

CHAPTER 4

Communications Assets in the Corps/Division

4-1. Introduction

The MSE network provides corps area communications in an ALB environment. A corps network can support up to a five-division corps or a geographic area spanning 23,250 square miles.

4-2. The Corps Signal Brigade

a. The standard corps signal brigade (Figure 4-1) is the center of the corps MSE network. It consists of an HHC, three corps area signal battalions, and a corps support signal battalion. It provides systems control of the corps area MSE network and provides technical control of the division signal battalions' installed components. The advantages of this arrangement are--

- Greater operational flexibility.
- Increased logistics support efficiency.
- Easier personnel management.
- Centralized MSE assets control.

The airborne corps signal brigade is slightly different in terms of organization and equipment. (See Appendix C.)

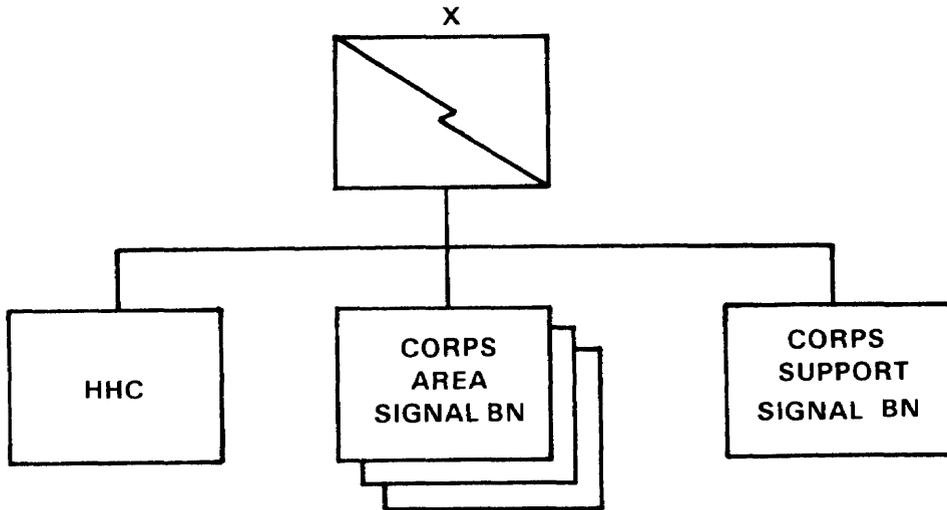
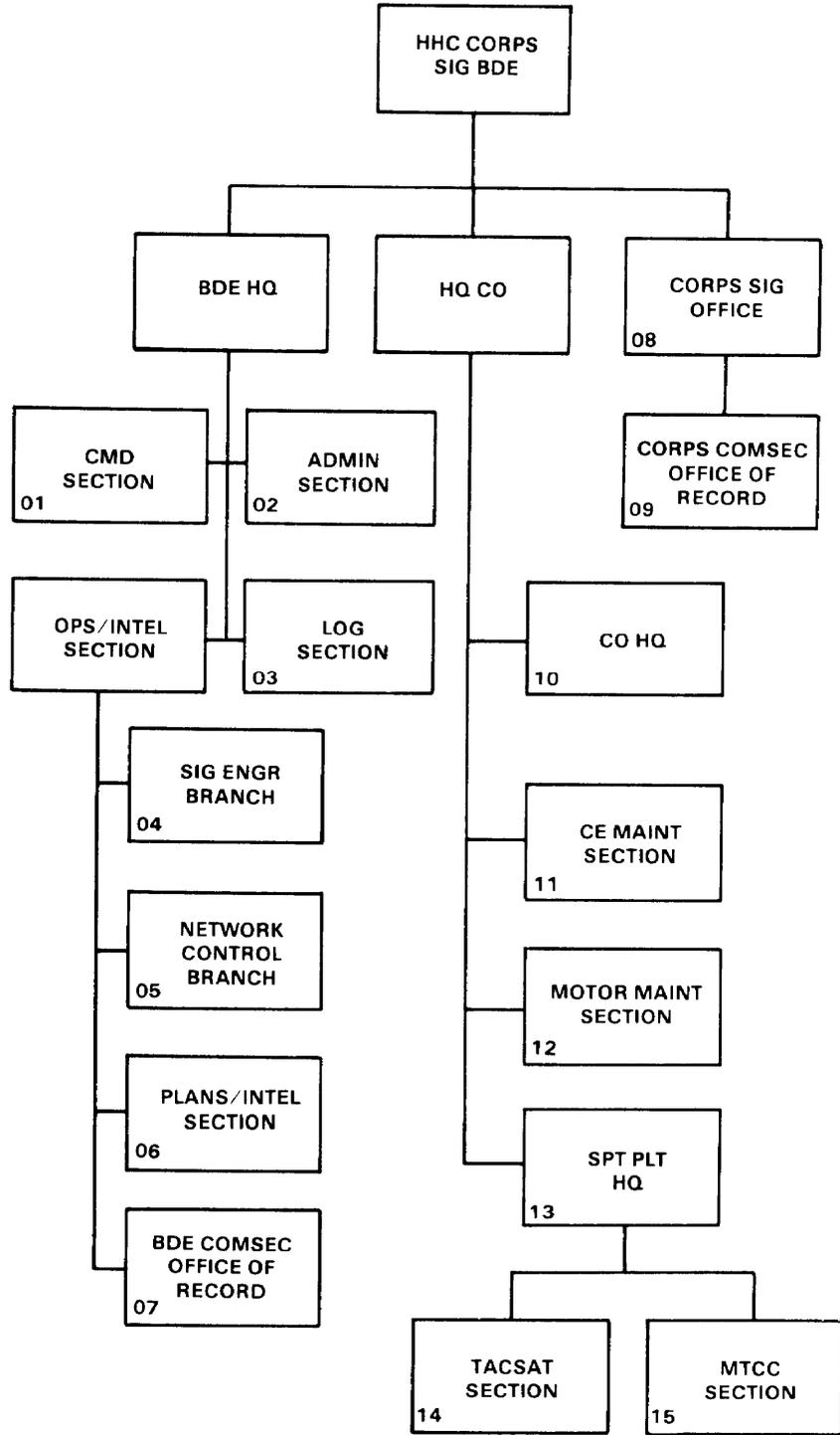


Figure 4-1. Corps signal brigade.

b. The HHC (Figure 4-2) consists of the brigade headquarters, the headquarters company, and the corps signal office.

(1) The brigade headquarters has a command section, administrative section, operations/intelligence section, and logistics section. The operations/intelligence section consists of the signal engineering branch, the network control branch, the plans/intelligence section, and the brigade communications security (COMSEC) office of record.

(a) The network control branch concerns itself with the MSE network. This branch installs, operates, and maintains two SCCs, one primary and one alternate. The SCCs, facilitate network management and control tasks with computer-assisted tools. These tools issue operational orders and directives to node managers, and receive and process return messages and reports from node managers. They also help in managing radio frequencies, COMSEC, equipment/personnel status reports, system activation/deactivation and reconfiguration including network radio links. (For more information on SCC functions, see FM 11-38.)



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Figure 4-2. HHC corps signal brigade.

(b) Since the corps signal brigade manages and controls the MSE network when deployed in a corps area, the corps SCCs provide technical control of the five divisional SCCs. The SCCs cannot operate alone, they must be physically linked by CX-11230/G cable to an NS. The area signal battalion within the corps provides this NS. The SCC gains network access through the NS.

(2) The headquarters company has a company headquarters, a communications-electronics (CE) maintenance section, and a motor maintenance section. It may contain a support platoon which provides TACSAT communications and a modular tactical communications center (MTCC). Terminal integration with MSE communications assets extends area coverage throughout the corps, to and from the divisions, and during special contingencies.

4-3. The Corps Area Signal Battalion

a. The standard corps area signal battalion (Figure 4-3) consists of an HHC, three standard area signal companies (identical in equipment and personnel at the corps and division level), and a signal support company. For the airborne corps area signal battalion organization, see Appendix C.

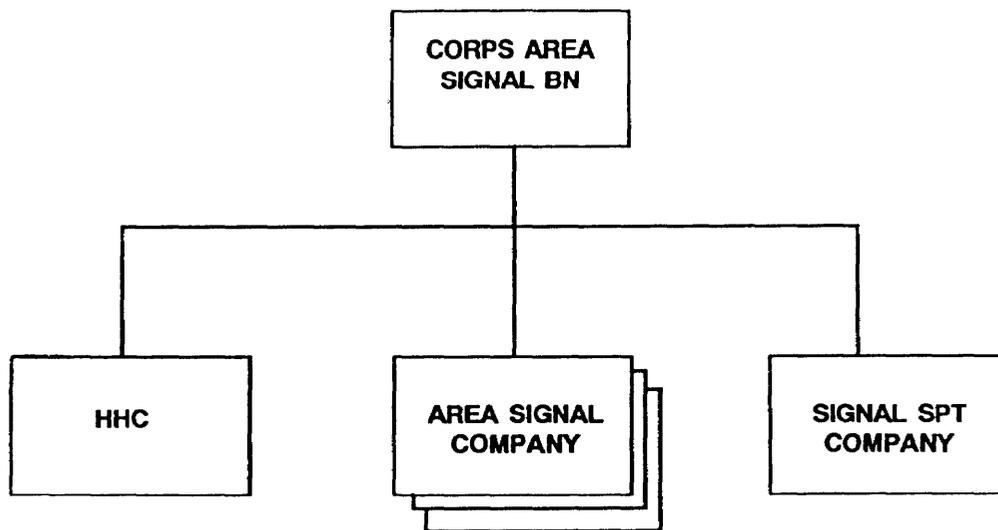
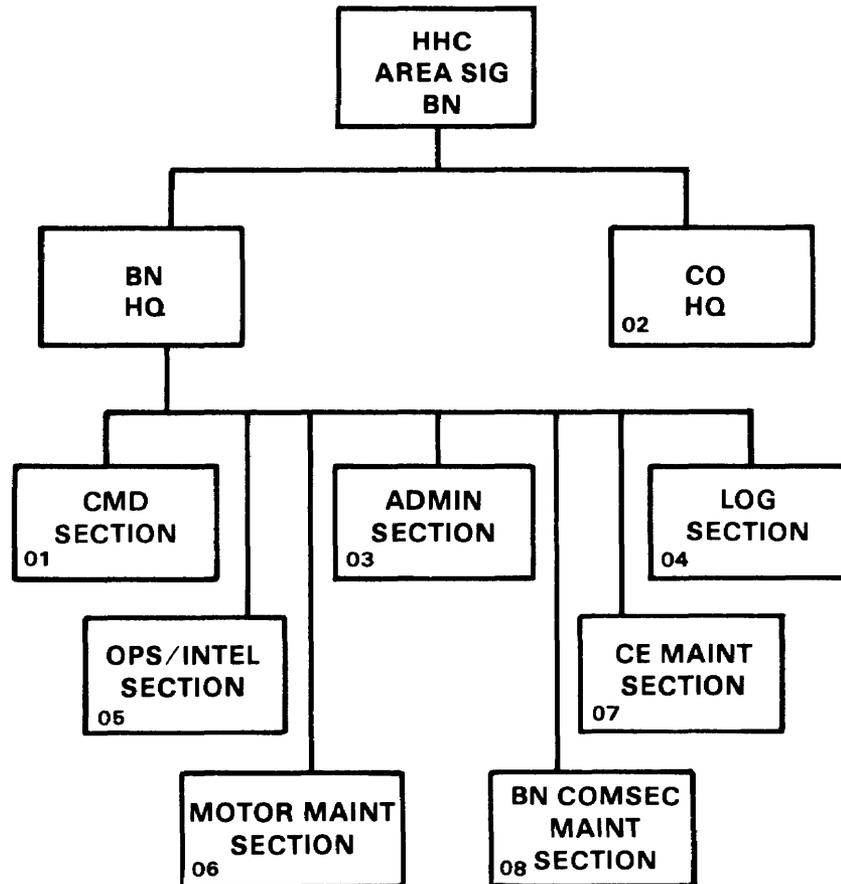


