FM 17-1

DEPARTMENT OF THE ARMY FIELD MANUAL

ARMOR OPERATIONS SMALL UNITS

HEADQUARTERS, DEPARTMENT OF THE ARMY

AUGUST 1957

FIELD MANUAL
No. 17–1

HEADQUARTERS,
DEPARTMENT OF THE ARMY
WASHINGTON 25, D. C., *23 August 1957*

ARMOR OPERATIONS—SMALL UNITS

437256°—57——1

CHAPTER 1

GENERAL

Section I. PURPOSE AND SCOPE

1. Purpose

This manual provides information and guidance on doctrine, tactics, and techniques for the employment of platoon-, company-, and battalion-size armor units (hereafter referred to as *small armor units*). It should be used in conjunction with appropriate field manuals of the 17 and other series. It provides the *basic* doctrine, tactics, techniques, and procedures common to two or more types of small armor units. Other publications provide the *specific* doctrine, tactics, techniques, and procedures for specific units. In addition, this manual supplements the doctrine stated in FM 100–5 and the staff procedures contained in FM 101–5.

2. Scope

a. This manual covers basic doctrine, tactics, and techniques of employment; organization; exercise of command; reconnaissance; security; administration and logistics; control; movements; and offensive, defensive, retrograde, and special operations appropriate to all small armor units. This general information is not repeated in other armor unit manuals. This manual duplicates other field manuals only where necessary to ensure clarity and understanding. Unless otherwise specified, the material presented herein is applicable without modification to both atomic and nonatomic warfare.

b. Small armor units include platoon-, company-, and battalion-size units of tanks, armored infantry, and armored cavalry, within the armored division, infantry division, airborne division, armored cavalry regiment, and other corps and army organizations. These are referred to generally, in this and other 17-series field manuals, as *armor units.* Currently prescribed terminology for these units differs in several respects from that heretofore used; the following are current titles and designations of armor units in divisions.

*Title**	*Designation**
Armored infantry battalion	——— Armored Rifle Battalion, ——— Infantry.
Rifle company, armored infantry battalion.	Co ———, ——— Armored Rifle Battalion, ——— Infantry.

*The title is used when making a general reference to the type unit; the designation is used in referring to a specific unit.

*Title**	*Designation**
Armored division armor battalion, 90-mm.	——— Medium Tank Battalion (Patton), ——— Armor.
Medium tank company, armored division armor battalion, 90-mm.	Co ———, ——— Medium Tank Battalion (Patton), ——— Armor.
Armored cavalry squadron	——— Reconnaissance Squadron, ——— Calvary.
Reconnaissance troop, armored cavalry squadron.	Troop, ———, ——— Reconnaissance Squadron, ——— Cavalry.
Infantry division armor battalion, 90-mm.	——— Medium Tank Battalion (Patton), ——— Armor.
Medium tank company, infantry division armor battalion, 90-mm.	Co ———, ——— Medium Tank Battalion (Patton), ——— Armor.
Infantry division cavalry squadron	——— Reconnaissance Squadron, ——— Cavalry.
Reconnaissance troop, infantry division cavalry squadron.	Troop ———, ——— Reconnaissance Squadron, ——— Cavalry.
Airborne division cavalry troop	Troop ——— (Reconnaissance) (Airborne), ——— Cavalry.

*The title is used when making a general reference to the type unit; the designation is used in referring to a specific unit.

Throughout this manual, where the word *battalion* appears in a general sense (battalion commander, battalion staff, battalion trains), it is to be considered as applying equally to the armored cavalry or infantry division cavalry *squadron*. Likewise, a general reference to *company* applies equally to the reconnaissance *troop*.

Section II. THE ROLE OF ARMOR

3. General

Technological developments and doctrinal and organizational concepts indicate that increased emphasis will be placed on combat operations that are characterized by open and fluid warfare, with greater dispersion of tactical formations and installations. The decisive element of these operations will be the rapid concentration of the combat power required to achieve a tactical advantage. Upon the accomplishment of a mission, immediate dispersion of this combat power will be necessary to avoid enemy atomic retaliation. Armor is designed for the conduct of mounted mobile warfare. Its capabilities have assumed increased importance within the role that ground forces will play on the battlefield.

4. Definition of Armor

The term *armor* embraces the tank, armored calvary type reconnaissance and security elements, armored infantry, artillery, engineer, and mobile service support units required to form an integrated and balanced fighting force for the conduct of mounted warfare, the nucleus of which is tanks. The term *armor* as used in this and 17-series manuals should be so interpreted. It should not be confused with the name of the branch nor with the tank units alone.

5. The General Role of Armor

a. Armor is a decisive tactical combat force. It is able to move rapidly over extended distances and commit its forces promptly. It possesses the capability of influencing combat activities within a broad area of operations. Armor's role is the conduct of highly mobile ground warfare, primarily offensive in nature and characterized by a predominance of mounted combat.

b. The armor-protected firepower, mobility, and shock action of armor formations, together with their extensive and flexible communication, provide them with the capabilities for independent engagement of large enemy formations. In addition, armor units are well suited to destroy hostile armor and to give close support to infantry units.

c. The role of armor is performed by units of the armored division, armored cavalry regiments, armor units of the corps and army, and the tank, reconnaissance, and armored calvary elements of the infantry and airborne divisions.

6. Role of the Armor Battalion, 90-MM

a. The 90-mm armor battalions are the principal striking forces of the armored division. They can be effectively used against both dismounted forces and armor formations. The battalion is capable of engaging in offensive or defensive action without armored infantry. However, it is normally employed as the nucleus of a battalion task force consisting of both tanks and armored infantry. It is both an administrative and a tactical unit, with supply, evacuation, and maintenance facilities sufficient for limited periods of combat. Its continued operation is dependent upon adequate and timely logistical support.

b. The role of the battalion in the infantry division is to support the overall division mission. The battalion is used in the greatest possible concentration consistent with the situation. It may be reinforced or may be used to reinforce infantry units. The battalion increases the strength and firepower of the attack and counterattack, exploits successes, and adds depth to the antitank defense in both the offense and defense.

7. Role of the Armor Battalion, 120–MM

The missions and the doctrine for employment of the 120-mm armor battalion are similar to those of the 90-mm armor battalion. Although the heavy-gun tank, by reason of greater armor protection and gun-ammunition capabilities, is better suited to fight enemy armor than is the medium-gun tank, it should not be considered primarily as an antitank or defensive weapon. In addition to the missions normally assigned to any armor battalion, the 120-mm armor battalion

may be assigned missions which make maximum use of the capabilities of its tanks, such as long-range fires delivered in the defense or retrograde operations, tank-gun fire in support of river-crossing operations, or tank-gun fire employed in the attack of a fortified area.

8. Role of the Armored Infantry Battalion

The primary mission of the armored infantry battalion is to assist tanks in the accomplishment of their assigned missions. The armored infantry battalion has the capability of engaging in offensive or defensive action without tanks, but is normally employed as the nucleus of a battalion task force consisting of both tanks and armored infantry. It is both an administrative and tactical unit, with supply, evacuation, and maintenance facilities sufficient for limited periods of combat. Its continued operation is dependent upon adequate and timely logistical support.

9. Role of the Armored Cavalry Squadron

The armored cavalry squadron is organized and equipped primarily to perform reconnaissance and to provide security for large combat formations. Reconnaissance and security operations may be executed by both air and surface means. The squadron is also employed to engage in offensive, defensive, or retrograde combat as an economy-force unit. This permits the higher commander to concentrate the bulk of his force on the more decisive objectives. In the performance of reconnaissance and security missions, an armored cavalry squadron normally operates without attachments. When operating as an economy force, the squadron normally will have attached, or placed in support, engineer and artillery units. The squadron may be organized into a battalion task force and is capable of receiving attachments of infantry and/or tanks. It is both an administrative and tactical unit, with supply, evacuation, and maintenance facilities sufficient for limited periods of combat. Its continued operation is dependent upon adequate and timely logistical support.

10. Fundamental Concept of Organization for Combat

The fundamental concept of organization for combat of small armor units is the formation of combined-arms forces especially tailored for specific tactical missions. The nucleus of such a force is an armor or armored infantry battalion or a tank or armored rifle company. Around this nucleus a force is formed which normally consists of tanks and armored infantry, in the proportion best suited for the mission, supported by artillery and engineers. Additional elements, either combat or service, can be added as necessary. These combined-arms forces are not rigid; even after they are committed to action, their composition can be quickly adjusted to meet the re-

quirements of a changing situation. The keynote of this concept is flexibility, in that a force of the proper size and composition can easily and quickly be formed for the accomplishment of the mission at hand. When such a combined-arms team is formed around a battalion, it is called a battalion task force; when it is formed around a company, it is called a company team.

11. Basic Missions of Armor

a. The basic missions of armor are to attack, disrupt, disorganize, and destroy enemy forces, and to provide reconnaissance, security, and antitank defense for friendly forces.

b. Armor may be employed in all types of ground combat, either independently or as part of a larger force. Armor is especially suited to execute the following type missions:

(1) Deep penetrations to seize decisive objectives.
(2) Envelopment and destruction of hostile forces.
(3) Employment as the mobile reserve of a larger unit to conduct spoiling attacks, counterattacks, and striking force actions.
(4) Acting as a covering force in retrograde movements, in offensive action, and in defensive action.
(5) Operations utilizing armor in mobile defense.
(6) Destruction of hostile armor.
(7) Exploitation of successes of other units and atomic weapons.
(8) Pursuit and destruction of hostile forces.

c. Armored cavalry units are particularly suited for—

(1) Reconnaissance.
(2) Battlefield and march security.
(3) Maintenance of contact with the enemy and between major friendly units.
(4) Delaying action.
(5) Holding wide fronts lightly.
(6) Seizing and holding critical terrain for a limited time.
(7) Rear area security and antiairborne missions.

12. Characteristics of Armor

a. General. Successful operation of armor units depends upon the proper utilization of their characteristics of armor-protected firepower, mobility, shock action, extensive and flexible communication, and responsiveness to command.

b. *Armor-Protected Firepower.* Armor units contain mobile, armor-protected machine guns, mortars, and tank guns. Armor employment is based on an integrated weapons system composed of the weapons of tanks, armored infantry, artillery, and other supporting elements. The tank is the principal weapon of armor; it is a weapons system in itself designed to engage all types of enemy targets in

mounted combat. The tank gun is a direct-fire weapon used primarily against enemy tanks and other "hard-shell" targets; the tank machine guns are used to neutralize or destroy enemy personnel and other "soft" targets. Armored infantry provide the basic weapons to close with and destroy the enemy by dismounted close combat. Artillery and other supporting weapons provide covering fires which assist tanks and armored infantry to close with and destroy the enemy. The combat and combat support elements of armor units have sufficient vehicular armor protection to afford a substantial degree of protection against enemy small arms and mortar and artillery shell fragments. This armor protection provides, too, a significant degree of protection against the effects of atomic weapons. This characteristic of armor equipment permits the commander to maneuver his combat forces under enemy fire and to fully exploit the effects of friendly supporting fires.

c. Mobility. Armor units are 100 percent mobile. Each person and item has an assigned place in a vehicle. The combat and combat support elements possess great cross-country mobility. The mobility of armor enables the commander to rapidly shift firepower and change task organization. It multiplies the effective strength of an armor unit, which can be applied against the enemy at several points within a short period of time. Army aviation elements, which are organic to the division and armored cavalry regiment, increase the mobility of these organizations by providing surveillance, reconnaissance, and limited medical evacuation, resupply, and troop movement for fast-moving armor formations.

d. Shock Action. Shock action is the combination of destructive physical and psychological effect on the enemy produced by the violent impact of mounted and mobile armor protected firepower of tanks and supporting armored troops. Armor combines tremendous concentrated firepower with rapid movement of its fighting vehicles to produce severe shock action on the enemy. The shock action of armor increases greatly as the number of tanks employed in mass is increased. This shock action, in a properly executed armor assault, can have a decidedly adverse effect on enemy morale and a favorable effect on the morale of friendly troops.

e. Extensive and Flexible Communication. The primary means of communication for armor units is radio. This provides armor with an immediately available and highly flexible communication system to higher, lower, adjacent, and supporting elements. Supplementary means of communication are installed and employed whenever required by the tactical situation.

f. Flexibility. Armor is flexible; armor units can be grouped or regrouped quickly to meet the demands of the tactical situation. The battlefield mobility of armor units permits rapid changes in task

organization, even when the units are engaged with the enemy, over nearly any type terrain. Many factors contribute to the flexibility of armor: cellular type organization, highly flexible communication system, mobile combat support and service units, and the mental mobility of the armor commander.

g. Responsiveness to Command. Because of its mobility, flexibility, and extensive and flexible communication, armor is extremely responsive to command. Armor units respond quickly and easily to mission-type orders requiring changes in mission, task organization, or direction of movement. Their communication facilities provide rapid means for transmission of instructions, while their flexibility and mobility permit orderly alteration of tactical groupings and rapid movement to a more critical or decisive area.

13. Capabilities of Armor

Armor is capable of covering broad fronts and deep zones of action. The following specific capabilities should be exploited for most effective utilization of armor units:

a. Ability to maneuver and control tremendous armor-protected firepower on the battlefield.

b. Ability to move rapidly from one area to another and decisively engage the enemy at a critical point.

c. Ability to disperse and concentrate rapidly.

d. Ability to withstand, to a significant degree, the effects of an atomic explosion.

e. Ability to rapidly engage the enemy and to quickly disengage from the enemy.

f. Ability to conduct heavy assault actions against enemy positions.

Section III. ATOMIC AND NONATOMIC WARFARE

14. General

a. The doctrine, principles, procedures, and techniques contained in this manual are applicable to both atomic and nonatomic warfare.

b. The characteristics of mobility and armor protection inherent to armor units make them relatively well suited for tactical operations in atomic warfare. Their armor provides a significant degree of protection against the effects of atomic weapons, while their mobility permits rapid movement, concentration, and subsequent dispersal. Thus they present poor targets for enemy atomic attack. However, armor commmanders must recognize that their units will attract heavy atomic and nonatomic fire, because of their tremendous striking power and capability to conduct sustained effective operations under atomic conditions. The tactics and techniques employed by armor units will be tempered by this consideration.

c. Individual and unit protective measures against the effects of atomic weapons are discussed in paragraphs 184 through 190.

15. Employment of Armor in Atomic Warfare

The basic doctrine for the employment of small armor units under atomic conditions is essentially the same as that for nonatomic conditions. The planning and execution of tactical operations will continue to be based on fire and maneuver, with atomic weapons considered as a means of extremely powerful fire support. Specific effects of the employment of atomic weapons on small armor unit tactical operations may include—

a. Small armor units can deploy much closer to the immediate area of an atomic explosion than can unarmored units, because of their armor protection and mobility. In addition, they can move almost immediately into the area of ground zero because their armor provides significant protection against residual radioactivity.

b. Small armor units can frequently employ the penetration, rather than the more time-consuming envelopment, in exploiting the employment of friendly atomic weapons. (Armor normally favors the maneuver of envelopment over the penetration under conditions of nonatomic warfare.) It can be assumed that the atomic battlefield will be characterized by widely dispersed islands of strength with no well-defined flanks to envelop. It is conceivable that, in order to destroy a greater number of enemy forces, a penetration supported by atomic weapons will be made at the point of enemy strength rather than at the point of enemy weakness, as would be normal under nonatomic conditions. In exploiting an atomic attack, armor may maneuver directly through the affected area; or the exploitation may be indirect, with a maneuver in conjunction with the atomic attack but not necessarily through the affected area.

c. Small armor units will rapidly concentrate from widely dispersed assembly areas. The concentration will be maintained only long enough for accomplishment of the mission; then the attacking units will disperse, to avoid offering the enemy a lucrative target for the employment of an atomic weapon. Whenever possible, objectives should be assigned to units no larger than battalion task force. When it is necessary for two or more battalion task forces to seize, occupy, and defend one objective, they should be sufficiently well dispersed throughout the action to preclude presenting a concentrated atomic target.

d. In defense, under atomic conditions, small armor units may be assigned much wider frontages than under nonatomic conditions. Defensive positions will be prepared for all-round defense. In atomic warfare, troops must not be massed in a fixed or static defensive position. The tactical advantage will be gained by that unit which

possesses sufficient mobility to quickly mass a superiority of firepower at the decisive point at the required time. Armor units will normally employ the mobile defense; this defense will be offensive in nature, since it will be based on the ability to employ a mobile offensive force at any threatened point in the defensive position.

16. Organization for Combat in Atomic Warfare

The principles governing the organization of armor units for combat under atomic conditions vary little from those considered under nonatomic conditions.

a. At the point of burst of most atomic weapons, there is a definite hazard because of residual radioactivity. Within the affected area, mounted action should be favored during the period of radioactivity.

b. Fewer combat units may be required to accomplish a particular mission if tactical atomic weapons are available to support them. This is true in both offensive and defensive situations.

c. Atomic explosions normally create extensive obstacles. This may make necessary the assignment of much more engineer support than would be required in nonatomic warfare. Since armor normally seeks to avoid built-up or forested areas, this is not considered to be a serious disadvantage.

17. Planning and Control in Atomic Warfare

Commanders and staff officers of small armor units will seldom be directly associated with the planning for and control of the employment of tactical atomic weapons. However, the direct effect of the employment of atomic weapons on tactical planning and control of small armor units include the following:

a. Friendly Troop Safety. The commander controlling the atomic attack determines the degree of risk to which his forces will be subjected during the employment of tactical atomic weapons. However, the application of individual and unit protective measures at the time of detonation, in order not to exceed this troop safety criteria, is the responsibility of each unit commander. In no other aspect of the tactical employment of atomic weapons does the small armor unit commander have a more direct or vital function. This responsibility can be fulfilled only through adequate training, the establishment of sound standing operating procedures, maintenance of discipline, leadership, and supervision.

b. Control of Combat Forces. The employment of tactical atomic weapons in close support of small armor units dictates a need for more stringent control measures prior to and during the attack. Lines of departure, times of attack, and specific routes, zones, or axes of advance will be assigned by the headquarters controlling the atomic strike. Detailed locations of units and firing positions will be speci-

fied at battalion level; battalion will also issue movement instructions, to include route of march, time of departure, and rate of march. Detailed reconnaissance of routes and positions, and traffic control of the movement of units from assembly areas to the line of departure usually will be conducted by the reconnaissance units of the battalion task forces.

18. Conduct of the Attack in Atomic Warfare

a. During the conduct of an attack, commanders will avoid presenting lucrative targets to the enemy by not permitting, except for brief periods, the concentration of units larger than a battalion. As a rule, objectives will be assigned to and seized, cleared, occupied, and defended by battalion-size units.

(1) Combat command and division objectives will be composed of a number of battalion objectives.

(2) Whenever possible, these battalion objectives will be located to maintain the desirable dispersion distance of 6,000 yards between centers and 4,000 yards between perimeters.

b. The seizure of combat command and division objectives frequently will require the concentration of units larger than a battalion in areas permitting less than the desirable degree of dispersion. When this occurs, efforts will be made to—

(1) Utilize the maximum available combat power to seize the objective in the shortest possible time.

(2) Require the attacking forces to maintain maximum contact with the enemy force, thereby reducing the enemy's capacity and will to employ atomic weapons in the area of close combat.

c. When a division or combat command is required to seize and defend an objective, the planned defensive dispositions should provide desirable dispersion distance between battalion-size units.

CHAPTER 2

FUNDAMENTALS OF EMPLOYMENT OF SMALL ARMOR UNITS

Section I. PRINCIPLES OF WAR

19. General

a. The *principles of war* govern the conduct of all military operations. They represent the major factors essential to the successful conduct of war. In this manual, the explanation associated with each principle is intended to emphasize its application to the employment of armor. The *principle of the objective* must be regarded as the "master principle." It has therefore been placed first. The remaining principles are not given in any particular order, since their relative importance and the degree of their application will vary with the situation.

b. In combat the plan of the commander, at all levels, must be based on a specific mission and certain principles. Every plan must relate the principles of war to the particular situation in which the commander finds himself.

20. Principle of the Objective

a. Every military operation must be directed toward a decisive, obtainable objective. The destruction of the enemy's armed forces and his will to fight is the ultimate military objective of war. Each phase of a combat operation must be directed toward this aim with the maximum means available. In this era of highly destructive weapons, high-speed aircraft, and guided missiles, the objective must be accomplished in the quickest possible time. Armor formations possess the necessary requisites for conduct of this mobile warfare.

b. Each element of an armor unit contributes to the attainment of the objective of the larger unit of which it is a part. For example, when the objective of a division has been defined, all elements of the division must be assigned objectives which facilitate the attainment of the division objective.

21. Principle of the Offensive

The key to success in armor operations is offensive action. Armor commanders may at times be forced to take the defense, but they should do so only as a temporary expedient to gain time or to econo-

mize forces so that the offensive can be taken elsewhere. Even in defense, the armor commander often can best accomplish his mission by offensive action.

22. Principle of Simplicity

Simplicity must be the keynote of efficient military operation. Simplicity of plan does not necessarily mean lack of detailed planning or ease of execution. Simplicity is a relative term. A certain operation may be considered as difficult for a poorly trained unit and yet be relatively simple for a well-trained organization.

23. Principle of Unity of Command

The decisive application of full combat power requires unity of command. Efforts of all elements of the forces involved in an operation, both attached and supporting, should be controlled and coordinated by a single commander. This promotes flexibility of employment, speed of action, and coordinated actions of all forces. Co-operation is achieved when elements of the combined-arms team work together for the accomplishment of a common mission. Before full cooperation can be attained, everyone must understand his instructions and execute them in accordance with the spirit and intent of the authority issuing them.

24. Principle of Mass

a. Maximum available combat power must be applied at the point of decision. Briefly, mass means superiority at the point of decision, but does not necessarily mean superiority throughout the battle area. Armor places superior forces at the point of decision by a combination of its mobility and armor-protected firepower and the complete exploitation of its communication facilities. Proper application of this principle, in conjunction with other principles of war, may permit the smaller of two forces to achieve decisive combat superiority.

b. Mass does not require continued concentration of forces; it does require that forces be so disposed that maximum combat power can be concentrated at the decisive time and place. The use of atomic weapons by enemy forces will require greater dispersion for passive defense; therefore, greater stress must be placed on the application of mass from the point of view of time rather than space.

c. Armor is employed in mass. The speed, maneuverability, and communication of armor permit the rapid massing of mobile firepower. The armor leader seeks to concentrate his mobile firepower at one decisive point, overcome that point, then shift to another decisive point. Violation of this principle exposes the commander to the risk of piece-meal defeat by even an inferior enemy. The proper balance between achieving mass and minimizing vulnerability to

enemy atomic attack is the major problem of the commander in atomic warfare. In the final analysis, the mission will be the overriding consideration.

25. Principle of Economy of Force

Minimum forces must be employed at points other than the decisive one. This principle is a corollary to the principle of mass. Rigid economy of force within an armor unit is always essential. Powerful units must never be frittered away on unessential tasks.

26. Principle of Maneuver

a. Maneuver must be used to change the relative combat power of military forces. Maneuver is the means most often used to achieve the critical factor of the battlefield—dominance of fire. Maneuver is used to increase the effectiveness of fire, and fire is used to facilitate maneuver.

b. In offensive operations, the armor commander utilizes the speed, mobility, and armor protection of his combat vehicles and the services of Army aviation to maneuver over ground of his own choosing to strike the enemy flanks and rear, or to bypass the enemy entirely if the mission requires such action. Armor defensive doctrine is based on the maximum use of maneuver to increase the effectiveness of armor's firepower and shock action.

27. Principle of Surprise

Surprise may decisively shift the balance of combat power in favor of the commander who achieves it. Surprise is a most powerful influence in armor operations and can be achieved through secrecy, concealment, deception, boldness, originality, rapidity, violence of execution, and the use of seemingly impassable terrain. Surprise is attained by striking the enemy at an unexpected time, at an unexpected place, from an unexpected direction, in sufficient numbers, and with sufficient support to gain the objective. Reconnaissance by Army aircraft, rapidity of concentration, speed of movement, the use of covered approaches, and the intensity of the attack all assist in gaining surprise. Movement generates surprise, and surprise gives impetus to movement. A movement which is accelerated, or which changes its direction, carries with it a degree of surprise. Surprise smooths the path of movement by hindering the enemy's countermeasures and countermovements.

28. Principle of Security

Armor units seek to provide for their own security through proper application of the other principles of war. Proper application of the principles of the offense, mass, surprise, and maneuver will keep the

enemy so preoccupied with his own security that he will have little effort left to spare for other purposes. Security does not imply undue caution and avoidance of all risks, for bold action is essential to success in war. When security is provided, unexpected developments will not seriously interfere with the pursuit of a vigorous offensive. The capability of Army aviation elements for providing observation over wide areas, and to an appreciable distance into enemy territory, should be fully exploited to assist the armor commander in providing security for his unit.

Section II. FUNDAMENTALS OF EMPLOYMENT

29. General

The employment of armor is governed by the application of the principles of war and certain guiding fundamentals (pars. 30–39) which are particularly applicable to armor. The successful use of these fundamentals depends entirely on how imaginative, progressive in thought, and flexible in mind are commanders and their staffs. The commanders must be willing to take coldly calculated risks. There is no place in the doctrine of armor for the words *always* and *never*.

30. Utilize Fire and Maneuver

Armor tactics are based on fire and maneuver. Fire and maneuver is the movement of one element covered by the fires of another element or elements. Maneuver is but a means of placing fire on the enemy with maximum effectiveness. Close air support, artillery, atomic weapons, and mortars provide the covering fires necessary to enable the tanks and armored infantry to close with and destroy the enemy. Decisive results are obtained by concentrating the direct-fire weapons of tank and armored infantry units at the critical point of action. Firepower alone, or maneuver alone, will seldom defeat the enemy; but an overwhelming mass of firepower, maneuvered into an advantageous position, will result in the destruction or surrender of the enemy forces.

31. Retain the Initiative

The initiative must be retained; once lost, it is difficult and costly to regain. The initiative is retained by the continuous application of force against those portions of the enemy defense least capable of withstanding attack, or most dangerous to accomplishment of the assigned mission. Retaining the initiative is furthered by a rapid succession of attacks against vulnerable points, denying the enemy an opportunity to adequately organize his force to oppose them, and by continuing the attack at night. The enemy must not be permitted to withdraw, or to prepare for an attack, without measures being taken

to divert him from his plans. It is essential to have alternate plans prepared for immediate execution should the initial thrust fail.

32. Exploit the Point of Least Resistance

In the conduct of offensive actions, small armor units habitually seek to maintain the momentum of their attack by exploiting any weak spots developed in the enemy defenses. If supporting atomic weapons are available, the employment of a friendly atomic strike on an enemy strong-point may create a point of least resistance. Depending on the degree of accuracy with which the atomic effects can be predicted, the attacking force would be able to move in a more direct line onto its objective in a shorter period of time.

33. Maximize Mobility

The mobility of armor must be exploited to maneuver firepower into position to destroy the enemy. Mobility makes possible the achievement of surprise. It permits the rapid concentration and prompt dispersal of combat forces required by atomic warfare. Mobility enhances the effect of maneuver. It permits armor to move in column and deploy rapidly. It makes feasible the assignment of multiple missions and permits the rapid disengagement of committed forces. It permits the concentration of forces on a single objective from divergent directions.

34. Maximize Flexibility

Armor formations are tailored to accomplish the mission at hand. Changes in the terrain, weather, or enemy situation may require changes in the task organization. Each unit must have a commander who is capable of handling operations in a fast-moving situation and who is trained to work under mission-type fragmentary orders.

35. Employ Tanks and Armored Infantry Together

The employment of combined-arms teams results in maximum use of the favorable characteristics of both tanks and armored infantry. Tank or armored infantry units may be, and frequently are, employed separately. Separation of tanks and armored infantry should be limited to the time or distance wherein the two are mutually supporting. However, this mutual support may not be attainable in situations when pure tank units are employed through the ground zero of an atomic weapon, or when pure armored infantry units are employed in areas where tanks cannot accompany them, such as a river crossing or an air-lift operation. The bulk of either tanks or armored infantry should be employed wherever their particular capabilities can be fully used.

36. Plan Deliberately, Execute Violently

Successful armor action is characterized by deliberate planning, followed by violent execution. Once plans are put into effect, the aggressiveness with which the attack is executed will normally determine the measure of success. Shock action cannot be obtained without violent execution. Armor action involves large road spaces, close timing, and detailed plans for resupply, medical evacuation, and maintenance. It involves careful coordination and teamwork by all units. It requires carefully thought-out communication plans. Each armor commander should be given information as to the final objective of the next higher commander. With this knowledge, he can rapidly direct successive efforts toward furtherance of the overall plan as he finds opportunity to exploit local successes. The commander must plan well ahead to know exactly what decision to make immediately after reaching an objective or locality.

37. Use Mission-Type Orders

Armor commanders normally are issued mission-type orders. These orders should tell the commander what to do, but not how to do it. The speed of armor actions, and the rapidly changing tactical situation during mobile warfare, make it necessary that commanders be allowed as much freedom of action as possible so that they can take immediate advantage of favorable changes in the situation as they occur.

38. Use Terrain to Best Advantage

Terrain and weather frequently make control and effective use of the road network the key to tactical success. However, the excellent cross-country mobility of armored combat vehicles minimizes armor's reliance on roads and allows the commander maximum freedom of maneuver. But the sustained fighting ability of armor units is dependent upon the flow of support transportation; and for the most part, this transportation consists of wheeled vehicles which move best on roads.

39. Insure Adequate Logistical Support

Adequate and timely logistical support is essential to the successful accomplishment of the tactical mission. Detailed planning for adequate resupply, medical evacuation, and maintenance must precede the operation.

Section III. FACTORS AFFECTING EMPLOYMENT

40. General

Armor must be employed in a manner calculated to make maximum use of its favorable characteristics. The employment of armor is based

upon the commander's consideration of four paramount factors: the mission, the enemy, terrain and weather, and the troops available. These four factors are considered constantly and simultaneously by the armor commander. For brevity they are frequently referred to as the factors of METT (*M*ission, *E*nemy, *T*errain and weather, and *T*roops available).

41. Mission

The mission of higher headquarters affects the employment of small armor units because it dictates the objectives assigned to subordinate units. Consequently, the mission of the small armor unit will affect its task organization, formation, and scheme of maneuver, as well as the employment of supporting units.

42. Enemy

a. General. All possible information of the enemy location, strength, disposition, and composition is obtained prior to the commitment of armor units. The primary sources of combat information available to the small armor unit commander include reports of units in contact, air observers, liaison with adjacent units, organic reconnaissance units, patrols, and intelligence provided by higher headquarters. Combat patrols, or reconnaissance in force, may be employed to provide additional information when required.

b. Obstacles. Minefields, roadblocks, antitank ditches, and other antitank obstacles restrict the maneuver of armor units and slow down their operation. Knowledge of the existence of such obstacles is of extreme importance in the employment of armor forces. Consideration should be given also to the possible creation of obstacles resulting from blown-down objects in wooded or built-up areas, and to areas of residual radioactivity following the employment of friendly tactical atomic weapons.

c. Atomic Capability. An enemy capability to employ atomic weapons must be given serious consideration. The existence of this capability may result in movement and attack during periods of darkness or poor visibility. It will also result in increased attention to passive defense measures such as dispersion, concealment, cover, stringent traffic control, radio discipline, and individual protective measures. It may also affect the use of unarmored service and support elements.

d. Air. An armor unit provides an attractive target to enemy air forces. Although the armored vehicles are relatively invulnerable to all but direct hits, the unarmored vehicles organic to armor units are vulnerable to enemy air attack. The employment of all forms of deception, cover, dispersion, and concealment is therefore of the greatest importance.

e. Antitank Capability. The degree of enemy capability to counter the employment of armor with antitank weapons is of vital concern and must be considered in the preparation of plans.

43. Terrain and Weather

a. Terrain and weather have decisive effects on the employment of armor units. Dense woods, swamps, mountainous, or extremely rough terrain, and deep mud can restrict the operations of armor. An armor unit loses much of its effectiveness when employed in unfavorable terrain or weather, or when confronted with obstacles sufficient to restrict its freedom of action and reduce the momentum of the attack. The full striking power of armor can best be achieved over rolling terrain in which the full cross-country mobility of vehicles can be utilized. A heavy rain or snowfall, with the resulting mud or ice, may turn otherwise favorable terrain into areas which will seriously limit or possibly prohibit mobile armor operations.

b. Although tactical maneuver and fighting are executed off the roads, armor uses roads whenever feasible to obtain maximum speed and control of movement. An extensive road net greatly facilitates sustained armor operations because most of the vehicles of supporting logistical elements are wheeled and are limited to roads or easily negotiated terrain.

c. Good terrain for armor operations is likely to be mined. Furthermore, tactical surprise may dictate the use of terrain which is difficult to cross and which may sometimes be considered as impassable.

d. Terrain in rear of the assigned objective must be evaluated in planning a continuation of the attack or defense of the objective. If portions of the terrain available for attacking forces are unsuitable for armor operations, dismounted action may be required to seize ground from which an armor attack can be launched.

e. Extreme cold or heat, or a reduction in visibility and observation resulting from snow, rain, or fog, will somewhat reduce the effectiveness of armor operations. On occasion, however, conditions of poor visibility offer certain advantages to armor units. For example, an attacking force is able to maneuver toward the enemy unobserved and under a greatly reduced threat from enemy air attack.

44. Troops Available

a. The assignment of missions to subordinate units is dependent on the number and type of units available. To insure sustained operations, consideration must be given to such items as previous and contemplated employment of the unit, status of equipment and personnel, and adequacy of logistics to support the mission. Tanks and other armored vehicles require frequent and thorough maintenance; periodic checks must be made of all vehicles to insure sustained mo-

bility. The means to accomplish this maintenance are available within the armor unit, and the necessary time for maintenance can be provided by the rotation of combat units actually engaging the enemy.

b. The continuous operation of vehicles, equipment, and weapons of armor units depends on efficient maintenance and adequate and well-timed resupply of fuel, lubricants, and ammunition. The status of supplies must be considered in all planning.

Section IV. ORGANIZATION FOR COMBAT

45. General

Armor battalions and armored infantry battalions normally operate attached to combat commands. The combat command commander may employ the attached battalions as pure battalions (without attachment), or he may organize them for combat by cross-reinforcement. Similarly, tank and armored rifle companies normally operate directly under control of one of the battalions. The battalion commander may employ his companies as pure companies (without attachment), or he may organize them for combat by cross-reinforcement. The armored cavalry squadron normally operates as a unit under the control of division or its parent armored cavalry regiment.

46. Battalion Task Force

a. A battalion task force is a temporary grouping of units, formed to provide the battalion task force commander with the number and type of units necessary to accomplish a specific mission or task. A battalion task force normally consists of an armor battalion or armored infantry battalion headquarters and headquarters company and one or more organic and/or attached companies.

b. There is no definite rule to determine the size and composition of a battalion task force (fig. 1); they are based on a consideration of the factors of METT (mission, enemy, terrain and weather, and troops available). In this respect, the battalion task force is similar to the combat command: Units of the proper type are attached, or placed in support, in sufficient numbers to carry out the assigned missions. The composition of a battalion task force can be readily changed to meet varying tactical situations.

c. A battalion task force organized around an armored infantry battalion headquarters normally is armored-infantry-heavy or balanced. Likewise, a battalion task force utilizing an armor battalion headquarters normally is tank-heavy or balanced. (A battalion task force is balanced when it contains armored rifle companies and tank companies in equal number, armored-infantry-heavy when it contains more armored rifle companies, and tank-heavy when it contains more

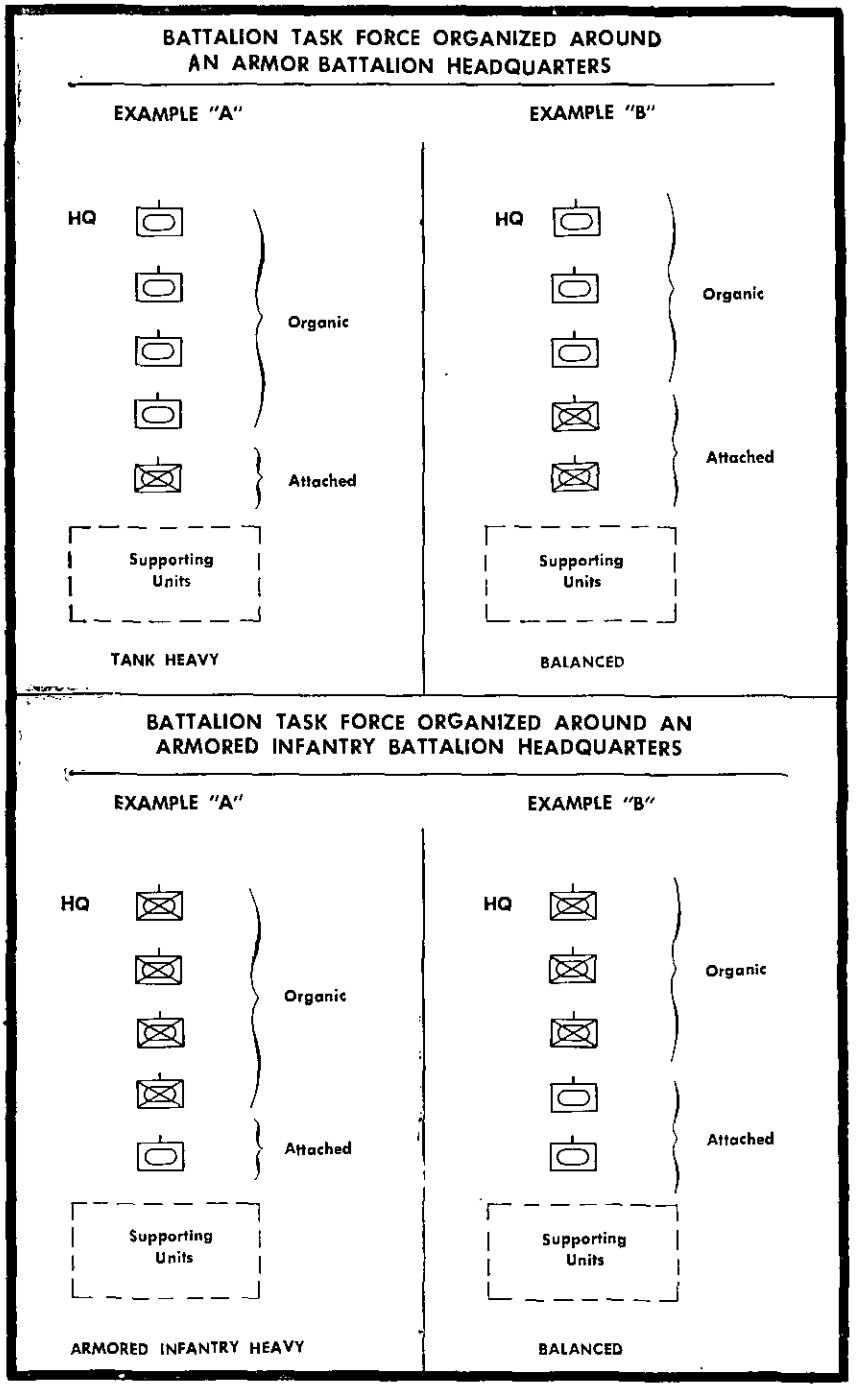


Figure 1. Examples of battalion task forces.

tank companies.) Battalion task forces may be referred to as armor battalion task forces or armored infantry battalion task forces.

