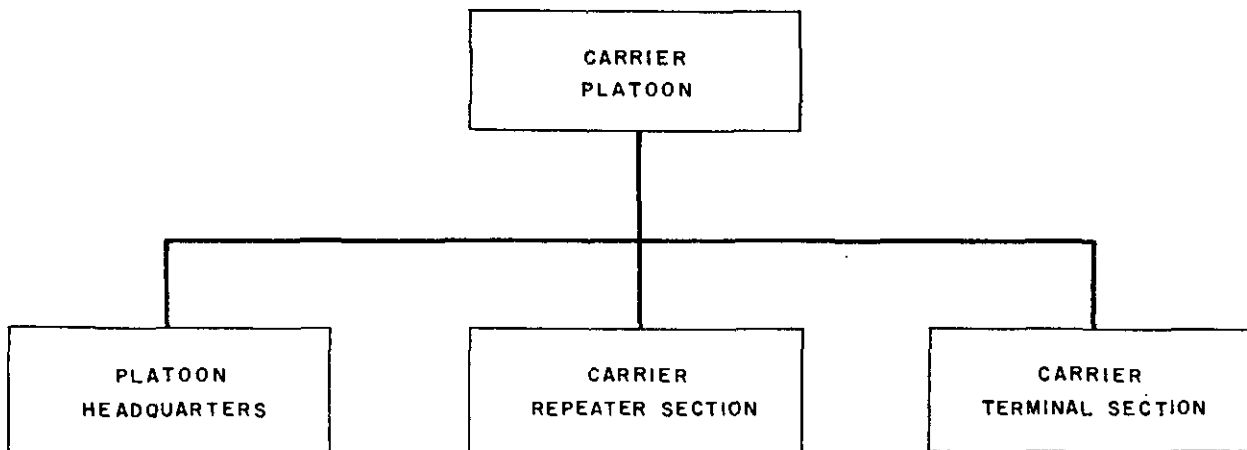


Figure 6. Organization of the carrier platoon.

is authorized a $\frac{1}{4}$ -ton truck with trailer for supervision and coordination of platoon activities. A Radio Set AN/GRC-106 is mounted in the $\frac{1}{4}$ -ton truck and provides the means for the platoon leader to operate in the company command net (figure 14). The headquarters is authorized a $2\frac{1}{2}$ -ton truck with tank unit, trailer-mounted, used by powermen in the sections for maintenance and resupply of MOGAS for power units.

b. Carrier Repeater Section. Figure 7 illustrates the internal organization of the carrier repeater section. This section consists of a section chief and four 3-man carrier repeater teams each consisting of a team chief, a senior carrier attendant, and a carrier attendant to install and oper-

ate four Telephone Repeater Sets AN/MCC-3. A carrier equipment repairman, a powerman, and a powerman's helper are also assigned to provide direct support maintenance on the section's carrier equipment and organizational maintenance on power equipment. A $\frac{1}{4}$ -ton truck with trailer is authorized for use by the section chief in supervision of the section's activities and for use by maintenance personnel. Four $\frac{3}{4}$ -ton trucks are authorized to mount the Telephone Repeater Set AN/MCC-3 and to tow the trailer-mounted generator set.

c. Carrier Terminal Section. Figure 8 illustrates the internal organization of the carrier terminal section. The section consists of a section chief for supervision of section operations;

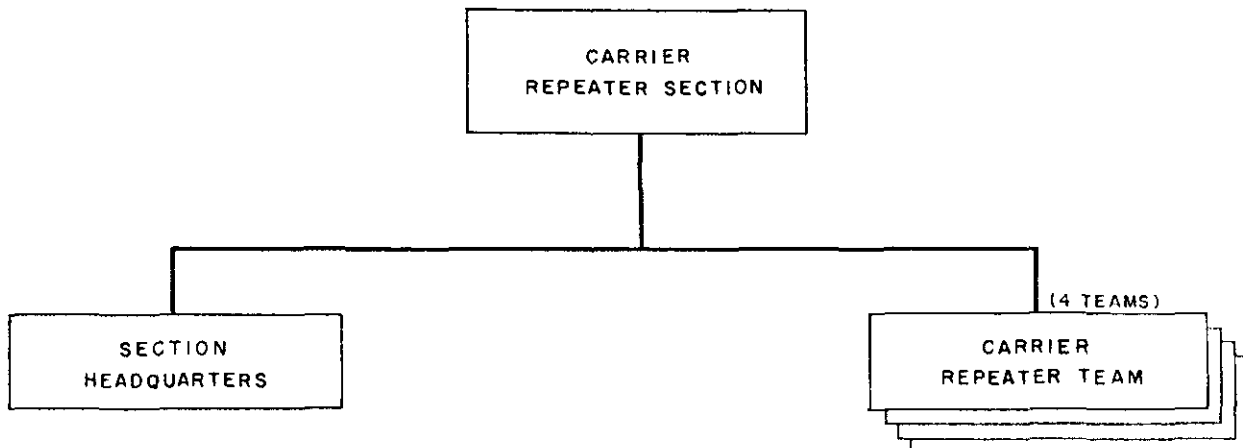
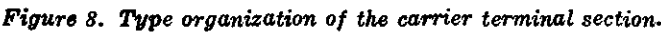


Figure 7. Type organization of the carrier repeater section.



are assigned to perform organizational maintenance on power equipment. A ¾-ton truck with trailer is authorized for use by the section chief for supervision of the section's activities and for use by maintenance personnel. The TOE authorizes eighteen 2½-ton trucks to mount the Telegraph-Telephone Terminal Set AN/MCC-6 and to tow the trailer-mounted generator set.

CHAPTER 4

COMMUNICATIONS IN THE THEATER ARMY

15. Introduction

Communications to and between component services and joint forces within a theater of operations is a responsibility of the theater commander. The theater commander normally delegates authority to provide communications within a theater of operations to the theater army commander. The authority for communications within the combat zone is further delegated to the field army commanders; however, the theater army commander retains the authority for communications within the communications zone (COMMZ). The theater army commander utilizes one of his major subordinate commands, the theater army signal operations command, to provide these communications by means of the theater army communications system (TACS).

16. Theater Army Communications System

The theater army communications system (TACS) is a multi-axis, multi-channel communications network. The system is composed of radio relay trunking systems, switching centers, and extension facilities to interconnect major headquarters, installations, and logistical complexes within the COMMZ. Communications paths of high capacity trunking systems criss-cross throughout the communications zone. Control centers are located at all points where the longitudinal and lateral systems cross. The signal control centers serve as junction points for patch-

ing and circuit control, and as entry and drop out points for circuits to trunk switching centers and for extension trunk circuits to user facilities. Control subcenters are frequently installed between control centers to provide relay facilities, as well as access points to the major trunking system. Extension facilities from control centers and control subcenters are provided to headquarters and activities as their means of entry into the TACS.

17. Theater Army Signal Command

The element of the theater army responsible for the installation and operations of the TACS is the theater army signal command. The organization of the theater army signal command is flexible and capable of being tailored to accomplish the signal mission of the theater army in different theaters of operation. To meet this flexibility, the theater army signal command is organized on a functional basis with building-block TOE signal units of company and battalion size that can be added or deleted as the situation requires. The basic companies are assigned to "type" signal battalions which are formed into "type" signal groups, thus comprising the theater army signal command. The signal radio relay company is the basic TOE building-block unit which provides the radio extension facilities from the TACS centers and subcenters to headquarters and activities served by the TACS.

CHAPTER 5

COMPANY COMMUNICATIONS OPERATIONS

18. General

a. This chapter is concerned with the primary employment of the signal radio relay company as a part of the theater army signal command in establishing radio extension facilities in the theater army communications system (TACS). The guidance given herein is also applicable to command operation if the unit is assigned to an army signal brigade; used to provide multi-channel terminal facilities between elements of supported headquarters; used to provide communications support in counterinsurgency situations; or employed for other operations under any of the seven army missions within the unit's capabilities.

b. The signal radio relay company provides the extension trunk circuits from control centers and control subcenters of the TACS to user headquarters, installations, other units and activities requiring access to the major trunking system. The extension circuits are installed by elements of the operating platoons of the company using multi-channel VHF radio and spiral-four cable systems. These systems are composed of various configurations of radio relay, radio terminal, carrier terminal, and carrier repeater facilities.