Figure 4-3. Corps area signal battalion.

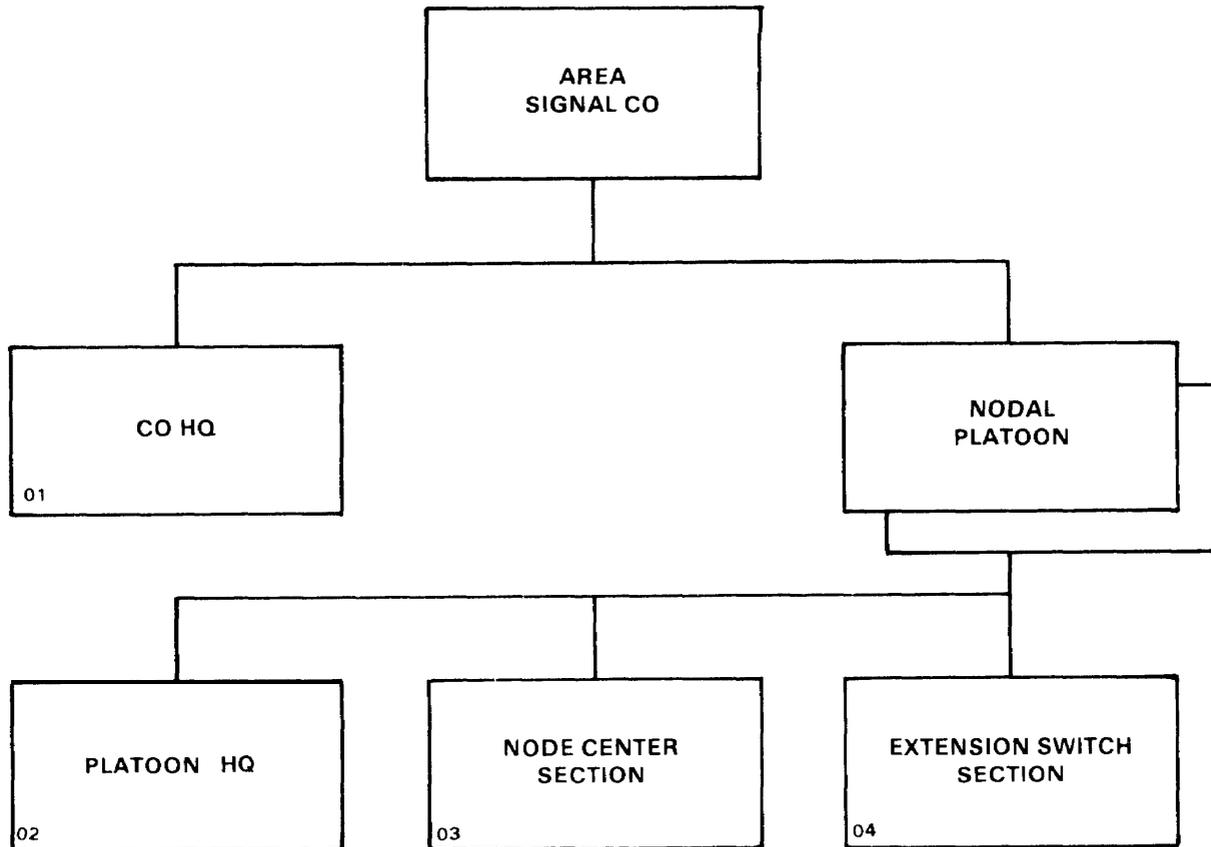
b. The HHC (Figure 4-4) consists of the battalion headquarters and a company headquarters. The battalion headquarters consists of a command section, an administrative section, a logistics section, an operations/intelligence section, a CE maintenance section, a motor maintenance section, and a battalion COMSEC maintenance section.



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Figure 4-4. HHC corps area signal battalion.

c. Each area signal company (Figure 4-5) consists of a company headquarters and two nodal platoons. Each nodal platoon provides a management shelter and team, in the platoon headquarters, and has an NC section and an extension switch section.



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Figure 4-5. Area signal company.

- (1) The NC section (Figure 4-6) has seven teams:
 - One NS team.
 - Four transmission system teams.
 - One RAU team.
 - One wire system team.
- (a) The NS team consists of an operations facility, a switching facility, and a support vehicle. The NS team installs all NS interconnecting cables.
- (b) Four transmission system teams deploy four LOS (AN/TRC-190(V3)) assemblages to support the NS.

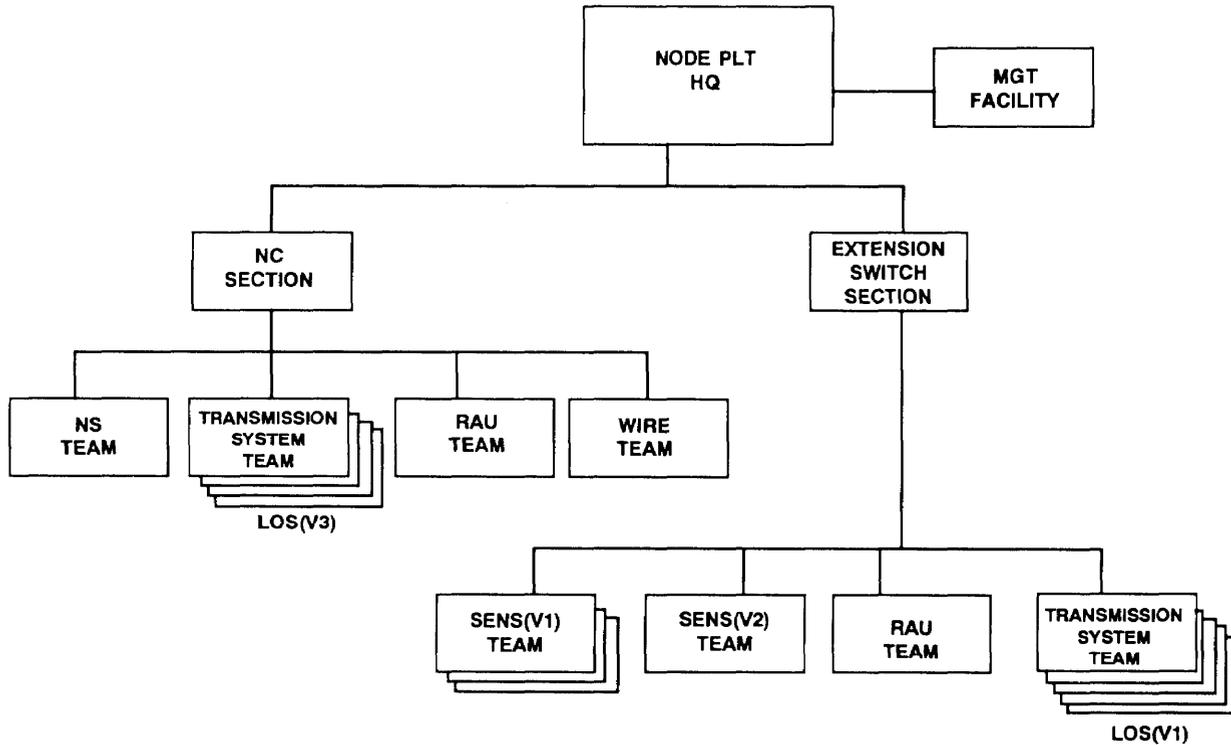


Figure 4-6. NC section and extension switch section.

(c) The RAU team consists of one RAU (AN/TRC-191), considered a local RAU in this section, and appropriate personnel.

(d) The wire system team lays out cable from the LOS assemblages and the RAU to the NS. The wire team also installs the CX-4566 26-pair cable and the J-1077 distribution boxes.

(2) The extension switch section (Figure 4-6) has 10 teams:

- Three SENS(V1) teams.
- One SENS(V2) team.
- One RAU team.
- Five transmission system teams.

(a) The RAU team in this section usually deploys in a remote configuration.

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(b) Five transmission system teams deploy five LOS(V1) (AN/TRC-190(V1)) assemblages, one for each SENS and one for the RAU.

d. The signal support companies differ in the authorized number of equipment and personnel. The signal support company (Figure 4-7) in the corps area signal battalion has a company headquarters, a large extension switch platoon, and an extension switch support platoon. The large extension switch platoon has a large extension switch section and a cable/wire section. The extension switch support platoon (Figure 4-8) has an extension switch support section and a cable/wire section.

