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FM 6-21

DEPARTMENT OF THE ARMY FIELD MANUAL

*Supp. by FM 6-20-1 (27 Oct 61)
6-20-2 (8 Jan 62)*

DIVISION

ARTILLERY

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HEADQUARTERS, DEPARTMENT OF THE ARMY

FEBRUARY 1960

FIELD MANUAL }
 No. 6-21 }

HEADQUARTERS,
 DEPARTMENT OF THE ARMY
 WASHINGTON 25, D. C., 24 February 1960

DIVISION ARTILLERY

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* This manual supersedes FM 6-21, 13 August 1957, and FM 6-101, 29 January 1952, including C1, 5 August 1952.

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CHAPTER 1

INTRODUCTION

1. Purpose

This manual is a guide for artillery officers and commanders and staffs of all combat arms. It is concerned with the employment of divisional artillery units in the combat zone. It covers organization, command, and tactical control of division artillery. It is principally designed for the use of division artillery officers in preparation for, and execution of, operations in the field. Basic principles and techniques of operation for battalion size units covered in this manual are applicable to all artillery units. Artillery tactics and techniques are discussed in detail in FM 6-20; additional references are listed in appendix I.

2. Scope

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

b. The manual is concerned with the organization of the airborne, the armored, and the infantry division artilleries and the tactical doctrine for the employment of divisional artillery units.

c. Additional information concerning those aspects of the airborne division artillery organization and methods of employment that are peculiar to airborne operations are contained in FM 57-30 and FM 57-100.

3. Capabilities

a. When supported by the organic personnel and equipment of the division artillery and the division area communications system, the division artillery headquarters is capable of—

- (1) Providing direct, reinforcing, and general support fires to combat elements of the division. This includes the provision of nuclear fire support.
- (2) Planning, supervising, coordinating, and controlling the operations of the division artillery and attached units.
- (3) Supervising the training of division artillery units.
- (4) Coordinating the fires of corps and army artillery supporting the division and air defense artillery, when em-

ployed in the surface-to-surface role in support of the division.

- (5) Acquiring target information utilizing air and ground observers, radar and related electronic equipment, and attached target acquisition units.
- (6) Providing intelligence from artillery sources for other artillery headquarters and the division G2.
- (7) Providing staff advice to the division commander on the use of all fire support available.
- (8) Acting as an emergency successor headquarters for the division in the event of destruction of the division headquarters.
- (9) Supervising logistical activities of the division artillery units, to include recommendations with respect to the required supply rate of artillery ammunition, announcement of the available supply rate to subordinate units, and the processing of requests for supplies and equipment which are required to be submitted through artillery command channels.
- (10) Providing extension of survey control throughout the zone of operations for all firing elements and for target acquisition units of the division and any other non-divisional installation designated in the coordinated survey plan of the corps.
- (11) Installing and maintaining internal communications.
- (12) Defending itself and its installations against hostile ground attack.
- (13) Providing limited evacuation and minimum combat medical care.
- (14) Providing meteorological data, on a time schedule, to all organic or attached units of the division.

b. The airborne division artillery headquarters and headquarters battery has the additional capability to perform those duties which are normally responsibilities of a battalion headquarters. These include maintaining personnel and supply records, assisting in the distribution of supplies and ammunition as well as obtaining second- and third-echelon maintenance support from the division support group.

4. Mobility

a. The armored and infantry division artilleries are 100 percent mobile in organic vehicles. The airborne division artillery is 70 percent mobile in organic vehicles.

b. All personnel and all material except the current self-propelled Honest John rocket launcher, the 155-mm howitzer (SP), the 8-inch howitzer (SP), and the tank transporter can be transported tactically by the C-119 and C-123 aircraft. All personnel and material can be transported by the C-124, C-130, or C-133 aircraft.

CHAPTER 2 ORGANIZATION

Section I. GENERAL

5. General

The division artilleries of the airborne, armored, and infantry divisions are organized and equipped to accomplish their assigned missions. Organization of each, to include their major components, are shown herein. Certain other combat support elements in the division are also shown. No attempt is made to examine each element in detail or to repeat unnecessarily doctrine contained in other manuals.

6. Mission

The division artillery supports the division by fire, neutralizing or destroying, in priority, those targets furnishing the most immediate threat to the accomplishment of the supported unit's mission. Division artillery gives depth to and isolates the battlefield by counterfire, by fire on hostile reserves, by restricting movement in rear areas, and by disrupting hostile command facilities and other installations.

Section II. AIRBORNE DIVISION ARTILLERY

7. Division Artillery

The airborne division artillery (fig. 1) is organized as a tactical and administrative unit and is self-sustaining. It consists of a

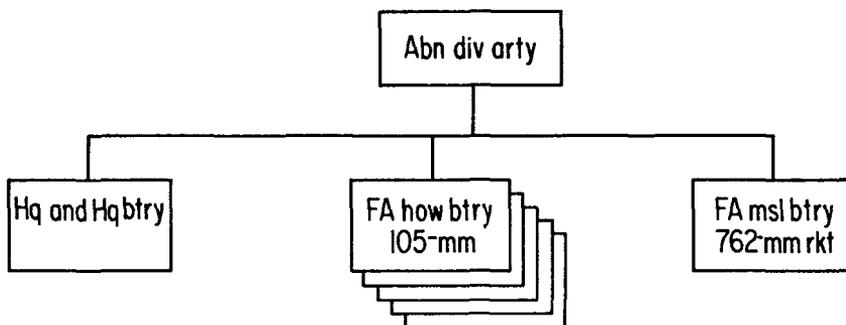


Figure 1. Division artillery, airborne division.

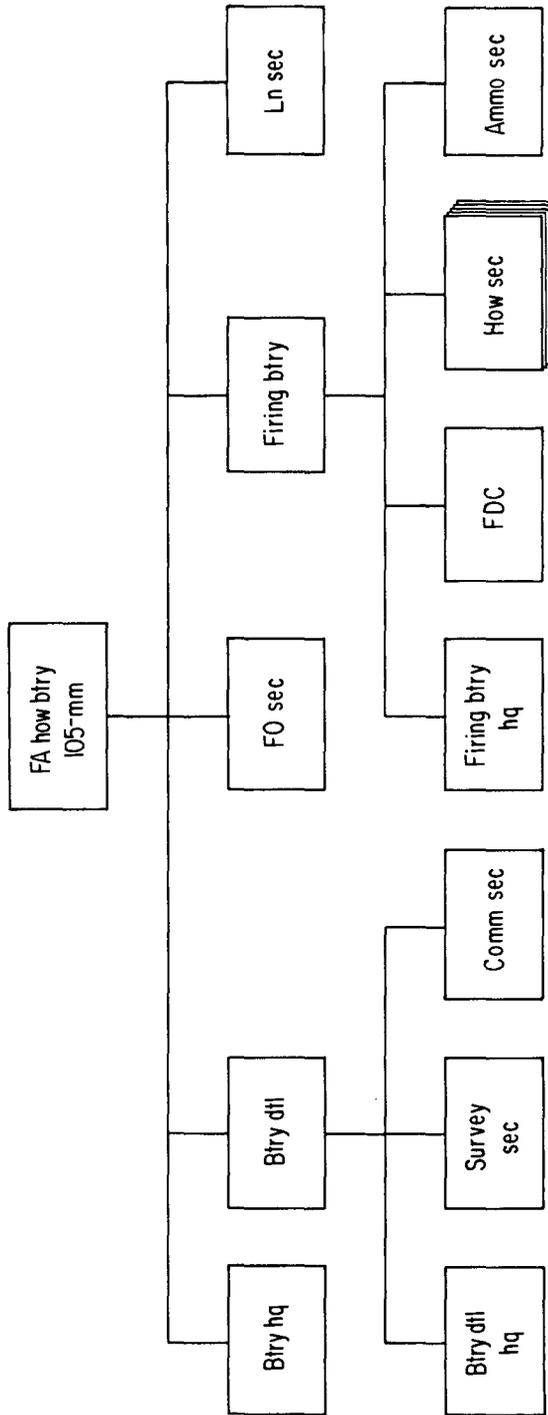


Figure 2. Airborne field artillery howitzer battery, 105-mm towed.

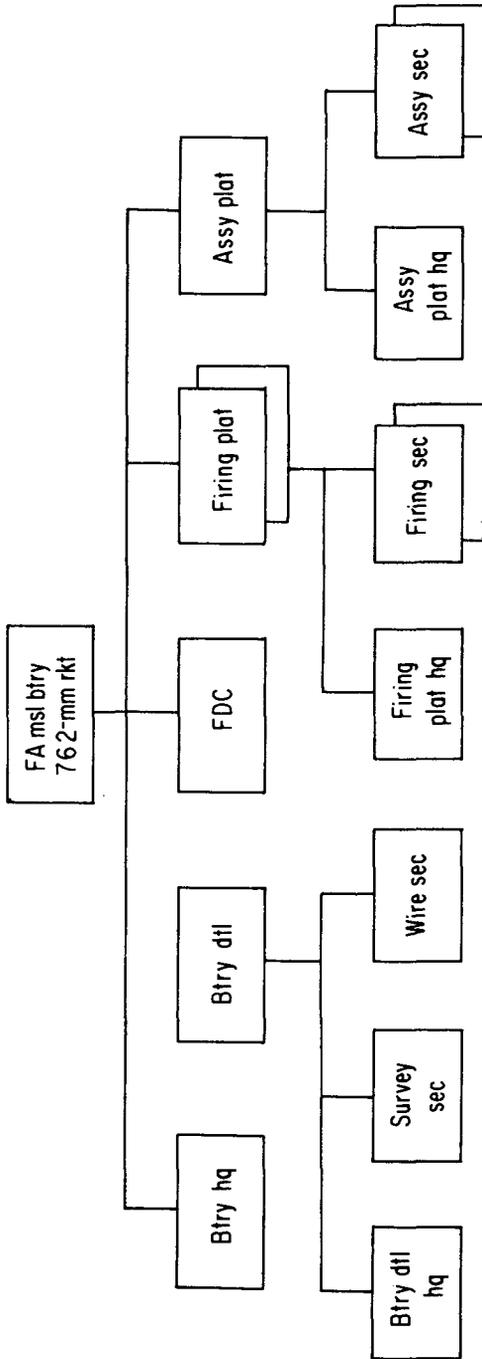


Figure 3. Airborne field artillery missile battery, Honest John rocket.

headquarters and headquarters battery; 5 field artillery howitzer batteries, 105-mm; and 1 field artillery missile battery, 762-mm rocket. The airborne division artillery is 70 percent mobile.

8. Field Artillery Howitzer Battery, 105-MM, Towed (fig. 2)

A 105-mm howitzer battery is used to reinforce each battle group mortar battery or to provide general support. A battle group should be supported habitually by the same 105-mm howitzer battery. The 105-mm howitzer battery may be controlled by division artillery, or it may be attached to the supported force. This 105-mm howitzer battery is 60 percent mobile in organic vehicles. The weapons can be transported by light cargo helicopters.

9. Field Artillery Missile Battery, Honest John Rocket (fig. 3)

The missile battery provides nuclear and nonnuclear general fire support for the division. It is normally employed in a general support role under division artillery control. It is normally employed as a battery but may be employed by platoon. It is 100 percent mobile in organic vehicles. When this unit is equipped with lightweight equipment, the weapon can be transported by light cargo helicopters.

Section III. ARMORED DIVISION ARTILLERY

10. Division Artillery

The armored division artillery (fig. 4) consists of a headquarters and headquarters battery; 3 armored field artillery howitzer battalions, 105-mm, self-propelled; and an armored field artillery rocket/howitzer battalion, self-propelled. The armored division artillery is 100 percent mobile in organic vehicles.

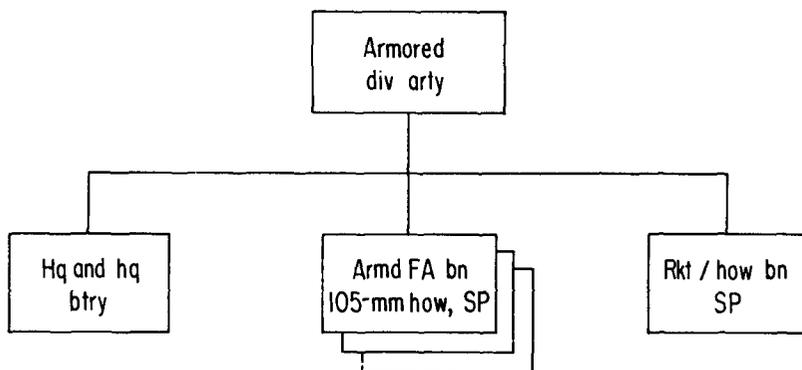


Figure 4. Division artillery, armored division.

11. Armored Field Artillery Battalion, 105-MM Howitzer, Self-Propelled
(fig. 5)

The armored 105-mm howitzer battalion provides direct support for a combat command. It may be employed in general support of the division or to reinforce other direct support artillery. This 105-mm howitzer battalion is 100 percent mobile in organic vehicles.

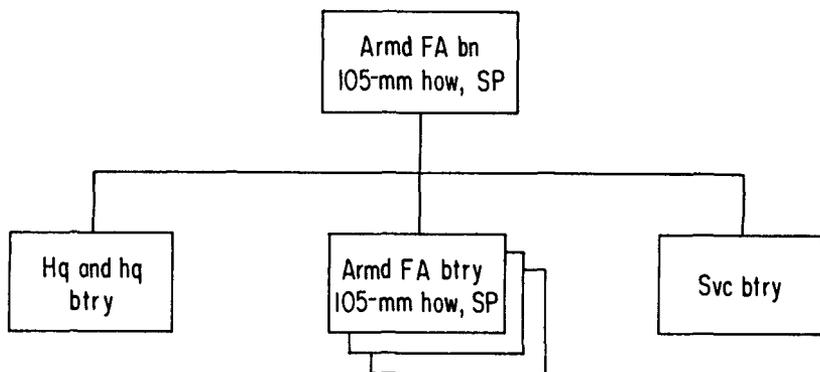


Figure 5. Armored field artillery battalion, 105-mm howitzer, self-propelled.

12. Field Artillery Rocket/Howitzer Battalion, Self-Propelled
(fig. 6)

The rocket/howitzer battalion provides nuclear and nonnuclear fire support. It is normally employed in general support of the division and may reinforce the fires of other artillery battalions. This battalion is 100 percent mobile in organic vehicles.

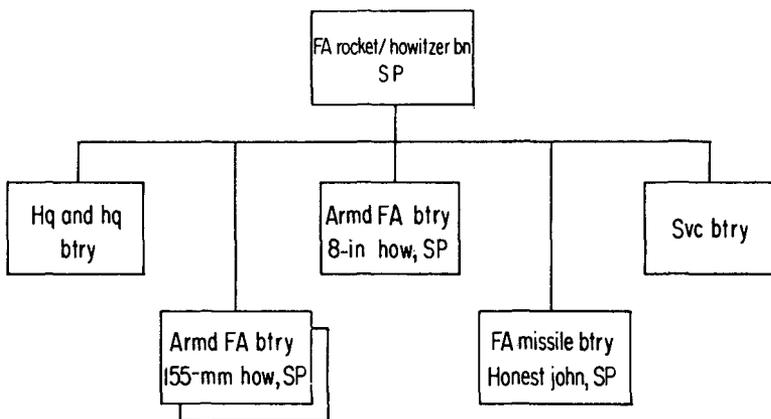


Figure 6. Field artillery rocket/howitzer battalion, self-propelled.

13. Armored Field Artillery Battery, 155-MM Howitzer, Self-Propelled
(fig. 7)

The two 155-mm howitzer batteries may be kept under battalion control or both may be attached to one of the light artillery battalions. These batteries are 100 percent mobile in organic vehicles.

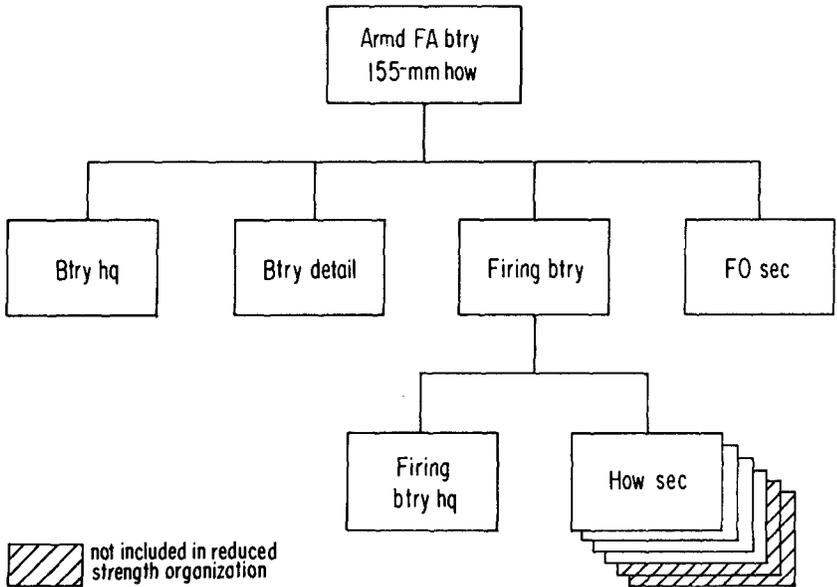


Figure 7. Armored field artillery battery, 155-mm howitzer, self-propelled.

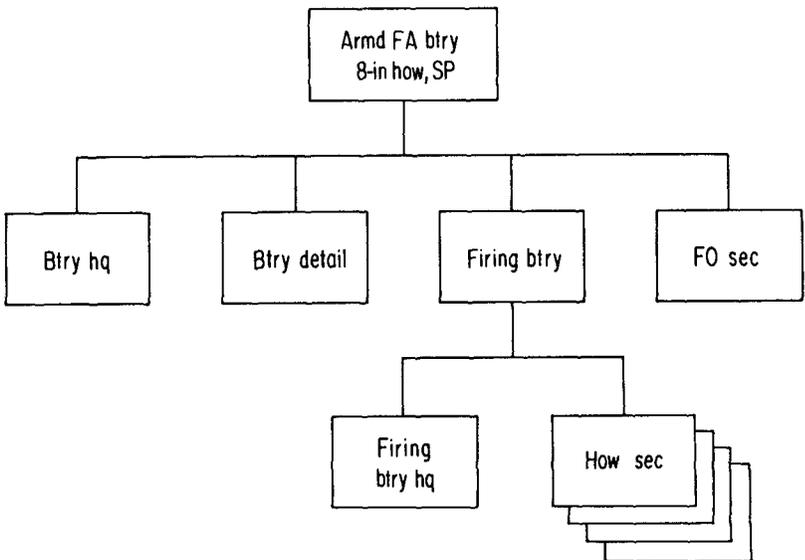


Figure 8. Armored field artillery battery, 8-inch howitzer, self-propelled.

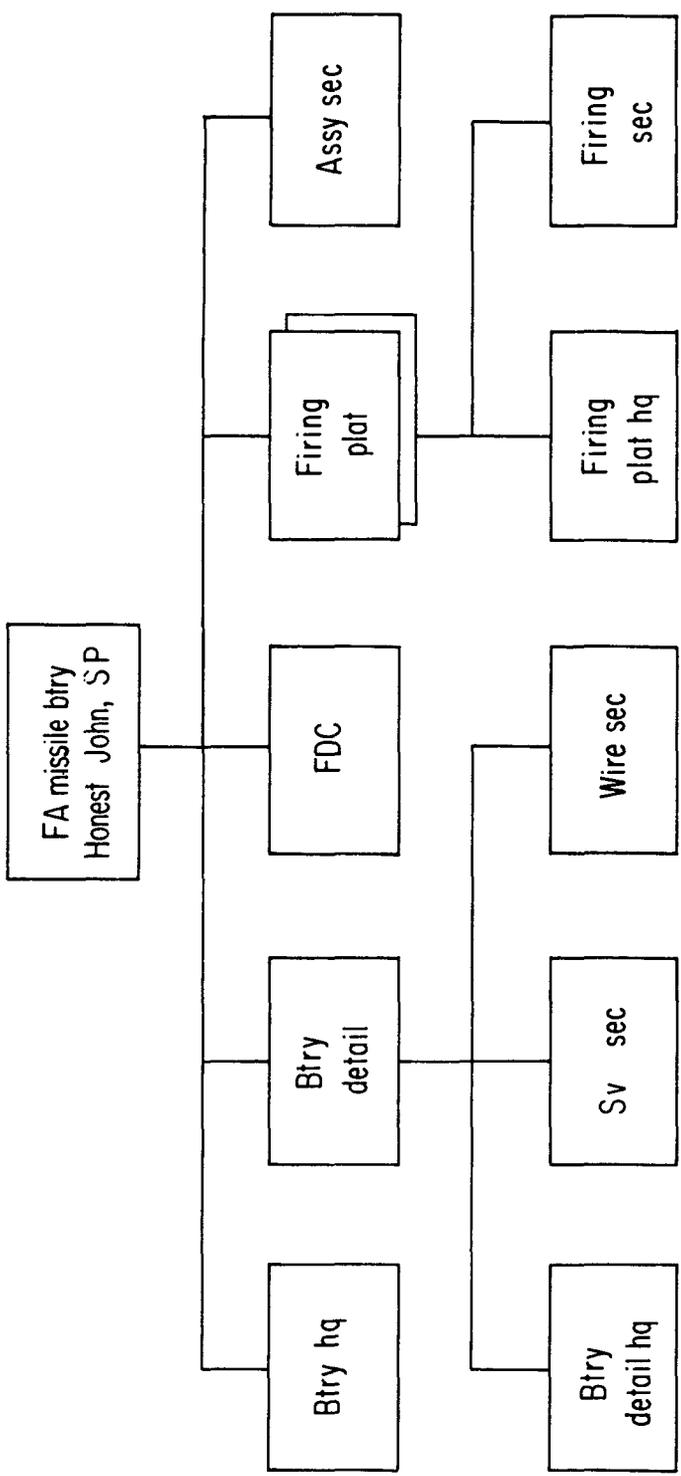


Figure 9. Field artillery missile battery, Honest John rocket.

14. Armored Field Artillery Battery, 8-inch Howitzer, Self-Propelled (fig. 8)

The 8-inch howitzer battery is normally employed in a general support role under division artillery or battalion control. It is normally employed as a battery, but may be employed by the firing section. This battery is 100 percent mobile in organic vehicles.

15. Field Artillery Missile Battery, Honest John Rocket (fig. 9)

The missile (762-mm rocket) battery normally is employed in a general support role under division artillery control; however, it may be attached to artillery battalions. It is normally employed as a battery but may be employed by platoon. The missile battery is 100 percent mobile in organic vehicles.

Section IV. INFANTRY DIVISION ARTILLERY

16. Division Artillery

The infantry division artillery (fig. 10) consists of a headquarters and headquarters battery; 3 field artillery howitzer battalions, towed; 2 field artillery howitzer battalions, self-propelled; and 1 field artillery rocket/howitzer battalion. The infantry division artillery is 100 percent mobile in organic vehicles.

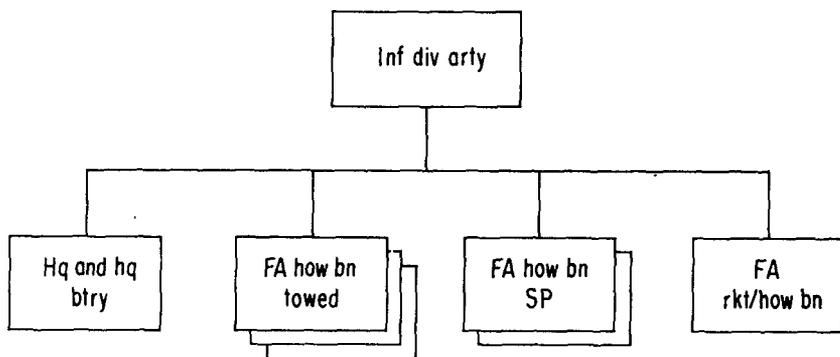


Figure 10. Division artillery, infantry division.

17. Field Artillery Howitzer Battalion, Towed or Self-Propelled (fig. 11)

This howitzer battalion is capable of providing direct support for a maneuver element of the division. It may be employed in general support of the division or to reinforce other direct support artillery. This battalion is 100 percent mobile in organic vehicles.

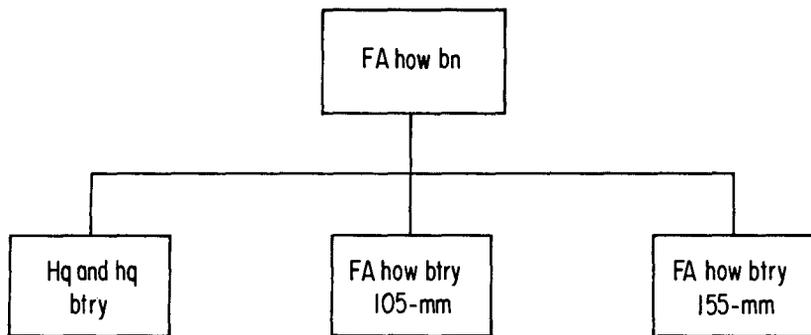


Figure 11. Field artillery howitzer battalion, towed or self-propelled.

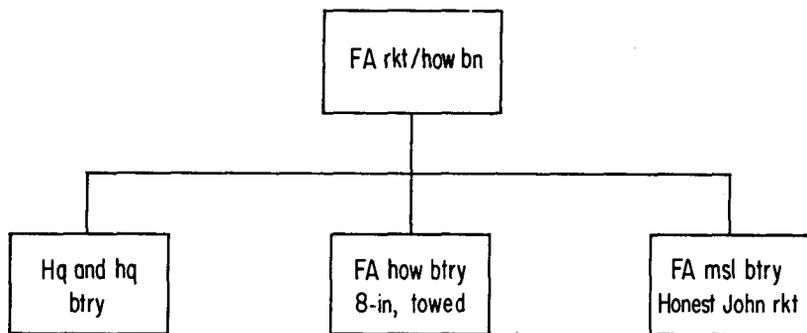


Figure 12. Field artillery rocket/howitzer battalion.

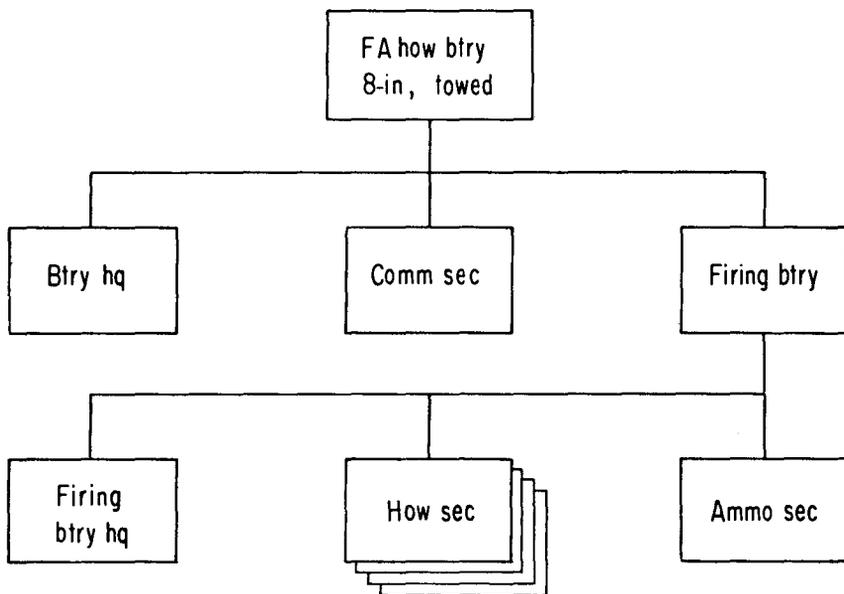


Figure 13. Field artillery battery, 8-inch howitzer, towed.

18. Field Artillery Rocket/Howitzer Battalion

(fig. 12)

a. The rocket/howitzer battalion provides nuclear and nonnuclear fire support. It is normally employed in general support of the division and may reinforce the fires of other artillery battalions. The rocket/howitzer battalion is 100 percent mobile in organic vehicles.

b. The 8-inch howitzer battery (fig. 13) and the 762-mm rocket battery (fig. 9) of the rocket/howitzer battalion are employed similar to those of the rocket/howitzer battalion discussed in paragraphs 14 and 15.

Section V. COMBAT SUPPORT OTHER THAN DIVISION ARTILLERY

19. Heavy Mortar Platoon, Infantry Battle Group

a. The heavy mortar platoon, organic to the infantry division battle group provides fire support for the battle group. The heavy mortar platoon will normally be employed in general support (mission assigned by the battle group commander) of the battle group.

b. The commander of the artillery battalion in direct support of the battle group, as fire support coordinator, advises the battle group commander on the employment of the infantry heavy mortar platoon. The artillery commander, as fire support coordinator, integrates the fires of the heavy mortar platoon into the overall plan of fire support.

c. Forward observers of the heavy mortar platoon send fire requests to the heavy mortar platoon fire direction center. They can also request and adjust other artillery fires if required.

20. Mortar Battery, Airborne Battle Group

The mortar battery provides fire support for the airborne battle group. The tactical employment, characteristics, organization, communications, and techniques peculiar to the mortar battery are covered in FM 6-18.

21. Transportation Battalion

The infantry division transportation battalion and the airborne division supply and transport company has the capability of providing vehicles for the movement of personnel and supplies of the division artillery which are not tactically mobile.

22. Aviation Company

The division aviation company provides air movement, observation, reconnaissance, and combat surveillance for the division. The artillery section supports the division artillery with aircraft for target acquisition and aerial adjustment of fires.

23. Signal Battalion

The infantry and armored division signal battalions provide signal supply and field maintenance for division artillery signal equipment. The airborne division signal battalion provides field maintenance for cryptographic equipment only. Each type establishes and operates the division area communications system of signal centers.

CHAPTER 3

TACTICAL EMPLOYMENT

Section I. GENERAL

24. General

Principles governing employment of divisional artillery units are essentially the same as those discussed in FM 6-18, FM 6-20, FM 6-61, and FM 6-140 as modified by paragraph 25.

25. Special Considerations Governing Employment of the Division Artillery

a. The principles of maneuver, mass, surprise, and economy of force as applied to artillery assume increased importance to the division artillery commander owing to the range capabilities of weapons, the division area of responsibility over which fires must be brought to bear, and the presence of a nuclear capability.

b. In areas designated by the division artillery commander, each division artillery battalion or howitzer battery may be assigned responsibility for activities considered essential to the success of the artillery mission. These activities may include coordination of observation, establishment of common survey control, installation of artillery communications, countermortar fires, preliminary target analysis, shell reports and crater analysis, and fire planning. Assignment of these responsibilities may be made in the operations order, fire support plan, standing operating procedure, or in any other manner considered appropriate by the division artillery commander.

c. The mortar battery organic to each battle group of the *airborne division* provides fire support to the battle group. The assignment of the mission of direct support to a division artillery 105-mm howitzer battery may be made, when required, to support a battle group in the event the mortar battery is detached from the battle group or to support a task force not organized around a battle group.

d. Batteries having a nuclear capability will normally be under the operational control of division artillery.

Section II. ORGANIZATION FOR COMBAT

26. General

The objectives, considerations, fundamentals, and tactical missions in organizing the division artillery for combat are essentially the same as those discussed in chapter 5, FM 6-20, modified as indicated in paragraphs 27 through 33.

27. Airborne Artillery Battery Group

In the absence of a battalion or other suitable headquarters, one or more batteries may be attached to another battery to form a battery group. The battery group headquarters has essentially the same function as a battalion headquarters. The battery group is formed and given a numerical designation, and the commander is designated in the same manner as in the battalion group (FM 6-20).

28. The Airborne Division Artillery Task Organization

a. Each assault mission assigned the airborne division is analyzed to determine the most suitable task organization to implement the plan of maneuver. The task organization is directly related to the sectors of responsibility and to the nature and types of tasks assigned major subordinate units. Considerable flexibility is possible in a task organization for an airborne assault, but, generally, the major assault forces are grouped under the five battle group headquarters.

b. The airborne division artillery organization for combat is patterned to provide fire support for the infantry elements of the division. The mortar battery of each committed battle group should normally be reinforced with a 105-mm howitzer battery. It may be desirable to attach all 105-mm howitzer batteries to battle groups in the airborne assault or to attach one or more 105-mm howitzer batteries to a particular battle group and use the remainder in general support-reinforcing or reinforcing roles (fig. 14).

c. If a howitzer battery is attached to a battle group, the battery is normally given the mission of reinforcing the fires of the mortar battery organic to the battle group. However, the howitzer battery may be further attached to the mortar battery, thus forming a battery group.

d. When a battle group is held in reserve under division control in the assault, the fifth howitzer battery may be placed in a battery group of two howitzer batteries which is assigned the mission of reinforcing the fires of the mortar battery organic to

the battle group committed in the most critical sector of the airhead. The division artillery must be flexible in organizing for combat and must be prepared to support any specific organization of supported combat elements.

e. The missile battery is the division artillery unit most capable of exerting a decisive influence on the course of combat action. It is normally assigned a mission of general support of the division.

f. Regardless of the organization for combat in the assault, centralized control of all division artillery units is regained at the earliest practicable time after the establishment of the airhead. The exact time will usually depend on the availability of adequate communications.

g. Once centralized control is established, the preponderance of the division artillery must be capable of supporting the forces engaged at any particular point on the perimeter of the airhead. This is accomplished by insuring that each position selected is fully coordinated with other artillery positions to provide the most effective coverage of the airhead perimeter.

h. Howitzer batteries are normally assigned general support-reinforcing missions in the defense of the airhead. This permits adequate centralized control by division artillery, while at the same time making a maximum volume of fire immediately available to the battle group artillery of committed battle groups.

i. Artillery assigned a mission of general support of the division provides supporting fires for the battle groups on call through division artillery.

j. The mortar batteries organic to the battle groups of the division may be employed to support the reconnaissance and security position, if one is established. Division artillery howitzer batteries may also be used for this purpose because of their greater mobility and longer range; when this is done, plans must be made for the withdrawal of the howitzer batteries to previously prepared positions from which they can support the main battle positions.

k. Gaps between battle groups on the airhead line are covered by nuclear and other fire support. The generally circular shape of the airhead facilitates the movement of personnel and equipment within the airhead and the shifting of supporting fires.

l. Prior to the time that all of the airhead is occupied, and in the event of multiple airheads, fire support required by one element may be provided by support means located in the perimeter of other units.

m. As the requirement for extending range in a particular

ORGANIZATION FOR COMBAT

- Btry A, 1st How Bn, 319th Arty: Attached 1st BG 41st Inf
- Btry B, 1st How Bn, 321st Arty: GS-rein
- Mortar btry 1st BG (-), 42d Inf: prepare to reinf
- Mortar btry 1st BG (-), 42d Inf: on order
- Btry C, 1st How Bn, 323d Arty: Attached 1st BG, 43d Inf
- Btry D, 1st How Bn, 325d Arty: Attached 1st BG, 44th Inf
- Btry E, 1st How Bn, 327th Arty: Attached 1st BG, 45th Inf
- Btry A, 1st Rmt/How Bn, 329th Arty: GS.

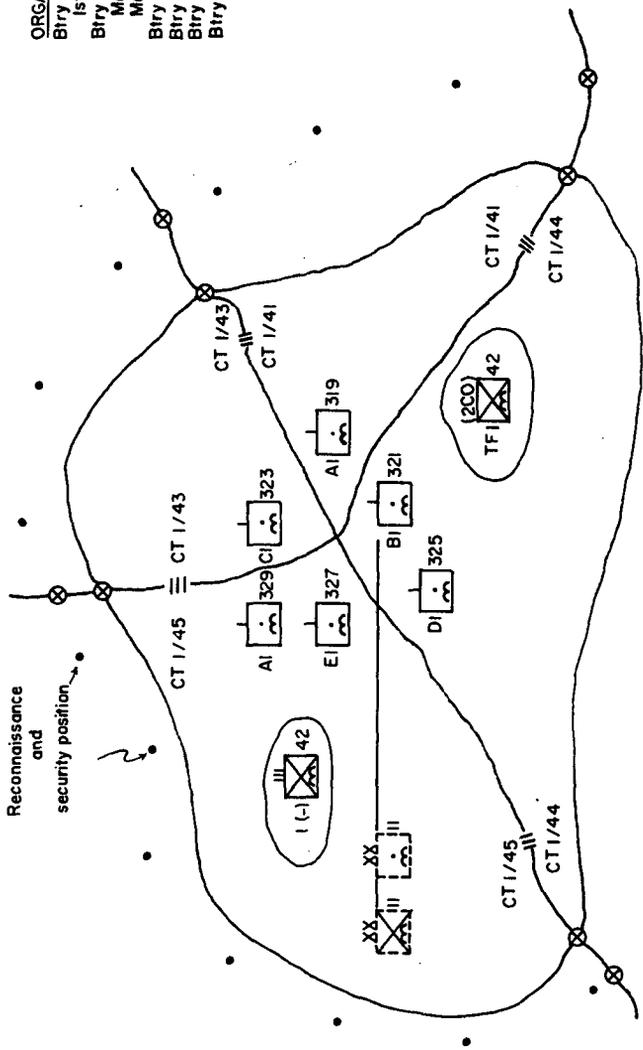


Figure 14. Airborne division artillery employed in an airhead (initial phase).

sector becomes evident, it is necessary to move certain howitzer batteries to positions from which they may be unable to support a considerable part of the perimeter; when this is done, suitable supplementary positions must be selected from which desired points on the perimeter can be supported with a minimum of delay and movement.

29. The Armored Division Artillery Task Organization

a. Each of the three 105-mm howitzer battalions is normally employed as a battalion under division artillery control and in direct support of the three combat commands. When a command is in reserve, its 105-mm howitzer battalion may be assigned a general support, general support-reinforcing, or a reinforcing mission. This battalion must be prepared for direct support of a designated combat command or task force of the reserve when committed. In certain cases, the attachment of a 105-mm howitzer battalion to a combat command (task force) may be necessary.

b. The rocket/howitzer battalion will normally function under division artillery control in a general support or general support-reinforcing role. However, elements of the battalion may be assigned a reinforcing mission.

c. The 155-mm howitzer batteries are normally employed under battalion control in a general support or general support-reinforcing role. Each of these batteries may be given the mission of reinforcing a direct support battalion or may be attached thereto. The attachment of these batteries to a supported unit would reduce the flexibility of artillery fires and should be avoided.

d. The 8-inch howitzer battery may be employed under division artillery or battalion control in a general support or general support-reinforcing role. When it is desirable to detach one or two howitzer sections to execute a special mission, the augmentation required must be furnished by battalion except for fire direction personnel and equipment. The battery is not capable of providing the required survey and communications. The detached section(s) may execute a mission assigned to battalion or battery, and when necessary, may be attached to another artillery headquarters.

e. The 762-mm rocket battery should normally be employed under battalion control; however, it may be attached to a direct support battalion or placed under division artillery control. The battery is so organized and equipped, that it is capable of operating by platoon for limited periods of time. Platoons may be attached to another artillery headquarters for special missions. Survey sup-

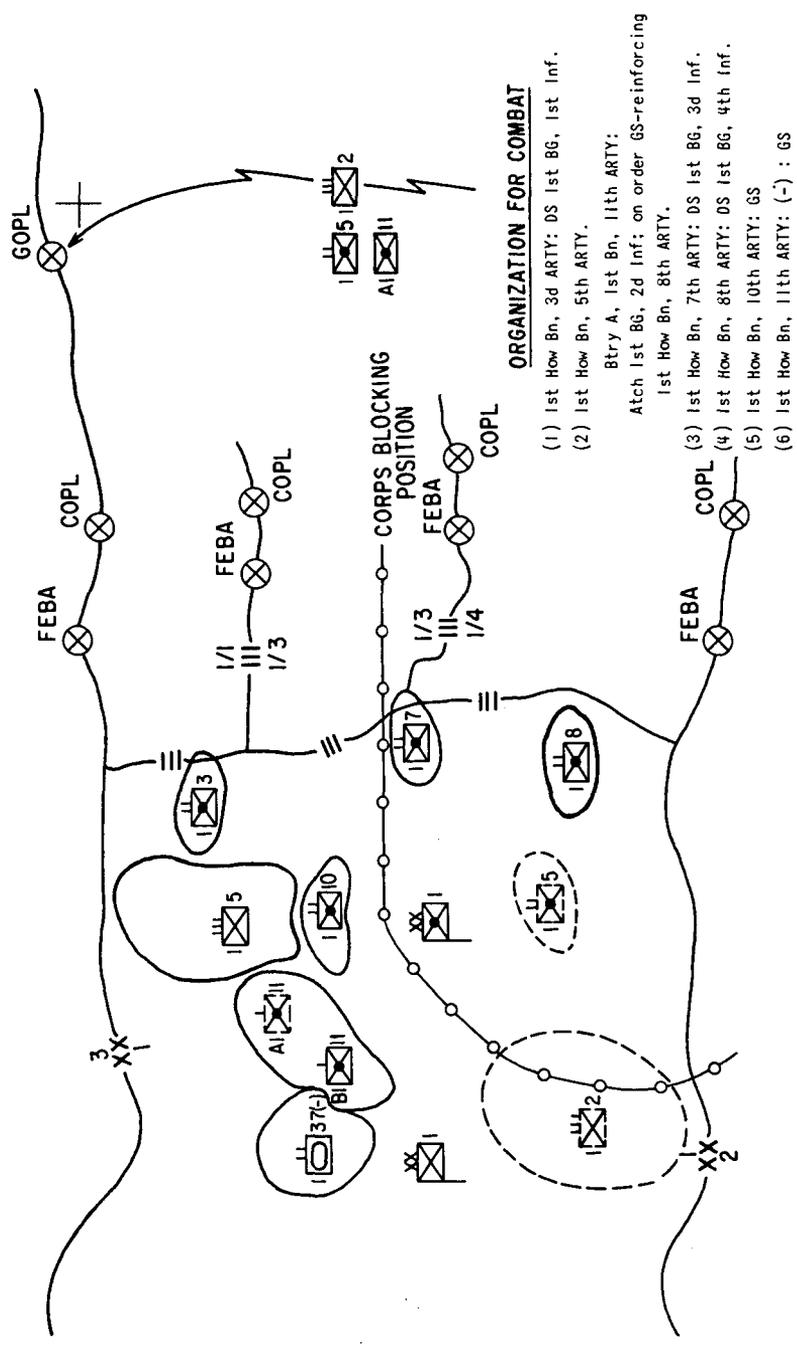


Figure 16. Infantry division artillery employed in the defense.

port must be furnished by the parent battalion or unit to which attached.

30. The Infantry Division Artillery Task Organization

a. The batteries of direct support battalions are normally employed under battalion control, but situations may occur where the attachment of a battery to a maneuver element of the division or another artillery unit will be required. When a battery is attached to other than artillery units, it is necessary to augment the battery with additional survey personnel and equipment, radio operators and long-range radio sets, observation personnel and equipment; and personnel and equipment for ammunition resupply.

b. The 762-mm rocket battery should normally be employed under battalion control; however, it may be attached to a direct support battalion or placed under division artillery control. The battery is so organized and equipped that it is capable of operating by platoon for limited periods of time. Platoons may be attached to another artillery headquarters for special missions. Survey support must be furnished by the parent battalion or unit to which attached.

c. The 8-inch howitzer battery may be employed under division artillery or battalion control in a general support or general support-reinforcing role. When it is desirable to detach one or two howitzer sections to execute a special mission, the augmentation required must be furnished by battalion except for fire direction personnel and equipment. The battery is not capable of providing the required survey and communications. The detached section(s) may execute a mission assigned to battalion or battery and when necessary be attached to another artillery headquarters.

d. Figures 15 and 16 show examples of employment of the infantry division artillery.

Section III. MISSIONS

31. Tactical Missions

A tactical mission is the fire support responsibility that may be assigned to an artillery unit. Tactical missions that may be assigned to artillery units are direct support, general support, reinforcing, and general support-reinforcing; or units may be assigned missions which are modifications of these missions. The responsibilities inherent in each type of tactical mission are outlined in figure 17 and are discussed in paragraph 59, FM 6-20.

A field artillery unit with a mission of--	Answers calls for fire from--	Establishes liaison with--	Establishes communications with--	Has the following zone of fire:	Must furnish forward observers--	Displaces an order of --
Direct support	Supported unit. Own observers. Next higher hq.	Supported unit.	Supported unit.	Zone of action of supported unit.	For zone of action of each rifle or armor company of supported unit.	Unit commander.** Next higher hq.
General support	Next higher hq. Own observers.	Not required unless directed by next higher headquarters.	Not required unless directed by next higher headquarters.	Zone of action of supported unit.	Not required unless directed by next higher headquarters.	Next higher hq.
Reinforcing	Reinforced unit. Own observers. Next higher hq.	Reinforced unit.	Reinforced unit.	Zone of fire of reinforced unit.	As requested by reinforced unit.	Reinforced unit.** Next higher hq.
General support-reinforcing	Next higher hq. Reinforced unit. Own observers.	Reinforced unit.	Reinforced unit.	Zone of action of supported unit.	As requested by reinforced unit, subject to approval of next higher hq.	Next higher artillery hq or reinforced unit, subject to approval of next higher hq.
General support (at battle group by organic artillery) *	Parent unit. Own observers.	Parent unit.	Not required unless directed by parent unit.	Zone of action of the parent unit.	For zone of action of each rifle company of parent unit.	Unit commander.** Next higher hq.

* Applies to airborne division only.

** Notifies next higher headquarters as to time & place

Figure 17. Field artillery tactical missions.

32. A Mission Type Order of Support

a. *General.* When two or more major maneuver elements of a division are grouped under the brigade or other task force, tactical missions in current doctrine do not provide the task force artillery officer sufficient flexibility to control the artillery with the force. It is normal for division artillery commanders to be directed to *support the attack*. A mission type order of *support* is a directive which gives the artillery commander flexibility to employ the artillery available to him in the manner best suited in his judgment to assist in accomplishing the force mission, within the guidance provided by the force commander. Lower echelon artillery commanders may be directed to *support* designated units, if the situation requires a partial decentralization of control. In this case, the lower echelon artillery commander assigns missions to his subordinate units as the situation requires and makes subsequent changes to meet changing situations.

b. *Artillery Supporting Task Forces.*

- (1) When a division commander desires to partially decentralize control by forming a task force composed of two or more major maneuver elements, the same freedom of action should be given to the artillery commander with the task force.
- (2) To facilitate artillery support of such a task force, the artillery should be organized under one commander.
- (3) Since two or more field artillery units will normally be required for support, they should be organized as a battalion (battery) group; a mission type order of support provides the flexibility which the battalion (battery) group commander requires to control his artillery.

c. *Responsibilities of Commanders.* Although there is not a fixed set of responsibilities inherent in the mission type order of support as in the standard field artillery tactical missions, the artillery unit commander assigned this order must accomplish the following requirements with respect to the supported force:

- (1) *Infantry division artillery (battalion group commander).*
 - (a) Respond to requests for fire support and forward requests beyond the capabilities of the battalion group to the division artillery fire direction center.
 - (b) Assign tactical missions to subordinate artillery battalions.
 - (c) Accomplish fire planning for the task force (brigade).
 - (d) Act as task force (brigade) fire support coordinator.

- (e) Inform division artillery of position areas and tactical missions assigned to his subordinate units.
 - (f) Comply with appropriate instructions contained in the fire support plan annex to division and/or task force (brigade) operation orders.
 - (g) Insure that the fire support coordinator has been designated for each major maneuver element of the task force (brigade).
- (2) *Airborne division artillery.*
- (a) Provide a minimum of one 105-mm howitzer battery to reinforce the fires of the mortar battery of each committed battle group.
 - (b) Provide liaison and communication to the headquarters of the supported unit(s).
 - (c) Position and displace subordinate batteries as required to provide artillery support.
 - (d) Respond with fire to requests for artillery support, forwarding requests beyond battery capabilities to the division artillery fire direction center.
 - (e) Furnish forward observers as required.
 - (f) Establish ground observation posts to observe the zone of action of supported unit(s), and, in conjunction with supported unit commander, coordinate observation within this zone. The supporting battery commander exercises no control over battle group observation agencies (including those of the mortar battery) but insures that agencies under his control are coordinated with those of the supported unit(s).
 - (g) Assist in planning fires in support of the supported units.
 - (h) Keep division artillery informed of position areas and tactical missions assigned to subordinate artillery units.

d. Instructions. When a field artillery unit is given the mission type order of *support*, the division artillery commander may issue certain instructions in conjunction with the order which may amplify or modify the requirements outline in *c* above. Therefore, the fire support plan must be studied in conjunction with the mission type order of support to insure that all instructions issued by the division commander are understood.

33. Assignment of Missions

Tactical missions for division artillery battalions are normally assigned by the division artillery commander as approved by the division commander. In the airborne division artillery, the tactical missions shown in figure 17 and appropriate modifications thereof are used to denote the fire support responsibilities of each artillery battery.

34. Type Organization for Combat

Type division artillery organizations for combat and examples of how they may appear in the division operations order are as follows:

a. *Example A. Airborne Division.*

* * * * *
* * * * *

3. EXECUTION.

f. Div Arty.

- (1) Battery Group, Btry A, 1st How Bn, 319th Arty (Jones, Capt. Comd).
Battery A, 1st How Bn, 319th Arty.
Battery B, 1st How Bn, 321st Arty.
GS-reinf Mortar Battery, 1st BG, 41st Inf.
- (2) Battery C, 1st How Bn, 323d Arty: DS Task Force Burke.
- (3) Battery D, 1st How Bn, 325th Arty: Reinf Mort Btry, 1st BG, 42d Inf.
- (4) Battery E, 1st How Bn, 327th Arty: Reinf Mort Btry, 1st BG, 44th Inf.
- (5) Battery A, 1st Rkt/How Bn, 329th Arty: GS.

b. *Example B. Armored Division.*

* * * * *

3. EXECUTION.

* * * * *

f. Div Arty.

- (1) 1st How Bn, 32d Arty: DS CCA.
- (2) 1st How Bn, 34th Arty: DS CCB.
- (3) 1st How Bn, 36th Arty: GS-reinf, 1st How Bn, 32d Arty: prepare for DS CCC on order.
- (4) 1st FA Bn (Rkt/How), 38th Arty: GS-reinf 1st How Bn, 34th Arty.

c. *Example C. Infantry Division.*

* * * * *

3. EXECUTION.

f. Div Arty.

- (1) 1st How Bn, 3d Arty: DS 1st BG, 1st Inf.
- (2) 2d How Bn, 5th Arty: DS 1st BG, 3d Inf.
- (3) 3d How Bn, 7th Arty: DS 1st BG, 4th Inf.
- (4) 4th How Bn, 8th Arty: DS 1st BG, 5th Inf.
- (5) 5th How Bn, 10th Arty: Reinf 1st How Bn, 5th Arty; prepare DS 1st BG, 2d Inf, on order.
- (6) 6th Rkt/How Bn, 11th Arty: GS.

Section IV. ARMY AVIATION

35. Capabilities

Army aviation is capable of performing many tasks for division artillery. Some of these are—

- a.* Aerial observation and target acquisition.
- b.* Aerial photography.
- c.* Route reconnaissance.
- d.* Wire laying and radio relay.
- e.* Air movement of critically needed items of supply.
- f.* Evacuation of casualties.
- g.* Column control.
- h.* Courier service.
- i.* Air movement of artillery weapons and personnel.
- j.* Survey assistance.
- k.* Administrative flights.
- l.* Aerial inspection of camouflage.
- m.* Battlefield illumination.

36. Organization

a. Army aviation is utilized to expedite and improve the ground combat capabilities and logistical procedures of the division. For a detailed discussion of army aviation, see FM 1-100.

b. All aircraft organic to the division are assigned to the division aviation company. The artillery support section of the division aviation company provides aircraft for division artillery aviation requirements.

c. The artillery support section of the infantry and armored division aviation companies contain 8 observation airplanes and 2 reconnaissance helicopters. There are 10 observation airplanes in the artillery support section of the airborne division aviation company.