19. Employment

a. The company will normally be assigned for command and operational control to a "type" signal operations battalion of the theater army signal command. Employment of the signal radio relay company is based on operational requirements assigned the signal operations battalion and the company will normally operate within the battalion's area of responsibility. Operational missions in this role will require elements to be dispersed throughout an area of approximately 5,000 square miles (12,800 square kilometers).

b. Operating platoons of the company are organized into terminal and repeater teams which provide multi-channel extension links to connect headquarters and other outlying activities within the COMMZ to centers and subcenters of the TACS. The company installs radio and carrier

terminal equipment at both ends of the extension links and repeater facilities as required. The radio and carrier terminal facilities installed at the outlying activities are connected to the patch panels, switchboards, and teletypewriter equipments which are organic or assigned to the outlying activities. The radio and carrier terminal facilities at the other ends of these links connect into patching equipment at control centers and control subcenters which are established by the signal long lines company (TOE 11-347).

c. This method of operation presents a problem in command supervision in that the platoons are normally not committed as one entity; but elements from two or more platoons are frequently employed to install the system configurations needed to provide a single extension facility. There is no set solution to the method of supervision once teams are detached from their platoons. Normally platoon headquarters will be separately located from the company headquarters for effective control of the operating elements. It may be desirable for the company commander to lay out areas of responsibility and place his platoon leaders at the control centers and control subcenters to supervise teams operating within those areas.

d. Platoon leaders of the operating radio relay platoons and the carrier platoon supervise the installation, operation, and maintenance of the terminal and repeater facilities. Platoon leaders are responsible for map and ground reconnaissance of sites where terminal teams and repeater teams will be employed. Liaison and coordination will be required with the supported headquarters, signal units in support of a headquarters, and signal units installing control centers and control subcenters. Coordination will include the location of patching or switching equipment to insure the shortest distance possible between cable connections and reduce installation time. The carrier platoon leader is responsible for coordination with the signal construction company on spiral-four cable requirements, physical location of attended repeaters, and the installation of unattended re-

peaters. Platoon leaders must keep the facilities control officer informed and up-to-date on operational and equipment status of terminal and repeater facilities.

e. Signal cable construction companies of the theater army signal operations command have the responsibility for providing, installing, and maintaining the spiral-four cable for carrier systems and for keying lines between radio and carrier shelters at terminal locations. Unattended repeaters are provided by the signal radio relay company; however, they are installed and maintained by the signal construction company. The situation may dictate that cable teams be attached to the operating platoons of the signal radio relay company.

20. Type System Configurations

a. Figures 9 through 13 illustrate several types of system configurations that could be installed by teams of the signal radio relay company. The type system to be used varies depending on the operational requirements, terrain, available equipment, tactical situation, or other conditions. The number of systems and amount of equipment required to support units within an area will vary and be dependent upon the density of units in the area and their missions. Concepts for employing the terminal, relay, and repeater facilities must always be flexible since each situation will require different arrangements. For detailed guidance on systems planning, reference should be made to applicable equipment technical manuals (app. II), TM 11-2150, and the TM 11-486-series.

b. The Radio Terminal Set AN/MRC-73 is a radio and carrier assemblage used to provide radio relay terminal, carrier telephone, and carrier telegraph facilities. The various terminal teams may be employed to terminate both ends of the radio links from the TACS to the headquarters and installations within the COMMZ. An AN/MRC-73 team located with a signal complex at a control center or control subcenter provides a 12-channel radio system to a similar outlying terminal team located with a supported headquarters. The AN/MRC-73 facilities can be arranged to provide 11 carrier telephone and 4 carrier telegraph channels, or 12 carrier telephone channels over a radio link. Planning distance for a system without repeaters is 25 miles (40 km) between terminals. Fig. 9 shows such a system configuration employing the AN/MRC-73 as a terminal facility at both ends of the system.

c. The Radio Repeater Set AN/MRC-54 is usable as either a radio relay repeater or radio terminal set. In the signal radio relay company, the AN/MRC-54 may be employed as a single relay to extend a 12-channel VHF radio relay system between two distant radio terminals (AN/MRC-73 or AN/MRC-54). Two of the three component radios are used as relays and the third set is maintained on standby. For planning longer systems, with AN/MRC-54s placed about 25 miles (40 km) apart, system lengths can be extended to a limit of 200 miles (320 km) using seven relays. Fig. 10 shows such a system configuration employing the AN/MRC-54 as a relay facility between two AN/MRC-73s.