(1) The large extension switch section has 20 teams:

- One management shelter team.
- One LENS (AN/TTC-46) team.
- Eight SENS (AN/TTC-48) teams.
- One wire system team.
- Nine transmission system teams.

(a) The management shelter provides a technical supervisory facility for the platoon command element.

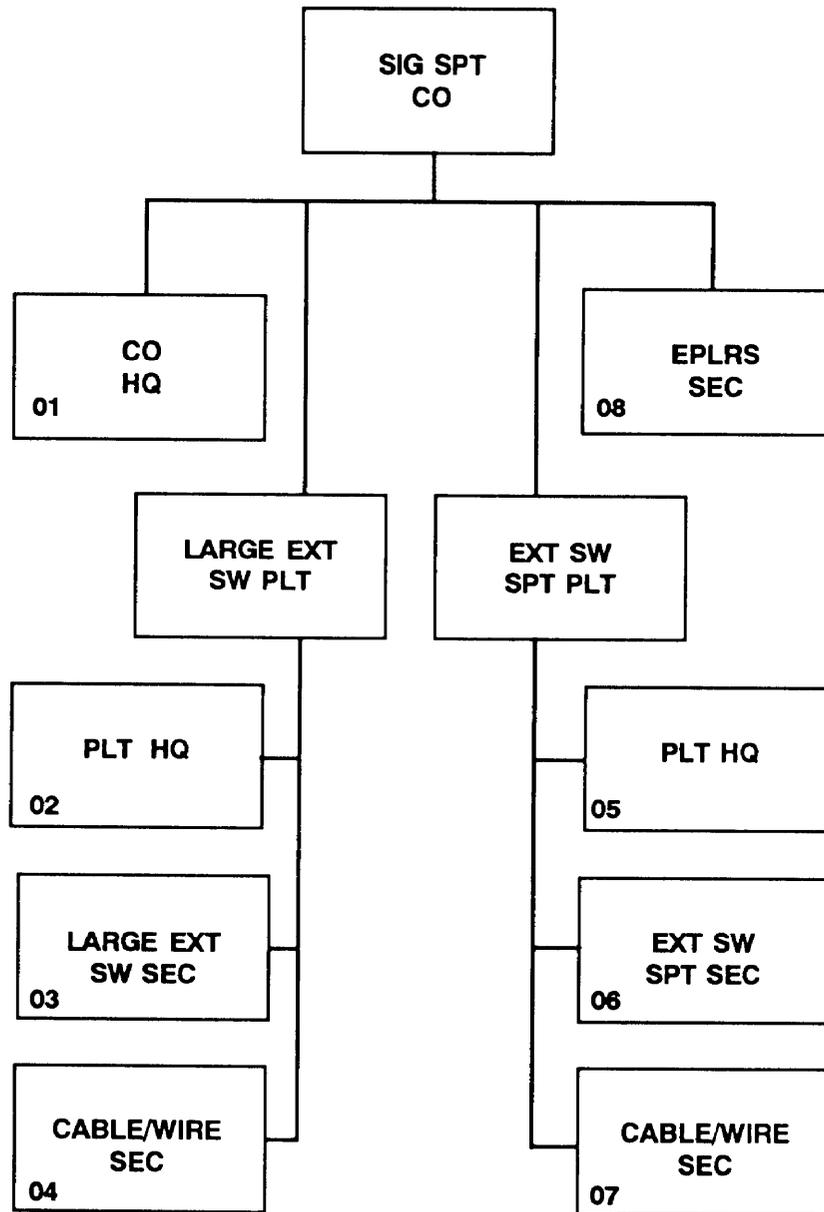
(b) The LENS consists of an operations facility, a switching facility, and a support vehicle.

(c) The SENS teams consist of six SENS(V1)s and two SENS(V2)s.

(d) The wire system team installs and maintains the CX-11230/G cables between the LENS and LOS radio shelters.

(e) Eight LOS(V1) assemblages and teams deploy with the SENS teams. One LOS(V4) (AN/TRC-190(V4)) assemblage and team provide connectivity between the LENS and two NCs.

(2) The cable/wire section has three cable/wire installation teams. These teams install the RMC TD-1234, CX-11230/G cables, CX-4566 26-pair cables, and J-1077 distribution boxes.



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Figure 4-7. Corps area signal battalion signal support company.

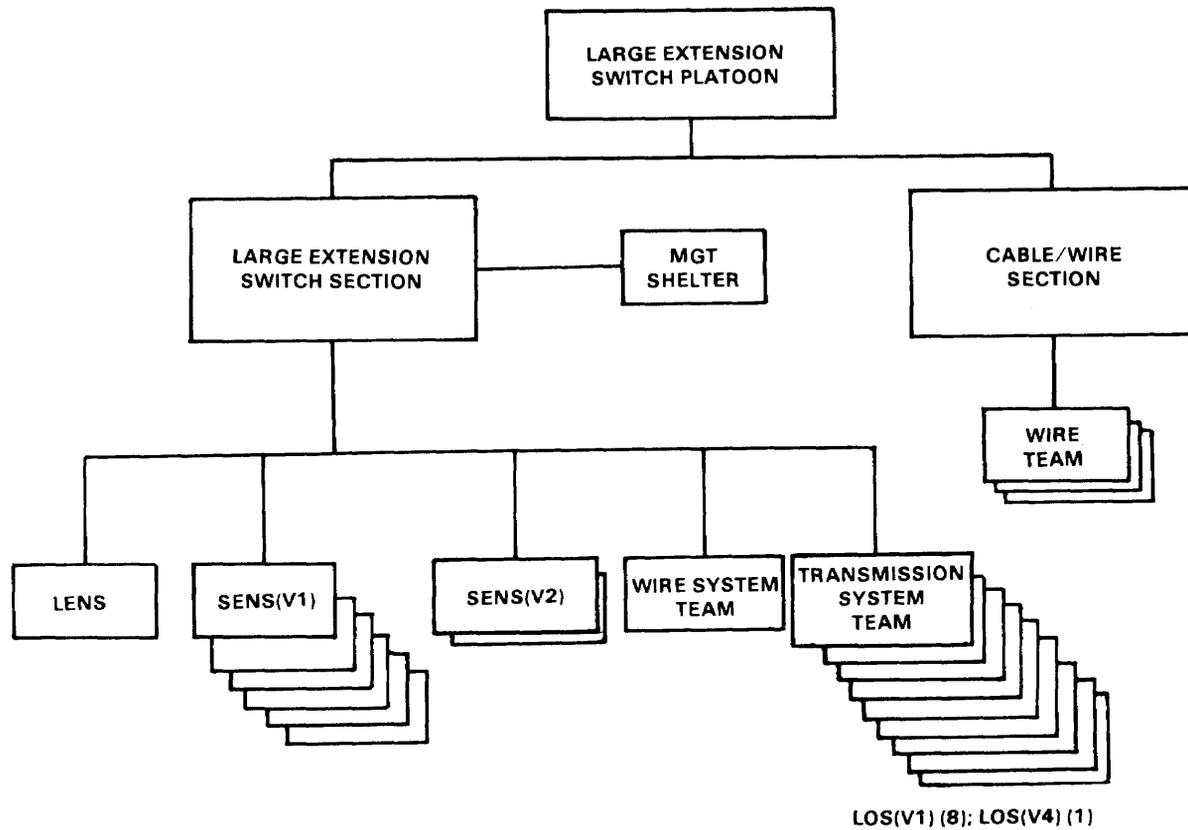


Figure 4-8. Large extension switch platoon.

e. The extension switch support platoon (Figure 4-9) has an extension switch support section and a cable/wire section. It will expand to include an EPLRS section when fielded.

- (1) The extension switch support section has 19 teams:
- Eight SENS teams.
 - One RAU team.
 - Ten transmission system teams.

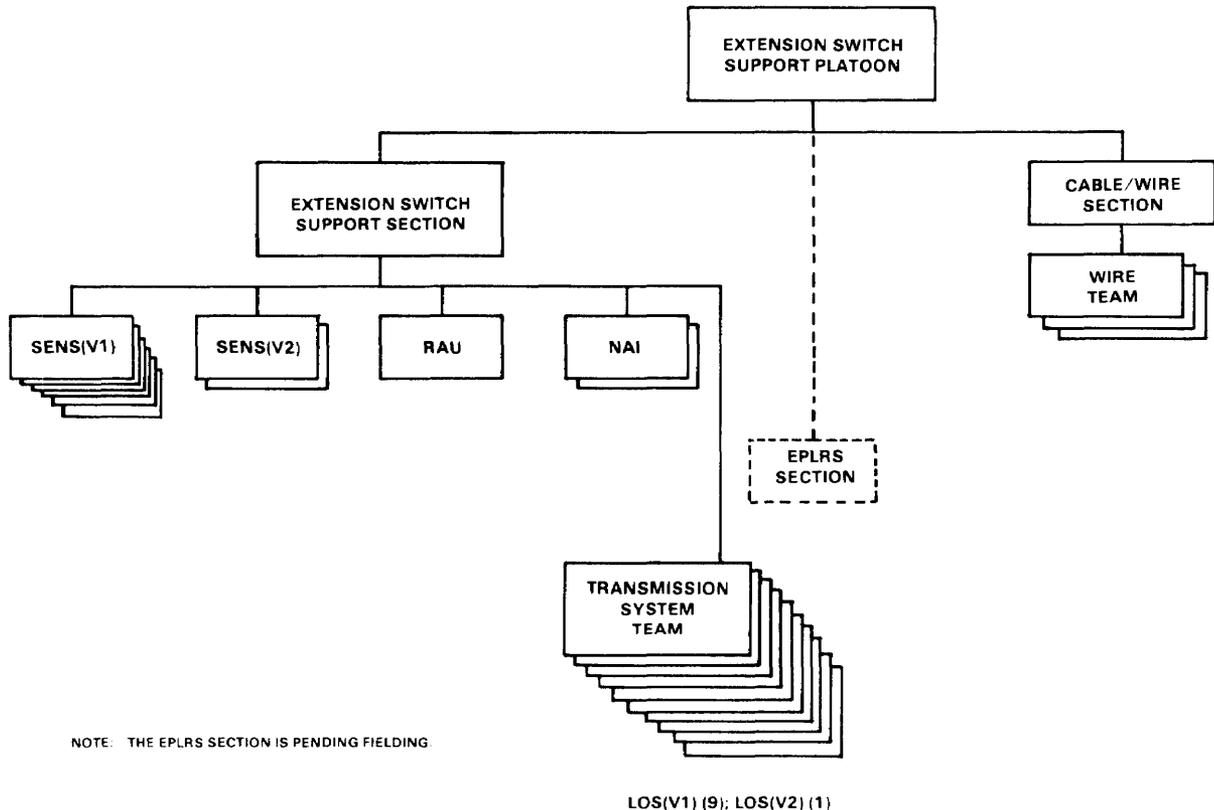


Figure 4-9. Extension switch support platoon.