47. Company Team

a. A company team is a tactical grouping of units under one company commander formed for a specific operation or mission. The company team normally consists of a complete company with one or more nonorganic units attached, or a company minus one or more organic units with one or more nonorganic units attached.

b. Within the battalion task force, the commander organizes company teams (fig. 2). The ratio of tanks to armored infantry in a company team varies with the factors of METT. Tank and armored infantry units are usually employed together; if they are not together, they should be within supporting distance of each other.

c. Platoons normally are employed as a part of the company team. Typical exceptions would be patrol, reconnaissance, or direct-fire support missions. The platoon usually is the smallest unit to be attached to another organization. Tanks should not be attached by sections unless terrain or other conditions prevent the effective operation of a complete platoon. Armored cavalry troops, however, frequently employ platoon teams (FM 17–35).

48. Command of Battalion Task Forces and Company Teams

a. General. Normally, a tank-heavy battalion task force or company team is commanded by a tank unit commander, while an armored-infantry-heavy task force or team is commanded by an armored infantry unit commander. Factors to be considered by the battalion task force commander, in determining who will command a team, include—

(1) Mission of the team.
(2) Composition of the team (tank-heavy or infantry-heavy).
(3) Personalities involved.

Thus, a team composed of a tank company and an armored rifle platoon would be commanded by the tank company commander. A team composed of an armored rifle company and a tank platoon would be commanded by the armored rifle company commander. In the case of a team made up of a tank company and an armored rifle company, the battalion task force commander could designate either company commander as the team commander. A less acceptable method is to designate a qualified battalion staff officer to command the team.

b. Subordinate Elements of Company Teams. The tank and armored rifle platoons normally are commanded directly by the team commander. As a general rule, a platoon leader will not command any platoon other than his own. Coordinated action between platoons of a company team is attained by orders to each platoon leader from

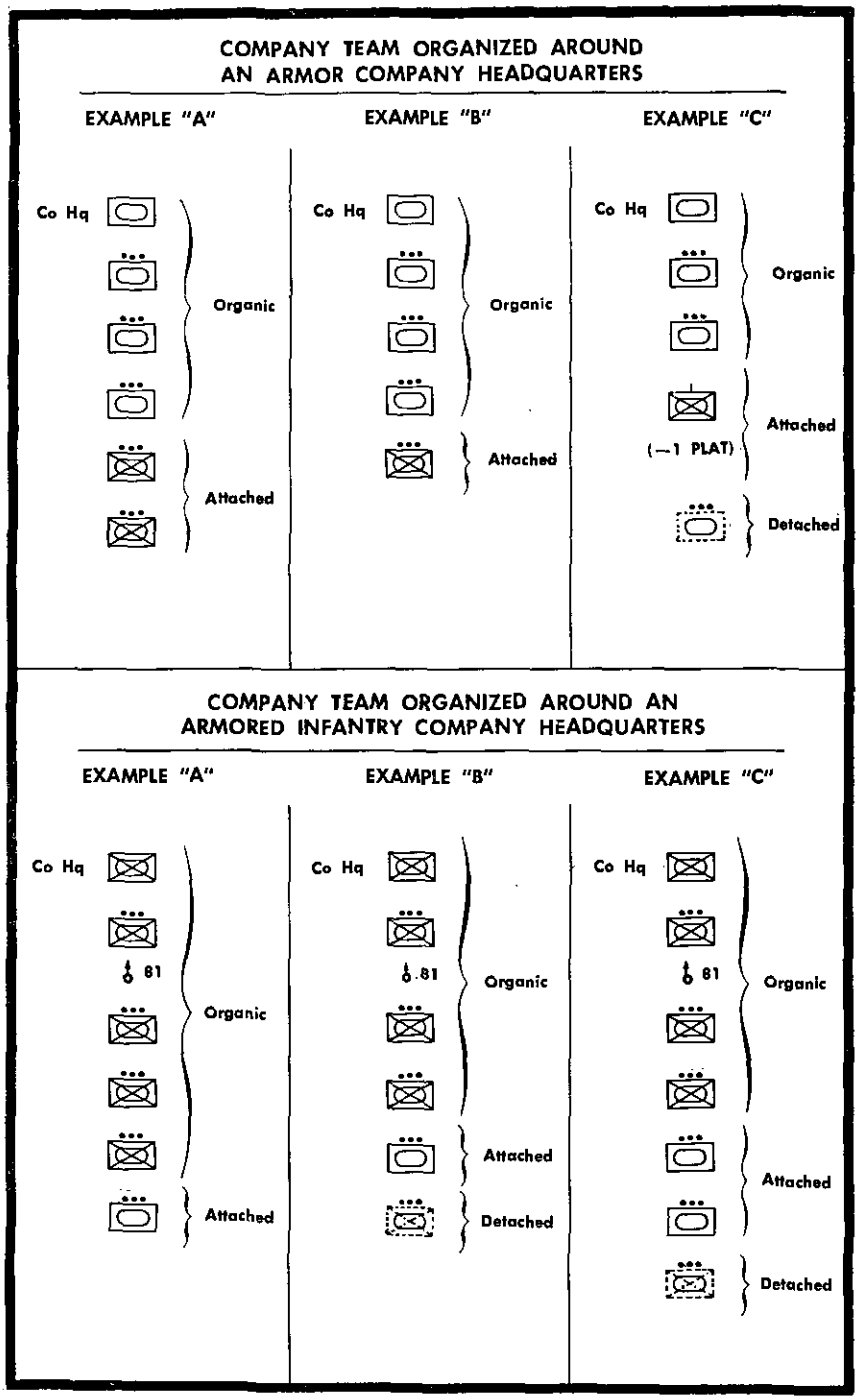


Figure 2. Examples of company teams.

the team commander and by cooperation between the platoons. If it is deemed necessary to place two platoons under a single commander, the company executive officer may be used to command them.

c. Battalion Mortar Platoon. The mortar platoon of the armor battalion or armored infantry battalion (app. IV) normally is employed directly under battalion control. This platoon will fire as a unit in support of the leading companies. When necessary, the battalion commander will indicate a priority of fire for this platoon.

d. Battalion Scout Platoon. The scout platoon of the armor battalion or armored infantry battalion is an organic reconnaissance unit which operates under the control of the battalion commander. Its primary mission is to perform reconnaissance and to provide security for the battalion. This unit is capable of performing a variety of missions, both administrative and tactical. For detailed discussion of the tactical employment of the scout platoon, see FM 17–35.

49. Use of Reserves

a. Reserves are used to exploit success or to reinforce. A reserve is most often thought of as a body of troops which is kept to the rear, or withheld from action at the beginning of an engagement, available for a decisive movement. Because of the capabilities of armor, the commander considers unengaged or uncommitted forces as reserves as well as combat forces specifically designated as such.

b. A combat force should not be held out as a reserve if it weakens the main effort. It may be held back to exploit the success of the main attack or to provide additional rear and flank security. Uncommitted portions of subordinate commands give the commander a flexible reserve. He must keep abreast of the situation so that he knows what units he has available for this purpose.

c. Small armor units normally are organized to include only a maneuvering force and a base of fire. The small armor unit commander satisfies the requirement for a reserve by providing depth to his formation, by maneuvering his supporting fires, and by making full and complete use of his unit's battlefield mobility.

50. Battalion Headquarters Groupings

During combat the headquarters and headquarters company usually operates in two echelons—the battalion command post and the battalion trains. The composition of the command post and the trains may vary according to the situation.

51. Battalion Command Post

a. General. The purpose of the command post is to provide personnel and facilities for the control of combat and administrative operations. The command post maintains communication with higher,

adjacent, supporting, and lower units. It forwards reports to the command group (par. 52) on new developments in the situation, continuously makes plans for current and future operations, provides for liaison with adjacent and higher units, and supervises liaison with supporting and lower units. The command post consists of the battalion commander, the battalion staff, and such liaison personnel as are necessary from attached and supporting units, together with the necessary supporting enlisted personnel and vehicles and equipment.

b. Combat Operation. The command post revolves around the combined operations-intelligence section. This section utilizes both S2 and S3 personnel. It must be capable of continuous operations over extended periods. An officer and an enlisted clerical assistant, both familiar with the situation and the operation of the headquarters, must be on duty at all times. During times that the daily summaries and other reports are being prepared, it probably will be necessary for all members of the S2 and S3 sections to be on duty. The executive officer prepares a roster of all officers available in the command post to be operations duty officers. He frequently must include his own name on the roster. Staff officers, when not required for duty in the command post, should be required to rest in order to be refreshed when faced with long hours of duty.

c. Administrative Operations. The S1 and S4 operate from the command post. Frequently the S4 will be away from the command post in order to properly supervise the logistical effort.

52. Battalion Command Group

The battalion commander may form a group to operate forward of the command post. Such a group, consisting of the battalion commander, certain key staff officers, and only essential facilities, is called the *command group* and is considered a subdivision of the command post. By establishing a command group, the battalion commander can more closely supervise combat operations, promptly make decisions, and change plans. The command group remains highly mobile and well forward during operations. It has no fixed composition and will consist of personnel from the command post who can best assist the battalion commander in a given situation. The personnel who normally accompany the battalion commander are the operations officer, artillery liaison officer, forward air controller, and necessary liaison and communication personnel, along with vehicles equipped with command radio facilities. The command group must maintain continuous communication with the command post to insure rapid transmission of new developments in the situation, new or supplementary orders from higher headquarters, and other pertinent information or directives.

53. Selection of Command Post Locations

Considerations in the selection of command post locations are—

a. Communication. It is mandatory that the command post be in communication with all subordinate elements and higher headquarters, preferably by voice radio. For this reason the command post will usually be located on high ground. It must be kept in mind, however, that the habitual use of hilltops as command posts will result in enemy fire being directed at hilltops to prevent their use. High ground other than the actual hilltop will usually provide adequate communication sites. Use of radio relay stations or available remote control equipment may allow the command post to be located on low ground with the radio facilities on high ground.

b. Accessibility. Command posts should be accessible to a road net which permits travel to subordinate elements and to higher headquarters. Generally speaking, the command post should be near the battalion main supply route. It should not be too close to crossroads or other prominent landmarks which might permit easy artillery registration on the location. Accessibility to a landing strip for Army aircraft should also be considered. While placing the command post in the immediate vicinity of a landing strip might compromise the location, the distance from the landing strip to the command post should not be great.

c. Security. For security the command post must depend almost entirely on its location with respect to other troops. In a fluid situation, security can be best obtained by placing the command post well forward so that the disposition of the companies provides security. The battalion command post might well be located in the vicinity of the battalion reserve, if one is retained. The use of combat troops primarily for command post security is to be avoided. Local security is obtained by positioning the armored vehicles on the perimeter, by assigning sectors of fire to vehicular weapons, and by establishing outposts with drivers and other available personnel. The headquarters company commander, assisted by the first sergeant, supervises local security.

d. Cover and Concealment. The command post location should offer the best available concealment from air observation and cover from the effects of artillery fire and aerial bombardment. Wooded areas offer good concealment, and basements offer a great amount of protection.

e. Anticipated Movement. The type of action in which the battalion is engaged usually will indicate the anticipated movement of the command post. In offensive action, the command post should be moved so that it is close to the forward elements, primarily to insure good communication. Similarly, in retrograde movements, the com-

mand post moves back to the rearward limit of communication, anticipating that the forward elements will move back.

54. Arrangement of the Battalion Command Post

The command post is arranged to facilitate work, foster security, permit concealment, and permit rapid and orderly exit. The battalion normally establishes an SOP for the interior arrangement of the command post. The message center, located near the entrance, provides an information center and is convenient to messengers. A dismount point with parking area near the entrance prevents vehicles from moving through the command post. The operations section is located a short distance from the dismount point. The operations section consists of the S2 and S3 vehicles, parked close together to permit joint operation of the two sections. The commanding officer, executive officer, administrative section, and liaison officers are located near the operations section. Mess and maintenance facilities are grouped together, but away from the operations section, so that vehicle movement is kept away from the main part of the command post. Vehicles are disposed to permit easy concealment and to minimize effects of artillery fire or air attack. They are parked to permit easy departure from the area, during the hours of darkness if necessary.

55. Movement of the Battalion Command Post

Movement of the command post should be planned so as to cause minimum interference with normal operation. The command post is capable of operation on the move; however, its efficiency is reduced. In many situations, when the command group is operating, it can maintain communication and control while the remainder of the command post moves. When the command group is not operating as such, a reconnaissance party may use communication vehicles to maintain communication while the command post moves. Subordinate units as well as higher and adjacent headquarters must be kept informed of the location, proposed location, and movement of the command post.

56. Battalion Trains

The trains are that part of the battalion which provides administrative services and logistical support to the battalion. The trains are normally divided into two elements, combat trains and field trains. The combat trains are located in the vicinity of the battalion command post. The field trains are located farther to the rear in the combat command trains area. This division of trains increases the flexibility of logistical support (FM 17–50).

Section V. COMBAT SUPPORT

57. Artillery Support

a. General. Artillery support provides the armor commander with a powerful means of influencing the course of combat. Artillery performs two general tasks: First, it provides close and continuous fire support by attacking those targets most dangerous to the supported forces; second, artillery adds depth to combat by neutralizing enemy mortars and artillery, by restricting movement of hostile reserves, and by disrupting enemy command and communication installations. In order to make effective use of artillery support, the armor commander must be familiar with the capabilities and limitations of artillery and the means by which artillery fires are obtained when required.

b. Combat Control. Within the armored division, artillery support is provided to subordinate elements by attachment of artillery units or by assigning fire-support responsibilities to artillery units in the form of artillery tactical missions. Each committed combat command is normally provided the support of at least one light artillery battalion.

(1) Attachment. Attached artillery units are under command of the commander of the force to which attached. Attachment of artillery to subordinate elements of the division is undesirable except when conditions of terrain, distance, or communication prevent effective massing of artillery fires, which can best be accomplished under division artillery control. These conditions will often exist in such operations as exploitation and pursuit.

(2) Artillery tactical missions. When artillery support is provided by assignment of tactical missions to the artillery, centralized command of the artillery is retained at division level; therefore fires can effectively be massed, and these massed fires maneuvered. The three standard artillery tactical missions, which may be modified as required to meet a specific situation, are as follows:

(*a*) *Direct support.* Most close artillery fire support for armor units is provided by light artillery (105-mm howitzer, self-propelled) organic to division artillery. These artillery battalions are normally assigned the mission of direct support of combat commands. The artillery unit assigned a mission of direct support of a force must be positioned to provide close and continuous fire support for the force, and will give priority to calls for fire from that force. The direct-support artillery unit provides liaison officers and forward observers to the force, maintains communication with it, and maintains observation

in its zone of action. Division artillery may call for fires from a direct-support battalion when the battalion is not engaged in a direct-support fire mission or when a threat to the division as a whole requires employment of all available fires.

(*b*) *General support.* The general-support mission normally is assigned to the medium (155-mm howitzer, self-propelled), heavy (8-inch howitzer, self-propelled), and 762-mm rocket (HONEST JOHN) artillery units organic to the composite battalion of division artillery. The 8-inch howitzer and the 762-mm rocket provide the division with an organic atomic delivery capability. Any artillery unit assigned the mission of general support provides support for the force as a whole.

(*c*) *Reinforcing.* When it is desired to make readily available to a force the fires of more than one artillery unit, one artillery unit may be assigned a mission of direct support of the force, while another artillery unit is given the mission of reinforcing the direct-support unit.

c. Antiaircraft Artillery Support. A self-propelled antiaircraft artillery (AAA) battalion normally is attached to the armored division. Division elements are afforded protection in an order of priority established by the division commander. One AAA battery, when required, may furnish AAA protection for a combat command.

58. Details of Artillery Fire Support

a. Because of the flexibility of its system of fire control, artillery can shift and mass the concentrated fire of several battalions in a matter of minutes. However, artillery support should not be diverted to small targets which are appropriate for the battalion mortar platoon or other battalion weapons. Artillery in the armored division provides highly mobile, self-propelled fire support which is capable of—

(1) Covering by fire the deployment of armor units.

(2) Assisting in providing protection for armor units during movement to and occupation of assembly areas and attack positions.

(3) Providing close indirect fire support during offensive, defensive, or retrograde operations.

(4) Firing counterbattery fire.

b. A forward observer from the supporting artillery battalion normally accompanies each line company. He receives requests for fire support from the platoon leaders and company commanders, transmits these requests to the supporting artillery fire direction cen-

ter, and adjusts the fire upon the designated target. He calls for fire on his own initiative on targets of opportunity in the zone of observation assigned to him, but his primary mission remains the support of the company.

c. Supporting artillery fires may be obtained by any of the following methods:

(1) Direct request through the forward observers.
(2) Request through the battalion command communication net to the artillery liaison officer.
(3) Request through combat command channels to the artillery battalion fire direction center.

d. The artillery forward observer coordinates his efforts and movements with those of the supported company. He locates himself where he can best observe and adjust fire and maintain communication with both the company commander and the supporting fire direction center.

e. The supported company commander is responsible for providing an armored vehicle and its communication facilities to the forward observer. He should solicit the forward observer's advice as to how the supporting artillery can best help his company in any particular situation. Radio is the primary means of communication for requesting and controlling artillery fire support.

f. All armor unit officers and the maximum number of selected enlisted personnel, including unit and crew leaders, scouts, and personnel who man observation or listening posts, should be capable of adjusting artillery fire.

g. To be fully effective, relevant details of planned artillery support should be disseminated down to company and platoon level. These details should include locations of preplanned artillery concentrations and reference points or areas upon which fire is to be delivered.

h. Requests for fires in support of a company normally are transmitted through the forward observer; however, requests may be transmitted through command channels to battalion if communication with the forward observer has been disrupted. Initial artillery fire requests include, as a minimum, the following elements in the indicated sequence:

(1) Identification of observer. The observer identifies himself by radio call sign.
(2) Warning order. The observer alerts the recipient of the message as to the nature of the message by saying FIRE MISSION.
(3) Location of target, and azimuth from observer to target. The sequence of these elements depends upon the manner of reporting the location of the target; (*i* below).

(4) Nature of target. The observer describes the enemy installation, personnel, equipment, or activity that is observed.
(5) Control. The observer's designation of control is expressed as WILL ADJUST or FIRE FOR EFFECT. If the observer is certain that his location of the target is accurate within 50 yards, his control should be FIRE FOR EFFECT. If he is not certain of the accuracy of the location of his targets, and feels that adjustment of the fire upon the target is required, his control should be WILL ADJUST.

i. Examples of initial fire requests are shown below.

(1) POWER ALFA 6
FIRE MISSION
COORDINATES 385624
AZIMUTH 1260
PLATOON OF INFANTRY IN THE OPEN
WILL ADJUST.

(2) BLUE GRASS 26
FIRE MISSION
FROM REGISTRATION POINT, AZIMUTH 2450
RIGHT 250, ADD 500
MACHINE GUN DUG IN NO OVERHEAD COVER
FIRE FOR EFFECT.

(3) BLUE GRASS 26
FIRE MISSION
AZIMUTH 1870
DISTANCE 1600
TANK ASSEMBLY AREA IN HEAVY WOODS
FIRE FOR EFFECT.

j. The azimuth from the observer to the target is announced at that point in the sequence of the initial fire request where it can be most efficiently applied by the fire direction center. Depending upon the manner in which the location of the target is reported, azimuth is announced as follows:

(1) When the target location is given in the form of coordinates, the azimuth is announced after the coordinates; for example, COORDINATES 385624, AZIMUTH 1260.
(2) When the target is located by a shift from a known point, the azimuth is announced immediately after the designation of the point from which the shift is being made; for example, FROM REGISTRATION POINT, AZIMUTH 2450, RIGHT 250, ADD 500.
(3) When a target is located by polar coordinates, the azimuth is announced as the first element of the target location; for example, AZIMUTH 1870, DISTANCE 1600.

k. For additional details pertaining to artillery fire support, see FM 6–20 and FM 6–40.

59. Tactical Air Support

a. Tactical air force units may support armor units by attacking enemy ground forces with bombs, gunfire, napalm, and rockets, or by destroying enemy aircraft which are operating against friendly ground forces.

b. When air support is made available, a forward air controller (FAC) is provided to the supported unit. The FAC aids and advises the commander on matters pertaining to employment of tactical air. He also controls the air strikes which are flown in support of the unit. Close liaison should be maintained between the forward air controller and the supporting artillery liaison officer. This will insure prompt exchange of information from both ground and air observation, and will assist in rapid engagement of all targets of opportunity. The FAC should remain with the command post (or command group) until a traget is designated. He then moves to a point where he can properly observe and direct the air attack on the designated target. The FAC rides in the armored vehicle or Army aircraft made available to him by the supported unit.

c. Air targets are those that are beyond the range or capability of supporting weapons. Suitable targets for supporting aircraft include enemy armor, enemy columns, targets out of range of artillery, enemy strongpoints, and enemy communication centers. Tactical air may also perform visual, photographic, weather, or electronic reconnaissance missions; illuminate the battlefield; provide aerial resupply; perform evacuation missions; and make 24-hour-a-day all-weather light bombardment attacks.

d. There are two types of close support air missions.

(1) A *preplanned mission* is one which is decided upon early enough to allow complete planning and thorough preparation. It is based upon a request submitted the day before the actual flight of the mission.

(2) An *immediate mission* is one for which the need cannot be foreseen and in which time is of the greatest importance. These flights may be flown by aircraft on ground alert, aircraft on air alert, column cover, or aircraft diverted from other missions.

e. Requests for air support should include the following information:

(1) Target location (by grid coordinates, and/or azimuth and distance from prominent and unique terrain features which cannot be mistaken from the air).

(2) Description of the target.

(3). Results desired (destroyed, neutralized, harassed).
(4) Time on target (include time limits in accordance with ground action).
(5) Tactical significance (justification of request).
(6) Location of friendly troops (who will utilize recognition signals?).
(7) Special control information (who will control air strikes, restrictions on fire, etc.? Details of signals to stop air strikes must be included in the event friendly troops are engaged).

f. A bomb line is established by higher headquarters, and the Air Force has clearance to engage all targets beyond this line. The bomb line changes with the situation, and the supported unit commander must know the location of the bomb line at all times. He recommends changes in the location of the bomb line to fit his tactical situation. Air strikes between the bomb line and leading friendly forces are made only when requested by or coordinated with the ground commander and must be controlled.

60. Fire-Support Coordination

a. Fire-support coordination functions exist to some degree at all combat echelons. A fire support coordination center (FSCC) is normally established at division level and higher. At battalion level, the artillery liaison officer is the fire support coordinator. His fire plan includes the fire capabilities obtainable from—

(1) Supporting artillery.
(2) Air Force (through S3 air and/or FAC).
(3) The organic mortar platoon.

The battalion S3 insures that the fire support plan can be integrated into and properly supports the plan of maneuver.

b. The purpose of this fire-support coordination and integration is to provide the battalion commander with a means of adequate control, supervision, and coordination of all fire support. This includes concentration of fire-support means upon targets, distribution of effective fire upon several targets simultaneously, the prompt attack of targets of opportunity, and deviation from the fire-support plan when necessary to meet unforeseen or changing situations.

61. Functions of Battalion Fire-Support-Coordination Personnel

a. The Artillery Liaison Officer. The artillery liaison officer operates with the battalion-size armor unit as the representative of the artillery supporting the combat command, and also functions as the fire-support coordinator for the battalion. As fire-support coordinator, he insures that targets which would affect the accomplishment of the mission of the battalion are attacked as rapidly as possible with the best fire-support means available. If sufficient means are not

available to battalion, combat command is requested to assist. Generally speaking, the artillery liaison officer makes recommendations to the battalion commander on all matters pertaining to fire support for the battalion. He is assisted by representatives of other fire-support agencies available to the battalion, who collaborate with him.

b. The Forward Air Controller. The FAC advises the fire-support-coordination personnel on the capabilities of tactical air and directs aircraft making air strikes when allocated to the battalion.

c. S3 Air. The battalion S3 air represents the battalion staff on the fire-support-coordination team. He also keeps in close touch with the S3 air at combat command to insure that he knows what air support is available. In addition, he formulates and forwards requests for both preplanned missions and immediate missions on targets of opportunity.

d. Battalion Mortar Platoon Leader. The commander of the battalion 4.2-inch mortar platoon advises the fire-support coordinator on how the mortars can best be employed. When plans are being made for an operation, he usually is present in the command post. During an operation, his duties often demand his presence elsewhere; but he is constantly available by radio to the fire-support coordinator as well as to the battalion commander.

62. Technique of Fire-Support Coordination

In a battalion-size armor unit, the fire-support-coordination personnel will not be present in the command post at all times, because they have duties which must be performed elsewhere. During the planning stages of an operation, these officers get together informally to solve any problems of fire support that arise. Such a get-together might include a phone call from the artillery liaison officer to the 4.2-inch mortar platoon commander asking him to fire a mission in the coming operation. It might include a meeting of the FAC, S3 air, and artillery liaison officer to decide on targets, times, etc., for some preplanned air strikes. Since fire-support coordination is a 24-hour operation, the members must have communication with the command post at all times in case their services are required.

63. Importance of Complete Utilization of Firepower

Small armor units by themselves can produce a tremendous concentration of fire. Elements of the tank-infantry-artillery team have a multitude of types of supporting weapons, each one capable of reinforcing the fires of the others. Moreover, supplementing the fire of such a team are an imposing variety of supporting weapons. The effect of fire is to neutralize the enemy defenses by killing, wounding, and demoralizing personnel, and by destroying and damaging materiel. The full destructive effect of all available firepower must be

concentrated rapidly upon the enemy to gain decisive results and save lives and time.

64. Engineer Support

a. The mission of engineers organic to the armored division is to facilitate the movement of armor units, and to increase combat effectiveness by means of general engineer work. These engineers are specially organized, equipped, and trained to perform certain tasks which assist armor units. These are—construction and maintenance of fords and bridges, construction and removal of obstacles, preparation and execution of demolitions, and provision of engineer supply service, including water and map supply. These services are available to all units of the armored division. Some of these tasks are performed by the organic engineer battalion operating as a unit; most of them are done by the subordinate elements of the battalion (companies and platoons) which support the combat commands and battalion tasks forces. In unusual situations, the engineers can be committed as infantry, but this should be done only after careful consideration of the effects of the resulting loss of engineer support.

b. The engineer elements which normally provide support for a combat command consist of an engineer company, a bridge platoon from the bridge company, and a water supply team from headquarters company. From these units come the engineers which support the leading battalion task force(s). The engineer units normally placed with the leading battalion task force(s) are an engineer platoon and a bridge section. Direct support is the normal method of employing engineer troops as long as centralized control, reinforcement, and logistical support from the parent unit are practical.

Engineers are attached only when distance, terrain, and/or the mission make operation under the control of the parent engineer unit impractical and undesirable.

c. The platoon leader of the engineer platoon supporting the battalion task force is the engineer staff officer for the task force. He acts as an advisor to the task force commander on the most efficient and effective employment of the supporting engineers.

d. The following are fundamentals of the employment of engineers.

(1) In a slow-moving or static situation, the location of the engineers is dictated by the site of their work missions.

(2) In a fast-moving offensive, exploitation, or pursuit, engineers in support of the leading battalion task force must be well forward in the column to assist the task force in the passage of obstacles. The engineer platoon normally marches just behind the leading company team.

(3) In retrograde movements, the most important engineer mission is to impede the advance of the enemy. Engineers should be located close to the tail of the withdrawing column.

(4) The engineer platoon supporting a leading battalion task force accomplishes *only* work necessary for the passage of that battalion.

e. For a detailed discussion of the employment of engineers organic to the armored divsion, see FM 5–134.

65. Army Aviation Support

a. An Army aviation element habitually should be placed in direct support of a battalion task force. This usually will consist of both fixed and rotary wing aircraft from the division aviation company. See FM 20–100.

b. Maintenance personnel from the aviation company accompany the flight to maintain the aircraft and, depending on the size of the flight, provide refueling facilities at a landing area near the task force command post.

c. These aircraft are used to—

(1) Extend the range of reconnaissance.
(2) Verify information.
(3) Provide security by reconnaissance.
(4) Assist in control and communication of the battalion task force.
(5) Provide flights for command reconnaissance and liaison.
(6) Provide courier and messenger service.
(7) Provide emergency resupply and evacuation of personnel casualties.
(8) Provide transport for limited combat forces (pars. 476–489).

66. Employment of Tactical Atomic Weapons

As part of a larger force, the battalion-size armor unit may be committed to an action supported by tactical atomic weapons. The decision to employ such weapons will be made by higher headquarters. Instructions pertaining to the plan of maneuver to exploit the effects of the weapon, safety measures to be adopted, and other pertinent information will be transmitted to the battalion through normal command channels. For a detailed discussion of the employment of tactical atomic weapons, see FM 100–31 and 101–31 (both classified).

67. Employment of Chemical Agents

Armor is capable of employing toxic chemical agents against enemy *armor and strongpoints; flame at enemy strongpoints; and smoke to* blind, conceal, and signal. See FM 100–5 and FM 3–5 for discussion of the employment of chemical agents to support combat operations.

CHAPTER 3

EXERCISE OF ARMOR COMMAND

Section I. COMMAND

68. General

The primary objective of successful armor tactical command is the development, integration, and employment of the unit's ability to move, shoot, and communicate. In preparing for armor command, the armor leader must thoroughly understand the tactical and technical employment of his unit, and the operations and employment of normal supporting or attached units. In tactical operations, the armor commander normally commands a combined-arms force.

69. Armor Commander

a. Responsibilities. The armor commander is responsible for the training of his unit, its actions in combat, the health and well-being of its personnel, its supply, and the maintenance of its equipment. To discharge these responsibilities efficiently, he must train and utilize his subordinates to the fullest extent. (At battalion level, *subordinates* is considered to include the staff.) He should indicate his policies to his subordinates and then allow them maximum freedom of action in order to develop ingenuity, initiative, self-reliance, and aggressiveness.

b. Command. The armor commander makes decisions, which are transmitted as orders. To insure that these orders are understood and properly executed, he continually supervises and checks on the execution of all orders issued. The armor commander will normally receive his orders from the next higher headquarters; however, in the absence of such orders, he must be prepared to take action on his own initiative.

c. Relations With Subordinates. The armor commander's relationship with his subordinates should be direct and personal. He should keep his subordinates informed of the situation and of his desires. He should encourage them to deal directly with him whenever they feel that such action is desirable. He should frequently visit subordinate units to obtain firsthand information and to foster esprit de corps; this is particularly desirable in the case of newly attached units. Attached or supporting unit commanders advise

and assist the armor commander in technical matters pertaining to the employment of their units.

d. Conduct in Combat. The armor commander locates himself wherever he can best direct, control, and influence the action of his unit. He keeps his headquarters and key subordinates informed of his location at all times. Whenever possible, the armor commander should set a personal example by positioning himself well forward in a combat action.

70. Succession of Command

a. The nature of armor operations requires a clearly understood procedure for succession of command in the event of sudden loss of the commander through combat action. This is especially true under conditions of atomic warfare. The succession of command should be clearly defined, either through orders or in the unit SOP. As a fundamental of leadership, each commander must train and utilize his subordinates so that a smooth and efficient transition of command is insured. The determination of the succession of command should be based on the following:

(1) With few exceptions, succession of command should be vested in the next senior in rank.

(2) Under exceptional circumstances, a subordinate other than the next senior in rank may assume temporary command. Such succession of command would be appropriate only in the case of a subordinate who, through his intimate knowledge of the existing tactical situation and his staff or command position, could best exercise command for the duration of the combat action in which the unit is engaged.

b. The delegation of authority is a function of command. This is especially important during periods in combat when contact with the commander is temporarily lost. The armor commander should habitually provide adequate guidance as to his concept of operations and should delegate sufficient authority to permit his key subordinates to exercise command in his name during periods of temporary loss of communication.

Section II. LEADERSHIP

71. General

a. The primary duty of the leader is the accomplishment of his assigned mission. Everything else, including the welfare of his men, is subordinate to the mission. It is the leader's duty to brief, instruct, and train his men so that the mission is accomplished. The welfare of his men is the leader's second most important responsibility. It is rarely possible to accomplish any mission without attention to the morale and esprit de corps of the men. For detailed discussion of

leadership traits, principles, and techniques and of methods of solving leadership problems, see FM 22–100.

b. Leadership of small armor units presents problems which are seldom encountered by the leaders of other small combat units. For example, the armor leader must convince his unit that being completely separated from other friendly units, and operating well within enemy-held terrain, is a normal armor operation. Problems of maintenance and supply for both personnel and equipment assume major proportions in armor warfare.

72. The Human Factor

a. The individual soldier of an armor unit must be indoctrinated with the spirit of the offensive. His thinking must be geared to the speed and violence of armor warfare. He must be trained to operate deep in hostile territory, and to recognize that the presence of the enemy to his front, flanks, and rear is a condition to be expected.

b. Armor leaders operate with their forward elements. They must possess mental mobility and be responsive to command. They must know and follow sound troop-leading procedures. They must be alert, aggressive, and decisive in the selection and pursuit of a suitable course of action to surmount the varied and complicated problems which will confront them.

73. Mental Mobility

Armor commanders must think in miles, not yards. Mental mobility is the ability of the leader to project his thinking far beyond the area of the immediate battle. Armor commanders must be able to see the smaller action and its outcome in proper relationship to the overall objective. They must constantly seek an opportunity to employ aggressiveness to the maximum in an effort to overwhelm the enemy and win the decision. Mental mobility includes boldness of concept and execution. In mobile warfare there is a definite requirement to take the calculated risk. There must be flexible planning which permits immediate adjustments when things do not go as originally planned. Commanders charged with the execution of plans must be able to adjust their thinking to frequent and drastic changes without undue excitement, worry, or frustration. Mental mobility includes foresight combined with swift decision. The armor commander must visualize the probable outcome of the battle and be prepared to instantly execute a better and more decisive plan as the situation develops. He must outdo the pace of the enemy. Mental mobility must be combined with personal mobility. Armor commanders must be efficient in commanding from combat vehicles moving at relatively high speeds and from Army aircraft. The armor commander should not be harnessed to slow, complex staff organiza-

tion and procedure. He carries the essentials of command in his head and his hip pocket. He uses his communication from wheeled, tracked, or winged transportation to cement the efforts of his command.

74. Responsiveness to Command

Armor commanders must be responsive to command. They must be capable of accepting a mission-type order, clearly understanding its meaning, and immediately taking the necessary action to execute the order. *Responsiveness to command is achieved by fully understanding* and exploiting the extensive and flexible communication organic to armor units. It is also accomplished through a combination of the mental mobility of the commander and the armor unit's characteristics of mobility and flexibility. It enables the armor unit commander to direct the employment of organic and supporting units with speed, accuracy, and efficiency.

75. Troop-Leading Procedure

a. Troop leading is a major function of armor command. The actual steps involved may vary at different echelons, depending upon the type unit being commanded. Troop leading embraces the written, verbal, or physical influence exerted by the commander on the troops he commands. Basically it involves planning, issuing orders, and supervising the actions of subordinate units. Planning includes the commander's mental processes, coordination with adjacent and supporting units, and reconnaissance—all pointing to the development of a plan. Following the development of a plan, orders are issued. The commander then must continuously supervise to insure that his intent is understood and carried out and must issue supplementary instructions as required. The commander must allow his subordinates time to accomplish the necessary steps in troop leading. The commander must direct the action of units one echelon below him in the chain of command and must have intimate knowledge of the situation of units two echelons below.

b. An armor unit is always engaged in combat or in preparation for combat. Troop leading does not stop with the withdrawal of the unit from action following the completion of its mission. The unit must continuously be prepared for commitment at any time and in any portion of the battle area. Training must be continuous both in and out of combat. Plans, implementing instructions, and supervision are necessary to insure preparedness.

c. Troop leading cannot be reduced to facts and figures. However, the following list of procedures will assist the commander to insure his accomplishment of the essential steps in troop leading. Depending on the level of command and/or the mission, certain points may

be omitted or combined. Following the receipt of instructions or orders from higher headquarters, the commander should—

(1) Issue a *warning order* to organic and attached units.
(2) Begin his *estimate of the situation*, to include a map study.
(3) *Coordinate* with supporting units.
(4) Make a *tentative plan.*
(5) Make a *personal reconnaissance* (air and/or ground).
(6) *Complete the plan.*
(7) *Issue the order*, including available information on future employment. At battalion level and below, orders will be habitually issued orally.
(8) *Check readiness* of organic and attached units.
(9) *Supervise* the operation.