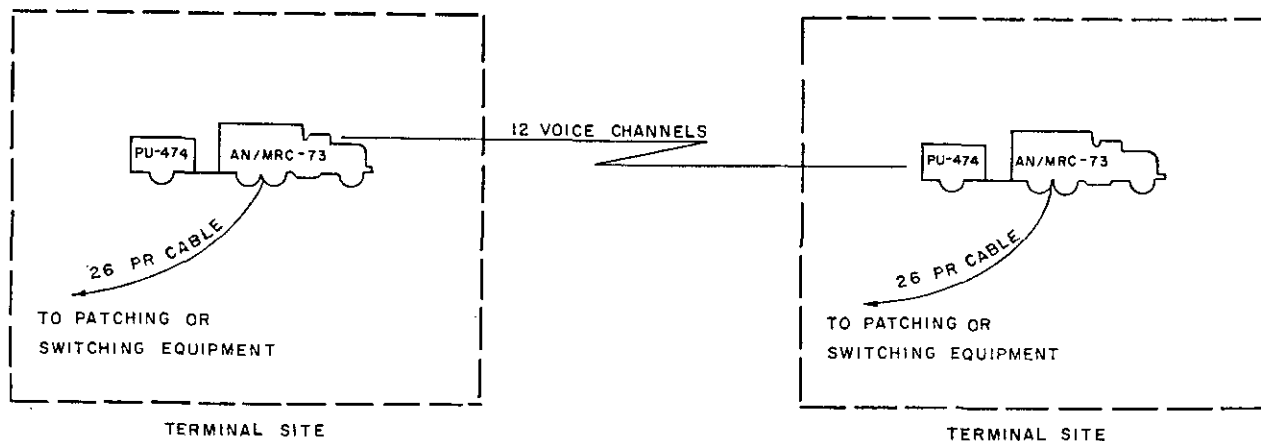


Figure 9. Type employment of the AN/MRC-73 as a terminal station

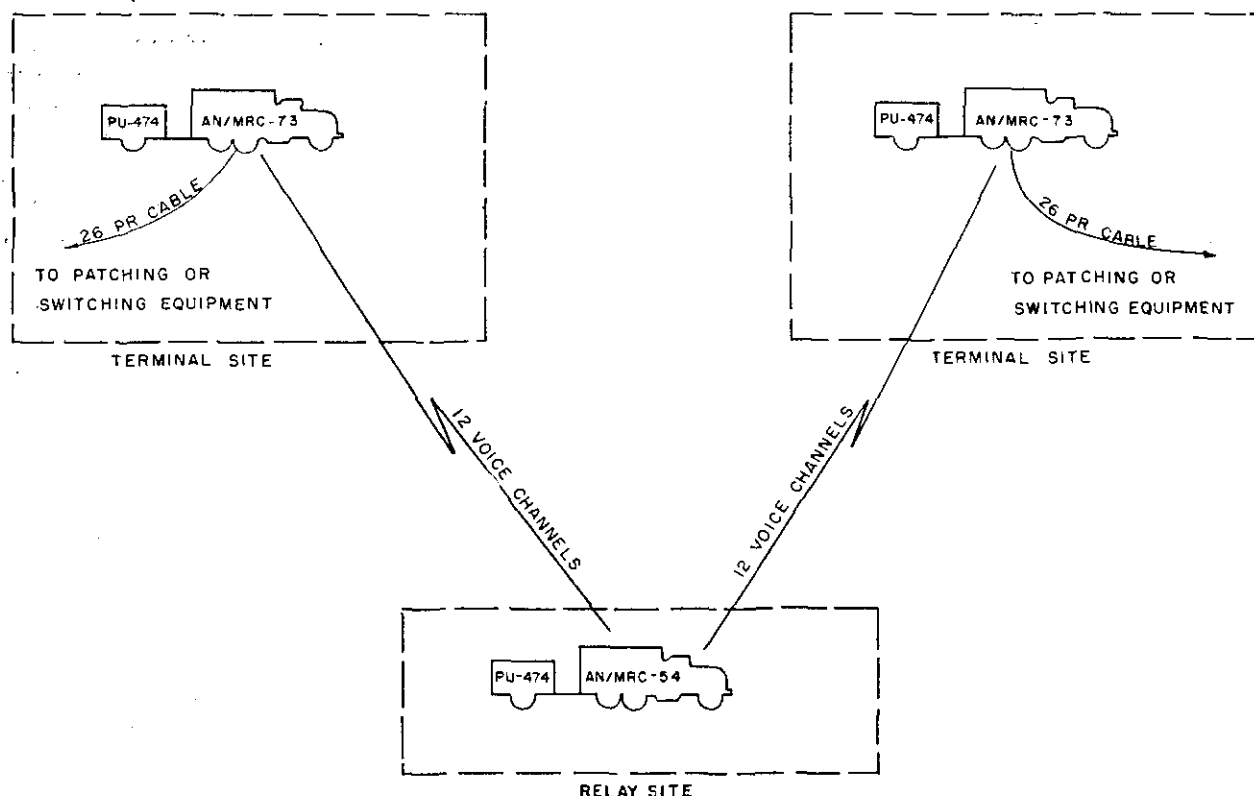


Figure 10. Type employment of the AN/MRC-54 as a radio relay station.

d. If operations require, the Radio Repeater Set AN/MRC-54 may be employed as a double 12-channel terminal set. It would be used in conjunction with the Telegraph-Telephone Terminal AN/MCC-6 to provide circuits over two independent radio relay systems. Installation of this type of system would depend on available equipment, site locations, and number of circuits required. Normally, two of the radio sets in the AN/MRC-54 are used to terminate two systems, maintaining the third radio set as standby. Both of the telephone carrier terminal facilities of the AN/MCC-6 are used in this employment. The carrier and radio shelters are connected by spiral-four cable to provide keying line distances of up to about one mile without attended repeaters. Figure 11 shows such a system configuration employing the AN/MRC-54 and AN/MCC-6 as a double terminal.

e. Carrier repeater facilities may be employed in a spiral-four/VHF radio system. Such operation would depend on terrain conditions and terminal equipment disposition. At a terminal location where the AN/MRC-54 is utilized and phys-

ical distance to the carrier terminal exceeds one mile, the AN/MCC-3 will extend the keying line range to about six miles (9.6 km). Longer distances will require installation of AN/TCC-11's in the system; however, an AN/TCC-11 must not be placed adjacent to a radio terminal. Fig. 12 shows a system configuration employing the attended repeater in a keying line.

f. The Telegraph-Telephone Terminal Set AN/MCC-6 can be used to provide carrier telegraph and carrier telephone terminal facilities on two spiral-four cable systems in addition to its use with the Radio Relay Terminal AN/MRC-54 (d and e above). The various carrier terminal teams are employed to terminate both ends of the cable (non-loaded spiral-four) extension links from the TACS to the headquarters and installations within the COMMZ. An AN/MCC-6 team, located with a signal complex at a control center or control subcenter, provides spiral-four cable circuits to a distant terminal team located at supported headquarters or activities. The two Carrier Telephone Terminals AN/TCC-7 in each AN/MCC-6 provide 12 telephone circuits on each of the two

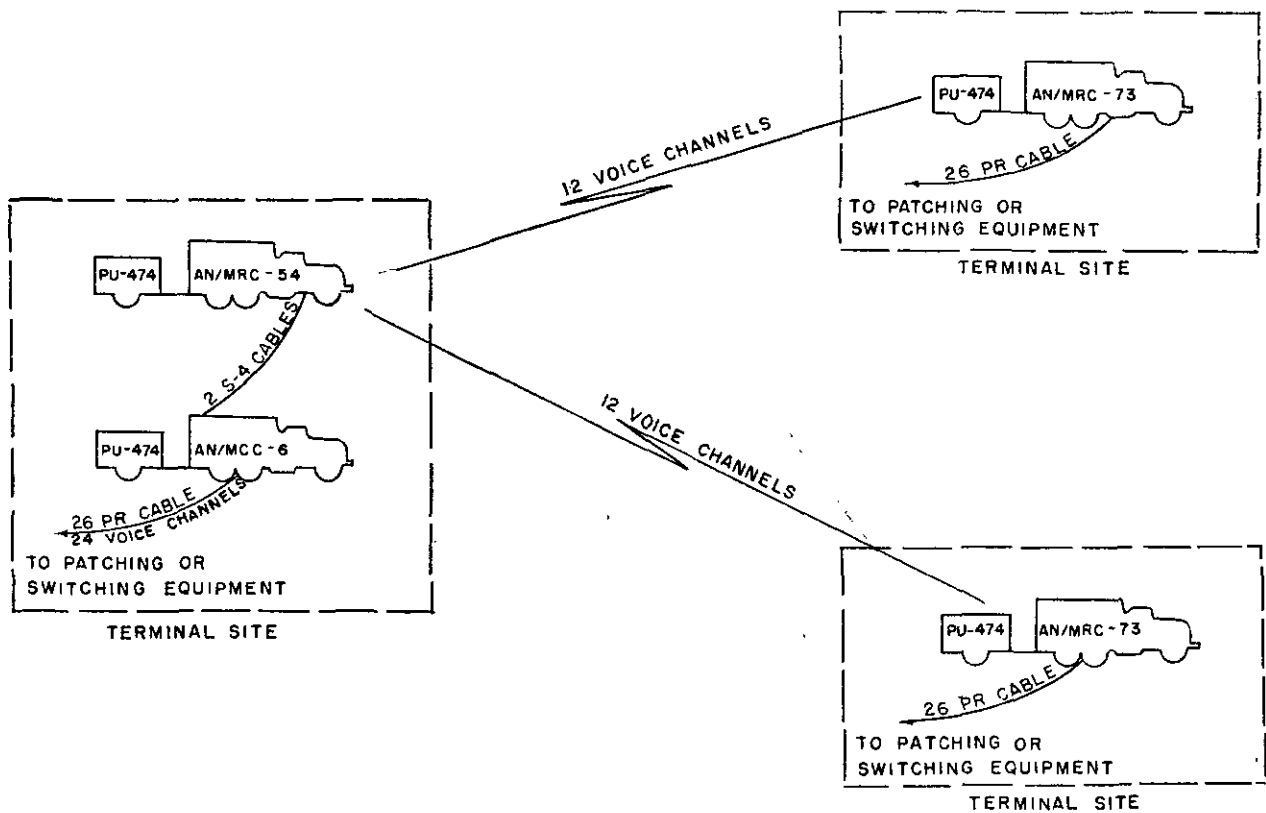


Figure 11. Type employment of the AN/MRC-54 and AN/MCC-6 as a terminal station.

spiral-four cables. The two voice-carrier Telegraph Terminals AN/TCC-4 in the AN/MCC-6 can be connected to one or more telephone channels so as to provide various combinations of telegraph channels up to one group of 16 channels. The distance between two terminals can be extended beyond six miles (9.6 km) with unattended repeaters (AN/TCC-11) and/or attended repeaters (AN/MCC-3). The AN/MCC-6 will provide dc power to a maximum of three unattended repeaters. Fig. 13 shows such a system configuration employing the AN/MCC-6 in a spiral-four cable system.

g. The Telephone Repeater Set AN/MCC-3 is used by the carrier repeater teams to extend the range of non-loaded spiral-four cable systems or to provide an attended cable repeater point at a remote radio relay terminal as described in *e* above (fig. 12). The AN/MCC-3 provides amplification, equalization, and automatic regulation of the carrier frequency signal in both directions of transmission. Distance between any attended carrier facility should not exceed 40 miles (64

km). The AN/MCC-3 will provide dc power to a maximum of three unattended repeaters in each direction of transmission. The unattended telephone repeaters AN/TCC-11 are used on cable systems (non-loaded spiral-four) to provide amplification, equalization, and automatic regulation for carrier frequencies in both directions of transmission utilized by carrier facilities. The unattended repeaters are spaced at $5\frac{3}{4}$ mile intervals ($23\frac{1}{4}$ mile cable reels). Fig. 13 shows a system configuration employing the AN/MCC-3 and the installation of unattended repeaters in a spiral-four cable system.