- (a) The SENS teams have six SENS(V1)s and two SENS(V2)s.
 - (b) The RAU generally deploys as a remote RAU.
 - (c) Eight LOS(V1)s support the small extension switches and one LOS(V1) supports the RAU. One LOS(V2) (AN/TRC-190(V2)) is available with two NAI converters CV-4002.
- (2) The cable/wire section has three cable/wire installation teams. They install the CX-11230/G cables, CX-4566 26-pair cables, and J-1077 distribution boxes.

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4-4. The Corps Support Signal Battalion

a. In addition to the three area signal battalions, the corps signal brigade has a corps support signal battalion (Figure 4-10). This battalion has an HHC, two area signal companies, and a signal support company.

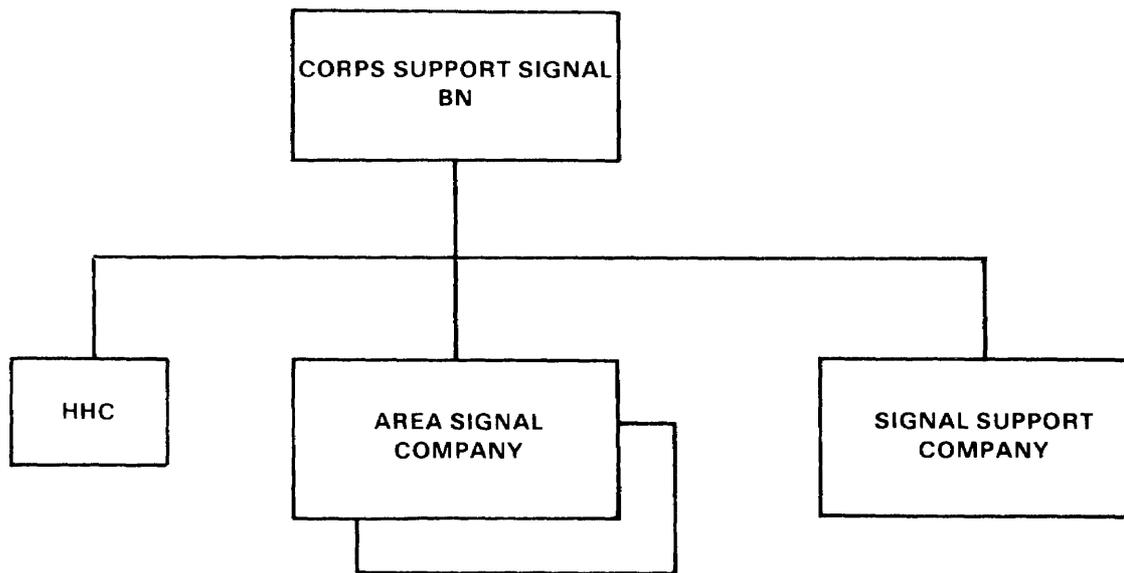
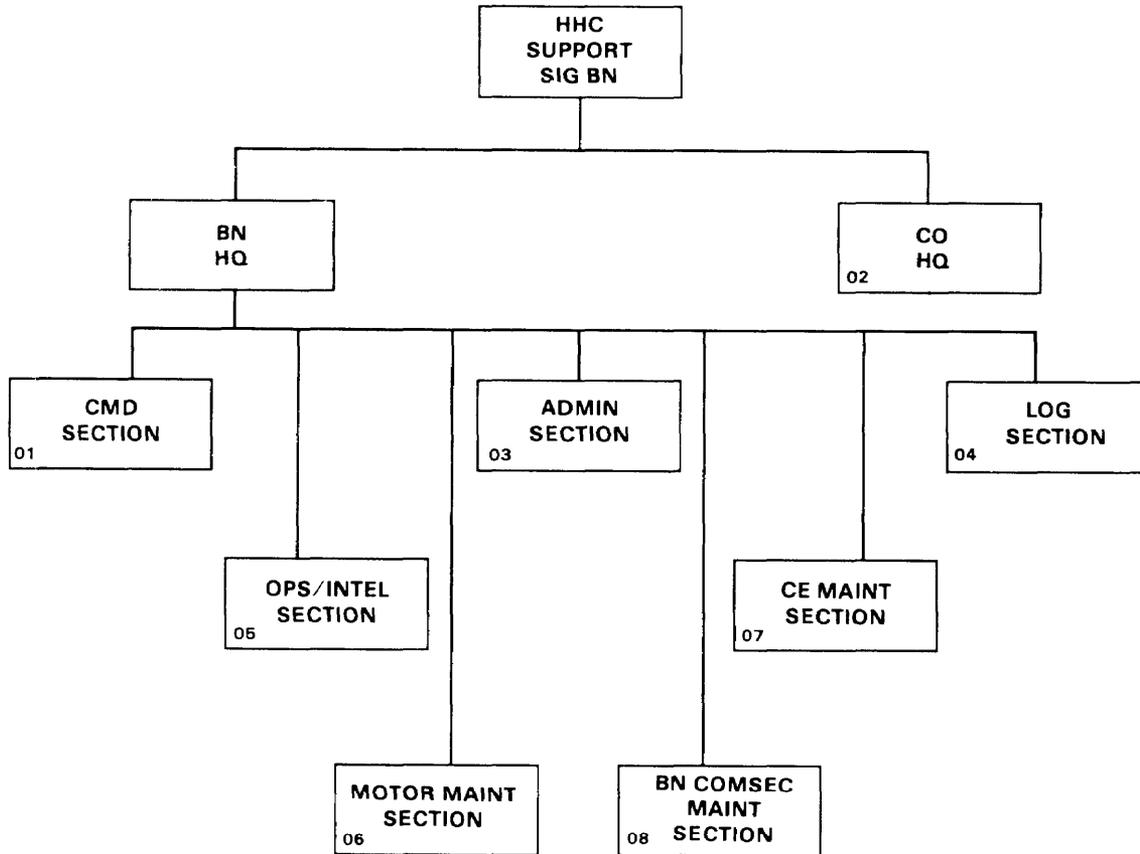


Figure 4-10. Corps support signal battalion.

b. The HHC (Figure 4-11) consists of a battalion headquarters and a company headquarters. The battalion headquarters consists of a command section, an administrative section, a logistics section, an operations/intelligence section, a CE maintenance section, a motor maintenance section, and a battalion COMSEC maintenance section. The corps support signal battalion provides communications throughout the corps area of operations through the efforts of the area signal companies.

NOTE: All area signal companies are identical throughout the corps and division.

c. The signal support company (Figure 4-12) has a large extension switch platoon and an extension switch support platoon. The structure and capabilities of these platoons are similar to those of the area signal battalion support company's. The large extension switch platoon (Figure 4-13) has a large extension switch section and two cable/wire sections. The management facility provides a technical supervisory facility for the platoon command element.



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Figure 4-11. HHC support signal battalion.

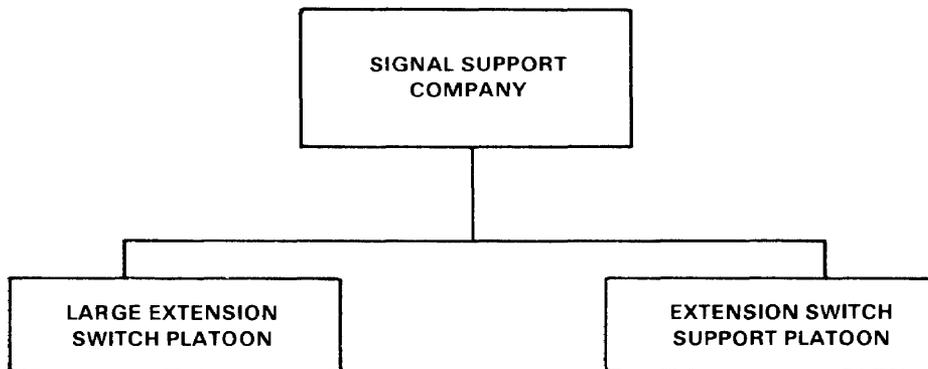


Figure 4-12. Signal support company.

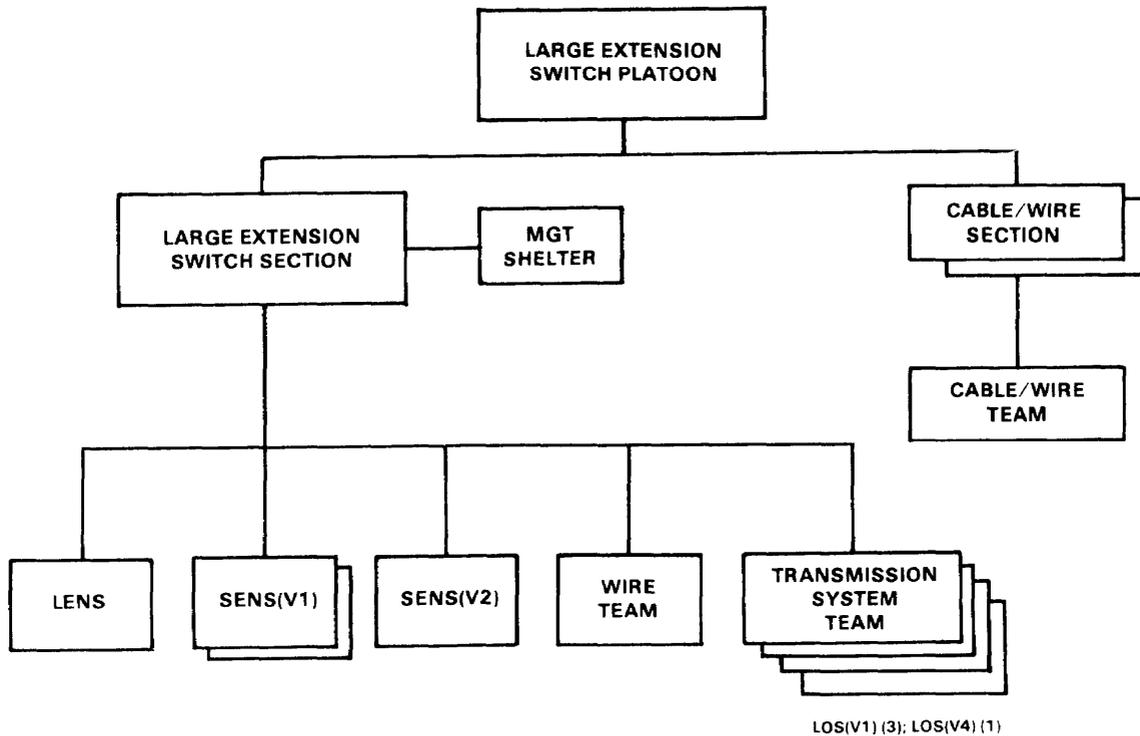


Figure 4-13. Large extension switch platoon.