Section III. THE BATTALION STAFF

76. General

a. A staff officer is an assistant to the battalion commander in the exercise of command. He transmits his commander's order to unit commanders or conveys his commander's instructions or desires. In an emergency, staff officers may, when so authorized, issue orders based upon the policies of the commander. Whenever a staff officer issues an emergency order, he informs the commander as soon as possible. The staff assists the commander by relieving him of time-consuming and distracting details. The staff keeps its information and estimates up to date on the strength, location, and action of lower units; enemy capabilities, strength, location, and composition; and the status of logistics and administration. On the basis of this information, the staff makes recommendations to the commander. When a decision is made, the staff members assist in translating the decision into orders and in supervising their execution.

b. The battalion staff is a closely knit team. The successful functioning of this team is primarily dependent upon close coordination among its members and between the staff and units of the battalion. This coordination also involves teamwork with the staffs of higher, adjacent, and lower units. Coordination is developed through understanding, training, and practice. Prompt dissemination of all pertinent information, decisions, and orders promotes the efficiency and teamwork of the battalion. Conferences and personal contact promote coordination and cooperation. There is some overlapping of duties in the battalion staff sections, and only by coordination and cooperation will contradictions and duplication of effort be avoided. It is essential that staff officers know the duties and responsibilities of other members of the staff in order to promote better understanding and cooperation so that they may take over

such duties in case of emergency. The staff sections should be organized to operate continuously on a 24-hour basis. During quiet periods, a duty roster system may be used for the staff.

c. The staff officer organizes and trains his assistants to function in his absence. Before leaving the command post, the staff officer acquaints himself with the general situation, announces his destination and probable hour of return, and determines what assistance he may give to other staff officers.

d. The staff cultivates friendly relationships with the commanders of lower and attached units. A staff officer must remember that he is not the commander but acts only in the commander's name. Commanders of lower and attached units are consulted to determine their capabilities, needs, and problems. Staff officers visit lower units to get firsthand knowledge of the tactical situation and administrative conditions. Commanders or their respresentatives are contacted personally as the first and last steps of each visit. When conditions are observed that are known to be contrary to announced policies, they are called to the attention of the appropriate commander. Details which do not require a command decision may be settled with the unit commander at the time of the visit. Simple reports of facts are made to the battalion commander following such staff visits.

e. The functions of staff officers of battalion-size armor units are as outlined for staffs of small units in FM 101–5. The specific duties of these staff officers are discussed in paragraphs 77 through 89.

77. Battalion Executive Officer

The executive officer is the principal assistant and advisor to the battalion commander. He coordinates and supervises the details of operations and administration, thereby enabling the commander to devote himself to the broader aspects of command. The primary function of the executive officer is to direct and coordinate the battalion itself. He is responsible that the staff is organized and working as a team to provide maximum assistance to the commander and the battalion as a whole. He sees that required reports are forwarded at the proper time, and that plans for the future are prepared. He insures that instructions issued to the command reflect the policies and plans of the commander. He supervises all liaison activities and liaison personnel. He keeps in close touch with the situation. During the temporary absence of the commander, the executive officer represents him and directs actions so that they reflect the policies of the commander. The executive officer is normally located at the battalion command post. He is prepared to assume command at any time.

78. Battalion Adjutant (S1)

The adjutant performs in general the functions of the personnel officer of the general staff type organization, the functions of the secretary of the general staff, the functions of the commander's personal staff, and the personnel functions of those special staff officers who are not present in the battalion staff, such as the adjutant general, inspector general, staff judge advocate, provost marshal, public information officer, and special services officer. He is responsible for staff supervision of the following activities:

a. Personnel management activities pertaining to—

(1) Classification, to include the awarding and changing of MOS, promotion, and demotion.

(2) Assignment, to include reassignment, transfer, replacement processing, and reporting and requisitioning of personnel.

(3) Reenlistment.

(4) Separation, to include discharge, relief from active duty, retirement, and transfer to the Army Reserve.

(5) Personnel services to include leaves of absence, awards, and decorations.

(6) Records required to perform personnel management functions including all personnel records.

(7) Educational development of individuals.

b. Maintenance of records on military justice procedures and assistance in the review of courts-martial proceedings from an administrative viewpoint.

c. Military pay matters.

d. Preparation and processing of reports on casualties and prisoners of war.

e. Maintenance of strength and other personnel statistics.

f. Administration and personnel management of civilian employees operating with the battalion or in the battalion area.

g. Operation of the headquarters communication control, distribution centers, and messenger service.

h. Operation of the postal service for the battalion.

i. Distribution, safeguarding, and accounting for classified correspondence.

j. Publication, authentication, and distribution of all orders and instructions except combat orders.

k. Maintenance of the office of record for the headquarters and supervision of records administration throughout the battalion.

l. Reproduction service for the headquarters.

m. Obtaining replacements and arranging for their reception, processing, assignment, and quartering.

n. Movement and internal arrangement of the command post and

establishment of a standing operating procedure to guide its operation.

o. Plans for shelter and quartering areas.

p. Reception of distinguished visitors in the battalion.

q. Civil affairs and military government.

r. Recovery and disposition of the dead.

s. Sanitation standards in coordination with the surgeon.

t. Coordination of recreation for battalion personnel and evaluation of morale. General supervision over the chaplain and maintenance of contact with welfare agencies.

u. Arrangements for the collection and evacuation of prisoners of war in coordination with the battalion S2 and S4.

v. Maintenance of the unit journal.

w. Miscellaneous administrative matters not specifically assigned to another staff section.

In personnel matters, he is assisted by the battalion personnel officer (see par. 110 for duties), who is in charge of the personnel technicians in the battalion.

79. Battalion Intelligence Officer (S2)

The battalion intelligence officer has duties similar to those outlined in FM 101–5 for the G2. He has staff responsibility for planning, coordinating, and supervising intelligence activities within the battalion. It is his duty to keep the commander, staff, subordinate units, and all other interested agencies fully informed of the enemy situation and capabilities, and terrain and weather. Among his duties, he—

a. Supervises and trains the battalion headquarters intelligence section.

b. In conjunction with S3, plans and supervises intelligence and counterintelligence training for all personnel of the battalion.

c. Plans and supervises troop counterintelligence measures within the battalion.

d. Prepares and presents the intelligence estimate.

e. Prepares the intelligence plan, to include the collection plan and orders and requests to collecting agencies, and coordinates subordinate collecting agencies (coordinating with S3).

f. Records all pertinent enemy information on the situation map and work sheet, and in the intelligence files.

g. Evaluates and interprets enemy information, and disseminates intelligence information to his commander, the staff, and higher, lower, and adjacent units.

h. Examines captured enemy personnel, including civilians (hostile or friendly) who may possess information of immediate tactical value. Examines captured documents and materiel if of immediate

tactical value, and expedites the sending of captured materiel, documents, and personnel to higher headquarters.

i. Requests and supervises distribution of maps, aerial photos, photointerpretation reports, defense overprints, annotated aerial photos, and photomaps for the battalion.

j. Recommends intelligence liaison, and promotes the exchange of information and intelligence with higher and adjacent units.

80. Battalion Operations Officer (S3)

The battalion operations officer has duties similar to those outlined in FM 101–5 for the G3. He is charged with staff responsibility for matters pertaining to organization, training, and combat operations. In the combined battalion operations-intelligence section, the S2 and S3 work as a team, with each being qualified and prepared to take full charge of both activities during the absence of the other.

a. Among his *organization* duties, the operations officer—

(1) Recommends assignment and attachment of units based upon the requirements of the battalion mission (to include task organization for movement, training, and combat).

(2) Studies and indicates priorities for personnel and equipment in coordination with S1 and S4.

(3) Makes a continuous study of organizations in the battalion; prepares and recommends changes to tables of organization and equipment.

b. Among his specific *training* duties, the operations officer—

(1) Prepares training directives, programs, orders, field exercises, and maneuvers, based on plans approved by the battalion commander; plans and supervises all training for personnel of the battalion.

(2) Selects training areas and ranges, and allocates training aids and other training equipment.

(3) Organizes and conducts schools within the battalion. Based upon the commander's directives, he prepares the program of instruction, selects and trains instructors, and assists in selection of units or personnel to attend schools.

(4) Makes training inspections, and prepares and supervises training tests based on Army training tests.

(5) Prepares training records and reports.

(6) Coordinates troop information activities.

(7) Trains personnel of the operations section to perform assigned duties.

c. In his *operations* duties, he—

(1) Informs his commander and other staff sections of the tactical situation and is prepared to make recommendations to the commander on actions to be taken by the battalion.

(2) Studies the situation as affected by the enemy situation, orders from higher headquarters, actions of adjacent and supporting units, and location and capabilities of the battalion's troops. He also studies the effects of casualties and replacements, terrain and weather, and the status of supply and equipment, as they apply to the battalion mission.

(3) Maintains up-to-date information on battalion and friendly units in order to keep the commander informed, and to aid in the preparation of reports; supervises the posting of friendly and enemy information on the situation map.

(4) Recommends the general location of bivouac and assembly areas and attack positions.

(5) Coordinates and plans reconnaissance measures within the battalion. He also plans security measures to be used by the battalion on marches and at halts, in assembly areas, at administrative and command installations, and when engaged with the enemy (coordinating with S2).

(6) Plans troop movements, to include units involved, formation, and type of transportation required (coordinating use of transportation with S4). He prepares the march order after the plan of movement is approved.

(7) Recommends the tactical employment of units. Recommendations are made after a study of the factors of METT (mission, enemy, terrain and weather, and troops available) and after conference with other staff officers and unit commanders.

(8) Has staff responsibility for fire-support coordination and insures coordination of the available means of fire support with the commander's scheme of maneuver.

(9) Recommends tactical and counterintelligence measures to attain secrecy and effect surprise (coordinating with S2).

(10) Coordinates with the communication officer in the preparation of the signal communication plan in order to maintain communication between the battalion commander, battalion headquarters, and units of the battalion.

(11) Recommends the general location of command posts according to the operation plan.

(12) Prepares the battalion operation order for the commander's approval. Some material for inclusion in the order is obtained from other staff officers (S1, S2, S4, and communication officer). After approval by the battalion commander, the operations officer publishes, authenticates, and distributes the order, and assists in supervising its execution. Even though the commander habitually issues the operation order verbally, a complete order, often in pencil form only,

should be written and kept in the unit file for record purposes. Frequently this is done during lulls in combat after the action involved has been completed.

(13) Transmits the commander's orders and instructions to units of the battalion; helps unit commanders by interpreting orders and instructions from higher headquarters, if necessary.

(14) Prepares for future operations, guided by information obtained from the commander and S2 and by knowledge of the present situation of the battalion.

(15) Prepares operational and after-action reports, and recommends training to correct combat deficiencies.

81. Battalion S3 Air

The battalion S3 air assists the battalion operations officer in matters pertaining to Army or Air Force air-support and fire-support coordination. His specific duties include submission of requests for tactical air support, to include air strikes and visual and photo reconnaissance.

82. Battalion Logistics Officer (S4)

a. The battalion logistics officer has duties similar to those outlined in FM 101–5 for the G4. He has staff responsibility for all logistical functions within the battalion. He plans, coordinates, and supervises those functions pertaining to supply, maintenance, evacuation of personnel casualties, and transportation within the battalion. He coordinates logistical matters with the division G4 and elements of the division trains as appropriate, or with the logistics officer of the unit to which attached. He keeps informed of the location of logistical installations which support the battalion. He is responsible for preparing the logistical plan of the battalion. He bases this plan on—

(1) The decision of the battalion commander.

(2) The mission and the tactical situation.

(3) The logistical situation, including a detailed knowledge of the status of supply, evacuation, maintenance, and transportation.

(4) Terrain over which the battalion will move, including roads and trails in the area of operations.

(5) Administrative orders and instructions from higher headquarters.

b. For specific duties of the battalion logistics officer, see FM 17–50.

c. The battalion support platoon leader, the transportation section commander, and the supply section commander are specifically designated to assist the S4 in the accomplishment of his mission.

83. Battalion Communications Officer

The battalion communication officer is a staff officer and commands the battalion communication platoon. His duties are generally the same as those outlined in FM 101–5 for the signal officer. His actions are based upon the policies of his commander and the existing standing operating procedure (SOP), signal operation instructions (SOI), and standing signal instructions (SSI). He keeps himself fully informed of present and contemplated activities of his unit. For his specific duties, see FM 17–70.

84. Battalion Maintenance Officer

The battalion maintenance officer is a staff officer and commands the battalion maintenance platoon. He also supervises and coordinates the maintenance activities in the battalion. His duties are outlined in FM 17–50.

85. Battalion Surgeon

The battalion surgeon is a staff officer and commands the medical section. He advises the commander and staff in matters pertaining to health of the command. He exercises technical supervision over medical training in the battalion, including training in first aid, sanitation, and hygiene. He coordinates with S4 on evacuation, sanitation, and the location of the battalion aid station. He plans and supervises all battalion medical service. For his specific duties, see FM 17–50.

86. Battalion Chaplain

The battalion chaplain's duties are as outlined in FM 101–5 for the chaplain. He is charged with the spiritual and moral guidance of personnel of the battalion. See FM 16–5.

87. Commander Headquarters Company

The headquarters company commander, in addition to his other duties, may serve as headquarters commandant for the command post. He is responsible for the organization, security, and movement of the command post in coordination with the battalion S2, S3, and communication officer, and under supervision of the battalion executive officer.

88. Battalion Liaison Officers

a. General. Effectiveness of liaison is directly proportional to the efficiency of the liaison officer. He must be alert, tactful, energetic, and possessed of a thorough practical knowledge of the employment and capabilities of his battalion. The liaison officer must understand

the staff procedure of higher units and the tactics and techniques of all arms. He must be provided with a radio-equipped vehicle and one or more enlisted assistants who can serve as radio operators or messengers.

b. Missions. A battalion liaison officer has four basic missions:

(1) To keep his own unit commander constantly informed of the tactical situation and the plans of the unit to which he is sent.

(2) To advise the commander of the unit to which he is sent of the plans and tactical situation of his own unit.

(3) To serve as an advisor concerning the employment of his battalion.

(4) To transmit orders and instructions from higher units to his own unit and from the battalion commander to subordinate units.

c. Duties.

(1) Before departing from his own headquarters, a liaison officer familiarizes himself with the situation and missions of his own unit, of adjacent units, and of the unit to which he is going. He contacts each major staff officer to determine any requirements of that staff officer in connection with the performance of his liaison mission. Lastly, he reports to the executive officer to be briefed on any additional reports and to be given a definite mission. He obtains proper credentials, if needed, from the executive officer. Prior planning and training of the enlisted men assigned to a liaison team should ensure that assigned transportation and communication equipment of the team is ready for employment on short notice.

(2) Upon arrival at the headquarters to which he is sent, a liaison officer reports promptly to the commander or his representative, states his mission, performs such briefing as is required, and offers such assistance as is desired. He next becomes familiar with the situation of the visited unit, obtains information pertinent to his mission by contact with each major staff section within the visited headquarters, and reports pertinent facts from his parent unit to each staff section.

(3) A liaison officer promotes cooperation and carries out his mission without interfering with the operations of the visited headquarters. Upon completion of his mission, or at selected intervals, he reports his departure to the visited unit commander or his representative and returns to his parent unit. Upon arrival at his parent unit, he promptly reports to his

own commander. Thus a continual interchange of information is accomplished.

89. Attached or Supporting Unit Liaison Officers

a. Artillery Liaison Officer. A supporting artillery battalion sends a liaison officer to a supported battalion-size armor unit. This officer is the fire support coordinator for the supported battalion. The liaison officer stays with the supported unit commander, keeps his parent unit constantly informed of the plans of the supported unit, and gives general supervision to the artillery forward observers with the supported unit.

b. Army Aviation Officer. The Army aviation officer is the advisor to the commander on the employment of Army aircraft. He is provided by the division aviation company when Army aircraft are supporting or attached to the battalion. The Army aviation officer will be prepared to assist the commander and staff by—

(1) Preparing, coordinating, and supervising plans for employing Army aviation personnel and Army aircraft.
(2) Acting as a coordinating agent to insure rapid procurement and distribution of aircraft supplies, parts, and equipment.
(3) Supervising and coordinating the selection, preparation, operation, and improvement of landing fields.

c. Forward Air Controller. A forward air controller may be provided to the battalion to assist in the employment of tactical air support. He—

(1) Aids and advises the battalion commander on matters pertaining to employment of tactical air.
(2) Controls the air strikes which are flown for the battalion.
(3) Maintains liaison with the artillery liaison officer to exchange information from both ground and air observation and to assist in rapid engagement of targets of opportunity.

d. Commanders of Attached or Supporting Engineer and Service Units. Commanders of attached or supporting engineer and service support units, or their liaison representatives, advise the commander and staff on the employment of their units. Commanders of attached or supporting units have the following specific duties—

(1) They submit plans and recommendations for the employment of their units, based on the battalion's mission.
(2) They coordinate their activities with battalion agencies and with those of larger, adjacent, and smaller units.

Section IV. COMBAT INTELLIGENCE

90. General

Combat intelligence is defined as intelligence for use in a combat area, whether based upon information collected locally or provided

by higher headquarters. An armor commander utilizes the three elements of combat intelligence—information of the terrain, weather, and enemy—in the execution of any combat mission. Of these three elements, information of the enemy situation is normally the most critical intelligence requirement because this information is so hard to obtain. The S2 must insure that routine intelligence production activities are accomplished in order of urgency to insure that the commander is provided with answers to his intelligence questions in time for them to be of use. Small armor units constitute a major source of combat information. The S3 must support the intelligence effort by understanding and accepting conclusions concerning the effects of the weather, the terrain, and the enemy situation on the operational plan. At small armor unit level, information concerning the enemy is usually difficult to obtain prior to combat. Therefore, it is essential that an effective collection effort be made to establish the existing enemy situation. This permits the commander to develop plans for accomplishing the mission which are influenced by weather and terrain and designed to exploit known enemy weaknesses. The actions of the unit generate combat information for its own use and for use of higher headquarters in the production of combat intelligence. Detailed information pertaining to combat intelligence is contained in FM 30–5 and FM 30–7.

Section V. COMMANDER'S ESTIMATE OF THE SITUATION

91. General

a. When a mission is assigned to an armor unit commander, a positive course of action is required. Adoption of the proper course of action is the result of a sound decision, and a sound decision is the result of an accurate estimate of the situation. A commander's checklist for the estimate of the situation is contained in appendix II.

b. For additional information on the commander's estimate, see FM 101–5.

92. Definition and Use of the Estimate

The estimate of the situation is an examination of all factors which will affect the accomplishment of the mission. The form prescribed for the estimate is designed to facilitate logical reasoning and to insure that all pertinent factors are considered. An estimate may be made hastily or deliberately, depending on the time available. Regardless of how it is made, the prescribed form and sequence should be followed. The estimate is a continuing process. With each change in the situation, the commander must review his estimate and decide either to continue his present course of action or to adopt a new one. The small armor unit commander's estimate almost always is a mental

one, but every estimate should be as thorough as the time available will permit.

93. Steps in the Estimate

a. The first step in the estimate is to thoroughly understand the mission and the intent of the higher commander. These must be kept in mind at all times. If the commander needs additional information to thoroughly understand them, he should immediately get this information from the commander assigning the mission. A personal conference is the best means of obtaining this information.

b. The next step in the process is to consider all the factors affecting the employment of the unit. Concurrently, the commander decides what courses of action are open to him and considers the enemy capabilities which could interfere with the accomplishment of the mission.

c. After considering the enemy capabilities and the courses of action open to him, the commander weighs each of his own courses of action against all of the enemy's possible reactions, and determines the probable effect of each enemy capability on the success of each of his courses of action. At this point, the commander begins to isolate the governing factors of the situation. These factors have an important bearing on the choice of the most suitable course of action.

d. The fourth step is a comparison and evaluation of the commander's own courses. Each course of action open to him is analyzed for advantages and disadvantages in terms of the governing factors defined in the preceding step. He then selects the course which appears most likely to succeed. If two or more courses offer equal prospect of success, he selects the one which favors future action.

e. The final step is the decision, which translates the course of action selected into a concise statement of what the unit will do, including answers to the questions what, when, where, how, and why.

Section VI. COMBAT ORDERS, RECORDS, AND REPORTS

94. General

a. Combat Orders. Combat orders are those pertaining to operations and administration in the field. For small armor units these are normally classified as operation orders, administrative orders, and standing operating procedures.

b. Reports. The effective supervision, direction, and control of an operation depends upon a reporting system that provides the commander with timely and useful information. The type, format, scope, content, and frequency of submission of reports vary with

the mission of the unit. The minimum number of reports which will provide data necessary for the efficient and effective execution of the mission should be required.

c. Records. A system of staff records is essential in order to have information available for the commander and staff, for higher and lower headquarters, and for the unit staff section historical record.

d. References. Additional detailed information covering orders, records, and reports is contained in FM 101–5, FM 17–50, FM 101–1, and FM 30–7.

95. Orders

a. Operation Order, General. An operation order (app. III) is an order, given by a commander, setting forth the situation, the mission, his decision and plan of action, and details about the method of execution which will insure coordinated action by the whole command.

b. Administrative Order. An administrative order is a formal statement of a commander, announcing to elements of the command the plan to provide administrative and logistical support for operations. See FM 17–50.

c. Standing Operating Procedure. A standing operating procedure (SOP) (app. III) 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 commander desires to make routine.

d. Fragmentary Order. A fragmentary order is a combat order issued in sections. Each section of a fragmentary order contains instructions for only the commander or unit concerned. Fragmentary orders are normally used after a particular operation has been initiated. Whenever time permits, the complete combat order is distributed to all subordinate units so that each can have a complete understanding of the part that it is to play in the operation. Fragmentary orders are concise, but not at the expense of clarity or essential information. They should follow the same sequence as the complete order. Fragmentary orders are supplemented as soon as possible by additional instructions made known as conferences, by additional messages, or by the issuance of a complete order.

e. Warning Order. A warning order is an order which gives preliminary notice of an order or action which is to follow. The purpose of a warning order is to give the operating elements of a command advance notice or warning of a contemplated operation or movement. Warning orders may be issued at all levels of command. Usually, they are issued as brief oral or written messages. They precede more detailed orders. Warning orders are issued whenever time can be saved or energy can be conserved through their use.

Instructions and information contained in a warning order are always repeated in the detailed order which follows.

f. March Order. A march order (app. III) is an operation order issued for movement of personnel and prescribed equipment from one location to another within a stated period of time.

g. Overlay-Type Operation Order. In an overlay-type order, both the written portion of the order and the portion portrayed graphically are placed on the overlay (app. III). In an operation order accompanied by an overlay, the written portion is shown on separate paper and the overlay is attached as an annex to this written portion. The written portion is usually shorter in the overlay-type order. Armor units favor the overlay-type order.

h. Written Operation Orders. Written operation orders, with or without overlays, are seldom employed below combat command.

i. Oral Operation Orders. Oral orders (app. III) are habitually used at platoon, company, and battalion level. The battalion commander may issue his order orally and distribute an overlay or an overlay-type operation order at the same time. This lessens the possibility of misunderstanding and reduces the necessity for detailed note-taking by subordinate commanders. In any event, the S3 should make a copy of the order for record purposes. Oral orders may vary in completeness from a detailed and complete dictated order to a simple fragmentary order of a few sentences. In oral orders, the format of the body of a complete written order should be followed as closely as possible.

96. Mission-Type Operation Orders

Depending upon the situation, operation orders may be extensively detailed or very brief. Proper application of armor's characteristics results in combat operations which are characterized by rapidity of movement and violence of execution. The continuation of such operations is facilitated by the use of mission-type orders. Mission-type orders state the mission clearly but give the recipient maximum latitude in their execution. Their use encourages initiative by subordinate commanders. They require minimum time for issuance and dissemination.

97. Reports

a. General. Armor unit standing operating procedures should prescribe certain operational occurrences which become the subject of an immediate report to higher headquarters. Examples of such occurrences are crossing the line of departure, seizing an objective, or closing into a new assembly area. These reports are submitted by the fastest means, usually by radio, and follow no particular format. Other operational reports common to armor operations lend them-

selves to the use of a standard format for brevity and clarity. All reports should be held to the minimum necessary for the accomplishment of the mission.

b. Spot Reports. A spot report (app. III) is an abbreviated intelligence report employed within small armor units. The use of the prescribed format will result in a brief message containing all the essential information.

c. Shelling Reports (SHELREP). When a unit receives enemy artillery fire, it immediately submits a shelling report (app. III) to the next higher headquarters. This information is placed in artillery channels at the first opportunity. This information is used by both the supporting artillery and the unit S2 in determining hostile artillery firing positions, and to assist in bringing effective counterfire on the hostile artillery.

d. Situation Reports. The detailed situation report is an operational report of the intelligence, operational, and administrative activities of the command for a specified period. When prepared, this report normally covers a period of 24 hours. This report may or may not be required by higher headquarters. However, it constitutes an excellent historical record of the unit's activities and, time and personnel permitting, should be prepared and retained in the journal file even though not required by higher headquarters.

e. Abbreviated Situation Reports (SITREP). A situation report is an operational report, normally required by higher headquarters. Time and frequency of submission of unit situation reports is included in the higher headquarters SOP. This report is an abbreviated adaptation of the situation report, suitable for transmission by electrical means. This report should accurately reflect the overall tactical situation and disposition of the reporting unit at the time the report is submitted.

f. Command Reports. The command report (SR 525–45–1) is required for each separate company, battalion, and larger unit while in an active theater of operations. This report is required on the last day of each month, and will cover the activities of the unit for that month.

g. Minefield Records and Reports. The commander of troops installing a minefield is responsible for reports of intention, initiation, and completion, and for preparing and submitting the minefield record to the commander authorizing installation of the minefield. Records of protective minefields must be made but need not be forwarded unless specifically directed. For additional details see FM 20–32.

h. Intelligence Summary (ISUM). The intelligence summary is a compilation of important items of intelligence, information, or both, obtained during a specified period of time. The period covered by the intelligence summary and the time at which it is to be submitted

are prescribed in the SOP of the next higher headquarters. In practice, it is normally prepared by units down to and including battalion. See FM 30–5 and FM 30–7.

i. Combat Vehicle Status Report. The combat vehicle status report (although submitted at G4), is also of operational or tactical significance. The report indicates, by a series of code letters, the status of combat vehicles in the unit. It indicates those vehicles which are combat serviceable, those which are deadlined but will be serviceable within 24 hours, those which will require more than 24 hours to repair or which have been evacuated, and those lost due to enemy action. This report is submitted daily by unit S4's to higher headquarters as prescribed in the higher unit SOP. See FM 17–50.

j. Personnel Daily Summary Report. The personnel daily summary report is the means used to convey the latest personnel information resulting from the unit's action during the period covered. Completion of a personnel daily summary work sheet facilitates compilation of information included in the report. The personnel summary report submitted to higher headquarters should include organic units which are with the organization and nonorganic units attached at the time of report, but should *not* include organic units detached at the time of report. The fastest means available, normally radio or teletype, should be used in submitting the report at the time prescribed by the unit SOP. Occasionally it may be necessary for a mounted messenger to deliver the report. Battalions furnish information copies of the report to the combat command and to parent headquarters of attached units which are included in the report.

98. Unit Operational Records

Small armor units maintain the minimum number of unit operational records necessary to insure efficient staff operations and historical data.

a. Unit Journal and Journal File. The unit journal is the official chronological record of events affecting the unit. The journal file contains the permanent copies of orders issued or received and other material required to substantiate the unit journal. The amount of detail recorded in the unit journal shall be the minimum necessary to fix the time or other facts concerning important events. Sometimes the situation will make it impossible to keep the journal completely current. When this occurs, copies of all messages and instructions received and dispatched are retained in chronological order and entered in the journal during halts or lulls in the action. Journals are mandatory at battalion level but are not normally maintained below battalion level.

b. Staff Work Sheets. A staff section work sheet is an indexed collection of information obtained from written or oral orders, messages,

journal entries, and conferences with the commander or other staff officers. It may also include information developed by the staff officer's own conclusions, opinions, ideas, or inspections. The work sheet assists the staff officer in the preparation of estimates, plans, orders, and reports.

c. Reference. For additional information pertaining to format, content, and scope of operational records, see FM 101–5.

Section VII. LOGISTICS

99. General

The tactical success of an armor unit is dependent upon adequate, timely, and continuous logistical support—supply, evacuation, transportation, and maintenance.

100. Principles and Techniques

a. The principles of logistics are—

(1) Logistics is a function of command.
(2) The impetus of logistics is from rear to front.
(3) Advance planning is essential.
(4) Reserve of supplies are maintained at all echelons.

b. For detailed information pertaining to the logistical techniques and procedures appropriate to armor operations, see FM 17–50.

Section VIII. ADMINISTRATION

101. General

a. The application of sound principles of personnel management is essential to the efficient operation of the battalion. By careful selection of individuals to fill positions in the battalion, the commander can reduce the amount of time necessary for the supervision of administrative matters, allowing himself more time for the supervision of combat operations.

b. The battalion adjutant must keep the commander informed concerning the personnel policies of higher headquarters. He must advise the commander in the formulation of all battalion policies which affect personnel, and must keep the commander informed of the effect of such policies on individual and team proficiency, morale, discipline, and esprit de corps within the battalion.

c. The battalion adjutant, by applying the principle of centralized functions, can relieve the company commanders of most of their administrative and personnel duties. The personnel section is the proper agency to perform these functions. The company commanders, if relieved of these administrative details, can devote a greater amount of time to the training and tactical employment of their units.

102. Strength Records and Reports

a. The records which the adjutant keeps, and the reports which he makes, contain much of the information that he uses in making his estimate of the personnel situation. The personnel daily summary report contains data pertaining to assigned and actual strength, personnel casualties, other losses, personnel gains, and prisoners of war. A close study of this report enables the adjutant to make an estimate of the losses to be expected in a coming operation. This is especially true after the battalion has been in varied combat situations. The adjutant makes use of the report to keep his commander informed of the present personnel strength and the strength the battalion may expect to have in future operations.

b. The most comprehensive report on the personnel situation is the periodic personnel report. This report normally is submitted at division level; however, the battalion may be required to furnish information which cannot be obtained from the division staff or from records in division headquarters. This report contains a brief statement of the status of all personnel activities which the adjutant supervises.

c. From time to time, higher headquarters calls for personnel reports in addition to those considered as being routine. For example, the battalion may be required to report on the results of a survey for particular specialists or for personnel having certain physical qualifications.

d. For additional details on the preparation, form, and content of routine records and reports, see FM 101–1 and FM 101–5.

103. Replacements

a. The battalion adjutant submits timely personnel requisitions, keeps the commander informed of the action taken to fill the requisitions and of the quality of replacements received, advises him of critical shortages, and recommends action to be taken to meet shortages. The adjutant must be sure that replacements are received and are integrated into the battalion in an orderly manner. The replacement can best be oriented and integrated into his assignment when the battalion is not actively engaged in combat operations or while it is rehabilitating. The adjutant must keep informed of the availability, quality, and morale of replacement personnel. He does this by visits to higher and lower headquarters, and by careful studies of forecasts and directives on replacements.

b. Detailed information pertaining to replacements is contained in FM 101–1.

104. Discipline and Law and Order

a. Since discipline is the mental attitude and state of training which renders obedience and proper conduct instinctive under all conditions, it is evident that training within the unit must be pointed toward the development of moral responsibility within each individual. When such training is adequate and effective, problems of law and order diminish. Preventive measures are much more effective than corrective actions. By exercising sound leadership, and by insuring that his commanders and staff do likewise, the unit commander builds good discipline. Good discipline forestalls many problems of law and order.

b. All members of the battalion staff must be alert to the status of discipline within the command. However, the adjutant must acquaint himself with the factors affecting discipline, must keep the commander informed, and must be prepared to make recommendations concerning discipline. He must keep close personal contact with, and maintain the confidence of, members of the command. He must not depend upon records and reports alone.

c. The battalion commander exercises summary and special court-martial jurisdiction. The battalion adjutant can do much to keep the court-martial system operating efficiently—mainly by insuring the appointment of courts-martial for prompt disposition of cases occurring within the unit, and by efficient administrative processing of charges and proceedings.

d. The battalion adjutant maintains statistics on all absences-without-leave, stragglers, rewards and punishments, court-martial actions, and other matters reflecting the status of discipline and law and order within the command. He maintains records to insure that corrective action is taken when required.

e. The battalion adjutant coordinates, with the provost marshal concerned, for the return of stragglers to organizations.

f. Additional information covering discipline and law and order is contained in FM 101–1 and FM 19–90.

105. Enemy Prisoners of War

a. The adjutant prepares, and supervises the execution of, plans for the collection and evacuation of enemy prisoners of war. He must be careful to insure that these plans conform to the directives of higher headquarters, and that they are sufficiently comprehensive. He coordinates with S2 for estimates on prisoners anticipated and facilities for any interrogation desired, and with S3 for necessary guards for prisoners while they are being evacuated. He coordinates with S4 for transportation to evacuate enemy prisoners of war and with the battalion surgeon for evacuation of wounded enemy prisoners of war.

b. Additional information covering enemy prisoners of war is contained in FM 101–1 and FM 19–40.

106. Morale

Morale is the barometer which indicates how well the individuals of the command adjust themselves to their immediate situation. The status of morale is of primary concern to commanders. It is based on good leadership and constant hard work to achieve efficiency. The adjutant should keep the commander informed about the effect of policies on morale within the unit. Certain activities for which the battalion adjutant is responsible and which build morale are—

a. Coordinating and scheduling recreational activities within the battalion.

b. Handling quotas allocated by higher headquarters to rest camps, rest areas, and leave centers.

c. Supervising the processing and administration involved in recommendations for, and presentation of, awards and decorations. This is a particularly important morale factor. Awards and decorations should be presented as soon as possible after the action involved. They should be presented in suitable ceremonies and by higher commanders commensurate with the rank of the award or decoration.

d. Constantly checking on the efficiency with which mail clerks operate, with a view to keeping mail service effective.

e. Keeping the chaplain abreast of tactical and other situations which will affect his plans, and lending nonprofessional assistance to the chaplain.

f. Insuring the timely payment of troops, by appointment of Class A agent finance officers and supervision of the preparation of payrolls.

g. Supervising the activities of the personnel officer and procuring the services of the American Red Cross field director, to ensure that the troops receive advice and assistance in connection with their personal affairs.

h. Implementation of a workable Army education program.

i. Periodic dissemination of information concerning the unit history and traditions.

107. Personnel Procedures

The battalion adjutant insures good personnel management by—

a. Supervising the assignment of personnel in accordance with the classification system and the needs of the battalion.

b. Insuring the timely reclassification of enlisted personnel in accordance with established procedures.

c. Supervising the administrative processing of reclassification papers on officers.

d. Making recommendations for reassignments which will keep units properly provided with key personnel and which will present opportunities to deserving individuals.

e. Supervising the administrative processing and followup of recommendations for promotion.

f. Putting into effect higher headquarters' policies and procedures on rotation, redeployment, and demobilization.

108. Recovery and Disposition of Remains

Recovery and disposition of the dead (formerly graves registration) are command responsibilities. The recovery and disposition platoon of the division quartermaster batallion is the operating agency for recovery and disposition service. Detailed instructions regarding the functions and operations of recovery and disposition are contained in higher units' SOP's, AR 643–55, FM 10–63, and FM 17–50.

109. Civil Affairs and Military Government

The adjutant coordinates the activities of any civil affairs or military government teams attached to or operating with the battalion. In the event no such teams are available, the adjutant normally performs their functions. In either case, the adjutant must be thoroughly familiar with policies and directives of higher headquarters concerning military government operations. The primary mission of military government during combat is to assist military operations by providing civilian labor, local supplies, buildings, public utilities, and control of refugees. In connection with military government, the adjutant must coordinate with S3 on security measures and on use of troops.

110. Duties of the Battalion Personnel Officer

a. The battalion personnel officer is assigned to the administrative section, battalion headquarters platoon, and is designated as assistant adjutant.

b. He is charged, under the supervision of the adjutant, with the preparation, maintenance, and safekeeping of all records, documents, correspondence, and statistics of a personnel and administrative nature, except those required to be kept in the battalion or company command post to insure efficient operation. He directs and supervises the activities of the personnel sergeant and the personnel specialists. Specifically he supervises the following personnel functions:

(1) Preparation and maintenance of officer and enlisted qualification records, enlisted service records, and other documents which are part of the personnel records jacket for officer and enlisted personnel.

(2) Classification, reclassification, assignment, and reassignment of enlisted personnel.
(3) Officer and enlisted separation actions.
(4) Enlistment and reenlistment actions.
(5) Enlisted appointment and reduction actions (to and from pay grade E–5 and above).
(6) Initiation of officer and enlisted military pay orders, allotment applications, and travel vouchers, and enlisted family allowance applications.
(7) Verification of monthly officer and enlisted machine records rosters against qualification records and morning reports.
(8) Administrative actions on officer efficiency reports.
(9) Preparation, maintenance, and use of personnel information rosters and inventory charts.
(10) Requisitioning of officer and enlisted personnel for all elements of the unit (when the formal requisitioning system is specified by the major commander) and supervision of the administrative processing of replacements.
(11) Surplus reporting of enlisted personnel.
(12) Preparation of morning reports from data submitted by company commanders and extraction of information for records maintenance and for reporting purposes.
(13) Preparation and verification of casualty reports.
(14) Preparation of strength returns and miscellaneous reports and rosters.
(15) Preparation of personnel *correspondence.*
(16) Publication of special orders and letter orders.
(17) Administrative actions on courts-martial and board reports, reports of investigation and survey, and statements of charges for Government property lost, damaged, or destroyed.
(18) Preparation of courts-martial charge sheets.
(19) Filing of correspondence, records, directives, and reports.
(20) Assumes custody of company funds when the companies go into combat or when, in the opinion of the battalion commander, the funds might be lost.

Section IX. SIGNAL COMMUNICATION

111. General

a. Communication is a function of command. Each armor unit commander is responsible for the establishment, operation, and maintenance, within his capabilities, of the communication system of his command. He must adhere to the following principles in establishing and operating his communication system:

(1) The communication system must be organized to fit the unit task organization. The communication systems of subordi-

nate and supporting elements must be integrated into the unit communication system.

(2) All communication means available to the unit must be used to their maximum extent. This prevents overloading any one means and minimizes the effect of a disruption of one or more means.

b. For detailed information on communication see FM 17–70 and appropriate unit manuals.

112. Communication Means

Radio is the primary means of communication within armor units. Wire, messenger, visual, and sound communication are supplementary means employed extensively under certain circumstances. Instructions for use of these means are contained in SSIs, SOIs, and other pertinent directives.

a. Radio. The flexibility of radio communication affords the unit commander the ability to control and coordinate subordinate elements, yet does not restrict these elements in their ability to move. Radio communication may be adversely affected by enemy jamming, terrain, and weather. Armor leaders habitually operate their own voice radios to insure the direct and personal characteristic of armor command. Five general classes of radios are employed by armor units:

(1) Mounted FM radios. These radios, mounted in vehicles and aircraft, consist of various combinations of components, depending on the communication requirements of the user. These components consist of an auxiliary receiver, a medium-power transceiver with a range of 10 to 15 miles, and a low-power transceiver with a range of 1 mile.