37. Employment

The artillery support section of the division aviation company operates under the operational control of the division artillery commander.

Section V. AIR DEFENSE

38. General

The overall air defense must be closely coordinated with all adjacent air defense units. For basic principles of air defense units employment, see FM 44-1 and FM 44-2.

39. Use of Organic Weapons

The organic 7.62-mm machineguns and semiautomatic rifles of the batteries should be considered in planning a coordinated air defense.

CHAPTER 4

COMMAND, CONTROL, AND COORDINATION

Section I. COMMAND RESPONSIBILITIES AND RELATIONSHIPS

40. Command Relationships

The relationship of the artillery commander to the force (supported unit) commander depends on the status of the artillery as a member of the combat team. When division artillery units are assigned or attached to a force (supported unit), the artillery officer is both a subordinate commander and special staff officer to the force (supported unit) commander. When division artillery units are neither assigned or attached to a force but are supporting that force, the artillery commander's relationship to the force commander is that of both an adviser and an independent commander obliged to render continuous effective fire support in accordance with his assigned mission. In either case, close coordination and liaison between commanders are essential for accomplishment of the mission.

41. Division Artillery Commander

a. The principal responsibilities of a division artillery commander are enumerated in paragraph 19, FM 6-20.

b. The airborne division artillery commander must, in addition to the responsibilities listed in FM 6-20, exercise more detailed control, supervision, and direction than that normally required in artillery operations. The airborne division artillery commander is responsible for—

- (1) The establishment of survey control throughout the air-head, to include that required by units not organic to division artillery to facilitate accurate fire support.
- (2) Personnel, supply, and ammunition functions which are normally responsibilities of battalion commanders and for obtaining second- and third-echelon maintenance support for all units of division artillery from the division support group.
- (3) Assisting, as directed by the division commander, in the technical field artillery training of personnel in the mortar

batteries organic to the battle groups and making recommendations to the battle group commanders concerning their tactical employment.

- (4) Establishing communications between the mortar batteries and the division artillery fire direction center at the earliest practicable time to facilitate the delivery of supporting fires.

42. Battalion Commander

a. The battalion commander is responsible for establishing policies and planning and supervising the tactical employment of his battalion to include—

- (1) Reconnaissance, selection, and occupation of position (RSOP).
- (2) Formulation of fire plans; fire direction; the execution of fires; and, when applicable, the detailed coordination and integration of the available means of fire support with each other and with the plan of operations of the supported unit.
- (3) Maintenance of continuous liaison with the supported or reinforced unit commanders either by direct contact or by representatives and, when the battalion is in a direct support role, acting as fire support adviser and coordinator for the supported unit commander.
- (4) Provision for continuous ground, map, and aerial reconnaissance for routes, position areas, and observation.
- (5) Keeping himself informed of both the enemy situation and the mission and the disposition and plans of supported troops.
- (6) Control of ammunition expenditure.

b. Other functions for which the battalion commander is responsible at all times, whether his unit is in garrison or engaged in active operations, are the establishment of policies, planning, and supervision of the following:

- (1) *Training.* Through his staff, the battalion commander coordinates the training program of his unit with that of the next higher headquarters, insures that training is adequate, and arranges for the procurement of training facilities. He supervises the training by frequent personal inspections, inspection by the staff officers, and reports by battery commanders.
- (2) *Discipline.* The battalion commander instills and main-

tains discipline in his battalion by closely supervising the mental, moral, and physical training of his men; by maintaining good morale; by personal example; and by the administration of justice. He appoints summary courts-martial and special courts-martial (unless otherwise directed), reviews their findings, and supervises the administration of or imposes punishments under Article 15, Uniform Code of Military Justice. In all disciplinary matters which are properly the prerogatives of the battery commanders, he is careful to exercise supervision only, leaving active control to the judgment of the subordinate commanders.

- (3) *Morale.* Through his staff and subordinate commanders and by personal action, the battalion commander gives close attention to those factors which serve to build and maintain the morale of his unit. He prescribes a fair and uniform policy governing promotions, leaves of absence, decorations and awards, and duty assignments. He takes steps to obtain for his battalion the best available quarters and rations, recreational equipment and programs, religious services, postal facilities, and services of the various welfare agencies. By means of personal inspections and with the assistance of the battalion surgeon, he controls sanitation, personal cleanliness, and health. Since the state of morale is one of the most important factors, as well as an index to the efficiency of the unit, the battalion commander must exert every effort to keep it at a high level.
- (4) *Administration.* By proper organization and utilization of his staff and the personnel section, the battalion commander insures the efficient administration of his unit. The maintenance of records and the rendering of routine reports becomes almost automatic, thus relieving the battalion commander of consideration of the many small details which affect his unit. He makes frequent inspections to assure himself that his administrative policies are being carried out, that unit messes are sanitary and properly operated, that living quarters are adequate, and that the operating workload is equally distributed.
- (5) *Supply and Maintenance.* Adequate and proper supply and maintenance are two important means by which the battalion commander maintains the combat efficiency of his unit. In general, the battalion commander discharges

his supply responsibilities through the S4. He must supervise, however, to see that his supply policies are complied with, that supply discipline is maintained, and that his battalion is adequately supplied with the best available equipment, clothing, and rations. He must provide for the training of all personnel in supply discipline. He must insure that ammunition supply is adequate and that basic loads are maintained. By means of command inspections, he insures that material, vehicles, and other equipment are on hand and properly maintained. In addition, he may request technical inspections by technically qualified personnel of maintenance organizations.

43. Battery Commander, Airborne Division

a. 105-mm Howitzer Battery. The duties and responsibilities of the airborne division artillery battery commander approximate those of a field artillery battalion commander as discussed in paragraph 42, with respect to observation, liaison, fire support, survey, fire direction, communications, and selection of position.

b. 762-mm Rocket Battery. The missile battery commander's responsibilities are essentially the same as those of the 762-mm rocket battalion commander as discussed in FM 6-61.

Section II. DIVISION ARTILLERY STAFFS

44. General

a. The organization and functions of the division artillery staffs are flexible and may be varied by the commander to meet the demands of each particular situation. The control of artillery and the coordination of fire support are the principle duties of an artillery commander; accordingly, his staff is organized to assist him in the discharge of these responsibilities.

b. Personnel for the division artillery staffs are provided in appropriate tables of organization. Type functional organizations are shown in figures 18 through 20.

c. The duties of division artillery staff officers conform to the principles and procedures described in FM 101-5 and chapter 4, FM 6-20, and are further amplified in paragraphs 45 and 46.

45. Duties of the Division Artillery Staff

- a. Executive Officer.* The division artillery executive officer—
- (1) Exercise overall supervision over local defense measures of units operating under the operational control of divi-

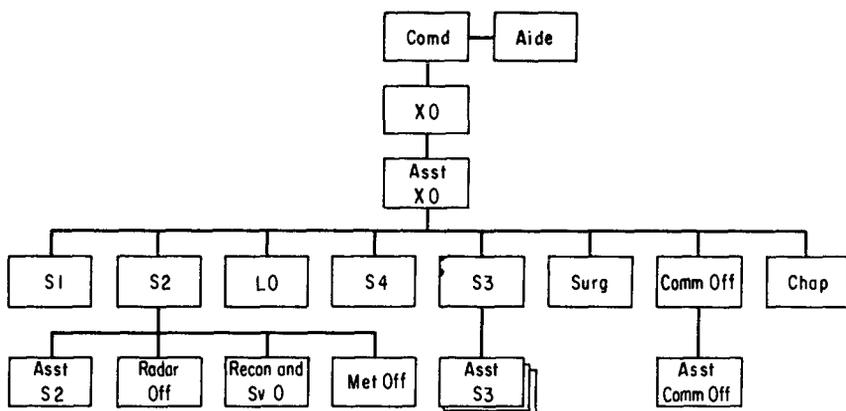


Figure 18. Infantry division artillery staff.

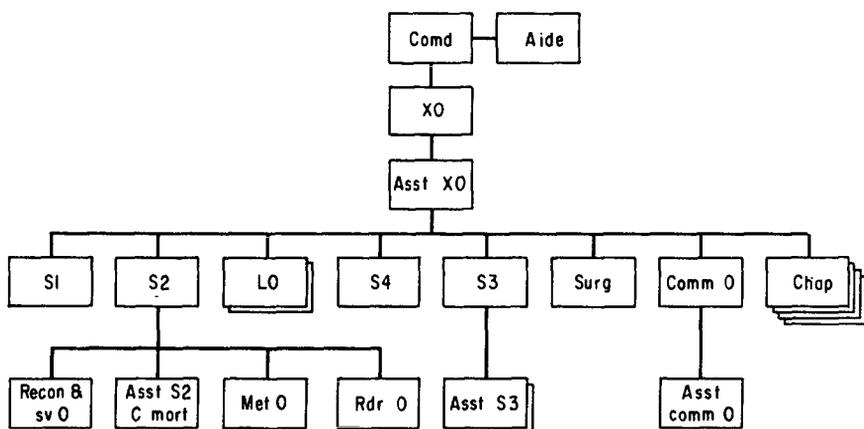


Figure 19. Armored division artillery staff.

sion artillery. He also coordinates defense requirements of all division artillery units and forwards recommendations to the division.

- (2) Directs the establishment of the division artillery command post in the location designated by the commander and insures that the various elements are disposed to facilitate operations and are properly protected and concealed.
- (3) Supervises the operation of the division artillery command post to include the fire direction center.

b. Assistant Executive Officer. The division artillery assistant executive officer is the principal assistant to the division artillery commander in his capacity as fire support coordinator. He performs duties as directed by the fire support coordinator and repre-

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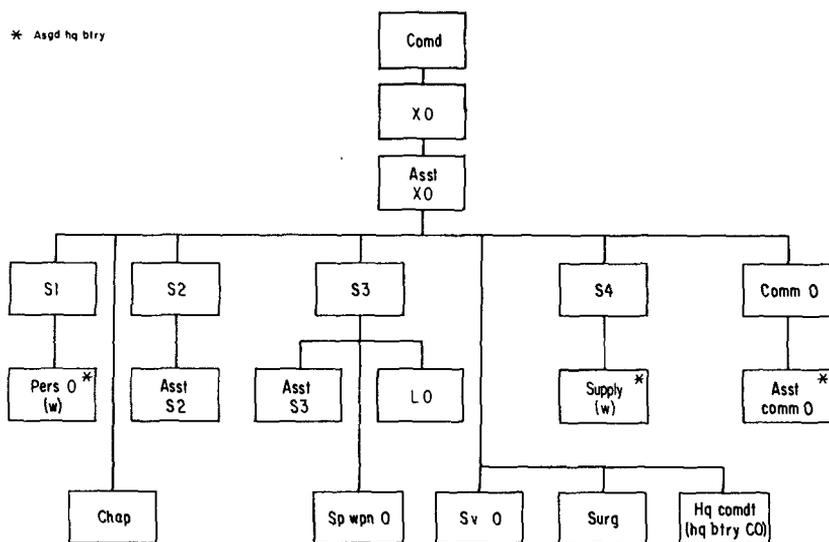


Figure 20. Airborne division artillery staff.

sents him at the fire support coordination center (FSCC) in his absence.

c. *Assistant S3, FSCC.* The assistant S3 (assistant operations officer) functions at the division fire support coordination center as the principal assistant to the assistant executive officer. He is qualified as a nuclear weapons employment officer.

d. *The Division Artillery Surgeon.* The division artillery surgeon is responsible for medical service including emergency treatment, operation of aid stations, evacuation of casualties, if practicable, and supervision of sanitation.

e. *Artillery Support Section Commander.* The artillery support section commander from the division aviation company acts in the capacity of a special staff officer and advises the division artillery commander concerning the utilization and employment of Army aircraft in direct support of or attached to division artillery. He provides information concerning Army aircraft operating in battle group areas and provides flights as directed by the division artillery commander or his designated representative.

f. *Forward Air Controller.* The forward air controller (FAC), an *Air Force officer*, normally operates out of division artillery headquarters. The air control team (ACT) in headquarters and headquarters battery consists of the personnel and equipment necessary to assist him.

46. Additional Personnel in Airborne Division Artillery

a. *Personnel Officer.* The personnel officer, under the supervision of the S1, is responsible for maintaining the personnel records of all personnel in the division artillery.

b. *Supply Officer.* The supply officer in the headquarters battery supply section, under the supervision of the S4, is responsible for maintaining the supply records of the division artillery and its organic units.

Section III. BATTALION STAFFS

47. General

a. The battalion commander is provided with a staff to assist him in the exercise of command. The staff obtains appropriate information and furnishes required estimates and advice to the commander. The staff prepares the details of the battalion commander's plans, reduces his decisions and plans into orders, and causes such orders to be disseminated to the command. The various members of the staff supervise the execution of plans and orders and take the necessary action to carry out the commander's policies. The staff must have a thorough knowledge of the policies of the commander, and in cases for which no policy has been established, initiate action to establish policy.

b. The organization of the battalion staff is based upon the principal functions of the battalion commander. It follows, in general, the organization of other military staffs (FM 101-5). Within the limitations imposed by tables of organization, the organization of the staff and the assignment of functions to staff

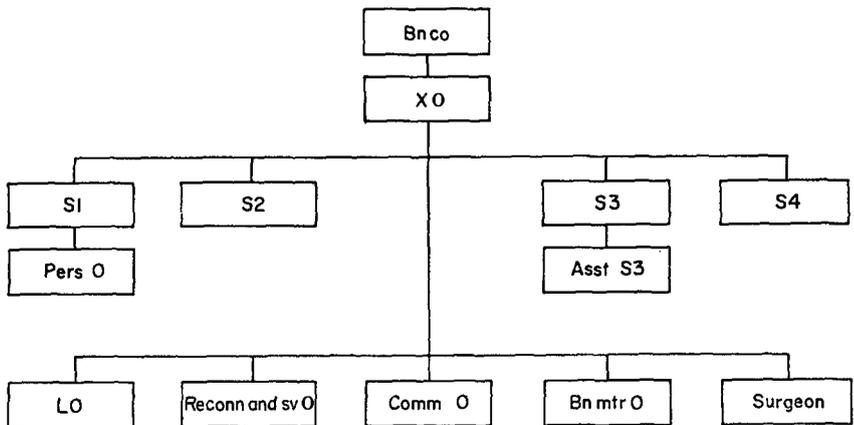


Figure 21. A type battalion staff.

sections are prerogatives of the battalion commander. Figure 21 shows a type organization of a battalion staff.

c. Staff officers, as such, have no command authority. Although staff officers may formulate and transmit orders to the batteries they do so only as representatives of, and in the name of, the battalion commander. The scope of this authority is determined by the battalion commander's policy. He is responsible for orders issued by members of his staff.

d. The staff officer as chief of a staff section supervises the personnel in his section and looks after their welfare. He makes recommendations to the appropriate battery commander concerning awards, decorations, promotions, and demotions of the personnel in his section.

e. Teamwork is of the utmost importance within the staff, between the staff and battery commanders, and with the staffs of the next higher artillery headquarters, the supported unit, and the reinforced unit.

48. Battalion Executive Officer

a. The executive officer is the second in command of the battalion. He is the principal assistant and adviser to the commander. He relieves the battalion commander of many details of administration within the battalion, leaving the commander free for overall planning, reconnaissance, and personal contacts with supported, higher, and other headquarters.

b. The duties of the executive correspond to those of a chief of staff. The executive makes decisions in accordance with the policies of the battalion commander and within the authority delegated to him.

c. The battalion executive performs the following specific duties, unless otherwise directed:

- (1) Represents the battalion commander during the commander's absence.
- (2) Coordinates all activities of the battalion, including administration, movement, occupation of position, and displacement. He normally leads the battalion on the march.
- (3) Coordinates the work of the staff.
- (4) Makes frequent informal inspections of battery positions, kitchens, and quarters.
- (5) Supervises the establishment and operation of the battalion command post.
- (6) Coordinates security measures within the battalion.
- (7) Is responsible for preparing the unit report, and super-

vises the preparation of other routine records and reports, including the command report when required.

- (8) Keeps himself informed of the tactical and administrative situation, including the status of training, supply, house-keeping, and morale.

d. Under certain circumstances, the executive officer may conduct reconnaissance, select positions, and order the displacement of the battalion. Some conditions under which such action might be taken are—

- (1) In a displacement, when the situation requires the presence of the battalion commander at a critical location away from the unit.
- (2) In any displacement ordered by the higher headquarters when the battalion commander is not present or readily available.
- (3) When directed by the battalion commander.

49. Battalion S1

a. In the armored division artillery, the S1 is the battalion adjutant. He is assisted by a warrant officer.

b. Specific duties of the S1 are to—

- (1) Establish and operate the office of record for the battalion.
- (2) Supervise the publication and distribution of orders. He authenticates routine orders.
- (3) Prepare correspondence.
- (4) Review courts-martial proceedings to verify that they are properly recorded, and that charge sheets are correctly prepared.
- (5) Supervise the maintenance of rosters to insure the equitable distribution of battalion details.
- (6) When necessary, handle the details regarding the procurement of civilian labor.
- (7) Supervise morale activities, including recreation, pass and leave policies, and awards and decorations. He arranges for adequate postal facilities and religious services, and he supervises the activities of the Army exchange when it is operated by the battalion.
- (8) Assist the summary court officer in the handling of personal effects.
- (9) Organize the personnel section and prescribe policies for its functioning.

- (10) Maintain the personnel section journal, if required, and furnish pertinent personnel data to the executive for inclusion in the unit report.

c. Those specific duties of the S1 which deal solely with individuals and individual records, and which are generally delegated to his assistant are—

- (1) Supervision of the personnel section.
- (2) Maintenance of service records, classification records, and other individual records.
- (3) Preparation of payroll, allotment, and insurance forms.
- (4) Preparation of orders regarding promotions and demotions.
- (5) Preparation and forwarding of casualty reports.
- (6) Requisition of replacements.
- (7) Submission of strength returns.

50. Battalion S2

a. The S2 is the battalion intelligence officer. His primary functions are the location of targets; the collection, recording, and filing of information, and the evaluation, interpretation, and dissemination of intelligence concerning terrain, weather, and the enemy.

b. Specific duties of the S2 are to—

- (1) Keep the battalion commander and staff informed of the enemy situation.
- (2) Coordinate observation and target acquisition agencies within the battalion.
- (3) Combine all available information into a readily usable target file and list and recommend to the S3 likely targets and a method of attack of targets based on his special knowledge of enemy habits and the situation.
- (4) Receive, evaluate, and record shelling reports, counter-mortar reports, counterbattery reports, and other reports required by higher headquarters. Disseminate the intelligence so obtained.
- (5) Make a continuous study of the terrain.
- (6) Keep the S2 situation map.
- (7) Foresee the need for, obtain, and distribute maps and airphotos and provide trigonometric lists.
- (8) Insure receipt of periodic weather reports.
- (9) Plan for and supervise all counterintelligence activities within the battalion.

- (10) Coordinate and supervise the intelligence training of all personnel in the battalion and the specialized training of intelligence personnel and observers.
- (11) Study and supervise the interpretation of air photographs.
- (12) Maintain such target records applicable to fire support coordination as are required.
- (13) Maintain the intelligence section journal, if required, and furnish pertinent intelligence data to the executive for inclusion in the unit report.
- (14) Determine suitable intelligence missions for the aviation support section. Brief and interrogate the pilot-observer team for each intelligence mission.
- (15) Request air reconnaissance and photographic missions.
- (16) Brief the liaison officers and forward observers on the enemy situation and on requirements for information.
- (17) Submit reports to higher headquarters as required.

51. Battalion S3

a. The S3 is the battalion operations and training officer; he is also the gunnery officer of the battalion. The assistant S3 is the chief assistant and relief of the S3.

b. The principal duties of the S3 are to—

- (1) Assist the battalion commander in planning, preparing, and issuing operation orders and other directives.
- (2) Assist the battalion commander in the planning of fires with higher headquarters, attached or reinforcing artillery, and the supported or reinforced unit.
- (3) Organize and supervise the operation of the fire direction center and train the fire direction center personnel (FM 6-40).
- (4) Prepare and forward the battalion fire capabilities chart to the next higher headquarters as directed.
- (5) Distribute to the batteries the necessary data for battery firing charts and prearranged fires.
- (6) Keep the battalion commander, staff, and battery commanders informed of the situation.
- (7) Direct and coordinate the activities of the liaison officers.
- (8) Prepare plans for the movement of the battalion, including warning and march orders, march graphs, plans and orders for rail and water movements, and other directives as may be required, and coordinate movement plans with the S4.

- (9) Inform the battalion S2 of all targets attacked or planned for attack, advise the S2 of changes in observation requirements necessitated by the situation; and advise the S2 on map and photograph requirements of operations personnel.
- (10) Keep the S3 situation map, unit firing record, ammunition record, and other pertinent S3 records as required by the battalion commander and higher headquarters.
- (11) Plan, supervise, and coordinate all training within the battalion to include the preparation of battalion training programs and review of battery schedules and organization and schedules for unit schools; coordination of specialist training with appropriate staff officers; procurement of training facilities; and provision for continuous training of all elements of the battalion throughout combat.
- (12) Cooperate with the S4 in the preparation of ammunition resupply requirements.
- (13) Maintain the operation section journal, if required, and furnish pertinent operations data to the executive officer for inclusion in the unit report.
- (14) Coordinate and supervise the survey activities of the battalion reconnaissance and survey officer.

52. Battalion S4

a. The S4 is the battalion supply officer. He may also be the battery commander of service battery in battalions having a separate service battery. In most battalions, he is also the battalion munitions officer. He is responsible to the battalion commander for the proper functioning of the supply system. In the procurement and distribution of ammunition, he is assisted by the ammunition train commander (FM 6-140). In all other battalion supply functions, he is assisted by the assistant S4, a warrant officer.

b. The principal duties of the S4 are to—

- (1) Determine and keep the battalion commander advised of the status of supply within the battalion.
- (2) Prepare and submit requisitions for all supplies except those furnished on an automatic basis.
- (3) Draw and issue all classes of supply.
- (4) Plan and supervise ammunition supply in cooperation with the S3 and keep the S3 advised of the availability of suitable lot numbers.
- (5) Advise the battalion commander of any difficulty in obtaining ammunition in suitable lot numbers.

- (6) Prepare such logistical reports as are required by the battalion commander or higher headquarters.
- (7) Recommend details of supply to be included in the battalion orders.
- (8) Recommend the locations for the battalion ammunition train.
- (9) Collect and report salvage.
- (10) Arrange for technical inspections of materiel by personnel of technical units.
- (11) Cooperate with the battalion motor officer in planning motor maintenance, location of maintenance facilities, and use of the battalion motor maintenance section.
- (12) Coordinate technical services required by the battalion.
- (13) Maintain the logistics section journal, if required, and furnish pertinent logistical data to the executive for inclusion in the unit report.
- (14) Act as property book officer, with informal accountability for all equipment and supplies.

53. Battalion Communication Officer

a. The battalion communication officer is charged with the planning, installation, and supervision of all signal communications for the battalion and attached units. He is assisted by the assistant communication officer (platoon commander, communication platoon of headquarters battery).

b. The principal duties of the communication officer are to—

- (1) Advise the battalion commander and staff on communication matters.
- (2) Reconnoiter for wire routes.
- (3) Direct and supervise the installation, maintenance, and operation of all artillery communication within the battalion.
- (4) Coordinate with the headquarters battery commander in the selection of the command post location.
- (5) In coordination with the S3 and headquarters battery commander, select the communication locations for the major elements of the command post—fire direction center, switching central, headquarters, message center, and radio and panel station.
- (6) Prepare plans for displacement and extension of existing communications in order to insure maximum efficiency and flexibility.
- (7) Extract and disseminate pertinent signal operation in-

structions items and recommend changes to the signal operations instructions and standing signal instructions.

- (8) Prepare communication information to be included in battalion orders.
 - (9) Coordinate with the S2 in the supervision of signal security.
 - (10) Conduct inspections of signal equipment.
 - (11) Advise the battalion commander on the status of signal equipment.
 - (12) Coordinate with the S4 to determine requirements and obtain authority for the procurement of signal equipment and supplies.
 - (13) Plan, organize, and supervise the specialist training of all communication personnel.
 - (14) Prepare and forward the line route map to the next higher headquarters.
 - (15) Maintain contact with signal or communication officers of the next higher headquarters and adjacent units to obtain or render assistance in the development of the communication system.
- c. The duties of the assistant communication officer are to—
- (1) Assist the communication officer in all of his functions.
 - (2) Train the communication platoon of headquarters battery in all phases of communications.
 - (3) Supervise the displacement of the command post.
 - (4) Coordinate all mess, motor, and supply facilities of the headquarters.
 - (5) Organize the local security for the command post.

54. Battalion Reconnaissance and Survey Officer

a. The responsibilities of the reconnaissance and survey officer are survey of the position and target areas, connection survey, reconnaissance, and furnishing data for the firing chart (FM 6-40).

b. In the performance of his primary duties, the reconnaissance and survey officer is closely associated with the battalion commander, S3, S2, and the survey officers of higher headquarters and adjacent units.

- (1) He normally accompanies the battalion commander on reconnaissance for positions and usually receives instructions for reconnaissance and survey directly from him.
- (2) He receives instructions directly from the S3 regarding

data required for the firing chart, reconnaissance requirements, and possible future routes and position areas.

- (3) He furnishes the S2 information concerning the terrain, available observation post sites, target locations, and map corrections.
- (4) He coordinates with the survey officers of other units in the exchange of information and data. Frequently he is able to assist the supported unit in determining the accurate location of their forward dispositions.
- (5) He must anticipate the survey and reconnaissance needs of the battalion and should always be prepared to make recommendations on these matters.

c. The specific duties of the reconnaissance and survey officer are to—

- (1) Prepare the survey plan in accordance with the instructions of the battalion commander and assist in determining the location of check points and targets.
- (2) Obtain survey control data from division or corps artillery.
- (3) Execute the survey plan.
- (4) Conduct reconnaissance for routes, position areas, and observation as directed by the battalion commander.
- (5) Plan, organize, and direct the specialist training of all survey personnel in the battalion.
- (6) Recommend the organization, equipment, and transportation of survey parties and the use of battalion and battery survey parties in varying situations.
- (7) Plan constantly for future reconnaissance, extension of survey, and survey for displacements.
- (8) Work closely with the S2 and the S3 in securing necessary information on target locations, observation, routes, and future positions and providing trigonometric lists.
- (9) Exchange survey data and information with the survey officers of higher headquarters and adjacent units.

55. Battalion (Airborne Battery) Liaison Officers

a. The artillery liaison officer is the artillery commander's representative at the command post of the supported, reinforced, or other headquarters to which he is sent. He is the fire support coordinator when working at armored division battalion task force level and acts as fire support coordinator in the absence of the artillery commander when working at combat command or battle group level. He plans and supervises the specialist training of the

liaison section. The duties of a liaison officer are similar when the tactical mission is either direct support or reinforcing.

b. Upon assignment and at each change of the supported or reinforced unit's mission, he should—

- (1) Obtain all available information concerning the situation of his own parent unit and that of the reinforced or supported unit.
- (2) Understand the plan of prearranged fires.
- (3) Know the location of registration points and meteorological (met) check points.
- (4) Know the status of ammunition supply.
- (5) Know the amount of general support and reinforcing artillery available.
- (6) Know the plan of observation including, in the case of a direct support battalion, the assignments of forward observers.
- (7) Know the plan for displacement of his unit.
- (8) Secure necessary maps or air photographs.
- (9) Arrange with the artillery unit communication officer for signal communication and obtain pyrotechnic, map reference, and unit prearranged message codes.

c. Upon arrival at the command post of the supported or reinforced unit, the liaison officer reports to the commander and informs him of the artillery plan, the location of the artillery, and the amount of artillery fire support available. He establishes communication or checks facilities already established.

d. During his tour of duty, the liaison officer—

- (1) Keeps the supported or reinforced unit commander informed of the artillery situation and capabilities. The direct support artillery unit liaison officer acts as the artillery commander's representative and as such is an adviser to the supported unit commander; the liaison officer from the reinforcing artillery unit advises the commander of the reinforced unit as to the availability and capabilities of reinforcing fires.
- (2) Keeps the artillery unit commander informed of the location and plans of the supported unit and of any changes in the supported units' scheme of maneuver.
- (3) Transmits requests for fires and for lifting fires.
- (4) Arranges for and assures a prompt exchange of information concerning the enemy.
- (5) Makes short visits to his own unit command post when

the situation permits, reporting to the commander on the situation and the effectiveness of the artillery support. He submits to the executive officer any data required for inclusion in the unit report.

e. Duties pertaining specifically to the liaison officer of the direct support artillery unit are to—

- (1) Act as fire support coordinator at armored division battalion task force level and, if artillery commander is absent, at combat command or battle group level. Prepare the fire support plan and insure that all appropriate fire plans are appended thereto. Act as adviser on all matters pertaining to artillery support.
- (2) Accompany the supported unit commander on reconnaissance and remain with him during combat. When the unit which the artillery unit normally supports is in reserve, the liaison officer, unless otherwise directed by his own commander, remains with the supported unit.
- (3) Keep his commander informed of all patrols, including their size, time of starting, route, mission, return route, and expected time of return.
- (4) Coordinate with the supported commander as to the desired location of the no-fire line and report this information to his parent unit.

f. The liaison officer of the reinforcing artillery unit keeps his commander informed of the situation, the reinforced unit's plan of fire, and its observation plan. In reporting the situation, he should include all information available, since this may be his commander's only or primary source of information of this type. He keeps the reinforced unit commander informed of the situation of the reinforcing artillery unit, including changes in capabilities and present or possible commitments other than the reinforcing mission.

g. Even though a unit with a mission of general support has no inherent responsibility for establishing liaison, higher headquarters may modify the mission to include a liaison function. When this is directed, the liaison officer from general support units performs his duties as described in *a* and *b* above and in FM 101-5. He frequently must serve as a technical adviser to the commander of the unit with which he is maintaining liaison and must be prepared to recommend appropriate tasks for his parent unit to perform. This is particularly applicable to liaison officers from such types of units as searchlight batteries, target acquisition battalions, 280-mm gun battalions, and missile units.

56. Battalion Radar Officer

(par. 75*b*)

a. The radar officer is in charge of the countermortar radar section and is the adviser to the artillery commander and staff on the technical and tactical employment of the radar equipment.

b. The radar officer's principal duties are to—

- (1) Make recommendations concerning the location of the countermortar radar position area.
- (2) Reconnoiter the countermortar radar position area and select the locations for the equipment.
- (3) Supervise the emplacement of the radar set and the organization of the radar position, including security.
- (4) Supervise the operations of the countermortar radar section.
- (5) Plan and supervise the specialist training of the countermortar radar section personnel.
- (6) Plan for the procurement and maintenance of radar, communication, and survey equipment and supplies in conjunction with the S4 and the communication officer.

57. Battalion Motor Officer

a. The battalion motor officer supervises the motor transport training, operation, and maintenance activities of the battalion.

b. The principal duties of the battalion motor officer are to—

- (1) Keep the battalion commander informed of the motor vehicle situation within the battalion, including the status of maintenance and movement capabilities.
- (2) Direct the operations of the battalion motor maintenance section.
- (3) Plan for systematic motor maintenance and salvage during combat and coordinate with the ordnance officer on evacuation of disabled vehicles.
- (4) Supervise the operation of the battalion motor pool when one is established.
- (5) Coordinate with the S4 in the procurement of tools and spare parts, in the location of maintenance shops, and in the use of the battalion motor maintenance section personnel.
- (6) Assist the battalion commander and the S3 in planning and conducting motor marches.
- (7) Conduct spot inspections of vehicles, and assist the battalion commander in making command inspections.

- (8) Plan and supervise the specialist training of all motor personnel in the battalion.
- (9) Supervise the preparation and loading of vehicles for shipment by rail, the waterproofing and loading of vehicles for movement by water, and the dewaterproofing operations.
- (10) Maintain the battalion motor records.
- (11) Assist the battery commanders in solving their motor maintenance problems.

58. Battalion Surgeon

a. The battalion surgeon has technical supervision over the medical section. He advises the commander and staff of the battalion to which his section is assigned or attached on all matters pertaining to sanitation and health of the command.

b. The principal duties of the battalion surgeon are to—

- (1) Recommend and supervise training in military sanitation, first aid, and hygiene.
- (2) Recommend the location of the battalion aid station and establish and supervise the operation of the aid station.
- (3) Conduct the technical training of the medical detachment.
- (4) Coordinate with the S4 in the procurement of medical supplies and equipment.
- (5) Assist the battalion commander in the conduct of sanitary inspections and perform physical inspections of all battalion personnel.
- (6) Keep himself informed of the evacuation policy of the next higher headquarters and of the location of clearing stations available to the battalion.
- (7) Contact the surgeons of both the next higher echelon and supported units.
- (8) Conduct sick call for the battalion.
- (9) Arrange with higher headquarters for dental care of the battalion.

59. Battalion Staff Coordination

a. The battalion executive officer prescribes staff duties, receives staff officers' reports, and directs overall coordination of the staff in accordance with the battalion commander's policies and the authority delegated to him. To accomplish certain tasks the battalion commander directs the S1, S2, S3, and S4 to exercise staff supervision over certain other staff officers. In this case, the designated staff officer is responsible for the supervision of other staff

operating agencies, but the other staff agencies still have direct access to the battalion commander and the executive officer.

b. Detailed staff coordination may be obtained by direct contact between various staff officers. Each staff officer exercises his own initiative in carrying out the duties delegated to him by the commander or the executive officer. He is responsible for seeing that—

- (1) His decisions and actions do not conflict with those of other staff officers.
- (2) All other staff officers concerned receive information of his decisions and actions.

Section IV. COMMAND POSTS

60. General

The command post is the artillery headquarters where the artillery commander, assisted by his staff, exercises his administrative and tactical functions. The headquarters is often divided into a forward echelon and rear echelon; the forward echelon is the command post.

a. Rear Echelon. When the artillery headquarters is divided into two echelons, the rear echelon is the place where the administrative details of the command are conducted. The rear echelon of a battalion of division artillery may be located with the division rear echelon.

b. Command Post. Intelligence and operations are the primary staff functions involved in the operation of the battalion command post. Other staff functions which contribute to both intelligence and operations are reconnaissance and survey, communications, liaison, and logistics. It will be necessary to perform certain personnel functions in the command post, but the detailed work is performed in the rear echelon.

61. Command Post Area

a. General.

- (1) The field artillery unit command post area is located to facilitate tactical control of subordinate units, to effect close coordination with the supported unit and with other means of fire support, and to facilitate reliable communications.
- (2) The headquarters battery and other elements of the artillery headquarters in the forward echelon are normally located near the fire direction center in the command post area.

b. Physical Layout of the Command Post.

- (1) The physical layout of the command post will depend upon the space available, terrain, shelter, and policy of the battalion commander. In general, it is desirable to organize the tactical operations sections of the command post into two separate parts—one for fire direction functions and the other for operations planning and intelligence functions. To facilitate coordination of these functions, the two parts should be so located that voice communications between them are not impeded. This also helps in keeping the situation map, normally kept jointly by the S2 and S3 sections.
- (2) The element performing fire control functions should be located away from the remainder of the command post elements. It should be accessible but should not be located near the entrance to the command post area where it will attract casual visitors.
- (3) The location of the other elements of the command post will be dictated by the situation. An installation should be provided near the command post entrance for the reception and information of visitors. Type command post layouts are shown in figures 22 and 23.

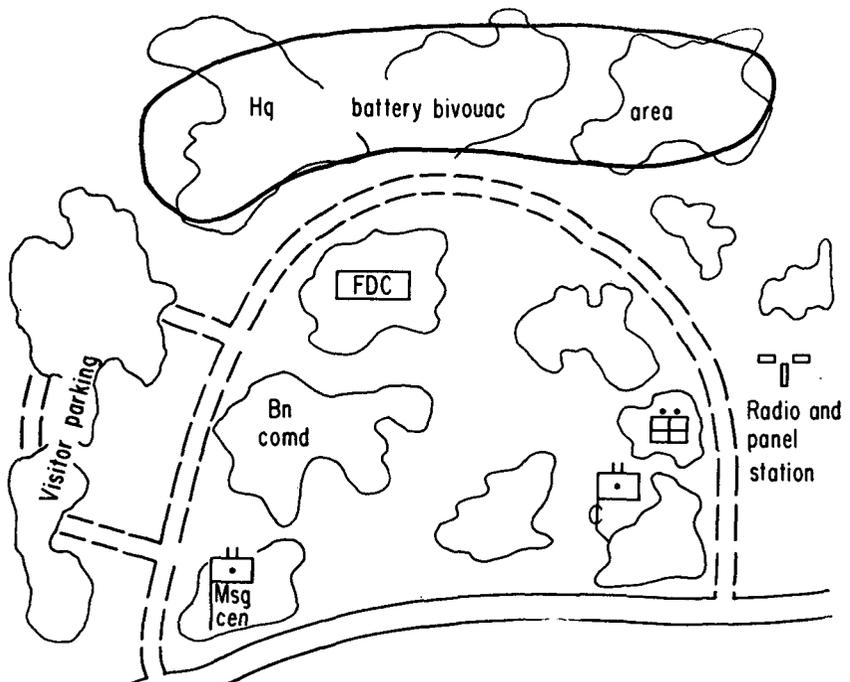


Figure 22. A type battalion command post area.

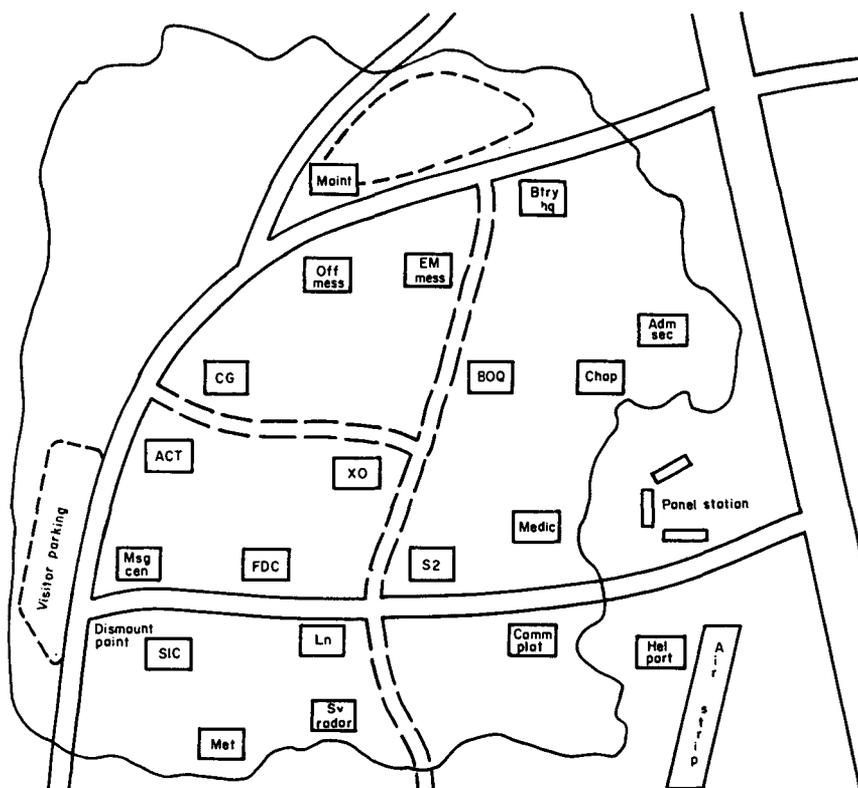


Figure 23. A type division artillery command post area.

62. Command Post Procedure

Command post procedure in the battalion is generally limited to those steps that are necessary for coordination between staff sections. It is dependent on the duties of staff officers and their relationship to each other. For detailed intelligence procedure and staff coordination between the S2 and S3 on intelligence matters, see FM 6-20. For detailed fire direction procedure and staff coordination between the S3 and S2 on fire direction and operations, see FM 6-20 and FM 6-40. For message center operation and standing operating procedure, see FM 11-17 and FM 101-5.

Section V. PLANS AND ORDERS

63. Plans and Orders

The battalion commander's decisions and plan are based upon the higher headquarters fire support plan; policies of his higher commander; plans, policies, and decisions of the supported or re-

inforced commander; and his estimate of the situation. Having arrived at a decision and a plan, he initiates action by means of orders.

64. The Battalion Operation Plan

a. The battalion commander's operation plan is based on the mission, the plan of the supported or reinforced unit, and his own estimate of the situation.

b. The battalion commander's planning starts when he receives his mission from the higher headquarters; it continues during his estimate of the situation, reconnaissance, and coordination with the supported or reinforced unit.

c. The battalion operation plan should follow the same sequence as that of an operation order. The battalion commander should consider the elements of the plan in the order in which they will be given in his oral operation order.

65. Warning Orders

Warning orders are issued prior to any action or movement to insure that troops have ample time to prepare for the forthcoming operation. Warning orders must be specific and include such elements of an order or action to follow as are known or considered essential. Only that portion of the command affected should be alerted.

CHAPTER 5

INTELLIGENCE

Section I. GENERAL

66. General

a. The efficiency with which the division artillery fulfills its mission depends to a great extent on adequate and timely combat intelligence. Combat intelligence is essential to the commander in his estimate of the situation and in the conduct of operations.

b. A thorough development of intelligence is necessary for the proper employment of division artillery units, the timely and effective delivery of fire, and the coordination of movement and fire support with the supported unit and other supporting arms. For a detailed discussion of field artillery intelligence, see FM 30-5 and chapter 9, FM 6-20.

67. Responsibility for Intelligence

The coordination of the intelligence activities within the division artillery in the detection, identification, and location of targets, and the gathering of other necessary information, is the responsibility of the commander. The intelligence officer (S2) has staff responsibility for intelligence activities which include—

a. Obtaining all intelligence essential to division artillery operations.

b. Obtaining and reporting information and intelligence relative to the force commander's essential elements of information.

c. Obtaining and providing information and intelligence requested by subordinate and adjacent units.

68. Definitions

a. *Combat surveillance* is defined as a continuous (all-weather, day and night) systematic watch over the battle area to provide timely information for tactical ground operations. The division G2 has general staff responsibility for the coordination of combat surveillance throughout the division.

b. Target acquisition is defined as that part of combat intelligence which involves the detection, identification, and location of ground targets for the purpose of target analysis, target evaluation, and effective employment of weapons. In field artillery, the target acquisition definition includes detection, identification (including friend or foe), and three-dimensional location of a target in relation to a known control point or known data plane with sufficient accuracy and detail to permit detailed target analysis and evaluation and the effective employment of appropriate weapons by the commander. The artillery is concerned primarily with target acquisition and in performing this task contributes to the combat surveillance effort.

c. Observation is the examination or study of the terrain, gunfire, atmospheric conditions, etc., made to obtain information of military value.

d. Zone of observation is that portion of the battlefield for which a designated unit has primary responsibility for observation.

e. Surveillance is the continuous observation of an area, an individual, a place, or an activity.

69. Organic Agencies

a. Within the infantry and armored division artilleries, a facility for gathering combat information is in the target acquisition platoon organic to all headquarters and headquarters batteries. The division artillery S2 utilizes these target acquisition platoons in developing an integrated intelligence picture and in executing the target acquisition plan. All information relative to the division essential elements of information and all target locations obtained by the target acquisition platoons are forwarded by the division artillery S2 to the division G2.

b. The infantry division artillery assistant S2 is the target acquisition platoon leader. He is specifically assigned the duty of countermortar intelligence officer. Personnel and equipment to support intelligence activities are in the target acquisition platoon.

c. In the armored division, the radar officer is on the battalion staff.

d. In the airborne division, there is no battalion organization and there are no radars or radar personnel in the division artillery.

70. External Sources of Information

a. The division artillery S2 has many sources of information other than those organic to division artillery. From the division G2 he may obtain the following :

- (1) General intelligence (intelligence reports, daily intelligence summaries, etc.).
- (2) Photograph interpretation services.
- (3) Captured enemy materiel intelligence.
- (4) Weather forecasts.
- (5) Detailed terrain analyses.
- (6) Hostile battery lists (corps).
- (7) Target data from the Air Force.

b. The S2 may request the following support from the aerial surveillance platoon in the division aviation company, through the Division G2:

- (1) Observation aircraft for visual observer teams.
- (2) Aircraft with side-looking radar facilities.
- (3) Aircraft with day or night photographic facilities.
- (4) Drone aircraft with photographic facilities.

c. From the supported arms, the following sources may provide information directly or indirectly to the division artillery S2:

- (1) The counterfire squad of the infantry heavy mortar platoon.
- (2) The short and medium range ground surveillance radar teams of infantry, armored, and reconnaissance units.
- (3) Patrols of all units.

d. The corps target acquisition battalion may provide division artillery with—

- (1) Meteorological data.
- (2) Hostile mortar locations.
- (3) General target information.

e. Tactical air reconnaissance may be performed by Air Force high performance aircraft for—

- (1) Preplanned photographic missions.
- (2) Immediate visual observation reports.

Section II. TARGET ACQUISITION

71. General

Although field artillery intelligence agencies will collect and report all information of military significance, their primary concern is target intelligence (i.e., the gathering and processing of information concerning the enemy which is important to artillery operations). Target intelligence begins with target acquisition. The

target acquisition effort must be aggressive and continuous and must extend throughout the zone of influence of the division to provide for the full exploitation of the division artillery firepower capabilities. Target intelligence must be disseminated in the shortest possible time for delivery of effective fire; therefore, the target acquisition elements will work closely with the fire direction center at artillery battalion and division artillery levels.

72. Organic Target Acquisition Agencies

Organic target acquisition agencies of the infantry and armored division artilleries are in the target acquisition platoons of each organic battalion and division artillery headquarters battery.

a. *Infantry Division Artillery.*

(1) The division artillery headquarters battery target acquisition platoon (fig. 24) contains the—

- (a) Platoon headquarters.
- (b) Survey section.
- (c) Survey information center.
- (d) Meteorological section.
- (e) Three countermortar radar sections.
- (f) Surveillance radar section.
- (g) Air control team.

(2) The howitzer battalions target acquisition platoons (figs. 25 and 26) contain the—

- (a) Platoon headquarters.
- (b) Survey section.
- (c) Five forward observer sections (only 1 in rkt/how bn).
- (d) Air control team (none in rkt/how bn).

(3) Although not a part of the target acquisition platoon of

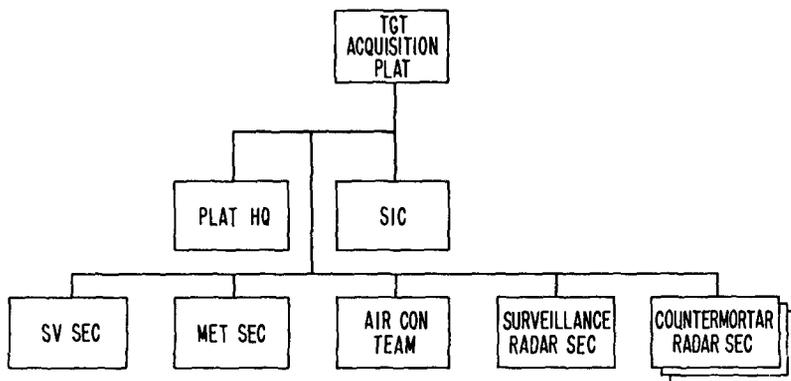


Figure 24. Target acquisition platoon, headquarters and headquarters battery, infantry division artillery.

the organic battalions, two air observers are available on an augmentation basis and will normally function under battalion or division artillery S2 control.

b. Armored Division Artillery.

- (1) The target acquisition platoon of the armored division artillery headquarters battery (fig. 27) is identical with

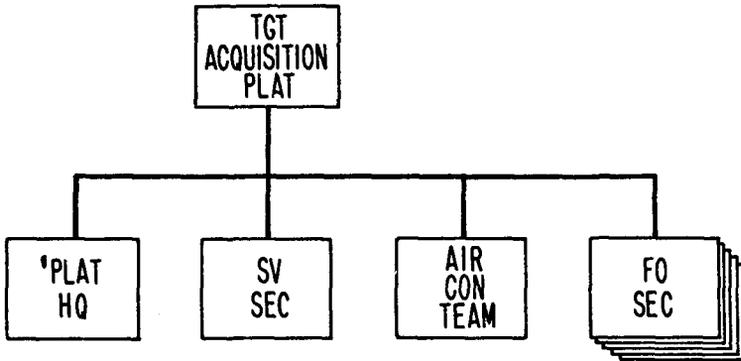


Figure 25. Target acquisition platoon, headquarters and headquarters battery, 105-mm howitzer battalion, towed or self-propelled, infantry division.

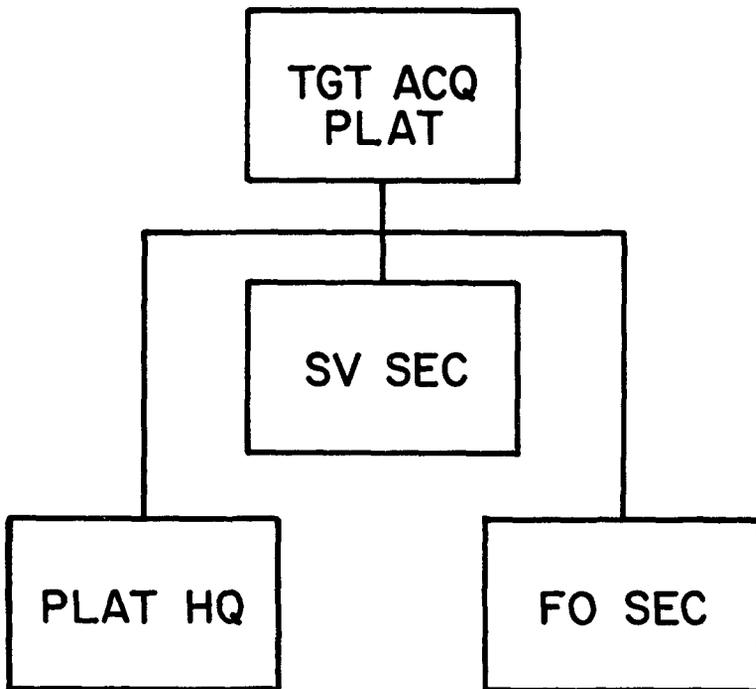


Figure 26. Target acquisition platoon, headquarters and headquarters battery, rocket/howitzer battalion, infantry division.

the one in the infantry division artillery headquarters battery with the following exceptions:

- (a) There are no countermortar radar sections.
 - (b) The platoon may be augmented with two air observers.
- (2) The howitzer battalions target acquisition platoon (figs. 28 and 29) contain the—
- (a) Platoon headquarters.
 - (b) Survey section.
 - (c) Countermortar radar section (none in rkt/how bn).
 - (d) Air control team (none in rkt/how bn).
- (3) Each howitzer battalion and the rocket/howitzer battalion may be augmented with two air observers.
- (4) Although not a part of the battalion target acquisition platoon, each howitzer battalion has four forward observer sections in each of the three firing batteries. The rocket/howitzer battalion has three forward observer sections, one each in the 155-mm and 8-inch howitzer batteries.

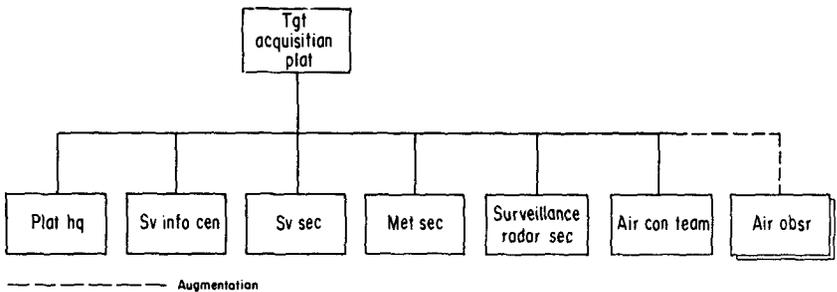


Figure 27. Target acquisition platoon, headquarters and battery, armored division artillery.