- (1) The large extension switch section has nine teams:
 - One LENS team.
 - Three SENS teams.
 - One wire team.
 - Four transmission system teams.
- (a) The LENS team consists of the switching and operations shelters and a support vehicle.
- (b) The SENS teams consist of two SENS(V1)s and one SENS(V2).
- (c) The wire team deploys the CX-11230/G cables between the LENS and the LOS radio shelters.
- (d) Three LOS(V1)s deploy with the SENS and one LOS(V4) deploys with the LENS.

(2) Each cable/wire section has a cable/wire installation team. These teams install the RMCs, CX-11230/G cables, CX-4566 26-pair cables, and J-1077 distribution boxes.

d. The extension switch support platoon (Figure 4-14) has an extension switch support section and two cable/wire sections.

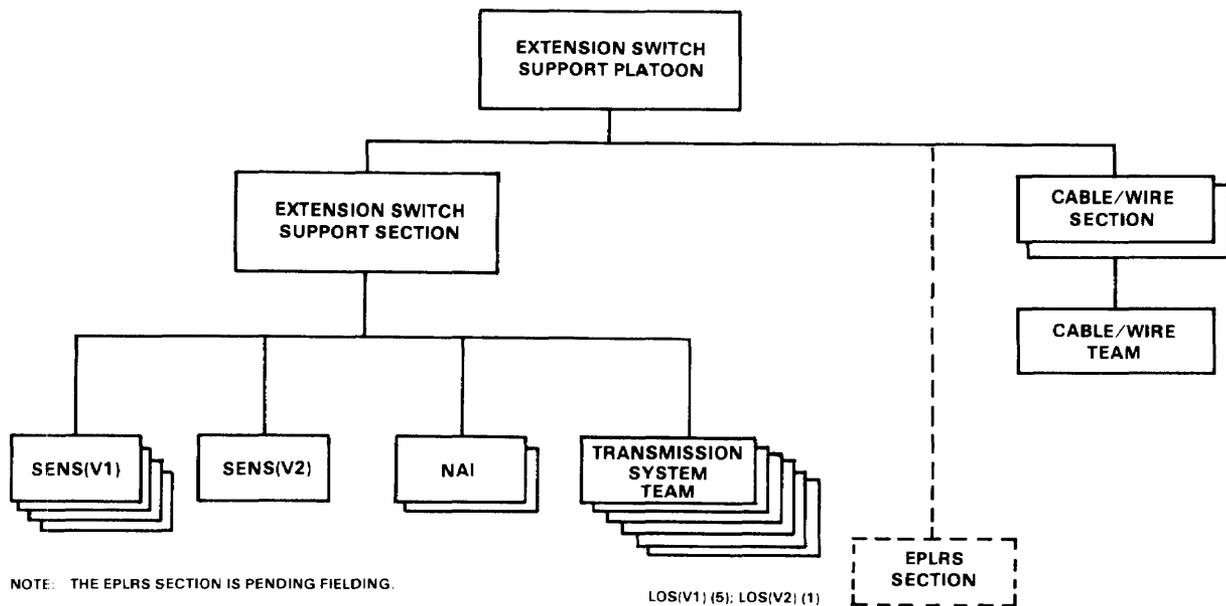


Figure 4-14. Extension switch support platoon.

(1) Each extension switch support section has 11 teams:

- Five SENS teams.
- Six transmission system teams.

(a) The SENS teams consist of four SENS(V1)s and one SENS(V2) .

(b) Five LOS(V1)s deploy to support the SENS and one LOS(V2) deploys with the NAI converters.

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(2) The two cable/wire sections have a cable/wire installation team. They install CX-11230/G cables, CX-4566 26-pair cables, and J-1077 distribution boxes.

(3) The EPLRS section will become an integral member of the extension switch support platoon when fielded.

4-5. The Division Signal Battalion

a. The division signal battalion (Figure 4-15) has an HHC, two area signal companies, and a signal support company and serves as a more forward deployed element in the MSE network. The battalion's structure is similar to a corps area signal battalion's structure except there are only two area signal companies at division. The division signal battalion provides communications support to major subscribers/CPs/OPFACs throughout the division's area of operations and is used in light and heavy divisions. When required, the division signal battalion can function as a stand-alone organization.

b. The HHC (Figure 4-16) consists of a battalion headquarters and a company headquarters. The battalion headquarters has a command section, an administrative/logistics section, an operations/intelligence section, a division signal office, motor maintenance and CE maintenance sections, a division COMSEC office of record, and a COMSEC maintenance section. The operations/intelligence section installs, operates, and maintains the division signal battalion's SCC.

c. The structure, personnel, and equipment of the division area signal company are identical to the corps area signal company.

d. The division signal support company (Figure 4-17) has a company headquarters and a general support platoon. It is similar to the corps area signal battalion's signal support company in mission. However, it is organizationally and materially different.

e. The general support platoon (Figure 4-18) consists of an extension switch section, a wire section, and an FM retransmission section. The management facility provides a technical supervisory facility for the platoon command element.

(1) The extension switch section has five teams:

- One LENS team.
- One RAU team.
- Two transmission system teams.
- One wire team.

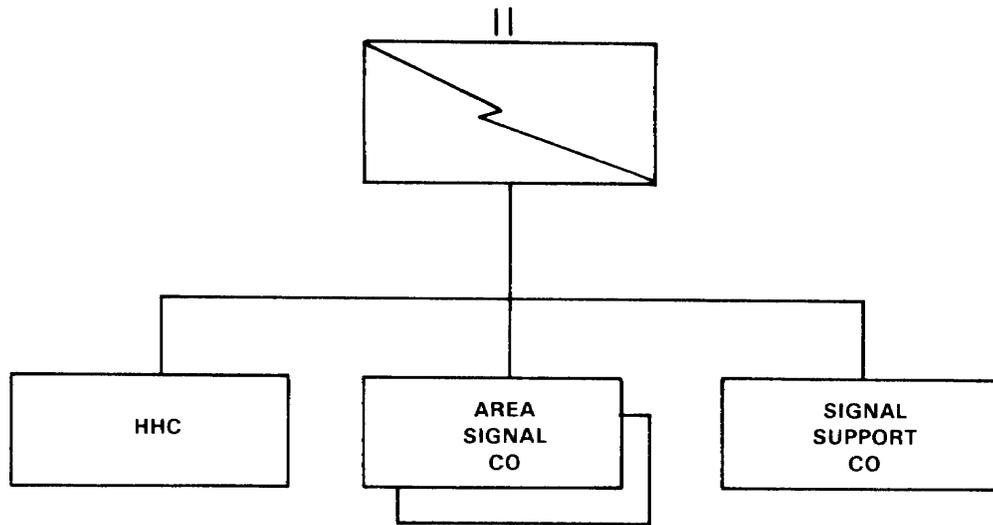
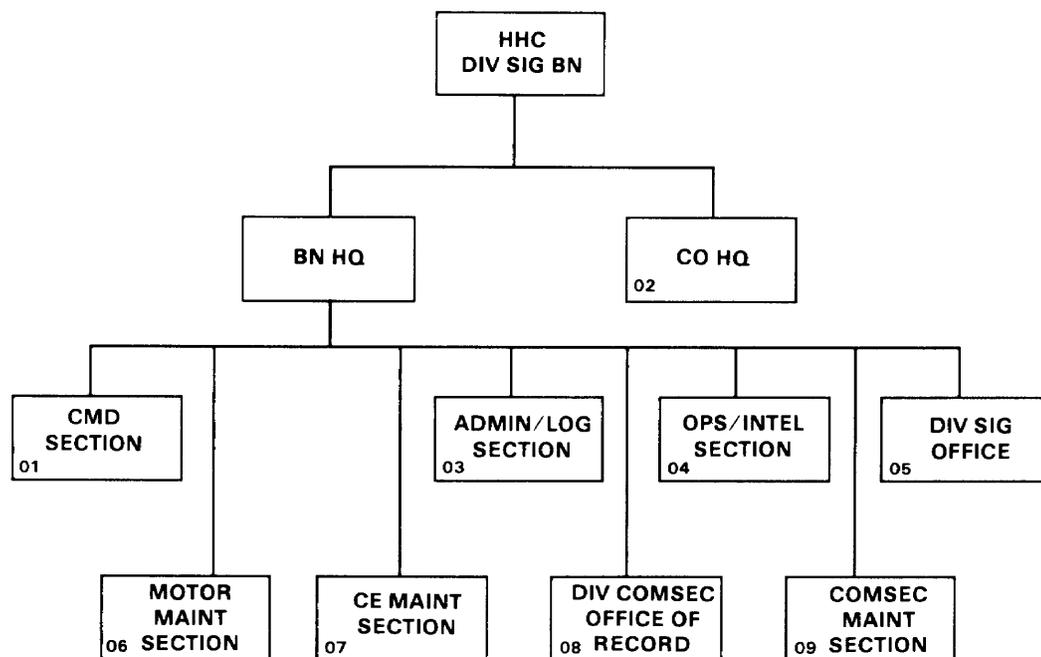


Figure 4-15. Division signal battalion.