h. Local circuits on 26-pair cable are normally terminated at the AN/MRC-73 and AN/MCC-6 as shown in figs. 9 through 13. The 26-pair cables are connected to circuit control or patching facilities at the control centers, control subcenters, or user headquarters and installations. Distance between the terminating equipment and patching panel should, if at all possible, be limited to two cable lengths (500 feet). Since the radio terminal teams and carrier terminal teams have only a lim-

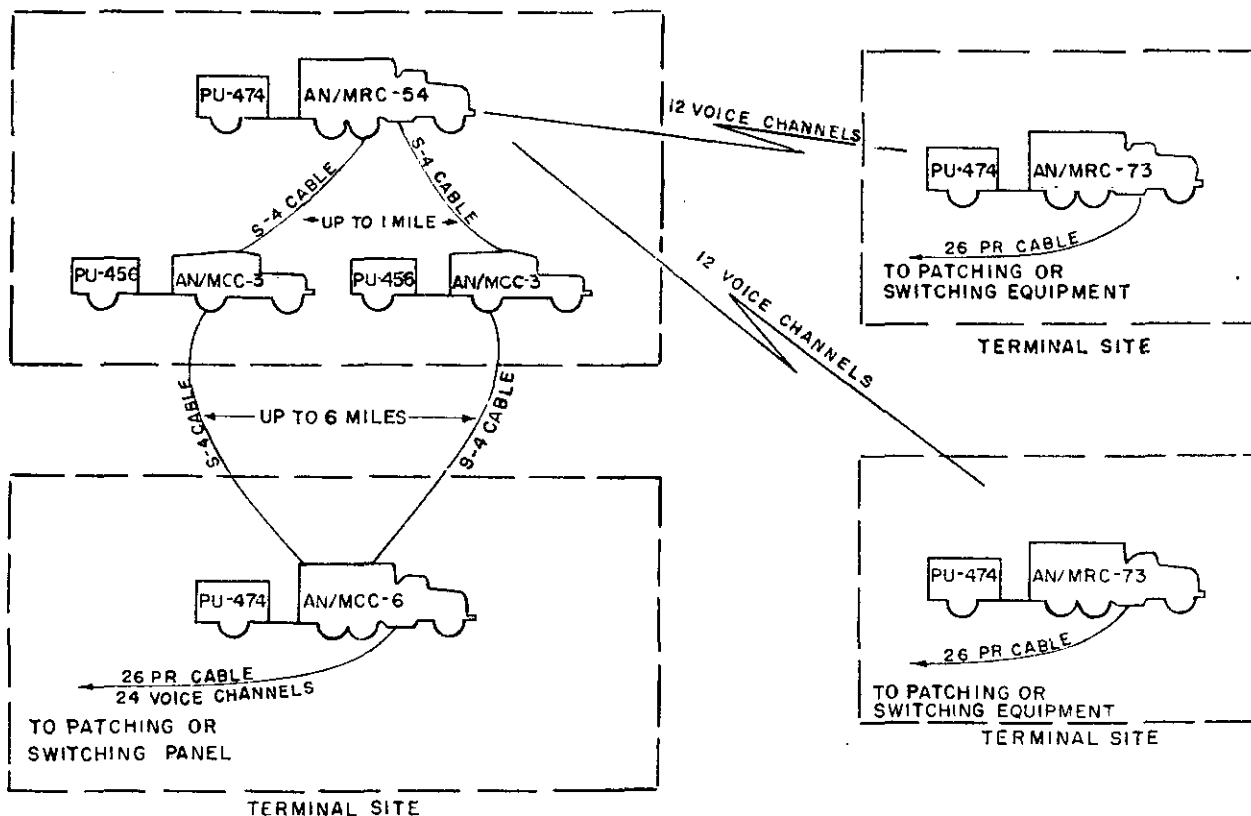


Figure 12. Type employment of the AN/MCC-3 at a remote radio site.

ited number of 26-pair cable lengths authorized as components of their shelter assemblages, additional 26-pair cable will have to be supplied by the signal unit providing the patching equipment. Field wire circuits from a user switchboard at a supported unit may be connected directly to the AN/MRC-73 or AN/MCC-6 shelter; or the field wire may be first brought into a distribution box and then into the terminating facilities by 26-pair cable.

21. Command and Control

a. The company commander is under control of the battalion commander for operational employment of the company. He is responsible for employing his operating elements in accordance with mission requirements and the theater signal plan and he insures compliance with battalion operational directives. Distance between company activities and the headquarters means that the commander must extend his operational control through his commissioned and noncommissioned officers, and spend much of his time in personal

observation of signal operations. Extensive use of detailed procedures (SOP) will enhance the communications operations of the company.

b. A facilities control officer in the company headquarters assists the company commander by directly overseeing operations of the widely dispersed radio relay platoons, carrier platoon, and their respective sections and teams. His duties are to plan, coordinate, displace, and control the operating elements of the company so as to insure installation and continuous operation of the extensive communications links. He is responsible for the coordination required with the various other signal units in order to provide an efficient theater communications system. He keeps the unit commander and battalion staff informed on the operational status of the company.

c. A Communications Operations Center AN/ MSC-31 is authorized in company headquarters for the facilities control officer to plan and control the various trunking facilities. The AN/MSC-31 contains a telephone switchboard, local telephone circuits, and drafting and display boards. These

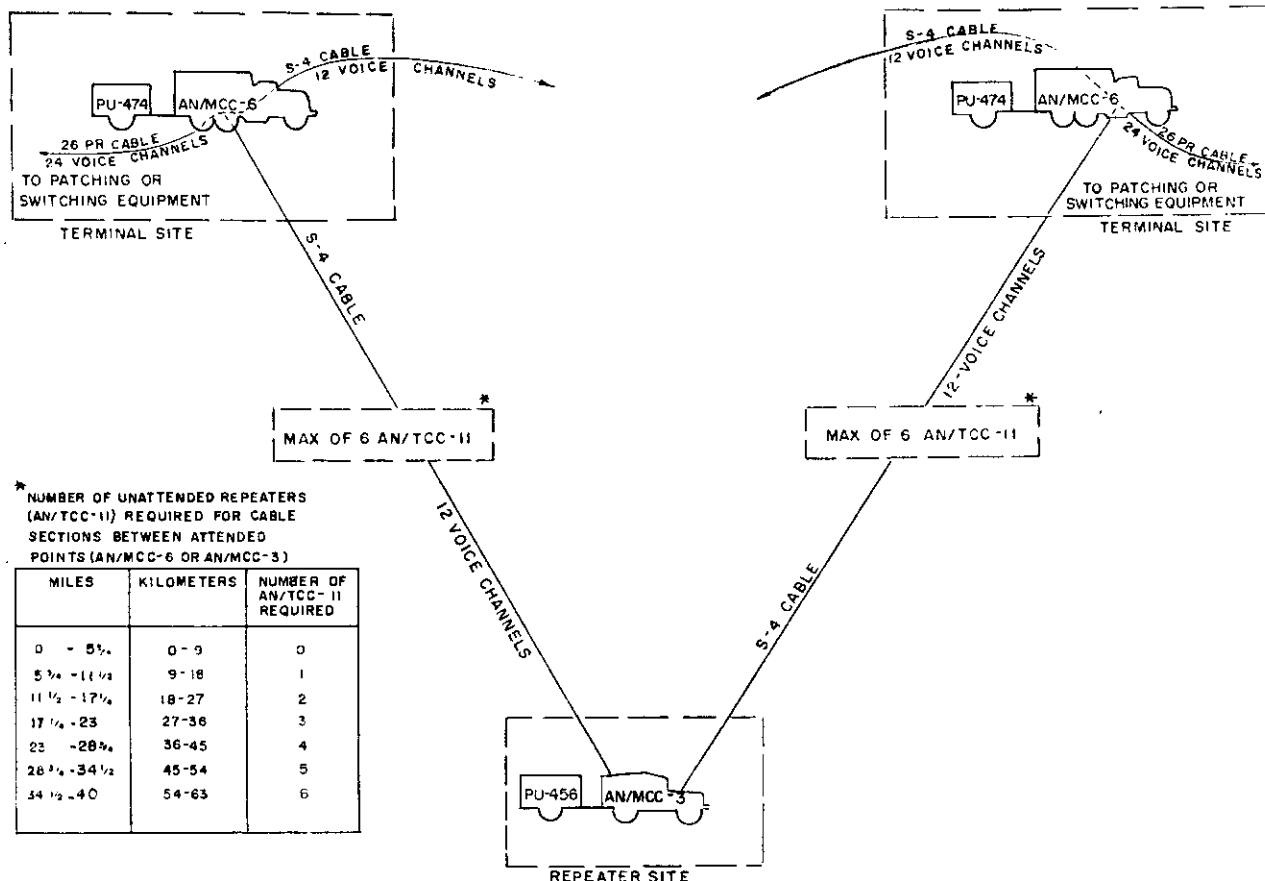


Figure 13. Type employment of the AN/MCC-3, AN/MCC-6, and AN/TCC-11 in a spiral-four cable system.

facilities are provided to display and make current changes to operational maps, systems diagrams, circuit diagrams, and documents required by higher headquarters, and local standing operating procedures (SOP).