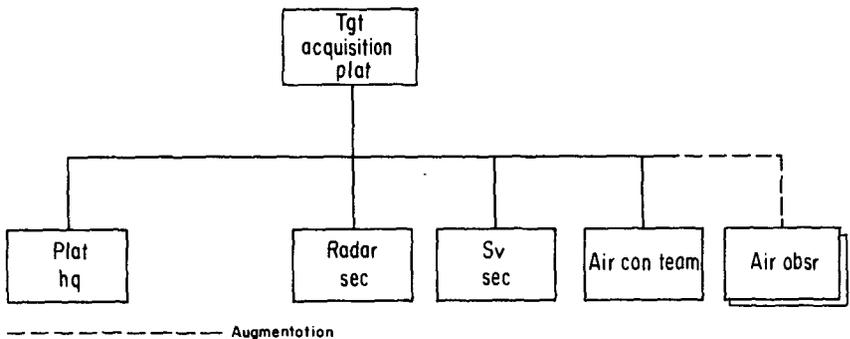


Figure 28. Target acquisition platoon, headquarters and headquarters battery, 105-mm howitzer battalion, self-propelled, armored division.

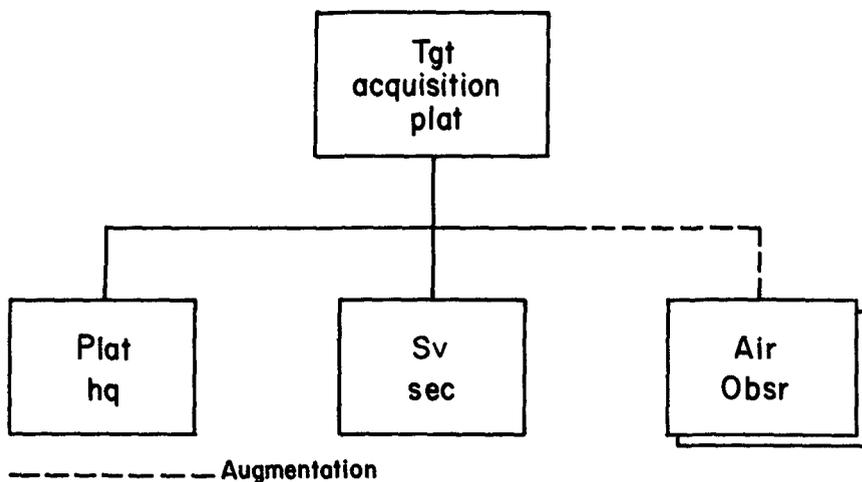


Figure 29. Target acquisition platoon, headquarters and headquarters battery, rocket/howitzer battalion, self-propelled, armored division.

c. Airborne Division Artillery.

- (1) The airborne division artillery has no target acquisition platoons.
- (2) The headquarters battery contains the survey platoon and three air control teams.
- (3) Each of the five howitzer batteries contains a forward observer section and survey section.
- (4) Although organic to the battle group, each mortar battery contains five forward observer sections and a survey section.

73. Zone of Observation

a. Artillery units are ordinarily assigned zones of observation. Observation is continuous, covering the entire zone of action or defense sector of the supported unit or force and extending deeply as possible into the hostile area.

b. A division artillery unit's zone of observation normally corresponds to its zone of fire. For a direct support battalion, this is the zone of action of the supported unit. To accomplish close-in coverage, both ground and air observer teams are utilized. Close-in coverage is accomplished by coordinating the zones of observation of the forward observers and assigning areas of primary responsibility to each observer. The areas of primary responsibility include critical areas, probable avenues of approach, the boundaries between units, and areas in defilade from other observers. A for-

ward observer team is primarily responsible for the areas immediately affecting the unit that he is supporting and has secondary responsibility for all other areas within its field of view. These teams also provide a means for gaining information of friendly troops, thus supplementing liaison with the supported arm. During periods of limited visibility and hours of darkness, observation is facilitated by the use of battlefield illumination or electronic devices.

c. To accomplish deep coverage, the division artillery S2 will utilize Army aviation (manned aircraft) and drones to examine specific suspect areas. Electronic devices are also utilized to examine the far reaches of certain suspect sectors.

74. Visual Target Acquisition

a. Ground Observation. Ground observation is accomplished by forward observers and observers at battalion observation posts. Observation posts may be numbered consecutively within a battalion. A block of numbers may be allocated by division artillery to avoid duplication.

- (1) Each unit with a mission of direct support (including the mortar battery of the airborne division) furnishes a forward observer to each rifle or tank company, unless otherwise directed. Units with a modified tactical mission, requiring "be prepared for direct support of," have the same responsibility. Forward observers must report all information to the fire direction center where it is passed on to the S2. They also disseminate to the supported company all intelligence and information received from their parent unit. The forward observer's mission is to provide artillery fire against those hostile elements which interfere with the mission of the unit he is supporting. He moves as necessary to accomplish his mission. In the attack, the artillery fires which he provides include fires to cover reorganization of the company and forestall counterattack. A forward observer locates targets and keeps his parent battalion informed of enemy activity and dispositions and the locations of friendly troops. Forward observation is coordinated by the S2 of the artillery battalion (except in the airborne division where the mortar battery executive officer or battery commander will accomplish this function). Artillery units, other than those with a direct support mission, may provide forward observer sections (e.g., should the bat-

talion be given a reinforcing mission, the reinforced battalion may ask that forward observers be furnished). These observers function under the control of the reinforced unit.

- (2) Each artillery battalion (and separate battery) establishes sufficient observation posts to cover its zone of observation and to accomplish any special observation mission assigned. Battalions having a direct support or reinforcing mission, locate their battalion observation posts so as to reinforce and extend the forward observation and to extend the coverage afforded by forward observers. Observation posts are located on commanding terrain to obtain a wide and deep field of view. Two or more observation posts, when appropriately situated and accurately located by survey, may be employed as a target area base for more efficient target location.

b. Air Observation. Air observation provides an important means of observation in rapidly moving situations and will supplement ground observation. It permits the location of targets which are defiladed from ground observers and the adjustment of fire upon these targets. It makes observation possible to a greater depth into the hostile position. Air observation is accomplished by Army and Air Force aircraft. Tactical Air Force long-range aircraft assist in the adjustment of fire of long-range artillery weapons which are capable of firing deep in hostile territory and in visual and photographic aerial reconnaissance.

75. Electronic Target Acquisition

a. The Surveillance Radar Section. The AN/TPS-25 radar set is a "moving target indicator" type radar. It is employed in both the target acquisition and combat surveillance roles. When this set is utilized for target acquisition, the radar operation is more refined, and therefore more productive of usable target data, than when used for combat surveillance.

- (1) The surveillance radar section is placed under the operational control of the division artillery S2 who directs the target intelligence effort for the division artillery. Defensively, the radar is positioned where it can maintain observation of areas not otherwise covered by patrols and surveillance equipment of the other elements of the division. Offensively, the radar is used to maintain observation of areas from which counterattacks or hostile reinforcement may emanate. In addition to its use against

hostile elements, the radar may be used to maintain surveillance of friendly patrols to keep the responsible commander informed of the position and movement of the patrol and to warn the patrol leader of the movements of enemy forces in his vicinity.

- (2) When operating the radar set in the target acquisition role, the radar operator after detecting a moving target, identifies it insofar as possible. From the aural tone in his headphones or over the loudspeaker, he can estimate the size and nature of the radar target and number of objects (e.g., one or more trucks, tanks, men, etc.) but cannot determine whether the moving objects are enemy or friendly. If information concerning friendly activities in the area of operations is not available to the radar operator, he considers all targets as enemy and reports them as such to the S2 where the identification of friendly elements is made. Normally, the identification of friendly elements is effected by coordination with the other combat units of the division. This coordination is accomplished by the S2 reviewing the patrol plans of the infantry and other units having personnel operating forward of the main body of troops.
- (3) Since the AN/TPS-25 locates only *moving* objects, considerable operator skill is required to determine, in addition to the location, the direction the target is moving and its rate of speed. As a minimum, the operator must predict and furnish to the S2 the three dimensional location information required by the firing unit to attack the radar target. Only the coordinated teamwork (obtained from detailed unit SOP's) of the surveillance radar team and the firing unit will provide for artillery fire at both the proper location and the proper time.
- (4) The AN/TPS-25 radar must be tactically located to take advantage of its range capability and to reduce to a minimum the dead spaces resulting from the radar line-of-sight characteristic. It is normally positioned within the defensive perimeter of nearby units, possibly an element of a battle group or an artillery battalion. If this is not possible, special security arrangements must be made. To insure the reporting of accurate target data, the radar site must be surveyed. The radar section must be capable of moving with the same facility as the unit with which it is operating, therefore, maximum warning of imminent movement must be given the section.

b. The Countermortar Radar Sections. In the armored division artillery, the countermortar radars are organic to the direct support battalions. The infantry division artillery countermortar radars will normally be in support of direct support battalions. Thus, the infantry division countermortar radars will be employed in the same manner as those of the armored division artillery. These countermortar radar sections have the primary mission of locating hostile mortars. They have the additional mission of radar gunnery.

- (1) Normally, the radar sites will be located 2,000 to 4,000 meters behind the forward edge of the battle area (FEBA) and in the immediate area of the direct support artillery battalions which they support. Each countermortar radar will be assigned a sector of search covering the zone of action of the supported unit (battle group or combat command) and sufficient contingent sectors of search to insure complete coverage of the division front by the three radars. All agencies of the battalion report hostile mortar activity to the battalion S2. This report of activity should include all mortar shelling report (MORTREP) information as prescribed in FM 6-20.
- (2) To insure complete coverage of the division zone of responsibility, the assistant S2 countermortar intelligence officer (CMIO), coordinates the assignment of sectors to be searched by radars and general areas of radar sites.
- (3) The following are the responsibilities pertaining to the countermortar radar sections:
 - (a) *S2, infantry division artillery.* After coordinating with the S3, the S2 recommends to the commanding general, division artillery, the attachment of the countermortar radars; he directs the radar officer concerning general locations of radar sites and primary and contingent sectors of search.
 - (b) *Assistant S2 (CMIO), division artillery.* The assistant S2 (CMIO) assists and advises the S2, division artillery, in his recommendations concerning the employment of countermortar radars; he also coordinates the sectors of search of countermortar radars.
 - (c) *Radar officer.* The radar officer performs detailed selection of radar positions in the general areas designated by the S2. He insures that proper liaison is arranged (either by himself or by the radar chief of section) with the artillery unit to which the radar may be at-

tached. The radar officer checks on arrangements for logistical support, communications, and local defense.

- (d) *Battalion commander.* When the countermortar radar section is under battalion control, the battalion commander will include in his operation order all information necessary for the radar officer.

c. *The Field Artillery Target Acquisition Battalion.* The field artillery target acquisition battalion, assigned or attached to corps artillery, may provide the division artillery with targets located by sound ranging, flash ranging, radar, and other tactical support which includes survey and meteorological data, (FM 6-120, FM 6-122, and FM 6-160).

76. Coordination of Observation

The plan of observation, like a fire plan, is developed simultaneously at each echelon and coordinated by each artillery headquarters with final coordination being the responsibility of the division artillery commander. Coordination of observation must be a continuous process at all levels of command to insure that complete coverage of the zone of operations is maintained. The importance of coordination of observation along the boundary between adjacent units must be emphasized. To insure maximum coordination of observation, the operations of the target acquisition agencies within the division artillery are normally controlled by the division artillery commander. The commander, assisted by the S2, takes action to insure—

a. Complete coverage in both width and depth of the division zone of action or defensive sector.

b. Assignment of definite areas of responsibility to each artillery observation post to intensify the search for information and targets.

c. Constant surveillance of likely avenues of approach of enemy forces.

d. Distribution of observation posts in width and depth to avoid unnecessary duplication of observation, to provide continuity of observation during enemy advances into the positions, to reduce the amount of defiladed area to the minimum, and to provide a large angle of intersection, in order to establish bilateral observation (target area bases) for target location and adjustment of fire using combined observation.

e. Maximum cooperation and appropriate employment of the available target acquisition agencies.

f. Continuous operation of ground target acquisition agencies.

77. Maneuver of Observation

The maneuver of observation is essential to the maneuver of firepower. The maneuver of observation is planned in accordance with the scheme of maneuver of the supported unit. Timely displacement of the observation posts is essential to provide continuity of observation. To insure maximum coverage of the zone of observation, the movement of observation posts is controlled by the battalion; however, observers should recommend their own displacement to obtain better observation. Forward observers with a supported unit will displace on their own initiative.

Section III. RECONNAISSANCE

78. General

Reconnaissance is the search for information of the terrain, of the enemy, and of friendly troops. It may be performed either by using maps and photographs or by ground and aerial means. Reconnaissance must be conducted continuously, energetically, and aggressively. Liaison officers, forward observers, air observers, and survey parties habitually report on routes and possible position areas.

79. Maps and Photographs

Maps and photographs contain a vast amount of information and can be employed profitably in planning and conducting a reconnaissance. Probable position areas and routes can be selected from them. A map or photographic reconnaissance is not a substitute for a ground or air reconnaissance; it must be verified.

80. Ground

Ground reconnaissance is the basic type of reconnaissance. Only by actual examination of the terrain can the condition of routes, the suitability of position areas and visibility from observation posts be evaluated. A detailed discussion of the reconnaissance for positions is given in paragraphs 125 through 139.

81. Air

Army aircraft are excellent for preliminary reconnaissance and should be used when time is available. However, any reconnaissance by air must be, whenever possible, verified by ground reconnaissance. A combination of both may be accomplished by the use of helicopters. If the battalion commander is unable to conduct

both air and ground reconnaissance, ground reconnaissance alone is preferable. General reconnaissance from the air may be used to direct ground reconnaissance to specific areas and thus greatly reduce the time required and the general area covered. During such general reconnaissance, the condition of routes may occasionally be determined with sufficient accuracy to obviate the need for a ground route reconnaissance.

Section IV. METEOROLOGY

82. General

a. The missions of the division artillery meteorological section are to—

- (1) Provide ballistic meteorological data for artillery firing units within the division.
- (2) Provide weather data for those sound ranging units of the field artillery target acquisition battalion located in the division area.
- (3) Provide weather data in support of fallout prediction as required (TC 101-1, 1958).
- (4) Establish liaison with the Air Weather Service (USAF) for the mutual exchange of weather data.
- (5) Provide special data for missile units as required.

b. Although the division artillery meteorological section may exchange data with the air weather service and may become a contributing station in the air weather service network, it cannot provide any forecast for tactical or strategic purposes.

83. Dissemination

The division artillery meteorological section will disseminate appropriate meteorological messages over the corps meteorological radio net, AM. This radio net will be monitored by battery, battalion, and division artillery fire direction centers and division and corps fire support coordination centers. The corps artillery communication officer will prescribe specific times and radio frequencies for the transmission of such messages by the division artilleries and the corps field artillery target acquisition battalion.

Section V. SURVEY

84. General

a. Definition. Field artillery survey is that survey conducted to provide an accurate basis for the determination of firing data.

b. Purpose. The purpose of field artillery survey operations is to provide timely survey control, within prescribed accuracies, to the required artillery installations. Artillery survey must provide a means of orienting weapons and instruments and provide a common grid for firing units and target seeking installations. Employment of such a grid provides the artillery with control that will—

- (1) Facilitate massing of fires.
- (2) Permit delivery of surprise observed fires.
- (3) Permit the delivery of effective unobserved fires.
- (4) Permit the transfer of accurate target data between units.

c. Time Required. The commander must allow sufficient time for adequate survey. For planning purposes, a survey party can traverse 1,000 meters per hour over gently rolling terrain; in triangulation, 30 minutes per instrument set up is used as a planning figure (i.e., does not include time for reconnaissance or travel time between stations). The time required for survey operations varies so widely in different situations, that average figures cannot be stated. As a guide in planning, the *minimum* time allowed for battalion survey should be 3 hours of daylight. The battalion commander should be able to estimate the time required by his battalion for survey in any particular situation.

d. Common Control. Common control is that control used by a unit as a whole; it may be survey control which has been established by higher echelon or assumed control, depending on the origin of the common grid and direction. Common control is necessary for the rapid and accurate massing of the fires of a number of batteries or battalions. Division artillery headquarters will initiate and, time permitting, establish common control among battalions (airborne batteries) by locating survey control points in those unit areas. In the absence of such control, the battalion (airborne battery) establishes its own control by survey, by firing, or by a combination of both (TM 6-200). If survey control is established by the battalion (airborne battery), it will be necessary to convert to the common control when the latter is established by division artillery.

85. Battalion Survey Plan

a. Survey must be performed with appropriate accuracy consistent with the weapon accuracy requirement and should be based upon a carefully prepared plan establishing definite goals and priorities. Units may be employed over an extended area; there-

fore, survey operations must be carefully planned to insure that accurate survey control is established as expeditiously as possible.

b. The battalion survey requirements are given in orders by the battalion commander to the survey officer. The nature of these requirements depend on the instructions and information received from division artillery. The battalion commander's orders include the—

- (1) Firing chart to be used.
- (2) Primary and contingent zones of fire.
- (3) Time available for survey.
- (4) Common control established by division artillery and the location of the division artillery survey information center.
- (5) Registration point, meteorological (met) check points, and observation posts.
- (6) Location of battery positions.
- (7) Location of the countermortar radar position (if appropriate) and survey control point for battle group mortar platoon.
- (8) Assistance to be given to reinforcing or attached artillery.
- (9) Battery augmentations from battalion, if required.

c. Based on the battalion commander's orders, the battalion survey officer formulates the detailed survey plan. The detailed plan includes a general concept of the survey operation, detailed instructions to each party, and instructions for more than one party. Survey planning must be continuous. Planning should include the improvement of the survey, the extension of control, and conversion to the common control of the higher echelon, when necessary. For detailed survey plans, see TM 6-200. In formulating the survey plan, the survey officer should keep in mind and strive to meet the following:

- (1) *Simplicity*. The plan must be understood by all personnel.
- (2) *Timeliness*. The plan must be capable of execution in the time allotted.
- (3) *Flexibility*. The plan must be capable of being changed, if the situation warrants a change.
- (4) *Adaptability*. The plan must be adaptable to the terrain, situation, personnel available, etc.
- (5) *Checks*. Wherever possible, the plan must provide for checks; i.e., closed surveys, alternate bases, and checks made by each member of the party.
- (6) *Required survey control*. The plan must provide the accurate survey control required by the various installations.

d. Survey operations begin as quickly as possible after the survey officer receives the battalion commander's order. Emphasis must be placed on timeliness of survey operations. Battalion survey logically breaks down into three operations: position area survey, target area survey, and connection survey. The survey officer organizes the available survey personnel to best perform the survey operations required in any or all of these three operations. Some of the principal factors which influence the organization for survey are as follows:

- (1) *Mission.* The mission of the unit as well as the survey mission will affect survey planning. The survey officer, in his planning, must be aware of the overall picture as well as the details.
- (2) *Tactical situation.* The enemy and friendly situations have a strong influence on survey operations, since the disposition of troops may dictate whether or not certain terrain may be occupied, certain routes used, or survey signals erected at stations. Friendly positions in dense wooded areas may mean that target area bases will have to be established at unusually great distances from the enemy to get good observation, or that several target area bases will have to be established well forward, each covering different areas of observation.
- (3) *Number of installations.* The number and location of artillery installations must be considered primarily with respect to time, survey control, and personnel available. The survey operations necessary to locate a small number of widely scattered installations will often require more time and/or personnel than would be required for a large number of closely grouped installations. In the survey plan, the survey tasks should be so allocated that the various parties executing the survey will complete their tasks in the most expeditious manner.
- (4) *Survey control available.* More extensive survey operations are required in areas where limited survey control exists than are required in areas where survey control is more plentiful.
- (5) *Personnel and training.* The survey plan must include the methods of survey which are completely familiar to all personnel.
- (6) *Time.* Time allotted for survey will influence not only the choice of a method of survey but the amount and type of control which can be extended.
- (7) *Terrain.* The type of terrain over which survey control

must be extended is a primary factor in determining the method of survey to be used. The survey officer should be so familiar with the effects of various types of terrain on survey operations that he can promptly and properly advise his commander on the time and personnel requirements for survey operations.

- (8) *Weather.* There are several restricting factors which can affect survey. These include restrictions on communications, routes, movements, etc. However, adverse weather conditions will give the greatest difficulty. Fog, rain, snow, heat, and dust can reduce visibility to the extent that observations through an instrument are impossible. Heavy rain or snow can make all field work impossible. Extreme heat or cold can reduce the efficiency of a party to the extent that time necessary to finish a phase must be materially increased.

e. The various tasks required to complete a battalion survey are categorized into the three divisions of operations, as follows:

(1) *Battery position area survey.*

- (a) For light, medium, and heavy artillery and mortars, survey battery centers or, when required, platoon centers. For the rocket and very heavy artillery battery, survey each launcher or weapon position.
- (b) Establish orienting line for each battery.
- (c) Compute orienting angles as required.
- (d) Establish a survey control point for the battle group heavy mortar platoon and, when required, provide necessary survey to radars. (These functions may be performed as a part of the connection survey, depending on the tactical disposition of units.)

(2) *Target area survey.*

- (a) Establish and survey two observation posts for target area base.
- (b) Survey critical points in the target area; i.e., registration and restitution points.

(3) *Connection survey.*

- (a) Connect all battery position area surveys.
- (b) Connect the target area survey to all battery position area surveys.

f. When the firing chart is based on inadequate topographical information, the survey must be organized to perform all three operations. Whenever possible, these operations should be conducted simultaneously. When a map of suitable scale and proven

accuracy is the basis for the firing chart, the amount of survey is considerably reduced, most of it having been accomplished by the map maker. When the observed firing chart is to be used and all batteries are to register, no survey is necessary initially. When only one battery is to register, a position area survey is required. The survey is planned to meet the requirements of each situation. In any event, a complete battalion survey is completed as quickly as circumstances will permit.

g. Even though the survey should always be as complete as circumstances permit, the opening of fire should not be delayed by slow and precise methods. When time is short, the minimum of survey sufficient to deliver the types of fires desired is performed. As time becomes available, the necessary topographical operations are performed to permit construction of a complete surveyed firing chart. Accurate massing of fires of more than one battalion (battery) will be difficult until a common grid is established. In addition to locating targets by ground survey and while waiting completion of this survey, consideration should be given to the possibility of obtaining target locations by inspection or restitution of airphotos (FM 6-40).

h. Orders for survey organization are frequently contained in the battalion or division artillery standing operating procedure. In a rapidly moving situation, the artillery battalion with a direct support mission may not have sufficient time for complete survey. It may be necessary in some cases to attach a survey party from the battalion to each of the firing batteries in order to expedite the required survey operations.

i. Orders from division artillery may designate the firing chart, common control, or restrictions on personnel in forward areas. When reinforcing or attached artillery is expected, division artillery may specify the survey operations to be performed for the incoming unit. Survey must be organized to meet these additional requirements.

86. Division Artillery Survey Information Center (SIC)

a. The division artillery survey information center (SIC) is an agency for collecting, evaluating, and disseminating survey data. The SIC is usually located in the vicinity of the division artillery command post and should be easily accessible from the closest road. It can be located with the division artillery operations section or can operate separately when so directed by the division artillery survey officer. The survey information center maintains a survey information file of designated 5th order (1:1,000) and all 4th order (1:3,000) or greater accuracy survey control points in the division

area. In addition, the division artillery survey officer will select critical control in the adjacent division areas for filing in the SIC. (See TM 6-200 for discussion of procedures used to obtain desired accuracy.) In addition, this file will also contain trigonometric lists prepared and issued by the Corps of Engineers and Army Map Service. When the tactical situation permits, a trigonometric list will be prepared and issued to divisions by the field artillery target acquisition battalion. Daily survey information procured from the corps artillery survey information center direct and from the division artillery survey parties is incorporated into the files of the division SIC. Survey information maps and overlays are maintained by the division SIC to aid in the rapid dissemination of required survey information to using units and to aid the division survey officer in planning the division artillery survey. These maps and overlays show:

- (1) Survey control points filed in the survey information center.
- (2) Proposed surveys in division and adjacent division areas.
- (3) Completed surveys in division area.
- (4) Friendly and enemy situation when it is such that it may affect survey operations.
- (5) Present and proposed artillery positions in the division area.

b. All field work performed by division artillery survey parties must be checked and evaluated for accuracy. When a survey party has computed the field work, the computations together with the field notes for that survey are turned into the survey information center. The survey information center computers verify the computations made in the field. This verification includes a check of all field records and computations of division artillery survey parties. Although time does not normally permit a complete re-computation, a partial check is made to insure that the proper techniques have been employed and the required accuracy obtained. If the field work and computations are verified and meet the 4th order (1:3,000) accuracy requirement, the survey is adjusted. The adjusted results are tabulated on DA Form 6-5, Record—Survey Control Point (RSCP), and filed. As the field notebooks become filled, they are cataloged and cross-referenced to the DA Form 6-5 and maintained as a permanent record.

c. The personnel of the survey information center are equipped and trained to perform conversion of coordinates (geographic to grid and/or grid to geographic) and transformation of coordinates and grid azimuths from zone to zone.

CHAPTER 6

FIRE SUPPORT COORDINATION

Section I. GENERAL

87. General

a. The principles, responsibilities, relationships, and procedures governing fire support coordination established in chapter 11, FM 6-20, are designed to insure maximum results in the employment of fire support means available to the division.

b. The division artillery commander is the division fire support coordinator (FSC). Working with representatives of the supported unit or force and the fire support agencies, he plans and coordinates fire support. The objective is the timely attack of targets using the most suitable means available, and the shifting of fires in accordance with the plans and needs of the supported unit or force.

c. A fire support coordination center (FSCC) is the single location in which are centralized communication facilities and personnel required for the coordination of artillery, air, and naval gunfire. Normally, a formal FSCC is not established at an echelon below division, the fire support coordination functions being exercised through close liaison, frequent meetings, and flexible communications. A type division fire support coordination center is shown in figure 30.

d. Sections II and III, chapter 11, FM 6-20, present the basic functions and general responsibilities of a division fire support coordination center. For detailed duties of FSCC personnel, see paragraph 229, FM 6-20.

88. Operation and Control

a. The division FSCC is the primary agency for the direction, guidance, allocation, coordination, and integration of the fire support available to the division.

b. The preparation, coordination, and supervision of the execution of the fire support plan, an annex to the operations order, comprise the major functions of the fire support coordination center.

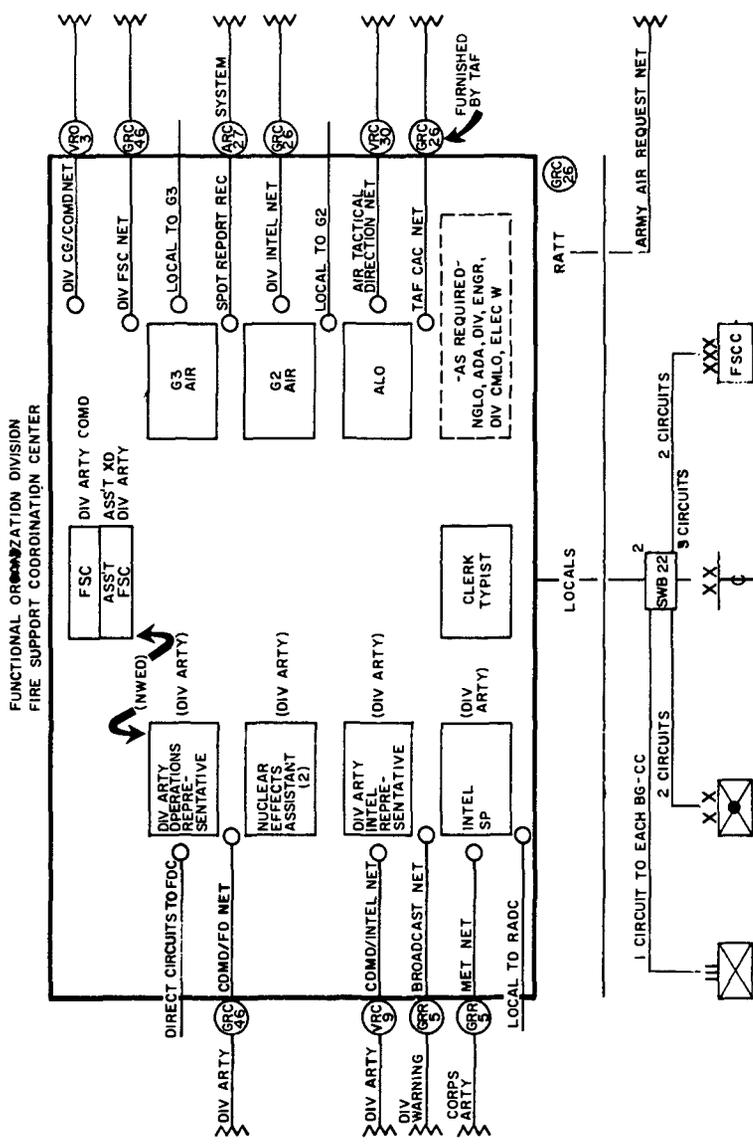


Figure 30. A type division fire support coordination center.

c. The fire support portion of the commander's concept of operation is the basis for the fire support plan. The fire support plan simplifies the fire support portion of the commander's concept of operation by providing specific information and instructions relative to fire support. The development of this plan includes the prepared integration of all fire support.

d. The division artillery commander as the division fire support coordinator (FSC) is responsible that the component parts of the fire support plan are prepared by the appropriate representative of the fire support agencies concerned. The fire support coordinator coordinates closely with the G3 throughout the preparation and execution of the plan to insure that the various means of fire support are coordinated with and complement the plan of maneuver or defense.

e. The fire support coordinator, based upon the division commander's concept of the operation and within announced policies, recommends the allocation of fire support means. The fire support coordinator further recommends additional allocations or reallocation of fire support available to the division, during the execution of an operation.

f. Control and coordination of all fire support retained under division control is exercised through the FSCC.

- (1) The operation order, the fire support plan, and changes thereto, designate the surface fire support that will be retained under division control. It may consist of a battalion or a battery with a designated mission, or it may consist of retention of control over fire support means (including nuclear weapons) available to the division.
- (2) Artillery fire missions are normally assigned through the division artillery fire direction center. Nuclear fire missions may be transmitted directly to the firing unit when communications permit, in which case the division artillery fire direction center monitors the transmission.
- (3) Fire support missions affecting air space utilization will be coordinated with the G3 air, air liaison officer (ALO), division air defense artillery officer (if appropriate), division aviation officer and the G2 air sections as required.
- (4) The air fire plan, artillery fire plan, naval gunfire plan, chemical fire plan, and nuclear fire plan when prepared and approved, are reviewed by the fire support coordination center to insure that the basic directions of the fire support plan have been implemented. The fire support

coordination center is always prepared to present the current and projected air, artillery, nuclear, chemical, and naval gunfire support situation. To facilitate this function, the fire support coordination center maintains current and projected support situation records (charts, etc.) for all fire support available to the force.

g. The fire support coordination center provides statistical data and operational reports on surface fire support matters.

- (1) Provides and directs reporting procedures for artillery with the division, requiring minimum reports from field artillery with the battle groups. The division SOP will specify the time of reporting and the content and scope of reports required.
- (2) G3 performs the general staff coordination of the possible fallout effects and makes recommendations to the commander concerning risks to the friendly forces. Affected units are notified through operational channels.
- (3) The G2 obtains and reports location of ground zero, height of burst, cloud dimensions, predicted and actual fallout, and estimated yield of enemy nuclear bursts.

h. The fire support coordination center maintains the current status of nuclear weapons and component's thereof available to the division, to include actual locations, custodial units, availability, codes, state of readiness, and call signs of custodial units.

i. The division artillery through the FSCC provides the radiological center (RADC) the following fallout weather data:

- (1) Average wind speed and direction at each 6,000 foot-level to 60,000 feet each 2 hours.
- (2) Average wind speed and direction at each 6,000 foot-level to 102,000 feet (minimum acceptable 78,000 feet) each 6 hours.
- (3) Height of tropopause concurrently with the data in (2) above.
- (4) Fallout weather data may also be obtained from the Air Weather Service's tactical weather station, supporting the corps or the corps artillery.

j. The fire support coordinator is responsible for the preparation of the fire support plan, and the nuclear fire plan. The nuclear fire plan is an appendix to the fire support plan which is an annex to the operation order. Each fire support agency is responsible for its respective fire plan.

k. After the fire support coordinator has obtained the com-

mander's guidance and concept and has coordinated the preliminary plan for nuclear weapons with the G3, he provides the nuclear weapon effects officer (NWE0) in the FSCC with the necessary guidance to prepare the nuclear fire plan.

l. The FSCC disseminates the predicted fallout pattern for each planned nuclear detonation.

89. Developing the Division Fire Support Plan

a. Concurrent planning for an operation is a continuing responsibility at all echelons of command. Dispatch of warning orders, tentative allocation of available fire support means, and the interchange of requests are made to facilitate and expedite fire planning.

b. On receipt of warning orders and the division commander's concept of operation, the division fire support coordinator initiates the development of the division fire support plan.

c. The battle group commander announces his mission and concept of operation. The battle group fire support coordinator (artillery commander) initiates development of the battle group fire support plan.

d. At the same time, the artillery and heavy mortar forward observers with rifle companies work closely with the company commander in developing the *company* fire plan.

e. There must be timely exchange of information between commanders and fire support representatives at division, battle group, and rifle company level to permit the coordinated and concurrent development of fire support plans at each echelon.

f. The format for the fire support plan is, in general, the same as that of the operation order. As a guide to the preparation of the fire support plan, see appendix III FM 6-20.

g. The fire support requirements of the battle group and rifle company constitute the basis for fire planning. The battle group fire support plan is approved by the battle group commander. The artillery portion of the fire support plan is the basis of battle group artillery fire plan. The air portion is used by the battle group S3 (air) in developing the air fire plan. When naval gunfire is available, the naval portion is used by the fire support coordinator and the naval gunfire liaison officer, in developing the detailed requirements of the battle group for naval gunfire. When necessary, the battle group fire support coordinator requests additional fires from higher headquarters to provide coverage which he cannot accomplish with available fire support means.

Section II. COMMAND AND STAFF PROCEDURES FOR NUCLEAR WEAPONS EMPLOYMENT

90. Command Responsibility

a. A major part of the division's combat power lies in its nuclear fire capability. Once nuclear weapons have been allocated to the division, the decision to employ them remains a function of command. The division commander must be constantly aware of the capabilities and availability of various nuclear delivery means.

b. The commander evaluates targets in terms of the mission, nature of the target, availability of nuclear weapons, results desired, and the limiting factors. However, evaluation in terms of firing capabilities, troop safety, detailed effects, and predicted condition of the target area normally requires a detailed analysis which results in recommendations to the commander.

91. Nuclear Fire Support Coordination

a. The division fire support coordination center is charged with the accomplishment of nuclear fire support coordination. The fire support coordinator is responsible for, and directs the personnel in this agency in the planning and coordination of nuclear and nonnuclear fires to include the detailed analysis of nuclear targets.

b. The G2 establishes procedures for channeling all nuclear target information to the FSCC and for processing, and evaluating this information at the FSCC. The fire support coordinator is responsible for maintaining current situation maps and displaying detailed target intelligence. Using this information detailed target analysis is accomplished as required.

c. Nuclear fires are developed and processed in the following manner :

- (1) G2 develops intelligence on possible targets and target complexes. The target, its location, and characteristics are submitted to the G3, the fire support coordinator, and other agencies as required.
- (2) The G3 evaluates general target areas to determine their relative importance and priority for attack. In so doing, he designates target areas and assigns priorities which provide guidance for the detailed target analysis which follows.
- (3) The FSCC is the focal point for nuclear target intelligence and incorporates this intelligence and fire support capability into appropriate fire plans.

- (4) The division engineer recommends targets suitable for the employment of prepositioned weapons for all operations.
- (5) The artillery operations representative (NWE0) in the FSCC performs detailed target analysis and recommends firing means, type of weapons, yields, heights of burst, times on target, and expected results (to include the fallout prediction plot in the event of a surface burst).
- (6) This recommended plan is approved or modified as directed.

d. Action on subordinate unit requirements and requests for surface fire support retained at division:

- (1) Nonnuclear artillery fire support requests from subordinate units will be requested of the division artillery fire direction center, where action is taken within established policies. Where necessary, action will be referred to the division FSCC for approval. Requests for nonnuclear fires from subordinate units through FSCC may be referred to an artillery fire direction center or other fire support agencies.
- (2) Subordinate unit requests to implement prearranged on-call nuclear fires will be controlled by the FSCC as authorized by the division commander.
- (3) Warning of imminent employment of a nuclear weapon is disseminated to higher, lower, and adjacent headquarters and air space clearance is obtained.

e. Following approval of a nuclear fire mission, the following is accomplished:

- (1) For approved missions, the fire support coordination center notifies division artillery fire direction center and other fire support agencies. G3 will notify the remainder of the division staff and affected units of the impending attack, the predicted fallout effects, and the area of contamination.
- (2) If the weapon is to be fired by surface means, the FSCC determines the type of firing means and the unit to fire. The fire mission is then transmitted directly to the firing unit.
- (3) The air force liaison officer insures that all air force elements concerned receive at least a 15-minute warning of the nuclear fire mission. The division aviation officer clears army aircraft from the area to be affected.

- (4) The FSCC initiates action to insure early damage assessment (direct, indirect, and technical). The FSCC notifies other elements of the command as required by standing operating procedure. G3 operations will notify subordinate units and the division staff of actual fallout effects and the actual area of contamination where effects differ from those predicted.

CHAPTER 7

FIRE PLANNING

Section I. GENERAL

92. General

a. The field artillery exerts its influence in combat by fire-power. The characteristics, tactical considerations, and techniques of field artillery firing are covered in FM 6-20 and FM 6-40. The general tactical use and planning of fires are covered in this chapter and FM 6-20.

b. Fire planning includes the procedures and techniques involved in planning for the use of the weapons of a force, so that their missions and employment will be coordinated. Fire support must be responsive to, and consistent with, the changing requirements of the supported unit. Effective fire support requires continuous, detailed, and concurrent planning, and coordination by all echelons. The fire support requirements of the battle group (combat command) and the infantry (tank) company constitute a basis for planning. In addition, fire planning must be responsive to the requirements for fire support of the force as a whole.

93. Fire Support Planning Procedure

a. The planning process starts with the commander's concept of operation which gives the overall picture of the operation and normally includes instructions on preparatory fire and use of available fire support means. Although requests for fire support usually flow from lower to higher echelons, planning and issuing plans for operation are continuous and concurrent functions at all command levels. Therefore, there must be timely exchange of information between commanders and fire support representatives at all levels. A tentative allocation of the available fire support means, the issuance of warning orders, and the interchange of requests are made at the earliest possible stage in the planning phase in order to facilitate and expedite detailed fire planning; by doing this, the preparation of the fire support plan for the battle group (brigade) (combat command) can begin well before receipt of the division operation order and its fire support plan annex. This plan is pre-

pared under the supervision of the direct support battalion (airborne mortar battery) commander as the fire support coordinator and, after approval by the battle group (brigade) (combat command) commander, is included in the battle group (brigade) (combat command) operation order, published as an annex thereto, or issued orally or in a fragmentary written form. This plan is the basis of the detailed fire plans of the available fire support means. It may also include the plan of fires of organic weapons. At battle group (brigade) (combat command) level, the artillery portion of the fire support plan normally is the detailed artillery fire plan. However, the detailed plan may be issued as a separate document, or it may be issued orally or in a fragmentary written form. Initial stages in preparing the artillery fire plan are the same regardless of which issuing procedure is used.

b. Fire planning for nonnuclear fires is influenced by the planned nuclear fires for an operation. Nonnuclear fires supplement nuclear fires. They may be used to attack close-in targets which escape nuclear fire damage or to augment the damage caused by nuclear fires.

Section II. TARGET ANALYSIS

94. General

Target analysis may consist of a rapid calculation at lower artillery echelons or may be a detailed written analysis. All targets are examined to determine their military importance, their relative priority for attack, and the capabilities of available weapons for such attack. The length of time and amount of detail involved depends on the amount of information available concerning the target, availability of means of attack, the degree of coordination required, and the urgency for attack of the target. Those targets that appear suitable for attack by nuclear means are referred to the division fire support coordination center.

95. Target Analysis Process

Factors to be considered in analysis are the mission and plan of supported unit, target characteristics, weather and terrain, effect desired, available means determination of other effects, and comparison of the suitable available means. A form for use in making a target analysis and procedure for nuclear weapons target analysis are presented in appendix II, FM 6-20. Chapter 9, FM 6-20, contains a comprehensive presentation of the procedures and

techniques of target analysis. Chapter 6, TM 3-200 contains the procedures and techniques of chemical target analysis.

96. Fallout Prediction

a. The consideration of fallout is essential to planning operations. Confirmation of fallout prediction is essential in the execution of operations. The fire support coordinator is responsible for the prediction of fallout resulting from nuclear weapons fired by friendly forces. The FSCC prepares the fallout predictions associated with the friendly employment of weapons for inclusion as a part of the detailed nuclear weapons target analysis.

b. The G3 insures that preattack and postattack fallout predictions for friendly nuclear attacks are made as necessary to permit considerations of the effects fallout will have on tactical operations. He insures that preattack predictions are disseminated to those staff officers, agencies, and other headquarters which require them for planning. Postattack predictions are disseminated to all agencies, the activities of which may be affected. For detailed procedures of fallout prediction, see TC 101-1, 1958.

97. Postattack Analysis of Fires

Effective damage assessment is dependent upon the availability of accurate information as to the actual height, location, and yield of burst. The procedures employed are discussed in FM 101-31. For Chemical Fire post action analysis, see TM 3-200.

Section III. RESPONSIBILITIES FOR FIRE PLANNING

98. General

Upon receipt of warning orders and the division commander's concept of operations, the battle group (combat command) commander announces his mission and concept of operations. His staff and company (battalion) commanders immediately initiate the development of the plan of operations and the plan for employment of organic infantry weapons.

99. Company Level

a. General. The company commander and the forward observers discuss the mission and concept of operation, select targets which must be engaged to support the plan of operation, and decide the best method of attack. Targets suitable for attack by the company's organic weapons are assigned to those weapons insofar as their capabilities and available ammunition permit. Targets not sus-

ceptible to profitable attack by organic weapons are then discussed in order to recommend the most economical and profitable means of attack by supporting agencies.

b. Infantry Division. The fires of the infantry division battle group heavy mortar platoon and the fires of the direct support artillery are first coordinated at the rifle company by the company commander and the forward observers. Based on the results of this coordination, each forward observer submits an informal request to the artillery battalion fire direction center indicating targets for attack by support weapons and the desired means of attack. At the direct support artillery battalion the fire plans are coordinated and consolidated. After approval by the battle group commander, the fire plan is submitted to division artillery.

c. Airborne Division. Fire planning is accomplished by the artillery and mortar battery forward observers in coordination with the company commander. The informal requests are submitted to the mortar battery fire direction center. There the plans are consolidated and coordination effected with the battle group commander. Fire planning for the artillery battery is accomplished and a copy of the completed fire plan is submitted to the division artillery fire direction center.

d. Armored Division. After coordination with the company commander, the forward observers submits an informal fire plan to the artillery liaison officer at battalion task force where all of the forward observer fire plans are consolidated. Coordination with the battalion task force commander is effected and the artillery fire plan is forwarded to the liaison officer at combat command or to the direct support artillery battalion fire direction center, depending on unit SOP.

100. Armored Division Combat Command (Infantry and Airborne Division Battle Group) Level

a. Concurrent with the planning at company level and at the battalion task force level in the armored division, the fire support coordinator and other fire support representatives are receiving target requests from the force commander and his staff. Target requests may also come from division or division artillery headquarters. Upon receipt and evaluation of these requests, the fire support coordinator consults with the supported unit staff to determine those targets which can be successfully attacked by the organic weapons of the unit. He then advises the commander of the supported unit as to the most suitable means of attacking the various targets. Based on the commander's decision and wishes,

targets are either included in the organic weapons fire plan or in the detailed fire plans of the fire support agencies.

b. Barrages are integrated into the artillery fire plan. Barrages will be assigned as follows:

- (1) *Airborne division battle group*. A minimum of one 105-mm howitzer battery barrages and two platoon barrages of the mortar battery.
- (2) *Infantry division battle group*. A minimum of one barrage for each battery of the direct support battalion and either one platoon barrage or two section barrages for the heavy mortar platoon of the battle group.
- (3) *Armored division combat command*. A minimum of one barrage for each battery of the direct support battalion.

c. The artillery fire support coordinator at combat command (battle group) (brigade) headquarters supervises the preparation of the fire plans for other fire support agencies, coordinates these plans with the artillery fire plan, and insures that they are integrated with the organic weapons fire plan and the plan of operations. He gives particular attention to defensive fires and to the coordination of fires along boundaries between units. The fire support coordinator, who has exercised supervision over the preparation of these plans, then makes any changes, additions, or deletions considered desirable or essential and effects final coordination with the staff.

d. Upon approval of the combat command (battle group) (brigade) commander, the artillery fire plan and the air fire plan (requests for preplanned air missions), and the naval gunfire plan (if the Navy is providing fire support) are submitted to the division fire support coordinator (division artillery commander) for coordination and provision of additional fires requested.

101. Division (FSCC) Level

a. The fire support plans of the combat commands (battle groups) (brigades) are reviewed upon receipt by the division fire support coordinator. Technically, the fires included in these plans which are in excess of the support means directly available to the combat commands (battle groups) (brigades) constitute requests for additional fires. However, in a normal situation, these requests will usually represent fires which previously have been made available to the combat commands (battle groups) (brigades) either in the division fire support plan annex or in form of additional tentative allocations of fire support. Consequently, the division fire support coordinator reviews fire support plans of the combat

commands (battle groups) (brigades) to insure that they can be fulfilled by the fire support means allocated to the division and that maximum effective use is being made of organic and supporting weapons. The plans are then consolidated, coordinated, and integrated; particular attention is given to the areas adjacent to boundaries in order to insure that targets in those areas are adequately attacked and that friendly troops are effectively safeguarded against exposure to friendly fire. The coordinated plans are augmented by the addition of fires required by the division commander. After approval by the division commander, the detailed fire plans of the various fire support agencies are distributed.

b. Fire plans are continually revised based on acquisition of new targets and/or changing situations.

102. Effect of Mission Type Order of Support (Airborne Division)

a. The mortar battery commander is the battle group fire support coordinator. He is responsible for preparation of the fire support plan. Fire support planning is accomplished at the level of the maneuver force commander. The mortar battery commander, as the battle group artillery officer and fire support coordinator, calls for and utilizes the fire support available from the supporting battery. The supporting artillery battery commander is responsible that his battery provides this artillery support to its best capability consistent with the instructions, restrictions, or priorities established by division artillery.

b. Fire planning is normally accomplished at battle group and division artillery levels. Since a supporting battery is in between these two levels of command, it will not normally plan fires. However, in a situation where a battery is placed in support of a task force as the only or the senior artillery headquarters, the battery becomes responsible for fire planning for the task force, to include scheduling of fires as necessary. The battery commander becomes the task force fire support coordinator. The task force artillery fire plan is submitted to division artillery for final coordination and augmentation by the fires of the division general support artillery.

c. When an artillery battery is placed in support of one battle group its fires are considered as allocated to the battle group for fire planning purposes unless otherwise specified by the division artillery commander. The supporting battery then assists the battle group mortar battery by providing information and assistance in scheduling. The degree of assistance will vary from providing a liaison officer from the reinforcing artillery battery to the mortar battery to providing as much of the facilities and per-

sonnel of the battery as necessary. The battle group commander may request the supporting battery commander to coordinate his fire support. The battle group artillery fire plan will be sent directly to division artillery with an information copy to the supporting artillery battery. In the defense, each 105-mm howitzer battery is allocated to the battle group for barrage assignment.

d. When an artillery battery is placed in support of more than one battle group, division artillery specifically allocates the fires of the supporting battery for fire planning purposes and for barrages. The division fire support plan should specify a priority of fires to certain battle group(s) to alleviate conflicting fire support requirements. The supporting battery coordinates the battle group artillery fire plans and may plan additional fires as specifically directed by division artillery. The coordinated battle group fire plans are forwarded to division artillery by the supporting battery.

103. Fire Planning Channels

Although the principles of fire planning and the actual techniques involved in the construction of an artillery fire plan are the same, the channels for fire planning and submission of fire

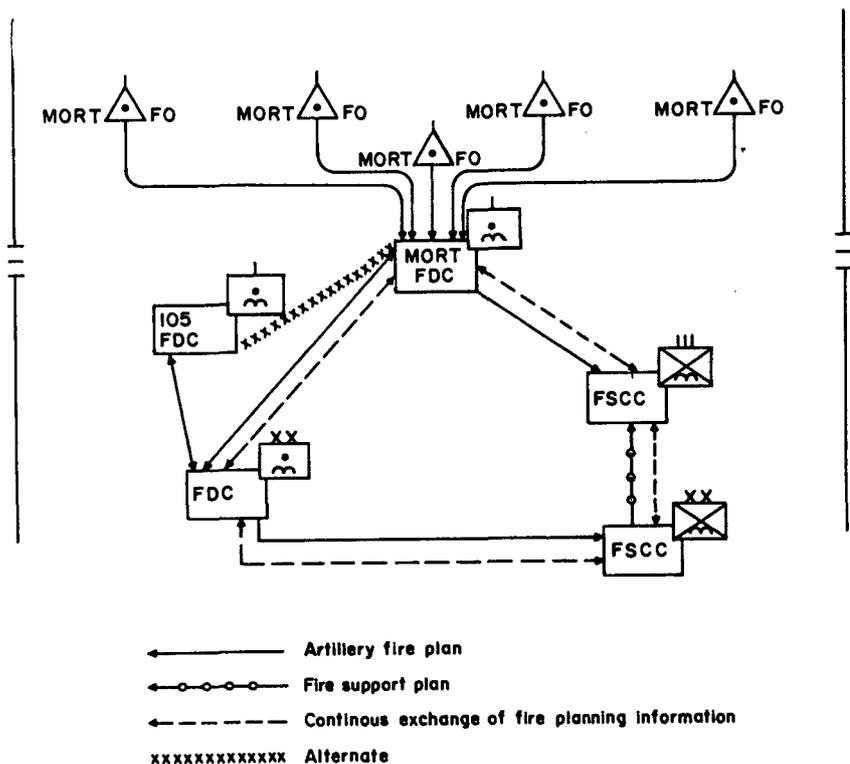


Figure 31. Airborne division artillery fire planning channels.

plans vary within the airborne, armored, and infantry division. Figure 31 shows the channels used in the airborne division, figure 32 shows the channels used in the armored division, and figure 33 shows the channels used in the infantry division.