(2) Portable FM radios. These radios are back-packed and have a range of 3 to 5 miles.

(3) Vehicular-mounted AM radios. These radios are long-range voice or CW sets used in communication links to higher headquarters. They have a range of 25 miles on voice and 75 miles on CW.

(4) Vehicular-mounted UHF air-to-ground radios. These are voice operated, with a range to aircraft of 135 miles.

(5) Vehicular-mounted AM radioteletype equipment. This equipment provides radioteletype, CW, or voice communication from battalion to higher headquarters.

b. Wire communication supplements radio and is used whenever practicable. The installation of wire is dependent on the situation and the time available. It is used to the greatest extent in defensive situations and in assembly areas. It is more secure than radio and

therefore should be used in the initial phase of an operation when secrecy is important.

c. Messengers are used to supplement radio and wire. Messenger communication is the most secure and reliable means, but it is slow over long distances.

d. Visual and *sound* means include the use of lights, flags, panels, arm-and-hand signals, pyrotechnics, alarms, shots, and horns. Prearrangement of signals is essential to insure that personnel understand their meaning. Their use is restricted by distance, visibility, security, and the nature of the signal. Messages are necessarily simple. The principal uses of visual communication are for identification of vehicles and units, for alarms, and to a limited extent for brief control signals.

113. Employment of the Battalion Communication Platoon

The battalion communication platoon installs and operates major portions of the battalion communication system and performs organizational maintenance on communication and other electronic equipment. The communication officer advises the company commanders on the employment of their communication personnel. The communication platoon provides the following services:

a. Supervises the operation of the battalion communication system.

b. Installs wire lines to companies, battalion strongpoints, outposts, and staff sections when time and situation permit.

c. Operates, when required, the battalion message center and switchboard, and provides messenger service.

d. Operates panel displays and message pickup facilities.

e. Operates the AM (RTT, CW and voice) medium-power radio equipment at the battalion command post and the battalion trains.

f. Provides facilities for encrypting messages.

g. Provides second-echelon maintenance on battalion communication and other electronic equipment.

114. Liaison

a. Liaison is a command responsibility and is a means of establishing communication. The purpose of liaison is to obtain by personal contact the desired cooperation, coordination, and exchange of information between commanders. Each commander maintains liaison with higher headquarters, supported units, and adjacent units by any means available.

b. Liaison may be accomplished by personal conference between commanders (command liaison) whenever the tactical situation dictates, or by means of a liaison agent or officer who represents the unit commander (par. 88). Usually both methods are employed concurrently. The liaison agent or officer spends most of his time at the

headquarters to which he is sent and maintains communication with his parent unit.

115. Communication Security

The armor unit commander is responsible for the communication security measures employed in his communication system. Communication security includes all measures taken to prevent or delay the enemy from gaining information from friendly communication systems. It is the responsibility of the unit commander to determine the maximum degree of communication security that he can employ consistent with his mission and the reaction time available to the enemy. For a detailed discussion of communication security, see FM 17–70.

116. Maintenance of Communication Equipment

Each unit commander is responsible for necessary maintenance of electronic equipment within his command. He is assisted by the communication officer and personnel from the battalion communication platoon. This platoon supervises first-echelon maintenance, executes second-echelon maintenance, and procures signal repair parts and other electronic repair parts as required.

CHAPTER 4

EMPLOYMENT OF ARMOR EQUIPMENT

Section I. ARMOR WEAPONS, GENERAL

117. General

Armor has a highly mobile integrated weapons system of tremendous firepower, designed primarily to engage in mounted warfare. Successful armor operations are dependent upon maximum utilization of this firepower, properly integrated with the other armor combat characteristics of mobility, shock action, and flexibility. The firepower of small armor units is derived from a multiplicity of organic weapons, including tank guns, machineguns, mortars, rocket launchers, and individual weapons, supported by artillery and atomic weapons.

118. Tank Weapons

a. General. Tank weapons include the main tank gun, the coaxially mounted machinegun, and the cupola- or turret-mounted dual-purpose (ground or air targets) machinegun. The main gun on a tank is a high-velocity, flat-trajectory, turret-mounted weapon. Tanks currently are classified as light-gun tanks, medium-gun tanks, or heavy-gun tanks.

b. Main Tank Gun. The most effective use of the main tank gun is in the direct-fire role, because of the accuracy and rapidity with which targets can be engaged. The main tank gun is capable of indirect fire against targets that cannot be observed through the direct-fire sights. However, it should be employed in this manner only under conditions of reduced visibility, or when the tank cannot be moved to a position from which direct fire can be delivered and there is no artillery available to fire the mission. Tanks should not be used as artillery. A variety of tank gun ammunition permits effective engagement of both *hard* and *soft* targets. Typical hard targets suitable for employment of the main tank gun are armored vehicles, bunkers, and pillboxes. Soft targets are those which can be destroyed by small-arms fire and shell fragments; these targets include troops in the open, unarmored vehicles, and open gun positions. Except for tanks equipped with gun stabilization, the main tank gun habitually will be fired while the tank is halted. Under certain tactical conditions, such as during the assault of an objective, when it is desired

to increase the shock action of the attack, the main tank gun may be fired while moving. However, such fire is inaccurate and can be employed only when a sufficient amount of ammunition is readily available.

c. Tank Machineguns. Each tank is equipped with two machineguns: a caliber .30 mounted coaxially with the main tank gun, and a turret- or cupola-mounted caliber .50 provided for use by the tank commander against ground or aerial targets. The tank machineguns are employed against soft targets, such as troops and thin-skinned vehicles. These weapons provide a great volume of fire and can be rapidly adjusted. The machineguns can be effectively fired from a moving tank and should be used for reconnaissance by fire and the final assault of an objective. A ground tripod mount is provided for the caliber .30 coaxial machinegun.

119. Ammunition

Main tank gun ammunition is classified according to the purpose for which the round is designed—armor-defeating, antipersonnel or antimateriel, and chemical. See FM 17–12.

120. The Tank as a Weapon

The firepower of the tank, and the tremendous physical impact of its mass and speed, make it a weapon with overwhelming shock action and psychological effect. Tanks can be employed to break down wire entanglements as well as to overrun and crush enemy weapons, shallow entrenchments, personnel, and light vehicles. Before an obstacle is rushed, it should first be taken under fire in order to weaken it and to detonate any demolition charges attached to it (fig. 3).

121. Vehicular Weapons

a. Armored Personnel Carriers. The cupola-mounted caliber .50 machinegun of the armored personnel carrier is highly effective against ground and aerial targets. This weapon can and should be used for long-range reconnaissance by fire. When the carrier is properly employed, this weapon can increase the automatic firepower of the unit in almost any tactical situation. Armored vehicles whose purpose is primarily that of administration or support, rather than combat, are also equipped with machineguns. These guns are intended for use against aircraft and for close-in protection.

b. Unarmored Vehicles. Certain unarmored vehicles are equipped with either the caliber .30 or caliber .50 machinegun. These weapons are employed against all appropriate ground and aerial targets.

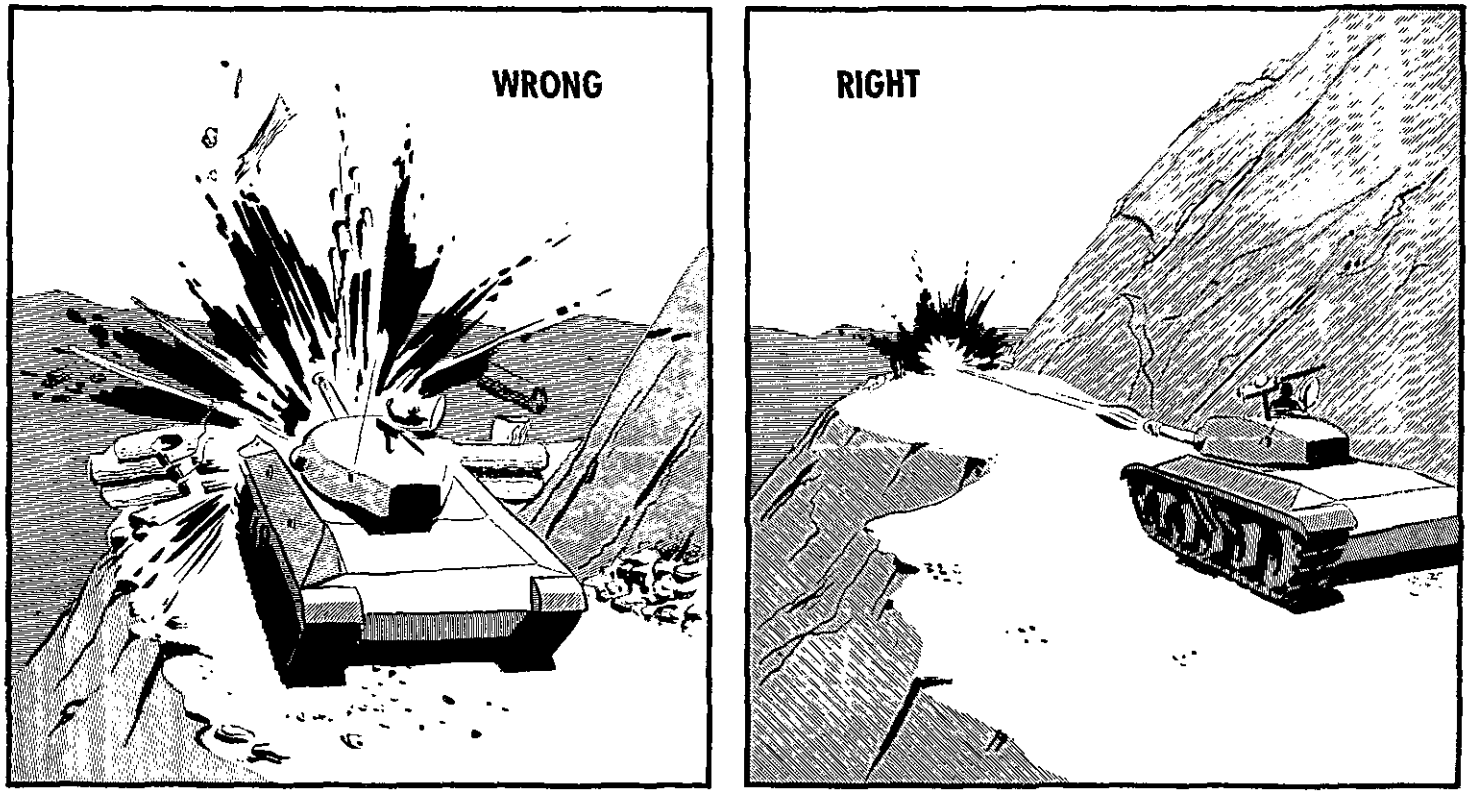


Figure 3. Undefended obstacles will probably be mined. They should not be rammed recklessly. First, HE fire should be used to weaken the obstacle; then a reconnaissance should be made for unexploded mines or demolitions.

122. Crew-Served Weapons

a. Machineguns. Crew-served caliber .30 machineguns are provided to elements of armored infantry and armored cavalry units (with the exception of scout elements in armored cavalry units). These weapons are provided with ground mounts and are not fired from vehicles. Suitable targets for these weapons include personnel, light materiel, and light vehicles.

b. Mortars. Mortars are the primary indirect-fire weapons organic to small armor units. Both the 81-mm and the 4.2-inch mortars can be fired either from their armored mortar carriers or from ground positions. These are high-angle, indirect-fire, close-support weapons used against personnel or unarmored vehicles and for laying smoke.

c. Rocket Launchers. Rocket launchers are provided to armor units for close-in engagement of armored and unarmored vehicles as well as for use against defensive installations and buildings.

d. Individual Weapons. Personnel of armor units are provided with many types of individual weapons. These include pistols, carbines, submachineguns, automatic rifles, and rifles. In addition grenades of all types, and antitank mines, are available. The armor soldier should be proficient in the use and maintenance of several of these weapons, regardless of his primary combat role.

123. Combat Support Weapons and Equipment

a. General. Combat operations of small armor units are supported by a variety of weapons and equipment which are provided and controlled by higher headquarters.

b. Artillery. The most readily available fire support is that provided by the light artillery (105-mm howitzer) which is normally in direct support of, or attached to, the combat command. In addition, the medium (155-mm howitzer) and heavy (8-inch howitzer) artillery units organic to the composite battalion of division artillery are normally employed in a general-support role to augment the fires of the light artillery battalions. In division artillery, the 8-inch howitzer and 762-mm rocket units are capable of delivering tactical atomic weapons. The fires of fire-support agencies organic to the division may frequently be augmented by the fires of corps and/or army artillery units.

c. Air Force. In addition to the fire support available through ground force agencies, armor combat operations may be supported by elements of the Air Force. This support is provided by high-performance tactical aircraft. Weapons of close-support aircraft may include bombs, rockets, and machineguns or cannon.

Section II. TANKS

124. General

a. Role of the Tank. The tank is an offensive weapon possessing tremendous armor-protected firepower and good cross-country mobility. The tank is suited for employment in the penetration or envelopment of hostile defenses. It is particularly well adapted for employment in forces conducting an exploitation of a successful offensive operation or the pursuit of a retreating enemy force. When employed in the defense, the long-range direct-fire capability of the main tank gun provides an effective antitank defense, while the tank machineguns provide a tremendous increase to the infantry automatic weapons employed in close-in defense.

b. Types of Tanks. There are two general types of tanks—combat tanks and special-purpose tanks. A combat tank is further classified as a light-gun tank, a medium-gun tank, or a heavy-gun tank. Depending upon the intended employment of special-purpose tanks, they possess, to a varying degree, the same characteristics as combat tanks. These characteristics include—

(1) Armor protection. The armored hull and turret of a tank protect the crew, weapons, and communication equipment from the effects of small-arms, mortar, and artillery fire and, to a significant degree, from the effects of atomic weapons.

(2) Firepower. Combat tanks possess tremendous firepower in their main guns and machineguns. Special-purpose tanks generally possess less firepower.

(3) Mobility. Tanks have a traction system which enables them to move rapidly over ground which a wheeled vehicle cannot cross. This traction system also allows the tanks to move on roads at sustained speeds which compare favorably with speeds of heavy wheeled vehicles.

(4) Shock action. The shock action of a tank is overwhelming. The combination of tremendous firepower, armor protection, and speed and mobility on virtually any type terrain produces an effect which crushes and demoralizes the enemy.

125. The Light-Gun Tank

The light-gun tank (fig. 4) is the smallest of the tank family and is designed primarily for missions requiring speed and maneuverability. It is lightly armored for protection against small-arms fire and shell fragments. The frontal armor provides protection against light antitank weapons. Its main gun can be successfully employed against lightly armored or unarmored vehicles, ground-mounted crew-served weapons, and personnel. The principal employment of the light-gun tank is in armored cavalry units for performance of reconnaissance

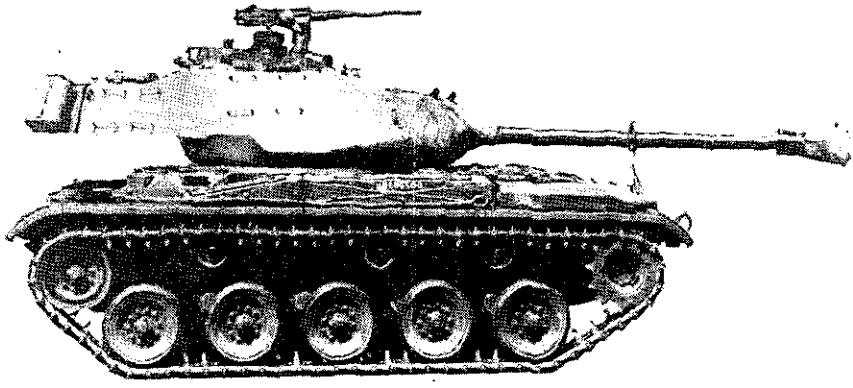


Figure 4. The M41, a light-gun tank. Main armament is a 76-mm gun. A caliber .30 machinegun is coaxially mounted with the main gun, and a caliber .50 machinegun is mounted on the turret.

and security missions. For detailed discussions of the light-gun tank and its weapons system, see TM 9–730, TM 9–7016, and FM 17–80.

126. The Medium-Gun Tank

The medium-gun tank (fig. 5) is the primary combat tank of the armored and infantry divisions and of separate tank units. Although it cannot operate at as fast a speed as the light-gun tank, it does possess good speed both on roads and across country. Its maneuverability, particularly cross-country, is excellent. The tank is provided with armor protection which enables it to operate successfully while being subjected to small-arms and artillery fire of all types, and to withstand the fire of medium antitank weapons delivered against the frontal armor. The medium-gun tank is employed alone or with infantry support to attack, counterattack, exploit, pursue, or defend. For detailed discussion of the medium-gun tank and its weapons system, see TM 9–718B, TM 9–7012, FM 17–78, and FM 17–79.

127. The Heavy-Gun Tank

The heavy-gun tank (fig. 6) is a heavily armored tank which has greater weight and size and is slower than the medium-gun tank. In maneuverability, it compares favorably with the medium-gun tank. The heavy-gun tank is employed to perform the same missions and engage in the same type actions as the medium-gun tank. However, since it has heavier armor protection and a larger main gun, it should be employed in areas where enemy armor is most likely to be located. It is also particularly well adapted for such operations as supporting infantry in river crossings and attacks of fortified areas. For detailed discussion of the heavy-gun tank and its weapons system, see TM 9–7014.

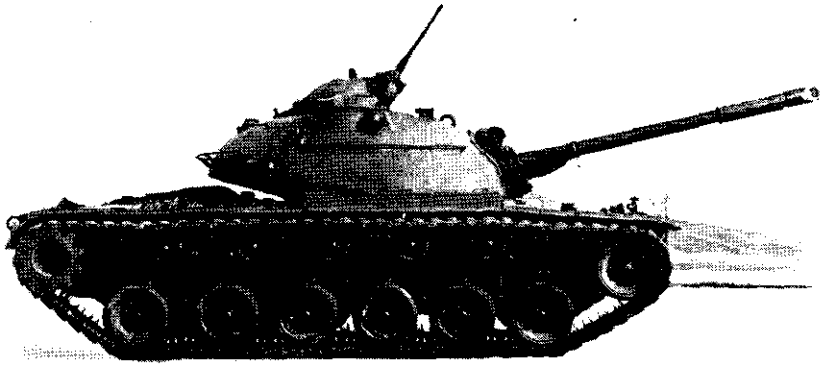


Figure 5. The M48, a medium-gun tank. Main armament is a 90-mm gun. A caliber .30 machinegun is coaxially mounted with the main gun, and a caliber .50 machinegun is mounted in the cupola.

Figure 6. The M103, a heavy-gun tank. Main armament is a 120-mm gun. A caliber .30 machinegun is coaxially mounted with the main gun, and a caliber .50 machinegun is mounted on the turret.

128. Special-Purpose Tanks

a. Flame-Thrower Tank. The flame-thrower tank (fig. 7) is a tank with a flame-throwing device mounted in place of the main gun. Mounting the flame thrower in a tank conceals its identity and enables the tank to be employed with, and under the same conditions as, combat tanks. The flame thrower is a short-range weapon designed for employment against personnel in emplacements who cannot be attacked effectively with other tank weapons. The flame thrower is used to force such personnel into the open where they can be destroyed by other tank weapons. To achieve maximum surprise and effectiveness and to provide security for the flame-thrower tank, it should be accompanied by combat tanks. For detailed discussion of flame-

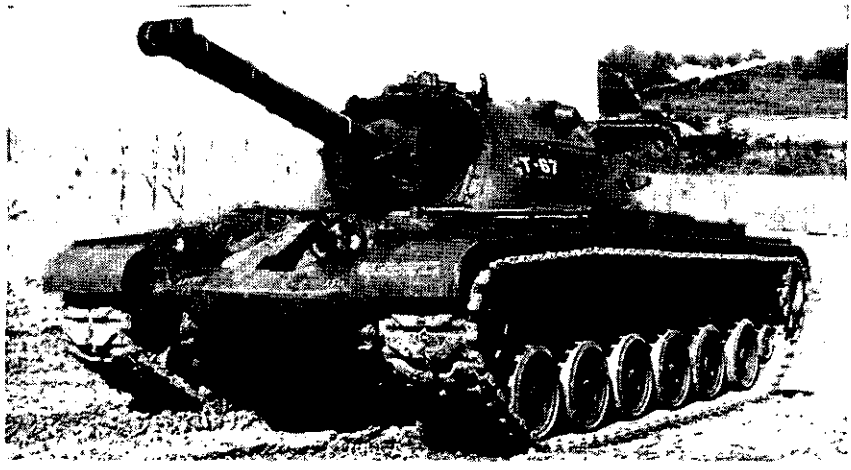


Figure 7. Flame-thrower tank.

thrower tanks, see TM 3–360. Installation of flame-throwing equipment on other types of armored vehicles is under development.

b. Amphibious Tank. The amphibious tank (fig. 8) is a full-track armored vehicle designed to operate on both land and water. An amphibious tank is technically referred to as a landing vehicle, tracked, armored (LVT (A)). The amphibious tank is primarily employed in assault landings on a hostile shore. The requirement for both land and water operation makes the amphibious tank suitable for only limited ground combat operations—it is not sufficiently armored to withstand heavy-caliber fire and does not possess a traction and drive system suitable for sustained land combat. Therefore, amphibious tanks should be replaced by combat tanks as soon as possible after the assault landing. For detailed discussion of amphibious tanks, see TM 9–775 and FM 17–34.

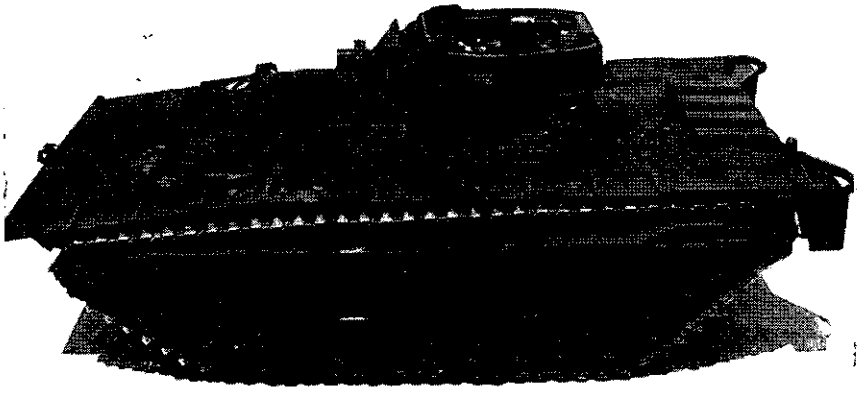


Figure 8. Amphibious tank.

Section III. ARMORED VEHICLES OTHER THAN TANKS

129. General

Armored vehicles are those vehicles other than tanks which are self-propelled, full-track, fully enclosed, and lightly armored. In mobility and maneuverability they are comparable to light-gun tanks. These vehicles provide armor-protected transportation to combat and combat-support personnel, and are the means by which these otherwise unprotected personnel are integrated into the mobile, armor-protected weapons system. Armored vehicles are primarily intended for employment with tanks in mobile combat and, like tanks, have a definite shock action on enemy troops. The vehicle's caliber .50 machinegun, when properly employed, increases the firepower of the unit in either offensive or defensive action.

130. Armored Personnel Carriers

a. General. The armored personnel carrier (fig. 9) is a vehicle of many purposes. Its primary purpose is to provide armor-protected transportation for personnel of armor combat units. However, with minor modifications, it may be used as a command and/or communication vehicle, as an armored ambulance, or for other purposes requiring full-track armored transportation. It can "swim" slow-moving streams or rivers and lakes. For a detailed discussion of the utilization of this swimming characteristic in the employment of this vehicle, see appendix V. The technical nomenclature of this vehicle is carrier, personnel, full track.

b. Use as an Infantry Carrier. This carrier is primarily intended for use by the infantry elements of armor and some infantry units. It is capable of transporting 10 men fully equipped for combat, plus the driver and vehicle commander. This vehicle provides the means by which infantry elements may be moved close to the objective, prepared for dismounted action, without fatigue or casualties from hostile fire.

c. Use as a Utility Vehicle. The armored personnel carrier can also be used as a command post, communication, supply, ambulance, or maintenance vehicle.

131. Armored Mortar Carriers

These carriers (fig. 10) are modified versions of the armored personnel carrier which permit vehicular firing of either the 4.2-inch or 81-mm mortar. These vehicles permit the rapid placement of mortar units and provide armor protection to the mortar crews while they are firing from the vehicle. To fire the mortar mounted in the vehicle, a large hatch in the top is opened; the ramp need not be lowered.

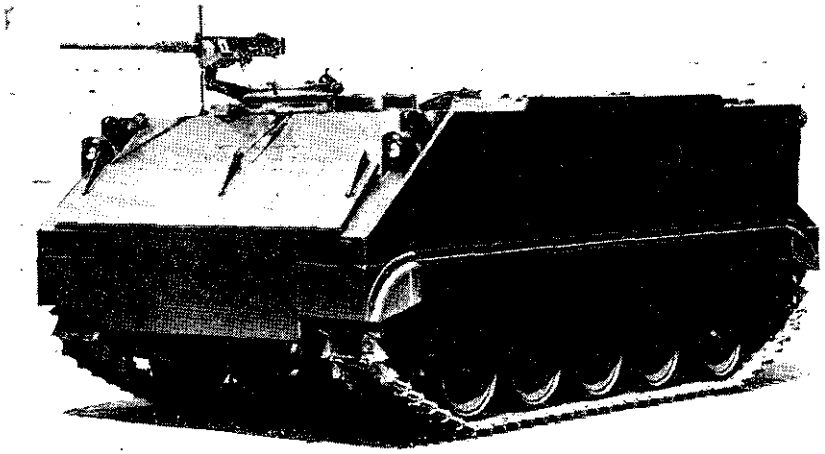


Figure 9. The M59, an armored personnel carrier.

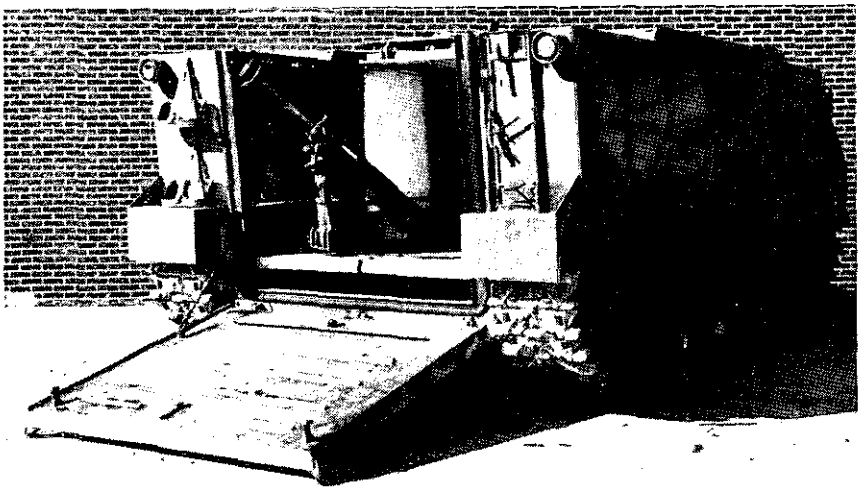


Figure 10. The M84, an armored mortar carrier.

Section IV. ARMORED COMBAT SUPPORT VEHICLES

132. General

Armored combat support vehicles may be either organic to the small armor unit or provided by other combat support units. The general characteristics of these vehicles vary with the purpose for which the vehicle was intended.

133. Tank Recovery Vehicle

The tank recovery vehicle (fig. 11) is designed for employment with units equipped with organic combat tanks and armored vehicles. It possesses the same armor protection and mobility as a medium-gun

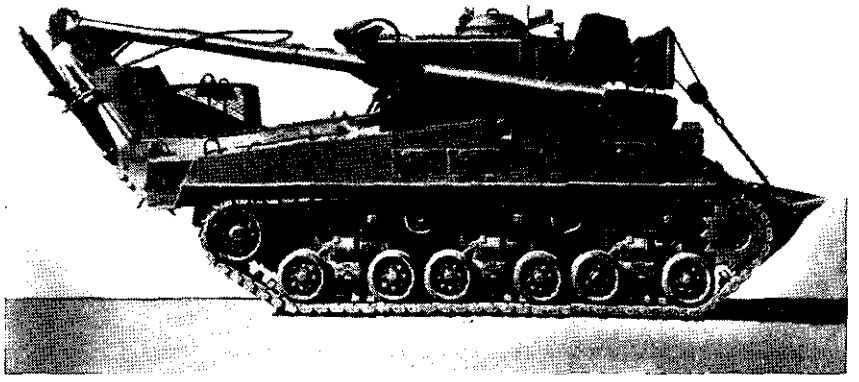


Figure 11. Tank recovery vehicle.

tank. It is employed to recover disabled tanks and other vehicles from the battlefield and to assist in maintenance activities by lifting turrets, engines, and other heavy components from vehicles. See TM 9–738 and TM 9–7402.

134. Artillery

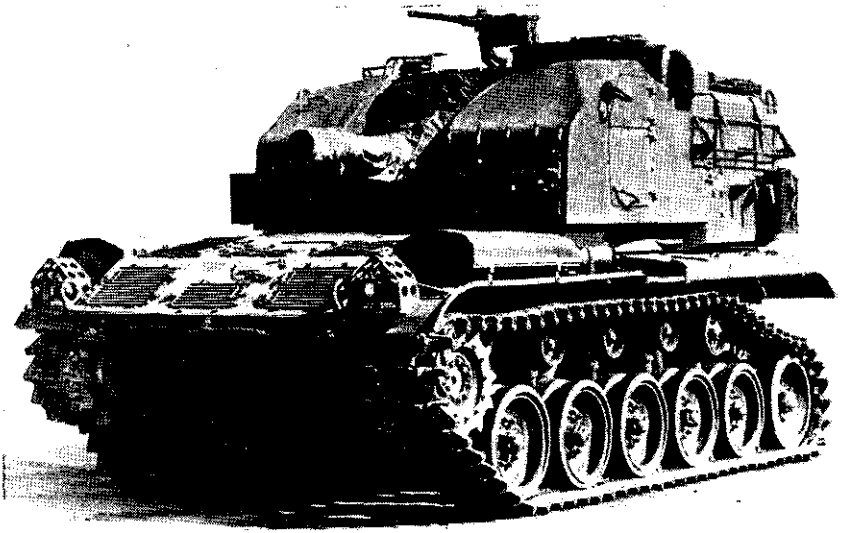
Artillery support which is normally available to small armor units includes light, medium, and heavy artillery, and very heavy rockets.

a. 105-MM Howitzer, SP. This is a full-track, armor-protected, self-propelled light artillery piece (fig. 12) normally employed in direct support of armor combat operations. Maximum range of this artillery piece is 12,200 yards.

b. 155-MM Howitzer, SP. This is a full-track, armor-protected, self-propelled medium artillery piece (fig. 12) normally employed in general support of armor combat operations. Maximum range of this artillery piece is 16,350 yards.

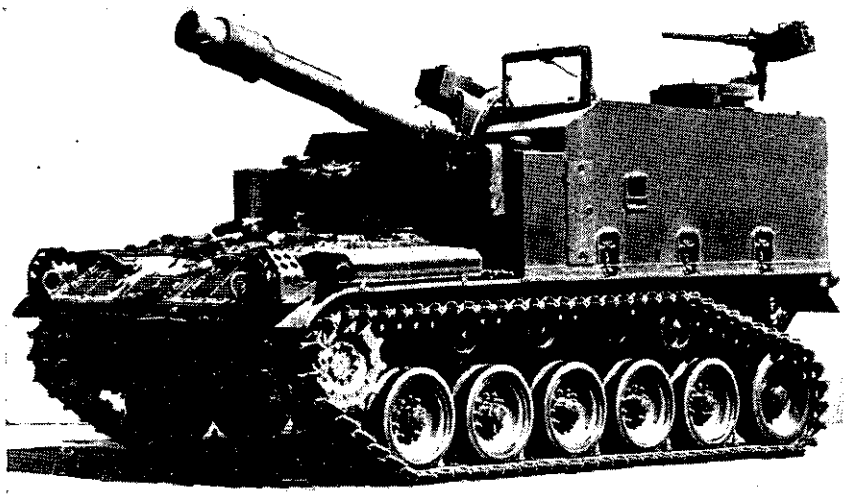
c. 8-Inch Howitzer, SP. This is a full-track, armor-protected, self-propelled heavy artillery piece (fig. 13) normally employed in general support of armor combat operations. This artillery piece is capable of firing both a nonatomic projectile and a tactical low-yield atomic projectile. Its maximum range using a nonatomic projectile is 18,500 yards.

d. 762-MM Rocket (HONEST JOHN). This is a free-flight very heavy rocket launched from an unarmored launcher. The 762-mm rocket (fig. 13) is primarily employed in delivery of tactical atomic weapons.



The M52, a 105-mm self-propelled light artillery piece

Figure 12.

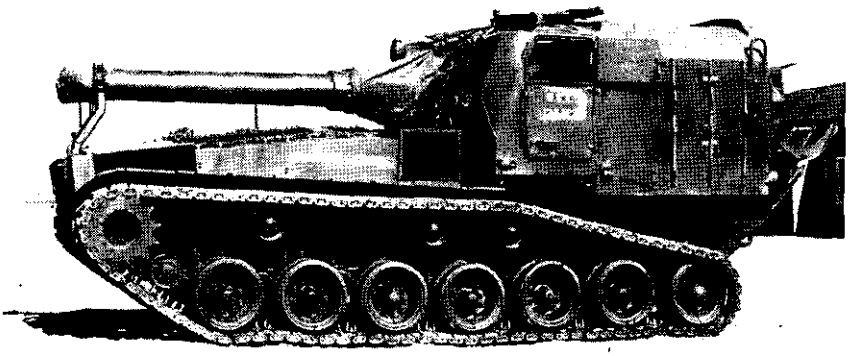


The M44, a 155-mm self-propelled medium artillery piece

Figure 12—Continued.

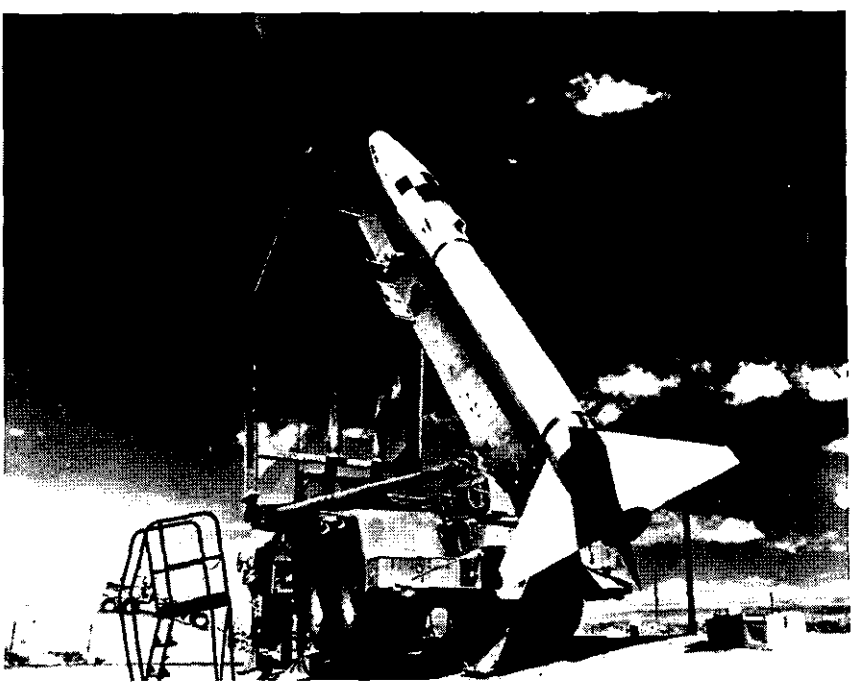
135. Engineer Vehicles

a. General. Engineer units organic to the armored division are equipped with armored personnel carriers for the transport of engineer squads and for command and communication purposes. These vehicles are identical to those previously discussed. In addition, these engineers are provided with special-purpose vehicles and equipment specifically designed to facilitate armor operations.



The M55, an 8-inch self-propelled artillery piece

Figure 13.



The 762-mm rocket, with launcher

Figure 13—Continued.

b. Combat Engineer Vehicle, Full-Track. The engineer armored vehicle (fig. 14) is a modified tank equipped with a boom, a dozer blade, and a 6.5-inch (165-mm) demolition gun. This demolition gun is effective against fortifications, pillboxes, roadblocks, and other obstacles.

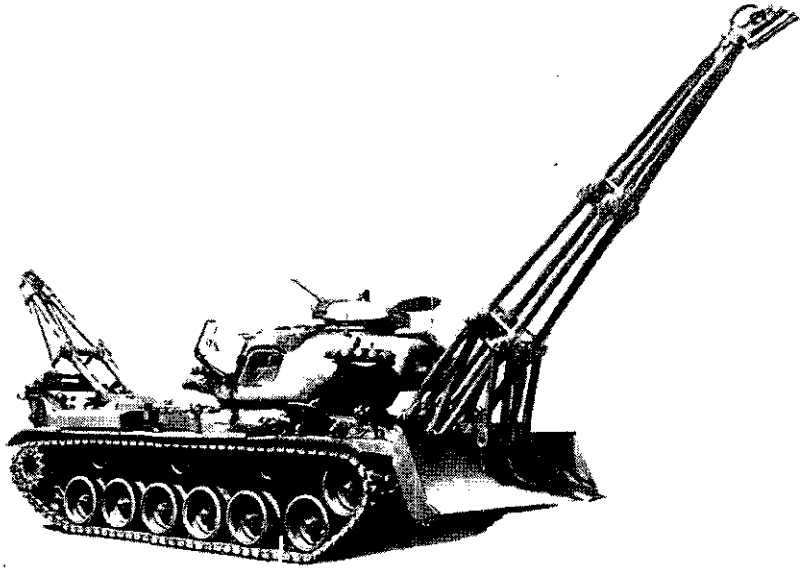


Figure 14. Combat engineer vehicle, full-track, 165-mm gun, M102 (a development item).

c. Assault Bridging. The assault vehicle launched bridge (fig. 15) is mounted on a modified tank and permits launching a 40-foot or 60-foot section of class 60 bridge. Under average conditions, the launching of the bridge can be accomplished within two minutes without exposure of any crew member.