22. Counterinsurgency Operations

Elements of this company will probably be employed in support of counterinsurgency operations. Predeployment training should prepare the unit to utilize its capabilities effectively in counterinsurgency situations. The company may be required to perform any or all of the following functions in counterinsurgency operations:

- Provide communications support for MAAG, Mission, or subordinate unified headquarters during a counterinsurgency situation.
- Provide communications support for U. S. Army units assisting a receiving state in the conduct of counterinsurgency operations.

c. Assist receiving state in establishing emergency civil communications in areas where there are no communications facilities.

d. Extend existing receiving state civil communications facilities to enhance the national counterinsurgency effort.

e. Assist in training receiving state armed forces and civilian personnel in radio communications techniques to increase their own communications capabilities.

f. Advise receiving state armed forces in training military personnel.

g. Assist in military civic action on projects useful to the local population in all levels in the field of communications which would contribute to economic and social development and would also tend to improve the relations of the armed forces with the population.

CHAPTER 6

COMPANY ADMINISTRATIVE OPERATIONS

23. General

The organization and employment of the signal radio relay company present problems of command and administration. Communications systems installed by the company will require many of the operating elements to be located at long distances from the company and platoon headquarters. Thus, the dispersed nature of the company will add to the difficulty of performing administrative functions. The company commander should exert every effort to visit each operating element in the field on a continuing schedule in order to coordinate and minimize administrative problems and keep the platoon and section leaders advised of command policies and procedures. The most common method of coordinating operations in subordinate elements of the command is through timely issuance of orders and the preparation and distribution of detailed unit SOP's.

24. Company Command Post

Location of the company command post will normally be designated by the battalion commander in battalion orders. Arranging company elements with the CP site is the responsibility of the company commander. The company commander is not provided staff officers to assist him in the operation of the company headquarters and must, therefore, rely on his noncommissioned officers. The facilities control officer will keep the company commander informed of mission operations, either on an informal basis or on regular schedule.

25. Personnel Management

The operating platoons of the signal radio relay company do not have administrative personnel to perform administrative functions, therefore, all personnel records are maintained at the company headquarters. Effective daily coordination of the operating platoon's personnel activities must take place between the platoon leaders and company headquarters. Personnel matters that must be coordinated include pay, leaves, mail, promotions, assignments, duty roster, decorations and transfers. Proper personnel management is a contri-

butive factor to the morale of the unit. The close coordination required can be accomplished through visits and use of the communications system.

26. Mass Operations

a. The company mess element is under direct supervision of the mess steward, and is authorized sufficient personnel and equipment to establish and operate a company mess on a 24-hour basis. Since the mess capability of the signal radio relay company is not large enough to support a mess facility at each location where company personnel will be operating, it will be necessary for personnel employed at these locations to ration with the unit or headquarters they are supporting. When operating platoons are dispersed, the number of mess personnel that can be attached to the mess facility of the supported units is limited. Augmentation of mess personnel will depend on the situation and will have to be coordinated with the supported units or headquarters. The company mess is operated dismounted and, when required, is loaded and moved by a 2½-ton truck. Details of mess operations are contained in appropriate army publications.

b. In counterinsurgency situations, special messing arrangements may be required to support the widely deployed teams in isolated and remote areas. The unit may also have to obtain food from the local economy if the unit supports receiving state civil communications facilities.

27. Equipment Maintenance

a. Maintenance is the care necessary to keep equipment in good working condition. It includes both the ordinary care exercised by operations, in addition to the repair work performed by trained technicians. Maintenance of company equipment is the responsibility of the company commander. The commander must insure that the equipment issued to the command is properly maintained. The platoon leaders assume supervisory responsibility for equipment issued to their platoons; and

the operators assume direct responsibility for proper care of the equipment they operate. The company commander, the platoon leaders, and the equipment operators all have specific responsibilities for the maintenance and care of government equipment. DA Pam 750-1 serves as a guide to commanders in fulfilling their maintenance responsibilities. Maintenance procedures are covered in detail in appropriate army regulations of the 750-series. Reference to maintenance procedures and equipment records which are maintained by operators and maintenance personnel is prescribed in TM 38-750. Company maintenance can be broken down into three areas as follows: organization and employment of maintenance personnel, supply of repair parts, and maintenance inspections.

b. The maintenance personnel of the signal radio relay company are organized and employed as follows:

- (1) Each operating section of the radio relay platoons and carrier platoon is authorized electronic maintenance personnel and powermen to provide direct support maintenance on communications equipment and organizational maintenance on associated power equipment. These repairmen remain with the operating section to perform on-site maintenance support. Emergency repairs are provided as required and periodic maintenance services are performed on a scheduled basis. Periodic maintenance should be planned so as not to interfere with normal operations of the equipment.
- (2) Company headquarters is authorized a motor maintenance element to provide organizational maintenance for company vehicles and for generator sets within the company headquarters. Motor maintenance operations are under the general supervision of the company commander and the direct supervision of the motor sergeant. Tool sets, vehicles and a maintenance shelter are authorized for the motor sergeant to establish a vehicle repair facility in the company CP area for those vehicles that can be moved to the shop for maintenance. Vehicles which cannot be moved will be maintained on-site.

- (3) Company headquarters is authorized an armorer to perform organizational maintenance on company weapons. The supply sergeant is responsible for the organization small arms maintenance. The armorer will normally perform maintenance in the company CP area; however, since the operating elements are usually widely dispersed, it may be more practical to perform organizational weapons maintenance on-site.

- (4) Maintenance in counterinsurgency operations requires continuous emphasis on preventive maintenance to insure equipment operation under adverse conditions. Mobile maintenance teams should be available to make periodic or on-call visits to service the installed equipment of the deployed teams that are widely dispersed.

c. The repair parts supply procedure for the signal radio relay company will depend on the deployment of the operating elements and the repair parts supply procedures of the supporting general support units. Operating elements normally will carry a prescribed load of repair parts to maintain their equipment for continued operations. Normally, the supply of repair parts for the operating elements will be coordinated by a designated section repairman with the signal supply parts specialist and the motor shop element of the company headquarters. The requisition for repair parts is forwarded on an informal basis to the company headquarters. At company headquarters, the requests are screened, consolidated, and forwarded to the direct or general support activity supporting the company. Upon receipt of the repair parts at company headquarters, they are segregated according to each request and delivered to the operating element. When an element is operating at a remote location, it may request repair parts direct from the direct or general support activity designated to provide repair parts support.

d. Commanders are responsible for frequent and thorough inspections to insure that maintenance is properly performed. These inspections are the means by which the commander can determine whether the equipment in his organization is serviceable. Maintenance inspections for the platoons should be conducted at a time that will not disrupt platoon operations. AR 750-5

and AR 750-8 provide for type and frequency of inspections. Platoon leaders should be notified in advance of the inspection if it is to be a formal inspection; however, no advance notification is required when the inspection is informal.

e. When the maintenance of organizational equipment exceeds the capabilities of the company, arrangements are made for necessary maintenance support with the supporting direct support maintenance unit. This procedure is followed for all equipment utilized by the company, including communications equipment requiring general support category maintenance, but excluding medical material and items of clothing, bedding, and light textiles. Support for medical materials is provided by the medical activity serving the area. Support for clothing, bedding, and light textiles is provided by the supporting supply and service direct support battalion, normally on a direct exchange basis. The signal radio relay company looks to its supporting direct support unit for maintenance and repair parts support. When general support maintenance is required, the direct support maintenance unit arranges for evacuation to the appropriate supporting general support maintenance unit. This includes communications equipment requiring general support maintenance. For details on maintenance operations, refer to FM-29-22.