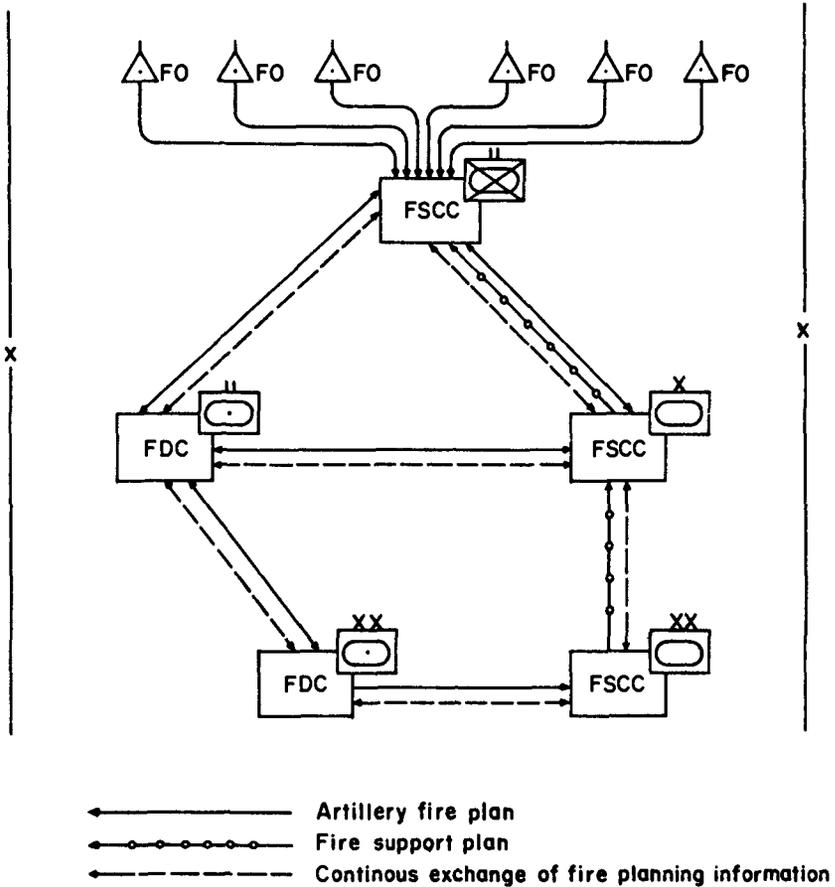


Figure 32. Armored division artillery fire planning channels.

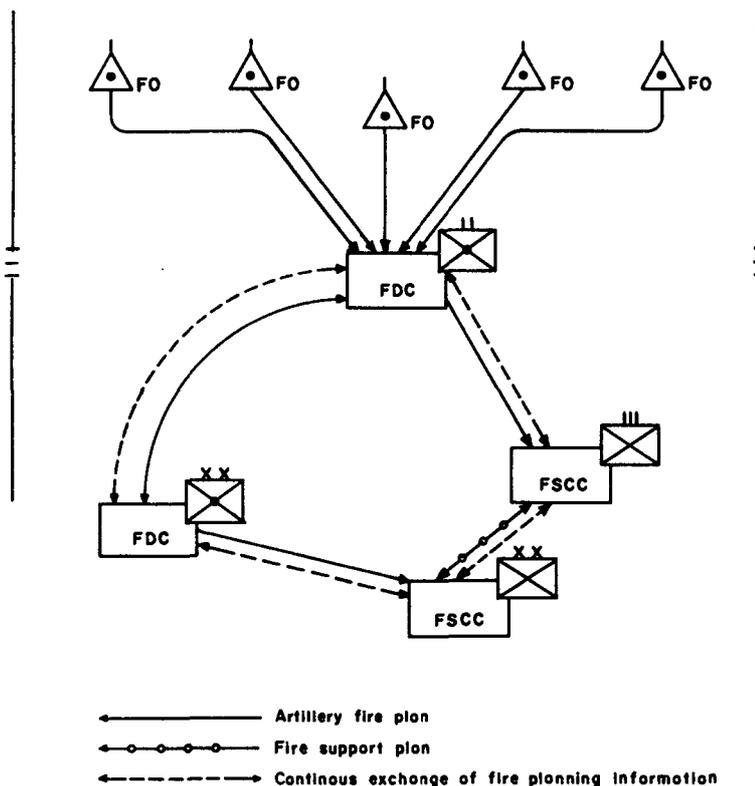


Figure 33. Infantry division artillery fire planning channels.

Section IV. DIVISION ARTILLERY FIRE PLANNING

104. Composition of Artillery Fire Plan

a. The artillery fire plan, which is prepared under the supervision of the direct support artillery battalion (airborne mortar battery) commander and approved by the combat command (battle group) (brigade) commander, is a directive to execute the fires contained therein. It shows graphically the planned concentrations and includes a target list. The plan will also include in its marginal information any written information required to clarify the plan plus any special requests to higher headquarters. Where appropriate, the plan will include a table of groups of fires and a schedule of fires. If a schedule of fires is included, it will show the concentration to be fired, the time each is to be fired, the unit(s) to fire on each, and the amount of ammunition to be expended. Additional information, such as no-fire lines and boundaries, may also be shown when required. Tabs may be attached showing position areas, fire capabilities, and the observation plan.

When forwarded to the division fire support coordinator, it may include requests for special fires.

b. When an artillery unit is to participate in the delivery of fires scheduled by other artillery units, such as a preparation in support of a coordinated attack, the higher artillery headquarters may be expected to exercise closer coordination and control of the fires. This is usually accomplished by furnishing each artillery unit a detailed time schedule. An example of a battalion schedule of fires is shown in figure 34.

c. To facilitate the tactical handling of prearranged fires, it may be desirable to arrange concentrations into groups of fires, series, or schedules. For a discussion of the technique of scheduling and grouping fires, see FM 6-20. The method for designating concentrations will be set up in an SOP from higher headquarters. A system of numbers and letter prefixes should be used that will insure that duplication in concentration designations will not exist (app. III).

d. The battalion fire capability chart is submitted as soon as possible to assist the higher artillery commander in his fire planning, consolidation of plans, and assignment of missions.

e. The fire capability of a battery is defined as the area that can be reached by 4 weapons in a 6-piece battery, by 3 weapons in a 4-piece battery, or by 1 weapon in a 2-piece battery. This area is limited in—

- (1) Deflection by the distance that the pieces can traverse without undue delay for shifting trails or moving carriages.
- (2) Maximum range by the characteristics of the weapon.
- (3) Minimum range by the mask as determined at the gun position and by the characteristics of the weapon.

f. The coverage in deflection may be expressed as so much left and right of a centerline, by reference to terrain features, or as grid azimuths for left and right limits.

g. The fire capabilities of the battalion are the aggregate of the fire capabilities of its batteries. The fire capabilities chart used in the battalion should show the area that can be covered by the individual batteries (fig. 35). The fire capabilities chart sent by battalion to the higher artillery headquarters may show the area that can be covered by the individual batteries, by two batteries, or by all batteries, as directed by the next higher commander.

Bn	Battery	-28	-26	-24	-22	-20	-18	-16	-14	-12	-10	-8	-6	-4	-2	H	+2	+4	+6	+8	+10	+12	
1st How Bn	A	DA 105 24			DA 402 18		MAW 30		MABC 30		DA 1 24		DA 104 18		DA 101 18		DA 105 18		DA 402 18		DA 106 24		
		DA 201 18																					
		DA 102 18																					
34th Arty	B						MAW 30		MABC 30		DA 1 24		DA 102 18		DA 201 18		DA 202 24		DA 203 24		DA 200 18		
	C	DA 102 18					MAW 30		MABC 30		DA 1 24		DA 103 24		DA 100 18		DA 106 18		DA 213 24		DA 204 24		

The heading is blocked out in 2-minute time intervals with respect to H-hour. Within each block, the horizontal bars are a graphical representation of the time and duration for firing mission. The letters and figures above the horizontal bar are the concentration designated by battalion. The figures below each horizontal bar are the number of rounds of ammunition to be expended on each mission.

Figure 34. A type schedule of battalion fires (armored division).

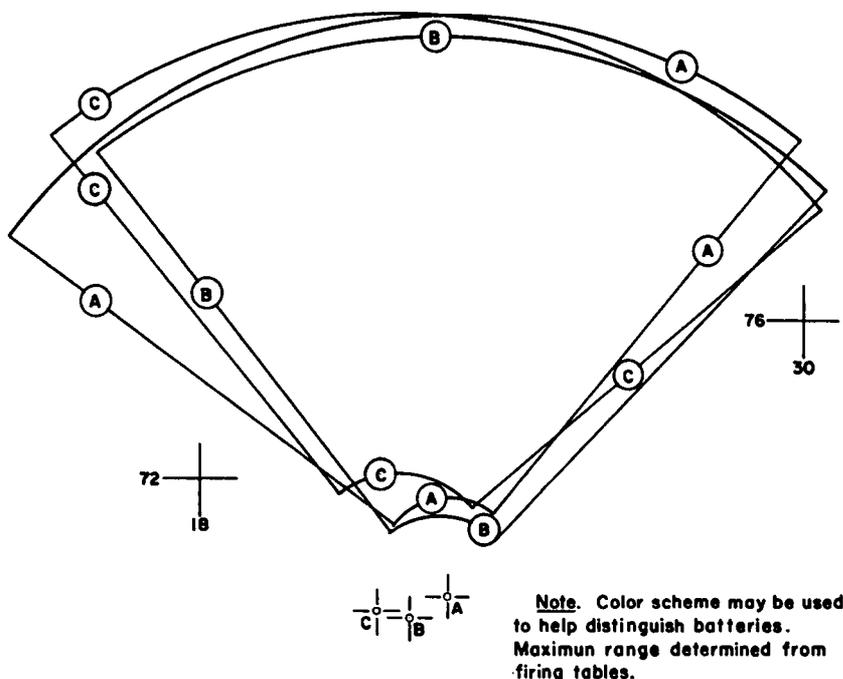


Figure 35. Battalion fire capabilities chart, armored division.

105. Zones of Fire

a. *General.* To insure that fires may be distributed and massed as desired by supported and higher commanders, zones of fire are designated for battalions. The zone of fire indicates the lateral, and sometimes the short and far, limits within which the battalion must be able to fire. These limits should be designated by points or lines. Zones of fire are assigned to insure adequate coverage of critical areas and are assigned with the tactical mission.

b. *Normal and Contingent Zones.*

- (1) The normal zone of a battalion in direct support usually coincides laterally with the zone or sector of the supported unit. The other portions of its zone of fire are called contingent zones. Direct support commanders have primary responsibility for observation and fire in their normal zones. They fire in their normal zones on their own initiative.
- (2) The normal zone of a battalion in general support is either the zone or sector of the force as a whole or so much of the zone or sector as is specified. Contingent zones into which these battalions may be ordered to

shift their fires may be prescribed. Fires delivered short of the no-fire line on targets located by observers of units other than the direct support unit must be cleared with the agency establishing the no-fire line through division artillery or the direct support unit concerned. If the clearance request is made to division artillery, it must clear with the direct support unit concerned.

c. Zones in Depth. Zones in depth may be prescribed by assigning position areas, or by prescribing minimum range lines and lines to be reached by all or part of the fire power of a unit.

d. Assignment of Zones to Batteries. The zone of fires of the battery corresponds to the zone of fire of the battalion unless otherwise ordered. The normal zone of fire of the battery corresponds to the normal zone of the battalion. In special situations where a battalion must cover a very wide front, a battery may be given a centerline to indicate its zone of fire. The zone of fire so indicated may not be the same as the battalion's zone of fire.

106. Direct Support Battalion Fire Planning

Fire planning in the direct support battalion is based on the fire support portion of the supported unit commander's concept of operation. The artillery fire plan is a consolidation of the artillery portion of the force headquarters' fire support plan and the requests of the supported unit. Other concentrations may be included in the fire plan from information received from other sources.

a. Upon receiving his mission from the higher commander, the supported unit commander confers with the artillery battalion commander. A tentative plan of artillery support is made at this conference. A joint reconnaissance is made whenever time permits. Prior to the conference, the plan of fires may exist only in the mind of the artillery battalion commander, based on his knowledge of the situation and the artillery battalion standing operating procedure. Regardless of its completeness, the plan must be sufficient to effect close support at any time after the batteries occupy positions. During the conference, the following factors are considered :

- (1) The mission and plan of maneuver of the supported unit.
- (2) Fire support requirements.
- (3) Artillery and ammunition available.
- (4) Information of the enemy.
- (5) Ground required for artillery observation.
- (6) Requirements and restrictions from higher headquarters.

- (7) An index of the terrain.
- (8) The supported unit's fire support plans.

b. Within the limitations imposed by the higher artillery commander and by terrain, the plan of action of the supported unit dictates the artillery battalion commander's choice of battery positions. Dependent on the mission of the supported unit and the force commander's concept of operation, the artillery battalion commander must ascertain the following :

- (1) The situation to include possible nuclear or chemical employment.
- (2) Time of attack.
- (3) Formation for attack or defense.
- (4) Organization of the ground for defense.
- (5) Location of the outposts and fires desired for their support.
- (6) Zone of action or defensive sector.
- (7) Line of departure or forward edge of the battle area.
- (8) Priority of fire.
- (9) Plans for the employment of all supporting weapons.
- (10) Intermediate and final objectives.
- (11) Phase lines, if any.
- (12) Location of the reserve and plans for its employment.
- (13) Locations of command posts.

c. In discussing the tentative concept of artillery fire support, the commander considers the following factors so far as they are applicable to the situation :

- (1) Nuclear fires planned for support of maneuver elements of the force.
- (2) Nonnuclear artillery fires desired prior to the attack.
- (3) Preparation, if any.
- (4) Defensive fires needed, including support of the outposts.
- (5) Priority of fire to the element making the main attack.
- (6) General location, time, duration, and priority of fires desired beyond close supporting distance such as fires to neutralize enemy observation posts, command posts, and signal facilities, and interdiction fire on routes of approach.
- (7) Fire desired outside the supported unit zone of action, which must be coordinated with the adjacent unit, in whose zone the fires will fall.
- (8) Precautionary means taken to protect friendly troops from the effects of nuclear weapons (e.g. nuclear safety lines, warnings required, passive defense).
- (9) Locations of the barrages.

- (10) Use of a common method of designating terrain features by the artillery and the supported unit.
- (11) Signals for lifting or shifting artillery fire, if not already prescribed.
- (12) Proposed routes of withdrawal in a delaying action.
- (13) Counterattack plans in a defense.
- (14) Restrictions, if any, on registration or time of opening fire.
- (15) Battalion fire capabilities.
- (16) Other missions which may require the placing of observers to cover certain terrain.
- (17) Availability of additional artillery, naval gunfire, or air support.
- (18) General plan of patrolling.
- (19) Fires ordered by higher authority, if known at that time.
- (20) Location of a no-fire line.

107. Continuation of Fire Planning

The battalion commander, through his forward observers, liaison officers, and S2, and by personal contact with the supported unit commander, keeps himself constantly informed of the situation and the requirements for artillery fire support. Whenever possible, he anticipates the need for additional fires and submits requests to the division artillery fire direction center. Throughout the action, he plans for additional observation, changes of position, methods of attacking targets of opportunity, or other action which will maintain or increase the efficiency of his fire support.

108. General Support Battalion Fire Planning

a. Fire planning for the general support battalion is accomplished by division artillery. Nevertheless the principles of concurrent and continuous planning apply.

b. The general support battalion commander's mission will generally include the limits of an area which he must be able to cover or targets which he must be able to reach. He selects battery positions which will enable him to reach these objectives and plans his observation accordingly.

109. Reinforcing Battalion Fire Planning

a. A battalion with a reinforcing mission receives its fire plan from the reinforced unit.

b. The reinforcing battalion commander should receive all available information regarding the supported unit and the plans of the reinforced artillery battalion. In addition, he receives

notification of the fires desired by the reinforced battalion, including scheduled fires and the priority of reinforcing fires.

c. The factors considered by the two battalion commanders are—

- (1) The primary mission of the reinforcing battalion.
- (2) Number of batteries or amount and type of ammunition available for reinforcing fires.
- (3) Probable duration of reinforcement.
- (4) Coordination of observation.
- (5) Fires ordered by higher authority.

d. When the tactical mission of a general support battalion is modified with the addition of general support-reinforcing as a standard tactical mission, its fire plan is still the plan of the higher artillery echelon. However, to accomplish the modified mission, the battalion commander's initial plan must be formulated in conference with the reinforced commander, and it includes the reinforcing fires requested. To facilitate continuous fire planning, liaison is established with the reinforced unit.

Section V. FIRE PLANS FOR SUPPORTING AGENCIES

110. Air Fire Plan

a. The battle group (combat command) S3 air, in coordination with the fire support coordinator or his representative and the forward air controller, prepares the request for prearranged air missions. In preparing the request, consideration must be given to the allocation of air support received from higher headquarters, as shown in the fire support plan, and to the availability of suitable targets. The requests for prearranged air missions received from the companies (battalions) are coordinated and are augmented, if required. The air support request form is prepared to show the requesting unit's designation, the priority the unit assigns to the mission, the description and location of the target, the results desired, the time on target, and other pertinent information needed by the tactical air force in determining the most desirable method of attack. After approval by the battle group (combat command) commander or his designated representative, the request for prearranged air missions is forwarded to the division G3 air.

b. The division G3 air follows a procedure similar to that used by the battle group (combat command) S3 air. The requests for prearranged air missions received from the battle group (combat commands) are coordinated and are augmented, if required. After

approval of the consolidated request by the fire support coordinator and the G3, it is forwarded to the next higher headquarters for necessary action.

c. The battle group (combat command) air fire plan and division air fire plan are prepared and are adjusted after confirmation of air requests have been received.

d. As a guide to the preparation of the air fire plan see appendix III, FM 6-20.

111. The Naval Gunfire Plan

a. When naval gunfire is available to support a battle group (combat command) operating independently, the battle group (combat command) naval gunfire plan is developed by the naval gunfire liaison officer and coordinated with the battle group (combat command) fire support coordinator. In division operations where naval gunfire is available, the battle group (combat command) normally does not prepare a formal naval gunfire plan; rather, battle group (combat command) requirements for naval gunfire are forwarded to the division naval gunfire officer (army officer) for inclusion in the division naval gunfire plan. Battle group (combat command) requirements forwarded to division should include the requesting unit's designation, the priority the unit assigns to the mission, the description and location of the target, the results desired, the time on target, and other pertinent information needed in determining the most desirable method of attacking the target. Battle groups (combat commands) are provided with copies of, or appropriate extracts from, the approved division naval gunfire plan.

b. The level at which a naval gunfire plan is approved will depend on the size and type of operation. In division operations, authority to approve the plan is normally delegated to the division fire support coordinator.

c. The naval gunfire plan normally shows the concentrations to be fired, the ships available for fire support, and a schedule of fires when appropriate. It may show the location of boundaries and the location of forward elements of the supported force. The schedule of fires serves as a directive to shore fire control parties and the naval gunfire liaison officers with the battle groups (combat commands) to request naval gunfire from available ships on the targets at the time indicated in the schedule of fires.

d. As a guide in the preparation of the naval gunfire plan, see appendix III, FM 6-20.

112. Nuclear Fire Plan

a. Nuclear fires may be scheduled for delivery at a particular time, they may be preplanned for on-call targets, or they may be delivered against targets of opportunity. Preplanning expedites and simplifies subsequent delivery; hence, on-call nuclear fires should be anticipated, and these fires should be preplanned. Frequently, fire on a target of opportunity will be effective only if quickly delivered. Concurrent planning by the commander and staff must be continuous to insure that targets of opportunity can be readily engaged when located. To achieve quick delivery, procedures must provide for rapid transmission of the request.

b. Nuclear fire requests are processed through command channels. Procedures must be established to insure rapid transmission and delivery of requests to the commander or his representative authorized to act on the request. The request may also be sent through fire support channels to alert the fire direction center and to insure delivery by using a dual transmission through fire power channels.

c. The considerations, procedures, and general steps in the planning process when nuclear fires are used are essentially the same as those for nonnuclear fire planning. Nuclear fires are normally included in a nuclear fire plan but may be included in the fire plans of the appropriate fire support agencies. When field artillery is the only nuclear fire support available, nuclear fires may be included in the artillery fire plan. In any case, nuclear and non-nuclear fires must be carefully and fully coordinated with each other and with the plan of operations for maximum effect. In nuclear warfare, nuclear fires may frequently be so essential to the accomplishment of the force mission that the plan of maneuver will be based on the fire support plan.

d. At battle group (combat command) level, nuclear fire planning is concerned primarily with nuclear fires scheduled by division for delivery in the battle group (combat command) sector. When battle group (combat command) operation plans are based on requested nuclear fires, the plans are not made final until the requests have been approved by the appropriate commander or his designated representative.

e. The nuclear fire plan must include, as a minimum, the—

- (1) Location of ground zero.
- (2) Type and yield of weapon.
- (3) Delivery unit or means.
- (4) Time and height of burst.

f. The division G3 makes a general analysis of targets in relation to their possible effect upon missions to be accomplished, the planned scheme of maneuver, priority of attack, assigned objectives, and the tactics to be employed. The detailed target analysis is accomplished in the division FSCC.

g. As a guide to the preparation of the nuclear fire plan, see appendix III, FM 6-20.

113. The Chemical Fire Plan

For details of Chemical fire planning, see FM 3-5 and TM 3-200.

114. Action by the Division Fire Support Coordinator

Fire plans are reviewed by the division fire support coordinator to insure that—

- a.* Nuclear and nonnuclear fires are fully coordinated.
- b.* Unnecessary duplication of fires is eliminated.
- c.* The plans of the various fire support agencies are coordinated.
- d.* Adequate fires are planned for targets and critical areas.
- e.* Troop safety criteria are met.
- f.* Maximum effective use is being made of fire support means.
- g.* The plans can be implemented with the fire support means available to the division. If the fire plans cannot be implemented with the fire support means available to the division, additional means are requested as modifications are effected in the plans.

115. Fire Planning in Support of Task Forces

a. The procedures and techniques involved in fire planning for a task force are the same as for the battle group (combat command) as outlined herein and in FM 6-18.

b. The senior artillery commander with the task force is the fire support coordinator. The task force fire support plan, if written, and the fire plans are forwarded to the fire support coordinator at the next higher echelon for coordination and further implementation, if appropriate.

c. When a nuclear delivery means has been attached to a task force, special weapons-qualified personnel must be included in the task force organization to accomplish the required detailed target analysis.

Section VI. COUNTERMORTAR AND COUNTERBATTERY ACTIVITIES

116. General

Corps artillery is responsible for all counterbattery activity within the corps sector. Division artillery is responsible for counter-mortar activities within the division sector but may be called on by corps artillery to fire counterbattery missions.

a. Terminology.

- (1) Countermortar activities are all activities carried on for the purpose of locating and neutralizing or destroying enemy mortars.
- (2) Counterbattery activities are all activities carried on for the purpose of locating and neutralizing or destroying enemy artillery or fire control installations.
- (3) A silent countermortar or counterbattery policy is a policy announced by the higher commander under which counterfires are withheld to provide time for all available means to collect counterbattery or countermortar intelligence information so that a more effective program of fire may be prepared.
- (4) An active policy is announced by the higher artillery commander when he desires delivery of counterfire as soon as the hostile battery or mortar(s) are located.
- (5) A semiactive policy is a compromise between the silent and active policy. Such a policy may be a silent policy except for the delivery of counterfires on those locations from which hostile fires are causing damage to friendly elements. Some artillery units may also be required to follow an active policy while other units follow a silent policy in order not to disclose the presence of additional units or loss of units.
- (6) Reports of hostile artillery shelling, rocket shelling, and mortar shelling must be reported without delay to the appropriate headquarters which can evaluate and act upon the information. These reports are transmitted by the most rapid means available and follow a prescribed form (FM 6-20).

b. Intelligence. The force commander utilizes all of his intelligence agencies for the collection of counterbattery and countermortar information. The principal sources of such information are countermortar radar sections of the corps target acquisition battalion and the infantry and armored division artilleries, shell-

ing reports, sound ranging by the counterfire squad organic to the infantry battle group, sound and flash ranging by the nearest target acquisition battery, ground and air observers, prisoners of war, and photo interpretation. Countermortar and counterbattery information and locations are disseminated to appropriate artillery units by the force artillery command, normally division artillery.

c. Artillery Counterfire Information Form. The artillery counterfire information form is used for recording both information of hostile artillery or mortar shelling and the locations of hostile batteries or mortars and counterfire action. For details concerning this form and its use, see FM 6-20.

d. Records. FM 6-20 contains a complete discussion on techniques and procedures in the use of the countermortar and counterbattery forms, records, and charts maintained at corps artillery and division artillery headquarters. The records and forms kept by division artillery units will usually be limited to hostile mortar and battery lists and a file of countermortar and counterbattery information forms containing shelling report information on hostile mortars or hostile batteries originating in the artillery battalion or its supported units.

117. Countermortar Activities

a. General. An artillery battalion commander with a direct support mission has three primary responsibilities in connection with countermortar activities. They are—

- (1) The collection of countermortar information from all available sources.
- (2) The execution of countermortar fires on hostile mortars in the zone of action of the supported unit, on weapons outside the zone which affect the supported unit's mission, and as ordered by the higher commander.
- (3) To function as part of the division artillery countermortar organization (FM 6-20).

b. Source of Information. The sources of information available to the battalion are—

- (1) The countermortar radar section.
- (2) Mortar shelling reports.
- (3) Infantry and armored units and artillery observers.
- (4) Countermortar section of division artillery headquarters.
- (5) Infantry and armored patrols.

c. Coordination With the Supported Unit. Coordination of countermortar information and fire is effected by the artillery bat-

talion commander through close liaison with the supported force. There must be a free exchange of information and complete cooperation between the supported unit and the artillery battalion. Mortars located by the counterfire squad of the battle group may be attacked by infantry supporting weapons if within their capabilities, if not, the supported unit commander may request artillery fire. Mortars located by an artillery battalion counter-mortar radar section will usually be attacked by artillery fire. In any case, fires by the most effective available weapons will be requested without delay. Weapons will be economically utilized consistent with the urgency and type of mission.

d. Fires. Countermortar fires are those fires delivered for the purpose of neutralizing or destroying hostile mortars. All weapons with high-angle capabilities may be employed in countermortar fire, but mortars and light artillery howitzers are preferable except when enemy weapons are in well fortified positions. Surprise is most desirable in the initial rounds of the neutralization to obtain maximum casualty effect.

Section VII. AIR DEFENSE ARTILLERY SUPPORT

118. General

a. Nuclear and other technological advances have increased the capabilities of modern weapons systems to attack and devastate area targets. It is necessary to insure that the air defense means required to provide the essential level of active air defense are available. The area air defense commander will determine the requirement for air defense artillery. For discussion of priorities, see FM 6-20 and FM 44-1. To employ air defense artillery effectively, a thorough understanding of the capabilities and limitations of air defense artillery weapons is necessary.

b. The mission of air defense artillery includes all measures designed to destroy, nullify, or reduce the effectiveness of an enemy attack by aircraft, and cruise or ballistic type missiles after they are airborne. Air defense artillery units equipped with weapons capable of neutralizing or destroying surface targets may be assigned an additional mission paralleling that of the field artillery. However, the threat of aerially delivered nuclear weapons normally makes it imperative that the air defense mission remain the first priority.

119. Employment in Surface Role

When an air defense artillery unit is employed as reinforcing artillery, the commander of the reinforced field artillery unit

coordinates the resources of both the reinforced and the reinforcing unit. Employment is similar to that of any reinforcing artillery unit. For further discussion of tactical employment of air defense artillery see FM 6-40 and FM 44-1.

Section VIII. BATTLEFIELD ILLUMINATION

120. General

Illumination of the battlefield is a supporting mission and is a responsibility of the artillery. Illuminating shells, aircraft flares, and field artillery searchlights are used to facilitate night observation and provide assistance to infantry and armored units during night operations.

121. Illumination Planning

a. Commanders of supported units consider illumination capabilities in planning night operations and the illumination plan is integrated into the fire support plan. The development of the illumination plan parallels fire planning and is accomplished by the forward observers, liaison officers, direct support battalion commanders, and division artillery commander in coordination with the supported commander at each echelon.

b. Illumination target acquisition is performed by all target acquisition agencies. All requests are submitted through artillery channels and are coordinated at division artillery. The illumination plan is prepared at division artillery. Division artillery makes the decision to illuminate after coordination with corps artillery whenever adjacent units may be effected.

c. For further discussion of illumination see FM 6-20, FM 6-40, and FM 6-115.

CHAPTER 8

CONDUCT OF BATTALION OPERATIONS

Section I. POSITIONING OF ARTILLERY UNITS

122. General

This chapter covers the fundamentals of tactical operations of field artillery howitzer (gun) units. It deals with battalion-size units; however, the same principles, with modification, will apply to battery-size units. For further discussion of operations for battery-size units, see FM 6-140. For tactical employment of division artillery missile units, see FM 6-61.

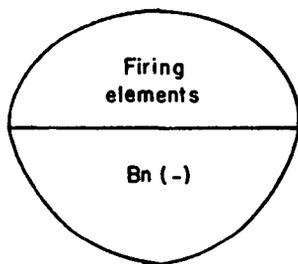
123. Methods

There are four general methods of positioning field artillery units. This discussion deals with divisional field artillery units of battalion size. However, the methods cited are applicable to cannon and missile field artillery units of battery size. Each of the four methods has many advantages and disadvantages. The value of a particular method or methods depends on the *type of unit*, the *situation*, the *mission*, and *enemy capabilities*. There are also many variations, modifications, and combinations of these methods which the artillery commander can use to meet the requirements of a particular situation.

a. Method 1. The battalion occupies a position area (fig. 36). The position area will always include firing positions. Firing elements and headquarters and service elements are in a common perimeter. Firing sections are positioned, and every feasible action is taken to insure that the time required to prepare for and fire a mission is kept at a minimum. Displacement of the firing elements or other elements of the battalion is made as required by the tactical situation rather than on the completion of fire missions. The battalion commander also selects or recommends (dependent on his mission) alternate and supplementary positions to which the battalion or elements thereof can displace.

- (1) The principal advantages of this method are as follows:
 - (a) It simplifies command, administration, messing, survey, communications, and local security problems.

- (b) The time required to resupply ammunition to firing sections is reduced to a minimum.
 - (c) Reaction time, rate of fire, and reliability in meeting firing schedules are effected favorably.
- (2) The principal disadvantages of this method are as follows:
- (a) The large concentration of personnel, vehicles, and weapons in one area facilitates detection by the enemy.
 - (b) A single nuclear weapon employed against the battalion position area might destroy the entire battalion.
 - (c) Displacement of the entire battalion may be necessary if the position is compromised.
 - (d) Repeated firing of weapons from the same positions may disclose the location of the battalion.



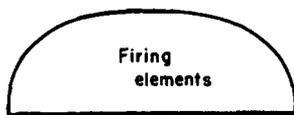
Headquarters and service elements and firing elements in a common perimeter. This area includes the firing battery of a rkt / how battalion, or the letter batteries of a cannon battalion. The area includes firing positions. Alternate positions are not shown.

Figure 36. Battalion position area, method 1.

b. Method 2. The battalion occupies a position area (fig. 37). The position area will always include firing positions. Firing elements and headquarters and service elements are in separate perimeters. Firing sections are positioned, and every feasible action is taken to insure that the time required to prepare for and fire a mission is kept at a minimum. Displacement of the firing elements or other elements of the battalion is made as required by the tactical situation rather than on the completion of fire missions. The battalion commander also selects or recommends (dependent on his mission) alternate and supplementary positions to which the battalion or elements thereof can displace.

- (1) The principal advantages of this method are as follows:
 - (a) The location of firing elements and headquarters and service elements in separate perimeters make it more difficult for the enemy to destroy the battalion with a single nuclear weapon.

- (b) Enemy action against one element of the battalion will not require displacement of the entire battalion.
 - (c) The location of battalion elements in more than one area makes it more difficult for the enemy to locate the battalion as a whole.
- (2) The principal disadvantages of this method are as follows:
- (a) Command, administration, survey, communications, and local security problems are more complex than in method 1.
 - (b) The time and effort involved in ammunition resupply to firing sections is greater than in method 1.
 - (c) Repeated firing of weapons from the same positions may disclose their locations to the enemy.



Headquarters and service elements and firing elements in separate perimeters. This area includes a firing battery of a rkt / how battalion or one letter battery of a cannon battalion. Therefore, the number of these areas will depend on the type of unit (most cannon battalions require three). The area includes firing positions. Alternate positions are not shown.

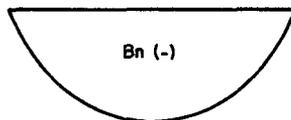


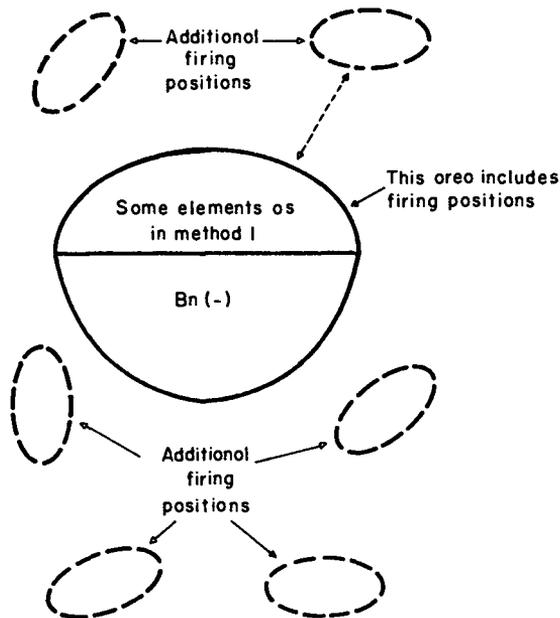
Figure 37. Battalion position area, method 2.

c. Method 3. The battalion occupies a position area (fig. 38). The position area will always include firing positions. Firing elements and headquarters and service elements are in a common perimeter. Unoccupied firing positions in addition to those within the common perimeter are selected as necessary to provide desired fire capabilities. One of these additional firing positions is normally used (i.e., time permitting) for firing a mission. The position is occupied by a firing element(s) only long enough to complete the fire mission. The firing element then returns to the battalion position area. Missions may be fired from firing positions in the battalion position area when conditions make it infeasible to accomplish the mission from another location. Firing elements are positioned and every feasible action is taken so that minimum time is required to prepare for and fire a mission from the battalion position area. Displacements, other than the movement of a firing element as mentioned above, are made as required by the tactical

situation rather than on the completion of fire missions. The battalion commander also selects or recommends (dependent on the mission) alternate and supplementary positions to which the battalion or elements thereof can displace.

- (1) The principal advantages of this method are as follows:
 - (a) Elements of the battalion are separated for relatively short periods of time, thus simplifying command, administration, messing, and local security problems.
 - (b) Enemy detection of the firing positions that are normally used for firing does not disclose the location of the remainder of the battalion.
 - (c) Displacement of a firing element(s) after firing reduces the possibility of its being materially damaged by counteraction against the position from which the mission was fired.
- (2) The principal disadvantages of this method are as follows:
 - (a) Achievement of the maximum rate of fire of the battalion is hindered.
 - (b) A single nuclear weapon delivered on the battalion position area might destroy the effectiveness of the battalion.
 - (c) Survey and communication problems are considerably greater than in methods 1 and 2.
 - (d) Firing elements may be detected during displacements.
 - (e) Lack of suitable position areas, time, and routes may preclude use of this method.
 - (f) The requirement for providing sustained fire may preclude use of this method.

d. Method 4. The battalion occupies a position area (fig. 39). The position area will always include firing positions. Firing elements and headquarters and service elements are in separate perimeters. One or more firing sections are located in each firing position. Unoccupied additional firing positions are selected as necessary to provide desired fire capabilities. The principal difference between this method and method 2 is that the firing element(s) moves to one of these additional firing positions as soon as a fire mission is completed. Firing sections are positioned and every feasible action is taken to insure that the time required to prepare for and fire a mission is kept at a minimum. Displacements, other than the movement of firing elements as mentioned above, are made as required by the tactical situation rather than on the completion of fire missions. The battalion commander also



Headquarters and service elements and firing elements in common perimeter. Fire missions are normally accomplished from firing positions outside the perimeter, such positions are occupied only long enough to complete the fire mission. Alternate positions are not shown.

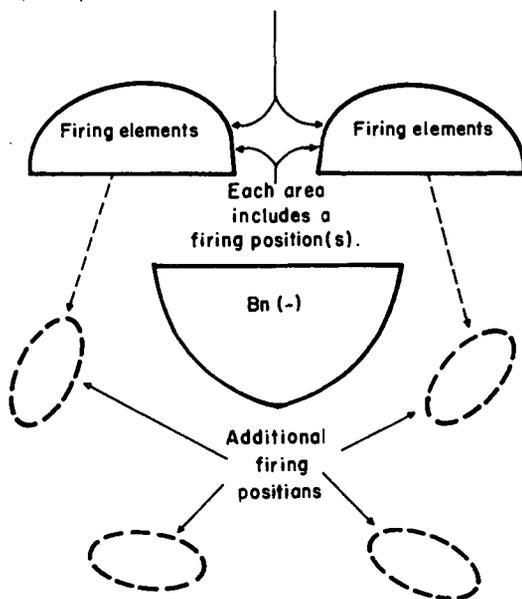
Figure 38. Battalion position area, method 3.

selects and recommends (dependent on his mission) alternate and supplementary positions to which the battalion or elements thereof can displace.

- (1) The principal advantages of this method are as follows:
 - (a) Dispersion of battalion elements provides the battalion with a high degree of protection (passive defense) at all times against nuclear attack.
 - (b) Detection and attack by enemy fire support means would probably require displacement of only part of the battalion, thereby allowing remaining elements to deliver fire.
 - (c) The location of battalion elements in several areas makes it more difficult for the enemy to locate the battalion as a whole.
- (2) The principal disadvantages of this method are as follows:
 - (a) Command, administration, messing, and local security problems are more complicated than in the other methods.
 - (b) Survey and communication problems are greater than in methods 1 and 2.

- (c) Achievement of the maximum rate of fire of the battalion is hindered.
- (d) Firing elements may be detected during displacements.
- (e) Lack of suitable position areas, time, and routes may preclude use of this method.
- (f) The requirement for providing sustained fire may preclude use of this method.
- (g) Considerable time and effort is involved in ammunition resupply to firing sections.

Each of these areas includes one or more firing sections, and may include a battery. The number of these occupied areas can be varied to meet the needs of the unit.



Headquarters and service elements and firing elements in separate perimeters. Firing elements occupy another firing position on completion of a fire mission.

Figure 39. Battalion position area, method 4.

124. Locating and Displacing Elements

a. With any of the methods in paragraph 123 headquarters elements and service elements may be located together or separated, depending on the desires of the battalion commander or on instructions from the division artillery commander.

b. The authority to order intrabattalion displacements of the type peculiar to methods 3 and 4 normally rests with the battalion commander. Authority to order displacements to alternate and supplementary positions is set forth in the inherent responsibilities of tactical missions (fig. 17 and FM 6-20).

Section II. RECONNAISSANCE, SELECTION, AND OCCUPATION OF POSITION

125. General

The purpose of reconnaissance, selection, and occupation of position (RSOP) is to move the battalion from a bivouac area, assembly area, or march column into a position from which it can deliver the firepower required to accomplish its mission or to displace the battalion from one firing position to another. Artillery reconnaissance is aggressive and continuous. It is planned and organized so it may be performed in the minimum length of time. Decentralization of efforts is normally necessary in conducting a rapid and efficient reconnaissance.

126. Battalion Commander's Party

a. The battalion commander's party consists of the personnel and equipment needed to assist the battalion commander in his reconnaissance, formulation of his plan, issuance of orders, and preparation for the occupation of position. The composition of the party will vary widely according to the type of battalion, mission, and restrictions on the number of vehicles in the forward area. In general, it is desirable that the battalion commander take with him his S2, S3, and communication officer, a survey officer; and a messenger. If possible and appropriate, he may take with him any or all of the following:

- (1) Radar officer or representative.
- (2) Battery commanders and their parties.
- (3) Survey section.
- (4) Communication chief.
- (5) Wire laying vehicles.
- (6) Train commander or train agent.
- (7) Representative of the medical detachment.

b. In gun or howitzer battalions, it may sometimes be desirable to include one gun or howitzer and crew in the party, so that registration can be completed and the firing chart can be started before the arrival of the battalion. This is particularly advantageous when the position is to be occupied at night and fires are to be delivered before daylight and when there is no restriction on registration.

127. Position Areas

In general, the term *battalion position area* is defined as that area occupied by the battalion with its elements disposed for com-

bat. Specifically, it is the area occupied by those elements of the battalion needed for the delivery of the required fire missions and for the security of the unit. Position areas designated in orders, on maps, or on overlays indicate the area within which the weapons must be placed but do not constitute a rigid restraining line for all elements of the battalion. For example, observation posts normally will be located at some distance from the position area, and the countermortar radar section will normally be outside the position area. Direct support artillery has priority for positions within the division area and division artillery battalions have priority over corps artillery units for positions within the division area.

a. Offense. In the offense, artillery positions should be selected well forward (2,000 to 4,000 meters behind the forward edge of the battle area) to support the attack and avoid early displacement. When circumstances warrant, as in a coordinated attack, the battalion may occupy and organize the position without firing from it prior to the attack. Registration, interdiction, and harassing fires may be delivered from supplementary positions, and all fires from the attack position will be withheld until the preparation is fired or the attack starts.

b. Defense. In the defense, artillery positions should be echeloned in depth to provide flexibility of fire and to insure continuity of support in the event of an enemy penetration of the forward edge of the battle area (FEBA). All division artillery cannon artillery should be able to fire immediately in front of the forward edge of the battle area. Direct support artillery battalions should be able to provide close support for the forward rifle companies and the primary positions of the reserve rifle companies of the battle group being supported. Maximum utilization of range capabilities should be made from primary positions to provide longer range fires to the extent of general ground observation in front of the combat outposts of the battle group. To provide longer range fires in front of the combat outpost line (COPL) and to provide depth of fires within the battle area, forward and rear supplementary positions are necessary. Units with nuclear capability are positioned laterally and in depth to provide the most effective continuous support. Alternate positions should be selected and prepared for occupancy. Supplementary positions may be used for registration and for harassing and interdiction fires to deceive the enemy.

128. Firing Battery Position

The primary and only indispensable requirement of a battery position is that it be suitable for the effective execution of assigned fire missions. For a detailed discussion of battery positions, see FM 6-140.

129. Observation Posts

Battalion observation posts are selected to give the best coverage possible, both in width and in depth. The primary consideration in locating observation posts is to insure complete observation over the battalion's entire zone of fire. To accomplish this, every effort is made to establish enough observation posts to insure that areas masked from one observation post can be observed from another. Available flank observation is used to overcome defilade. Other considerations are—

- a.* Ease of installation and maintenance of communication.
- b.* Ease of concealment of locations and routes thereto.
- c.* Coordination is effected with adjacent units to insure adequate coverage of the boundaries of the supported units zone of action or sector of defense.
- d.* Avoidance of outstanding landmarks. For organization and operation of observation posts, see FM 6-140.

130. Countermortar Radar Positions

a. Technically qualified radar personnel must advise the artillery commander concerning the location of the countermortar radar position area. In designating a position area, the artillery commander assigns an area sufficiently large to enable selection of the actual radar site based upon technical considerations affecting the operation of the radar.

b. The primary considerations governing the selection of the radar position area are proper coverage of zone of action of supported unit, technical capabilities and limitations of the radar set, and integration of the radar zone of search with zones of other units as directed by the higher artillery commander.

c. In the offense, the position should be well forward to avoid early displacement. In the defense, the general location of the radar position may be prescribed by the higher artillery commander to provide depth to the radar operations of the force as a whole. The proximity of the radar position to the area of search is determined by the technical limitations of the equipment. Other considerations in the selection of the position area such as security,

cover, and concealment, ease of communication, and the comfort of personnel are the same as in the selection of the battery position.

d. In the selection of the actual locations for the installations of the radar section, the mission of the section, the situation, the characteristics of the radar set, and the characteristics of enemy materiel is considered. A position is selected where the terrain best facilitates the technical operation of the radar set (FM 6-160).

131. Ammunition Train

For the location requirements of ammunition trains, see FM 6-61, FM 6-140, and FM 57-20.

132. Release Point

The release point is a point on the route of march where the batteries will be released from the battalion march control. Battery guides meet the column there and guide their respective batteries into position. The release point should be located short of the position area and at a place where traffic can be controlled. Cross-roads, defiles, or other locations subject to interdiction fire or traffic congestion should be avoided.

133. Steps in Reconnaissance, Selection, and Occupation of Position

a. Placing a battalion in position involves the accomplishment of several tasks which must be performed simultaneously or in sequence. Accomplishment of these tasks varies with the mission, time available, and the type of battalion. The armored artillery battalion, when operating as part of a task force, will frequently occupy positions, often from march column, with little or no previous reconnaissance. In such cases, the prompt opening of fire takes precedence over all other considerations. The airborne artillery must make its reconnaissance and selection of initial positions from photographs or maps. The airborne artillery commander has no opportunity to see or point out positions on the ground. Upon arrival in the drop or landing zone, the batteries must be prepared to go into action by piece if necessary, consolidating and organizing positions progressively as the situation permits. A systematic procedure for the reconnaissance, selection, and occupation of position is necessary to expedite the rapid and

efficient emplacement of artillery. In all cases, the general principles apply; the variations are in their application.

b. In general, the procedure for RSOP can be broken down into the following steps:

- (1) Receipt of orders.
- (2) Planning the reconnaissance.
- (3) Conference with the supported or reinforced unit commander.
- (4) Reconnaissance for battery positions, observation posts, countermortar radar position (when appropriate), command post, aid station, routes into positions, and wire routes and selection of the actual locations on the ground for the elements of the battalion.
- (5) The formulation of a plan for occupation of the positions selected.
- (6) The issuance of orders to carry out the plan.
- (7) Preparation for occupation—survey, installation of communication, and route marking.
- (8) Movement of the battalion to the position area and the occupation and organization of positions.

134. Receipt of Orders

The battalion commander may receive oral or written orders concerning the occupation of position from his higher commander. The oral orders may be given in person, by telephone, or by radio. If he is to report to the higher commander to receive the order, the battalion commander is usually accompanied by his party (par. 126). He reports for orders accompanied by such members of his staff as may be permitted.

135. Planning a Reconnaissance

The purpose of the reconnaissance is to enable the battalion commander to make decisions upon which to base his orders for the occupation. The assignment of reconnaissance missions to members of the battalion commander's party depends on the time available, extent of the area to be covered, size of the party, and personal desires of the battalion commander. In the following example of operations that may be performed by members of the party, the battalion commander may desire to make an initial reconnaissance of the battery positions and routes by means of aircraft.

<i>Reconnaissance or task</i>	<i>Reconnaissance or task performed by—</i>
Selection of the registration point and initial targets.	S3 and/or reconnaissance and survey officer.
Formulation of the plan of observation including location of observation posts and areas of responsibility.	S2.
Formulation of survey plan.	Reconnaissance and survey officer.
Selection of position areas and routes.	Reconnaissance and survey officer, or S3 (battery commanders, if available).
Formulation of communication plan.	Communication officer.
Selection of command post location.	Headquarters battery commander and/or communication officer.
Selection of countermortar radar section location.	Radar officer.
Selection of aid station location.	Headquarters battery commander and/or representative of the medical detachment.
Make check of camouflage and security.	S2 and executive officer.
Selection of release point location.	S3.

136. Conference With Supported or Reinforced Unit Commander

Upon receiving a direct support or reinforcing mission, the battalion commander must establish liaison with the supported or reinforced unit if this has not already been accomplished. If he has been assigned a definite position area by the higher commander, reconnaissance for battery positions, observations posts, and other installations may be started at once. If he has not been assigned a definite position area, he may have to confer with the supported or reinforced unit commander before completing the reconnaissance. Usually, the battalion commander can start his reconnaissance and choose tentative locations for the various installations, reserving his final decision until after his conference with the supported or reinforced unit commander.

137. Reconnaissance, Selection, and Occupation of Position From Rear Area

a. Action Prior to Leaving the Area. Before leaving the bivouac or assembly area, the battalion commander briefs the battalion executive officer and issues orders to expedite the occupation of the position. Depending upon his knowledge of the situation at the time, he may issue orders concerning—

- (1) Movement of elements of headquarters battery, staff officers, and battery commanders and their parties to a

forward location from which they can quickly be brought forward to receive the battalion order.

- (2) Probable routes, initial points, release points, time of movement, and the use of route markers.
- (3) Prearranged radio codes or messages by which the battalion can be ordered forward.
- (4) Probable order of march of the batteries.

b. Instructions for the Reconnaissance. After receiving the higher commander's order, the battalion commander assembles his party, explains the situation, and issues instructions for the reconnaissance. He points out on the ground or on a map the battalion position area, possible observation posts, and the tentative locations for the batteries and other installations. If he has decided to make a personal reconnaissance at this time, he designates the place where he will issue the battalion order. If he assigns reconnaissance missions to members of his party, he designates the time and place at which the party will reassemble. He designates where he will meet the battery commanders. If the position is to be occupied immediately, instructions are sent to the battalion executive officer to move the battalion forward.

c. Conducting the Reconnaissance. The battalion commander will seldom personally perform all the operations concerning reconnaissance; certain operations will usually be performed as indicated in paragraph 135. While the members of his party are performing their assigned reconnaissance duties, the battalion commander may contact the supported or reinforced unit commander or make a general terrain evaluation of the entire battalion area.

d. Orders for the Occupation.

- (1) Based on his reconnaissance, reports of his staff, and the scheme of maneuver of the supported unit or the mission of the reinforced unit, the battalion commander completes his plan. He then formulates his order and issues it to his staff and the battery commanders. Normally, the order will be issued orally and in fragmentary form.
- (2) The battalion commander designates the release point in his order. A representative of the battalion commander is placed in charge of the release point until the arrival of the battalion executive officer.

e. Movement to the Position. The battalion executive officer alerts the battalion to prepare for movement. When directed, the executive officer marches the battalion to the designated release

point where the batteries are released to their respective battery commanders.

138. Reconnaissance, Selection, and Occupation of Position From March Formation

a. General. The occupation of a position from a march formation follows, in general, the procedure outlined in paragraph 137. Detailed planning prior to the march is essential, reconnaissance is limited and more decentralized, and hasty methods must be used.

b. Planning.

- (1) Prior planning should be conducted with the supported or reinforced unit before the start of the march. From a map reconnaissance, possible successive position areas and observation posts are noted and marked on maps or photographs. Terrain features and works of man that can be identified on the ground are noted and marked with numbers as control points. The direct support battalion marching in support of armor or mounted infantry should select tentative positions from which the phase lines, assembly areas, or other march control features designated by the supported unit commander can be supported. When in support of foot troops in a march column, the direct support battalion may leapfrog batteries from position area to position area. Reinforcing battalions, in coordination with the reinforced unit, select positions along the axis of advance which will insure the accomplishment of the mission. Possible positions for attached battalions are generally designated by the commander of the unit to which they are attached.
- (2) Prior planning by division artillery battalions, and missile batteries marching alone is equally essential. Basing his plan on his mission and knowledge of the situation, the unit commander selects positions or assembly areas along his route which he might be required to occupy.

c. Preparation.

- (1) Command liaison must be established as soon as the warning order for the march is received. Prior to the start of the march, the forward observers, liaison officers, battery commanders, reconnaissance and survey officers, and the fire direction center personnel are furnished maps or photographs showing the locations of possible position areas, observation posts, and numbered concentrations. Forward observers and liaison officers with the artil-

lery battalion rejoin their respective elements of the supported unit. The order of march of the elements of the battalion should expedite entry into action.

- (2) The commander of a division artillery battalion or a missile battery marching alone may direct his executive officer to march the unit to a selected assembly area or release point near the position area.

d. Disposition of Elements During the March.

- (1) During the march, a battalion reconnaissance party marches with the advance elements of the column. The reconnaissance and survey officer reconnoiters the position areas designated by the battalion commander and reports the results of his reconnaissance. Such reconnaissance is not limited to these areas if other suitable areas are found. The battalion commander may frequently utilize an airplane or helicopter for command, reconnaissance, and security while on the march. The battery commanders and their parties may march at the head of the battalion. Figure 40 shows the disposition of the elements of the artillery battalion marching with and in direct support of infantry. Disposition of a direct support field artillery battalion marching with an armored column is shown in figure 41.
- (2) Normally, artillery commanders will precede their units when they are part of the march column of a supported unit. They are accompanied by a reconnaissance party. Depending upon his mission and knowledge of the situation, the commander reconnoiters such positions along the route as he deems necessary. Frequently, the commander's knowledge of the situation will be such that he can proceed directly to the position area, select the positions, and send back to the assembly area for the unit.

e. Protection of the Column.