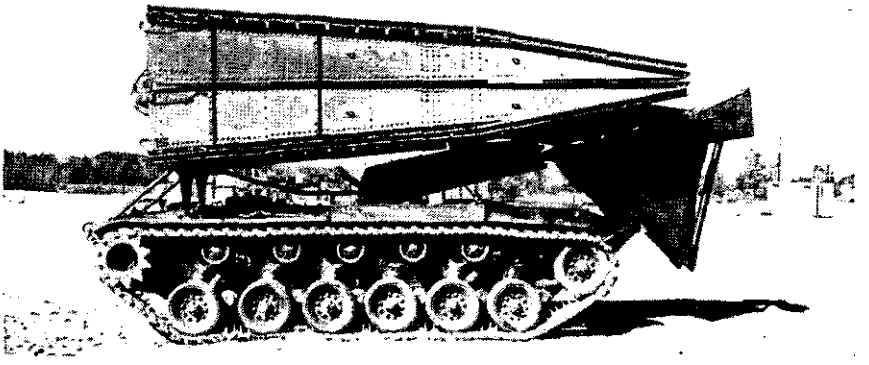


Figure 15. Assault vehicle launched bridge (a development item).

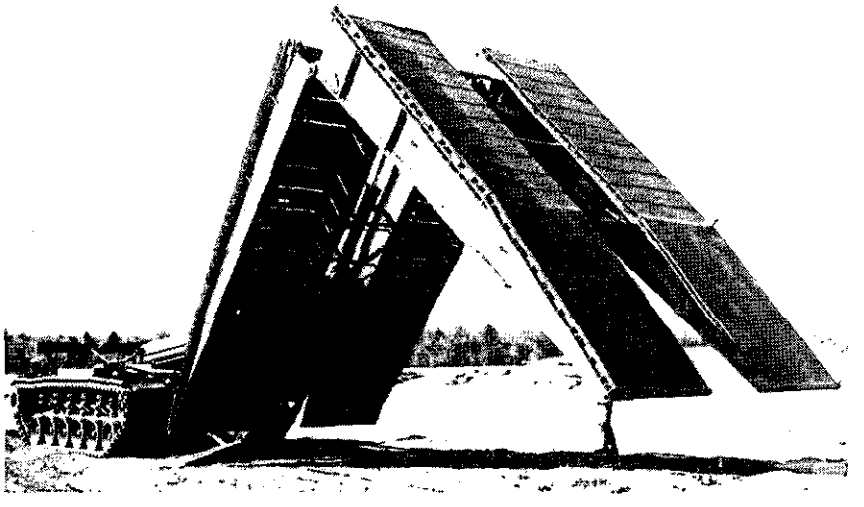


Figure 15—Continued.

Section V. GENERAL-PURPOSE AND SPECIAL-EQUIPMENT VEHICLES

136. General

Small armor units are equipped with a variety of unarmored general-purpose and special-equipment vehicles which are not peculiar to armor. These vehicles are used for command, communication, reconnaissance, administrative, and logistical purposes. For general characteristics of these vehicles, see TM 9–2800–1.

137. Types of Vehicles

a. Truck, Utility, ¼-Ton. The ¼-ton truck, the most common military vehicle, is used within armor units for transportation of commanders, staff officers, and reconnaissance, maintenance, communication, liaison, messenger, and other personnel. Most of the radio equipment not mounted in armored vehicles is mounted in this type vehicle. See TM 9–8014 and TM 9–8012.

b. Truck, Ambulance, Front Line, ¼-Ton. This vehicle is used for the evacuation and/or transport of battle casualties (TM 9–8014).

c. Truck, Cargo, ¾-Ton. This vehicle is used for the transport of personnel, cargo, and communication equipment (TM 9–8030).

d. Truck, Cargo, 2½-Ton. This vehicle is used primarily for the transport of cargo, supplies, and personnel (TM 9–8024 and TM 9–8022).

e. Truck, Cargo, 5-Ton. This vehicle is the primary resupply vehicle of battalion-size armor units and is primarily used for logistical purposes (TM 9–8028).

f. Truck, Gasoline Tank, 2½-Ton (M49). This vehicle, equipped with a 1,200-gallon tank, is used to provide bulk resupply of gasoline to unit vehicles (TM 9–8024).

g. Truck, Medium Wrecker, 5-Ton. This vehicle is employed by battalion maintenance personnel for the evacuation of disabled wheeled vehicles (TM 9–8028).

h. Trailers. Armor units are equipped with a variety of trailers—¼-, ¾-, and 1½-ton cargo and 1½-ton water trailers—for use with the above vehicles or with armored personnel carriers.

Section VI. SPECIAL EQUIPMENT

138. General

Special equipment includes those items which are used only in specific situations to assist the advance of armor units. Some items of special equipment are organic to small armor units; some are furnished by higher headquarters. Training in the operation and employment of special equipment is conducted concurrently with unit training. This section discusses three items—tank dozer, mine clearance devices, and tank-mounted searchlight.

139. Tank Dozer

The tank dozer (fig. 16) is a standard combat tank equipped with a bulldozer blade. Hydraulic controls permit operation of the blade from within the tank. In the event of damage in combat, the blade may be jettisoned from within the tank. The tank dozer is used to construct and improve routes, approaches to streams, and crossings; to remove obstacles and rubble; and to clear paths through areas containing antipersonnel mines.

140. Mine Clearance Devices

Mine clearance devices (figs. 17–20) are devices designed to detonate mines. They are used to clear paths through minefields. Tank-mounted clearance devices may be attached to tanks in a semipermanent manner, or they may be pushed or pulled by a tank. Mine clearance devices are operated under supervision of engineer personnel.

141. Tank-Mounted Searchlight

Combat tanks may be modified by mounting a searchlight on the turret (fig. 21). This searchlight provides artificial light to illuminate the battlefield for night operations. The searchlight is equipped to provide both white light, which can be employed for direct lighting or for indirect lighting (artificial moonlight), and infrared light.

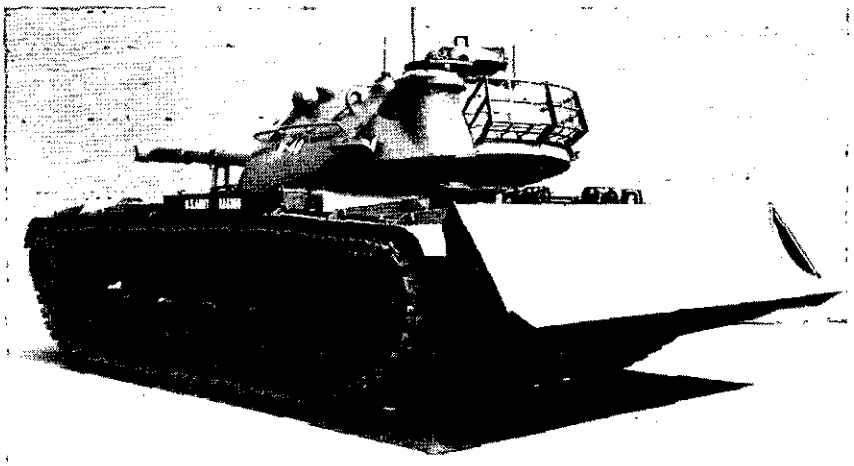


Figure 16. A medium-gun tank dozer.

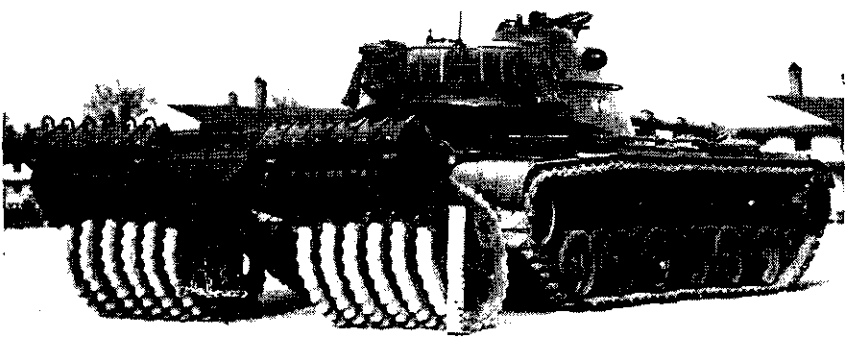


Figure 17. Larruping Lou. A tank-mounted mine clearance device. Weighs 19 tons and detonates mines by pressure. (A development item.)

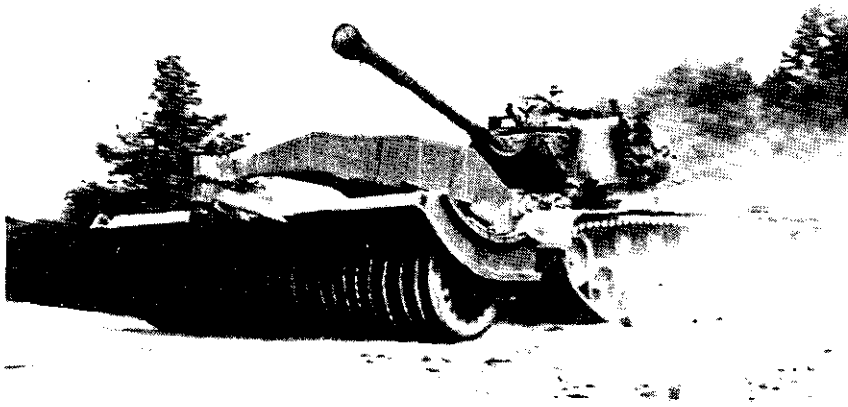


Figure 18. High Herman. A tank-mounted mine clearance device. Weighs 36 tons and detonates mines by pressure. (A development item.)

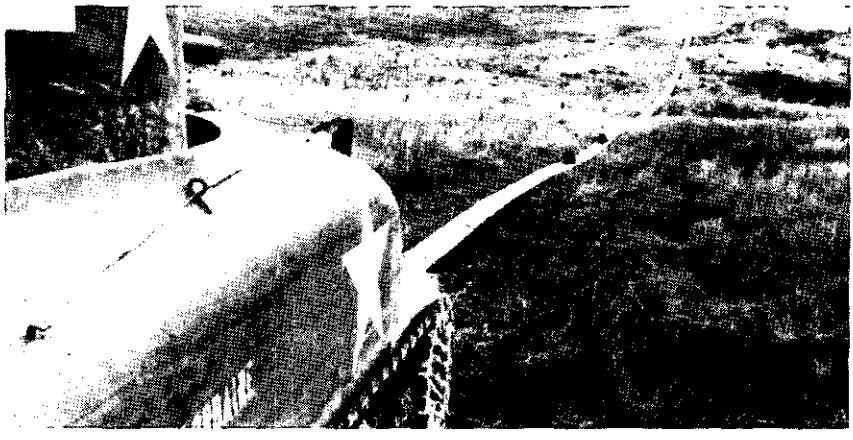


Figure 19. M3 demolition snake. A tank-pushed mine clearance device. It has an effective length of 320 feet and contains 4,500 pounds of TNT. It detonates mines by explosion. It is set off by a rifle or machinegun projectile, fired at a fuze located 60 feet in front of the tank.

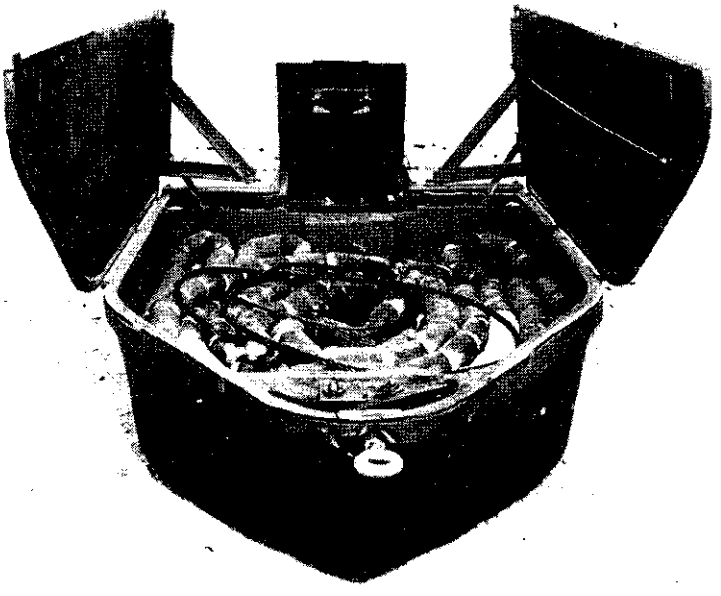


Figure 20. Jato T4E2. A tank-pulled mine clearance device. An electrically fired rocket pulls a 800-foot line charge. It contains 1,200 pounds of plastic explosive in an effective length of 410 feet. The entire unit is transported into position on a sled which is towed behind a tank. It detonates mines by explosion. It is electrically actuated after the charge comes to rest in the minefield. (A development item.)

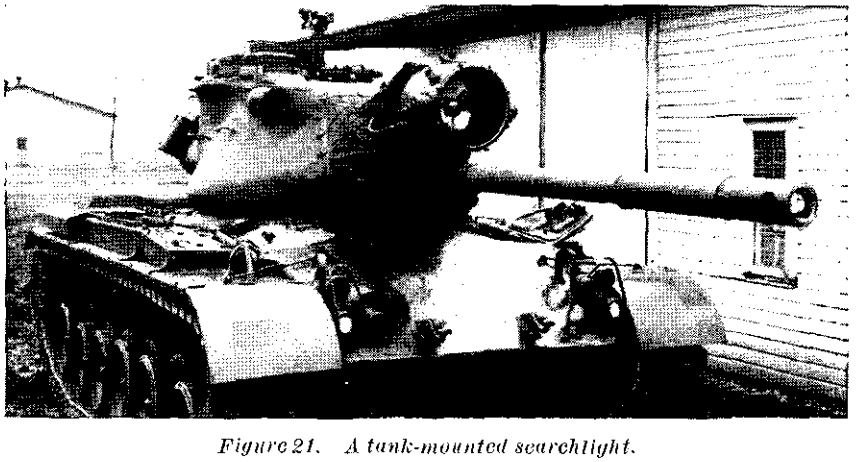


Figure 21. A tank-mounted searchlight.

CHAPTER 5

RECONNAISSANCE AND SECURITY OPERATIONS

Section I. RECONNAISSANCE OPERATIONS

142. General

a. Reconnaissance is a directed effort in the field to collect information of the enemy and the area of operations. This information is classified under the headings of the enemy, the terrain, the weather, and the enemy's resources. There are three classifications of reconnaissance—battle, close, and distant.

b. The purpose of reconnaissance is to obtain combat information of the enemy and the area of operations for the production of combat intelligence. The combat intelligence produced is used by the commander in forming his plan of operation.

c. Reconnaissance and security complement one another and cannot be readily separated. Effective ground reconnaissance provides a certain amount of security. On the other hand, the activity of a security force provides a certain amount of reconnaissance.

d. All units conduct reconnaissance to some degree. Reconnaissance is continuous on the battlefield, and all information of the enemy and terrain is reported as it is obtained.

e. The threat of nuclear radiation to ground forces on the atomic battlefield will necessitate the development of techniques to determine the degree of contamination in specific areas.

143. Battle Reconnaissance

Battle reconnaissance is the directed effort to gather information of the immediate battlefield area. It is made immediately before and during battle, and is conducted by units in contact with the enemy. Battle reconnaissance conducted by battalion-size units is normally directed toward determining the location, composition, and disposition of enemy troops in contact, to include the local reserves immediately in rear of the line of contact. Every front-line unit executes battle reconnaissance for itself.

144. Close Reconnaissance

Close reconnaissance is the directed effort to collect information in the area of current tactical operations. It is normally performed

within supporting distance of artillery and other combat units. Close reconnaissance conducted by battalion-size units is normally directed toward determining the location, composition, and disposition of enemy reserve forces and supporting troops that can influence the local action.

145. Distant Reconnaissance

Distant reconnaissance is the directed effort to collect information in an area beyond that of close reconnaissance. It may be performed in an area which lies beyond supporting distance of artillery and other combat units. Distant reconnaissance is directed toward determining the location, composition, and disposition of enemy reserve forces, supporting troops, and supply installations which can influence the outcome of the current operation.

146. Reconnaissance Agencies

a. Ground reconnaissance agencies include all personnel and units specially organized, designed, or designated to perform reconnaissance. Among the armor units specially designed for reconnaissance are the armored cavalry regiment, the armored cavalry squadron of the armored division, the cavalry squadron of the infantry division, the cavalry troop of the airborne division, the reconnaissance platoon of the infantry battle group, and the scout platoon of the armor battalion and armored infantry battalion.

b. The armored cavalry squadron is equipped to conduct reconnaissance and surveillance by ground and airborne means utilizing visual, photographic, and electronic methods. See FM 17–35.

c. Army aviation units are equipped to perform aerial observation and are excellent agencies to supplement ground reconnaissance.

d. The Air Force provides additional air reconnaissance. This reconnaissance includes aerial observation and photographic missions.

147. Fundamentals of Reconnaissance Operations

The method of conducting reconnaissance operations varies with the situation and conditions in the area and with the assigned missions, size, type, and composition of the reconnaissance units. Ground combat reconnaissance operations are performed in conformance with five fundamentals.

a. Orient on the Location or Movement of the Objective. Units performing reconnaissance must maneuver according to the location or movement of the objective rather than the location or movement of friendly forces. The objective may be enemy troops, a terrain feature, or a locality. To permit this type of maneuver, commanders of units performing reconnaissance must be allowed maximum freedom of action.

b. Report All Information. Reconnaissance is conducted to obtain information to be used in the production of combat intelligence. To be of value to the commander, this information must be received in time to be of use and must be accurate in answering the questions *what* (to include how many), *when*, *where*, and *doing what*. All information obtained during the conduct of a reconnaissance mission should be reported regardless of its apparent value. When considered in conjunction with information from other sources, information which appears unimportant may be extremely valuable. The development and use of brief reconnaissance spot report forms (app. III) will facilitate the rapid transmission of essential information. Negative as well as positive reports must be submitted.

c. Avoid Decisive Engagement. Units performing reconnaissance obtain information by stealth whenever possible, but fight when necessary in order to gain the information. The reconnaissance mission must not be jeopardized by combat with the enemy, particularly when combat is not essential to obtain the information desired.

d. Maintain Contact With the Enemy. In the performance of a reconnaissance mission to obtain information of an enemy force, contact with the enemy must be gained as soon as possible. Once this contact has been made, it must be maintained. In many instances contact can be maintained by observation alone. Contact with the enemy is not voluntarily broken without authority from higher headquarters.

e. Develop the Situation. When enemy contact is made or an obstacle is encountered, the situation must be developed quickly. The enemy's location, strength, composition, and disposition must be determined, with a special effort being made to determine the flanks of his position. A decision to attack or bypass the position, in keeping with the mission, must be reached quickly. When the terrain permits, the enemy position is reconnoitered by mounted reconnaissance and reconnaissance by fire. If the terrain restricts vehicular movement, the situation is developed with dismounted and airlifted patrols. Other elements of the unit cover the movement of the dismounted patrols and assist in the reconnaissance by attempting to draw enemy fire.

148. Types of Reconnaissance Missions

There are three types of reconnaissance missions: route, zone, and area. The type to be employed in a given situation is determined after a consideration of the information desired, where the information is to be sought, the known enemy situation, the terrain, the size of the reconnaissance force, and the time available for obtaining the information.

149. Route Reconnaissance

a. Route reconnaissance (fig. 22) is the directed effort to obtain information of the enemy or the terrain along a specific route and on the terrain features that dominate the route. Dominating terrain features are those which, if held by the enemy, will affect movement along the route.

b. Route reconnaissance may be assigned to obtain information of a specific route (see FM 5–36 for detailed discussion and report format) or of an enemy force moving generally along a specific route. When intelligence indicates that the enemy is moving on one or more routes, or when terrain features canalize his advance, these routes may be reconnoitered to obtain enemy information. Routes of advance of friendly forces may be reconnoitered when specific information of any given route or series of routes is required.

c. Route reconnaissance can be made faster than zone or area reconnaissance. Therefore, it may be employed when time is too short to permit more detailed reconnaissance.

150. Zone Reconnaissance

a. Zone reconnaissance (fig. 23) is reconnaissance of the routes and terrain between definitely established boundaries. Zone reconnaissance is more thorough and time-consuming than any other type.

b. When the enemy's location is in doubt, or when it is desired to locate a suitable route within a zone containing several routes, a zone reconnaissance may be directed. Factors which determine the width of the zone are the pattern of the road net, terrain features within the zone, time available to accomplish the mission, anticipated enemy action, troops available, weather, and visibility.

151. Area Reconnaissance

a. Area reconnaissance (fig. 24) is the directed effort to obtain information of the enemy or the terrain within a definitely defined locality. All roads and terrain features within the area must be reconnoitered.

b. The area to be reconnoitered may be a town or city, a woods, a series of possible crossing sites over a river, or any other physical feature whose external limits are easily defined. The specific area to be reconnoitered is designated by use of a boundary line which completely encloses the area.

152. Reconnaissance by Fire

a. Reconnaissance by fire is accomplished by firing on likely or suspected enemy positions in an attempt to cause the enemy to disclose his presence by movement or by return fire (fig. 25). During reconnaissance by fire, personnel with binoculars must continually observe

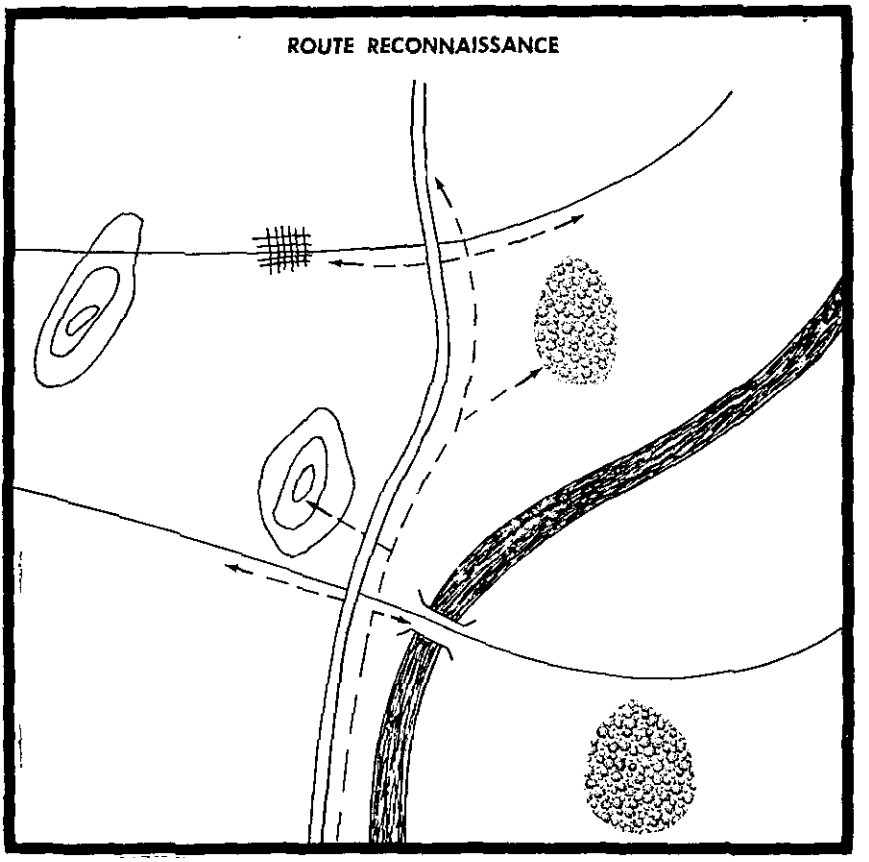


Figure 22. Route reconnaissance.

the positions being reconnoitered, so that any enemy movement or return fire will be definitely located.

b. Reconnaissance by fire is a technique used when time is critical. It is made at the loss of achieving further surprise, but it tends to lessen the probability of moving into a well-concealed enemy position without being aware of its presence.

c. If the enemy returns the fire, the unit proceeds to develop the situation. If the fire is not returned, the unit continues on its mission. However, caution should be exercised, because reconnaissance by fire may fail to draw the fire of seasoned enemy troops.

153. Reconnaissance of a Town, Obstacle, or Enemy Position

a. In reconnoitering a town, obstacle, or enemy position, an attempt should be made to approach it from the flanks or rear. If time is available, the reconnaissance should be made dismounted; however, if time is short, the unit will remain mounted. In either case, de-

tailed observation with binoculars will precede the actual reconnaissance.

b. When time is available, dismounted patrols move forward, covered by the remaining elements of the unit. The number of patrols depends upon the size of the objective and upon available approaches, cover, and concealment. If the patrols find that the near edge of the area is clear, the remainder of the unit moves forward. The dismounted patrols then continue the reconnaissance, overwatched and closely followed by the rest of the unit.

c. A mounted reconnaissance should usually start with a reconnaissance by fire. Then part of the unit moves forward rapidly, overwatched by the remaining elements. If the near edge of the area is clear, the overwatching elements move forward and the advance continues. Vehicles move through a town by bounds in a staggered formation, covering the buildings on the opposite side of the street by observation and fire. It is desirable for dismounted personnel to precede the vehicles.

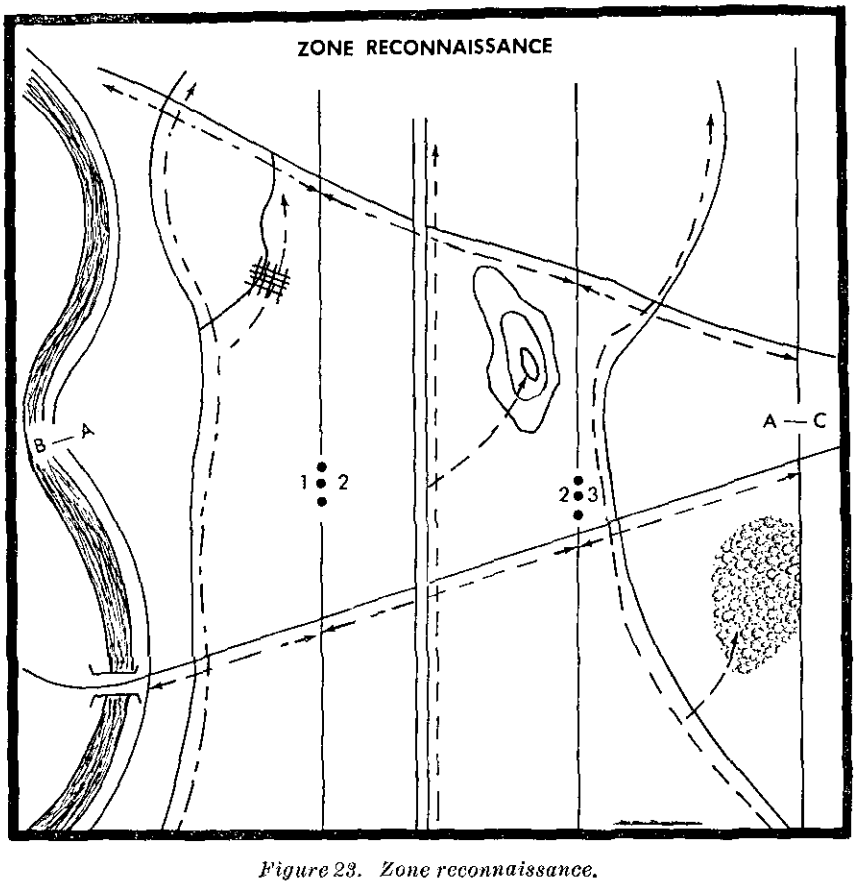


Figure 23. Zone reconnaissance.

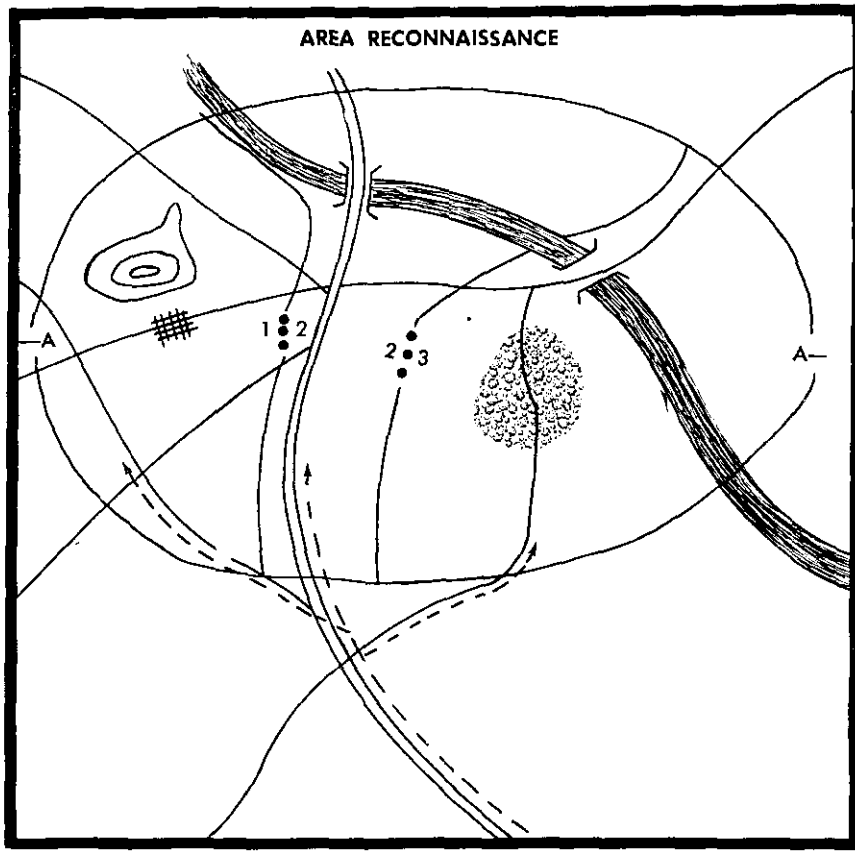


Figure 24. Area reconnaissance.

154. Reconnaissance of a Bridge or Defile

The first step in reconnoitering a bridge or defile is to make a visual reconnaissance for enemy positions. When mines, booby traps, or ambushes are suspected, patrols reconnoiter the approaches of the bridge or defile. Reconnaissance of a bridge includes checking underneath as well as on top for mines, booby traps, demolition charges, or weakened construction. Any demolitions located should be removed or neutralized. If circumstances permit, the class of a bridge should be determined and a sign placed on the bridge to indicate the class to troops using it later. For further discussion of attack of a defile, see paragraphs 330 and 331.

155. Reconnaissance at Night

Reconnaissance operations are slow and less effective at night. Night reconnaissance is usually limited to dismounted patrolling, observation of routes, and the use of listening posts. Only against very

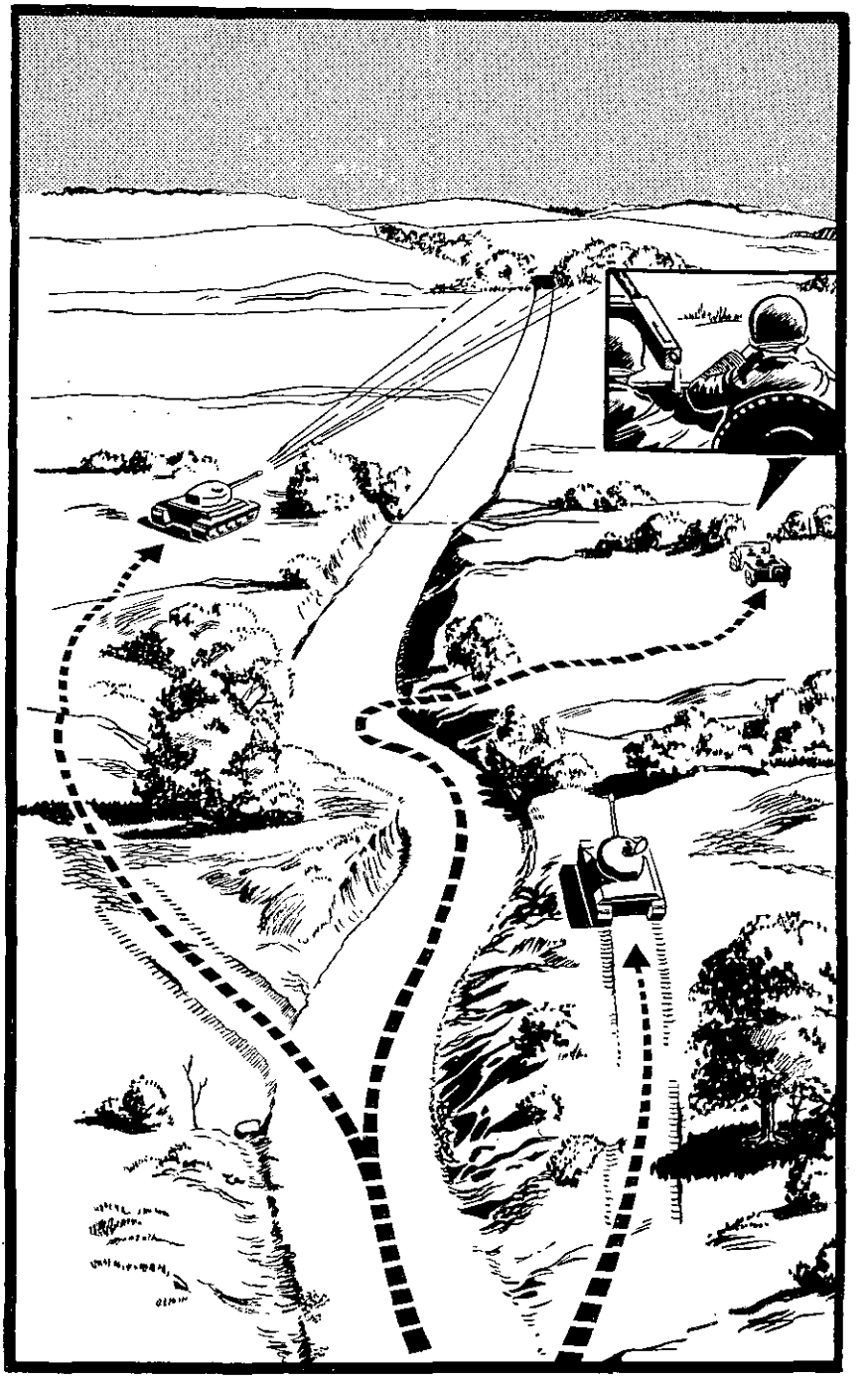


Figure 25. Reconnaissance by fire; fire is placed on suspected enemy positions.

light enemy resistance and with favorable terrain and routes of advance can vehicular reconnaissance be used without being preceded by dismounted patrols. Engines and tracked vehicle movements can be heard for considerable distances. Observation is limited, making vehicles highly susceptible to ambush. Cross-country movement is very difficult. Except for short cross-country movements, night vehicular reconnaissance should be confined to the road net.

156. Reconnaissance in Force

A reconnaissance in force is an attack by a considerable force of troops used to discover and test the enemy's position and strength. In an analysis of this definition, three significant points should be considered—

a. The reconnaissance in force is planned and executed as an attack with a limited objective and appropriate control measures (pars. 244–258).

b. The size of the force varies in accordance with the factors of METT (mission, enemy, terrain and weather, and troops available). The force must be strong enough to make the enemy react to the attack and thus disclose his locations, dispositions, and strength. The force normally is not less than a battalion task force with artillery and engineer support.

c. The commander who orders a reconnaissance in force should be alert to any opportunity to exploit success by the reconnoitering force. If the reconnaissance discovers a weak spot in the enemy's dispositions, the prompt commitment of additional forces may achieve an important tactical victory at little cost.

157. Reconnaissance by Army Aircraft

a. The use of Army aircraft is an excellent means of extending, supplementing, or even replacing ground reconnaissance. All unit commanders should exercise discretion in the use of Army aircraft in order to insure maximum efficiency and minimum loss of aircraft. The battalion commander should request Army aircraft to support his reconnaissance efforts as appropriate.

b. Army aircraft are normally employed in conjunction with, and in close support of, ground reconnaissance forces. The aircraft are used to extend observation by making aerial reconnaissance; they are also capable of locating and reporting enemy strongpoints, roadblocks, blown bridges, or approaching enemy columns.

c. Army aircraft may be used for rapid surveys of areas contaminated with residual radiation, either fall-out or induced. Additionally, aircraft may be used to locate routes through or around such areas.

158. Reconnaissance Frontages

The extent of the frontage assigned to a reconnaissance unit of a given size is dependent upon many factors. These factors include the information desired, the time available to perform the mission, the enemy capability to resist or interfere, the terrain (with emphasis on the road net), and the weather. If detailed information is desired, the frontage must be narrower than it could be if only general information were needed in the same period of time. Route reconnaissance can be conducted on a wider frontage than zone or area reconnaissance.

159. Coordination and Control of Reconnaissance

a. Reconnaissance must be coordinated at all levels of command. This will insure maximum results from the intelligence effort, prevent duplication of effort, and economize reconnaissance forces. Coordination is primarily accomplished by assigning a specific mission to each unit performing reconnaissance.

b. The unit commander uses every available means to control the advance of his elements. Radio is the primary means of control within armor units. In addition, commanders at all levels should make maximum use of liaison personnel, staff officers, messengers, and Army aircraft to assist in the rapid transmission of reconnaissance instructions and reports. Phase lines, check points, contact points, boundary lines, routes, objectives, and time limitations may assist the commander in controlling his unit.

160. Reconnaissance Instructions

Reconnaissance instructions must be complete and must include exactly what combat information is to be obtained, where the information is to be sought, and when the mission is to be executed. Essential details may include—

a. Pertinent information of the enemy and friendly troops.

b. Plans of the higher commander.

c. Specific information desired.

d. Zone, area, or route to be reconnoitered.

e. When, where, and how information is to be reported to the higher commander.

f. Time of departure.

g. Phase lines and objectives and, when desirable, the times they are to be reached.

h. Action to be taken when the mission is completed.