28. Company Supply Operations

a. The acquisition and timely distribution of supplies plays an important part in the accomplishment of the company mission. The company commander must be familiar with the status of supplies and equipment within his organization, and must thoroughly consider the logistical support required for current and future operations. He must insure that proper planning, record keeping, and close supervision are provided to produce the necessary steady flow of required supplies. The company commander is assisted in this function by the company supply sergeant. They are responsible for assuring that undue delay does not occur in accomplishing effective supply support. A signal supply parts specialist is authorized to provide for the high density of signal equipment. A supply activity is maintained at the company CP to insure that each operating element of the company has its authorized TOE equipment and is provided quantities of expend-

able supplies. Internal supply procedures must be designed to implement and facilitate a responsive supply system. The details of company supply may vary according to the deployment of the operating sections; however, the procedures must be in compliance with AR 735-35.

b. The company property book is established and maintained by the supply sergeant at the company CP. The platoons and sections are issued TOE and TA property from the supply activity on hand receipt. If the equipment becomes inoperative due to negligence or fair wear and tear, replacements are drawn in accordance with the provisions of AR 735-35.

c. Each individual soldier is issued clothing and equipment according to the appropriate Table of Allowance (TA), and each soldier is responsible for the proper use and care of his individual clothing and equipment. Records for individual clothing and equipment are maintained by the supply sergeant at the company CP.

d. Company records are not required for expendable supplies; however, the company commander should insure that each platoon and section exercises supply economy. Expendable supplies are requested by the operating platoons from the company supply element on an informal basis. The company supply sergeant consolidates these requests and forwards the formal consolidated requisition to the supply activity supporting the company.

e. During counterinsurgency operations, certain unique transportation problems must be considered to assure that teams in remote areas are effectively supplied. Supply planning must consider the stockage of larger quantities of essential items and planning the resupply well in advance of the normal requisitioning cycle.

29. Company Internal Communications

Communications between company headquarters and the operating platoons are essential to the command and control of company operations and effective company administrative operations. The type of communications used will depend on the type message or report that is to be transmitted. To provide such internal communications, the signal radio relay company has five (5) AM

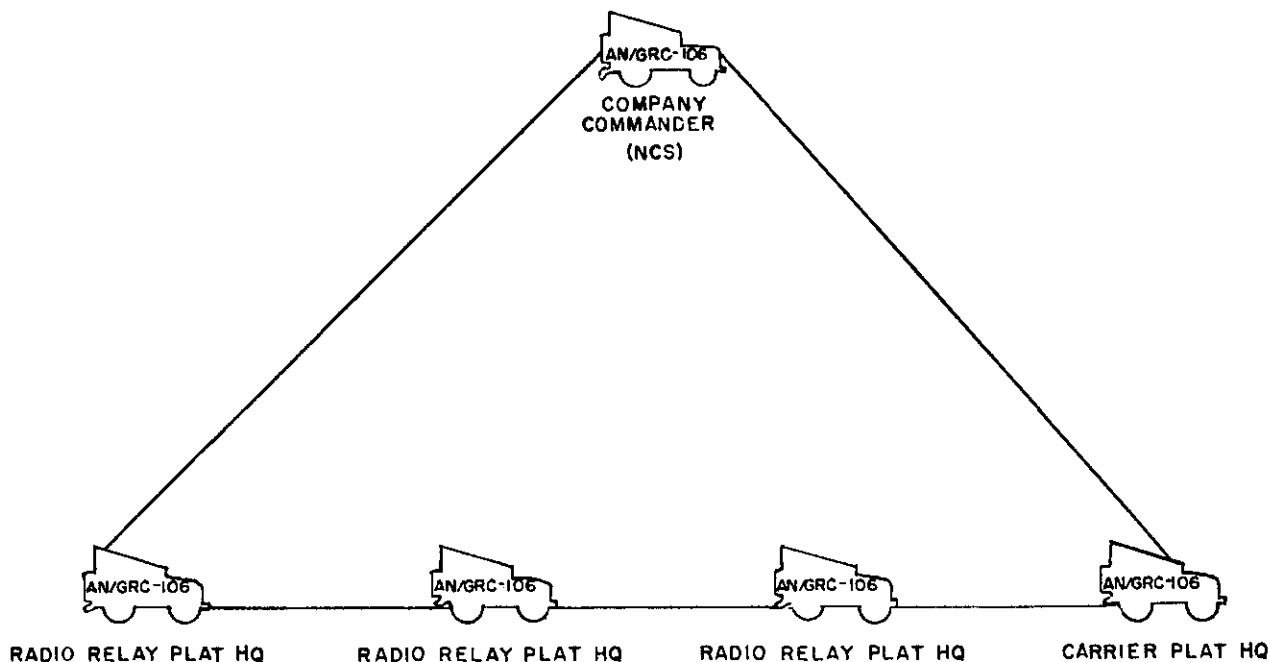


Figure 14. Type company command and administrative net (AM).

Radio Sets AN/GRC-106 and facilities of the common-user telephone system.

a. *AM Radio.* Fig. 14 shows a type internal voice radio net for the signal radio relay company. The HF/AM SSB AN/GRC-106 is utilized by the company commander, the three radio relay platoon leaders, and the carrier platoon leader for command and administrative traffic. The unit commander can contact the operating platoons when they are committed and separated from the headquarters. He can contact the platoon headquarters while making inspection trips to the various terminal and repeater sites. A radio operator is assigned to company headquarters and each platoon headquarters.

b. *Wire Communications.* Fig. 15 shows the employment of wire equipment authorized for the signal radio relay company.

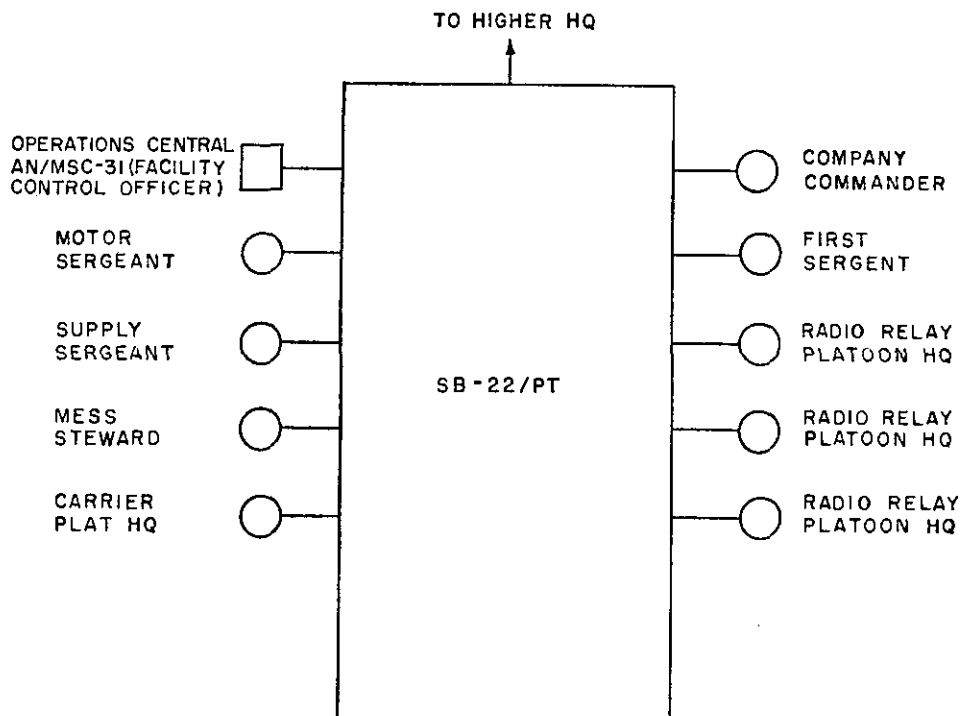
- (1) The unit has a Manual Telephone Switchboard SB-22/PT, eight reels of field wire, and telephones to establish communications for company headquarters. The SB-22 gives local communications to the company headquarters and gives access to the theater army communications system. A switchboard operator is assigned to operate the local

switchboard and help install the local wiring.