- (1) When the column is halted unexpectedly, supporting light artillery should move into positions from which it can support the head of the column if necessary.
- (2) Upon a request for fire, enemy ground action which stops the column, or other development requiring artillery fire, the battalion commander directs immediate occupation of position by at least one battery. The remainder of the battalion is kept moving forward until needed. If it is determined that the fire of more than one battery is required, the battalion, or the required number of batteries,

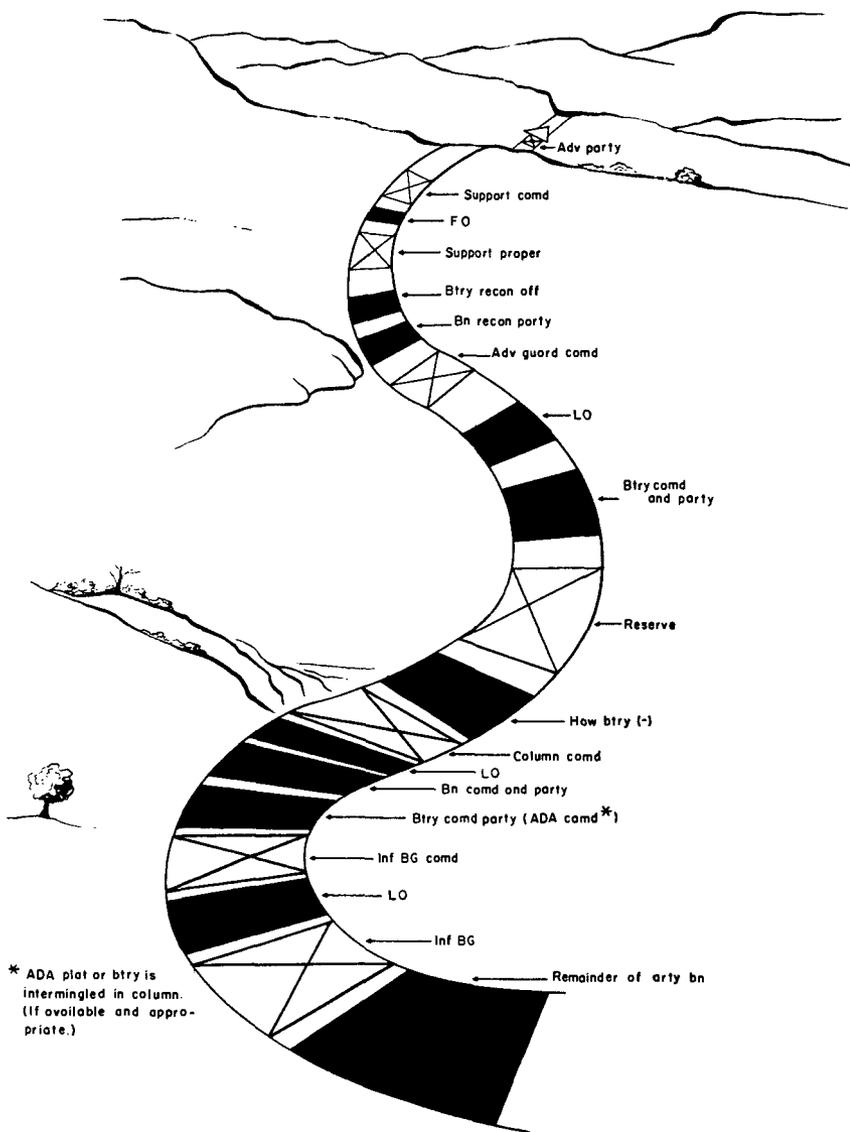


Figure 40. Field artillery battalion marching with infantry.

occupies the nearest available position area from which the mission can be accomplished.

f. *Occupation of Position.* The battalion commander issues instructions to the executive by prearranged radio message or by messenger. The battalion commander, a battalion staff officer, or the battery commanders make a reconnaissance of the position areas before the batteries arrive. The battalion commander continues the reconnaissance and issues the orders necessary to com-

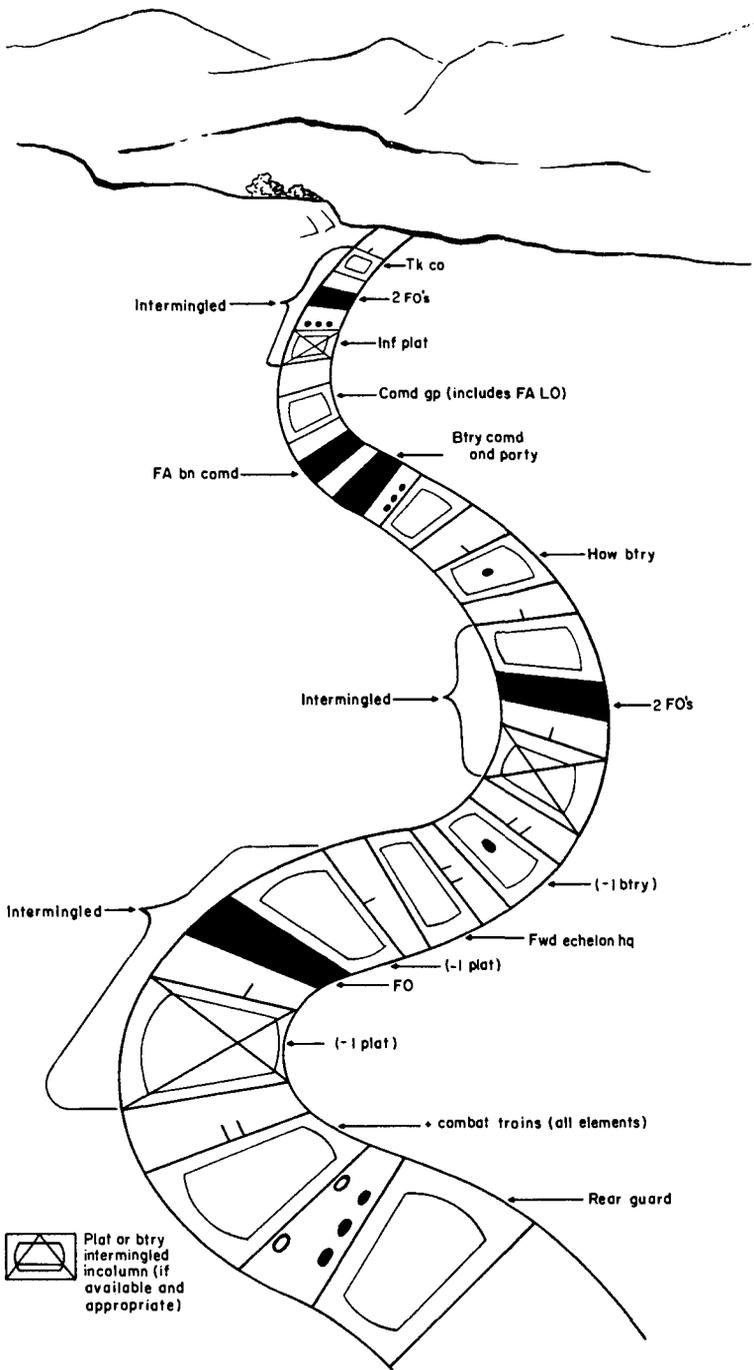


Figure 41. Field artillery battalion marching with an armored column.

plete the occupation. The location of the command post will be influenced by the choice of battery positions and the location of the command post of the supported unit, if known. Direct wire circuits are laid between the fire direction center and the batteries. Radio is used to communicate with liaison officers and forward observers until the situation is clarified and it appears that the battalion will be in position long enough to warrant the laying of additional wire.

139. Preparation for a Night Occupation

For a night occupation of position, certain preparations in addition to those described in paragraphs 137 and 138 should be made during daylight. Wire lines should be laid and properly identified. Selected positions and routes should be plainly marked. Chiefs of section should reconnoiter routes and positions to be occupied by their respective sections. Additional guides should be provided for the movement into position. When fires are to be delivered before daylight, instrument locations and directions must be staked in and the target area survey must be completed. When the situation permits, it may be desirable to move one piece forward during daylight and register prior to the night arrival of the battalion.

Section III. DISPLACEMENTS

140. General

Displacements normally include the reconnaissance, selection, and occupation of position. A field artillery unit must be prepared to deliver continuous supporting fire. Movement must conform to the plan of the supported or reinforced unit. The movement may be deliberate, or it may be hasty as in the case of a fast moving attack. As in other types of reconnaissance and selection of position, a standing operating procedure, well-indexed terrain map, a continuous fire plan, and close liaison with the supported or reinforced unit pay big dividends when time is limited.

a. Planning. Planning for displacement should be continuous. To insure continuous fire support during an attack or a retrograde movement, timely displacement is necessary. The method of displacement is such that fire support is available at all times. When the battalion is displaced as a unit, the battalion commander arranges for the transfer of his fire responsibilities to another unit or units during the displacement. The time that a unit is out of action while displacing should be reduced to a minimum. Maintenance of communications with liaison officers and forward observ-

ers and a consideration of the terrain will influence the distance and frequency of displacements. As a general rule, the distance of displacement should be at least one half the maximum range of the displacing pieces.

b. Reconnaissance and Selection of Position. The principles of reconnaissance and selection of positions for a displacement are, in general, the same as for an initial occupation. The battalion commander should continuously reconnoiter in his zone for positions, observation posts, and routes to meet the possible requirements of his mission. When time permits, survey is carried forward or to the rear, and communication is installed prior to the displacement. In a forward displacement, the battalion commander usually makes the reconnaissance and selection of position. In a rearward displacement, the battalion executive officer, assisted by a reconnaissance party, may make the reconnaissance and selection of positions while the battalion commander remains with those elements of the battalion still in position or goes where the situation is most critical.

c. Routes. Air observers, liaison officers, forward observers, communication personnel, and survey parties habitually report on routes within the zone of advance. Route reconnaissance parties report on the number of route markers required, strength and condition of bridges, and the presence of minefields. When the route of displacement has been selected, the route reconnaissance party should be prepared to clear and mark routes through minefields. When two or more artillery battalions, not in a battalion group, displace over the same route, the next higher commander coordinates the movement. When artillery must displace over a route used by units of other arms, the force commander coordinates the movement. In general, direct support artillery should have priority on roads over other artillery.

141. Direct Support Battalions

a. General. The direct support battalion is displaced on the initiative of the battalion commander. Displacement is dictated by the scheme of maneuver of the supported unit. Continuous fire support must be maintained. When displacement is necessary, the battalion commander coordinates his movements with the action of the supported unit and notifies the higher artillery commander, giving the method of displacement, the time the displacement will begin, the expected time of completion, and the location of the new position area.

b. Method. The direct support battalion may displace by one

of three methods, depending on the time available, scheme of maneuver of the supported unit, presence of reinforcing artillery, traffic conditions, and enemy activity.

(1) *Armored division.*

- (a) When reinforcing artillery is present or when arrangement can be made for other artillery to take over the direct support fire missions, the battalion may move as a unit.
- (b) Displacements may be by echelon, moving 1 firing battery and the headquarters battery in 1 echelon and 2 firing batteries in the other. The order of displacement of the two echelons will depend on the situation.
- (c) When the situation requires, the battalion may displace by battery, having two firing batteries in position at all times.

(2) *Infantry division.*

- (a) When reinforcing artillery is present or when arrangement can be made for other artillery to take over the direct support fire missions, the battalion may move as a unit.
- (b) Displacement may be by echelon, moving 1 firing battery and a portion of headquarters battery (unit SOP) in 1 echelon and the remainder of the battalion in the other.
- (c) The battalion may displace one battery at a time.

c. Procedures.

- (1) When the battalion displaces by echelon, close coordination between the battalion commander and the battalion executive officer is essential. The battalion commander usually remains at the forward position area as long as is necessary to supervise the occupation of position. The battalion executive officer remains with the battalion and supervises the movement from the old position. When one echelon is in the new position and ready to fire, the battalion commander or his representative calls the next element forward by prearranged code. If the situation requires that the battalion commander remain with the supported unit commander, the battalion executive officer supervises the displacement.
- (2) When the battalion displaces, the procedure is essentially the same as for an initial occupation of position.

d. Displacement of the Command Post.

- (1) There should be no interruption in the operation of the fire direction center when the battalion displaces by battery or by echelon. Continuous communication is maintained with the supported unit, reinforcing artillery, and higher artillery headquarters. The fire direction center is displaced by echelon so that continuous massed fire support can be maintained.
- (2) When the battalion displaces as a unit, an advanced command post should be established in the new position area. When time permits, displacement of the battalion should not begin until communication between the advanced command post and the supported unit has been established.

142. General Support Battalions

a. General support battalions normally displaced by battalion. However, if the situation requires, displacement may be by any of the methods outlined for direct support battalions (par. 141). A general support battalion displaces only on order or authority of the higher artillery headquarters. However, the battalion commander is responsible for a continuous study of the situation and for making recommendations to the higher artillery commander when displacement is necessary. He should be prepared to advise the higher commander as to the positions, routes, and time of displacement.

b. When the general support battalion has a general support-reinforcing mission, displacement must be coordinated with the next higher artillery headquarters and the reinforced unit. In selecting positions and time for displacement for recommendation to the higher commander, the battalion commander must consider all elements outlined in his mission. Usually the battalion will be displaced as a unit. General support missions may be assigned to other units by the higher artillery commander while displacement is in progress.

143. Reinforcing Battalions

When a field artillery battalion has only the mission of reinforcing the fires of another unit, it will displace upon request of the reinforced unit commander. The reinforcing unit is responsible that the next higher headquarters is notified of the method of displacement, times displacement is started and completed, and the area to which the reinforcing battalion is displaced.

Section IV. AIRBORNE ARTILLERY RECONNAISSANCE, SELECTION, AND OCCUPATION OF POSITION

144. General

The airborne field artillery, normally enters combat by parachute or assault cargo aircraft and must depend entirely on terrain studies, intelligence reports, maps, and air photographs for reconnaissance and selection of positions. Initially, control may be decentralized down to individual sections. When medium field artillery and air defense artillery are required, these units may have limited missions initially upon landing, but normally remain in general support and are disposed in depth to support the most critical sectors. Control is decentralized until such time as the commander can regain control, after which the procedure is the same as for other field artillery units. The division artillery commander in an airborne operation exercises more detailed control, supervision, and direction than is normally required in artillery operations. He assumes the responsibilities for personnel, supply, and ammunition functions which are normally responsibilities of battalion commanders. For employment of airborne forces see FM 57-100 and FM 57-30.

145. Planning and Reconnaissance and Selection of Position

a. As soon as practicable after receiving the higher commander's orders, the artillery commander confers with the commander of the element to which his artillery is attached or supports. The commander must obtain from the supported element the following:

- (1) Mission and scheme of maneuver.
- (2) Drop and/or landing zone location.
- (3) Air movement plans.
- (4) Assembly plan.

b. Based on the information obtained from higher headquarters and a study of air photographs, the artillery commander selects his position area and assembly control point. Subject to the approval of the supported unit commander, he selects battery positions, routes, and locations for the artillery elements. Prominent objects and terrain features which may serve as meteorological check points are selected and numbered. Usually, weather permitting, daily photographic missions will be flown over the objective area, and the photographs will be available to the artillery commander. With these photographs he is able to make a continued photoreconnaissance and study of the situation.

146. Operation Order

a. Upon completion of his plans, the artillery commander issues his order for the operation. Sufficient time should be allowed to insure that every individual who is to take part in the operation is familiar with the situation and plan. Issuance of the order will be greatly facilitated by the use of a model of the objective area constructed to scale.

b. In addition to the elements normally included in an operation order, the artillery commander's order for those units not attached to battle groups should include the—

- (1) Plan for movement to the marshaling area; counter-intelligence measures to be adopted in the marshaling area.
- (2) Air movement table for the unit.
- (3) Loading plan.
- (4) Drop zone or landing zone.
- (5) Assembly plan.
- (6) Assignment of forward observers and liaison officers (usually covered by standing operating procedure).
- (7) Supply, including ammunition, rations, and water, to be taken in organic load; resupply; and change in the significance of canopy colors.

c. Instructions concerning the registration point, survey, and the plan of observation normally are not issued until control has been centralized.

147. Loading Plans

The loading plan includes the aircraft parking diagram obtained from the troop carrier command, routes within the marshaling area from the bivouac to the airdrome, order of loading, and the distribution of the staff and key personnel within the unit. Since the number and types of aircraft will vary with each operation, several loading plans should be prepared and kept available to meet the requirements of varying situations.

148. Supply Plan

The initial amount of ammunition, rations, and water transported in the organic tactical load will be prescribed by higher authority. Resupply is by air drop, or air-landed automatically, or on the call of the division or battle group commander. The division artillery commander, assisted by the S4, prepares estimates of the resupply requirements. The division artillery S4

works in close cooperation with the S4 of the battle group and with the division G4 in the preparation of resupply requirements and plans.

149. Marshaling Area

The marshaling area will be designated by the higher commander. The distance from the bivouac to the departure airfield will be governed by security requirements. Detailed plans are made for the secret movement of troops and equipment to the marshaling area. The airborne artillery should be in the marshaling area in sufficient time for joint briefing with troop carrier units and for rehearsals of ground operations. Photoreconnaissance is continued while the units are in the marshaling area. The artillery commander, through battery liaison, maintains constant liaison with the battle group commander.

150. Rehearsals

a. Rehearsals prior to the operation are essential and should be made as realistic as circumstances allow. The division artillery commander may direct a number of rehearsals for the various artillery elements. These should lead up to the execution, in conjunction with the battle group, of an operation similar to the actual operation. It should include—

- (1) Plans and preparations for the entire operation.
- (2) Assembly at the airfield and checking of equipment.
- (3) Simulated loading.
- (4) Simulated dispersion on selected drop zones or landing zones.
- (5) Ground maneuver to include the operation of radio communication on assigned frequencies with prescribed call signs and codes, subject to security requirements prescribed by higher authority.
- (6) Critiques.

b. During rehearsals, elements of the artillery should be integrated into the battle group exactly as they are to operate in the actual operation.

c. Normally, at least one full scale rehearsal will be organized by the force commander prior to the operation. This rehearsal will usually include complete loading, practice landing, and ground maneuver (FM 57-30). When no rehearsal involving a practice loading and landing is prescribed by a higher echelon, the artillery commander on his own initiative should make every effort to obtain sufficient aircraft for a rehearsal. Rehearsals may cause

a breach of security; however, if the rehearsals are carefully controlled, they may provide a means of misleading the enemy.

151. Loading

a. The actual loading of the elements of the artillery will depend on the number and types of aircraft available. Aircraft are assigned to the division artillery by number either by the battle group or the division commander. Unit integrity is retained as far as possible. For methods of loading and lashing equipment in transport aircraft, see TM 57-210.

b. The artillery commander, staff, and key personnel are distributed so that the loss of any 1 airplane will not prevent any 1 element of the artillery from functioning as a unit. The artillery commander and his executive will never fly in the same aircraft. A representative of the artillery commander (usually a liaison officer) will jump with the battle group commander. Liaison officers and forward observers will jump with the infantry units which they support.

152. Landing

a. The drop zone or landing zone of the airborne artillery may be the same as, or adjacent to, that of other elements of the battle group. The first troops to land are generally charged with gaining and maintaining the security of the drop and landing zones. However, the artillery may find it necessary to clear its own drop or landing zones; it must be prepared to fight as infantry. Equipment is recovered and assembled as rapidly as possible. Chiefs of sections conduct their sections to the preselected battery rallying point. Before reaching the rallying point, a section may be employed by the chief of section, on his own initiative, to support small groups of infantry by direct laying. Individual sections and batteries are prepared to shift their fire in all directions.

b. Immediately upon landing, guides are posted to direct personnel to the command post. As the headquarters battery personnel arrive, the command post is organized. The artillery commander contacts the higher command by radio and exchanges information of the situation. Ground reconnaissance is started at once. Communication with liaison officers and forward observers is by radio. Wire communication is installed to the battery positions and through the howitzer and mortar battery to the command post of the battle group. Survey is started, and observation is established when the artillery commander regains centralized control and as the situation permits.

153. Air-Transported Artillery Battalions

Air-transported field artillery battalions participating in an airborne operation land in areas which are reasonably secure. As a consequence, the battalion commander gains control more easily and time will permit him to issue orders based on information furnished by commanders already on the ground. Procedure in reconnaissance and selection of position is similar to that prescribed in paragraph 138.

Section V. SECURITY

154. General

a. Division artillery units may be attacked by—

- (1) *Counterbattery.* Friendly artillery may be attacked by hostile cannon, mortar, rocket, or missile fires.
- (2) *Air.* Artillery may be attacked by bombers, fighter bombers, or fighter aircraft. Armament employed by attacking plans may be of a nuclear nature or may vary from machineguns to heavy demolition bombs and includes small antipersonnel bombs, fire and chemical bombs, and rockets of various sizes. There is no organic air defense artillery in the division; therefore, the division must rely primarily on friendly tactical air or reinforcing air defense artillery for active air defense. Passive air defense must be exercised continually.
- (3) *Ground.* Artillery units may be attacked by hostile ground troops, guerillas, or partisans while in position or while on the march. Security of division artillery units against ground attack becomes more critical as a result of gaps caused by dispersion between units; particular emphasis must be given to protection and security of nuclear weapons, systems, and materiel. Artillery must be located tactically to best accomplish its mission. Additional troops normally will not be furnished artillery units for local security, or other combat units will not normally be assigned the primary mission of protecting field artillery units. Each unit of the division artillery is responsible for its own local security; coordination is effected with adjacent units, and the division artillery executive officer exercises overall coordination over local defense measures of division artillery units.
- (4) *Combination.* Artillery is of such prime importance in the success of a mission that the enemy may employ

counterbattery, air or ground attack, or any combination of these forms to attempt to destroy or neutralize friendly artillery. The battalion (battery) commander is responsible for the security of his unit; success in the defense and protection of his organization permits the accomplishment of the artillery mission. When selecting positions that will enable them to accomplish their mission, commanders must consider the defensibility of each particular area and be prepared to counter any method of hostile attack. Such factors as defilade, cover and concealment, size and relative location of the area, and terrain suitable for security observation posts influence the selection of the position. Other factors requiring consideration are avenues of approach, natural obstacles, fields of fire, and routes of communication. Even though an integrated battalion area is highly desirable, the paramount security requirement is the selection of defensible battery positions consistent with the accomplishment of the mission. Defensive measures under the nuclear threat are characterized by flexibility, dispersion, and the necessity for additional defensive areas in depth.

b. The tactical aspects of defense must be centered at the battery with close coordination of defensive measures by battalion whenever this is practicable. Individual battery defenses are integrated into a battalion defense by the battalion executive officer who is normally the battalion security officer. Emphasis must be placed on—

- (1) Timely and adequate warning.
- (2) Mutual support between batteries, whenever practicable.
- (3) Proper location of all weapons.
- (4) Camouflage, cover, and concealment.
- (5) Dispersion of the elements of the command.
- (6) Adequate training in security discipline.
- (7) Preparation of plans of action which can be executed immediately to cover all enemy capabilities.

c. The battalion security officers duties include—

- (1) Coordination of defense preparations within the battalion and of defense arrangements with adjacent units.
- (2) Supervision of the battalion warning system.
- (3) Formation of the battalion reserve.
- (4) Formulation of counterattack plans.
- (5) Arrangements for mutual fire support between batteries.

- (6) Conduct of rehearsals of the battalion defense plans.
- (7) Supervision to insure the continuous improvement of the battalion defensive positions.
- (8) Integration of available air defense weapons into the battalion defense plan to the maximum degree consistent with their assigned mission.

155. General Defensive Measures Available to Field Artillery

a. General. Defensive measures available to artillery may be classified as either passive or active. An adequate warning system is essential to either measure of defense.

b. Passive Security Measures. Passive security measures are those taken to avoid detection and subsequent enemy action or in the event of attack to minimize the effectiveness of enemy action. These include—

- (1) Camouflage, cover, and concealment to obtain complete protection from enemy observation or to mislead or misrepresent the true identify of the installation.
- (2) Dispersion of pieces, vehicles, and installations so as not to offer the enemy a concentrated target. Dispersion within a given position must be consistent with accomplishment of the mission and defensibility of the area.
- (3) Field fortifications to include emplacements for weapons, foxholes and trenches for personnel, and revetments for equipment and ammunition. The situation and material available determine whether overhead cover will be provided for personnel and ammunition.
- (4) Natural obstacles should be improved and artificial ones constructed. These include antitank and antipersonnel mines, wire, and booby traps.
- (5) Adequate warning system to include ground and air observers, communications, and trip flares.
- (6) Dummy positions to attract attention away from the operating installation. These should not be so obvious as to be unrealistic. Frequently, pieces may be fired from dummy positions.
- (7) Alternate positions for each battery from which missions can be continued with little delay, should the primary positions become untenable. Registrations from alternate positions assist in avoiding early disclosure of the main battery position.

c. Active Security Measures. Active measures include the use of all available weapons in the battalion and the aggressive em-

ployment of personnel to defeat the enemy. The howitzer battalion possesses sufficient small arms which, with the direct fires of the howitzers, enable it to defend itself against minor ground attacks. Defensive fires are coordinated to delay, confuse, blind, and render ineffective any attacking ground forces. All personnel must be sufficiently trained in infantry small unit tactics to enable them to successfully attack and destroy small enemy parties in the vicinity of the position area. Troops fire on hostile aircraft only on command or prearranged signal. Normally hostile planes are taken under fire only in the event of direct attack or hostile act. In addition to organic weapons, some air defense automatic weapons are usually available to artillery units. For further discussion of employment of security measures, see FM 6-140.

156. Security Organization

a. General. The position consists of the defended area screened by a series of outposts. The defended area contains the weapon position, command post, and truck park and service area; it is as compact and closely knit as circumstances permit. The outposts form the protective screen, acting as detection and warning agencies. Essential elements of a coordinated all-around defense (fig. 42) include—

- (1) Effective location of all organic weapons to provide a continuous band of grazing fire around the perimeter.
- (2) Preparation of emplacements for rocket launchers to cover probable avenues of approach by armored units which cannot be covered by direct fire of primary weapons of the battery position.
- (3) When appropriate, recommendations of the air defense artillery commander as to defense against air attack.
- (4) Inclusion of available forward area air defense weapons in the coordinated ground defense plan to the maximum degree consistent with their assigned mission.
- (5) Assignment of definite defense positions to all personnel.
- (6) Establishment of an effective day and night detection and warning system.

b. Defended Area. The weapon sections, as the nucleus of the defense, are located to facilitate both the accomplishment of the units mission and mutual support for close defense. The sections are integrated into the defense plan by assignment of primary and secondary sectors of responsibility to each weapon section (fig. 43), preparation of the firing position of each section to insure complete cannon fire coverage of the position perimeter

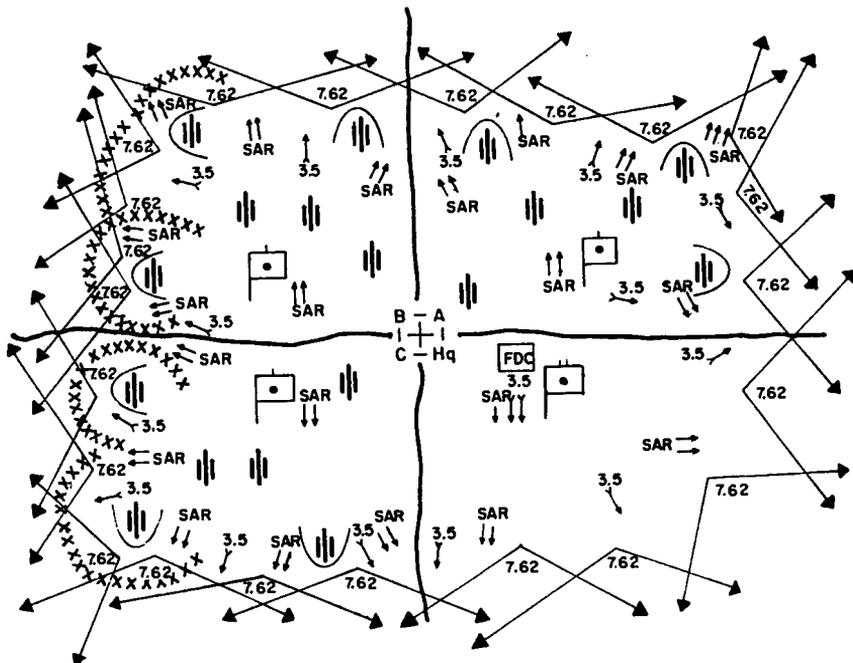


Figure 42. Type battalion defense (schematic diagram), armored division.

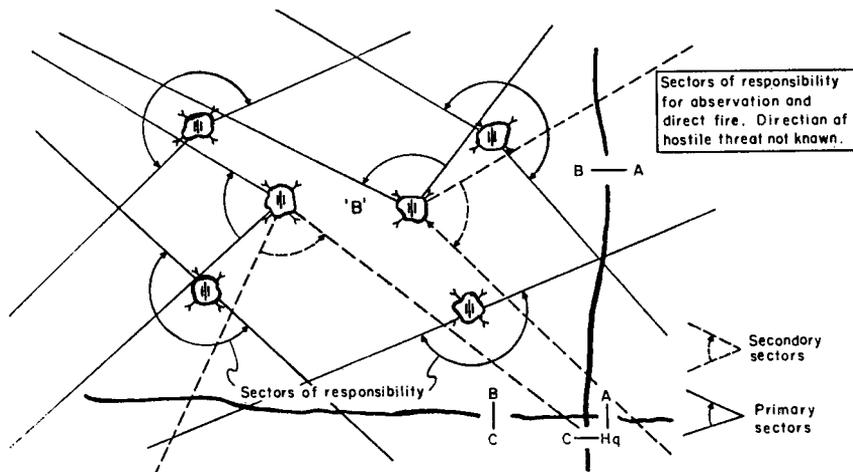


Figure 43. Type battery defense (schematic diagram).

and development of fire plans to cover all possible avenues of approach.

c. *Outposts.* An efficient warning system is provided primarily by outposts. During daylight hours, the outposts, consisting of security observation posts and rocket launcher teams are situated to cover all approaches to the battery. At night, these outposts

may be pulled in to form a tight perimeter. For these outposts to be most effective, communications must be established to facilitate the transmittal of timely warnings and information. Outposts must be carefully briefed on the location of friendly units and advised of necessary movements of friendly personnel such as messengers and wire crewmen. Observation and early warning are further supplemented by use of army aviation.

157. Procedures

To insure an efficient defense, certain practices must be included in each unit's standing operating procedure. Machineguns must be mutually supporting; have sectors of fire assigned and stakes set to indicate the final protective fires. Whenever possible, friendly troops, who may be affected, must be warned of impending close-in cannon fires or long-range automatic weapons fire. Periodic reports are required of all outposts; and unmistakable warning signals prescribed. Mandatory precautions include prohibiting all civilians access to the position area and definite recognition of all friendly personnel before granting them entry to the area.

158. Organization of Position

a. Initial Preparation. Sufficient machineguns and rocket launchers should be brought forward with the advance party to insure adequate defense of the area during the critical period while each battery is moving into position. Simultaneously with the occupation of position, the remaining auxiliary weapons are emplaced for defense, camouflage measures initiated, and coordination of local security commenced.

b. Improvement of Position. Improvement of the position area is continuous. Fortifications and camouflage should be constructed with the view that the unit may remain in position for several weeks. The priority of projects for improving the position depends on many variables; however, the following must be taken into consideration:

- (1) Delivery of supporting fires at the earliest moment.
- (2) Emplacements for weapons and protective measures for personnel and equipment.
- (3) Organization for defense against ground and air attack.
- (4) Preparation of temporary firing positions for close defense.
- (5) Protection of ammunition.

(6) Initiation of camouflage measures to supplement natural concealment.

(7) Preparation of dummy and alternate position areas.

c. Night Operations. At night and when visibility and audibility are limited, certain precautions in addition to those already enumerated are necessary. Reserve ammunition for night use must be distributed prior to darkness; trip flares, booby traps, and anti-personnel mines must be armed; correct use of the challenge and password must be required; and sentries must be posted within each section. Night movement within the area must be kept to a minimum. Fire of automatic weapons must be closely controlled to prevent disclosure of their locations. Sound and light discipline must be maintained. All vehicles possible are brought within the perimeter at night. At dawn, restrictions imposed during hours of darkness are lifted.

159. Displacement Security

a. General. Artillery is particularly vulnerable to enemy air and ground action during movements. Its vulnerability increases when artillery is entering or leaving a position and when it is confined to a road as in passing through defiles, over bridges, or other places where the terrain restricts dispersion. The commander, when planning the defense of his displacing column, must consider the enemy's tactics, the terrain, the weather, and the current situation. The advisability of a night move should be considered unless restricted by higher headquarters.

b. March Security. The commander must reconnoiter the route to be followed, paying particular attention to localities favoring ambush and areas which may be under enemy ground observation. While on reconnaissance, friendly units along the route should be contacted and arrangements made for communications and "on-call" assistance. When ground attack is possible, the column should travel at a fairly fast rate with intervehicular distances at a minimum to facilitate control, minimize the area to be defended, and expedite the assembly and retaliatory action of the unit. To provide overall protection, organic automatic weapons should be distributed equitably throughout the column, and, when available, air defense forward area weapons should be equally spaced throughout the column. All personnel should be prepared for immediate combat. When air attack is imminent, the terrain, number and type of attacking aircraft, and type of unit under attack will govern the action to be taken. This may be either to halt the column, disperse and dismount personnel, or to continue the march and fire all available appropriate weapons from the

vehicles on the road. An effective warning system during movement includes security detachments, reconnaissance elements, and signal communications. If conditions permit, army aviation should be utilized for route surveillance and early warning. Preparations may be required to monitor routes and areas for radioactive contamination.

c. Occupation of New Position. Whenever possible, the new position is cleared and outposts are established prior to its occupation. If this is impracticable, outposts are established immediately upon arrival of the unit. Outposts and sentries are maintained in the old position until evacuation is complete.

160. Nuclear Ammunition

In addition to the security measures enumerated in paragraphs 155 through 159, those units having a nuclear capability must protect nuclear ammunition and publications from enemy action and prevent access to classified material by unauthorized personnel at all times. This entails security measures against not only the enemy but unauthorized friendly personnel as well. Chapter 7, FM 6-61, sets forth the special precautions and security measures to be taken.

Section VI. ARTILLERY MARCHES AND BIVOUACS

161. References

For the basic doctrine governing troop movements see FM 100-5. For technical and logistical data pertaining to troop movements see FM 101-10. For a detailed discussion of motor movements, see FM 6-140 and FM 25-10.

162. Types of Marches

a. General. The type of march selected for an artillery battalion is determined by the—

- (1) Mission of the unit.
- (2) Visibility.
- (3) Condition of the roads.
- (4) Traffic conditions.
- (5) Enemy air activity.
- (6) Nearness to the frontlines.

b. Infiltration (Fig. 44). In infiltration, vehicles of the unit are dispatched individually or in small groups at intervals. This type of march provides the poorest target for hostile observation and

When possible columns should march to destination over more than one route

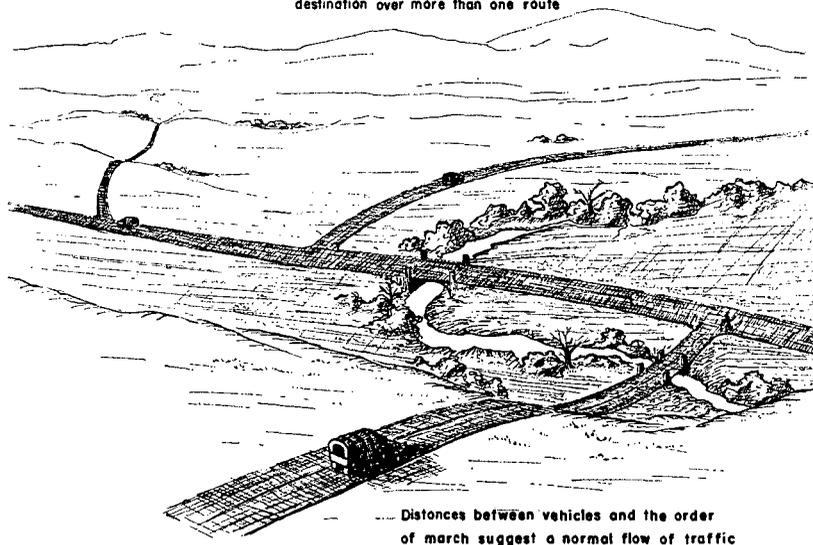


Figure 44. Infiltration march.

attack. The infiltration march interferes the least with other traffic; however, it has the disadvantages of greater time length for the column and more difficult column control.

c. Closed Column. In closed column, the march unit (battery) is formed as compactly as possible consistent with safe driving. The time interval between march units is usually 5 minutes. Advantages of the closed column are ease of control and reduction of time length of the column to a minimum. Disadvantages are that the column is vulnerable to air and artillery attacks, and that the strength and nature of the column are readily apparent to enemy observers.

d. Open Column. The open column is the normal type of column used in marching. The distance between vehicles is prescribed by the column commander and is usually 150 meters with a minimum of 100 meters. The time interval between march units is the same as in closed column. Advantages of this type of column are reduction in driver fatigue, better vision on dusty roads, ease of passage of the column by individual vehicles, and dispersion of protection against air attack. Major disadvantages are the greater time length of the column and the increased difficulty in control as compared with a closed column.

163. Preparation for the March

a. Orders. The amount of detail given in a march order depends on the tactical and traffic aspects of the situation and the state of

training of the command. Many details may be included in a standing operating procedure and need not be included in an order. The order may be supplemented by strip maps, circulation maps, route sketches, and march tables. Each march unit commander and, if practicable, each driver should be furnished a map or sketch of the route. The principal items that should be included in a march order (when applicable) are the—

- (1) Situation.
- (2) Mission and destination.
- (3) Organization for the march, showing the order of march, composition, and commander of each serial, march unit, and special detail.
- (4) Instructions to air observers; to security detachments; to reconnaissance, pioneer, and quartering parties; and to route marking and traffic control groups to include place and time of departure, mission, special instructions, and method of communication with, and the time of re-joining, the main body.
- (5) Instructions to the main body, to include the initial point, control points, and the regulating or release point; times that march units arrive at or clear these points; rate of march; and route or routes of march.
- (6) General instructions such as restrictions on use of roads, maximum speed of march units and individual vehicles, alternate routes and detours, restrictions on lights, halts, precautions during halts, special instructions regarding march discipline, and instructions regarding defense against air or ground attack.
- (7) Administrative details, including supply, maintenance, evacuation, and burial.
- (8) Communication instructions, such as the use of radio, messengers or agents, and whistle or horn signals, and the opening and closing of command posts.

b. Route Reconnaissance. Route reconnaissance may be performed from maps or air photographs, from airplanes or helicopters, or by driving over the route. Reconnaissance by one or more of these means should precede every march; reconnaissance is imperative prior to movements in combat areas or cross-country movements. A map or aerial reconnaissance should, when practicable, be followed ground reconnaissance. The purposes of route reconnaissance are to determine—

- (1) The most suitable route, considering difficult terrain and probable enemy action.

- (2) Alternate routes.
- (3) Concealment and cover available.
- (4) Road conditions, to include types of surface, grades, fords, bridges, underpasses, and tunnels.
- (5) Location of minefields, road blocks, defiles, contaminated areas, or other obstacles to the march and detours to avoid them.
- (6) Condition and capacity of bridges, underpasses, and tunnels.
- (7) Selection of sites for halts, bivouacs, and assembly areas.
- (8) Plans for route marking and pioneer work.
- (9) Time required to make the march.

c. Quartering Party. The purpose of a quartering party is to arrange for the local procurement of necessary supplies or services and shelter, if available, and to locate and lay out bivouac areas prior to the arrival of the column. The quartering party may be used to perform route reconnaissance and pioneer work and to prepare plans for the defense of the area. Sanitary plans to be made by the quartering party are outlined in FM 21-10.

164. Conduct of the March

a. General.

- (1) Constant and thorough supervision by officers and non-commissioned officers is essential to good march discipline. Officers and noncommissioned officers ride where they can best supervise the march of their units. The senior officer or noncommissioned officer commands the vehicle in which he is riding and is responsible that all orders concerning the march are carried out. He normally rides beside the driver. Commanders and other specifically designated personnel may double the column for supervision or as tactical necessity may dictate. All other personnel in the column should be prohibited from doubling the column except at scheduled halts.
- (2) Aircraft in communication with control vehicles may frequently be used for control of the march column.
- (3) The vehicle commander must remain awake and alert. His duties are to watch the route for signs, markers, traffic signals, and other traffic. He must keep the driver alert. Relief drivers may sleep in the body of the truck.
- (4) Vehicles march well to the side of the road on two-lane roads. They stay to the right or left of the centerline,

depending on the driving regulations of the particular country. For some heavy artillery and missile units, because of greater weight, length and, width, two-way traffic is impracticable on narrow roads. Serials containing these weapons may have to be routed over different routes, or road blocks should be set up to control one-way traffic. Warning devices or signs will be used for oversized vehicles that require more than one-half of the width of the road.

b. Route Marking. The mission of the route marking detail is to mark the route with signs and/or personnel so that the column will arrive at its proper destination without delay. Individuals should not be posted where signs can be used with equal effectiveness. When necessary for security, route marking personnel should be posted in pairs. They are posted at dangerous road intersections, railroad crossings, and wherever obstacles and mined or contaminated areas require cautious driving. When the route marking party is formed, individuals are given full instructions in their general duties. When they are posted, they are given special instructions applying to their particular post. Duties of an individual posted as a route marker are comparable to those of a sentry. A positive check must be made to insure that all route marking personnel are picked up promptly and returned to their organization upon completion of the march. For details of route marking and traffic control, see FM 25-10.

c. March Discipline. March discipline is the observance and enforcement of the rules that govern a unit on the march, especially those involving correct formations, distances, and speeds and the effective use of cover. March discipline is acquired through training and experience in marching. Vehicle movements require a high state of individual training and march discipline. Since march control is difficult, much of the responsibility for a successful movement rests with subordinate commanders and leaders.

165. Artillery With Security Detachments

a. When contact with the enemy is an actuality or is expected, tactical conditions govern the disposition of march elements. Dispositions are made to provide security and to facilitate entry into action. Generally, light artillery will be the only artillery included in security detachments. Self-propelled artillery is desirable for the support of all security forces.

b. As a general rule, the artillery supporting a security detachment will move by bounds if the detachment is dismounted or will be a part of the column if the detachment is motorized.

166. Advance Guard

a. General. Artillery must be prepared to give close and continuous support to the advance guard. The size and mission of the advance guard and the terrain and enemy capabilities are factors in determining the amount, the caliber, and the location of the supporting artillery.

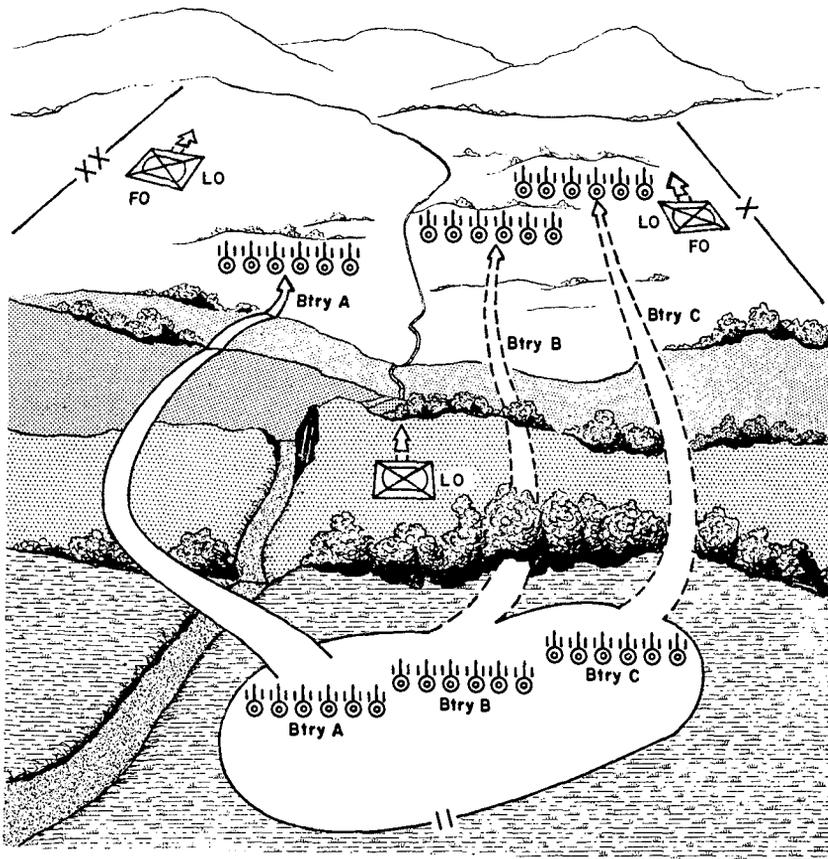
b. Strength and Disposition. If the advance guard is basically an infantry company, the artillery is normally not attached. A battery from the artillery with the main body marches in support of the advance guard, usually between the main body and the advance guard. For larger advance guards operating at such distance that artillery marching with the main body cannot render support, light artillery, reinforced with medium artillery when the need for it can be foreseen, should be attached to the advance guard. Normal liaison with the advance guard commander will be established by the artillery.

c. Positions.

- (1) Prior planning for locating positions is essential. Reconnaissance elements must be well forward in a march column to enable the artillery to occupy position promptly in support of the advance guard action. Artillery with the advance guard must take care that it does not occupy positions prematurely. However, once committed, it must go into action rapidly. Communication will be by radio initially. Normally, observed firing charts constructed on a map or grid sheet will be used initially.
- (2) When contact is imminent and the advance guard has deployed, the artillery supporting the advance guard moves by bounds from one firing position to another. When more than one battery is in support of the advance guard, the artillery moves by bounds by echelon with one echelon moving forward while the other is in position ready to fire (fig. 45). Methods of displacing by echelon are discussed in paragraph 141.

167. Rear Guard

a. Strength. The mission of a rear guard requires the support of light and medium artillery. The rear guard of a division requires the support of at least a battalion of light artillery and a battery of medium artillery. Self-propelled artillery is desirable. When large units are involved, the rear guard artillery may be reinforced by corps artillery. If the distance between the rear guard and the



Battery A has displaced forward. Batteries B and C will displace as indicated by dotted lines.

Figure 45. Displacement of an armored division artillery battalion supporting a deployed advance guard.

main body is excessive, the artillery may be attached to the rear guard.

b. Dispositions. Rear guard artillery usually marches by bounds in the interval between the rear guard and main body. The commander of the rear guard artillery marches with the rear guard commander. The ammunition train of the rear guard artillery marches in the interval between the rear guard artillery and the main body.

c. Positions. The principles governing the selection of artillery positions for rear guard actions are the same as those for advance guard actions. (par. 166).

168. Flank Guard

Artillery is attached to the flank guard only when the distance

between the flank guard and the main body prohibits support of the flank guard by artillery with the main body. The amount of artillery in support of a flank guard as well as its employment is similar to that in support of an advance guard.

169. March Outposts

When a column halts, the security detachments organize march outposts. Normally, the artillery will not occupy positions for short halts. For long halts of if the column is bivouacking for the night, the artillery occupies positions. Security in bivouac is covered in paragraph 69, FM 6-140.

170. Halts and Bivouacs

a. Halts. Halts are made at regular intervals or at selected sites to rest the men, service the vehicles, and to check the loads. Usually, a halt of 15 minutes is made at the end of the first 45 minutes of marching. Subsequent halts of shorter duration are made at the end of longer intervals. Halts for feeding and refueling are usually from 45 minutes to 1 hour in duration.

b. Bivouacs. When troops rest on the ground with no overhead cover, or under shelter tents or improvised shelter, they are said to be in bivouac. Troops are placed in bivouac only when required by the tactical situation, or when better shelter is not available.

171. Selection of Location

a. Halts. During active operations, wooded areas and winding roads offer the best halting places, since they provide concealment and do not present a straight line for attack by enemy aircraft. Halts should be made where vehicles may be dispersed off the road. Crossroads, railroads, and other similar places should be avoided. No part of the column should stop on steep grades or bridges. Relief of personnel must be considered in selecting a place to halt. Villages and towns should be avoided. Columns should be halted to provide adequate sight distance for approaching traffic; if possible, 200 meters of clear view should be provided at both ends of the halted column.

b. Bivouacs. The selection of bivouac areas is preceded by a reconnaissance for routes and suitable locations. As far as the tactical situation permits, security, supply, sanitation, and the comfort of the troops govern the selection of bivouac areas. Drainage, accessibility, water supply, and protection from weather are important considerations. Areas selected are usually designated in the march order. A quartering party should precede the column to the bivouac area.

172. Types of Halts

a. Short Halts. In rear areas where there is little danger of enemy air attack, the vehicles of each unit may be closed on the leading vehicle to facilitate servicing and inspection. In the combat zone, vehicles are halted in concealment when possible. If no concealment is available, vehicles are widely dispersed to make them unprofitable targets for enemy aircraft. When halting on the road, vehicles should stop as far to the right as possible. In areas recently occupied by the enemy, vehicles remain on the hard surface until it is assured that there are no mines on the shoulders. Troops remain off the road to the right of their assigned vehicles, staying clear of the traveled portion of the road at all times. If parked off the road, vehicles should be headed in the probable direction of movement. During halts, drivers and assistant drivers perform the prescribed inspections and maintenance (FM 25-10). Men are posted to control traffic. Security measures for short halts are the same as for marches.

b. Long Halts. When a battalion makes a long halt during a march, it is usually placed in an assembly or bivouac area. Security measures for bivouacs are applicable to long halts.

173. Sanitation

During short halts, sanitation is a minor problem. Refuse and trash should be buried by the individuals concerned as a security measure and to eliminate the possibility of contamination of the area. During long halts or in bivouac, adequate sanitary measures must be promptly initiated and strictly enforced. Latrines and garbage pits are constructed immediately. Areas must be kept clean at all times, and refuse and garbage must be burned or buried. Upon evacuation of the area, all fires must be extinguished, the site thoroughly cleaned, and the latrines and garbage pits filled and marked (FM 21-10).

Section VII. OFFENSIVE COMBAT

174. Responsibilities

a. Division artillery in the offense must be organized and disposed to—

- (1) Protect the assembly and attack positions and the movement into position or cover the deployment of the attack units.
- (2) Execute the necessary fires prior to the attack.
- (3) Furnish continuous fire support throughout the action.

(4) Protect the attacking units during periods of reorganization.

b. The preponderance of the artillery firepower supports the main attack.

c. The tactics and techniques utilized by a particular battalion depend on the tactical mission assigned; that is, direct support, general support, reinforcing, or general support-reinforcing.

175. Positions

a. The primary consideration in the selection of position is the ability to accomplish the mission from the position area selected. The division artillery must be able to accomplish its assigned tactical mission in support of the plan of maneuver outlined by the commander. Defilade, hardstand, dispersion, and cover and concealment should be considered whenever possible. Direct support units normally occupy positions in the zone of the supported unit. They must be able to cover the zone and should be able to reach the initial objective of the supported unit without displacement. Battery positions in the offense must be well forward to exploit the range of the weapons, support the attack as long as possible without displacement, and to facilitate liaison and communication. These positions should be located to avoid interference with other units. Adequate dispersion laterally and in depth must be maintained between units, consistent with the accomplishment of effective fire support, to minimize the effect of employment of enemy nuclear weapons.

b. General support battalions must be able to support the division as a whole and to cover the zone of fire prescribed by higher authority. Although general support battalions should be well forward, it may be necessary to sacrifice some range to adequately cover the prescribed zone efficiently.