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Figure 4-16. HHC division signal battalion.

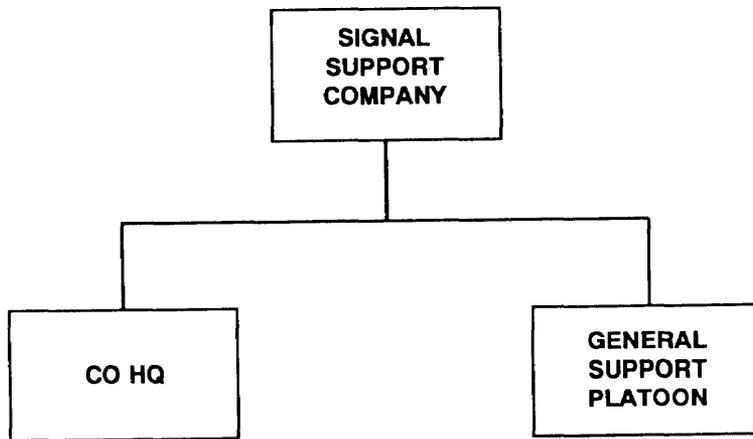


Figure 4-17. Division signal company.

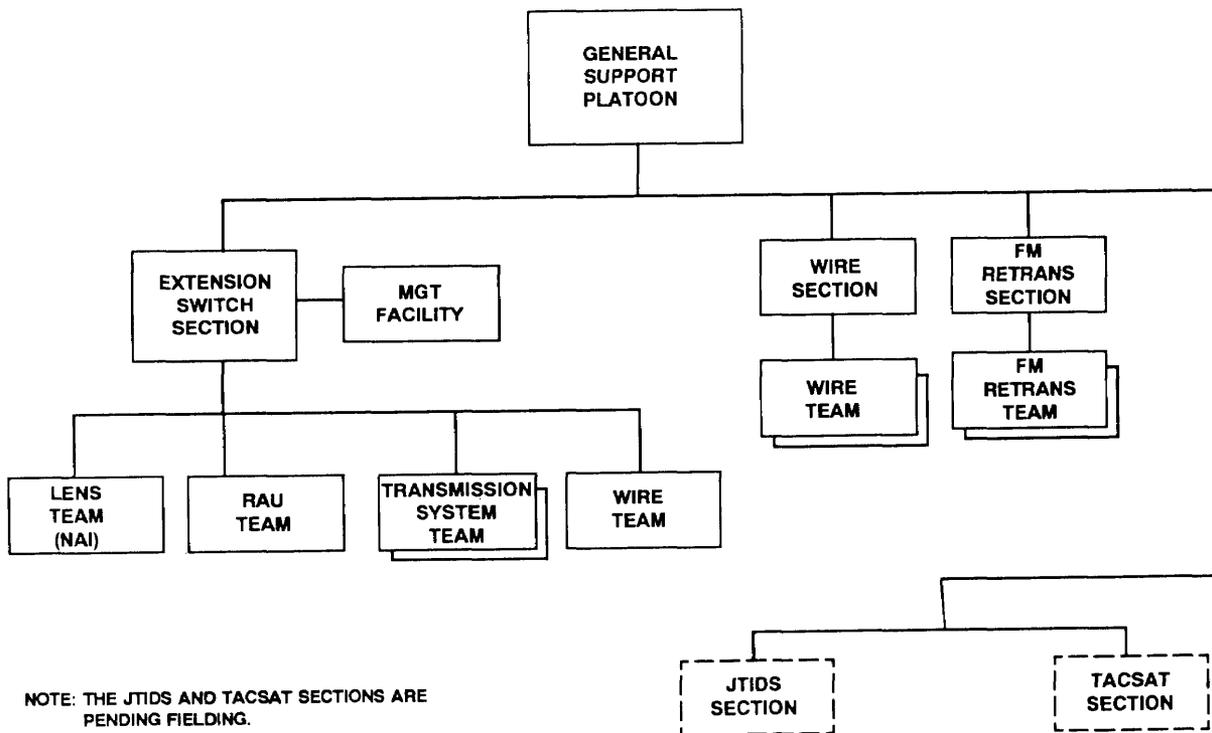


Figure 4-18. General support platoon.

(a) The LENS team is identical to the LENS team discussed earlier in this chapter. This LENS team can use an NAI converter when engaged in joint operations with NATO allies.

(b) The RAU team deploys in a remote configuration.

(c) One LOS(V1) deploys with the RAU and one LOS(V4) deploys to support the LENS.

(d) The wire team installs and maintains the CX-11230/G cable between the LENS and the LOS radio shelter.

(2) The wire section has two wire system installation teams. These teams install and maintain the wire and cable for the LENS's RMCs, J-1077 distribution boxes, and CX-11230/G cable. If needed, the wire teams can deploy with the remote RAU and LOS(V1) and assist in installing these assemblages.

(3) The FM radio retransmission section has two teams that provide single-channel retransmission stations for division level FM voice nets.

4-6. Employment Characteristics

a. The NCs are the hubs of the MSE network providing internodal connectivity (Figure 4-19). The NS is the main element of the NC. It provides network access to 24 local subscribers (that is, node and network management personnel) and to mobile subscribers through the RAU (local/remote) and MSRT. It provides network access for LENS and SENS. When providing a gateway between an adjacent MSE network or to the EAC network, at least two trunk connections are made. Division establishes at least one link to adjacent division(s). NC deployment is based on serviced CPs (extension nodes) deployment, topographical considerations (such as site availability and accessibility), LOS requirements, and network interconnectivity requirements.

b. Rapid initial network deployment requires installing a preprogrammed connectivity system. (FM 11-38 contains further information on the backbone system.) The assistant corps signal officer (ACSO)/ADSO and the S3/system control (SYSCON) plan the backbone system, the SCC issues the orders for execution, and the designated area signal companies provide the assets to install, operate, and maintain the NCs. Each NC is equipped with one 30-meter mast to extend the antenna height when the 15-meter mast is not sufficient. In an evolving network, each NC must connect to at least two other NCs via internodal radio links. For optimum service and survivability, at least three internodal links are required.

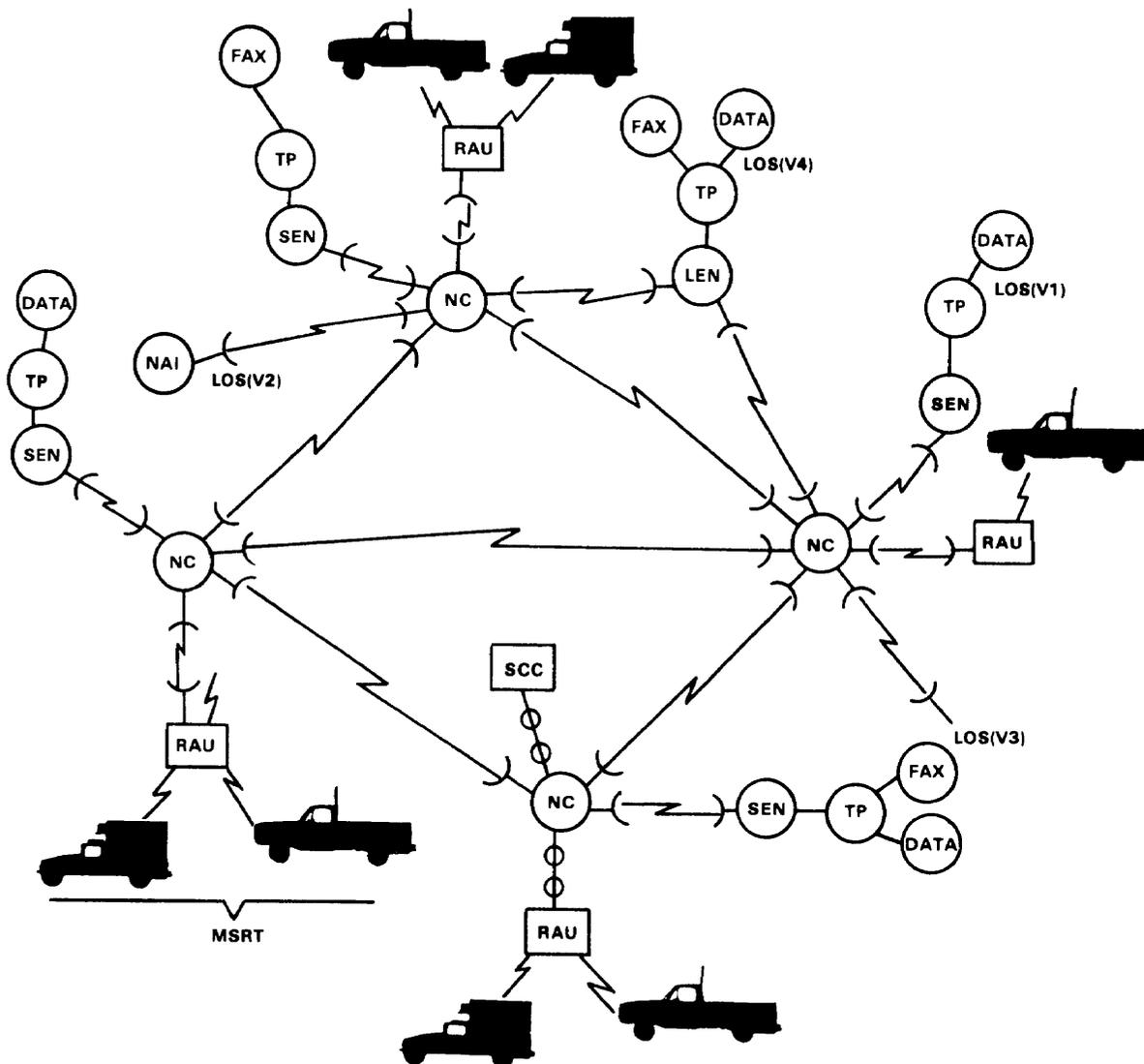


Figure 4-19. Internodal connectivity.