Section II. SECURITY

161. General

a. Security includes all measures taken by a command to protect itself from surprise, annoyance, espionage, sabotage, or observation by the enemy. Its purpose is to preserve secrecy and to gain and maintain freedom of action.

b. Security is achieved by effectively providing for the detection of a threat, for sufficient time to react to the threat, and for the avoidance, neutralization, or destruction of the threat. Security is enhanced by effective intelligence, counterintelligence, and counterreconnaissance operations. All units are responsible for their own security, regardless of the security provided by other units. A security force for a larger formation must be strong enough, and must be properly located, to provide adequate time for the main body to react. However, security measures must not unnecessarily divert forces or effort from the accomplishment of the mission of the main body.

162. Security Against Ground Action

a. Ground threats to the security of a command include reconnaissance, fire, attack by ground forces, infiltration, guerillas, partisans, and airborne forces. The first essential in security against ground action is the proper use of terrain.

b. Security from observation is afforded by counterreconnaissance, concealment, camouflage, deception, and movement. Security from fire is provided by counterfire, movement, cover, fortifications, and dispersion.

c. Security against ground attack is provided by air and ground reconnaissance; covering forces; advance, flank, and rear guards; and local security elements. Size and composition of the security forces is dependent on the type of operation and composition of the enemy force. Against a highly mobile enemy, strong in armor, security forces must be of equal or greater mobility and must possess antitank capabilities. Natural and artificial obstacles must be utilized to the maximum. In any case, security forces must be capable of effective operations under the same conditions as the enemy force which poses the threat (par. 365).

163. Fundamentals of Security Operations

a. Orient on the Location or Movement of the Main Body. A security force maneuvers according to the location and movement of the main body, and positions itself between the main body and the known or suspected enemy threat.

b. Perform Continuous Reconnaissance. All security forces must perform continuous and aggressive reconnaissance. This reconnais-

sance provides the security force commander with information of enemy forces within his area of responsibility and enables him to stay between the main body and the enemy threat. Reconnaissance provides security from surprise by keeping the main body commander informed of enemy locations and movements, and by maintaining contact with enemy forces which constitute a threat to the main body.

c. Provide Timely Warning. The main body commander must have early warning of the location and movement of enemy forces which constitute a threat to his mission. Only by timely warning can the main body commander choose the time and place to engage the enemy, and maneuver his forces to gain tactical surprise and advantage over the enemy.

d. Provide Space for Maneuver. Security forces operate far enough from the main body to insure that the main body has enough time and space to maneuver to meet the enemy threat. The exact distance will depend upon the size of the security force and the terrain.

e. Maintain Enemy Contact. Once contact with the enemy has been gained, it must be maintained until the enemy ceases to be a threat to the main body or moves out of the assigned area of responsibility. Enemy forces must not be permitted to penetrate the security force and surprise the main body. If the enemy force moves out of the area of responsibility, action must be taken to inform the adjacent unit and to assist that unit in establishing contact with the enemy force.

164. Frontages in Security Operations

The extent of the frontage assigned in security operations is dependent upon several factors. These factors include the degree of security desired, the length of time the security is required, the enemy capability, the terrain (with emphasis on avenues of approach), and the weather.

165. Security Forces

Security forces protect a command against surprise, ground observation, or interference by the enemy. A security force may be an advance guard, a rear guard, a flank guard, a screening force, a covering force, or a rear area security force, according to its location and purpose (fig. 26). It engages in offensive, defensive, or delaying action as required to accomplish the mission.

166. Advance Guard

a. An advance guard is a security detachment which operates ahead of the main body to provide early development of the situation; to insure the uninterrupted advance of the main body; to protect the main body against surprise; to cover the deployment of the main body

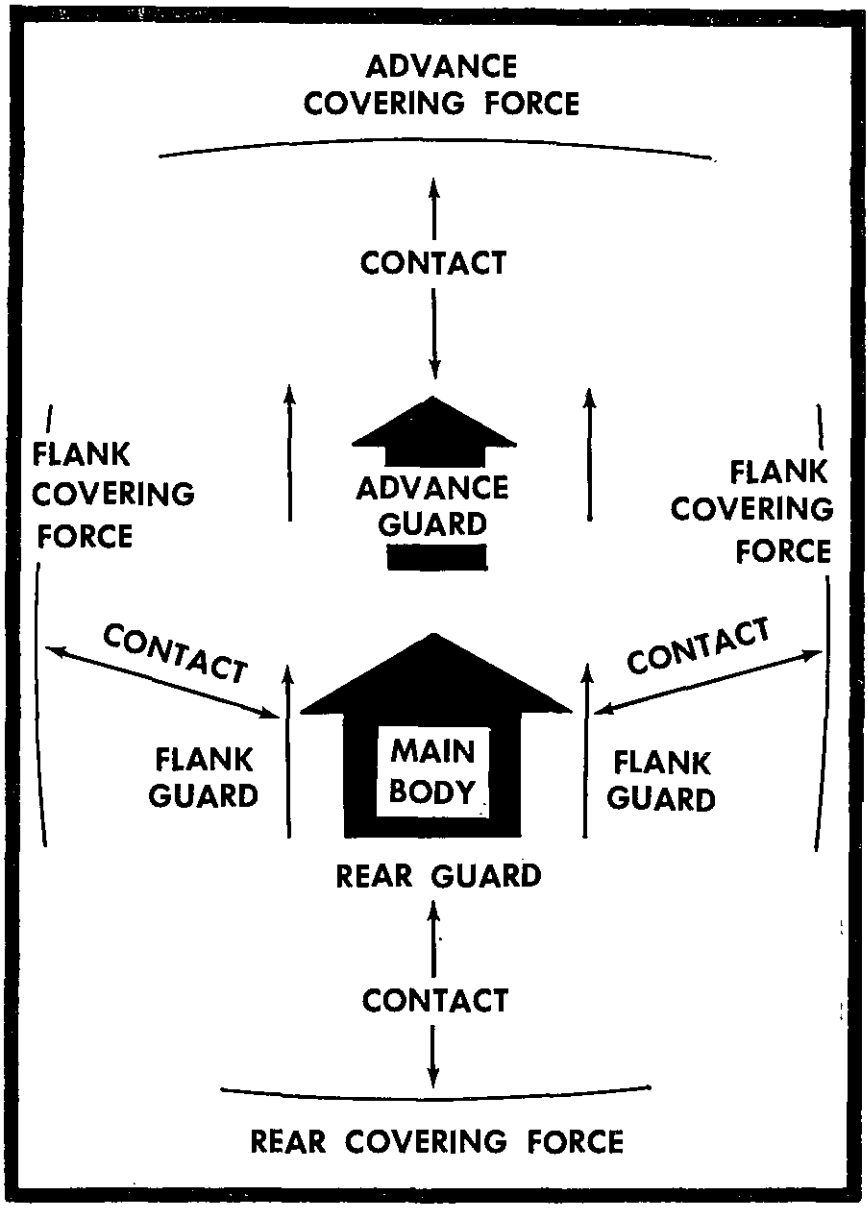


Figure 26. Relationship of advance, flank, and rear guards to covering forces.

if it is committed to action; and to facilitate the advance by removing obstacles, repairing roads and bridges, or locating bypasses.

b. The advance guard operates as fast as the situation will allow. It performs continuous reconnaissance to the front and flanks and pushes back or destroys small enemy groups before they can hinder the main body. When the advance guard encounters large enemy

forces or heavily defended areas, it acts immediately to develop the situation. It employs every means available to determine the location, strength, disposition, and composition of the enemy. It may then be required to join in the attack by the main body. The advance guard must be far enough in front of the main body to insure that the commander has freedom of action in the employment of the main body. However, it must not be so far in front that it can be destroyed by enemy attack before assistance can reach it. Distances are reduced at night, in close terrain, and under conditions of low visibility.

c. The advance guard normally advances in column until contact is made. It may move continuously or by bounds. Movement by bounds is employed when contact with the enemy is imminent and the terrain favors this technique. For additional details on employment of the advance guard, see paragraphs 290 through 293.

d. When contact with an enemy force is made, the action taken falls into four distinct steps (fig. 27):

(1) Deploy.
   (*a*) Units should move immediately to positions from which they can be employed against the enemy.
   (*b*) The immediate action of the commander is to make a report of the enemy contact to his higher headquarters.

(2) Develop the situation. This consists of the action necessary to determine the strength, location, composition, and disposition of the enemy that has been encountered.

(3) Choose a course of action. After developing the situation, the commander must choose a course of action that is appropriate in the immediate situation and will insure the accomplishment of the assigned mission.

(4) Report. The commander then makes a complete report to his higher headquarters. This report includes—
   (*a*) The complete enemy situation as it has been developed.
   (*b*) The decision of the commander as to the course of action he will follow.

167. Rear Guard

a. A rear guard is a security detachment that protects the rear of a column from hostile forces during an advance or a withdrawal (fig. 28).

b. During the advance, the rear guard defeats or delays hostile forces attacking the rear of the main body, protects the trains, and collects stragglers. The rear guard follows the main body at a distance prescribed by the main body commander and usually moves on the axis of advance of the main body.

c. During a withdrawal from action, the rear guard covers the dis-

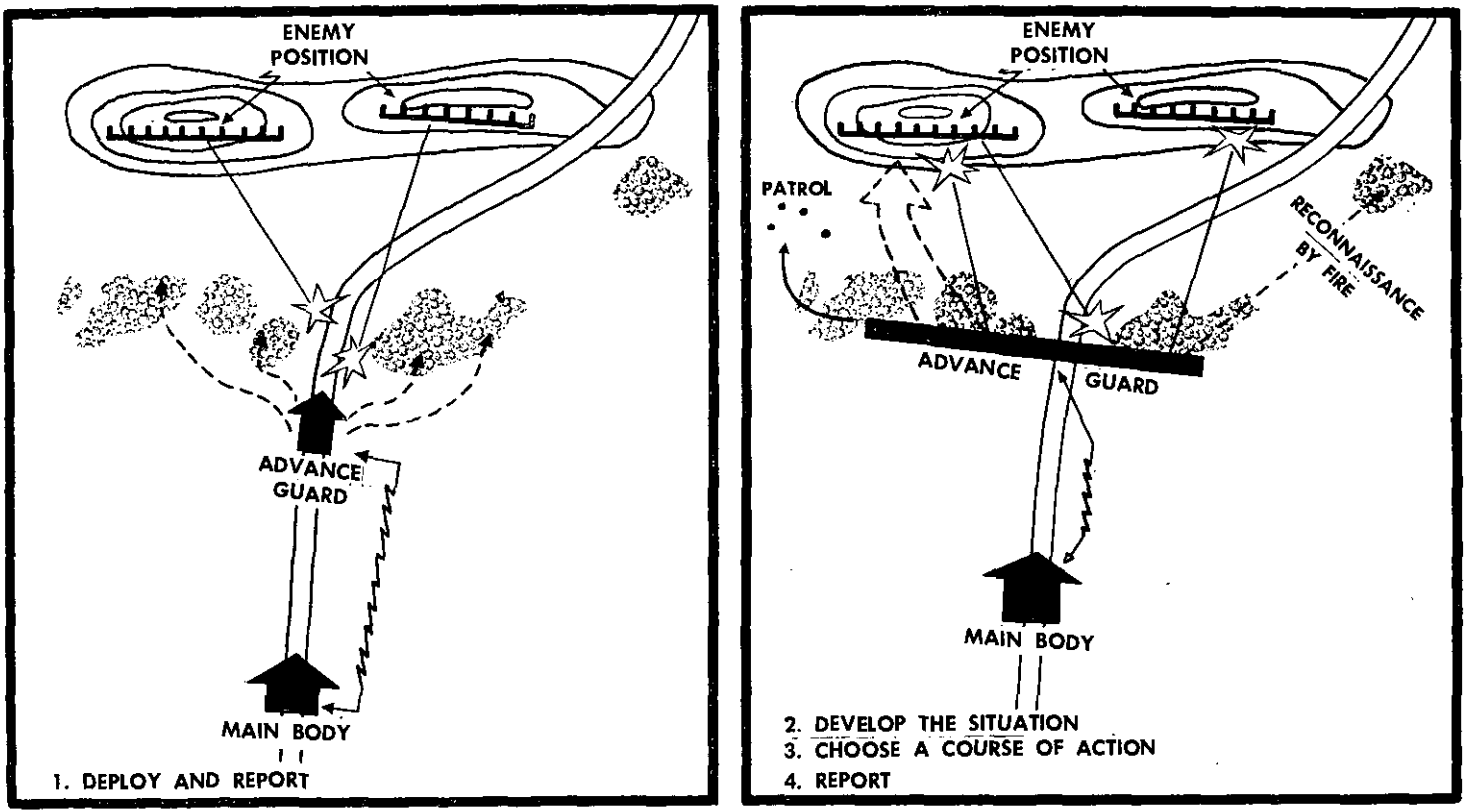
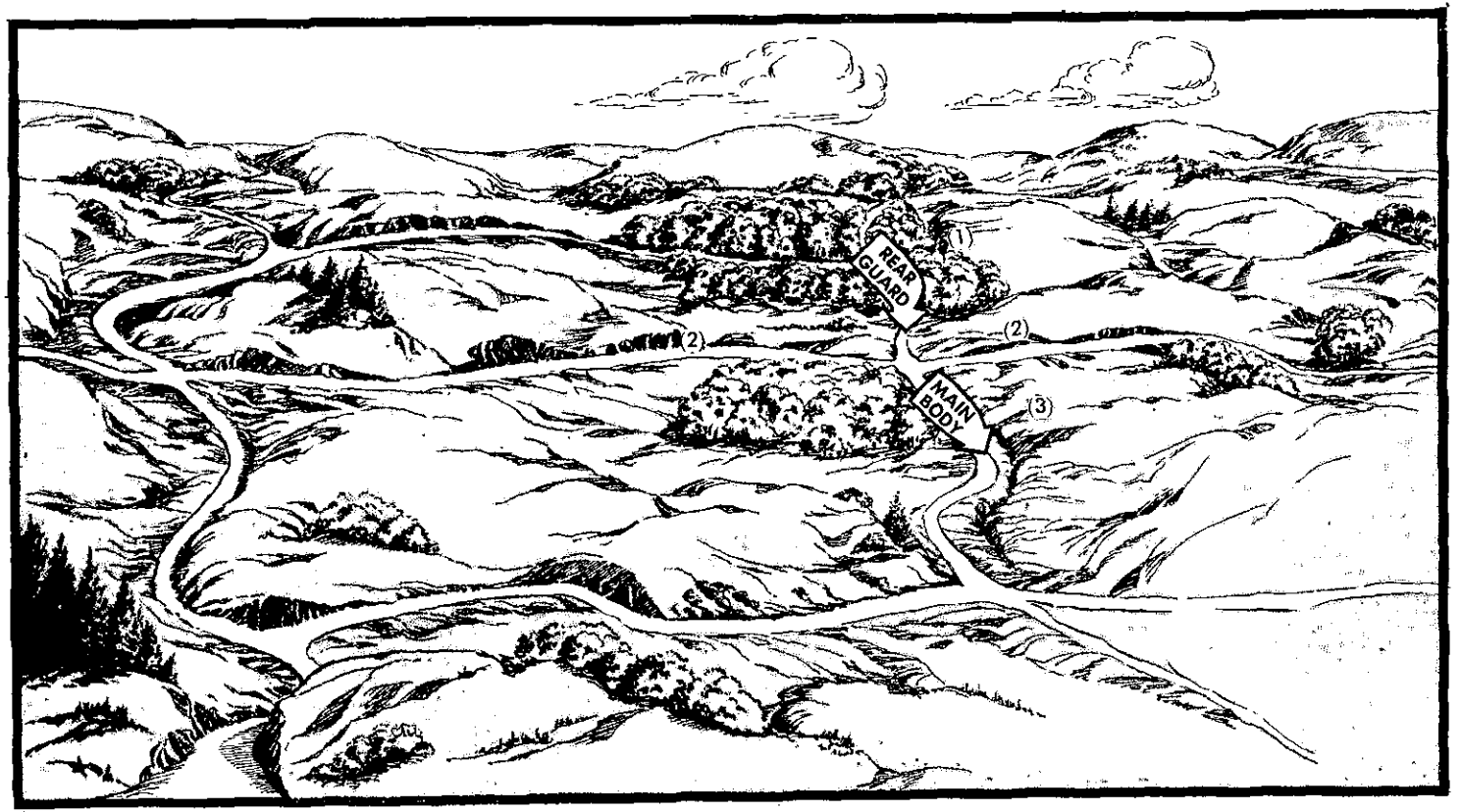


Figure 27. Advance guard—action on making contact.



1 Occupy delaying position.
2 Reconnoiter lateral roads on movement to next position.
3 Next delaying position should be reconnoitered when in preceding position.

Figure 28. Rear guard.

engagement of the main body. The rear guard employs delaying action tactics and withdraws by bounds, basing its rate of movement on that of the main body or moving in accordance with prearranged plans. The rear guard must not allow itself to be bypassed or driven in on the main body.

168. Flank Guard—General

a. A flank guard is a security detachment that protects the flanks of the main body. A flank guard may be employed during offensive, defensive, or retrograde operations to protect the main body from ground observations, direct fire of hostile weapons, and surprise attack. It employs offensive, defensive, or delaying action as necessary to accomplish the mission. The flank guard is mobile when the main body is conducting an offensive operation or a retrograde movement, and is stationary when the main body is in the defense.

b. The flank guard regulates its rate of movement on that of the main body. It must be far enough from the main body to insure that the main body commander has adequate time and space in which to maneuver to counter an enemy threat. This distance is not fixed, but depends on the factors of METT (mission, enemy, terrain and weather, and troops available). All other factors being relatively equal, the stronger the flank guard, the greater the distance at which it may operate from the main body.

c. If the flank guard becomes overextended, it will not be able to furnish the desired protection to the main body. If the area to be secured becomes so wide that it cannot be adequately secured, the flank guard commander should ask for permission to cover part of the area by screening, or to be relieved of responsibility for the rear part of the area. This request would be in the form of a recommendation to the main body commander.

169. Flank Guard Methods of Movement

There are three methods of movement which may be employed by the mobile flank guard. The method selected depends primarily upon the rate of advance of the main body.

a. Movement by Leapfrog Method. This method may be used when the main body is advancing slowly against strong enemy resistance and there is a requirement for strong flank protection. In this situation, it is anticipated that each of the blocking positions will be secured as it is reached in order to provide the maximum flank protection possible. As the flank guard advances and the first blocking position is reached, the commander designates a unit to secure it. However, the commander must be prepared to conduct a coordinated attack if necessary to secure the position. As the next blocking position is uncovered, the commander designates another unit to secure it.

When all subordinate units have been employed and the main body's advance requires the securing of additional positions to the front, the rear unit is leapfrogged forward from its previously occupied blocking position to a new one to the front.

b. Movement by Bounds. This method usually is used when the main body is moving against light enemy resistance and its movement is characterized by frequent halts of short duration. The blocking positions are not necessarily occupied, but the area to the flank is kept under surveillance by reconnaissance elements and by Army aircraft if available. Instead of leapfrogging, all subordinate units retain their relative positions in the column. When the flank guard is required to halt, each subordinate unit blocks likely avenues of enemy approach from the flank in the vicinity of its position in column. When the forward movement is resumed, subordinate units move by bounds to secure critical points designated by the commander. The distance between subordinate units is determined by the area of responsibility, location of critical points, enemy threats on the flank, and the rate of advance of the main body.

c. Movement by Marching. This method usually is used when the main body is advancing at a constant rate. The flank guard normally uses a column formation and moves without halting, adjusting its rate of advance to the movement of the main body. The distance between subordinate units is determined in the same manner as when moving by bounds. The commander indicates which avenues of approach and critical terrain features are to be given special attention.

170. Flank Guard for An Advancing Force

a. In performing a flank guard mission for an advancing force (fig. 29), the flank guard must be prepared to occupy blocking positions on critical terrain features that dominate likely avenues of enemy approach into the flank of the main body. The flank guard must be prepared to attack and destroy small enemy forces within its capabilities, or to attack and seize critical terrain features on which blocking positions are to be established. It attempts to prevent strong enemy forces from entering its area of responsibility, by defending within its capabilities. If forced from its blocking position, it delays the enemy until the main body can react to the threat.

b. The flank guard's area of responsibility normally is designated by the main body commander. In a mobile situation, the area of responsibility may be the flanks of specific units. Such an area will always include the space from the rear of the leading unit to the rear of the last unit specified, regardless of their geographical location. In certain situations the area of responsibility may be designated as a series of terrain features.

1 Reconnoiter woods for suspected enemy.
2 Reconnoiter road to the flank.
3 Reconnoiter hill for suspected enemy position.
4 Send patrol to make contact with main body.

Figure 29. Flank guard.

c. In planning for a flank guard mission, the flank guard commander makes a map study of the area of operation and selects a series of blocking positions on the flank and parallel to the axis of advance of the main body. The positions are selected to keep enemy direct fire and ground observation off the main body. They should be located on defensible terrain that dominates likely avenues of enemy approach. In the selection of a blocking position, special attention should be given to road nets and terrain that permit the rapid movement of hostile armor into the flank of the main body.

d. The commander must develop a plan of maneuver by which he can seize and hold the blocking positions as well as maintain contact with the leading unit of the main body. The plan of maneuver must include the seizure of blocking positions, either by separate subordinate unit action or by a coordinated effort. Once the blocking position is secured, the commander must assign responsibility for holding it to one or more subordinate units.

e. Contact points are designated between blocking positions to prescribe areas of responsibility for units holding such positions. Contact points are locations, designated by the commander, at which subordinate units make physical contact. When a unit is ordered to occupy a blocking position, it assumes responsibility for the area between the contact points on each flank.

f. A route of advance for the flank guard is selected. This route should be far enough from the main body's axis of advance to insure that the movement of the flank guard will not interfere with the maneuver of the main body. When possible, this route should be close to the line of blocking positions and between the blocking positions and the main body's axis of advance. If a suitable route does not exist, the flank guard may be required to operate cross-country.

g. The flank guard adopts a formation that permits rapid employment against any enemy resistance. The formation must permit flexibility of employment to meet any changes in the situation. The formation that provides the best control and flexibility of employment is the column formation. Security must be provided for the formation. This normally is accomplished by charging each subordinate unit with the security of its exposed flank. Use of Army aircraft assists in providing security by extending observation to the flank.

h. The commander of the flank guard normally assigns a three-part mission to the commander of his leading element. The mission includes the establishment of an advance guard to ensure the uninterrupted advance of the flank guard, the maintaining of contact with the main body, and the securing of the area between the main body and the route of advance of the flank guard. Only in exceptional circumstances will this leading element of the flank guard be required

or directed to occupy blocking positions along the route of advance. The remainder of the flank guard marches in column, prepared to secure the blocking positions on order. The decision to occupy blocking positions depends upon the speed with which the main body is advancing, and the strength of the enemy on the flank.

171. Flank Guard for a Penetrating Force

There are special considerations in planning for a flank guard mission in a penetration or an attack out of a bridgehead. These considerations are the relatively narrow front on which a penetration is conducted and the resultant lack of maneuver room. In addition, a penetration frequently is conducted through friendly troops, which requires close liaison and coordination to avoid confusion during the period when maneuver space is limited. In the performance of a flank guard mission during a penetration—

a. The blocking positions normally are selected by the main body commander and are closely coordinated with the penetration objectives.

b. When a penetration is made through friendly front lines, the flank guard's area of responsibility starts at the shoulder of the penetration (which is held by friendly forces) and extends to the rear of the leading unit of the main body.

c. The initial movement through the gap of the penetration must be closely coordinated. Elements of the flank guard normally follow the leading unit on the main body's axis of advance. The location of the remainder of the flank guard in the column of the main body is dictated by its intended employment. When the flank guard can move to the flank, it moves on its own axis. It is prepared to employ offensive action to secure blocking positions, or to meet a counterattack by the enemy.

172. Flank Guard for a Defensive Force

The flank guard for a defensive force occupies a series of strong points on the flank of the main body. The strong points are located on critical terrain features that dominate likely avenues of enemy approach into the sector. The flank guard normally is given a sector of responsibility, which is tied to specific terrain features. In the accomplishment of the mission, the flank guard employs defensive tactics. If forced from its positions, it conducts a delaying action, obtaining time and space for the main body to react to the threat.

173. Flank Guard for a Retrograde Movement

The operations of a flank guard for a unit performing a retrograde movement are similar to those of a flank guard for an advancing force. The major difference is that the area of responsibility is from the

front of the last unit (which may be the rear guard) to the front of the first unit in the formation.

174. Screening Force

a. A screening force is a security detachment which protects an area or a body of troops from surprise by observing and reporting enemy activity. Screening is the securing of an extended area by surveillance in which the security force observes, reports, and maintains visual contact with hostile forces. The missions of the screening force are to—

(1) Provide timely warning of enemy approach.
(2) Gain and maintain contact with, and report the movement of, enemy forces.
(3) Destroy or repel enemy patrols.
(4) Annoy and harass the advance of enemy forces.

b. A screening mission is assigned when a wide area requires securing and there are few troops available to perform the mission. The area may be along a river line, between widely dispersed units, or on an exposed flank where a major threat does not exist. The mission is accomplished by a series of observation posts and patrols that are capable of observing all of the approaches into the sector.

c. The screening force normally must dispose forces in small groups in order to cover the wide sector. In doing so, the force's combat strength is dissipated. This usually makes it impossible to mass the force to engage a major enemy threat.

d. A screening force may not be able to offer strong resistance to the enemy. Its main mission is to provide timely warning and maintain contact with the enemy. However, within the scope of the mission, it may attack to destroy or repel small enemy patrols that penetrate the screen. In addition, it may deliver harassing fire on the enemy or employ other measures to slow the advance of the enemy.

e. In screening, maximum use should be made of Army aviation elements and of the electronic surveillance devices in the armored cavalry squadron. Helicopter-lifted observation posts may be established at critical points a considerable distance from the main body.

175. Covering Force

a. The mission of a covering force is to provide an early development of the situation, defeat enemy forces within its capabilities, and delay, deceive, and disorganize the enemy. A covering force operates beyond advance, flank, or rear guards and may be employed when the main body is engaged in offense, defense, or a retrograde movement.

b. A covering force engages in any type action necessary to accomplish its mission, but usually conducts an offensive action or a

delaying action. The force must not become so engaged as to allow itself to be overrun or by-passed.

c. When operating as an advance covering force in an offensive operation, a battalion-size armor unit normally advances with companies abreast to insure complete coverage and to eliminate the possibility of bypassing enemy elements. At the same time, sufficient strength should be retained in reserve to influence local actions. The reserve is so located that it can readily be employed to assist in the accomplishment of the mission. An advance covering force for offensive operation employs the techniques of offensive operations as described in paragraphs 290 through 293.

d. A battalion-size armor unit employed as an advance covering force during the defense is positioned beyond the observation posts in the mobile defense and beyond the general outpost in the position defense. The distance at which the covering force operates in front of the defense area is normally prescribed by higher headquarters. The battalion sector is divided into company sectors, and the companies are deployed to cover the battalion sector. An outpost system is organized, consisting of observation posts and mobile patrols as a warning net and of strongpoints established behind this net. These strongpoints are located on commanding terrain features which dominate likely avenues of enemy approach. Normally, a company-size reserve should be retained. Engineer, artillery, and tank elements may be attached to the battalion for this mission. When forced to withdraw, the battalion fights a delaying action back through the observation posts or general outpost, avoiding decisive engagement with the enemy. Every effort must be made to deceive the enemy as to the true location of the main defensive position. The action of the advance covering force during the defense is generally the same as for a delaying action, as described in paragraphs 416 through 430.

e. When employed as a covering force to cover a withdrawal from action, a battalion-size armor unit uses the friendly front line, or a position near it, as its initial position. The technique of performing this mission is the same as described in *d*, above.

f. All elements of the covering force, including engineers and artillery, should be placed under one commander. The covering force commander operates under the direct control of the main body commander. The main body commander specifies the area of operation or units to be covered.

176. Rear Area Security

a. A rear area security force protects rear area units and installations from hostile action and guards lines of communication and supply.

b. The rear area security force may establish a defensive position. If the area to be secured is too large for employment of this method, the area is covered by observation posts and patrols with a large, highly mobile reserve prepared for immediate movement to any portion of the front if an enemy threat is reported by the observation posts or patrols.

c. Lines of communication and supply may be protected by establishing a series of observation posts and mobile patrols throughout the area of responsibility. A centrally located, mobile reserve is then employed according to the information received from the observation posts and patrols. If the area is too large to be protected in this manner, it will become necessary to increase the number of mobile patrols and to locate the reserve in small groups at various points throughout the area. The security force commander must retain control of all reserve groupings so that he can employ them singly or in mass.

d. Army aviation and the surveillance elements of the armored cavalry squadron should be used to the maximum. Plans should be made to airlift elements of the reserve to engage enemy elements detected by screening forces or to reinforce units in contact.

177. Counterreconnaissance

a. Counterreconnaissance consists of all measures taken to protect a force or an area from hostile observation. It may be employed to protect a concentration, a movement, or an operation where secrecy is important.

b. The unit performing a counterreconnaissance mission prevents enemy ground reconnaissance units from observing the main body, or portions thereof, by performing an advance, flank, or rear guard mission or a covering force mission. The type of action employed is either offensive or defensive or a combination of both, whichever can best accomplish the mission.

178. Security Against Atomic and Chemical Weapons

Armor units obtain security from atomic and chemical weapons by dispersion consistent with efficient conduct of operations, construction and use of protective shelters and field fortifications, individual protective clothing and equipment, marking and avoiding contaminated areas, training of all personnel and units in individual and collective protective measures, and decontamination. For details see chapter 6.

179. Security Against Covert Threats

Security against hostile threats of espionage, sabotage, and subversion is best provided by effective counterintelligence operations. These are discussed in FM 30–7. Since the principal covert threats

to security are espionage and sabotage, security measures to counter these two hostile activities must be emphasized. These measures include training of all individuals in the safeguarding of information and other aspects of security; the control of circulation and communication; physical protection of sensitive areas, installations, and individuals; and the fostering of friendly relations with the civil population.

CHAPTER 6

INDIVIDUAL AND UNIT PROTECTIVE MEASURES

Section I. GENERAL

180. Purpose

This chapter deals with specific individual and unit protective measures which are common to all small armor units. Included are measures which are employed to reduce the probability of detection. If the unit is detected, proper measures minimize the effects of the enemy's use of atomic or chemical weapons as well as other artillery, mortar, and aircraft-delivered weapons. In addition, many of these measures are used when friendly atomic weapons are being employed in close support of armor units, to permit the location of armor units closer to ground zero.

181. Definitions

a. Active Protective Measures. Active protective measures include all the positive means taken to engage, destroy, or neutralize the enemy forces, his weapons, and his intelligence efforts.

b. Passive Protective Measures. Passive measures are those taken before, during, and after an action to prevent detection or to minimize the effect of enemy attack.

c. Chemical Weapons. The term *chemical weapons*, as used within this chapter, refers to toxic chemical agents and does not include nontoxic agents such as flame and smoke.

d. Atomic Weapons. The references to atomic weapons within this chapter include all tactical weapons which result in a nuclear explosion, regardless of the means of delivery.

182. Concealment as a Protective Measure

a. General. Concealment consists of anything that prevents personnel or equipment from being seen by the enemy, but which provides little or no protection in the event of detection.

b. Camouflage. Camouflage includes all measures taken to mislead the enemy by concealment and/or deception. Successful camouflage depends on the proper selection of position, the discipline of the personnel involved, and the proper use of natural materials or artificial construction. FM 5–20 contains specific procedures and techniques of camouflage.

c. Night Operations. An effective way to obtain concealment is to conduct movements and tactical operations during hours of darkness or periods of very limited visibility. Difficulties encountered in night operations can be minimized through adequate training, planning, and supervision.

183. Mobility as a Protective Measure

The mobility of armor units provides an extremely effective means of passive protection. This mobility makes the armor unit a fleeting target which is capable of rapid movement from widely dispersed areas, brief concentration, and subsequent rapid dispersal. Their mobility permits armor units to move quickly through or out of an area of radioactivity or chemical contamination. Retention of mobility is essential to successful armor operations, and no other protective measures should be employed which will seriously restrict the movement of armor units.

Section II. PROTECTIVE MEASURES AGAINST ATOMIC WEAPONS

184. General

Atomic explosions have three primary effects—blast, thermal radiation (heat), and nuclear radiation. Blast injuries are caused by collapsing buildings and flying debris. Blast damage to materiel is primarily due to equipment being violently displaced by the shock wave. Casualties resulting from the thermal radiation are caused by burns resulting from flash heat. Nuclear radiation casualties result from damage to or destruction of living body tissue. For additional unclassified information on the effects of an atomic explosion, see DA Pam 39–1. For precise information applicable to plans for troop safety, refer to data in FM 101–31 (classified). Secondary effects of such an explosion may include fires, resulting from the initial heat or blast, and residual radiation.

185. General Protective Measures

a. Training. The atomic weapon, though a tremendously destructive military device, is not a weapon against which there is no defense. This fact must be firmly established early in the training of any unit. The more each soldier knows about what the atomic weapon can and cannot do, the more effective he will be on an atomic battlefield and the greater will be his chances for survival. Training must stress the interrelated importance of discipline, camouflage, cover, concealment, dispersion, and first and self aid for survival on the atomic battlefield. Field exercises should always include application of unit and individual protective measures. The fact must be emphasized that armor units, because of their equipment and method of operation, are far

better suited for the atomic battlefield than any other combat unit. All personnel must be fully aware that the immediate effects of an atomic explosion may last for as long as 90 seconds, while the residual or delayed effects may last for days.

b. Unit Standing Operating Procedure. The conditions which prevail on an atomic battlefield require that many individual protective measures be performed without detailed direction. The SOP of each armor unit must include procedures to be followed in connection with friendly and enemy employment of atomic weapons. The SOP should include provisions for a warning system to be used in the event of friendly or enemy employment of atomic weapons, routine procedures for protection of equipment and personnel, use of radios, and certain specified reports. The measures prescribed by the unit SOP should be rehearsed at every opportunity.

186. Protection Afforded by Armored Vehicles

a. General. Armored vehicles provide a significant degree of protection to personnel against the effects of an atomic explosion.

b. Tanks. A tank provides excellent protection for personnel within it. The protection provided is roughly equivalent to that provided by a four-foot-deep foxhole with overhead cover. When located close to ground zero, the tank may be thrown or rolled along the ground by the tremendous blast effect of an atomic explosion. The SOP must require that all unnecessary items, such as empty shell casings or ration boxes, be removed from the vehicle and that all necessary items be well secured within the vehicle. Tank crew members under threat of atomic attack should habitually wear helmets while in the tank, and should keep all hatches securely locked. When its hatches are locked, the tank gives complete protection against the thermal (heat) effect of an atomic explosion. However, all combustible material should be removed from the outside of the tank and from its vicinity, to prevent external fires. The tank provides excellent protection against nuclear radiation. The degree of this protection depends upon the yield of the weapon, the height of burst, and the distance from the vehicle to the point of detonation. Precise determination of the degree of this protection in any given case may be made by a specially trained atomic weapons staff officer or by reference to FM 101–31 (classified). Tank crew members, when under threat of atomic attack, should remain within their vehicle, leaving it only when absolutely necessary.

c. Armored Personnel Carriers. Armored personnel carriers provide some protection against the effects of an atomic explosion for personnel within the vehicle, though not as much as a tank. There should be no loose material or equipment in the vehicle which might fly around and cause injuries, and all personnel in the vehicle should wear helmets.

The protection against thermal effects is generally the same as that afforded by the tank (*b* above), and the same considerations apply. Personnel within an armored personnel carrier and under threat of atomic attack should remain in the vehicle, leaving it only when necessary or when better protection, at least the equivalent of a four-foot revetted foxhole with overhead cover, is *immediately* available.

187. Protective Measures for Dismounted Personnel

It cannot be assumed that all personnel of an armor unit will at all times have the protection afforded by an armored vehicle. For this reason, it is essential that all members of an armor unit be well trained in the protective measures which can be used by an individual not protected by an armored vehicle.

a. Protection Against Blast. The immediate and reflex reaction of a person caught in the open at the time of an atomic explosion should be to hit the ground. Shallow ditches or even slight folds in the ground provide some protection against flying debris (figs. 30 and 31). Personnel trenches such as foxholes or prone shelters afford even better protection. Under certain conditions, these protective shelters can be further improved by placing vehicles, especially armored vehicles, over them to provide expedient overhead cover (fig. 32). When this protective measure is employed, care must be taken to insure that the shelters are dug in dry, firm soil and are of such dimension that a lateral movement of the vehicle, resulting from the blast wave, will not cause collapse of the shelter. The time and the tactical situation permitting, the most effective individual shelter, with the exception of a tank, is the two-man foxhole with overhead cover. This shelter should be dug in firm ground, revetted as much as possible, and kept free of loose objects. The overhead cover should be as substantial as possible, flush with the surface of the earth to prevent blowoff, and should include about four inches of earth.

b. Protection Against Thermal Radiation (Heat). The thermal effects of an atomic explosion are emitted instantaneously and with the speed of light. Thermal casualties result from burns on bare skin and to a lesser extent through clothing. Personnel caught in the open at the time of the explosion will be immediately exposed to this effect and will be unable to react fast enough to avoid it. However, any shadow-producing object or terrain feature provides protection against thermal radiation. Unit SOP should require that personnel expose only the minimum amount of bare skin when not protected by means other than clothing. Shirts and jackets should be worn with sleeves rolled down, and gloves should be worn whenever practical. All personnel must be trained never to look at the fireball of an explosion, since their eyes may be injured. Shelters which have overhead cover give complete protection against thermal effect. Placing a shelter-half over

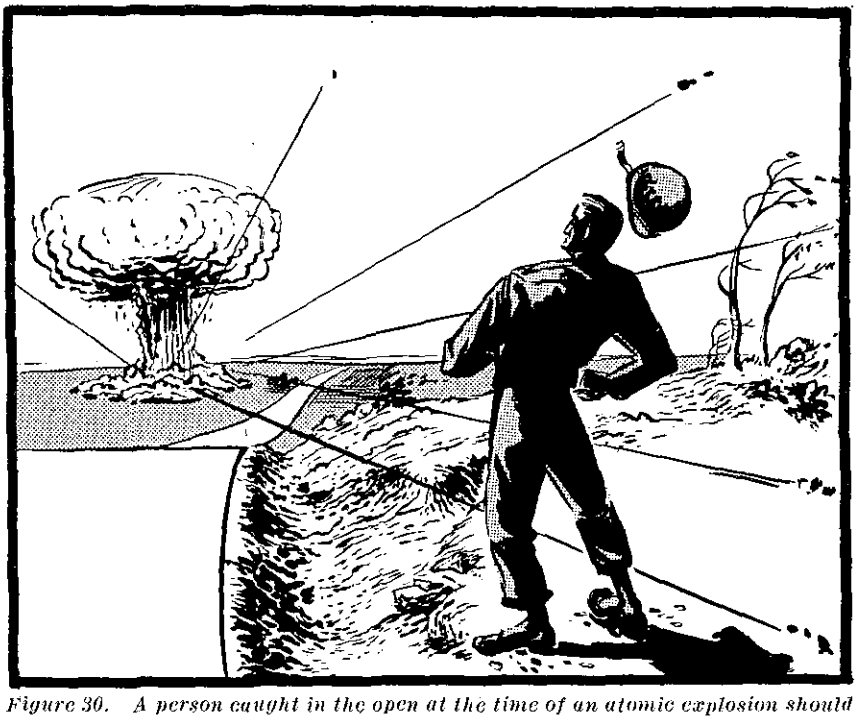


Figure 30. A person caught in the open at the time of an atomic explosion should immediately hit the ground.