176. Attack in a War of Movement

a. *Meeting Engagement.*

(1) *General.*

(a) A meeting engagement may result from a clash between two opposing forces neither of which is fully deployed for battle.

(b) When contact is imminent, the advance guard deploys and moves forward on a broad front to develop the situation, to cover the development and employment of the main body, and to secure terrain that will afford

observation for the artillery. Paragraph 166 discusses artillery in support of the advance guard.

- (c) As the situation develops, artillery battalions with the main body occupy positions to support the attack. Batteries that have occupied positions to support the advance guard may have to displace to positions suitable for support of the attack. The artillery moving to positions should be given priority on roads.
 - (2) *Communication.* Communication will usually be by radio. Wire is laid to the batteries whenever possible.
 - (3) *Control.* Control during the advance guard action may be decentralized to the direct support batteries. The battalion commander centralizes control as early as possible.
 - (4) *Intelligence (FM 6-20).* The search for information and intelligence is intensified as the situation develops. Initially, the bulk of the information will come from the forward observers, liaison officer, and the observers operating with the advance guard artillery. Intelligence efforts are concentrated on—
 - (a) *Targets.* Every effort must be made to locate and identify definite targets which will most affect the mission of the attacking troops.
 - (b) *Terrain.* Intelligence of the terrain prior to the attack should be sufficient to permit rapid formulation of the plan of observation. Prior to and during the attack, intelligence activities are intensified to provide a basis for planning for forward positions, displacement, extension of communication, and for development of the observation plan.
 - (5) *Fires.* The preponderance of firepower will be concentrated on targets of opportunity and adjusted by forward or air observers. In a meeting engagement, a formal preparation will not usually be fired because of a lack of definite targets and because of the time required for the necessary fire planning.
- b. *Pursuit.*
- (1) *General.*
 - (a) The object of pursuit is the annihilation of the hostile force. Direct pressure against the retreating force is combined with an encirclement to cut the enemy's line of retreat.
 - (b) An artillery battalion with the encircling force is normally attached. Self-propelled artillery is desirable.

Liaison between the artillery battalion with the encircling force and the artillery in support of the direct pressure force, if not ordered by higher authority, should be arranged by the artillery battalion commander with the encircling force.

- (2) *Communication.* Communication in the battalion with the encircling force will be by radio. Careful planning is necessary to insure constant radio communication with the higher artillery commander. Communication in the battalion with the direct pressure force will be primarily by radio. Wire should be laid to the batteries whenever the situation permits.
- (3) *Control.* The degree of centralized control of artillery with the division will depend on the speed of the pursuit.
- (4) *Intelligence.* The bulk of the artillery intelligence will come from forward observers and from air observers. Particular emphasis should be placed upon the necessity for the prompt exchange of intelligence between the artillery with the encircling force and that with the direct pressure force.
- (5) *Fires.* Most field artillery fires in pursuit will be observed fires on targets of opportunity. Air observation should be fully exploited. The purpose of these fires is to—
 - (a) Restrict the use of roads by the enemy in his retreat.
 - (b) Prevent the forming of columns by the enemy for an orderly withdrawal.
 - (c) Prevent the enemy from forming for a counterattack.

177. Attack of an Organized Position

a. General. An organized position is an area in which troops and weapons have been put in position for future action and in which field fortifications have been constructed. In planning for the attack of such a position, the field artillery battalion commander must consider his mission, nuclear fires planned for the attack, the time available, and the extent to which the hostile position has been organized.

b. Communication. The installation of communication is progressive. Wire is used wherever possible. The initial phase of communication installation is completed immediately upon occupation of position and is followed by the expansion phase. The expansion phase is followed by the improvement phase prior to the attack or during the progress of the attack when time permits.

c. Control. Centralized control within the battalion will be maintained.

d. Intelligence. The efforts of the intelligence agencies of the battalion are directed primarily toward locating the most important targets for prearranged fires and obtaining information for higher headquarters. Observation is augmented to afford the best possible adjustment and surveillance of fires. When time permits, observation posts are located by survey.

e. Fires.

(1) *Prior to the preparation.* Fires prior to the preparation usually consist of registration fires, fires on targets of opportunity, and protective fires to cover the deployment and movement into position of the attacking troops. Interdiction fires may be employed to restrict enemy operations, disrupt communications, and prevent the movement of enemy reserves. To deceive the enemy concerning the location and number of batteries and the point and time of attack, the following deceptive measures may be employed:

(a) Registration by one piece per battalion.

(b) Registration from a supplementary position located at some distance from the position area and tied to the position area by survey.

(c) Firing from positions other than those to be used during the attack.

(d) Use of roving guns.

(e) Use of dummy positions.

(f) Use of visual and sonic simulation equipment.

(2) *Preparation.* A preparation is often fired in the attack of an organized position. Based on the recommendations of his artillery commander, the force commander decides whether a preparation is to be fired and what its length will be. The duration of the preparation may vary from a few minutes to several hours, depending on the degree of surprise sought, the amount of ammunition available, and the extent to which the enemy position is organized. The preparation may or may not be divided into phases. In general, any division of a preparation into phases should provide for gaining ascendancy of firepower over hostile artillery in the early phases, maintenance of neutralization of artillery throughout the preparation and delivery of an overwhelming mass of firepower on the

enemy forward elements in the final phase. For a discussion of artillery preparations, see FM 6-20.

- (3) *During the attack.* Fires during the attack are delivered to assist the advance of the supported unit. All types of firepower are employed. Successive concentrations on known or suspected enemy locations may be prearranged. The direct support battalion will receive information concerning targets of opportunity from its own observers and from the supported unit. During the attack, the general support battalion, lacking direct contact with the supported unit, must utilize all its observation facilities to the utmost to locate and attack targets of opportunity within the limitations imposed by the no-fire lines. Targets of opportunity located or attacked by the general support battalion should be reported to the division artillery headquarters and, where possible, to the direct support battalion responsible for fires in that zone of action.

Section VIII. DEFENSIVE COMBAT

178. Responsibility

Defensive combat, to include the nuclear battlefield, dictates dispersion, flexibility, and the necessity for additional positions to be located in depth. In defensive combat, the responsibility of the field artillery is to adequately support, by firepower, all phases of the operation. The artillery may be required to support elements of the security force, the main battle force, the counterattacking force, or the entire force during a retrograde movement.

179. Coordination With Other Arms

a. Coordination with other arms is effected in the same manner as in offensive combat. In addition to its assigned tactical mission in the defense, a field artillery battalion must be prepared to support the counterattacking force. If this additional mission is to be one of direct support, forward observers and liaison officers should be sent with the force.

b. When a counterattack is planned, liaison must be established with the unit which is to make the counterattack. The commander of the artillery in direct support of the counterattacking force should accompany the force commander on his reconnaissance of the terrain over which the counterattack is to be made. The artillery plan of communication, observation, and fires for the counterattack should be as complete as time permits; it should be thor-

oughly understood by the staff and subordinate commanders and by the supported unit commander and his subordinates.

180. Communication

All means of communication are employed. In formulating his communication plan for the defense, the battalion commander should insure that signal equipment and supply, particularly wire, will be adequate to permit the battalion to pass readily from support of the defense to support of the offense.

181. Defense of Battle Position

a. Positions.

(1) *Artillery support of the security echelon.*

(a) When security forces are operating at distances beyond the ranges of cannon artillery positioned within the battle area, it is necessary to attach artillery to the security force. When the division is providing a general outpost, the types of artillery attached to the general outpost force should include all calibers of cannon artillery in the battle area in order to aid in deceiving the enemy as to the true location of the battle area. Such attachment is normally terminated when the security force has completed its withdrawal. Self-propelled artillery is desirable for the support of all security forces. Positions are selected to facilitate counterbattery and interdiction fires and fires on possible assembly areas and routes of approach as well as to provide effective cover for the withdrawal of the security force. To facilitate the withdrawal of the artillery, positions should be selected near withdrawal routes. Positions to which the artillery will displace upon relief from attachment to the security force should be completely prepared for occupation. Arrangements for the preparation of positions to which the artillery will withdraw is the responsibility of the artillery commander.

(b) The combat outpost receives its supporting artillery fires through the artillery battalions which are in direct support of the units manning the battle position. Normally the combat outpost will be established within the effective range of the field artillery within the battle position. In some situations, it may be necessary for the direct support artillery to occupy forward supplementary positions in order to give adequate fire support to the combat outpost.

(2) *Artillery support of the main battle position.*

- (a) Artillery in support of the units manning the main battle position should be echeloned in depth to provide flexibility of fires and to insure continuity of support in case some artillery units are forced to the rear.
- (b) The divisional artillery in support of the units manning the main battle position must be able to place the fire of all batteries immediately in front of the forward edge of the battle area (FEBA).
- (c) Artillery must be prepared to support supplementary or blocking positions of the supported unit. This may require the selection and preparation of supplementary firing positions to the rear. The bulk of the light artillery must be able to place fires and support counter-attacks throughout the depth of the battle position.
- (d) Position areas of artillery in general support are prescribed by the division artillery commander. All division cannon artillery should be able to fire in support of the forward edge of the battle area. Supplementary positions may be used to provide longer range fires in front of the combat outpost line (COPL), to attack hostile formations early and to provide depth to artillery fires within the battle area. The selection of positions for heavy and missile batteries will be determined by the mission.
- (e) Alternate positions are always prepared to which artillery units can displace when necessary. Supplementary positions may be used for interdiction and harassing fire and for registration. Dummy positions should be prepared for deception; they may be used as supplementary positions. Before dummy positions are prepared, their locations must be coordinated through the division artillery commander.

(3) *Artillery support of delaying positions.*

- (a) The artillery battalions will normally be located in position areas where they can provide close and continuous support to the strong points of the forward defense area and where they can provide the greatest mass of fires within the battle area. Terrain will be an important factor in the selection of defensive positions. As a rule, the ground best suited for strong points (high ground) is not suitable for artillery positions. The primary considerations in the selection of artillery position areas are mission and weapon capabilities.

If the nature of the operation is such that artillery position security requirements exceed the capabilities organic to the unit, the positions should be in the vicinity of strong points or reserves when possible.

- (b) Alternate positions for the artillery are prepared both forward and rear including those necessary to provide adequate artillery support for the striking force. These positions should be surveyed and prepared to the extent that artillery can move in and commence fire immediately. Detailed planning on communication, routes, observation, resupply, liaison, and possible mission change must be made. A battalion with a reinforcing mission must be prepared to take over a direct support mission on short notice.

b. *Observation.* Organization and improvement of observation facilities continue as long as the defensive position is occupied. All available observation agencies, including facilities of the corps target acquisition battalion and supporting tactical reconnaissance aircraft, are integrated into the observation plan. Where possible, the battalions, particularly those in general support, may be directed to establish direct communication with the target acquisition battalion or one of its batteries. Direct support battalions, including those supporting the covering force, should so organize their observation as to facilitate the displacement of observation posts while maintaining surveillance of the entire zone.

c. *Counterintelligence.* Every effort is made to deceive the enemy as to the location, caliber, and strength of the artillery supporting the defense. As a specific counterintelligence measure, artillery fires from positions which will be occupied during the defense of the main battle position may be restricted or prohibited. Fires from dummy or supplementary (not alternate) positions may improve the deception (FM 100-5). Whenever possible, positions and installations should be camouflaged prior to occupation. The use of roads and trails is strictly controlled, and measures are taken to keep movement off roads and trails to a minimum. The activities of civilians should be closely controlled. The movements of refugees and displaced persons must be restricted to designated roads. The disposition of the local civilian inhabitants of the area will usually be directed by higher authority. Civilians are not permitted in or near the positions; suspicious or questionable persons should be arrested and evacuated.

d. *Fires.*

- (1) *General.* Defensive fires, both observed and unobserved,

generally can be planned in great detail and delivered accurately.

- (2) *Restrictions on fire.* Since premature firing furnishes the enemy with counterbattery data for his artillery preparation and may disclose the plan of defense, the force commander will usually restrict firing either by announcement of a silent policy, by designating those battalions which may fire, or by restricting the daily ammunition expenditures.
- (3) *Registration.* The extent to which registration fires are conducted by battalions depends on the restrictions placed on fires by higher authority and the status of ammunition supply. It is desirable that each battery be registered on a number of registration points. To insure the accurate and rapid massing of fires, it is essential that at least one piece per battalion be registered on selected registration points.
- (4) *Coordination of fires.* Coordination of the fires of battalions is effected by the division artillery headquarters. Direct support battalion commanders, in coordinating their fires with the supported unit commander, must consider—
 - (a) Defensive fires planned for the weapons of the supported unit and the areas into which these weapons cannot fire.
 - (b) Fire capabilities of the artillery battalion.
 - (c) Desirable locations for barrages or defensive concentrations.
 - (d) Availability of reinforcing artillery.
 - (e) Requirements for additional fires to be requested through the division artillery headquarters.
- (5) *Fires to support a counterattack.* Each unit may have one or more counterattack plans, the execution of which is dependent on the action of the enemy. For each counterattack plan of a unit, the artillery battalion supporting that unit formulates a plan of fires and coordinates it with the supported unit. When nuclear fires are to be employed nonnuclear fires are planned to supplement and augment those fires.

182. Retrograde Movements

A retrograde movement is any movement of a command away from the enemy. A retrograde may be forced by the enemy, or it

may be made voluntarily. It may be classified as a withdrawal from action, a delaying action, or a retirement (FM 100-5).

183. Withdrawal From Action

a. General. A withdrawal from action is an operation which involves the breaking off of combat and the movement of the force away from the enemy. Local commanders employ local covering forces to assist their units in disengaging from action. The movement is initiated behind a general covering force designated by the force commander. The mission of the field artillery in a withdrawal is to assist the supported unit to disengage from the action and to cover its movement.

b. Positions. To maintain secrecy and to keep up the appearance of normal activity, fire should be maintained from those positions occupied prior to the withdrawal. The number of pieces or batteries left in position to cover the withdrawal will vary with the tactical situation; conditions affecting the withdrawal such as time of day, terrain, weather; and the orders of higher authority. The selection of positions to be occupied after the withdrawal will depend on the proposed employment of the force.

c. Reconnaissance.

- (1) Route reconnaissance is initiated upon receipt of orders for the withdrawal. To insure an orderly withdrawal, the reconnaissance should include selection of, and familiarization with, routes to the assembly point where the march column will be formed, or to previously selected positions from which the battalion will support any further action; determination of the number of route markers needed; and selection of initial and release points. If traffic control is not prescribed by higher authority, the movement of the battalion must be coordinated with that of other units.
- (2) When the battalion is to occupy positions after the withdrawal, reconnaissance and selection of position is effected as in a displacement (par. 141). All vehicles and personnel not actually needed to maintain the necessary fires and to affect the displacement may be moved at the same time as the reconnaissance parties.

d. Control. The extent of control will vary depending on the method of withdrawal prescribed by higher authority, the time of withdrawal (darkness or daylight), and the activity of the enemy.

- (1) In a night withdrawal artillery piece(s) may be left in each battery position to create the impression that normal fires are being maintained. The number of pieces left will

be as specified and normally will be determined by the amount of enemy activity. Sufficient personnel and communication facilities are left to insure proper fire direction.

- (2) In a daylight withdrawal, some artillery may be attached to the covering force. Heavy and missile batteries are usually moved early to clear the withdrawal routes. Direct support battalions should displace their batteries by echelon to furnish continuous support during the withdrawal.

e. Fires. The fires of the artillery left in positions are as nearly the same as practicable in quantity and type as those previously executed by the force. Liaison is maintained between the covering force and the artillery in position to insure prompt support in emergencies.

184. Delaying Action

a. General. A delaying action is a retrograde operation employed to slow up the enemy's advance, inflict maximum punishment, and gain time without becoming decisively engaged in combat. One or more delaying positions may be selected and occupied in the operation. Each delaying position should be selected to provide adequate ground observation for field artillery.

b. Mission. The mission of field artillery in a delaying action is to force early deployment and maximum delay of the enemy and to prevent him from reforming or reorganizing as successive delaying positions are occupied. The field artillery will also assist heavily engaged units in disengaging from the enemy by delivering of nuclear and nonnuclear fires.

c. Positions. Positions should be selected well forward behind the first delaying position to permit long-range fires. When all of the artillery is emplaced well forward behind the first delaying position, a portion of it must be withdrawn early to cover the displacement of the remainder and to provide continuous support. In direct support battalions, displacement is usually by echelon—the largest echelon displacing at a time when the infantry will normally not require maximum artillery support. The method of displacement by general support battalions will be dictated by the orders of the higher artillery commander.

d. Control. Centralized control of artillery when supporting successive delaying positions is maintained at the highest artillery echelon possible. Detailed planning permits decentralized execution. When dictated by the situation, artillery units can be attached to maneuver elements to provide continuous fire support to these elements. When control can be centralized at a higher headquarter

ters, however, it is desirable to assign a mission of direct support to such units.

e. Fires. Fires consist primarily of long-range interdiction fires, fires on targets of opportunity, and concentrations planned to break up enemy troop concentrations. Fire plans, particularly those of direct support battalions, should include planned close support fires and barrages to be fired on call.

185. Special Operations

a. Special operations are those operations in which the terrain, weather, nature of the operation, or a combination of these creates the need for special measures, equipment, and techniques. It is necessary for all planning and operating personnel to recognize and make necessary allowances for the degree of limitation and the tactical or logistical effects such conditions impose. In the majority of instances, the condition experienced will limit speeds and restrict loads.

b. Special operations require careful planning by the artillery commander. The factors of climate—temperature, humidity, precipitation, wind, and light—are important in the planning and conduct of military operations since they have a direct effect upon terrain, troops, vehicles, and equipment. The systematic consideration of these factors, with their seasonal variations, in conjunction with information on terrain, condition and state of training of troops, and state of maintenance and availability of suitable vehicles and equipment is necessary to the planning of a successful operation under adverse conditions. The artillery commander should seek the advice of personnel on higher echelon staffs who are trained in and charged with, the detailed planning of logistical support of special operations. See FM 100-5 for the effects of terrain and weather upon the basic tactical doctrine of the combined arms. See FM 6-20 for their general effects on field artillery tactics and techniques. Other details on the different types of special operations may be found in the appropriate references listed in appendix I.

Section IX. RELIEF AND REINFORCEMENT IN COMBAT

186. Relief in Combat

a. General. Relief in combat for artillery battalions presents no serious difficulties. If the relieving battalion is to occupy positions other than those of the battalion to be relieved, the relief is accomplished in a manner similar to that used during reinforcement in combat. If the relieving battalion is to occupy the positions of the

battalion being relieved, the relief entails more detailed planning and cooperation between battalions (FM 6-20). Reliefs are normally made under cover of darkness or reduced visibility and with the utmost secrecy.

b. Planning. For battalions other than direct support battalions, the details of the relief are usually covered in orders from the higher commander. For direct support battalions, plans must be made to maintain normal fire support by using both the relieving battalion and the battalion being relieved. Liaison officers and forward observers, from the relieving battalion should arrive early in the area of the unit being relieved. The plans may include counter-preparations, barrages, and concentrations to cover noise of movement incident to the relief of the force.

c. Reliefs.

- (1) The principle of *one* responsible commander must be adhered to during the execution of a relief in place. The execution of the relief takes place under the direction of the commander of the artillery battalion to be relieved, until the relieving supported unit commander assumes command. At this time, the relieving artillery battalion commander also assumes responsibility from the relieved artillery commander.
- (2) In the event relief of the artillery unit is not concurrent with the relief of the supported unit, the relieving artillery unit must assume the direct support role upon departure of the relieved artillery unit. In these cases it is desirable to leave, as a minimum, the liaison officers of the relieved artillery unit with the supported force. This will insure minimum changes to the supported unit commander's policy on fire support coordination.
- (3) The battalion to be relieved furnishes the relieving battalion—
 - (a) Friendly situation including administrative details such as the location of units and supply and medical installations, and the names of local commanders.
 - (b) All available information on the enemy.
 - (c) Route markers and guides and pertinent information on routes.
 - (d) Operational plans for the supported unit.
 - (e) Plans for local security.
 - (f) Location of other artillery units within supporting range and means of communicating with them.
 - (g) Information pertaining to fire direction, no fire lines, observation posts, situation maps, marked maps or

charts for observers, fire plans, survey data, and alternate position charts.

- (h) Installed wire circuits, line route maps, diagrams to include radio, special codes, and other communication information.
 - (i) Supplies in excess of prescribed loads and ammunition in excess of basic load, or as directed.
 - (j) Any restrictions on firing or movement.
 - (k) Any other information which may be pertinent.
- (4) The relieving battalion must occupy positions and man all installations without disrupting artillery support. The battalion furnishes its own supplies and equipment except in unusual circumstances when mutual exchanges may be authorized by higher headquarters.

187. Reception of Attached or Reinforcing Artillery

a. General. As soon as the commander of the incoming battalion is informed of the mission of his unit, he should contact the designated higher artillery commander and determine what part of the organization of position is to be performed by his battalion. The organization of position performed by the incoming battalion will depend on the time available and the restrictions on movement in the forward area.

b. Preparation of Position for an Incoming Battalion.

- (1) A battalion commander may be directed to select and prepare a position for a battalion which is to arrive later. The incoming battalion will usually be a reinforcing or attached battalion. In such cases, the battalion commander on the ground is responsible for the reconnaissance, selection, and preparation of the positions to be occupied by the incoming battalion until the incoming battalion commander arrives.
- (2) Depending on the orders of the higher commander and the time available, the battalion commander on the ground is responsible for—
 - (a) Selecting the position area and the locations for the various installations.
 - (b) Marking the route to the position area and providing sufficient guides to insure that each of the incoming batteries is oriented and can find its installations.
 - (c) Executing the position area survey and marking each battery position. The survey should be connected to the survey of the battalion on the ground.

- (d) In the case of direct support battalions, coordination with the supported unit commander on location, security, and movement of the incoming unit.
- (3) The incoming battalion commander must assure himself that adequate preparations are made for the reception of his battalion. He should precede his battalion to the area, contact the battalion commander who selected the position, and reconnoiter the position area with him. He should be accompanied by as large a party as the situation will allow, particularly if the position is to be occupied during the hours of darkness. It is desirable to include the battery executive officers, chiefs of sections, and a number of guides. Upon arrival at the position area, the battery commanders are guided to their respective battery positions. Other members of the party are shown the routes to and the locations of the various elements of the battalion, and plans are made for the occupation. Preparation for the occupation of the position is continuous. If practicable, installation of wire communication may be started. Arrangements may be made for guides to meet the incoming battalion at an assembly area close to the position area.
- (4) When the incoming battalion arrives at the release point, it is met by guides from both battalions. It is desirable to have each element of the battalion guided into position by a number of that element.

c. Reception.

- (1) The artillery unit in position should furnish the incoming battalion with the following information:
 - (a) Enemy information including cataloged targets.
 - (b) Friendly situation including the location of command posts and names of local commanders.
 - (c) Fire direction information, including an up-to-date situation map, marked maps or charts of observers, survey data, and standing operating procedures.
 - (d) Administrative details, including plans for local security and locations of supply and medical installations.
 - (e) Communication information.
- (2) All details incident to the occupation and organization of position that cannot be accomplished by the incoming battalion because of lack of time or announced restrictions must be performed by the battalion in position.

188. Auxiliary Weapons

a. General.

- (1) When directed by the appropriate commander, the fires of auxiliary weapons are used to reinforce the fires of artillery units. For maximum effect, such auxiliary weapon units employed in the role of reinforcing artillery should be capable of employing artillery massed fires and should be connected to the field artillery with adequate survey and communication. Special weapons suitable for supporting artillery roles are tank and air defense artillery.
- (2) The commander of the reinforced artillery unit is responsible for the coordination and employment of all available resources of both the reinforced and the reinforcing units to the extent that the reinforcing unit may be able to accomplish its mission in an auxiliary role. This may entail assistance to the reinforcing unit in any or all of the following:
 - (a) Designating general position areas.
 - (b) Furnishing air observation and supplementing ground observation as required.
 - (c) Furnishing necessary survey.
 - (d) Assigning missions and preparing firing data, when applicable.
 - (e) Installing wire communication for the reinforcing unit, if necessary.
- (3) The reinforcing unit will usually be responsible for the following:
 - (a) Establishing radio communication.
 - (b) Procuring ammunition and supplies.
 - (c) Establishing liaison with the reinforced artillery unit.

b. Tanks. Tank units with a secondary mission of reinforcing the fires of field artillery normally remain under the command of the unit to which they are assigned or attached. Tank units employed in artillery roles are assigned missions suitable for the flat trajectory weapon with which they are armed.

CHAPTER 9

FIRE DIRECTION

189. General

a. Fire direction is the tactical employment of firepower—the exercise of tactical command of one or more units in the selection of targets, the concentration or distribution of fire, the allocation of ammunition for each mission, and the methods and techniques used in fire direction centers to convert fire missions into appropriate fire commands.

b. The objective of fire direction is to enable the artillery commander to accomplish—

- (1) Continuous and accurate fire support under all conditions of weather, visibility, and terrain.
- (2) Flexibility of fires sufficient to accomplish prompt and accurate massing of the fires of his units in any area within range and simultaneous distribution of fires on numerous targets.
- (3) Control of artillery fire through orders, policies, and priorities and by means of adequate liaison, observation, and communications.
- (4) Coordination of artillery fires and integration with the fires of other fire support means.

c. Detailed techniques and doctrines of field artillery gunnery are discussed in FM 6-20 and FM 6-40.

190. Fire Direction Team

a. The division artillery headquarters coordinates the fires of its subordinate units and allocates reinforcing artillery fires to conform to the division plan of operation. Division artilleries are concerned primarily with tactical fire direction and not with the determination and the transmission of firing data.

b. The battalion fire direction team is composed of those elements of the battalion and battery command posts used by the battalion commander to control and direct fire. The team assists the battalion commander in the control and coordination of all fires for which the battalion is responsible. Acting in accordance with the battalion commander's policies and directives, the fire direction

team orders the execution of prearranged fires, approves and fires (or disapproves) missions requested by observers, and executes promptly all fire missions ordered by division artillery headquarters.

191. Fire Direction Center (FDC)

a. The fire direction center, consisting of gunnery, intelligence, communication personnel and equipment, is that element of the command post by which the commander exercises fire direction or fire control. The personnel and equipment authorized to accomplish this function are prescribed by tables of organization and equipment.

b. The division artillery fire direction center controls and directs the fires of the units over which it exercises centralized control. Firing data are not normally prepared. Centralized control requires that the division artillery S3 or his representative make the decision to fire, prescribe the method of attack, the amount of ammunition to be fired on each target, and alert selected artillery firing units. The division artillery closely coordinates its fires with the supported unit. The production of target intelligence and the coordination of countermortar activities are primary concerns of the division artillery S2.

c. The battalion fire direction center translates target intelligence, fire missions from higher commanders, and fire requests into the appropriate fire commands and transmits them to the batteries. The battalion FDC is organized and supervised by the battalion S3. Personnel that may be utilized in the operation of the battalion FDC are the S3, the assistant S3 (s), the operations sergeant, chart operators, computers, and switchboard and radio-telephone operators. Other personnel who have functions essential to the operation of the fire direction center are the battalion S2, the reconnaissance and survey officer, the communication officer, and the intelligence sergeant. For specific duties of personnel, see FM 6-40. The location of personnel and equipment of the FDC will be governed by the requirement of the FDC to perform its primary mission as efficiently as possible. Other considerations include the necessity for and availability of shelter, the dispersion required by the situation, and the desires of the S3. The S3 should be given wide latitude in his choice of organization of the installation.

d. Subordinate artillery echelons must be prepared to assume the functions of the division artillery fire direction center in an emergency. The charts, records, forms, and reports used by the subordinate units are the same as those used by the division artillery and are kept current with the situation. Should it become neces-

sary for the subordinate unit to take over division artillery fire direction, it must also assume the division artillery communication responsibilities.

e. The infantry heavy mortar platoons of the infantry division battle group establish and operate their own fire direction centers in a manner similar to that of cannon artillery battalions. Mortar forward observers send fire requests directly to the heavy mortar platoon fire direction center. If the mission is more appropriate for the direct support battalion, or additional fires are required, the heavy mortar platoon fire direction center will request such fires from the direct support battalion. Mortar gunnery procedures and techniques are based on the same principles as are artillery weapons.

192. Charts, Records, Reports, and Forms

Division artillery units will maintain charts, records, reports, and forms as outlined in FM 6-20 and FM 6-40.

193. Division Artillery Fire Direction Center

a. Normally, direct support artillery will not be diverted from its primary mission. When a unit requests additional fire, the division artillery commander or his authorized representative at the fire direction center will—

- (1) Decide whether to grant the request.
- (2) Determine the battalions (batteries) capable of firing on the target from the fire capabilities chart.
- (3) Decide on the number of battalions (batteries) to fire and the amount of ammunition to be expended.
- (4) Inform the unit requesting the additional fire of the decision.

b. In assigning missions to battalions (batteries) when the chart location of a target is known, the fire direction center will include the following in its order :

- (1) Coordinates and altitude of target.
- (2) Nature of target.
- (3) Amount and type of ammunition.
- (4) Method of fire.
- (5) Time of opening and/or lifting fires.
- (6) Concentration number.

c. If the chart location of a target is unknown initially, battalions (batteries) adjusting on an important target and desiring addi-

tional fire will request fire support from the division artillery FDC. The request for additional fire will include—

- (1) Approximate coordinates.
- (2) Nature of target.
- (3) Concentration number.
- (4) A statement that the correct coordinates and altitude will be reported later.

d. The division artillery FDC will then determine which units are to fire on the target and send them a warning order. The requesting battalion (battery) is then informed of what additional fire it will receive. As soon as the unit requesting the fire determines the correct coordinates and altitude, these data are sent to the division artillery FDC and from there to the units designated to fire the mission.

e. The size and nature of the target will govern the distribution of fire. Each battalion (battery) may be assigned a part of the target, if the target area is large or irregular.

194. Additional Fire

The division artillery FDC normally calls on division general support units and corps reinforcing units for fire missions. Direct support artillery units are not called on for additional fires unless warranted by the importance of the mission. If additional artillery fire is desired, the FDC notifies the corps artillery FDC. Air or naval support is requested through the fire support coordination center.

195. Battalion Fire Direction Center

a. The procedures followed in the fire direction center are those required to translate target intelligence, fire missions from higher headquarters, and requests for fires into the appropriate fire commands and transmit them to the batteries.

b. The fire capabilities of the batteries determine the areas into which each battery can fire and which batteries can fire on a given target. The dead space area is that area which, although within the maximum range of the weapon, cannot be covered by fire from a particular position because of intervening obstacles, nature of the ground, or the characteristics of the trajectory or the limitations in the pointing capabilities of the weapon. A dead space chart is constructed by outlining the area of dead space on a chart or map and shading or labeling that area which cannot be reached by fire with the particular weapon, charge, and type of trajectory. Dead

space charts for the battalion FDC should be improved as time permits. Improved charts will be maintained at battalion and should include charge capabilities as well as dead space areas for low-angle and high-angle fires. Normally, dead space charts which are forwarded to higher headquarters need show only dead space areas for low-angle and high-angle fires without reference to charge. For determination of dead space, see FM 6-40.

c. Requests for fire are normally reported directly to the battalion and/or battery fire direction center where they are plotted on firing charts. Based on an analysis of this plot, the description of the target, the policies of the commander, and orders from higher headquarters, the decision to fire is made, and the fire order is issued to the battalion FDC and the observer. Fire commands are then computed as prescribed by the fire order and transmitted to the batteries (pieces) (FM 6-40).

d. The echelon at which each of the elements of procedure is accomplished is the decision of the battalion commander and should be specified in the standing operating procedure. Flexibility, accuracy, and speed must be maintained in any case.

CHAPTER 10

SIGNAL COMMUNICATIONS

Section I. GENERAL

196. General

a. Effective artillery support depends on efficient communication. The communication to be established in any situation is a command decision, based on the tactical situation, the facilities available, and the commander's estimate of the requirements. The commander is responsible for providing adequate communication with all elements of his command and with supported, reinforced, and adjacent units. The commander exercises his responsibility for communications through the division artillery communication officer. The communication officer exercises immediate staff supervision in the training of communication personnel and in the installation, operation, and maintenance of the division artillery communication system. He prepares communication plans and orders and advises the commander on the employment of all communication facilities available to division artillery (FM 6-20).

b. All means of communication will be utilized as required. No means is considered primary.

c. The division signal battalion will install and operate a division area communication system established throughout the division area consisting of signal centers, wire and radio trunks and local lines, and radio/wire integration facilities to provide general and direct communication support for units of the division area. This is not intended to replace the separate functional wire and radio systems of the artillery. Artillery units will use the division area communication system for administrative communication on a common user basis. In addition, sole-user channels will be allocated when requirements exceed organic artillery capabilities. A detailed discussion of division area communication systems is contained in FM 11-10, FM 11-11, and FM 11-57.

197. Communication Requirements

a. *Internal Communication Requirements.* The internal communication requirements of division artillery are those necessary

for internal command, fire control, and administrative use. They will include nets for—

- (1) Tactical and administrative control.
- (2) Fire control and coordination.
- (3) Exchange of information and intelligence.

b. External Communication Requirements. The external communication requirements of division artillery are those necessary for the commander to communicate with higher headquarters, supported, reinforcing, and adjacent units. They will include nets for—

- (1) Tactical and administrative orders from division headquarters.
- (2) Time-on-target missions and meteorological data from corps artillery.
- (3) Exchange of information and intelligence with higher, supported, and adjacent headquarters.
- (4) Air defense intelligence from corps air defense artillery.
- (5) Communication with supported units.
- (6) Communication with reinforcing artillery units.
- (7) Communication with aircraft (both observation and tactical).
- (8) Receipt of accurate time signals for solar survey.

c. For a discussion of artillery communication principles, planning, and missions, refer to chapter 14, FM 6-20.

198. Tactical Employment of Communication

a. General. The communication system to be established in any tactical situation is a command decision based on the mission, the facilities available, and the commander's estimate of needs. It will always contain an alternate means of communication.

b. Offense. The amount of communication established in the offense varies with the development of the action. In preparation for an offensive action, complete communication facilities will usually be established. During the offense, the rapidity of movement dictates the facilities to be established. Wire is employed whenever time permits. If radio silence or listening silence have not been imposed, radio is employed to the maximum in rapidly moving situations, since it can be rapidly established and affords communication during movement.

c. Defense. Because of the additional time available in the defense, communication systems are usually more completely de-

veloped. Wire systems are expanded by duplicating lines on alternate routes and installing lateral lines to adjacent units.

d. Marches and Bivouacs.

- (1) Communication during marches is necessary for warning, march control, collection and dissemination of information and intelligence, and transmission of both tactical and administrative orders and information.
- (2) In a bivouac or assembly area, wire communication, especially to the perimeter, is desirable, if time permits.

199. Means of Communication

Signal communication includes all means of conveying information of any kind from one person or place to another except by personal conversation and mail. The means available to the division artillery are wire, radio, messenger, visual, and sound.

200. Message Center

The message center of division artillery is the communication agency charged with the responsibility for receipt, transmission, and delivery of messages. Message centers are operated by organic communication personnel. The unit commander is authorized to establish an in-station operation procedure which will best meet the particular needs of his unit. Simplicity and speed are the paramount considerations in formulating an operating procedure for in-station use. Message center procedure is covered in FM 6-140 and FM 11-17. A type division artillery message center is shown in figure 46.

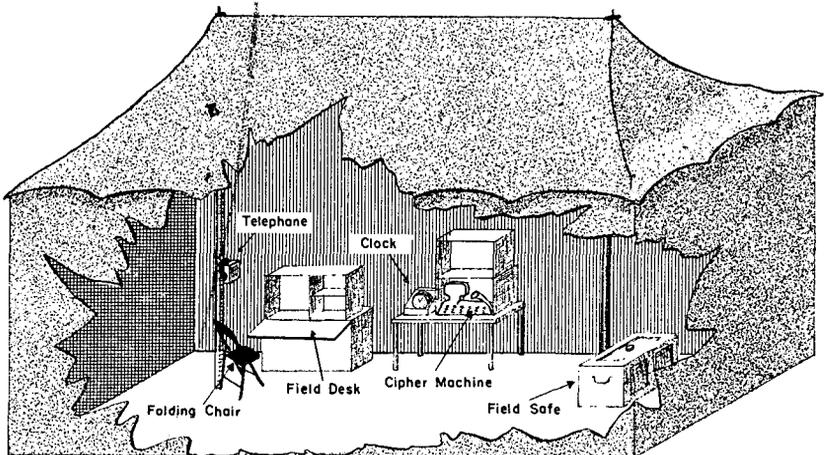


Figure 46. A type division artillery message center.

Section II. WIRE COMMUNICATION

201. General

a. The division artillery wire system is a vital means of signal communication. The installation of wire for command and fire direction is installed prior to or during occupation of position. The system is expanded as time and personnel are available. The wire system is extended, duplicated, and continuously improved as more time becomes available to meet the maximum requirement.

b. Wire communication is generally more stable than other means, does not require a high degree of technical skill to install and operate, and is less subject to electrostatic disturbances or enemy jamming than radio communication. Disadvantages of wire communication are that the lines are vulnerable to shelling, bombing, and vehicular traffic and are subject to tapping by the enemy. The use of wire communication does not insure that a record of the message is made.

c. The nature of the wire system installed depends on the length of time the position is occupied. Wire circuits parallel the radio system, so that an alternate method is always available in the event of failure of one of the systems.

d. The division artillery and subordinate units will enter the division area communication system through the nearest signal center.

e. Priorities for installation of wire systems are established to enable division artillery to deliver fires as rapidly as possible. First priority should be given to fire direction circuits. Local and administrative circuits may be installed later.

202. Division Artillery, Infantry Division

a. *Division Artillery Headquarters.* A type wire system for division artillery, infantry division, is shown in figure 47.

(1) *External trunk circuits.*

- (a) Corps artillery headquarters installs command and fire direction trunk circuits to division artillery headquarters.
- (b) The division signal battalion is responsible for the installation of circuits between the division artillery switchboard and radio terminal equipment at the signal subcenter serving division artillery headquarters.
- (c) Division artillery is responsible for the installation of—

1. Trunk circuits to attached units.
 2. One circuit from the division artillery operations switchboard to the operations center of each organic and attached unit.
 3. One circuit from the division artillery command switchboard to the command switchboard of each organic and attached unit.
 4. Circuits to the command and fire direction center switchboards of the missile battery (Honest John) when this battery is retained under division artillery control.
- (2) *Internal trunk circuits.* A wire team from division artillery is responsible for connecting, with the necessary number of trunk lines, the operations switchboard to the command switchboard.
- (3) *Local circuits.* Local circuits are established as required.
- (4) *Sole-user circuits.* Artillery requirements for sole-user circuit allocations through the area communication system will vary with each situation, depending on the artillery organization for combat, the disposition of signal centers and artillery units on the battlefield, and the status of the artillery communication. Artillery will require the following sole-user circuits:
- (a) Two circuits from division artillery to the division fire support coordination center.
 - (b) One circuit from the fire support coordination center to each unit with the capability for firing nuclear ammunition.
 - (c) Two circuits from corps artillery to division artillery.
 - (d) Certain supporting corps artillery units (target acquisition reinforcing groups) positioned in the division sector may require sole-user circuits to corps artillery headquarters.
- (5) *Simplex circuits.* When time and distance do not permit the installation of two trunk circuits between division artillery headquarters and its subordinate units, a second circuit may be gained by simplexing the existing trunk circuit.

b. Field Artillery Howitzer Battalion, Towed and Self-Propelled. The howitzer battalions, towed and self-propelled, require similar communication systems (fig. 48). The howitzer battalions will enter the division area communication system through the nearest signal center to augment or supplement organic communications means

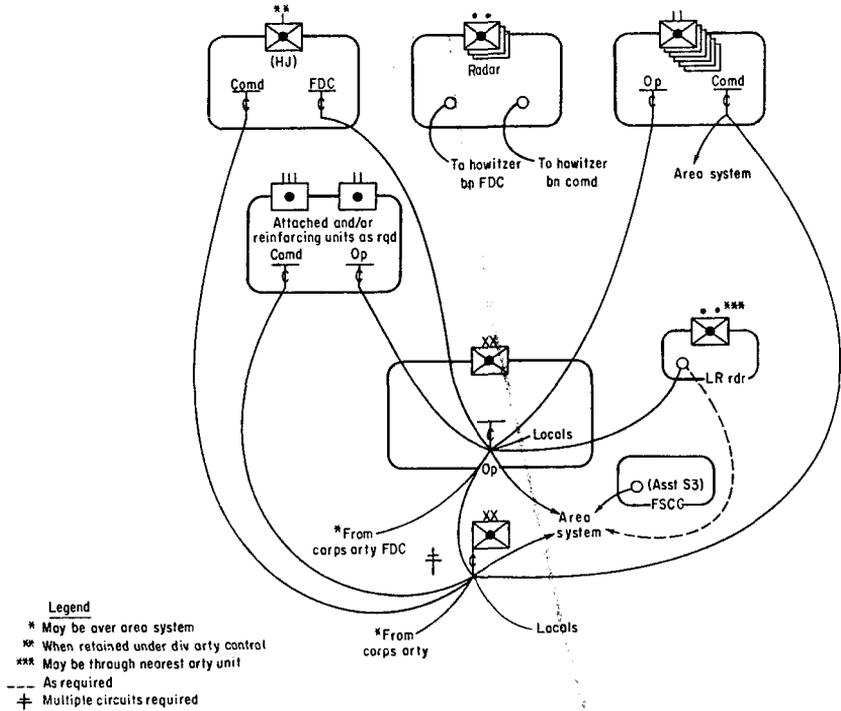


Figure 47. Type wire system, division artillery, infantry division.

c. *Field Artillery Rocket/Howitzer Battalion.* A type wire system for the field artillery rocket/howitzer battalion is shown in figure 49. The battalion will enter the division communication system through the nearest signal center to augment or supplement organic communication means.

d. *Subordinate Units.* Type wire systems for the subordinate units organic to the division artillery battalions are explained in FM 7-24.

203. Division Artillery, Airborne Division

a. *Division Artillery Headquarters.* A type wire system for an airborne division artillery headquarters is shown in figure 50.

- (1) The wire teams of division artillery are responsible for the installation of the following circuits:
 - (a) Local circuits in the division artillery command post area.
 - (b) Trunk circuits between the division artillery command switchboard and the division artillery operations switchboard.

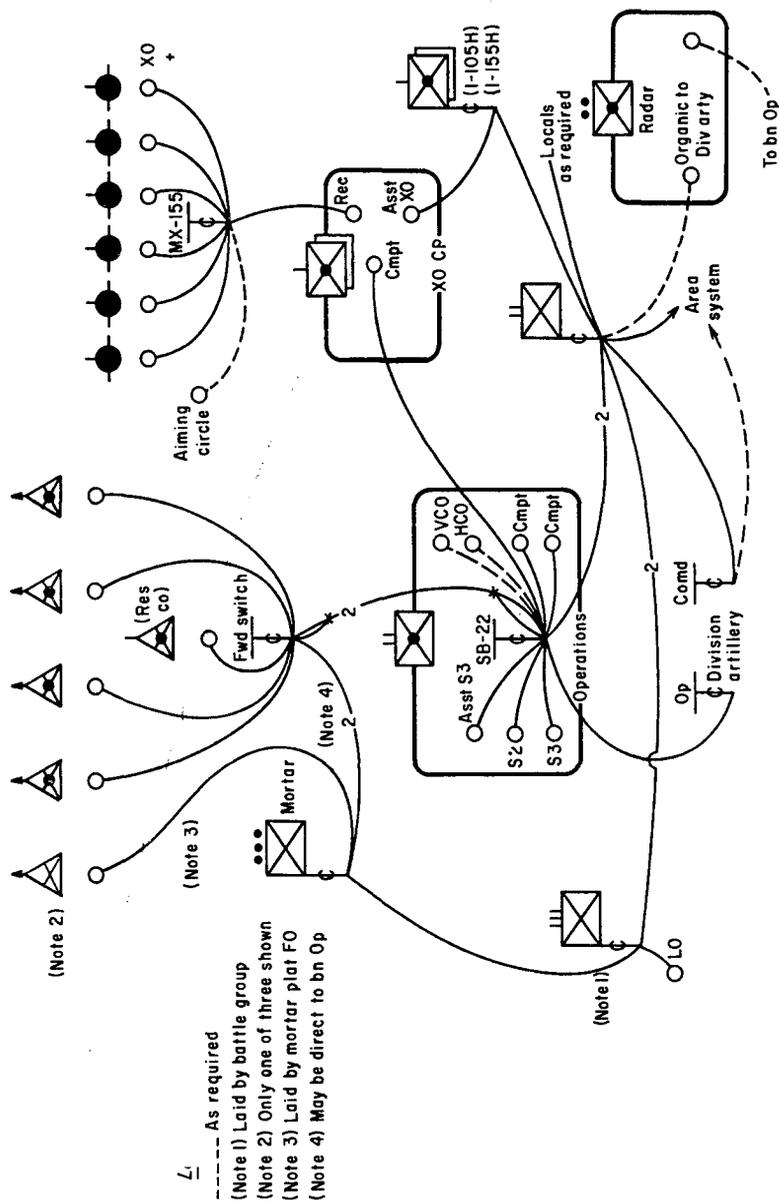
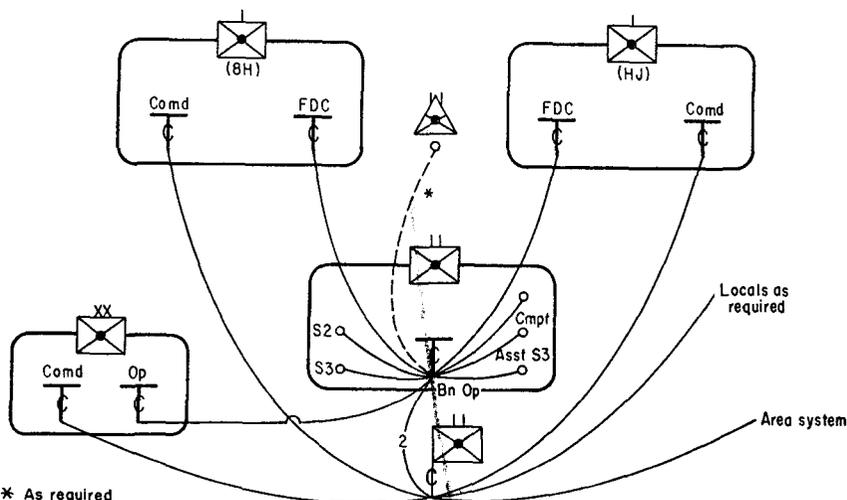


Figure 48. Type wire system, howitzer battalion, infantry division.



* As required

Figure 49. Type wire system, rocket/howitzer battalion, infantry division.

- (c) Trunk circuits to the operation center of the field artillery batteries from the operations switchboard of division artillery.
- (d) Trunk circuit to the command switchboard of the field artillery batteries from the command switchboard of division artillery.
- (2) Wire circuits received by division artillery are trunk circuits from the division command board or trunk circuits from the division communication center or trunk circuits from the radio relay equipment provided by the division signal battalion. This equipment is provided division artillery when distances between division headquarters and division artillery require its use.
- (3) Because of the distances involved, the airborne division artillery may, at times, have to use the division area communication system as a substitute for the trunk circuits between division artillery and the field artillery batteries.

b. *Subordinate Units.* Type wire systems for the subordinate units organic to the division artillery are explained in FM 7-24.

204. Division Artillery, Armored Division

a. *Division Artillery Headquarters.* A type wire circuit for division artillery headquarters, armored division, is shown in figure 51. The requirements for trunk circuits in an armored division artillery are similar to those in an infantry division artillery.