c. The LENSs serve 176 wire subscribers: 96 local (meaning they are connected directly to the LENS via 26-pair cables and J-1077 distribution boxes) and 80 remoted (using CX-11230/G ¼-mile cable and TD-1234 RMCs). The TD-1234s can be set out alone or two can be linked together in series using CX-11230/G cable. They provide access for up to

8 wire line subscribers each. If the user unit requires access for more than 8 subscribers, the RMCs are used in a paired configuration. Units that are adjacent to each other and have 8 or fewer subscribers each will use one RMC and CX-11230/G cable. The LENS can terminate up to 5 RMC groups.

d. The LENS can service CNR customers via a secure digital NRI [TSEC/KY-90). CNR customers access the MSE network through the LENS or SENS operator (Figure 4-20). After the operator completes the connection, the NRI functions automatically. Distribution of the TSEC/KY-90 is: 1 per NC platoon in each of the area signal companies (42); 2 per signal support company, corps support signal battalion; totaling 44.

e. The RAUs are generally used in a local (collocated with an NS) and remote arrangement. This does not mean that both RAUs cannot be remoted. This depends on the availability of an LOS assemblage to support it. Because the RAU constantly emits a marker beacon declaring its availability to affiliated MSRTs, those RAUs closest to the forward edge of the battle area (FEBA) use emitter masking techniques. With this in mind, the node platoon leader/sergeant must make important tactical deployment decisions about signal security. (See Appendix D.)

f. Deployment of the LOS assemblages must be considered to minimize a node's radio signature. When used as an internodal link, the LOS(V3) can be deployed on hills up to 400 meters (¼ mile) (via CX-11230/G cable) from the node. If the distance exceeds 400 meters (¼ mile), the SHF radio link (Figure 4-21) can be used to prevent long cable runs. The same deployment considerations are valid for the LOS(V1) and the LOS(V4).

g. The LOS(V2) supports the NAI unit during combined operations (Figure 4-22). The SHF radio capability does not exist within the LOS(V2). If an LOS relay is needed to complete an internodal link, the LOS asset for that relay is provided as directed by the corps SCC. The NAI is located at selected NSs throughout the corps (Figure 4-23).

h. The MSRTs provide mobile access to the MSE network. The MSRT, AN/VRC-97 (Figure 4-24), accesses the system through the RAU and can receive or transmit voice, facsimile, or data traffic. When a RAU is en route to a new site, it has MSRT capability using radio number eight and the TSEC/KY-68 DSVT remoted into the cab of the vehicle. This capability enhances C² within the MSE battalions during movements.

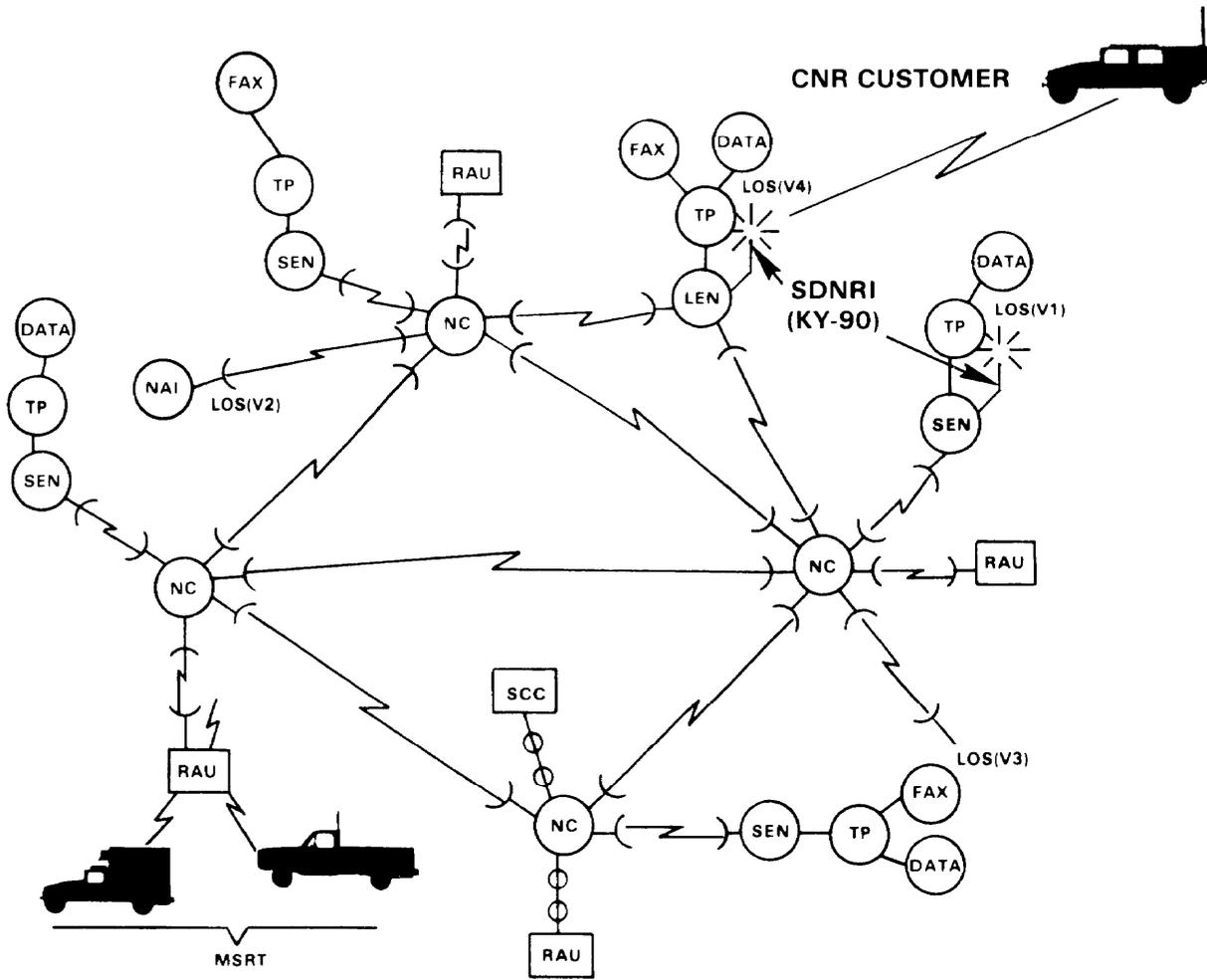


Figure 4-20. CNR interface with MSE.

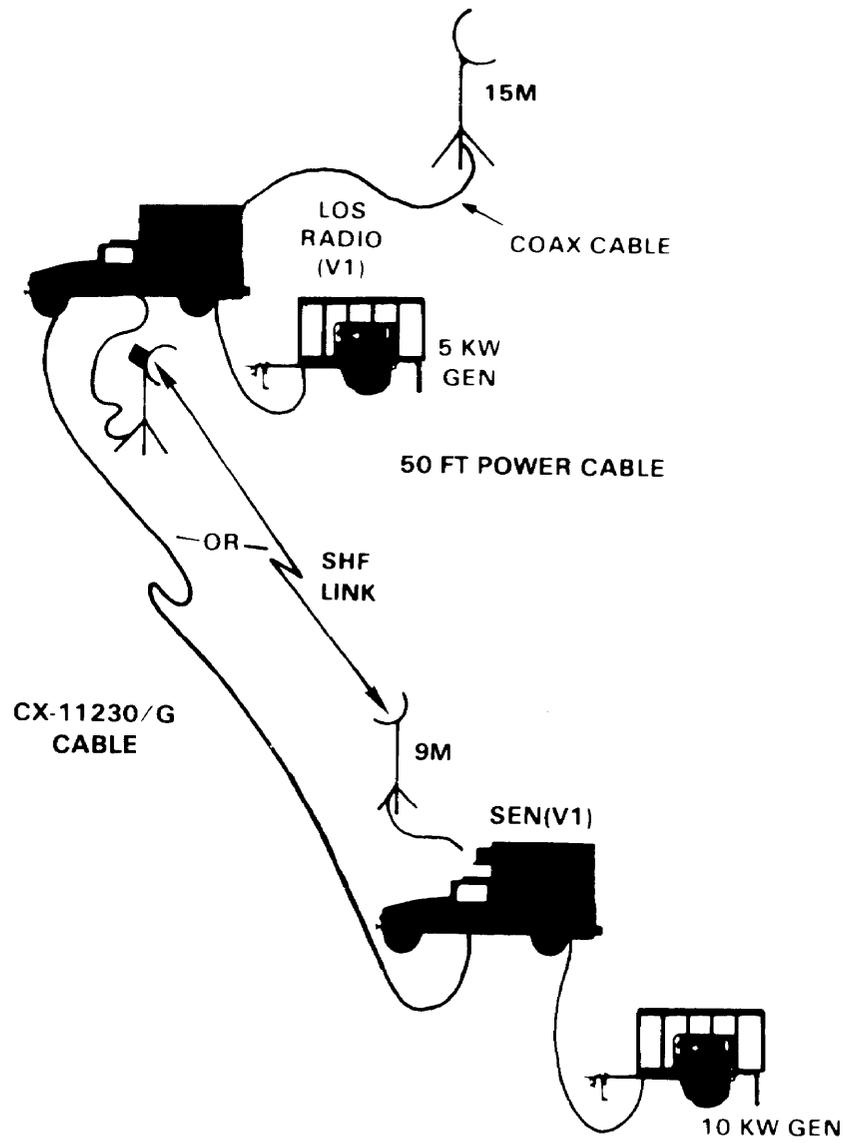


Figure 4-21. SHF radio link.