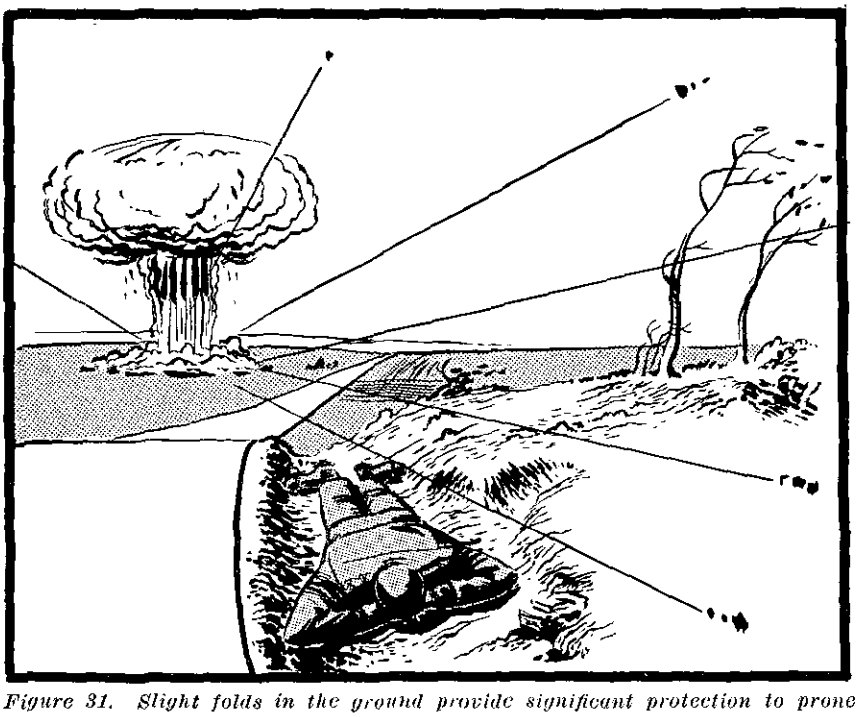


Figure 31. Slight folds in the ground provide significant protection to prone personnel.

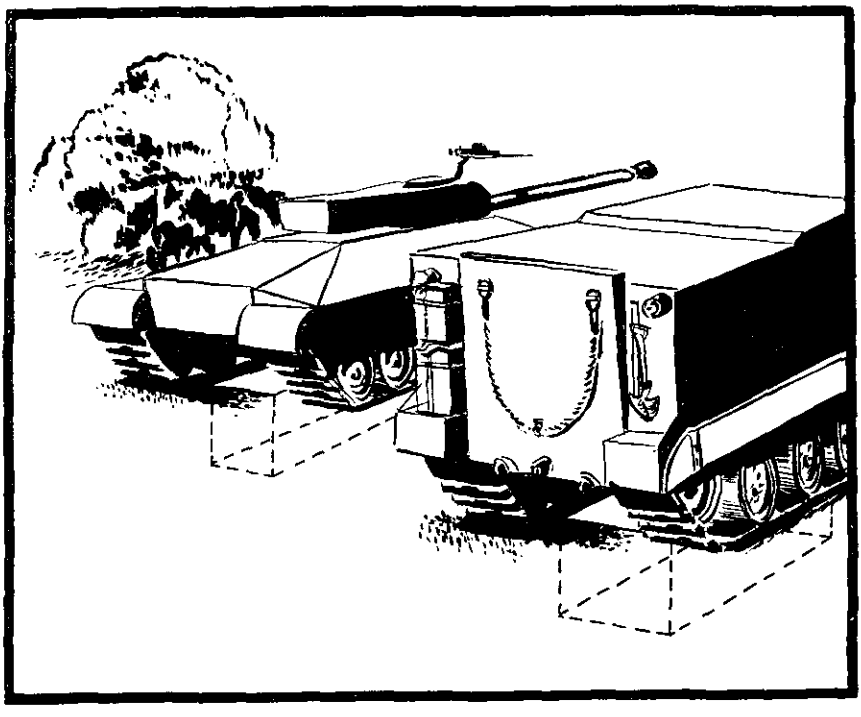


Figure 32. Hasty type protective shelters.

an otherwise open trench or foxhole gives effective protection. No highly combustible item, such as the pre-1956 poncho, should be used for overhead cover.

c. Protection Against Nuclear Radiation. Nuclear radiation is the atomic effect about which the average soldier knows the least and which he fears the most. Protection from nuclear radiation is obtained by placing dense material between the radiation source and the individual. It has been determined that 1½ inches of steel or 7½ inches of earth will reduce prompt gamma radiation by 50 percent. To be effective, shielding must be on all sides. Thus, 3 inches of steel in the hull and turret of a tank, or 15 inches of earth, will reduce the prompt gamma radiation to one-fourth of its original intensity. Prompt gamma radiation is emitted at the same time and at the same velocity as thermal radiation, but to a shorter range. (Prompt gamma radiation is that which is emitted from the fireball at the time of the explosion, and from the cloud for about 90 seconds after the burst, until the cloud is too high for the radiation to reach the ground. It must not be confused with the residual radiation and radioactive fallout following a surface or subsurface burst, or the induced nuclear radiation of the earth's surface in the immediate vicinity of ground zero beneath an air-burst weapon.) Personnel caught in the open within range of

this effect at the time of explosion cannot act quickly enough to avoid gamma radiation. A tank or a four-foot-deep foxhole with adequate overhead cover provides the best protection against this effect. The armored personnel carrier, and the other shelters discussed above, provide significant protection against this hazard.

d. Protection Against Radioactive Fallout. A surface, near-surface, or subsurface atomic explosion causes an additional radioactive hazard known as *fallout.* Such explosions draw tremendous quantities of earth up into the atomic cloud at the time of explosion. This material becomes radioactive and falls back to earth, downwind from the point of detonation, and is known as fallout. This is perhaps the greatest and most lingering hazard and may cover many square miles. The presence and intensity of residual radioactivity resulting from fallout is determined by the use of unit dose-rate instruments which measure it in terms of roentgens per hour. If the tactical situation permits, the most effective protective measure is prompt movement out of the area before the fallout begins or as soon as possible after it has been detected. If it is necessary to remain within the fallout area, the protective measures against the other effects previously discussed will be effective. Armored vehicles must remain completely buttoned up with the crews remaining inside. Constructed shelters should be provided with overhead cover. The period of time a unit may remain in the affected area is dependent upon the degree of risk acceptable to the commander, the intensity of the radiation, and the protection available to the personnel. In any event, the amount of time spent out of cover should be kept to the minimum. The radioactive dust which will collect on the tops of shelters and vehicles should be brushed away at periodic intervals, and complete decontamination should be accomplished at the first opportunity. The protective mask prevents breathing and swallowing of radioactive particles.

188. Unit Protection Against Atomic Weapons

a. General. A unit's protection is no more effective than the collective protective measures taken by its individuals. The fundamental purpose of both individual and unit protective measures is to maintain the combat efficiency of the unit. The number of protective measures an armor unit can take depends on the tactical situation. However, there are certain procedures that can be employed in almost any situation.

b. Smoke. The use of smoke materially decreases the thermal effects of either a friendly close-support weapon or a possible enemy atomic attack. This protective use of smoke would be appropriate during a period of unavoidable concentration of troops, such as making a deliberate river crossing or passing through a defile. A dense fog or heavy snow or rain provide similar protection.

c. Dispersion. Dispersion is an excellent passive protective measure, primarily because it makes target definition more difficult and the target less attractive. However, armor units cannot disperse so much that they will be tactically ineffective. Under conditions of atomic warfare, battalion-size armor units occupy approximately the same size areas as under nonatomic conditions. The dispersal takes place *between* battalions and is controlled at combat command and division level (fig. 33). Depending upon the terrain available and the tactical situation, major armor units try to keep approximately 4,000 yards between perimeters of battalions or 6,000 yards between centers of mass of adjacent battalions. These distances are sought between all critical installations—battalion-size units, combat command headquarters, division artillery and division trains headquarters, and division headquarters. These desirable dispersal distances should be considered in the assignment of assembly areas, objectives, and defensive positions.

d. Position Selection. Within the restrictions imposed by the tactical situation, unit positions should be selected on terrain which provides natural shielding from atomic weapon effects. Personnel casualties resulting from secondary blast effects are more likely in built-up areas than in open country.

189. Unit Protective Procedures Against Atomic Weapons

The unit protective procedures shown below should be routine within armor units. When these procedures are employed to protect against possible effects from a friendly atomic attack, care must be taken not to make them so obvious that the enemy will be warned.

a. Whenever it is possible to determine the direction from the unit's position to the point where an atomic explosion will occur, as would be possible in the use of friendly atomic weapons, vehicles should be placed to take advantage of cover offered by the terrain.

b. Whenever possible, just prior to the friendly employment of atomic weapons, tank turrets are rotated so the main gun is facing away from the blast (fig. 34). This will prevent damage to the sights.

c. When the unit is under threat of atomic attack or in the vicinity of a friendly supporting attack, vehicle antennas should be tied down when not actually in use, to prevent their being broken off.

d. Tools and light equipment, such as those used by the kitchen and maintenance personnel, should be secured to reduce the missile hazard within the area.

e. Special instruments which are provided to determine the intensity of residual radioactivity should be maintained in an operative condition with sufficient personnel trained in their use. During periods when the unit is subject to radioactive fallout or radiological agent

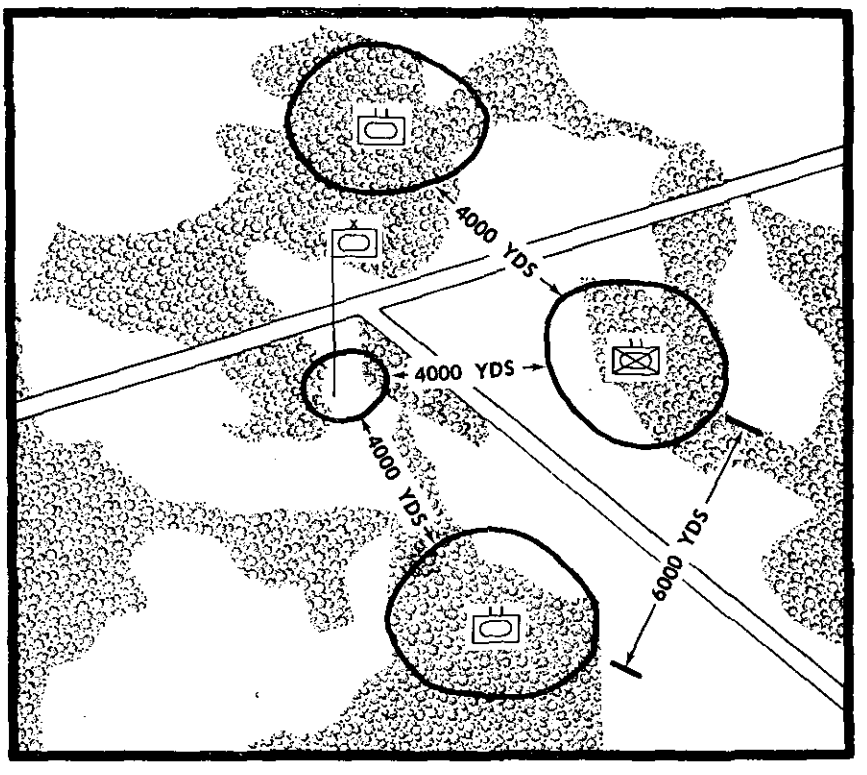


Figure 33. Desirable dispersal distances.

attack, the dose-rate meters should be used to take periodic readings of intensities and determine the presence of radioactivity.

f. Administrative procedures such as feeding, resupply, maintenance, training, and recreation should be staggered so that a minimum number of personnel are out of cover at any given time.

190. Atomic Decontamination Procedures

Decontamination procedures are those unit and individual measures that are taken to reduce the dose rate resulting from radioactive fallout. These measures may include—

a. Brushing or sweeping off clothing and equipment. If possible, a complete change of clothing should be issued and the old laundered.

b. Bathing as soon as possible.

c. Turning over the soil in the immediate area of foxholes, vehicles, and occupied installations. This buries the fine fallout particles and reduces the intensity to a lower level.

d. Hosing or washing equipment and vehicles with soap or detergents at the earliest opportunity.

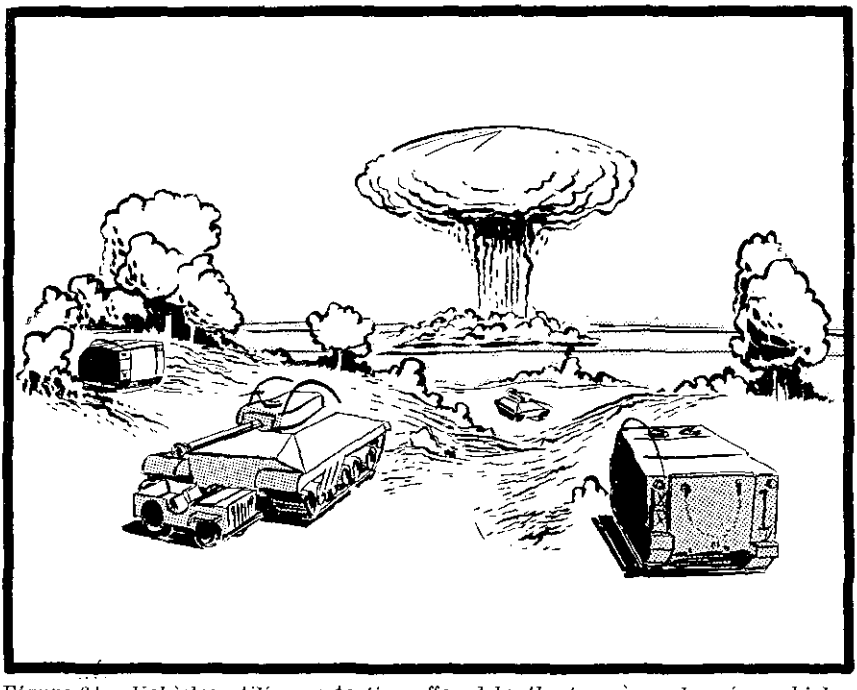


Figure 34. Vehicles utilize protection offered by the terrain or heavier vehicles.

Section III. PROTECTION AGAINST CHEMICAL AND BIOLOGICAL ATTACKS

191. General

Armor units must train their personnel to apply protective measures against chemical and biological attacks. Unit standing operating procedures should include actions to be taken in the event of such an attack. Protective measures include provisions for an adequate warning system; use of individual and unit protective equipment; providing facilities for prompt decontamination of individuals, equipment, and supplies; and prompt treatment of casualties. For additional information pertaining to defense against toxic chemical or biological agents, see FM 21–40 and FM 21–41.

192. Protective Equipment and Shelters Against Chemical Attack

a. The individual's primary protection against toxic chemical attack is his protective mask. The mask provides protection against toxic gas in field concentration, against biological agents, and against inhalation of radiological particles.

b. The tank crew is provided with a tank collective protector (fig. 35). This protector consists of an air purifier which supplies a gen-

erous amount of purified air to three hose connections to which three individual masks with canisters are attached. These individual masks, which may be detached from the air purifier when crew members leave the tank, give the same protection as the individual protective mask. Two tank collective protectors are installed in each tank, one in the turret and one in the driver's compartment. Each individual mask is equipped with a built-in microphone which connects to the vehicle intercom system.

c. Only in rare instances do armor units construct or use protective gasproof shelters. Instead, they take advantage of their mobility to avoid or rapidly pass through areas of contamination. Personnel decontamination stations may be established if the situation permits. In these stations, provisions are made for showers, an exchange of personal equipment, and the issue of new or laundered clothing.

193. Decontamination of Vehicles After Toxic Chemical Attack

An armored vehicle, when contaminated, will continue its mission until the tactical situation permits first-echelon decontamination by the crew. For very light contamination, natural means of decontamination, such as weathering or the heat from the engine, may be sufficient. If the interior of the vehicle is contaminated, protective ointment, gasoline, diesel oil, rags, grass, or other expedients may be used to remove the contamination. For second-echelon decontamination, the vehicle crews or specially trained personnel use DANC solution and hot soapy water. On the exterior of the vehicle, bleach slurry and solvents are used. Third-echelon decontamination is performed at decontamination points in maintenance areas by vehicle crews and power-driven decontaminating apparatuses. For additional information pertaining to decontamination, see TM 3–220 and FM 21–40.

194. Biological Attack

Definite information on the employment of biological agents by the enemy is disseminated from higher headquarters, but each armor unit must be alert to the danger and promptly report the unusual occurrence of diseases. The best local defense against biological warfare is strict enforcement of all preventive medical measures, sanitation, and a high standard of personal hygiene.

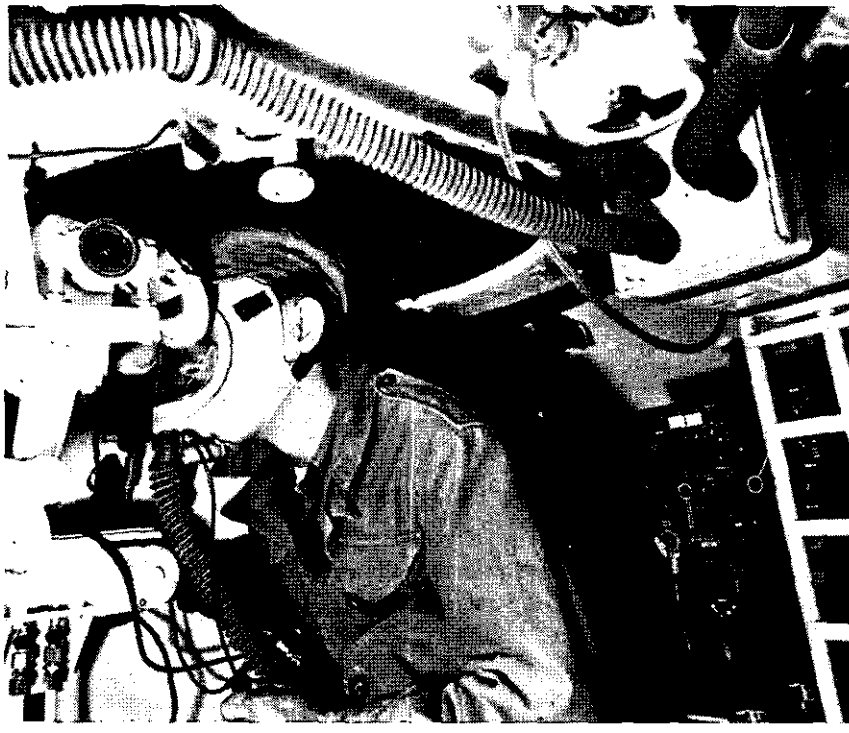


Figure 35. Tank collective protector.

Section IV. PROTECTIVE MEASURES AGAINST ARTILLERY, MORTARS, AIRCRAFT, AND ANTITANK GUIDED MISSILES

195. General

a. A unit which is well disposed and protected against the effects of either atomic or toxic chemical attack is also well protected against enemy mortar, artillery, air, and antitank guided missile attack. Concealment, dispersion, and cover are primary protective measures.

b. Armor units in assembly areas and attack positions, or occupying objectives or defensive positions, maintain from 50 to 100 yards between vehicles.

c. Air alert sentries are maintained on all organic weapons which are capable of firing on aircraft. Normally, aircraft are fired on *only* when they make a direct attack. Premature or unnecessary firing discloses positions to the aircraft.

d. When attacked by enemy aircraft while on the march or in a cross-country movement, armor units maintain their interval and distance, continue the movement, and direct all possible fire at the attacking aircraft.

e. All personnel of armor units should be well trained in the com-

pletion and rapid transmission of shelling reports (app. III). Prompt and accurate shelling reports assist effective counterbattery fire by supporting artillery.

196. Defense Against Antitank Guided Missiles

a. General. The introduction of the antitank guided missile to the battlefield increases the threat to mounted armor formations in all types of actions. This new weapon does not, however, affect the overall concepts of offensive or defensive doctrine. It does demand that greater emphasis be placed on the application of existing countermeasures against conventional antitank weapons as well as development of certain techniques based on the characteristics of the type antitank guided missile encountered.

b. Characteristics of Antitank Guided Missiles. In general antitank guided missiles, are rocket-propelled, command-guided systems which require both launcher and guidance equipment as well as necessary operating personnel. These missiles have the capability of being launched from either ground launching vehicles or aircraft. Observer control personnel may operate at the launching site or from a detached position at a vantage point, using binoculars, periscopes, or the naked eye to adjust the flight of the missile.

c. Countermeasures. The armor unit opposed by antitank guided missiles employs essentially the same tactics used against more conventional antitank guns. Maximum use is made of existing cover and concealment, including wooded areas (in which antitank guided missiles cannot be effectively employed). When attacking an objective, the avenue of approach selected to the objective should be the one offering the most effective cover, consistent with the accomplishment of the mission. The commander must take into account a possible antitank guided missile threat, but should not allow this consideration to be overriding in the selection of a course of action. Reliance, instead, should be placed on speed of movement, use of existing cover and concealment, and taking positive steps to eliminate or reduce the effectiveness of any such weapons encountered. The latter actions may include—

(1) Placing harassing fire on known or suspected observer locations and/or launching sites.
(2) Placing smoke on known or suspected observation posts.
(3) Employing dismounted armored infantry elements, using covered and concealed approaches, to attack either the launching or control sites.

CHAPTER 7

ARMOR MARCHES AND ASSEMBLY AREAS

Section I. MARCHES

197. General

a. An armor unit spends much of its time in the execution of marches, both tactical and administrative. Thus, a vital factor in the successful operation of the unit is the efficient execution of these marches. March training must be conducted throughout, and concurrently with, all other phases of training.

b. The armor commander's objective in marching is to move from one location to another, arriving at the appointed time and place with all personnel and equipment in the best possible condition, ready to accomplish the mission. This requires thorough planning and constant supervision during the execution of the movement. *March technique* is the name given to the procedures employed in the movement of troops in column.

198. March Definitions

For a thorough understanding of march technique, it is necessary to know and understand the meaning of the following military terms used in marching. For other details, see FM 19–25, FM 25–10, FM 101–10, and SR 320–5–1.

a. Arrival Time. The time at which the head of the column, or head of an element thereof, arrives at a designated point.

b. Clearance Time. The time at which the tail of a column, or tail of an element thereof, passes a designated point.

c. Close Column. A column in which each vehicle is closed to safe driving distance behind the preceding vehicle. Armor units in close column normally use a density of 34 vehicles per mile.

d. Control Vehicle. The vehicle that travels at the head of a column, or element thereof, and sets the speed of the column necessary to maintain the prescribed rate of march.

e. Density. The average number of vehicles that occupy one mile of road space.

f. Distance. The space between vehicles or units, measured from the rear of one vehicle (including towed load if any) or unit to the front of the following vehicle or unit in the column. It may be expressed in yards or miles.

g. Guide. A person who leads a unit or vehicle over a predetermined route or to a selected area.

h. Infiltration. Movement of vehicles, singly or in small groups, at extended and irregular distances.

i. Initial Point (IP). Point (example, a crossroads) at which a foot march or motor movement is formed without halting by the successive arrival of the units that finally make up the column.

j. Light Line. A theoretical line on the ground beyond which vehicles proceeding to the front at night are required to use blackout lights, or beyond which vehicles proceeding to the rear are required to operate with driving lights on.

k. March Column. All elements using the same route for a single movement of troops.

l. March Discipline. Observance and enforcement of the rules which govern a unit on the march, especially those involving correct formations, distances, speeds, and security.

m. March Graph. Time-spaced diagram used in planning and controlling marches, both road and foot, and in preparing or checking march tables.

n. March Order. An operation order issued by a commander to give instructions for a march.

o. March Table. A composite list showing the general organization and time-space schedule for a march movement. It is generally published as an annex to an operation order.

p. March Unit. A unit or group of units which moves or halts at the order of a single commander. A platoon, company, or similar organization normally forms the march unit. A serial is made up of one or more march units.

q. Marker. A person, flag, sign, or some other object posted along the route of march to indicate a change of direction, a procedure to be followed, a danger point, or the position of a unit.

r. Open Column. A column in which distances between vehicles are increased to accomplish greater dispersion. Armor units in open column normally use a density of 17 vehicles per mile, or greater if conditions require.

s. Quartering Party. A group of persons containing representatives of each unit within the march column. It is dispatched prior to the main body for the purpose of reconnoitering and planning for the occupation of the new area. It posts guides at the release point to lead units of the main body into their assigned areas without halting.

t. Rate of March. The average marching speed in miles per hour, including scheduled halts.

u. Release Point (RP). A location at which the units of a march column revert to control of their respective commanders.

v. Road Space. The length of roadway, measured in miles, allotted to an element of the march column.

w. Serial. One or more march units, preferably with the same march characteristics, placed under one commander for purposes of march control. A battalion normally forms a march serial.

x. Strip Map. Sketch of a route of march. It may or may not be drawn to scale, but should include identifying landmarks such as towns, bridges, crossroads, etc.

y. Time Distance. The time required to move from one point to another at a given rate of march. It is also applied to the interval of time between march units, serials, or columns as they move past a given point. The time is measured from the instant the tail of one unit clears the point to the instant the head of the following unit reaches the same point.

z. Time Length. The time required for a column or elements thereof to pass a given point.

199. Types of Marches

Marches of armor units may be classified as administrative marches or tactical marches.

a. Administrative March. An administrative march is a march in which the primary consideration in the arrangement of troops and vehicles is their rapid transit. This type of march is made when no enemy ground activity or other interference is expected. Emphasis is placed on speed of movement and on conserving the energy of the troops. Whenever practicable, columns are composed of vehicles having the same march characteristics. If possible, the integrity of units is maintained. Separate roads may be assigned to columns having different march characteristics, or column movements by the same route may be echeloned with respect to time.

b. Tactical March. A tactical march is one in which the units and vehicles are arranged in the column in a manner which will facilitate their employment upon contact with, or interference from, the enemy. The factors which have the greatest influence on dispositions for the tactical march are the composition and proximity of hostile ground forces, hostile air activity, and the plan of action upon arrival at the destination.

200. Types of March Columns

Armor units normally use one of three types of march columns open column, close column, or infiltration.

a. Open Column. The open column is particularly applicable to tactical marches made during daylight. Such marches are made when time is so important that lack of secrecy is acceptable and the calculated risk of some losses from air attack must be taken. Open

column is also used when moving with driving lights at night, or with blackout lights on moonlit nights on good roads. A specific distance between vehicles is prescribed when the open column is used. This distance in most cases is approximately 100 yards, which is considered to be the proper space to prevent destruction of more than one vehicle by a single enemy air attack. The open-column formation provides the best compromise between the conflicting requirements for a short time length and for adequate dispersion.

b. Close Column. The close column is used during hours of darkness under blackout driving conditions. It also is used for administrative marches at small-unit level. This method of marching takes maximum advantage of the traffic capacity of the roads. However, it does not provide dispersion against enemy air attack. In daylight, a distance of approximately 50 yards between vehicles is prescribed. At night, the distance between vehicles is dependent upon the visibility, road conditions, and terrain. As a general rule, this distance is the maximum at which a driver can see the blackout taillight of the preceding vehicle.

c. Infiltration. Infiltration may be used on tactical marches when sufficient time and road space are available and when the maximum of secrecy, deception, and dispersion is desired as a means of passive protection against enemy observation and attack. Because of extended distance between vehicles, column control is extremely difficult, and routes must be carefully marked in advance to prevent drivers from becoming lost.

201. Organization of March Columns

The number of columns which a unit employs in its movement depends on the availability of routes and upon the situation. The use of one route facilitates control, but increases the amount of time required for the movement and increases the length of the march column. The use of multiple routes makes control more difficult, but decreases the amount of time required for the movement and shortens the length of the march column. If an ample road net exists, the commander must weigh these factors carefully in making his decision.

202. Warning Orders for Marches

a. Upon receipt of an order indicating that the unit is going to move, the commander immediately alerts his command by issuing warning order to all subordinate commanders and key personnel of the headquarters. Each subordinate unit notifies its headquarters when it is ready to move. The warning order includes the nature of the operation, the general purpose of the operation, the time of departure, and the destination. Warning orders help to ensure that the unit will be ready to start on time and that subordinate com-

manders will have time to complete maintenance and to rest personnel. When pertinent, instructions to the quartering party should be included in the warning order.

b. When a unit is marching as part of a larger command, a liaison officer, or agent, with radio-equipped vehicle is sent to the area of the unit which precedes it in column. This liaison officer or agent keeps his commander informed as to the progress of the unit to which he is sent, so that his unit will be able to clear the initial point at the prescribed speed and distance without halting.

203. Planning the March

a. Although many factors contribute to a successful march, one of the most vital is careful and adequate planning. Considerable detail is involved in moving an armor unit from one location to another. To obtain best results, all commanders must make full and complete use of their staffs, liaison officers, and reconnaissance agencies. In planning a march, a commander must take due account of enemy employment of atomic weapons or the threat of such employment in the bulk of the planning considerations outlined in *b* below.

b. Among the items considered in planning are—

(1) Route of march.
(2) Route reconnaissance.
(3) Quartering party.
(4) Formation for the march.
(5) Selection and designation of initial point (IP).
(6) Selection and designation of release point (RP).
(7) Rate of march.
(8) March distances.
(9) Control and supervision of the march.
(10) Halts.
(11) Security measures to be adopted.
(12) Logistical support.
(13) Trains.
(14) Communication.
(15) Establishment of necessary liaison.
(16) Issuance of maps and orders.

204. Route of March

a. Higher headquarters usually designate a route or routes of march. Higher headquarters may establish a road priority for the march, and each unit commander must follow this schedule.

b. The selection of the best route or routes is an important factor in the conduct of a successful march. Accomplishing the mission is the most important consideration, and the route that will best insure that objective will be the one selected. The mission may make it

necessary to select secondary roads—roads that may not be surfaced and which are dusty or muddy. A commander must be sure, before selecting a route, that every vehicle in the column can negotiate it.

205. Route Reconnaissance for Marches

a. After receiving the warning order for a movement, the commander obtains all available information concerning the route of march. His sources of information include reports from higher headquarters, map reconnaissance (fig. 36), and air and ground reconnaissance. The route reconnaissance should provide information about—

(1) Roads, including type, condition, and width.
(2) Bridges, including capacity, location, and bypasses.
(3) Fords, including location, depth of water, and condition of bottom, banks, and approaches.
(4) Any other aspects of the terrain which may be useful to the commander.
(5) Defiles, congested areas, or obstacles which may result in excessive concentration of marching elements and creation of a possible atomic target.
(6) Points at which guides or markers will be required.
(7) Location of "coil up" areas if their use is contemplated (par. 216*d*).

b. A commander may be called on by higher headquarters to perform route reconnaissance for a larger command.

206. Quartering Party

a. In any move to a new area, a quartering party should, whenever possible, precede the main body. The quartering party is composed of representatives of all subordinate units. Its size and composition should insure its ability to thoroughly reconnoiter the new area, to furnish any needed security, and to make necessary improvements on entrances to, and routes within, the area. The operations of the quartering party should normally be covered in the unit SOP. The commander of the quartering party should be informed of the route, order of march, and estimated time of arrival of the main body.

b. It is desirable that the same individuals be employed regularly on quartering-party assignments. If the area to be occupied has been recently evacuated by the enemy, the quartering party should include personnel trained in mine detection and removal. Personnel detailed to the quartering party are told how long they will be gone and what special equipment they need. They are furnished with signs and markers and with sufficient pioneer tools to make necessary improvements to the area.

c. See paragraph 299 for additional information.

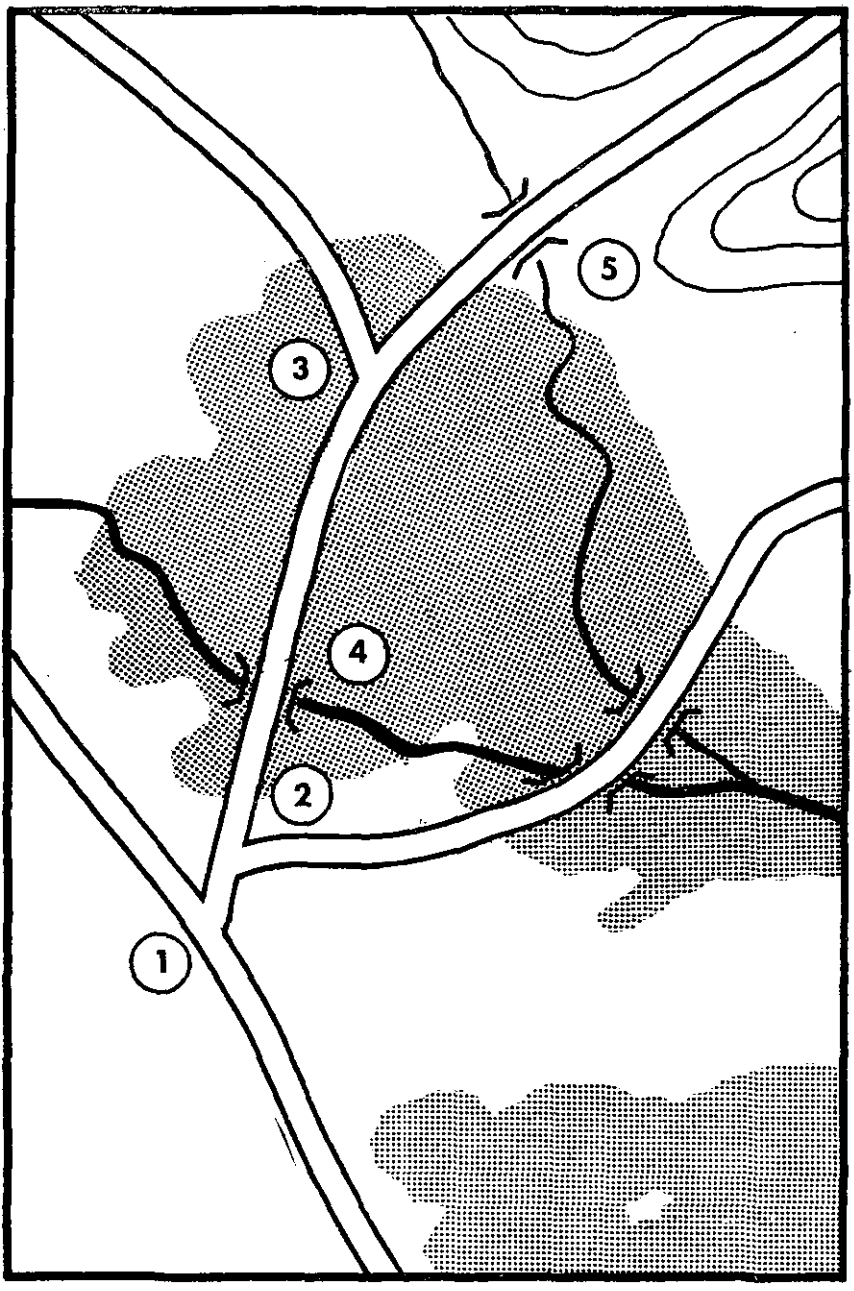


Figure 36. Route reconnaissance by map. Markers are needed at 1, 2, and 3. Bridges 4 and 5 must be examined. Woods are defiles where the enemy may ambush the column. Hills must be reconnoitered. Distances must be measured.

207. Formation for the March

a. The formation for the tactical march is governed primarily by the tactical situation and the order in which it is desired that subordinate units arrive in the assembly area or attack position. The order of march in a movement to an attack position is based on the planned employment of units in the attack. March units are so arranged that a minimum of movement and regrouping is required in the attack position. Other considerations are the time of the move and the march characteristics of the marching units. When the tactical situation demands that a column be composed of vehicles of different characteristics, the rate of march is based on the slowest vehicle. For march control purposes, it usually is desirable to place the slowest serial or march unit at the head of the column. However, this may not always be practical.

b. In an administrative march, the formation is generally governed by the position of the units in the old assembly area. When marching as part of a larger unit, a battalion ordinarily marches as a serial, each of its companies being a march unit. An order of march may be selected so that the unit most distant from the IP moves out first, followed by the next most distant unit, which ties in at the tail of the column as the leading unit moves by. The units may also leave the old area in the order in which it is most convenient for them to enter the new area. Exceptions to this procedure are made for the battalion headquarters, which usually is near the center of the column, and for the service elements, which are at the rear of the column.