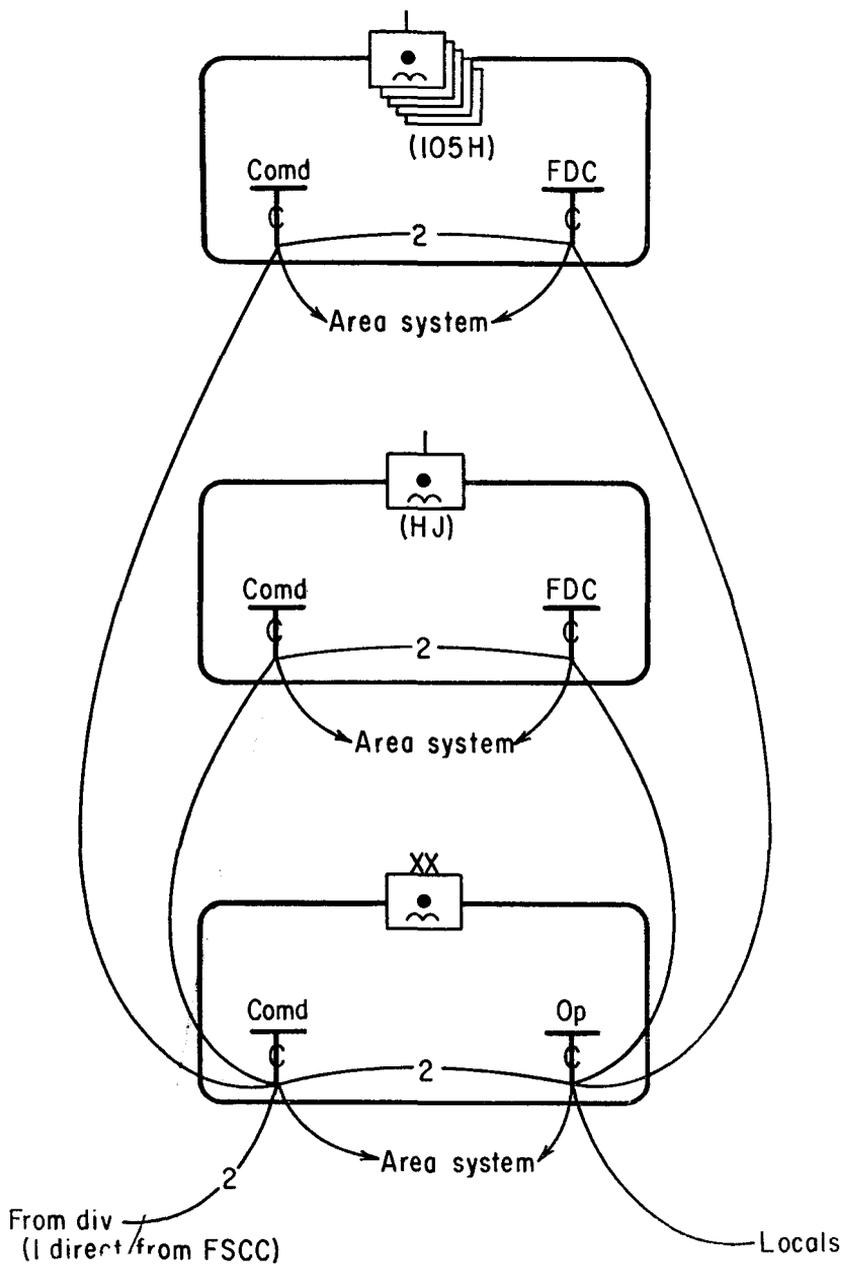
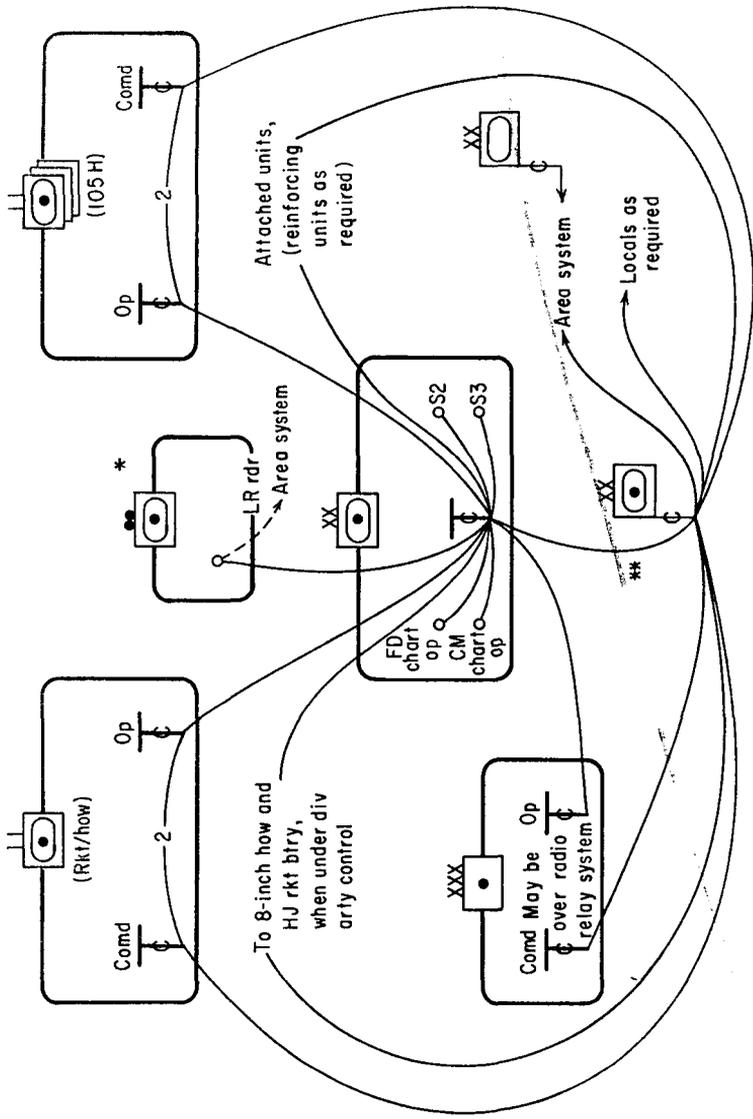


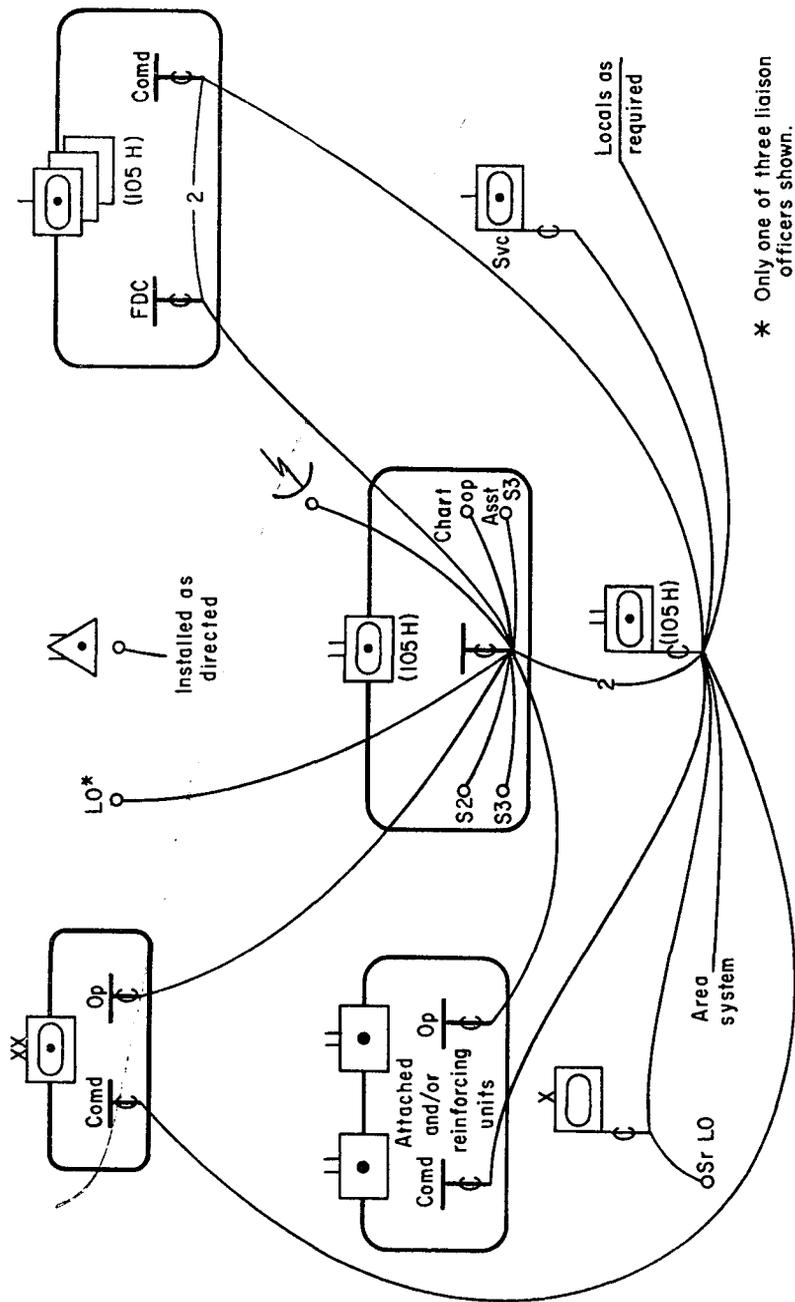
Figure 50. Type wire system, division artillery, airborne division.



* May be through nearest artillery unit.

** Multiple circuits required

Figure 51. Type wire system, division artillery, armored division.



* Only one of three liaison officers shown.

Figure 52. Type wire system, field artillery howitzer battalion, 105-mm, self-propelled.

- (1) *Local circuits.* Local circuits will be installed by a command post wire team supervised by the wire foreman. Circuits will be installed as required.
- (2) *Forward switching central.* To economize on wire and time and to add flexibility to the wire system, division artillery may establish a forward switching central in the vicinity of the battalions. If this is done, the forward switching central should be placed in a proposed command post location. The forward switching central may be supported by one or more of the division artillery wire teams.
- (3) *Maintenance and recovery of wire.* Maintenance of wire circuits is the responsibility of both users. The recovery of wire in old positions must be planned and initiated, if at all possible. In a fast moving situation, which is typical of armor operations, wire recovery may not be possible. The basic load of wire must be maintained by requisitioning through signal supply channels.

b. Field Artillery Howitzer Battalion, 105-mm, Self-Propelled.
 A type wire system for the field artillery howitzer battalion, 105-mm, self-propelled, is shown in figure 52. The battalion will nor-

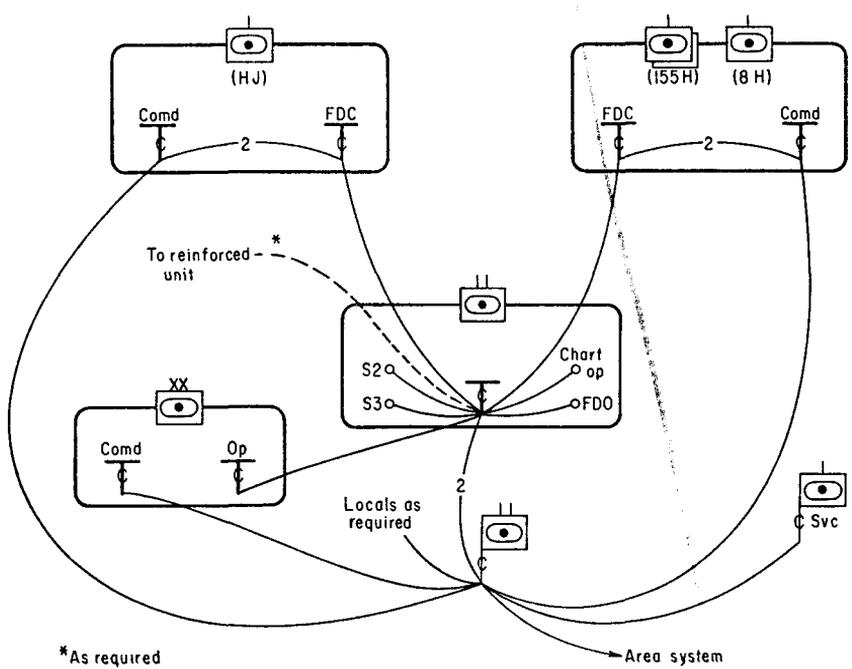


Figure 53. Type wire system, field artillery rocket/howitzer battalion, self-propelled.

mally enter the division communication system through the forward signal center servicing the supported combat command.

c. Field Artillery Rocket/Howitzer Battalion, Self-Propelled.

- (1) The battalion will normally enter the division area communication system through the nearest forward signal center. It may, at times, be desirable for the Honest John battery to enter the division area communication system directly to augment communication means with battalion headquarters.
- (2) The type wire system shown in figure 53 assumes all batteries are under the operational control of the battalion headquarters. The system may be readily changed for situations where batteries are detached.

Section III. RADIO COMMUNICATION

205. General

a. Radio, when properly used, furnishes a most valuable means of signal communication. It is used for both tactical and administrative messages. It is an essential means of communication for highly mobile elements. It is especially suitable for motor movements and in fast moving situations.

b. All units will maintain listening watch on the division warning net for warnings and intelligence disseminated on a broadcast basis. All units will utilize a common corps artillery survey frequency for control of survey parties and transmission of survey data.

c. Aircraft of the division aviation company operating under division artillery control will use the division artillery command/fire direction net, or, in the airborne division, division artillery F1 net. When artillery fire is being adjusted, the division artillery S3 or his representative will direct the aircraft to the frequency of the battalion or battery which will fire the mission. When aircraft are assigned specific missions under battalion or battery control, they will utilize a frequency of the battalion or battery.

d. Artillery elements of the division furnish certain equipment for use by the air liaison officer and the forward air controllers. Division artillery headquarters and headquarters battery furnishes two vehicles with appropriate radio equipment for the tactical air force air liaison officer (ALO). These vehicles are AM-FM retransmission stations to assure communication between forward air controllers and the air liaison officer. Retransmission stations will be positioned well forward within FM range of the forward air controllers. In the airborne division, the radio sets for the

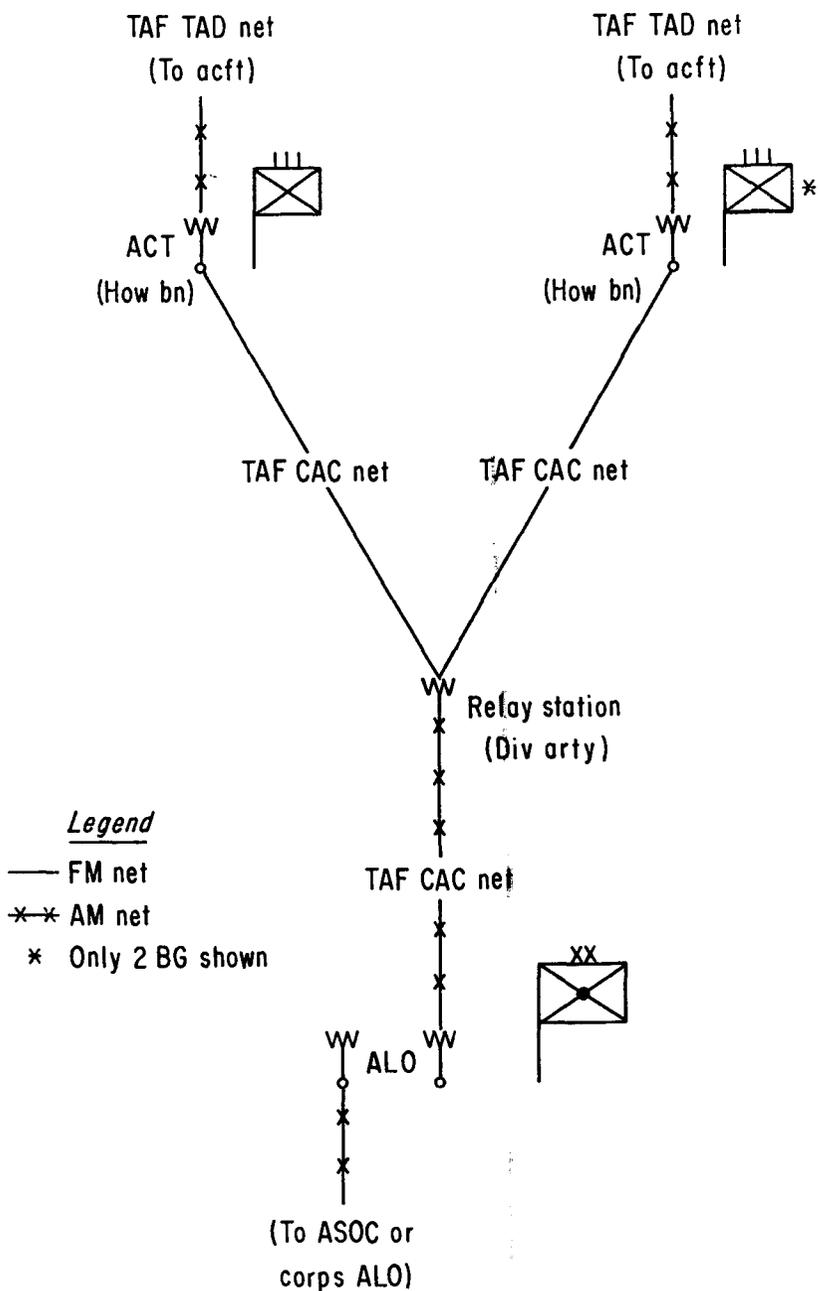


Figure 54. Type radio system for coordination and control of close air support.

forward air controller are furnished by the mortar batteries. A type radio system for coordination and control of close air support is shown in figure 54.

e. The short-phrase repeat-back method of communication transmission described in Joint Army-Navy-Air Force Publication (JANAP) 164 will be used.

f. Voice procedure for processing fire missions is shown in FM 6-40.

g. The division signal officer is responsible for the assignment of radio call signs and frequencies throughout the command. He makes the assignment in the signal operation instructions (SOI). The division signal officer also prescribes a system for adding suffixes to radio call words. Suffixes are used to indicate staff positions or subordinate radio stations that otherwise would require separate call words. Suffixes to be used by the division artillery are determined by the division artillery communication officer and are forwarded to the division signal officer for inclusion in the SOI (FM 11-16).

206. Internal Radio Nets, Division Artillery

The internal radio nets of the division artillery headquarters are those nets required within division artillery for command, intelligence, and fire control activities.

a. *Division Artillery Command/Fire Direction Net, FM.* The division artillery command/fire direction net, FM, is used primarily for communication from division artillery fire direction center to Army aircraft flying surveillance missions under division artillery control and for internal staff control. This net may be used by division artillery to issue orders to subordinate units and for collection of information and the dissemination of intelligence.

b. *Division Artillery Command/Fire Direction Net, AM (RATT).* The division artillery fire direction net, AM, is used for control of subordinate units and transmission of fire requests from battalions to division artillery, fire missions from division artillery to battalions or batteries retained under division artillery control, and time-on-target missions to all battalions and batteries. Time-on-target missions will be transmitted by voice; other messages may be transmitted by radioteletype.

c. *Command/Intelligence Net, FM.* The command/intelligence net, FM, is used for the internal control of airborne division artillery. It is used to issue tactical and administrative orders to the organic batteries of division artillery, collect battlefield information from the batteries, and disseminate intelligence to the batteries.

d. Primary Fire Direction Net, FM. The primary fire direction net, FM, is used by airborne division artillery headquarters and its organic batteries for the receipt and adjustment of fire missions. It is used by division artillery for the dissemination of target data, meteorological data, and fire missions. The mortar batteries of the airborne battle groups will monitor this net to receive meteorological data and may operate in the net to request additional fire support.

e. Secondary Fire Direction Net, FM. The secondary fire direction net, FM, is used by airborne division artillery headquarters for receipt and adjustment of fire missions and the coordination of artillery support when the traffic on the primary channel becomes heavy.

207. External Radio Nets

a. General. To accomplish the fire support mission, division artillery must operate radios in certain external radio nets. These radio nets must meet the command and tactical requirements to—

- (1) Receive orders from higher headquarters.
- (2) Coordinate tactical air support.
- (3) Coordinate with link-up artillery headquarters (airborne).
- (4) Facilitate survey.
- (5) Broadcast and receive warning information.
- (6) Broadcast and receive meteorological data.

b. Corps Artillery Survey Channel, FM. The corps artillery survey channel, FM, is used by the division artillery headquarters and artillery battalion and battery survey sections to facilitate survey and for coordination with corps artillery survey elements. Because of the limited range of the radio sets employed on this channel, it is not intended or feasible for this net to be a coordinated net; however, it does provide communications within and between all survey sections in the division artillery. This channel is of primary interest to the division artillery survey section and of secondary interest to the survey officer.

c. Corps Artillery Fire Direction Net, F2, AM (RATT). The fire direction center of division artillery operates a radio in the corps artillery fire direction net F2, AM, for coordination of fires, requests for additional fire support, and receipt of time-on-target missions.

d. Division CG/Command Net, FM. The division CG/Command net, FM, is intended primarily for communication between the division commander and his staff and the commanders of all major

subordinate units. Because of the number of radio stations in this net, it will not be used for lateral communication between commanders except in an emergency.

e. Division Intelligence/Operations Net, AM (RATT). The division intelligence/operations net, AM, is used for collecting and disseminating intelligence between division headquarters and its major combat elements; it is also used for command and operational control when required. This net provides a radioteletype link between the division headquarters, aviation company, division artillery, reconnaissance squadron, and the five battle groups.

f. Division Command/Operations Net, AM (RATT). A radio set at the radio station of division artillery headquarters operates in the division command/operations net, AM (RATT). Over this net, the division artillery communicates with the division headquarters and each supported unit. Command and administrative traffic is normally transmitted over this net.

g. Division Warning Net, AM. The division warning net, AM, is used to broadcast enemy air alerts; nuclear, biological, and chemical attack warnings; fallout warnings; and similar information of an urgent operational nature which applies to the division as a whole or to major divisional elements. All elements of the division monitor this net. Division artillery headquarters will transmit information pertaining to air alerts over this net.

h. Division Intelligence Net, AM. The division intelligence net, AM, is a radio net which links division headquarters with the information gathering agencies of the airborne division, the aviation company, the five airborne battle groups, and the cavalry troop. Division artillery monitors this net with a radio receiver. Information and intelligence pertinent to the elements of division artillery will be transmitted over one or more of division artillery's internal nets.

i. Division Command Net, AM. The division command net, AM, provides a radioteletype link between the airborne division headquarters, the five airborne battle groups, the fire support coordination center, and the cavalry troop. This net is used to issue tactical orders to elements of the division. The division artillery furnishes a radio set to the fire support coordination center for employment in this net. The fire support coordination center will begin fire planning when tactical orders are issued to the battle groups.

j. Division Air Request Net, FM. The division air request net, AM, is used by the five airborne battle groups to submit immediate and preplanned tactical air support requests to the fire support coordination center. Division artillery furnishes a radio set,

mounted in a fire support coordination center vehicle, for use in this net.

k. Air Defense Intelligence Net, AM. Division artillery headquarters monitors the air defense intelligence net, AM. Air defense warnings received over this net are rebroadcast over the division warning net, AM, if they are applicable to units of the division.

l. Tactical Air Force Control and Coordination Net, FM, and Tactical Air Direction Net, AM. The tactical air force control and coordination net, FM, and the tactical air direction net, AM, are used to assist in the execution of air strikes. The air control team (ACT) in division artillery headquarters operates a radio set for the division air liaison officer (ALO) in these nets. Two additional vehicles with the necessary radios are assigned to the radio section. These vehicles are used to establish AM-FM relay stations to assure communication between forward air controllers and the division air liaison officer.

m. Tactical Air Observation Net, AM. The tactical air observation net is used for communication between tactical aircraft and division artillery for artillery adjustments and surveillance of nuclear fires. Tactical air force reconnaissance aircraft may be called on to adjust long-range artillery when it is not feasible for army aviation to accomplish the mission. Division artillery headquarters employs a radio set in this net as required.

n. Artillery Link-Up Net, AM (RATT). The artillery link-up net, AM, (RATT), provides a radioteletype link with the airborne artillery headquarters of the link-up force. It is used to coordinate artillery support between the airhead and link-up force artillery and for adjustment of fire coordination lines between the two closing forces.

o. Division Assault Net, FM. The division assault net is a radio net between the airborne division headquarters and the five airborne battle groups, cavalry troop, aviation company, and FSCC. This net supplies an early radio link in the airborne assault. Division artillery furnishes a radio set to the FSCC for operation in this net.

p. Time Signal Net, AM. A radio receiver in the division artillery survey information center (SIC) is used to receive time signals. Normally, one broadcasting station in each theater will be designated to broadcast time signals to the entire theater of operations. The time signal is used in conjunction with astronomic survey.

q. Army Air Request Net, AM. The army air request net is used to request immediate and preplanned tactical air support. Requests

for air support are sent directly to the Army Operations Center from the division FSCC.

r. TAF Spot Report Receiver, UHF. A radio set in FSCC operates in the spot report receiver system for monitoring Air Force missions flown for the division.

s. Corps Artillery Meteorological Net, AM. The corps artillery meteorological net, AM, is used for broadcast of meteorological messages on a time sharing basis to all units with the corps.

208. Division Artillery, Infantry Division

a. Division Artillery Headquarters. Division artillery is assigned 1 amplitude-modulated channel and 1 frequency modulated channel for command and fire direction (CF) (par. 204*a* and *b*). Division artillery units maintain listening watch on the division warning net. Air defense warnings applicable to the division are rebroadcast by division artillery over the division warning net. Type radio nets for division artillery are shown in figure 55.

b. Field Artillery Howitzer Battalions, Towed and Self-Propelled. Each howitzer battalion headquarters operates three internal FM radio nets—a command net (C), a primary fire direction net (F1), and a secondary fire direction net (F2). Type radio nets for a howitzer battalion are shown in figure 56.

c. Field Artillery Rocket/Howitzer Battalion. Each rocket/howitzer battalion headquarters operates two internal FM radio nets—a command net (C) and a fire direction net (F). Type radio nets for a rocket/howitzer battalion are shown in figure 57.

209. Division Artillery, Airborne Division

Division artillery headquarters is assigned three frequency-modulated channels—a command and intelligence net (CI), a primary fire direction channel net (FI), and a secondary fire direction channel net (F2) (par. 204*c-e*). During al ink-up operation, division artillery must be able to communicate with the link-up force headquarters. Type radio nets for division artillery are shown in figure 58.

210. Division Artillery, Armored Division

a. Division Artillery Headquarters. Division artillery is assigned 2 amplitude-modulated channels—1 for command and intelligence (C1) and the other for fire direction (F)—and 1 frequency-modulated channel for command and fire direction (CF) (par. 204 *a-c*). Division artillery units maintain listening watch on the division warning net. Air defense warnings applicable to the division are

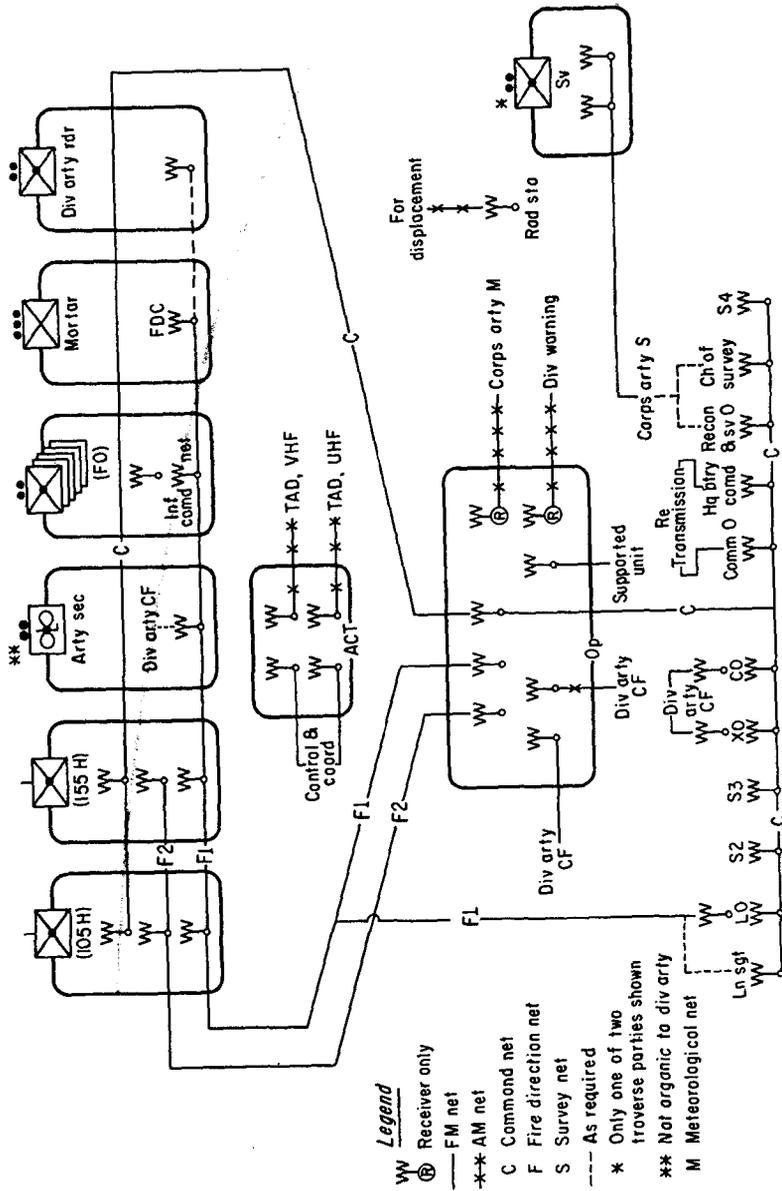


Figure 56. Type radio nets, howitzer battalion, infantry division.

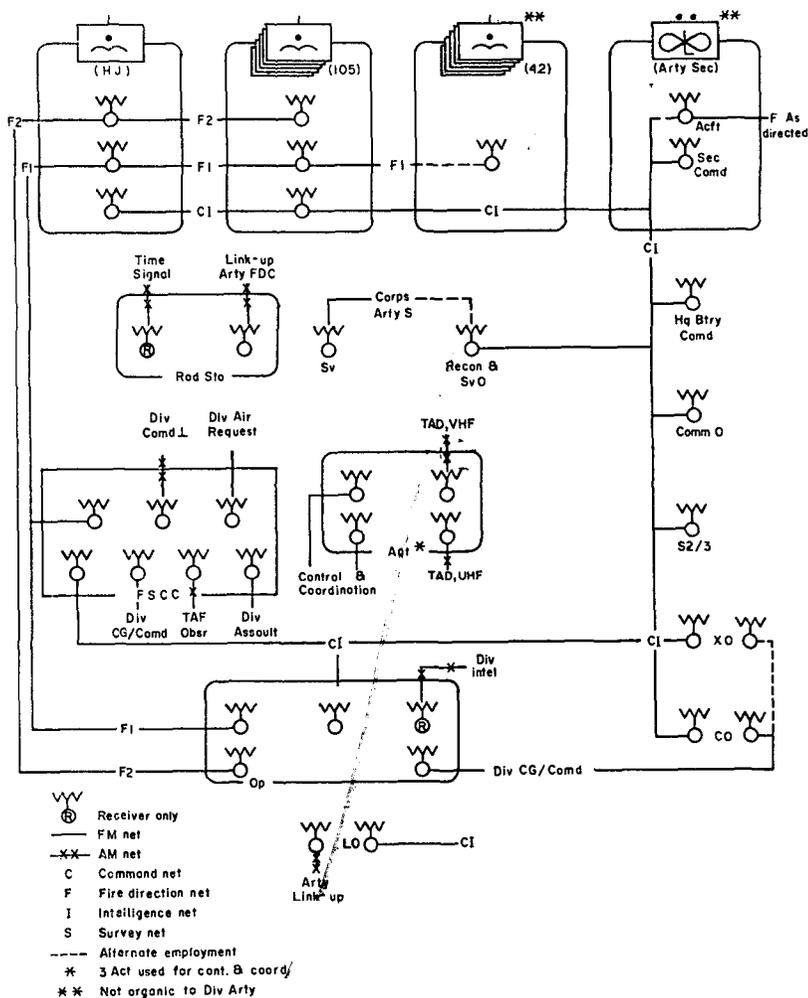


Figure 58. Type radio nets, division artillery, airborne division.

rebroadcast by division artillery over the division warning net. Type radio nets for division artillery are shown in figure 59.

b. *Field Artillery Howitzer Battalion, 105-mm, Self-Propelled.* Each 105-mm howitzer battalion operates three internal frequency-modulated radio nets—a command net (C), a primary fire direction net (F1), and a secondary fire direction net (F2). When a fourth frequency is assigned, it will be used as a fire direction net (F3). Type radio nets for a 105-mm howitzer battalion are shown in figure 60.

c. *Field Artillery Rocket/Howitzer Battalion, Self-Propelled.* The rocket/howitzer battalion operates three frequency modulated nets to fulfill its internal radio communication requirements. These

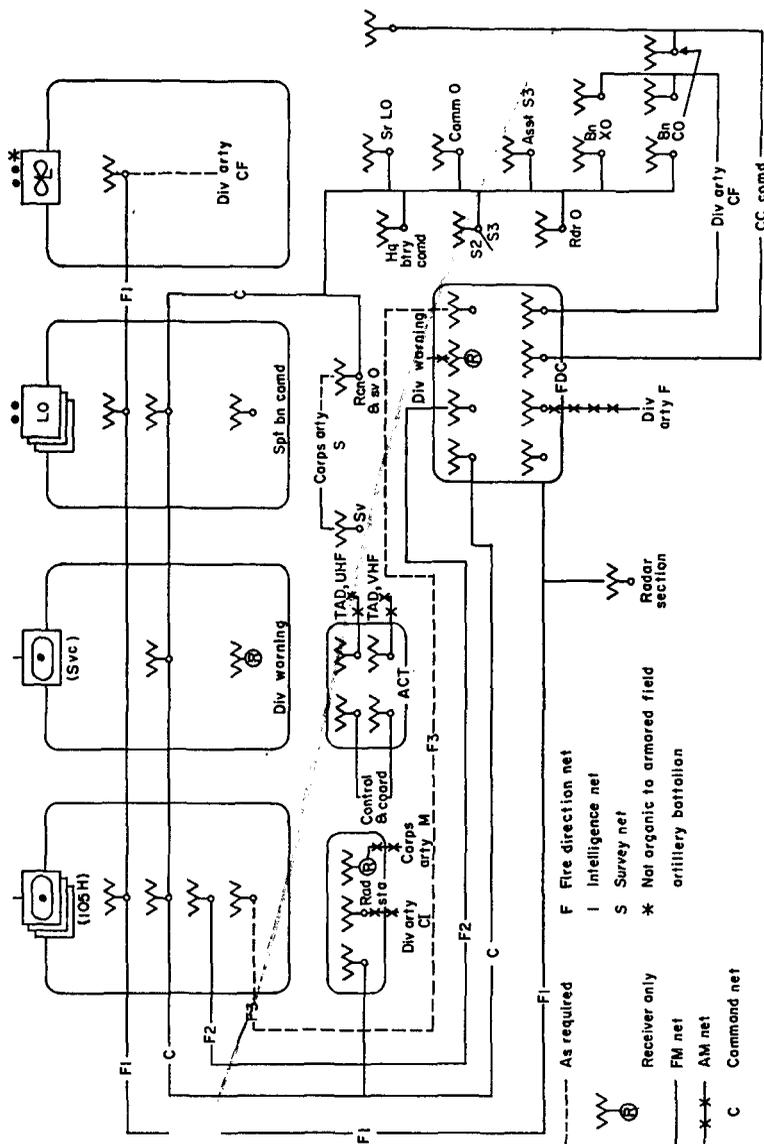


Figure 60. Type radio nets, field artillery howitzer battalion 105-mm, self-propelled.

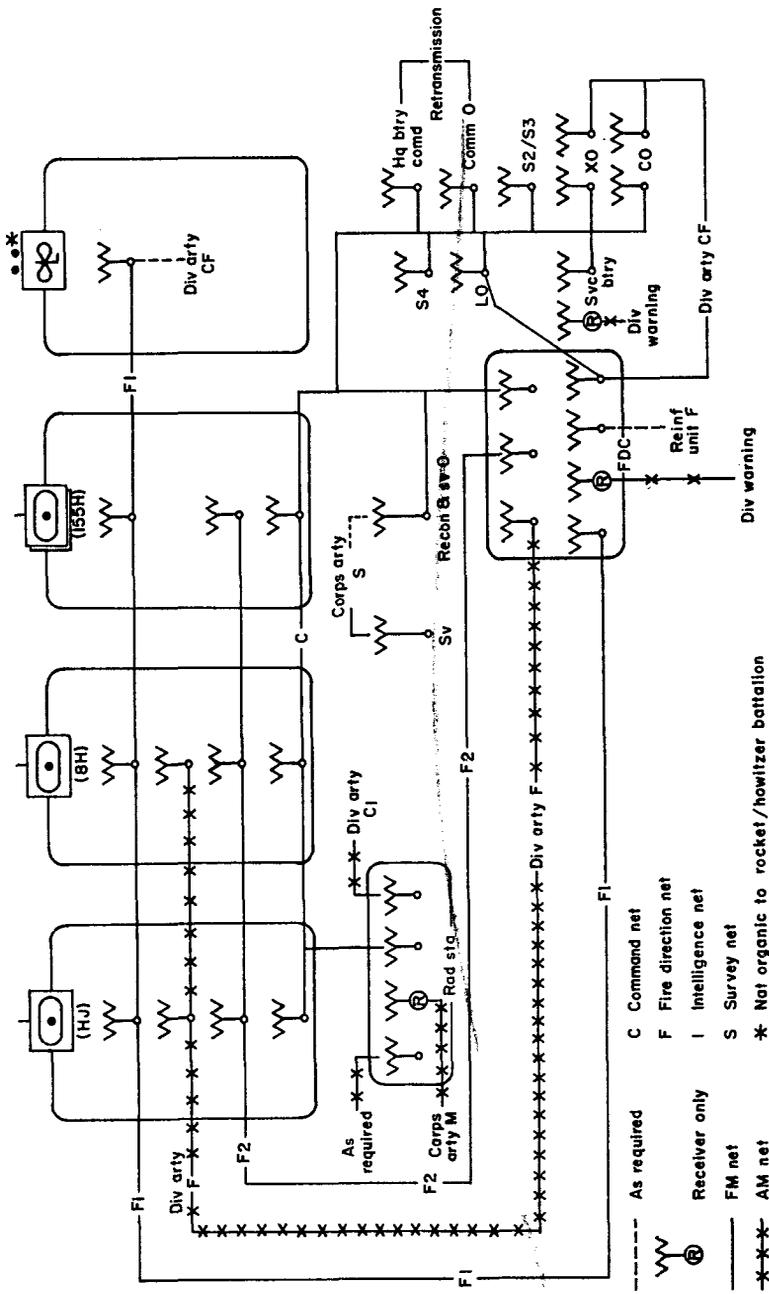


Figure 61. Type radio nets, field artillery rocket/howitzer battalion, self-propelled.

nets are a battalion command net (C), a battalion primary fire direction net (F1), and a battalion secondary fire direction net (F2). Type radio nets for a rocket/howitzer battalion are shown in figure 61.

Section IV. FIRE DIRECTION CENTER AND FIRE SUPPORT COORDINATION CENTER

211. General

a. To provide the communication necessary for fire support, separate radio and wire systems are installed as required. Thus, an alternate means of communication is provided, if either system fails. Neither wire nor radio is considered the primary means of communication. The presence of both types of communication permits a selection of the best means to meet any situation.

b. Maximum use will be made of the communication personnel within the fire direction center and the fire support coordination center in establishing communication within these installations.

212. Fire Direction Center

a. The fire direction center personnel at division artillery control and direct the fires of the units over which they exercise centralized control. Communications (both radio and wire) are installed as required to accomplish this mission (FM 6-40).

b. A type division artillery fire direction center (fig. 62) may utilize the following communications:

- (1) *Wire.* A switchboard will be installed in the FDC with local lines to the S2, S3, countermortar chart operator, fire direction chart operator, and other personnel as required. In addition, circuits are required to subordinate, adjacent, reinforcing units and to corps artillery fire direction center. A multi-channel cable connects the FDC and command switchboards.
- (2) *Radio.* The number and types of radio sets employed in the FDC will vary according to the mission and quantity of radio equipment authorized. Radio sets should be removed into the FDC whenever possible.

c. A discussion of a battalion FDC is given in FM 6-40.

213. Fire Support Coordination Center

a. Reliable communication must be established by using existing facilities, when possible, between the fire support coordination center and—

- (1) The FSCC's at higher and lower echelons.
- (2) The force or supported unit.

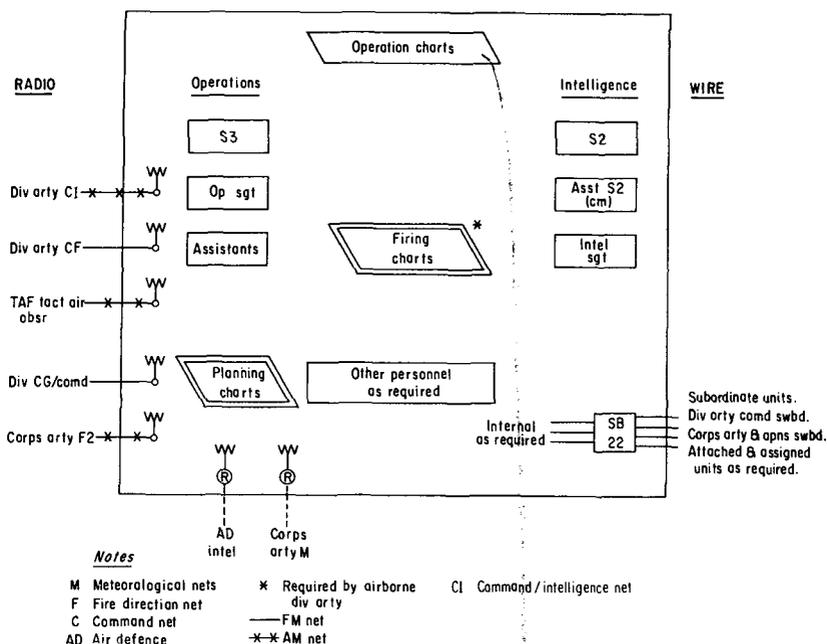


Figure 62. Type communications plan for a division artillery fire direction center.

- (3) The artillery (FDC).
- (4) Other fire support agencies.

b. A type division fire support coordination center (fig. 63) may utilize the following communications:

- (1) *Wire*. A switchboard will be installed in the FSCC with local lines as required. In addition, a circuit is required from the FSCC to the division artillery fire direction center. This circuit will normally be through the division communication system.
- (2) *Radio*. The number and types of radio sets employed in the FSCC will vary according to the mission and various types of fire support represented in the FSCC. Radio sets should be remoted into the FSCC whenever possible.

c. Communication between FSCC's and to the supported force or unit is a command responsibility.

d. The fire support coordinator or his representative supervises the establishment of communications and the internal arrangement of communication equipment within the FSCC.

e. Each fire support agency and each staff section represented in the FSCC is furnished the necessary communication equipment and operating personnel by its parent unit. In the infantry and armored divisions, the division signal battalion furnishes certain radio equipment for the operation of the FSCC (FM 11-10 and FM 11-11).

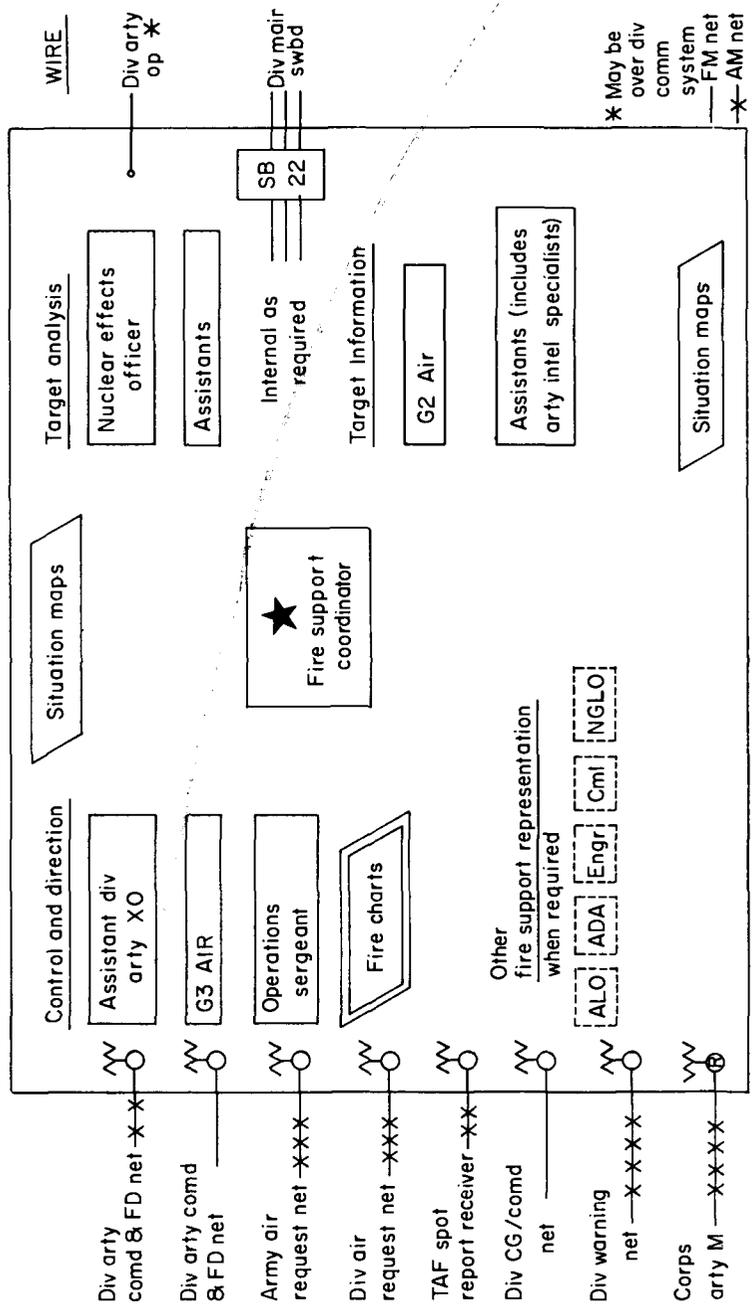


Figure 63. Type communications plan for a division fire, support coordination center.

APPENDIX I

REFERENCES

- AR 55-355 _____ Military Traffic Management Regulation.
 (C) AR 190-60 _____ Physical Security of Atomic Weapons (U).
 AR 220-50 _____ Regiments; General Provisions.
 AR 220-60 _____ Battalions, Battle Groups, Squadrons, General Provisions.
 AR 220-70 _____ Companies; General Provisions.
 AR 310-series _____ Military Publications.
 AR 310-1 _____ General Policies.
 AR 320-5 _____ Dictionary of United States Army Terms.
 AR 320-50 _____ Authorized Abbreviations and Brevity Codes.
 SR 220-150-5 _____ Assignment of Separate Nondivisional Battalions and Companies.
 AR 525-24 _____ Command Report (Report Control Symbol CSGPO-28 (R1)).
 FM 1-5 _____ Army Aviation Organization and Employment.
 FM 1-100 _____ Army Aviation.
 FM 3-5 _____ Tactics and Techniques of Chemical, Biological, and Radiological Warfare.
 FM 5-15 _____ Field Fortifications.
 FM 5-20 _____ Camouflage, Basic Principles and Field Camouflage.
 FM 6-18 _____ Mortar Battery, Battle Group, Airborne Division.
 FM 6-20 _____ Field Artillery Tactics and Techniques.
 FM 6-40 _____ Field Artillery Gunnery.
 FM 6-50 _____ 4.2-Inch Mortar M30.
 FM 6-60 _____ The Field Artillery Rocket, 762-mm.
 (S) FM 6-60A _____ The Field Artillery Rocket, 762-mm (Atomic) (U).
 FM 6-61 _____ Field Artillery Missile Battalion, Honest John Rocket.
 FM 6-115 _____ The Field Artillery Searchlight Battery.
 FM 6-120 _____ The Field Artillery Observation Battalion and Batteries.
 FM 6-122 _____ Artillery Sound Ranging and Flashing-Ranging.

(Classification)

Copy Nr. 2
1st Hw Bn, 14th Arty
VIC HOPFGARTEN (208168) GERMANY
160200 March 1958
MX 44

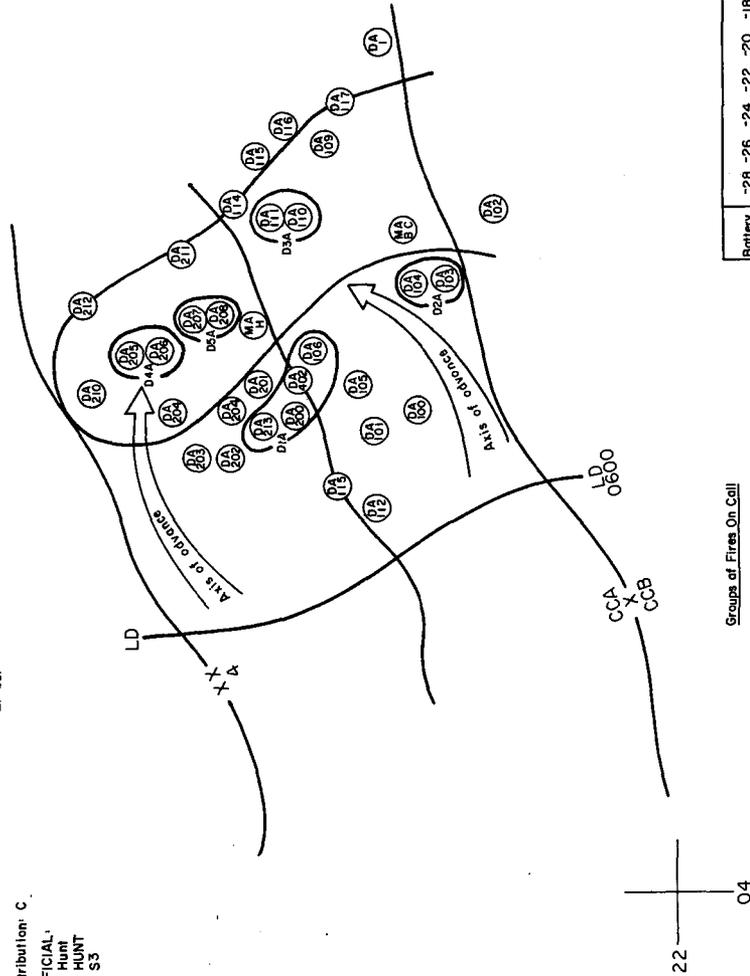
Artillery Fire Plan
Map: GERMANY, 1:25,000, ALSTEAD

1. CCA aims 160600; seize portions of div obj.
2. Priority of fires to 2d arm'd rifle Bn of div obj.
3. Request div arty fire conc MABC, DA 1, DA 104, and DA 200, during prep. action.
4. Request div arty coordinate conc DA 102 and notify this hq of resulting action.
5. Request div arty make available one battery of medium arty to assist firing groups as indicated.
6. Tanks will not fire in prep.

SHANNON
Lt Col

Distribution: C.

OFFICIAL:
/s/ Hunt
HUNT
S3



22
04

Groups of Fires On Call

Battery	D1A	D2A	D3A	D4A	D5A
A	DA106		DA110	DA205	
B	DA213		DA111	DA206	
C	DA402	DA103			DA207
Div arty (None FA btry)	DA200	DA104			DA208

Schedule of Fires

Battery	-28	-26	-24	-22	-20	-18	-16	-14	-12	-10	-8	-6	-4	H	+2	+4	+6	+8	+10	+12
A	DA 105 24																			
B	DA 201 18																			
C	DA 102 18																			

(Classification)

Figure 64. A type artillery fire plan.

Target List

Code	Description	Coord	Alt	Remarks
DA 100	AW (dug-in)	62204088	398	Before H-Hr.
DA 101	MG (dug-in)	62004134	400	Da.
DA 102	OP (sandbagged)	64064024	429	HE early in prep. Smoke on call.
DA 103	Trenches	63464074	410	Extend N from coord 300 m—after H-Hr.
DA 104	MG (sandbagged with overhead cover)	63374097	408	N. end of trenches-- after H-Hr.
DA 105	Trenches	62444150	407	Run N and S 200 m -- after H-Hr.
DA 106	Recoilless rifle and trenches	62644186	412	After H-Hr.
DA 109	Trenches	64644184	409	On call.
DA 110	Trenches extend from-- to	64034218	405	Da.
DA 111	Stream jct	63984244	406	Da.
DA 112	Stream bend	61274140	390	Prat conc.
DA 113	Stream jct	61504165	390	Da.
DA 114	Stream jct	64144271	397	Prat conc.
DA 115	Draw	64534245	393	Ave of approach.
DA 116	Draw	64684223	397	Da.
DA 117	Draw	65084171	393	Da.
DA 200	AW (dug in with overhead cover)	62144210	413	About H-5.
DA 201	OP	62314224	418	Before H-Hr.
DA 202	Recoilless rifle (sandbagged)	61784265	410	About H-5.
DA 203	AW and foxholes	61804294	408	About H-5.
DA 204	Trenches	62154322	420	After H-5.
DA 205	Trenches (extending from-- to	62704356	417	On call.
DA 206	Trenches extending from-- to	62804333	423	Da.
DA 207	Trenches extending from-- to	63004297	419	Da.
DA 209	Stream jct	63084276	417	Da--S portion partially covered by logs.
DA 210	Draw	62204261	407	Prat conc.
DA 211	Draw	62364396	407	Ave of approach.
DA 212	Trail jct	63704318	403	Da.
DA 213	MG (dug-in)	63164398	413	Prat conc.
DA 402	AW and trenches	62184233	417	About H-5
DA 1	CP	62454202	417	After H-Hr.
MABC	Mortars	65564133	367	PI and POW report.
MAH	Mortar	63854111	408	Counter mortar radar and PI.
		63004256	413	Sound ranging and mort rep.

- FM 6-135.....Adjustment of Artillery Fire by the Combat Soldier.
- FM 6-140.....The Field Artillery Battery.
- (S) FM 6-155.....Warhead Assembly, High Explosive, 762-mm Rocket, M6 (T2043E1 and T2043) (U).
- FM 6-160.....Radar Set AN/MPO-10.
- FM 7-10.....Rifle Company, Infantry and Airborne Division Battle Groups.
- FM 7-21.....Headquarters and Headquarters Company, Infantry Division Battle Group.
- FM 7-24.....Communications in Infantry and Airborne Divisions.
- FM 7-40.....Infantry and Airborne Division Battle Groups.
- FM 7-100.....Infantry Division.
- FM 8-10.....Medical Service, Theater of Operations.
- FM 9-5.....Ordnance Ammunition Service.
- FM 10-10.....Quartermaster Service in Theater of Operations.
- FM 10-17.....Quartermaster Organization and Service in Army and Corps.
- FM 10-60.....Supply of Subsistence in a Theater of Operations.
- FM 11-10.....The Signal Battalion, Infantry Division.
- FM 11-11.....The Signal Battalion Armored Division.
- FM 11-16.....Signal Orders, Records and Reports.
- FM 11-17.....Tactical Communications Center Operation.
- FM 17-1.....Armor Operations; Small Units.
- FM 17-20.....Armored Infantry Units; Platoon, Company and Battalion.
- FM 17-35.....Armored Cavalry Units; Armored and Infantry Division.
- FM 17-50.....Armor Logistics.
- FM 17-70.....Signal Communication in the Armored Division.
- FM 17-100.....The Armored Division and Combat Command.
- FM 20-32.....Land Mines Warfare.
- FM 20-60.....Battlefield Illumination.
- FM 21-5.....Military Training.
- FM 21-6.....Techniques of Military Instruction.
- FM 21-10.....Military Sanitation.
- FM 21-26.....Map Reading.
- FM 21-30.....Military Symbols.
- FM 21-40.....Small Unit Procedures in Atomic, Biological, and Chemical Warfare.