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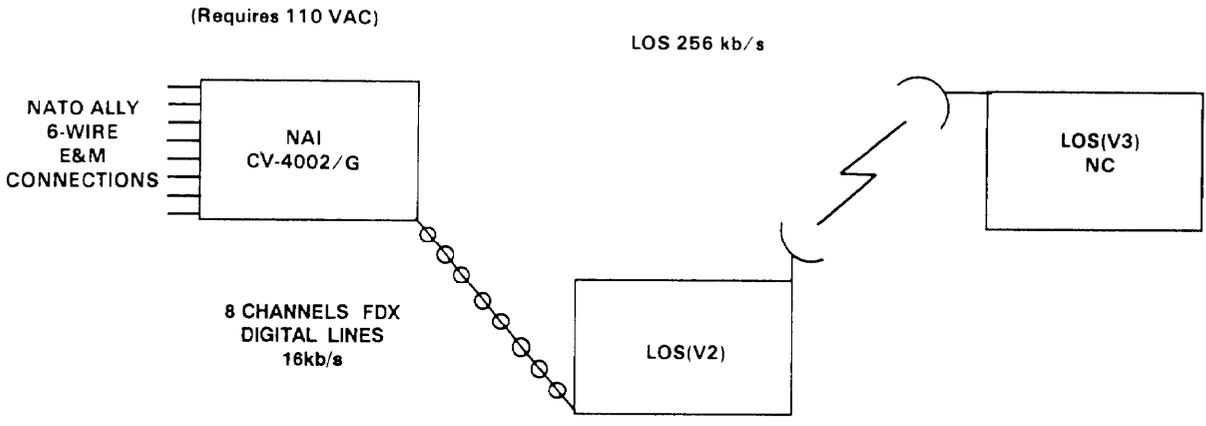


Figure 4-22. NATO/MSE interface using LOS(V2).

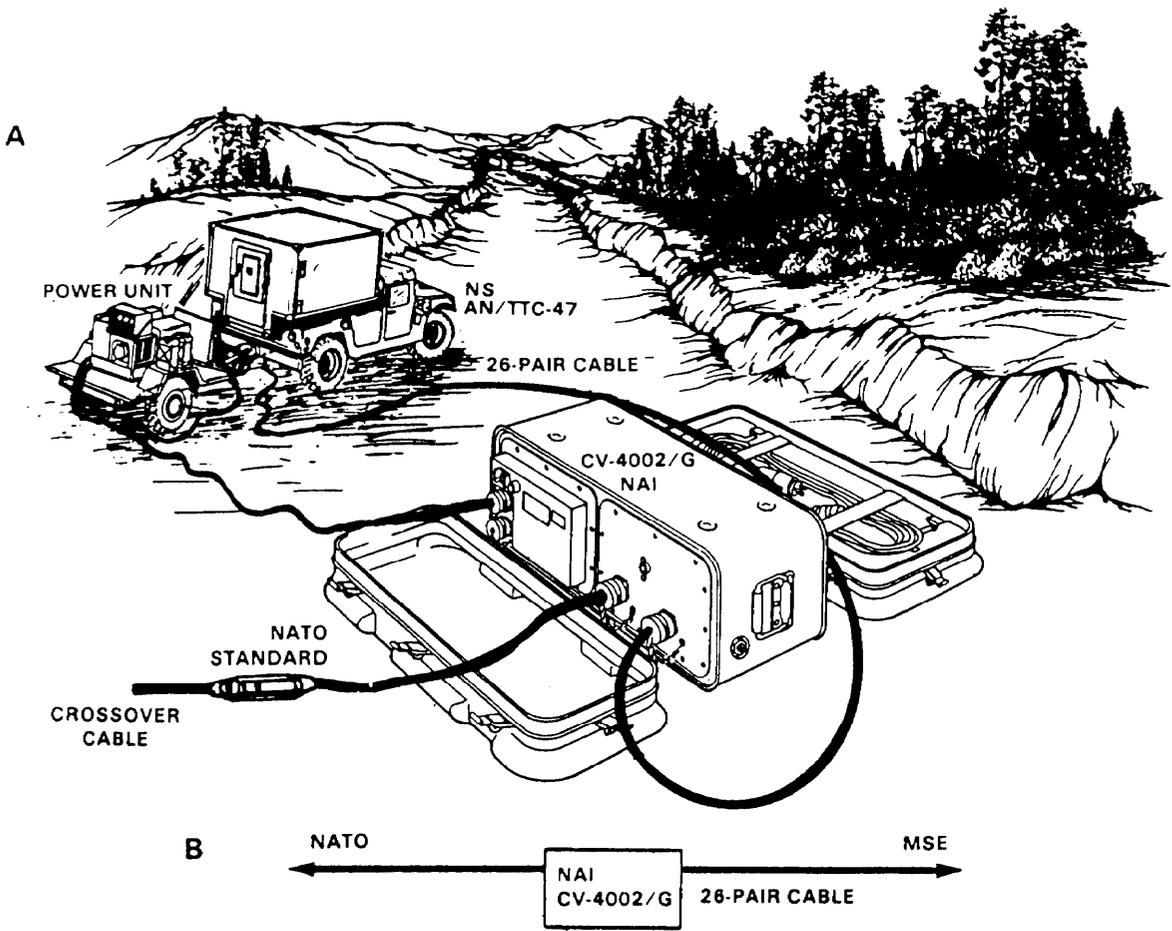


Figure 4-23. NAI deployment at an NS.

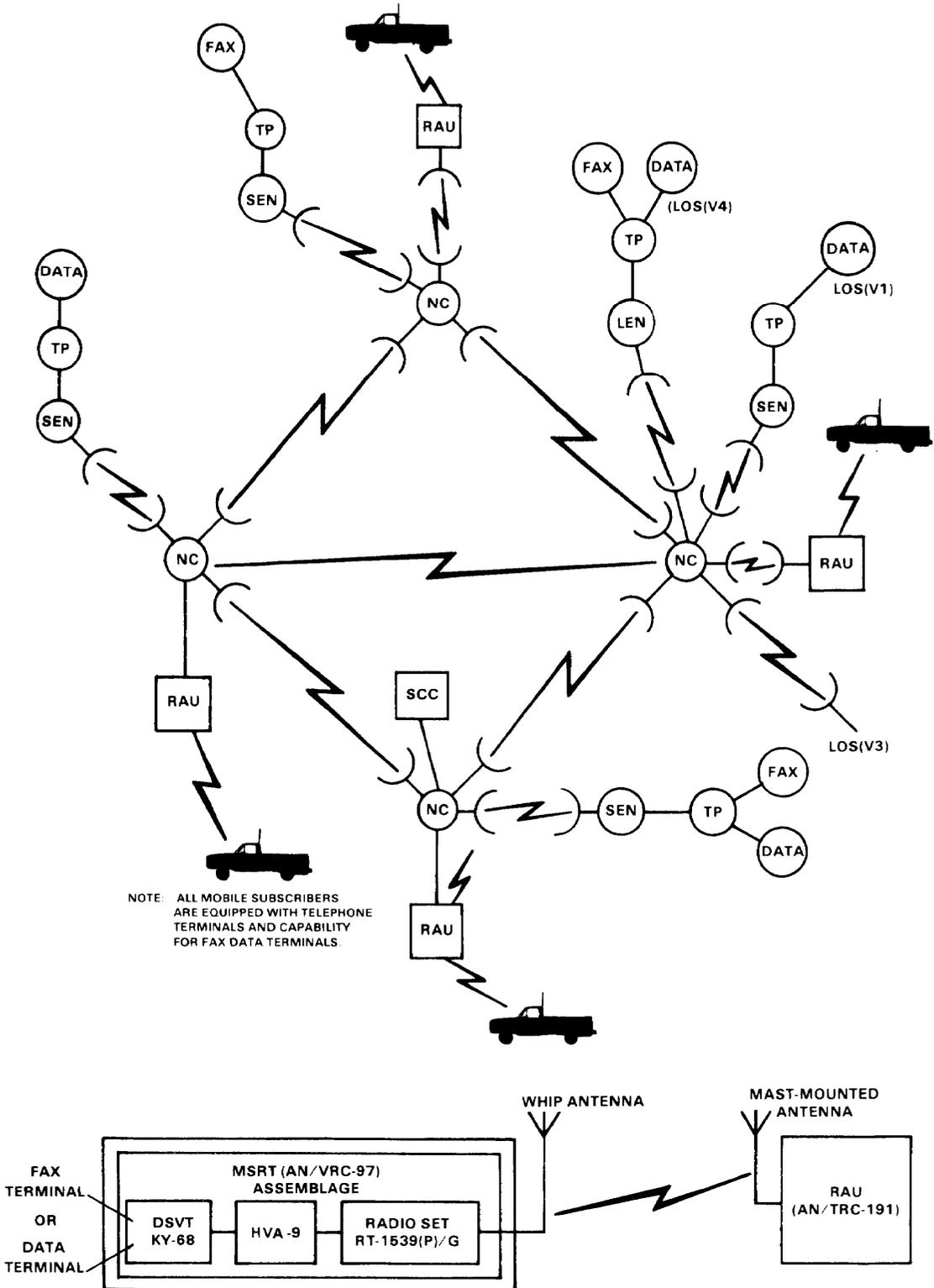


Figure 4-24. Mobile subscriber interface.

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4-7. System Control

a. Upon deployment, the corps and division signal battalions relinquish control of their MSE signal assets to the corps signal brigade. To the maximum extent possible unit integrity is maintained. However, operational requirements may dictate an OPCON command relationship between division signal battalion MSE assets and corps/division assets.

b. The corps signal brigade manages and controls the corps MSE network by and through the corps SCC. Within a corps MSE network, a primary SCC and an alternate SCC are netted for replication of the primary/regulatory network data bases, displays, and processing services. This ensures continuity of operations. The primary SCC performs all automated network planning, management, and control for the corps. When in a corps network, the division SCC functions in an active role but remains under the technical control of the corps' primary SCC. The movement and placement of NCs are closely coordinated between the corps signal brigade and the division signal battalions. The actual movement of these assets on an area basis is under the control of the respective division and corps signal battalion commanders. The corps signal brigade is responsible for maintaining network integrity, coverage, and service (in static situations and dynamic reconfiguration) by reallocating nodes, trunks, extension assets, and area responsibilities. In a division stand-alone configuration, the division SCC assumes all these functions and accepts responsibility for the division network elements. FM 11-38 details systems management and control. (Appendix E shows standardized MSE CP configurations.)

c. Initial signal C² is exercised through CNR nets. After MSE system activation, restricting signal C² engineering traffic to the MSE system as much as possible decreases our vulnerability to Threat radio electronic combat (REC).

4-8. Conclusion

Each of the organizations plays a critical role in the successful employment of MSE. Effective MSE communications requires the coordination and cooperation of key staffs, tacticians, logisticians, and signal personnel.