- (2) Each platoon will be provided trunking circuits (common-user) into the theater army communications system installed in its area of operation. This system provides the company commander, facilities control officer, and headquarters elements with telephone service to the platoon headquarters.

30. Training

The combat effectiveness of the signal radio relay company will depend on the unit training program. The company commander is responsible that all individuals of the company are trained as combat soldiers and specialists. The commander is assisted in the planning and conduct of training by the other officers and key noncommissioned officers of the company. To achieve and maintain a higher degree of proficiency in both fields, the soldier must be trained in basic military and technical subjects. Personnel of the signal radio relay company are trained in accordance with applicable ATP'S and directives from higher headquarters and local command headquarters. The unit training program includes —



LEGEND:

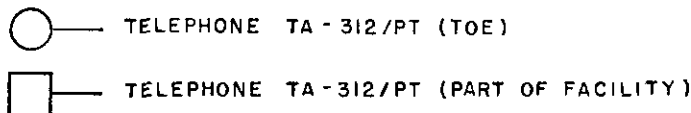


Figure 15. Type wire diagram for the signal radio relay company.

a. *Basic Combat Training.* This training provides personnel with instruction in basic military subjects and the primary aspects of individual skills. Basic combat training is a continuing program and review of this training is conducted periodically.

b. *Advanced Individual Training.* This training provides personnel with instruction in common or technical military occupational skills. This phase of training may be given at unit schools, training centers, service schools, or through on-the-job training in the unit. Technical specialists include carrier equipment repairmen and attendants and radio relay equipment repairmen and attendants. Common specialists include clerks, cooks, drivers, mechanics, and other personnel

concerned with administrative support functions of the unit.

c. *Unit Training.* The purpose of unit training is to combine and integrate the individual skills and operational capabilities of the sections and platoons into an organization capable of performing the assigned mission of the company. During team and section training, close supervision by the company commander, platoon officers, and noncommissioned officers is of vital importance.

d. *Field Exercises.* Field training exercises should be conducted under simulated combat situations. During this training, the unit must provide communications within the scope of its mission. This type of training should be on a contin-

uing cycle to increase the unit's operational efficiency and to provide the capability to perform special missions as required.

31. Standing Operating Procedures (SOP)

An SOP contains tactical and administrative procedures and general instructions which the commander wishes to make routine. SOP's are combat orders which eliminate the necessity of repeating details of instructions for each unit operation. Normally, an operations order will refer to the SOP unless the procedures for the operation differ from those contained in the SOP.

The preparation of clear, concise operating procedures is of primary importance to the success of signal communications. Normally, the initial SOP prepared during unit training will be detailed and lengthy. However, as the unit becomes proficient, the SOP can be expressed in less detail. The SOP of the unit is based on the SOP of the next higher echelon of command. The unit SOP must be reviewed continually and revised to incorporate changes in procedures and to eliminate unnecessary details. Detailed instructions for the preparation of unit SOP's can be found in FM 24-16 and FM 101-5.

CHAPTER 7

SECURITY

32. General

a. Security of the signal radio relay company is a command responsibility. However, because of the deployment of the operating sections, the company commander may require the platoon leaders and section chiefs to execute the security function of each platoon or section. A security plan should be developed by the company commander and the platoon leaders. It should be included in the company SOP and embrace all measures to protect the unit against —

- (1) Nuclear blast and the resultant radiological activity.
- (2) Attack by enemy ground, air, and airborne elements.
- (3) Chemical and biological attack.
- (4) Enemy guerrilla activity.
- (5) Enemy observation.

b. The mission of the signal radio relay company requires that communications support be provided on a 24-hour basis. The dispersion of the operating platoons may require that a considerable amount of the communications effort of the company be diverted in order that it may provide the necessary security for its installation. To insure more productive use of the company communications capability, security for the company's installations within the various headquarters supported must be assumed by the army troops providing the security force for these headquarters.

c. Security, as covered in this manual, is considered to refer only to physical security as opposed to communications security. Communications security is covered in detail in AR 380-5, AR 380-series, and FM 32-5.

33. Defense Measures

Defensive measures may be active or passive or both. Active defense is direct offensive action against an attacker. Passive defense is that action taken to protect personnel and installations against an enemy attack such as camouflage, concealment, and dispersion. The signal radio relay

company TOE provides a limited number of weapons for active defense; therefore, it **must** depend primarily on passive defense for security. Defense measures should include the establishment of outposts and warning systems; utilization of interior guards; and making use of natural terrain obstacles.

34. Defense Plans

A defense plan is developed by the company commander and his staff, and, in order to be adequate, must provide for individual defense and installation defense. In establishment of a defense plan, provision should be made for utilization of vehicles as possible armament or as obstacles. Crew-served weapons should cover all avenues of approach and provide maximum fields of fire and observation. A unit's defense plan will be part of the command rear area defense plan, thus coordination with the agency responsible for rear area security and area damage control is essential to the economy of forces. The overall defense plan will include various types of attack. Some of the types of attack and the measures to be employed against them are as discussed below.

a. *Defense Against Air Attack.* Measures that can be employed are —

- (1) Camouflage of the area, and use — concealment or deception devices.
- (2) Dispersal of facilities within an installation.
- (3) Blackout discipline.
- (4) Construction of foxholes and other suitable shelters.

b. *Defense Against Guerrilla Action.* In countries where United States troops are operating, active guerrilla warfare may be directed against signal installations. In a counterinsurgency situation, the signal radio relay company will require effective security of installations and defense against attack.

- (1) Guerrilla activity is directed essentially toward capturing equipment and supplies, and communications supplies are

especially valuable prizes. Consequently, resupply procedures and techniques require special security planning because of the ambush hazards along roads.

- (2) Sites selected for signal installations should be secure against guerrilla action. Personnel on duty should be alert and cautious in order to minimize the effect of sabotage and guerrilla attack. Heavier weapons than those organic to operating teams may be required for employment in the defense plan. In addition, extra grenades, trip flares, mines, and barbed wire should be obtained and used to protect the installation against attack. Emergency communications procedures to request assistance in case of attack should be prearranged.
- (3) In counterinsurgency situations, physical security of installations requires special considerations to assure protection from insurgent attacks. Communications equipment must be dug in and adequately reveted to assure adequate protection. In addition, receiving state forces may be required to supplement organic elements and to assure that unit communications capabilities are not diminished because of security requirements.
- (4) Particular attention must be given to formulating adequate convoy protection plans for counterinsurgency situations. The signal radio relay company has many trucks that may be required to displace frequently for various reasons. The movement plan must include provisions for adequate weapons, communications between vehicles — ground and air — and from vehicles to base camp as well as constant air cover to assist the convoy as appropriate.

c. Defense Against Chemical and Biological Attack. Protection against chemical and biological attack is an important defense consideration. Losses due to exposure to these agents may

be so extensive as to seriously reduce the unit's effectiveness. See FM 21-41 for individual protective measures against chemical and biological attack, and FM 21-40 for unit protective measures against chemical and biological attack. Defense measures that can be utilized include —

- (1) Use of protective clothing.
- (2) Use of protective masks and CBR protective shelters.
- (3) Proper care of protective clothing and equipment.
- (4) Posting of CBR sentries.
- (5) Protection of food and water supplies.
- (6) Effective use of decontaminants, detector kits, and first aid techniques.

d. Defense Against Nuclear Attack. In operations where nuclear weapons are employed, commanders must anticipate sudden severe personnel losses within very short periods of time. Personnel must be trained and indoctrinated in rapid reorganization and in the treatment of casualties with minimal professional medical assistance, as well as effective use of protective measures. Protection against heat, blast, radiation, and other effects of nuclear warfare includes the defensive measures listed below. Also see FM 21-40 and FM 21-41.

- (1) Dispersion of personnel and equipment.
- (2) Use of underground shelters for personnel and equipment.
- (3) Use of firefighting apparatus.
- (4) Establishment of a warning system.
- (5) Use of radiological detecting instruments.
- (6) Digging-in of equipment wherever possible.

35. Destruction of Equipment

When it becomes necessary to abandon an installation, the equipment, records, and supplies that cannot be evacuated will be destroyed to deny possible use or study to the enemy. Destruction will be ordered by the company commander as directed by higher authority and will be accomplished according to the destruction plan prepared by the company commander.

APPENDIX I

REFERENCES

1. General

This appendix contains a selected list of publications pertinent to the training and operations of the signal radio relay company. For additional publications, refer to Department of the Army Pamphlets of the 310-series.