- FM 21-41-----Soldiers Handbook for Nuclear, Biological, and
Chemical Warfare.
- FM 21-48-----CBR Training Exercises.
- FM 22-5-----Drills and Ceremonies.
- FM 24-20-----Field-Wire Techniques.
- FM 25-10-----Motor Transportation, Operations.
- FM 30-5-----Combat Intelligence.
- FM 30-7-----Combat Intelligence; Battle Group, Combat
Command, and Smaller Units.
- FM 31-21-----Guerilla Warfare and Special Forces Opera-
tions.
- FM 31-25-----Desert Operations.
- FM 31-50-----Combat in Fortified Areas and Towns.
- FM 31-60-----River-Crossing Operations.
- FM 31-70-----Basic Cold Weather Manual.
- FM 31-71-----Northern Operations.
- FM 31-72-----Mountain Operations.
- FM 44-1-----Air Defense Artillery Employment.
- FM 44-2-----Light Antiaircraft Artillery (Automatic
Weapons).
- FM 44-3-----Light Antiaircraft Artillery (Skysweeper).
- FM 44-4-----Medium and Heavy Antiaircraft Artillery.
- FM 44-8-----Army Air Defense Command Posts and Army
Air Defense Information Service.
- FM 55-37-----Transportation Battalion, Infantry Division.
- FM 57-30-----Airborne Operations.
- FM 57-35-----Army Transport Aviation, Combat Operations.
- FM 57-100-----Airborne Division.
- FM 60-5-----Amphibious Operations Battalion in Assault
Landing.
- FM 60-30-----Amphibious Operations; Embarkation and Ship
Loading (Unit Loading Officer).
- FM 72-20-----Jungle Operations.
- FM 100-5-----Field Service Regulations; Operations.
- FM 100-10-----Field Service Regulations; Administration.
- FM 100-11-----Signal Communications Doctrine.
- FM 101-1-----The GI Manual.
- FM 101-5-----Staff Officers' Field Manual; Staff Organization
and Procedure.
- FM 101-10-----Staff Officers' Field Manual; Organization,
Technical, and Logistical Data.
- (S) FM 101-31-----Staff Officers' Field Manual; Nuclear Weapons
Employment (U).

- TM 6-200-----Artillery Survey.
- TM 6-242-----Meteorology for Artillery.
- TM 9-1901-----Artillery Ammunition.
- TM 9-2810-----Tactical Motor Vehicle Preventive Maintenance,
Supply, Inspection, and Training Procedures.
- TM 10-206-----Kitchen Cars, Supplies, Equipment, and Ra-
tions.
- (C) TM 23-200___Capabilities of Atomic Weapons (U).
- TM 57-210-----Air Movement of Troops and Equipment.
- DA Pam 39-1____Nuclear Weapons Employment.
- DA Pam 39-3____The Effects of Nuclear Weapons.
- DA Pam 108-1____Index of Army Motion Pictures, Film Strips,
Slides, and Phono-Recording.
- DA Pam 310-____Military Publications Indexes.
series.
- JCS Pub #1-----Dictionary of United States Military Terms for
Joint Usage.
- DA TC 101-1,____Prediction of Fallout and Radiological Monitor-
1958. ing and Survey.

APPENDIX II

A GUIDE AND CHECKLIST FOR THE PREPARATION OF
AN ARTILLERY BATTALION STANDING OPERATING
PROCEDURE

1. General

a. A standing operating procedure (SOP) is a set of instructions giving the methods to be followed by a particular unit for the performance of those features of operations, both tactical and administrative, which the command desires to make routine.

b. An SOP applies except when modified by order.

c. A unit SOP must conform with the SOP of higher headquarters.

d. An SOP is used to supplement current Department of the Army field manuals, technical manuals, and other publications. It can be used to supplement material already covered and to give instructions and information not yet covered in available publications. It should be clear, concise, and complete. It is made concise by omitting all but the most important material already covered in available publications. It must be complete enough to give newly arrived individuals and attached units the information necessary for them to perform their duties or to accomplish their missions properly. A battalion SOP must conform to the standing operating procedures of higher headquarters. Only routine matters should be made SOP. An SOP should not include matters which are influenced by changing conditions. If a commander tries to make his unit SOP too inclusive, he sacrifices flexibility, his decisions become stereotyped, and he is apt to ignore other solutions. A written SOP may become too large for practical purposes. This is particularly true of tactical procedures, because an SOP which is adversely affected by changing conditions must be changed frequently, and therefore soon becomes of little worth. Instead of developing team work and understanding, a constantly changing SOP creates confusion and conflict.

e. Each unit SOP should have a table of contents listing subject material by section, paragraph, and page to enable individuals to find pertinent information quickly.

f. Each unit SOP should have annexes dealing with loading plans and communication diagrams. These annexes should be based on current tables of organization and equipment and the desires of the commander.

2. Guide for a Standing Operating Procedure

The SOP contained in this appendix may be used as a guide and checklist for any officer designated to write a unit SOP. Therefore, it *purposely includes more detail* than the normal artillery battalion SOP. This SOP is written for an infantry division artillery battalion consisting of a headquarters and headquarters battery, one 105-mm howitzer battery, and one 155-mm howitzer battery. The information contained herein will, of necessity, be modified to conform to other types of battalion organization.

STANDING OPERATING PROCEDURE

Section I. GENERAL

1. REFERENCE AND RESCISSION

- a. Reference, artillery annex, SOP, 1st Inf Div., 10 Dec 57.
- b. Rescission, SOP, 1st How Bn, 3d Arty, 2 Jan 57, is rescinded and will be destroyed.

2. PURPOSE

This SOP standardizes routine procedures; it applies to organic and attached units alike unless otherwise stated. The material presented herein is applicable without modification to both nuclear and nonnuclear warfare.

Section II. PERSONNEL

3. DISCIPLINE, LAW, AND ORDER

Personnel awaiting trial by special court-martial or lower court will be held with their units. Personnel of attached units will be held with their units; however, any action concerning special or summary courts-martial will be referred to their parent organization.

4. PRISONERS OF WAR (POW)

- a. S2 will coordinate evacuation of POW to collecting point of supported battle group.
- b. Wounded POW will be evacuated through medical channels.

5. RECOVERY AND DISPOSITION

- a. Dead will be evacuated to division cemetery, if established, otherwise to division collecting points—and the parent organization will be notified.
- b. Isolated burials will not be permitted. Location of isolated graves will be reported to battalion.
- c. Personal effects will be properly identified, handled, and forwarded to parent battalion by 2000 hours daily.
- d. Civilian dead will be interred by local civilians in accordance with local customs. Identification report will be forwarded to division headquarters (G1).

6. MORALE AND PERSONNEL SERVICES

a. *Decorations and Awards.*

- (1) Recommendations will be submitted to battalion executive within 2 days of knowledge of action.
- (2) All recommendations will be processed through parent organization to division review board.
- (3) Presentation will be made without delay at appropriate troop formation whenever possible.

b. *Personnel Services.*

- (1) Units will pick up mail at battalion command post (CP).
- (2) PX items, when available, will be distributed with rations.
- (3) Rest and recreation quotas will be filled when combat conditions permit.
- (4) Emergency leaves will be processed through division AG.

7. PERSONNEL PROCEDURES

a. Recommendations for battlefield promotions (officers) will be sent to division headquarters (through parent organization).

b. Personnel receiving battlefield promotions will remain with their own units.

8. REPORTS

a. Units will report to division artillery daily as of 1800 hours, by 2000 hours.

b. Command report (original) will be forwarded to division artillery as of last day of month, by 10th of following month.

Section III. INTELLIGENCE

9. OBSERVATION

a. *Responsibilities.* As prescribed in assigned tactical mission.

b. *Artillery Observation Posts (OP).*

- (1) Functions: Adjust artillery fire, observe fires, and report information.
- (2) Communication: By battalion establishing OP, as directed.
- (3) Location: As requested by supported unit or as directed by battalion S2.

c. *S2 Staff Responsibilities.*

- (1) Establish artillery OP's as necessary.
- (2) Brief observers and liaison officers before departure from own unit to include—
 - (a) Situation, location of supported unit, location of friendly units.
 - (b) Index points.
 - (c) Pyrotechnic code, prearranged code, map coordinate code.
 - (d) Assignment of zones of observation and primary areas of responsibility within each zone.
- (3) Supervise own observers and coordinate their activities with those of supported unit.
- (4) Maneuver own observation agencies.
- (5) Request and coordinate requests for additional observation agencies (air observation, radar, sound and flash, etc).

d. *Observer Procedures.*

- (1) Report for briefing to S2, S3, and communication officer prior to departure.
- (2) Remove all security material from personnel and vehicles.
- (3) Establish OP to cover assigned zone of observation.
- (4) Establish communication and report location of OP.
- (5) Prepare terrain sketch (by forward observers (FO) (submit if situation permits).
- (6) Submit visibility diagram (by FO's), (submit if situation permits).
- (7) Organize personnel for continuous operation. Orient instruments for night operation.
- (8) Select alternate OP.
- (9) Send fire missions to the appropriate fire direction officer.
- (10) Reports.
 - (a) Information reports to battalion headquarters or appropriate headquarters as directed.
 - (6) Submit visibility diagram (by FO's), (submit if situation permits).
 (b) Submit visibility diagram (by FO's), (submit if situation permits).
 (c) Periodic report hourly to battalion headquarters or appropriate headquarters as directed. (Negative reports required).

e. *Air Observation.*

- (1) Request for aerial observation to division artillery S2 to supplement ground observation.
- (2) Disposition and employment of aerial observers (augmentation) as directed by division artillery.

f. *Radar.* Battalion furnishes communication, security, logistics and survey to division artillery radar section when directed or when necessary.

g. *Shelling Reports.*

- (1) Form: See annex A.
- (2) Procedure: From locating agency to battalion S2 to division artillery by fastest means available.
- (3) Shelling report teams:
 - (a) FO sections.
 - (b) Liaison sections.
 - (c) Survey sections.
 - (d) Two 2-man teams per battery.

10. AIR DEFENSE WARNING SYSTEM

a. *Procedure.* Warnings received over division warning net.

b. *Alert Status.*

- (1) Red—air attack imminent.
- (2) Yellow—air attack probable.
- (3) White—all clear.

11. REPORTS

S2 submit necessary intelligence data for unit and command reports to battalion executive officer.

Section IV. OPERATIONS

12. TACTICAL MISSIONS

a. *General.* See Annex E.

b. *Forward Observers.*

- (1) Furnished in accordance with tactical mission assigned battalion.
- (2) Functions:
 - (a) Adjust artillery fire in zone of supported unit as requested by supported unit.
 - (b) Advise supported unit commander on artillery matters.
 - (c) Report information.
 - (d) Maintain communication with supported unit and own artillery unit.

13. FIRE DIRECTION

a. *Firing Charts.*

- (1) Horizontal and vertical control charts at battalion; firing batteries maintain horizontal control chart.
- (2) Coordinates and altitude of registration point for grid sheet observed firing chart, 3000060000 and 300 respectively.
- (3) Battalion and battery fire direction centers exchange information necessary to keep firing charts current and complete.

b. *Fire Capabilities.* S3 to division artillery. Report coordinates and direction of fire for each battery as soon as available.

c. *No-Fire Line.* Responsibility of direct support battalion commander. Submitted to division artillery. The no-fire line will be kept current on all firing charts. Battalion S3 will keep firing batteries informed on latest information concerning no-fire line. The battalion S3 will keep firing batteries current on the following information:

- (1) Accurate location of forward friendly troops as reported by observers and liaison officers.
- (2) Plan of maneuver.
- (3) Patrol activity.

d. *Control of Fire Direction.* Requests for fire are transmitted to battalion FDC. Battalion FDC maintains centralized control of battery FDC's. Control is decentralized to battery FDC's only when desirable or necessary.

e. *Artillery Fire Plans.* Battalion will prepare an artillery fire plan integrating mortar platoon fires.

f. *Concentration Designation.* Concentrations will be designated in accordance with current directives; see artillery annex, SOP, 1st Infantry Division.

g. *Artillery Barrages.*

- (1) Direct support: The barrage of each battery will be provided the supported unit.
- (2) Reinforcing: As requested by reinforced unit.
- (3) General support: As directed by higher headquarters.
- (4) General support, reinforcing: As directed by higher headquarters.

h. *Additional Massed Fire Procedure.*

- (1) Code name is announced periodically by corps artillery.
- (2) Mortar platoon FDC requests additional fire from battalion FDC including coordinates, altitude, and nature of target.
- (3) Division artillery rebroadcasts. All available division artillery will fire.

- (4) Request is transmitted to corps artillery by division artillery; if approved, corps artillery rebroadcasts. All available artillery will fire.

i. Maximum Rates of Fire. See FM 6-40.

j. Fire Support Coordination. See appendix 4, artillery annex, SOP, 1st Inf Div.

14. SURVEY

Position area, target area, and connection survey as required. Locate SCP for mortar platoon. Locate countermortar radar if appropriate.

15. MARCHES

a. Quartering parties:

- (1) Report to vicinity of message center.
- (2) Vehicles—one $\frac{1}{4}$ -ton vehicle for each battery.
- (3) Personnel—1 officer, 1 NCO, and 2 enlisted men (including driver).

b. Movement order by S3 to include—

- (1) Initial point (IP).
- (2) Initial point time.
- (3) Order of march.
- (4) Rate of march.
- (5) March units.
- (6) March unit commanders.
- (7) March interval.
- (8) Route.
- (9) Halts.
- (10) Route markers.
- (11) Release point and release point time.

c. March discipline:

- (1) Only $\frac{1}{4}$ -ton vehicles are permitted to double column.
- (2) Each battery will designate a pace-setting vehicle.
- (3) Radio communication is maintained between head and tail vehicle in each march unit and between each march unit and battalion CO.

d. Halts:

- (1) *Scheduled.* All personnel, except drivers and assistant drivers and those manning mounted automatic weapons, will dismount and disperse. Drivers and assistant drivers will perform vehicle inspection and service.
- (2) *Nonscheduled.* Battery commander or representative proceeds forward, determines cause for the halt, and takes appropriate action to continue the march.

e. Maintenance: Each driver inspects and services vehicle at all authorized halts.

f. Vehicle breakdown:

- (1) Two men dismount and direct traffic around stalled vehicle.
- (2) All vehicles pass except march maintenance vehicle.
- (3) March unit maintenance personnel start repair of vehicle pending arrival of battalion maintenance personnel.
- (4) Further action will be as directed by battalion motor officer.
- (5) Vehicle will regain place in column only after column halts.

16. RECONNAISSANCE, SELECTION, AND OCCUPATION OF POSITION

a. Reconnaissance Parties. Complete:

Staff	Hq btry	How btry
CO	Btry comd	Btry comd
Comm off	Wire 1	Firing btry hq
Svc off		Wire 2
S2		

b. Procedure.

- (1) When vehicles are limited to less than number shown in *a* above, they will be eliminated from the bottom of list. Exception for the how btry—when a 1 vehicle party is ordered, the firing battery headquarters vehicle will be taken.
- (2) Assemble vehicles in vicinity of message center unless otherwise directed.

c. Occupation of Position.

- (1) *Laying.* Pieces are laid with tubes within 10 mils of center of traverse. Aiming posts are put out at a common deflection, 2,600 mils for towed howitzers; 800 mils for self-propelled howitzers.
- (2) *Boresighting.* Boresighting is accomplished immediately upon occupying position and once daily in static position.
- (3) *Ammunition.* Unless otherwise specified, the following 105-mm and 155-mm ammunition is at each piece.

<small>105-mm</small>	<small>155-mm</small>
40 rd HE	18 rd HE
5 rd HEAT	3 rd illuminating shell
5 rd HC	
5 rd WP	3 rd WP
5 rd colored smoke	
Total 60 rd	Total 24 rd

- (4) *Executive officer report.* Immediately after battery is laid, to include direction, minimum elevation, and distribution, be prepared to report, when called for, ammunition powder temperature and lateral limits.
- (5) *After registration.* Measure adjusted azimuth and/or orienting angle.

d. Organization of Position.

- (1) *Priorities.*
 - (a) Prepare to deliver fire.
 - (b) Protection of personnel (foxholes, dig-in).
 - (c) Preparation of security installations and camouflage of pieces, vehicles, etc. Camouflage concurrent with other work to maximum extent practicable.
 - (d) Protection of ammunition.
 - (e) Preparation of emplacements for howitzers and section equipment.

- (f) Preparation of direct fire positions.
 - (g) Preparation of protective minefields and barbed wire.
 - (h) Preparation of alternate and dummy positions.
- (2) *Alternate positions.* Location is selected and reported by BC at earliest opportunity. Positions are organized as completely as time permits to include survey, wire communication, and emplacement of howitzers, personnel, and equipment.
- (3) *Dummy positions.* Dummy positions are established only on authority of higher headquarters.
- (4) *Defense.* Battery security officer reports completion of organization of battery defense and submits sketch of battery defense to battalion executive officer.
- e. Displacement.* Headquarters and Headquarters Battery: When battalion displaces forward by echelon, the 1st echelon of Headquarters and Headquarters Battery displaces with 1st Howitzer Battery; 2d echelon displaces whenever forward CP has communications and has assumed control and $\frac{1}{2}$ or $\frac{2}{3}$ of the battalion has displaced.

(1) *1st echelon.*

- (a) Communication officer.
- (b) S2.
- (c) Reconnaissance and survey officer.
- (d) Instrument and survey.
- (e) S3.
- (f) Hq battery commander.
- (g) Wire 1, 2, 3.
- (h) Message center.
- (i) Radio 1.

(2) *2d echelon.*

- (a) Bn executive officer.
- (b) Assistant S3.
- (c) CP truck.
- (d) Btry hq.
- (e) Wire 4.
- (f) Radio 2.
- (g) Kitchen.
- (h) Supply.
- (i) Motor maintenance.

- (3) *Service element.* Train agent moves with 1st echelon, Hq and Hq Btry.

17. SECURITY

a. Organization of Personnel.

- (1) S2 determines alert status and rebroadcasts warning.
- (2) Battalion executive officer is designated battalion security officer.
- (3) Each battery will designate an officer as battery security officer.
- (4) Battery security platoon composition and equipment:
 - 25 EM (including 1 sgt), 1 officer, and individual weapons.
 - 2 hand grenades per man.
 - 2 rocket launchers.

b. Security Procedure.

- (1) *Coordination:* Preliminary coordination is accomplished between adjacent units pending final coordination by battalion security officer.

(2) Signals:

- (a) Ground or airborne attack—2 short blasts on horn or whistle or 2 rounds fired from small arms.
- (b) Airattack—2 short blasts on horn or whistle or 3 rounds fired from small arms.
- (c) CBR attack—striking a sound producing object (shellcase, iron triangle) repeatedly, 4 short blasts on horn, or 4 rounds fired from small arms.
- (d) All clear—continuous blast on horn or whistle.

(3) Outpost reports. Day—hourly (negative report required). Night—every 15 minutes (negative report required).

(4) Authority to cease primary mission to defend position against attack is delegated to senior person present. Immediate report of such action is made to battalion.

(5) Local counterattacks are limited to action necessary to restore position.

(6) Displacement to alternate position is made only on authority from battalion.

(7) Primary weapons: Primary zone of responsibility is assigned each howitzer. If howitzer is directed to fire outside zone, responsibility for observation in assigned zone remains. Range cards are prepared by each section.

(8) Report of defensive plan: Sketch of primary and alternate positions, to scale, are given to battalion security officer showing location of primary and auxiliary weapons, zone of fire for each weapon, location of sentinels, outpost, and direct fire positions.

(9) Materiel will be destroyed before it is abandoned.

(10) For CBR defense, see annex F.

c. Security on the March.

(1) Air and ground sentinels will be in each vehicle.

(2) All automatic weapons will be manned.

18. AVIATION

a. Air OP's. Air observation will be requested from division artillery.

b. Airfields.

(1) When suitable terrain is available, establish an airfield in the vicinity of battalion.

(2) Installation and marking is the responsibility of the headquarters battery commander in accordance with procedures established by higher headquarters.

c. Heliport.

(1) Location of the heliport will be recommended by the communication officer with advice of helicopter pilots supporting the unit.

(2) Installation and marking is the responsibility of the headquarters battery commander in accordance with procedures established by higher headquarters.

19. REPORTS

S3 will submit data for unit and command reports to battalion executive officer.

Section V. LOGISTICS

20. CLASS I SUPPLIES

- a. Batteries pick up rations daily at battalion ration breakdown.
- b. Each battery draws water from water supply points (WSP). S4 informs batteries of location of WSP.
- c. Three emergency rations are in reserve in each battery. Battery commander has authority to issue.
- d. Additional emergency rations are in following vehicles:
 - (1) FO vehicle—3 rations.
 - (2) CO vehicle—1 ration.
 - (3) Recon vehicle—1 ration.
 - (4) Ammo tn vehicle—1 ration.

21. CLASS II AND IV SUPPLIES

- a. Loss or damage of major items will be reported immediately to S4.
- b. Routine supply is based on normal requirement.

22. CLASS III SUPPLIES

Service element will deliver class III supplies to battery positions.

23. CLASS V SUPPLIES

- a. *Normal.* Firing battery ammunition sections operate under control of battalion ammunition train.
- b. *Emergency.* Battery ammunition sections will be prepared to operate independently.
- c. *Basic Load Distribution.*

	105-mm btry	155-mm btry
(1) Ea prime mover	60	24
(2) Btry ammo trucks and trailers	360	360
(3) Total in how btry	720	504
(4) Total in bn ammo tn	480	396
(5) Basic load	1,200	900

24. SALVAGE

Each battery will collect surplus, salvage, and enemy material and will establish dump in a convenient location. Salvage is evacuated by service element through normal channels.

25. EVACUATION AND HOSPITALIZATION

- a. One aid man is attached to each firing battery from battalion medical section.
- b. Aid station is in the vicinity of the CP.
- c. Wounded or sick personnel are evacuated to battalion aid station, coordinated by battery; further evacuation to division clearing station will be by battalion medical detachment.
- d. FO and liaison wounded or sick personnel are evacuated through channels of the supported unit.

26. SANITATION

See Medical Annex, SOP, 1st Inf Div.

27. REPORTS

S4 will submit data for unit and command report to the battalion executive officer.

Section VI. COMMAND AND COMMUNICATION

28. WIRE COMMUNICATION

- a. Wire system (bn), annex G.
- b. Wire system (105-mm how btry), annex H.
- c. Wire system (155-mm how btry), annex I.
- d. Line route map is a 1:25,000 overlay. Batteries submit one copy to battalion; communication officer submits consolidated battalion copy to division artillery.
- e. Changes to line route map same as *d* above.
- f. Installation by headquarters battery.
 - (1) To area communication center.
 - (2) Operation and command circuits to batteries.
 - (3) Two circuits between operations and command switchboards.
 - (4) Local operation and CP installation.
 - (5) Radar section (when attached). Normally laid by nearest battery.
 - (6) Artillery OP's.
 - (7) Priority: Operational or fire control circuits are installed first, followed by administrative and lateral lines. When the distance between units is great, the area communication system may be used to establish communication pending installation of a trunk line to the distant unit. After a trunk line is completed, the area communication system supplements other means. Within the category indicated, the following priority will prevail:
 - (a) Trunks—battalion operations to battery executive command post; command circuits battalion to service elements. Adjacent battalions as directed.
 - (b) Operation locals—Computers
 - Chart operators
 - S3
 - S2
 - Artillery OP's
 - (c) Command locals—CO
 - Message center
 - Outpost
 - Radio-panel station
 - Radar officer
 - Air station
 - Airstrip (when local)
 - Battery commander
 - Communication officer
- g. Installation by howitzer batteries:
 - (1) Operation locals—Executive officer
 - Howitzer crew
 - Aiming circle operator
 - Computer and chart operator
 - Recorder
 - (2) Command locals—Outpost
 - Battery commander
 - Truck park
 - (3) Trunk circuits to adjacent units as directed.

- (4) Area communication system (when required).
- (5) Others as directed, such as OP's FO's, when requested, etc.

h. Special requirements—mortar platoon reinforcing mission: If directed by higher headquarters the headquarters battery or designated howitzer battery will install—

- (1) Trunk circuit from battalion FDC to reinforced mortar FDC, or—
- (2) Trunk circuit from battalion forward switchboard to reinforced mortar platoon FDC.

i. Special requirements—direct support mission: Installed by headquarters battery.

- (1) Trunk circuit battalion command switchboard to supported unit command switchboard.
- (2) Local circuit battalion operation switchboard to FO with each supported company.

j. Special requirements—support mission: Installed by headquarters battery or designated howitzer battery. When required, trunk circuit battalion (battery) command switchboard to supported unit(s) command switchboard.

29. RADIO COMMUNICATION

a. Radio net (bn), annex J.

b. Radio net (105-mm how btry), annex K.

c. Radio net (155-mm how btry), annex L.

d. Explanation of nets:

(1) Battalion command net, FM.

Short title, "C."

Voice net for command and intelligence.

(2) Battalion fire direction net, FM:

Short title primary, "F1"; alternate, "F2."

Voice net for fire control and direction.

(3) 105-mm how btry command and fire direction net, FM:

Short title, "CF."

Voice net for command, intelligence, and fire direction.

e. Restrictions on radio transmission:

(1) Copy, cover, guard, and listening watch: Transmitters off, receivers continue to monitor assigned frequency.

(2) Radio silence: All receivers and transmitters off.

(3) Emergency silence: Observe conditions of guard.

f. Displacements (Hq and 155-mm how btry):

(1) Movement of displacing echelon: battalion "C."

(2) Registration in forward area: as directed by the S3 or his representative.

(3) Remaining echelon in rear: normal.

(4) Movement of remaining echelon: battalion "C."

(5) After battalion closes in forward area: normal.

g. Displacements (105-mm how btry): Own "CF."

30. MESSAGE CENTER

a. All message traffic processed through message center (exceptions: tactical messages or messages transmitted in clear text or encoded in the prearranged message code for delivery within the battalion) will include—

(1) Encryption.

(2) Decryption.

- (3) Authentication.
- (4) Logging.
- (5) Delivery.

b. Message center will maintain a record of status of both radio and wire or any other means of communication available.

c. Message center must be aware of exact locations of all battalion installations. Be prepared to guide visitors.

d. Battalion agent is at division artillery except during displacement of battalion; he accompanies battalion during displacement.

31. COMMUNICATIONS SECURITY

a. Messages will be transmitted in clear text only when enemy does not have time to act upon information, and when time is not available for encryption; both conditions must exist.

b. Communication violations and compromises will be reported to the communication officer immediately.

c. All transmissions and messages will be authenticated unless otherwise directed. Exceptions are nonnuclear fire missions.

32. SIGNAL SUPPLY AND MAINTENANCE

See section VI, logistics, and annex M.

33. COMMAND POST

a. *Locations.* S3 reports movement and location to division artillery.

b. *Selection of Location for Installation.*

- (1) Communication officer (coordinating with headquarters battery commander) locates headquarters, FDC, message center, switchboard, and radio-panel station.
- (2) Headquarters battery commander determines all other locations.

JONES
Lt Col

- Annexes: A—Artillery Counterfire Information Form.
 B—Loading Plan, Hq and Hq (omitted).
 C—Loading Plan, Firing Btry (105-mm How) (omitted).
 D—Loading Plan, Firing Btry (155-mm How) (omitted).
 E—Tactical Missions.
 F—CBR Defense.
 G—Battalion Wire System (omitted).
 H—Battery Wire System (105-mm How) (omitted).
 I—Battery Wire System (155-mm How) (omitted).
 J—Battalion Radio Net (omitted).
 K—Battery Radio Net (105-mm How) (omitted).
 L—Battery Radio Net (155-mm How) (omitted).
 M—Signal Maintenance.

OFFICIAL

/s/ Baker
BAKER
 S3

**ANNEX A (ARTILLERY COUNTERFIRE INFORMATION FORM)
 TO SOP**

(Artillery counterfire information form, as shown in FM 6-20 should be reproduced here.)

ANNEX E (TACTICAL MISSIONS) TO SOP
(Tactical missions as shown in figure 17 should be reproduced here.)
ANNEX F (CBR DEFENSE) TO SOP

1. GENERAL

a. Purpose. To effect maximum utilization of personnel and facilities, including military organization for CBR defense within the existing organization of this command.

b. Definitions. CBR is defined as chemical, biological, and radiological warfare.

2. ORGANIZATION

a. CBR defense officers and noncommissioned officers in batteries of this battalion will act as advisers on defensive aspects of CBR attacks.

b. Radiological monitoring and decontamination teams will be provided as prescribed in FM 21-40 (Nov 58) and DA TC 101-1 (Dec 58).

c. The CO of this battalion will be notified immediately of all CBR attacks.

3. DUTIES AND RESPONSIBILITIES

In addition to normally assigned duties and/or supervisory responsibilities, the following responsibilities will apply for CBR defense:

a. Individual. All individuals are responsible for—

- (1) Sounding the alarm if CBR agents are detected.
- (2) Employment of proper protective measures in case of attack.
- (3) Assistance to others in the immediate vicinity during and immediately after a CBR attack.
- (4) Self-aid and first aid procedures.

b. Unit. Unit commanders are responsible for—

- (1) Adequate training in CBR defense.
- (2) Periodic inspection of all individual CBR protective equipment.
- (3) Establishment and training of specialist teams as required.
- (4) Frequent training in simulated CBR attacks.
- (5) Seeing that all personnel mask without command or CBR alarm when the following are placed directly on their positions:
 - (a) Artillery concentrations (rocket and mortars).
 - (b) Aircraft bombs.
 - (c) Aircraft spray.
 - (d) Enemy smoke.
- (6) Seeing that all personnel remain masked until told to unmask by the senior officer or noncommissioned officer present.

4. OPERATIONS

In the event of CBR attack these procedures will be followed:

a. Prior to the attack, while the general alert is in effect, the unit will continue to carry out its mission.

b. Routine guards and sentries will be supplemented with trained CBR sentries.

c. Protective masks will be carried by all personnel at all times.

d. On hearing the alarm, all personnel will seek nearest cover.

5. LOGISTICS

a. The quartermaster will be responsible for storage and issue of protective clothing.

b. The signal officer will be responsible for storage, issue, and maintenance of radiac instruments, to include calibration, with the assistance of the chemical officer.

6. COMMAND

Commanders at all levels will take immediate, effective, and aggressive action to carry out the provisions herein to insure continuance of the mission in event of CBR attack.

ANNEX M (SIGNAL MAINTENANCE) TO SOP

1. MAINTENANCE

a. First-echelon maintenance is performed daily.

b. Weekly first-echelon maintenance will be completed and entries made on appropriate maintenance checklists.

c. Second-echelon inspections are completed at least once a month; latest checklist will be used.

d. Record of operations will be maintained for power reels and generators.

e. After second-echelon inspections are completed, daily and weekly check sheets previously maintained will be destroyed.

f. Record of monthly inspections will be retained until replaced by a later check sheet (AR 750-628).

2. REPAIR

a. All signal items needing repair will, before being sent to battalion, have first-echelon maintenance performed on them, and the necessary first-echelon maintenance forms will accompany the item.

b. Items to be repaired will bear a tag listing organization, designation, and the maintenance required.

c. Battalion communication section will repair items if possible. If higher echelon repair is indicated, unit will prepare necessary work orders and process through battalion S4.

d. Records of operation and maintenance forms will accompany power reels and generators evacuated for repair.

e. Signal equipment turned in for repair will be properly protected en route to prevent damage to the equipment. Radio sets will not be transported in trailers.

APPENDIX III

COMMON NUMBERING SYSTEM FOR CONCENTRATIONS

1. General

a. A common system of designating concentrations is established to indicate the planning source and to prevent duplication. This system must be prescribed by the highest echelon controlling the fire support agencies. It is initiated at corps level when the division operates as part of a corps. Similarly, it is initiated by division or battle group when appropriate.

b. This system is applicable to fires on targets of opportunity, as well as prearranged fires, and may be modified for any particular type of organization.

2. Letter Prefixes

a. The system prescribes a two-letter designation for a concentration. The first letter indicates the division and is assigned by higher headquarters. Corps SOP should provide for identification of corps units which control fire support agencies, comparable to the following:

<i>Unit (II Corps)</i>	<i>Letter*</i>
1st Infantry Division.....	A
2d Infantry Division.....	B
3d Infantry Division.....	C
4th Armored Division.....	D
II Corps FSCC.....	E
Additional units or as desired.....	F, etc.

b. Division SOP should similarly provide for identification of units controlling fire support agencies by assigning the second letter. In the airborne division each battle group, owing to the organic mortar battery, and each division artillery unit will be assigned a second letter. In the infantry division and armored divisions, normally, only the division artillery units will be assigned a second letter designation.

Example 1: Airborne division:

<i>Unit</i>	<i>2d Letter*</i>
1st Airborne Battle Group, 41st Inf.....	A
1st Airborne Battle Group, 42d Inf.....	B
1st Airborne Battle Group, 43d Inf.....	C

<i>Unit</i>	<i>2d Letter*</i>
1st Airborne Battle Group, 44th Inf.....	D
1st Airborne Battle Group, 45th Inf.....	E
Btry A, 1st How Bn, 319th Arty.....	F
Btry B, 1st How Bn, 321st Arty.....	G
Btry C, 1st How Bn, 323d Arty.....	H
Btry D, 1st How Bn, 325th Arty.....	J
Btry E, 1st How Bn, 327th Arty.....	K
Btry A, 1st Rkt/How Bn, 329th Arty.....	L
Division artillery.....	M
Division FSCC.....	N
Attached units or as desired.....	1stP, R, etc.

Example 2: Infantry division:

<i>Unit</i>	<i>2d Letter*</i>
1st How Bn, 3d Arty.....	A
1st How Bn, 5th Arty.....	B
1st How Bn, 7th Arty.....	C
1st How Bn, 8th Arty.....	D
1st How Bn, 10th Arty.....	E
1st Rkt/How Bn, 11th Arty.....	F
Btry A (8-inch how).....	G
Btry B (762-mm rocket).....	H
Division Artillery.....	J
Division FSCC.....	K
Air.....	L
Naval.....	M
Attached units or as desired.....	N, P, etc.

Example 3: Armored division:

<i>Unit</i>	<i>2d Letter*</i>
1st How Bn, 32d Arty.....	A
1st How Bn, 34th Arty.....	B
1st How Bn, 36th Arty.....	C
1st FA Bn (rkt/how), 38th Arty.....	D
Btry A (155-mm how).....	E
Btry B (155-mm how).....	F
Btry C (8-inch how).....	G
Btry D (762-mm rocket).....	H
Division artillery.....	J
Division FSCC.....	K
Air.....	L
Naval.....	M
Attached units or as desired.....	N, P, etc.

* The letters I, O, Q, U, and V are omitted to avoid possible confusion.

3. Number Designation

Within the divisions, the concentration numbers allotted to the various units will usually be established by division SOP. Normally each unit assigned a second letter will use numbers 1 through 999. The further assignment of numbers within the unit is left to the discretion of the commander. In the airborne division, the group of concentration numbers might be assigned as follows:

a. *Battle Group.*

<i>Unit</i>	<i>Numbers</i>
Company A -----	1-99*
Company B -----	100-199*
Company C -----	200-299*
Company D -----	300-399*
Company E -----	400-499*
Company F -----	500-599*
Heavy mortar battery -----	600-799
Battle group headquarters -----	800-899
Attached units or as desired -----	900-999

*Numbers assigned to each infantry company may be used by both the mortar battery forward observer and the 81-mm mortar FDC.

b. *Division Artillery.* Since all units of division artillery are readily identifiable by the letter prefixes already assigned, it is not necessary to assign blocks of numbers to its fire support agencies. Each may use the numbers 1 through 999, as required.

4. **Examples**

Examples of concentrations are as follows:

a. *Airborne division, letter designation C.*

- (1) Concentration CA656 would be designated by the heavy mortar battery of the 1st BG, 41st Infantry.
- (2) Concentration CJ101 would be designated by Btry D, 1st How Bn, 325th Artillery.
- (3) Concentration CD280 would be designated by the 81-mm mortars of company C, 1st BG, 44th Infantry.

b. *Infantry division, letter designation A.*

- (1) Concentration AA101 would be designated by the 1st How Bn, 3d Artillery.
- (2) Concentration AG350 would be designated by Btry A, 6th Rkt/How Bn, 11th Artillery.
- (3) Concentration AJ50 would be designated by division artillery.

c. *Armored division, letter designation D.*

- (1) Concentration DC401 would be designated by 1st How Bn, 36th Artillery.
- (2) Concentration DH601 would be designated by Btry D, 1st FA Bn (rkt/how), 38th Artillery.

5. **Target Designation**

Corps will prescribe the method of designation for other targets and grouping of concentrations. For further discussion of target designations, see appendix II, FM 6-20.

APPENDIX IV

ARTILLERY FIRE PLAN

1. Purpose and Scope

The purpose of this appendix is to illustrate the material presented in the text relative to artillery fire planning.

2. Composition

The fire plan consists of five component parts:

a. The graphical portion should be a consolidation of the various artillery fire plans submitted to the fire direction center after duplications have been adjusted. It also is based on the commander's concept and contains targets received from the artillery S2 and/or higher headquarters. Concentrations are planned on known and suspected enemy locations and terrain features (protective concentrations). They are planned on any target that can affect the supported unit and these fires are not restricted by boundaries. This portion should—

- (1) Show concentrations by circles. Each circle represents an area 200 meters in diameter; the concentration is identified by an appropriate number and letter prefix (app. III).
- (2) Contain friendly information, such as boundaries, lines of departure, and objectives.
- (3) Indicate, where appropriate, groups of fires to cover single tactical localities too large to be adequately covered by one concentration. Liaison officers and forward observers may recommend groups of fires.
- (4) Show "tick" marks for orientation of overlay.

b. Marginal information should include any information considered pertinent and necessary. There is no standard number of paragraphs or sequence of information prescribed. This section should include—

- (1) Plan of maneuver of supported unit.
- (2) Priority of fires.
- (3) Requests to higher headquarters for additional fire support.

- (4) Requests for special missions (e.g., smoke missions) and requests for clearance for fires outside the zone of supported unit.
- (5) Information concerning the employment of the supported unit's organic weapons and other firepower available to support the operation.

c. A *target list* containing those concentrations which are planned. This list should include—

- (1) Coordinates of all concentrations shown in the graphical portion.
- (2) A column showing the altitude of each target in meters (when list is prepared at an artillery fire direction center).
- (3) A description and sufficient remarks to properly evaluate each target. Remarks may include type of fuze action desired by observer locating or requesting fire on target.

d. *Scheduled fires*—the force commander will determine the duration of the preparation. The fires of a direct support battalion are normally scheduled to include a short period after the end of the preparation. Scheduled fires may be interrupted for oncall missions of sufficient importance. Additional schedules should be prepared which may be fired oncall or on the occurrence of a specific event during the operation. The fires requested by the supported unit should have priority before other appropriate artillery targets are scheduled. The artillery fires should be coordinated with the fires of organic support weapons, close air support, and naval gunfire. The time allotted for firing each concentration (either 2 or 3 minutes) is determined by the ammunition to be expended and the maximum rate of fire of the weapons. An appropriate time interval for shifting to the next target and for tube cooling will be included between concentrations. The schedule is blocked out for the appropriate time in 2- or 3-minutes time blocks for each unit. Each block should include—

- (1) The concentration to be fired (in the upper half of the block).
- (2) A horizontal bar showing the time to commence firing, the concentration, and the time firing must be completed.
- (3) The amount of ammunition to be expended per unit (below the horizontal bar).

e. *Groups of fires* planned to cover a single tactical locality too large to be covered by a single concentration are indicated in a table of groups of fires. Each concentration within a group of fires is assigned to a separate fire unit (battery or battalion).

Concentrations may be made into groups of fire without regard to the agency planning the concentrations. Groups of fires are fired oncall. The headquarters preparing the fire plan will designate groups of fires.

3. Fire Plan

When a preparation or counterpreparation is to be fired and the artillery fire plan contains some groups of fires, the fire plan (fig. 64) contains information in each of the fire component parts.

APPENDIX V

RECORDS AND REPORTS

1. General

To have information available for the commander and staff, for higher and lower headquarters, and for the unit or staff section historical records, a system to maintain records by the staff is essential. Records and reports should be kept to a minimum consistent with the requirements of the situation and the instructions of commanders of higher echelons. Journals are permanent records. Other records such as overlays of the situation map become permanent, when filed with a journal. The command report is of permanent value (AR 525-24). The unit report becomes permanent when filed with the executive's journal or with the command report. Unless records and reports are filed with a journal or with the command report, they are retained only until they have served their purpose; then they are destroyed. Those records and reports which may be used in the battalion command post are—

- a.* Communications status log (fig. 65).
- b.* Message center log (fig. 66).
- c.* Journals.
- d.* Situation maps, overlays, and firing charts.
- e.* Unit report.
- f.* Staff section reports (when required).
- g.* Worksheets and data sheets.
- h.* Counterbattery and other target files (corps battalion).
- i.* Countermortar and other target files (divisional battalion).
- j.* Command report.

2. Journals

Journals are permanent chronological records of the activities of staff sections and units. Important incidents are recorded as they occur. They include messages sent or received, orders, tactical or administrative operations, visits of commanders or staff officers from higher headquarters, and times of departure of the commander and section chief from the headquarters and times of return thereto. The minimum detail necessary to fix the time or other

COMMUNICATION STATUS LOG

UNIT 1st How Br, 17th Arty DATE 18th May 59
 TIME ZONE 5 PAGE 1 OF 2 PAGES

UNITS TO WHICH CONNECTED	AM RAD		FM RAD		TT		TP		VHF		REMARKS
	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	
<i>1st Inf.</i>	2215	2310	2240	2245			2340				
<i>Dir Arty</i>	2335		2330		2240	2230					
					2245						

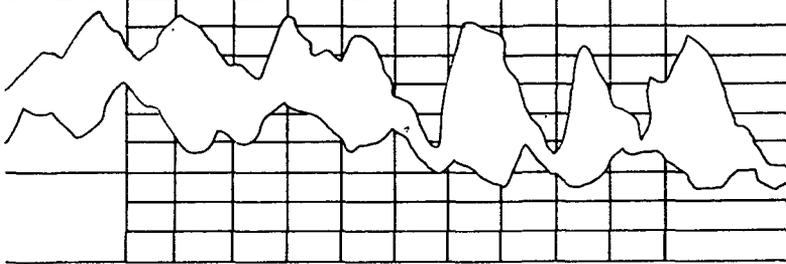


Figure 65. A type communication status log.

MESSAGE CENTER LOG

(FM 11-17)

#(INCOMING)
#(OUTGOING)

UNIT 1st How Br, 17th Arty DATE 18 May 59 PAGE 3 OF 3 PAGES

MESSAGE CENTER NR	TIME FILED	MEANS	PREC	MESSAGE DATE/TIME GROUP	CRYPT	GR COUNT	CLEARED		REMARKS
							TO/FROM	TIME OF RECEIPT	
394	2200 S	<i>Mag</i>	<i>R</i>	152149 S			<i>1st Inf Dir Arty</i>	2215 S	<i>Fla</i>
395	2212 S	<i>Rad</i>	<i>R</i>	152159 S	✓	15	<i>1st Inf Dir Arty</i>	2224 S	
396	2215 S	<i>Mag</i>	<i>R</i>	152211 S			<i>1st How Br, 18th Arty</i>	2255 S	<i>D-2220 S R-2245 S</i>
397	2330 S	<i>Rad</i>	<i>R</i>	152231 S	✓	10	<i>1st Inf Dir Arty</i>	2342 S	

Figure 66. A type message center log.

facts concerning important events is the ideal. Original entries should not be altered, but they may be supplemented or corrected by subsequent entries. Copies of messages, orders, and situation overlays are kept in a file which is forwarded with the journal. Journals are closed daily, and include a summary of major activities with supporting data for the action taken. Journals are submitted periodically as called for by higher headquarters, and/or filed with the command report. An example of a journal is shown in figure 67.

(Classification)

1st How Bn, 3d Arty
Organization

Unit Journal

vic Erbenhausen, Germany
Location

From: 010001 March 58
Time and Date

To: 012400 March 58
Time and Date

Time Zone Z

Serial No	Date/ Time Signed	Time		Incidents, Messages, and Orders	Action taken
		In	Out		
Saturday, 1 March 1958					
1		0001		Weather cold - cloudy	
2		0200		Bn closed position area NW Erbenhausen	SM
3	010210		0315	Bn locations to Div Arty	F
4		0400		Weather snowing - temperature 20 degrees	
5			0700	Bn CO left CP for CP 1st BG, 1st Inf	
6		0900		Arty op ord #7 from 1st Inf Div Arty	SMFT
7		0905		Bn CO returned CP from CP 1st BG, 1st Inf (see supplementing entry #13)	
8	010840			From Div Arty, 1st How Bn, 10th Arty, reinf 1st How Bn, 3d Arty, close psn 849228 by 012400, 1/10 Bn establish Ln with 1/3 Bn at once	SMFT
9		0930		CG, 1st Div Arty, entered Bn area	ST
10			1030	CG, 1st Div Arty, left Bn area	ST
11	011840	1830		From Div Arty, 1st How Bn, 10th Arty, reinf 1st How Bn, 3d Arty, close psn 049228 by 012400, 1/10 Bn establish Ln with 1/3 Bn at once. (Correcting entry #8)	SMFT
12		2330		Div Arty situation report	F
13		24	00	Daily summary: Bn occupied psn vic 041243 at 0200. Bn CO spent 2 hrs with CO, 1st BG, 1st Inf planning op Delta, weather permitting scheduled for 15-21 Mar. Bn fired 23 conc during period. See situation report for details. 1st How Bn, 10th Arty reinf 1st Bn 3d Arty effective 012400.	

LEGEND: M - Posted on situation map.
 S - Distributed to staff.
 T - Information distributed to troops.
 F - File or indicate actual agency

(Classification)

Figure 67. Example of a unit journal.

3. Situation Maps

a. Efficient operation usually requires the keeping of two situation maps—a combination S2/S3 situation map and an administrative map.

- (1) The S2/S3 situation map (fig. 68) shows the friendly and enemy dispositions. It is normally the joint responsibility of the S2 and S3. To facilitate the changing of information to keep it current and to conserve maps, a piece of acetate or tracing paper is placed over the map. If acetate is used, an overlay is made periodically or when the situation changes; this overlay is dated and filed with the executive's journal. When tracing paper is used, a new overlay is prepared whenever the old one becomes too cluttered for clarity. Items still current are transferred to the new overlay, and the old one is dated and filed with the executive's journal.
- (2) When separate S2 and S3 situation maps are used, the enemy situation map (S2) shows the location of the

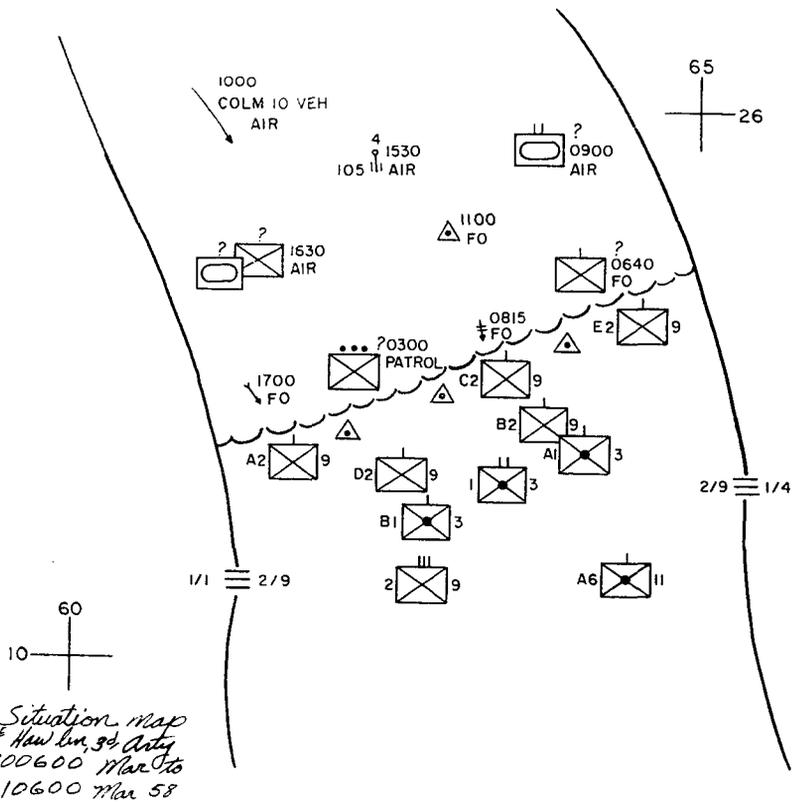


Figure 68. A type S2/S3 situation map overlay.

enemy forward dispositions, hostile battery positions, and all known enemy installations of interest to the battalion. The S3 situation map shows the friendly situation including battery positions, observation posts, command post, and disposition of the supported, reinforcing, and adjacent units.

- (3) Overlays to the situation maps may include operation overlays, overlays of contemplated operations and dispositions, fire capabilities, observation and visibility overlays, and overlays showing special target analyses.

b. The administrative map should be of the largest scale possible upon which can be shown the required administrative locations and routes. This map is the joint responsibility of the S1 and S4. This map and appropriate overlays are kept in a manner similar to the S2/S3 situation map.

4. Staff Section Reports

Staff section reports are not normally required from an artillery battalion. If required, however, their contents will be similar to the information furnished for the unit report, only in more detail, and will resemble the periodic staff section reports submitted by staff sections at division level. (For examples of division level reports, see FM 101-5.) S3 and S4 reports are those most frequently requested by higher headquarters.

5. Worksheets

a. Worksheets are unofficial, nonpermanent assemblies of extracts from current orders, messages, directives, and decisions.

b. Whether a worksheet will be kept by a particular staff section or not depends on the desires of the commanding officer, chief of section, and the section workload.

c. The purpose of the worksheet is to provide an orderly and readily available means of recording information which may be used in the preparation of estimates, plans, orders, and reports.

d. There is no prescribed form for the worksheet; it normally consists of a series of pages indexed to correspond to the principal activities of the section, which may very well be represented by the paragraphs of the principal report rendered by the section.

6. Counterbattery and Countermortar Files

For information regarding counterbattery and countermortar files, see FM 6-20.

7. Command Report

The command report is a periodic narrative summary of events by the commanding officer of such units and headquarters as specified in AR 525-24. For detailed information on preparation of this report, see FM 101-5 and AR 525-24.

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[AG 322 (26 Jan 60)]

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

L. L. LEMNITZER,
General, United States Army,
Chief of Staff.

Official:

R. V. LEE,
Major General, United States Army,
The Adjutant General.

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Active Army:

- | | |
|-------------------------|----------------------------|
| DCSPER (2) | Btry (1) except |
| ACSI (2) | SA Btry (5) |
| DCSOPS (2) | NTC (17) |
| DCSLOG (2) | USMA (50) |
| Tech Stf, DA (1) | SA GSC (100) |
| Tech Stf Bd (1) | Spec Sch (5) except |
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| US ARADCOM (2) | USAIS (36) |
| OS Maj Comd (5) | USAAVNS (500) |
| Log Comd (5) | PMST Sr Div Units (3) |
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| Regt/Gp/BG (1) except | 6-200 (10) |
| FA Gp (2) | 6-300 (10) |
| Bn (1) except | |
| FA Bn (5) | |

NG: State AG (3); units—same as Active Army except allowance is one copy to each unit.

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

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