2. Army Regulations

AR 105-series	Communications.
AR 230-5	Non-Appropriated Funds and Related Activities; General Policies.
AR 310-20	Allied Communications Publications (ACP's) and Joint Army-Navy-Air Force Publications (JANAP's).
AR 320-5	Dictionary of United States Army Terms.
AR 320-50	Authorized Abbreviations and Brevity Codes.
AR 340-15	Correspondence.
AR 350-1	Army Training Policies.
AR 380-5	Safeguarding Defense Information.
AR 735-11	Accounting for Lost, Damaged, and Destroyed Property.
AR 735-35	Supply Procedures for TOE Units, Organizations, and Non-TOE Units.
AR 750-1	Maintenance Concepts.
AR 750-5	Organizations, Policies, and Responsibilities for Maintenance Operations.
AR 750-8	Command Maintenance Management Inspections.

3. Department of the Army Pamphlets

DA Pam 108-1	Index of Motion Pictures, Film Strips, Slides and Phono-Recordings.
DA Pam 750-1	Preventative Maintenance Guide for Commanders.

4. Field Manuals

FM 5-15	Field Fortification.
FM 5-20	Camouflage, Basic Principles and Field Camouflage.
FM 10-20	Organization for Supply of Petroleum Products in Theaters of Operations.
FM 10-60	Supply of Subsistence in a Theater of Operations.
FM 11-8	Field Radio Relay Techniques.
FM 11-20	Signal Operations, Theater Operations.
FM 11-21	Tactical Signal Communications Systems.
FM 11-15	Signal Cable Construction Battalion.
FM 21-5	Military Training.
FM 21-6	Techniques of Military Instructions.
FM 21-26	Map Reading.
FM 21-30	Military Symbols.
FM-21-40	Small Unit Procedures in Chemical, Biological and Radiological (CBR) Operations.

FM 21-41	Soldier's Handbook for Chemical and Biological Operations and Nuclear Warfare.
FM 21-48	Chemical, Biological and Radiological (CBR) and Nuclear Defense Training Exercises.
FM 24-18	Field Radio Techniques.
FM 24-19	Communications - Electronic Reference Data.
FM 24-20	Field Wire and Field Cable Techniques.
FM 31-16	Counter guerrilla Operations.
FM 31-22	U. S. Army Counterinsurgency Forces.
FM 32-5	Communications Security.
FM 100-10	Field Service Regulations Administration.
FM 100-15	Field Service Regulations Larger Units.
FM 100-20	Field Service Regulations Counterinsurgency.

5. Technical Manuals (TM's)

TM 11-486-series	Electrical Communications Systems Engineering.
TM 11-487-series	Directories of Signal Communications Electronics Equipment.
TM 11-666	Antennas and Radio Propagation.
TM 11-679	Fundamentals of Carrier and Repeater.
TM 11-685	Fundamentals of Single-Sideband Communications.
TM 11-2150	Telephone Carrier Systems.
TM 38-750	The Army Equipment Record System and Procedures.

6. JCS Publications

JCS Pub 1	Dictionary of United States Military Terms for Joint Usage.
-----------	---

APPENDIX II

CHARACTERISTICS OF MAJOR ITEMS OF SIGNAL EQUIPMENT

This appendix briefly covers the major items of signal equipment organic to the signal radio relay company (TOE 11-377). The information presented is intended for signal users and planners at company level. More detailed technical information may be obtained from appropriate equipment technical manuals. These manuals are listed in the appendix under the "nomenclature" column.

Characteristics of Major Items of Signal Equipment

Nomenclature	Description	Major components	Remarks
Communications Operations Center AN/MSC-31. TM 11-5895-223	A mobile operations center shelter with facilities for planning, engineering, and controlling communications systems.	1 — SB-22/PT 4 — TA-312/PT	Equipment is installed in 2½-ton shelter S-183/MSC-31.
Radio Set AN/GRC-106. TM 11-5820-520	A high-power radio set which transmits and receives SSB AM voice and CW signals over a frequency range of 2 to 30 mc. Requires 24 volts for dc operation.	1 — RT-662/GRC 1 — AM-3349/ GRC-106	Intended for vehicular installation. To replace AN/GRC-19 and radio component of AN/GRC-46, AN/VRC-29, and AN/VSC-1.
Radio Terminal Set AN/MRC-73. TM 11-5895-221	A mobile VHF-UHF radio terminal set providing 11 channels of carrier telephone and four channels of carrier telegraph over spiral-four cable or radio. May be operated as a single radio terminal or as a telegraph and telephone terminal. Operation is line-of-sight.	1 — AN/TRC-24 1 — AN/TCC-7 1 — AN/TCC-20 1 — TT-4 1 — PU-474 1 — S-181/MRC-73 12 — TA-182	Equipment is installed in shelter which can be mounted on a 2½-ton truck. PU-474 is trailer-mounted.
Radio Repeater Set AN/MRC-54. TM 11-5820-203	A mobile VHF-UHF radio relay set used as a relay for 12 telephone channels. Set may be used with AN/TCC-7 or an AN/MCC-6 as a terminal for two 12-channel telephone carrier systems. Channels may be used for telephone, telewriter, data, or facsimile. Operation is line-of-sight.	3 — AN/TRC-24 1 — PU-474/M 1 — S-177/MRC-54	Equipment is mounted in Shelter S-177/MRC-54. Shelter can be mounted on a 2½-ton truck. PU-474/M is trailer-mounted.
Telegraph-Telephone Terminal AN/MCC-6. TM 11-5805-285	A dual, mobile carrier-frequency telegraph-telephone terminal. Each terminal providing 12 telephone circuits or 11 telephone and 8 voice frequency telegraph circuits over a spiral-4 or wideband radio circuit.	2 — AN/TCC-4 2 — AN/TCC-7 28 — TA-182 1 — TT-4A/TG 1 — S-185/MCC-6 1 — PU-474/M	Equipment is installed in shelter which can be mounted on a 2½-ton truck. PU-474/M is trailer-mounted.
Telephone Repeater AN/MCC-3. TM 11-5805-286	A mobile, attended 12-channel carrier repeater set used to extend the range of wire carrier systems. Used with spiral-4 cable or radio circuits.	1 — AN/TCC-8 1 — PU-456/G 1 — S-173/MCC-3	Equipment is installed in shelter which can be mounted on a ¾-ton truck. PU-456/G is trailer-mounted.
Telephone Repeater AN/TCC-11. TM 11-5805-240	An unattended telephone repeater to extend the range of carrier telephone systems employing non-loaded spiral-4 cable.	N/A	Used with telephone terminal AN/TCC-7 and telephone repeater AN/TCC-8. Requires 148 volts and 0.1 amps supplied over the spiral-4 cable.

By Order of the Secretary of the Army:

HAROLD K. JOHNSON,
General, United States Army,
Chief of Staff.

Official:

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

Distribution:

Active Army:

DCSPER (2)
ACSI (2)
DCSLOG (2)
DCSOPS (2)
ACSFOR (2)
CORC (2)
COA (1)
CINFO (1)
TIG (1)
TJAG (1)
TPMG (1)
TSG (1)
OPO (1)
CRD (1)
CC-E (10)
CNGB (1)
CofEngrs (3)
CofCh (1)
USACDC Agcy (5) except
 USACDCCEA (25)
USCONARC (10)
USAMC (15)
USAECOM (10)
USAECOM (Phila) (10)
USACDC (10)
USACDCEC (5)
USASA (10)

USACDCIAS (1)
USACDCNG (1)
USACDCCISG (1)
USACDCCAG (5)
USACDCCSSG (5)
ARADCOM (10)
ARADCOM Rgn (10)
OS Maj Comd (5)
LOGCOMD (5)
Armies (25)
Corps (15)
Div (10)
Sig Gp (1)
Sig Bn (1)
Sig Co. (1) except
 TOE 11-377 (15)
Sig Det (1)
USAWC (2)
USACGSC (10)
Br Svc Sch (3) except
 USAOC&S (19)
 USAQMS (25)
 USASCS (12)
 USAARMS (5)
USASMLCS (5)
USMA (5)
USAJFKCENSPWAR (10)

NG: State AG (3); Units -- same as Active army except allowance is one copy to each unit.

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

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