208. Selection and Designation of the Initial Point (IP)

a. The purpose of the IP is to furnish all units with a common point from which they can start their march according to a predetermined timetable. When a battalion or company is marching as part of a larger unit, the initial point for the larger unit is designated by the commander of that unit. The battalion or company commander then designates another initial point, short of the IP of the larger unit, and sets a time for his unit to reach and clear it. The IP must be far enough from the assembly or bivouac area to permit each unit to gain the specified speed by the time it reaches the point. Each unit must be traveling at the prescribed speed, and with the prescribed time and ground distances, when it reaches this point (fig. 37). The initial point should be easily distinguishable on the ground.

b. Each march unit or serial commander is responsible for a reconnaissance of the route from the march unit or serial IP to the larger unit's IP. This route is measured, and the amount of time it takes the leading vehicle to travel this distance is determined. This amount of time is subtracted from the time at which the leading vehicle must pass the larger unit's IP, and the result is the starting time for the march

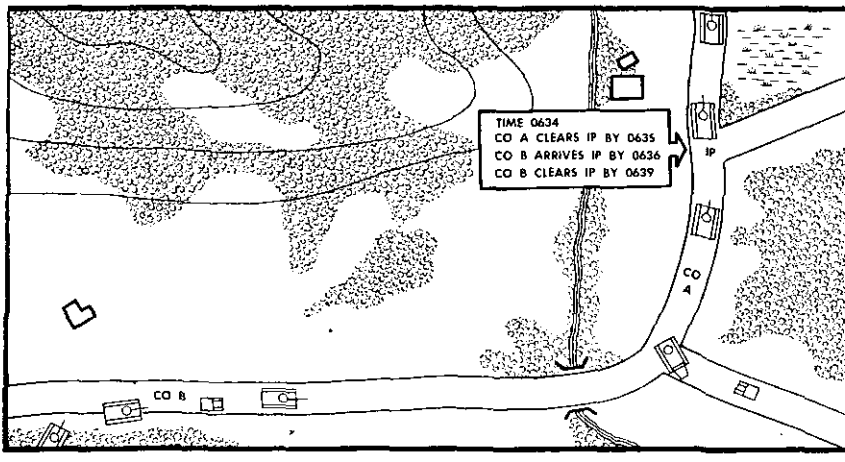


Figure 37. The commander moves out his unit to cross the IP at the proper time and speed, without halting and with the prescribed distance between vehicles.

unit or serial. If other units are to precede the march unit or serial to the larger unit's IP, the commander establishes liaison with those units and is careful not to block their movement. While planning estimates may have to be changed, final corrections can easily be made through liaison.

209. Selection and Designation of Release Point (RP)

a. The RP is the point at which an incoming serial or march unit is released from column control and leaves the march column. On reaching this point, the serial or march unit separates from the column and, led by guides from the quartering party, promptly moves into its assigned portion of the new area. The RP should be at or near the entrance to the area to be occupied and should be easily recognizable from the ground.

b. If a battalion is marching as a part of a larger command, it may be released from column control, as a serial, at the larger command's release point. It then may be required to march some distance as a serial before its march units disperse. This will require the battalion to have a release point of its own where guides pick up the companies and guide them into the new area. Guides must be alert to recognize the leading elements of their respective units, so that they can lead their units from the column without interrupting the march of the remainder of the serial.

210. Rate of March

a. The rates of march for mixed columns of tanks, armored personnel carriers, and wheeled vehicles are as follows:

(1) During daylight—12 to 20 miles per hour.

(2) During darkness—6 to 10 miles per hour on good roads.

b. The factors to be considered in determining the exact rate of march are—

(1) Grades, sharp turns, cities, towns, and other bottlenecks along the route.
(2) Surface conditions such as dust, ice, mud, and snow.
(3) Condition of vehicles.
(4) Condition of drivers and crews.
(5) State of march training and degree of experience of individuals and units.
(6) Weather conditions that affect visibility.
(7) Light conditions that affect visibility.
(8) Possible atomic threat which might result in selection of an increased rate of march.

c. Rates of 15 miles per hour or more for sustained periods can be attained only under the best conditions. To attain this rate, routes of march must be comparatively level and should avoid cities, towns, sharp turns, and other bottlenecks; the road should be hardsurfaced and free from ice and snow; vehicles must be in good condition and should not have been subjected to long periods of operation; crews, particularly drivers, should be rested and at their peak of alertness.

211. March Distances

a. The distance between vehicles in a march column is determined by the selection of the type column to be employed.

b. The distance between elements of the column, expressed as a time interval, usually is announced by the commander. For planning purposes, the time interval is often one minute between march units and three minutes between serials.

c. The threat of atomic attack may require selection of increased march distances between both vehicles and march units.

212. Control and Supervision of the March

a. A high degree of training and discipline is the greatest factor in successful control of an armor unit on the march. Detailed supervision is necessary to insure that the column is formed according to plan. Control of the unit on the march is attained by the following means:

(1) Detailed supervision by all commanders.
(2) Planned staff supervision at critical points and possible bottlenecks, including at least the IP and RP, to check the order of march, the rate of march, the time length of the column, clearance times, and march discipline.
(3) A control vehicle marching at the head of each march unit.
(4) Adequate marking of routes (guides and markers).
(5) Use of phase lines and check points.
(6) Radio (if permitted by security).

(7) Hand signals and flags.
(8) Use of Army aircraft.
(9) Assistance from military police.

b. The commander and designated members of his staff must closely supervise the movement of the unit on the march. These officers check for the presence of all vehicles in their column, their condition, distances between march units, their rate of march, and the general conduct of the march units. Corrections, where necessary, are made immediately. Supervision of the march column is the responsibility of all officers and noncommissioned officers of the unit.

c. Radio or listening silence may be in effect during motor marches. The degree of security desired must be weighed against the necessity for control and the reaction time of the enemy. Communication is maintained by motor or air messenger, as well as by visual means. When feasible, wire is installed at the next location, to be operative when the command post enters the new area. Visual signals—particularly arm-and-hand signals and flashlight signals—are used extensively for column and vehicle control. Messengers are used between units in the column. Each unit marching as part of a larger unit maintains liaison with the preceding unit. A liaison officer or agent travels with the preceding unit and keeps his commander informed as to the preceding unit's time of departure, time of clearing the IP, and time of reaching intermediate control points and the RP. At prescribed intervals he informs his commander of the location of the rear of the preceding unit and gives him early warning of any unscheduled halt and the reason for it as soon as it is determined. Army aircraft may be provided to supplement organic means of communication during the march.

213. Traffic Control of the March

a. Armor units generally are directed to march to their destination on a designated route within a specified period of time. In order to insure completion of the march within the allotted time, traffic control personnel are posted at critical points along the route to keep all column elements on the proper route and to minimize delays caused by other columns, civilian or refugee traffic, congested areas, or difficult stretches of road.

b. When a battalion is marching as a part of a larger unit, traffic control personnel normally are provided by the headquarters controlling the march (FM 19–25). When marching alone, the battalion provides its own traffic control personnel, normally from the scout platoon. When sufficient personnel are available, traffic control personnel are posted in pairs, one to direct traffic while the other covers him. Their equipment should include appropriate route markers if required, dimmed or red flashlights, luminous buttons, or other devices or equipment to facilitate identification during hours of darkness.

214. Control of Speeds Within the Column

a. It is theoretically possible for an entire march column to move at a constant speed. However, elements in a column of any length simultaneously encounter many different types of roads and obstacles, including hills, sharp curves, and defiles. On a long hill or bad stretch of road, for example, a traffic jam may occur at the near side of the obstacle while excessive speeds and distances are common on the far side. The result is that different parts of the column often are moving at different speeds at the same time. This produces an undesirable accordionlike action (or "whip").

b. This problem is particularly important to armor units because of the varied types of organic vehicles. To reduce "whip" in a march column, the leading vehicle must not exceed the authorized maximum speed of the slowest vehicle in the column, especially while negotiating an obstacle. To minimize vehicle congestion on the near side of an obstacle, vehicle commanders and drivers must be alert and maintain the prescribed minimum distance (usually included in the unit SOP) between vehicles. To eliminate excessive speeds on the far side of the obstacle, and to maintain proper march distance, each vehicle must only gradually resume speed to maintain the prescribed rate of march after it crosses the obstacle.

215. Vehicle Control on the March

a. A maximum speed should be prescribed for the vehicles in a march column. Such a speed may be included in the unit SOP or may be published as part of the unit march order. This prescribed maximum speed must be based on the maximum sustained speed of the slowest vehicle in the column. It will not be exceeded by any vehicle in the column, even when closing gaps or making up for lost time. Vehicles which have dropped out of the column for any reason regain their position in column only by passing units which have halted, and never do so by passing or doubling moving columns.

b. Each vehicle commander is responsible for the proper conduct and movement of his vehicle. His responsibilities include—

(1) Insuring that the vehicle maintains proper position in the column.

(2) Designating crew members to control traffic and to assist passing traffic when his vehicle is halted.

(3) Insuring that the vehicle does not pass any moving vehicle or column in regaining its position after being required to halt for maintenance.

(4) Supervising maintenance and service of the vehicle at halts.

(5) Repeating signals passed back along the column.

c. The following rules will assist drivers and vehicle commanders to insure proper procedure on a march.

(1) Start the engine on signal from the unit commander, and keep alert for the command to move out.

(2) Move out slowly, and allow the vehicle ahead to gain its proper distance before normal speed is reached.

(3) Keep within the lane of the column unless required to give way to or pass other traffic.

(4) Maintain an even driving pace, increasing and decreasing speed gradually. Do not speed to catch up; do not lag behind.

(5) Regain proper distance from the vehicle ahead by gradual changes in speed.

(6) Watch the vehicle ahead for changes in direction, traffic hazards, column signals, etc.

(7) Keep position in the column unless ordered or signaled to pass other elements.

(8) Shift into proper gear when approaching a hill or a slow stretch of road. Never coast down hills with the clutch disengaged or transmission in neutral. Use the same gear that would be used to ascend the hill.

(9) Obey traffic signals, signs, and markers except when otherwise instructed (as, for example, when traffic control personnel have cleared the way for the column to pass intersections).

(10) If possible, move a disabled vehicle off the road to the right and signal the succeeding vehicles to pass.

(11) Move as far as possible off the road or to the right side of the roadway before halting.

(12) Stop the engine on proper signal or if the vehicle is to stand longer than a few minutes.

(13) Wait for the command before dismounting at halts.

(14) Keep to the off-road side of the vehicle, and off the traveled part of the road, when dismounted.

216. Halts on the March

a. Units on the march normally make schedule halts of 15 minutes duration after each 1 hour and 45 minutes of marching. At scheduled halts, all march units and serials halt *simultaneously* at the specified time; they make no attempt to close up gaps in the column. Vehicular crews perform their scheduled at-halt maintenance operations.

b. At halts, march unit and serial commanders make sure that—

(1) Traffic control personnel are posted at the front and rear of each march unit.

(2) Correct distance between vehicles is maintained, since armor units do not normally close up at the halt.
(3) All vehicles and personnel remain well on the right side of the road and keep the traveled portion of the road clear at all times.
(4) Ground and air security is maintained.
(5) Crew maintenance is performed by the crew of each vehicle.
(6) Vehicle personnel are alert to receive and relay signals for the resumption of the march. This is particularly important at night.
(7) Maintenance personnel check the mechanical condition of vehicles, as appropriate.
(8) All vehicles move out at the same time after the halt.

c. Halts for refueling should be scheduled in advance; this enables march unit commanders to make definite plans for refueling. Trucks carrying fuel and lubricants usually are sent to the companies for a march.

d. During tactical marches when contact with the enemy is imminent, or during prolonged halts, it is often desirable to shorten the column. When the terrain permits, units do this by "coiling up" on each side of the road (fig. 38). In this procedure, each subordinate unit selects, or has designated to it, an area off the road; all of its vehicles move into this area just as they would move into a bivouac or assembly area. In an administrative march, the units are so placed that they can easily move back onto the road, faced in the proper direction to resume the march. If tactical considerations govern, the units are placed to facilitate movement in the direction of the expected action.

217. Security Measures on the March

a. Secrecy. An intention to move should be concealed from the enemy if at all possible. If this is done, the enemy probably will not be able to react soon enough to seriously interfere with the movement. Routine operations should be maintained up to the time of movement, with no apparent increase or decrease in activity. Radio transmissions should continue at average rates unless listening silence has been directed. Movement of vehicles should be kept to a minimum.

b. Security Forces. The commander of the march column is responsible for maintaining security throughout the movement. Security may be provided by the use of covering forces and advance, flank, and rear guards, or by other friendly forces. For details as to the composition, mission, and conduct of security forces, see paragraphs 161 through 179.

c. Sectors of Observation. While on the march and at halts, each vehicle is assigned a primary sector of responsibility for observation

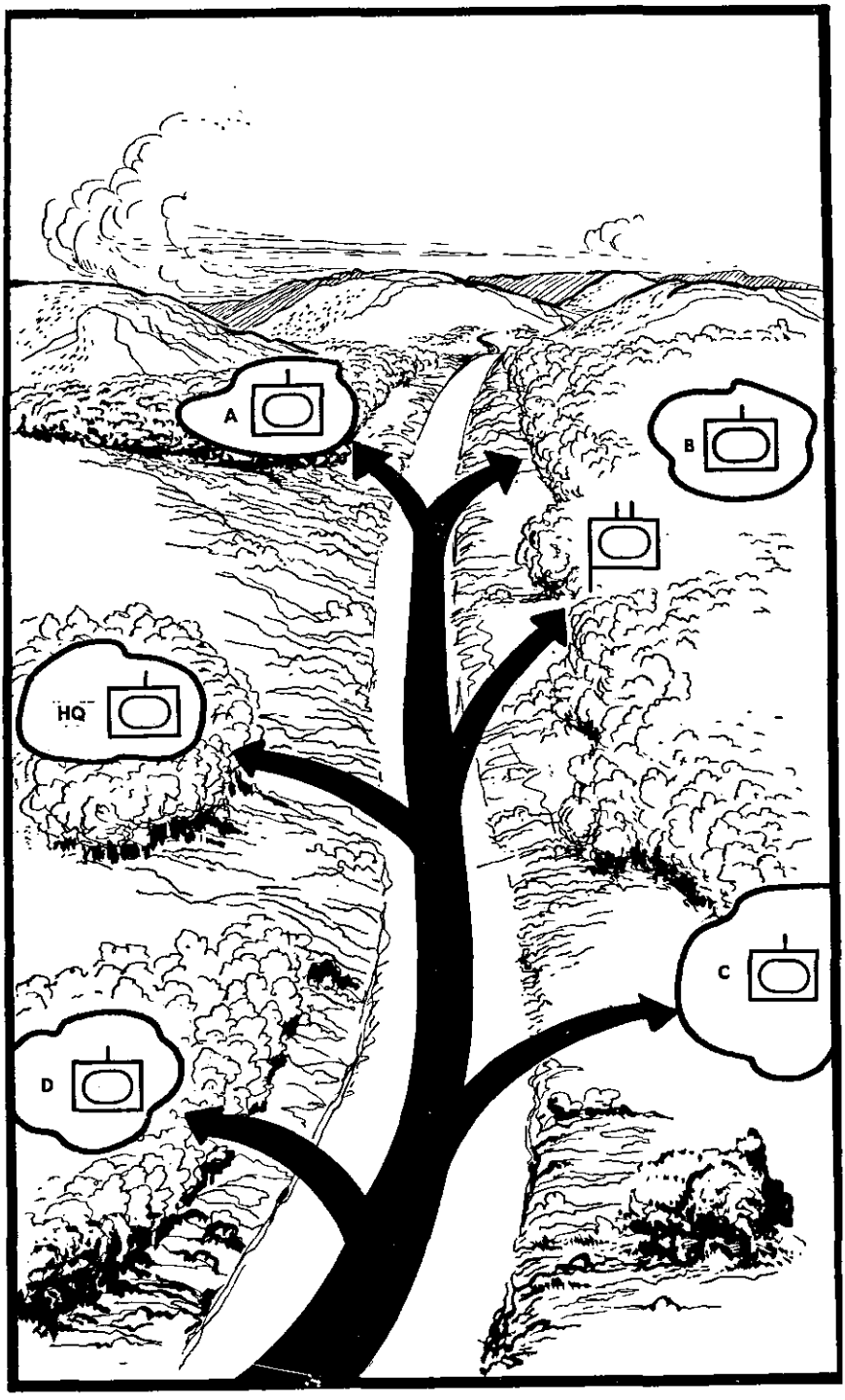


Figure 38. Coiling up.

(fig. 39). These sectors are assigned in a pattern to provide all-round observation by the vehicles of a unit.

d. Army Aircraft. The commander should take full advantage of available Army aircraft to obtain knowledge of routes and of enemy forces and their dispositions. When a battalion is marching as the lead element of a larger command, it is normal for Army aircraft organic to the division to provide surveillance to the front and flanks, beyond the security elements. The efforts of such aircraft should be closely coordinated with advance guard and flank guard elements.

e. Security Against Air Attack. Both during the march and at the halt, the armor unit must provide its own security against air attack (fig. 40). This is done by placing an air sentry on each vehicle and by continuously manning the antiaircraft guns. Proper distances must be maintained between vehicles. All personnel must guard against the tendency to jam up at halts, obstacles, and traffic bottlenecks. Commanders and staff officers, while moving along the column, constantly check these security measures.

f. Communication Security Measures. Normal communication security measures are maintained during movements.

g. Defense Against Atomic or Chemical Attack. Column formations normally present poor targets for enemy atomic or chemical weapons. However, profitable targets may be presented by multiple-column formations with inadequate lateral distance between columns. When enemy atomic or chemical attack is considered possible and additional protection is desired, column formations are dispersed in depth and the movement is made on a broad front. Increased emphasis is placed on avoiding congestion at obstacles.

218. Security in An Interior Unit on the March

a. When marching as an interior unit of a larger command, the small armor unit is responsible for its own local security against surprise by hostile groups which may have been able to penetrate the security detachments or which have concealed themselves and allowed the advance elements to bypass them.

b. At halts, each vehicle crew posts a sentry either in the turret (in the case of tanks) or at a nearby vantage point. Tanks may be posted to cover any suspicious areas or avenues of approach (fig. 41). Personnel remain alert at all times.

219. March Outposts

a. March outposts are established by a column's security detachments to protect it at every halt of more than a few minutes' duration. The advance guard forms the march outpost system which protects the head of the column, while the flank and rear guards do likewise

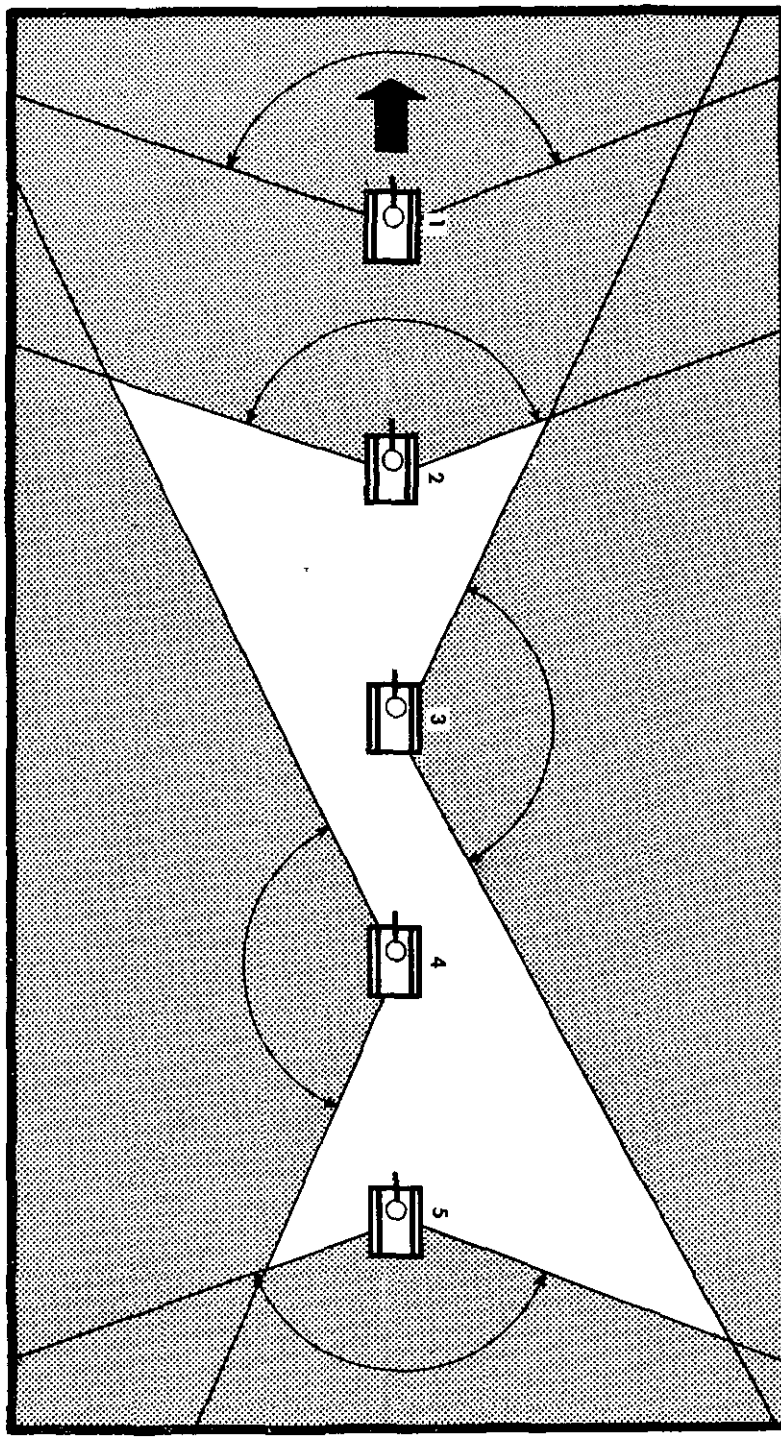


Figure 39. Each vehicle is assigned a primary sector of responsibility for observation.

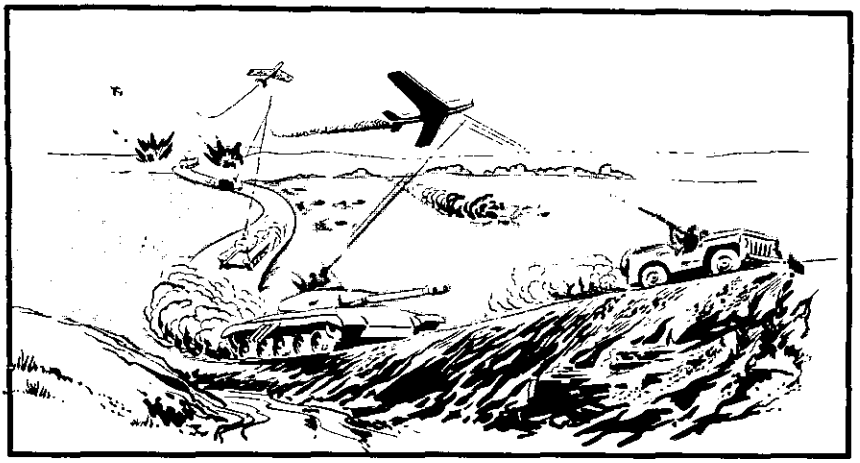


Figure 40. Defense against air attack while on the march. Vehicles continue the march; all antiaircraft guns are manned and fired; vehicles are properly spaced.

to cover their respective portions of the main body. At the end of a march, these outpost systems continue to operate until a regular outpost system can be established.

b. A security force establishes a march outpost system by occupying commanding terrain to the front and flanks and by assigning areas of responsibility covering all avenues of approach. Radio contact is maintained between elements of the march security forces and adjacent friendly units. If the duration of the halt permits, an artillery fire plan is prepared, and the march outpost positions are improved and strengthened by the installation of roadblocks and other obstacles on each avenue of approach. The establishment of obstacles through demolition is accomplished only at the direction of higher headquarters.

220. Night Marches

a. In the combat zone, most marches near the forward areas are conducted at night, particularly when the enemy has air superiority and/or an atomic capability. Frequently, even blackout lights are prohibited forward of the light line. Every unit must be able to make efficient night marches, even under adverse conditions. Constant practice in marching at night gives valuable training, and efforts should be made to conduct some of this practice over unfamiliar terrain. Infrared vision devices are helpful in making night marches under blackout conditions, and the proper use of these devices should be stressed.

b. In night marches, speeds are slower and vehicles stay closer together than during daylight marches. Night marches are tiring, and

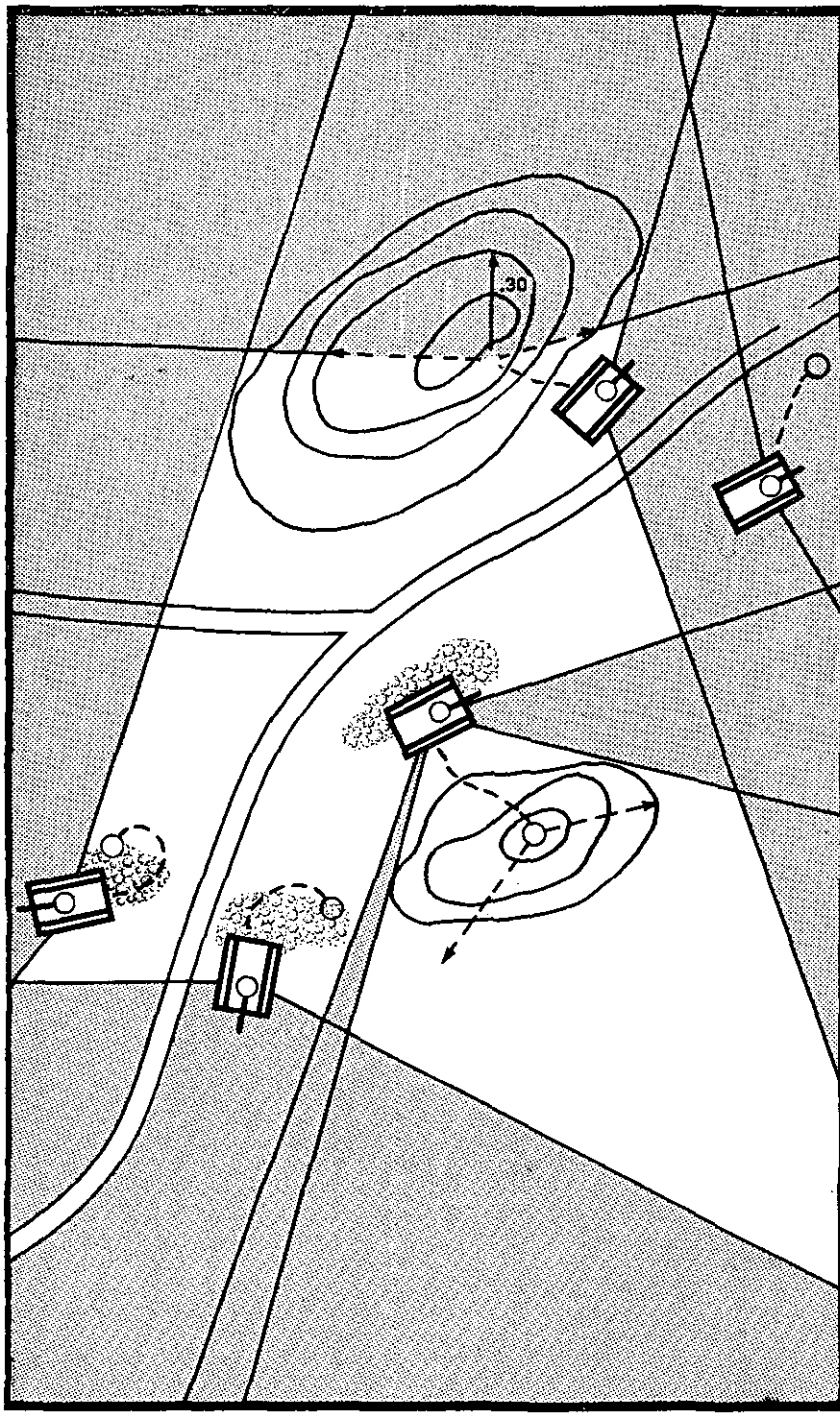


Figure 41. At halts, all avenues of approach are covered.

there is a tendency toward slower execution of orders. Determined leadership is necessary. Officers and noncommissioned officers must set an example by their alertness and activity.

c. A night march requires detailed planning. Route reconnaissance and the proper use of road guides and markers assume greater importance. Darkness increases the difficulty of control. To protect night vision, only shielded colored lights are used for control. Whenever possible, all driver personnel should remain in darkness for 30 to 50 minutes before beginning a night march, to accustom their eyes to the darkness. During this period, and while driving, they must not smoke. Smoking is prohibited not only because the flame of a lighter or match may be visible to enemy observers several miles away, but also because of the temporary blinding effect on all personnel in the vicinity.

d. Whenever a halt is made during a night march, either the commander or the assistant driver of each vehicle dismounts and contacts the preceding vehicle in the column. Arrangements are made to relieve drivers at scheduled halts. At least two men in each vehicle, in addition to the driver, remain awake at all times. Toward the end of each halt, every vehicle is checked to make certain that crew members are thoroughly awake and ready to march. Special precautions must be taken to insure that no part of the column is held up, when the march is resumed, because a driver or crew has fallen asleep during the halt.

e. The distance between vehicles on night marches varies with the terrain, road conditions, and visibility. As a general rule, this distance is the maximum at which the driver can see blackout tail-light of the preceding vehicle. Distances may be increased during bright moonlight and on good roads, while hilly and rough terrain, bad roads, rain, fog, dust, or complete darkness force the column to close up to maintain contact.

221. Logistical Support on the March

Supplies of all classes are checked to insure that adequate amounts are available to accomplish the march. Plans are made for refueling vehicles during the march, if necessary, and after arrival in the new area. These arrangements include the refilling of trains to proper loads as soon as possible after the movement has been completed. All units should begin the march with their prescribed and basic loads complete. For a detailed discussion on logistical support of armor unit marches, see FM 17–50.

222. Location of Trains on the March

a. In an administrative march, the battalion trains, less those vehicles marching with the individual companies, normally march as a unit at the tail of the battalion.

b. In a tactical march, battalion trains may be divided into combat trains and field trains. When this is done, the combat trains move at the rear of the battalion. The field trains normally do not accompany the battalion but stay in the trains area of a larger command.

Section II. MARCH ORDERS AND COMPUTATIONS

223. March Order

a. The march order (app. III) is an operation order prepared in accordance with decisions made by the commander. If the unit is marching as part of a larger unit, the order is based on, and issued after the receipt of, the march order of the higher headquarters. This order should be complete and should cover all problems which might arise during the movement. At battalion level, a written march order is normally issued for an administrative march or a training march. A written order is desirable for a combat tactical march, if there is time to prepare it. Whether written or oral, the order should include all of the following items if they are not covered in unit standing operating procedures:

(1) Destination.
(2) Route.
(3) Rate of march (may be SOP).
(4) Order of march.
(5) Location of the initial point.
(6) Time of passing the initial point.
(7) Security (may be SOP).
(8) Scheduled halts (may be SOP).
(9) Distances between vehicles and time interval between march units (may be SOP).
(10) Communication.
(11) Location of the command post during the march (may be SOP).
(12) Traffic control measures (may be SOP).
(13) Location of the release point.
(14) Time each march unit is to clear the release point and any other critical points along the route of march.

b. At company level, the march order is normally issued orally to the platoon leaders, executive officer, first sergeant, and key personnel of attached elements. These officers and noncommissioned officers in turn issue their own march orders, containing all pertinent parts of the company commander's order, to their respective units.

c. The company commander's oral march order will cover the items considered in planning the march (*a* above) and will be in the form of the operation order. Any instructions covered by the company SOP need not be repeated.

d. Strip maps should be supplied to all key personnel, including vehicle commanders and route markers. A strip map (fig. 42) is a schematic sketch of the route of march, normally issued as part of the march order. A strip map usually shows the IP, destination, RP, route names or numbers, mileage between towns and other key points, road junctions and crossroads, towns and cities, and bridges and railroad crossings.

224. March Computations

a. General. A workable march table should be prepared for every march. The march table includes, in addition to route and rate of march, times of arrival and clearance at the destination and at critical points along the route. The determination of these times is based on the road space occupied by each unit and the time required for the unit to pass a given point at a uniform rate of march (time length).

b. Vehicle Density. The vehicle density of an armor column is defined as the number of vehicles occupying one mile of road space. Armor columns may be classified as either open, close, or infiltration (par. 200).

(1) *Open column.* The average vehicle density of the open column is 17 vehicles per mile of road space or approximately 100 yards per vehicle.

(2) *Close column.* The average density of a close column is 34 vehicles per mile of road space or approximately 50 yards of road space per vehicle.

(3) *Infiltration.* In infiltration, vehicles are dispatched at irregular intervals at a fixed density, such as three, four, five, or six vehicles per mile. Column control is difficult to maintain, and the route must be well marked to keep drivers from getting lost.

c. Road Space. Road space is the total road distance occupied by a march column, including the distances between vehicles, march units, and serials. Accurate determination of road space is essential in the mathematical computation of a column's time length. See figure 43 for proper procedure for determining the road space of a unit.

d. Time Length. Time length is the time required for a column or element thereof to pass a given point. The total time length of a column includes the total time distance between the march units and serials. See figure 43 for the proper procedure for determining a column's time length.

e. Road Space/Time Length Table. The table shown in figure 44 contains sufficient data to permit calculating the time length of a column for selected rates of march. It is not necessary to determine road space before using this table; however, the total time distance between march units and serials must be added to the total read from the chart.

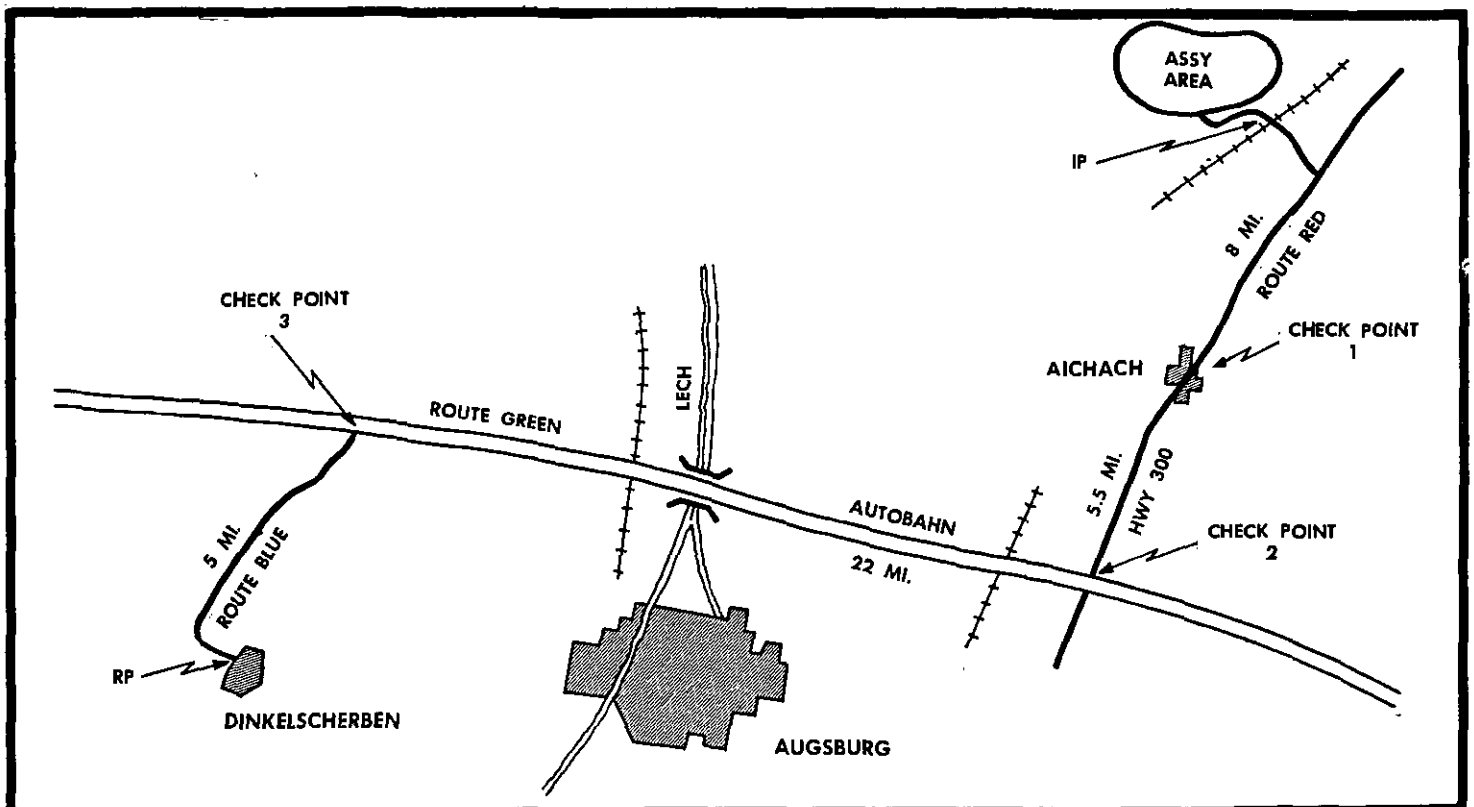
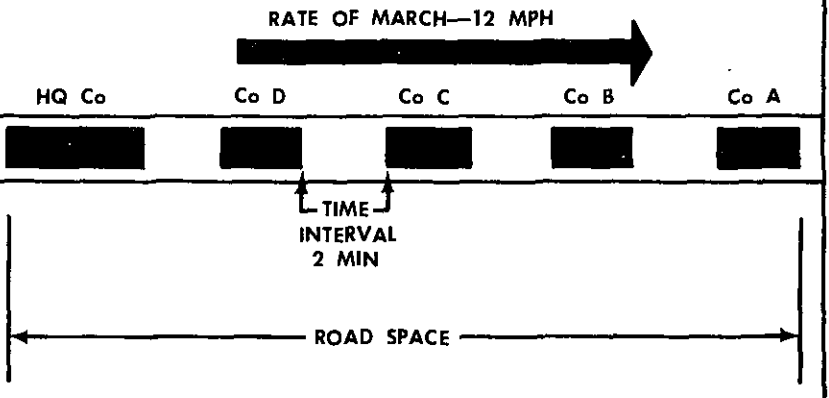


Figure 42. Strip map.

EXAMPLE: AN ARMOR BATTALION OF 198 VEHICLES IS MOVING IN OPEN COLUMN (DENSITY—17 VEH) AT A RATE OF MARCH OF 12 MPH. THE BATTALION IS MOVING IN FIVE MARCH UNITS WITH 2 MINUTES BETWEEN MARCH UNITS. WHAT IS THE TOTAL TIME LENGTH OF THE BATTALION?



TO DETERMINE ROAD SPACE:

$$\frac{\text{NR OF VEHICLES}}{\text{DENSITY}} + \frac{\text{TIME INTERVAL (MINS) X RATE (MPH)}}{60} = \text{ROAD SPACE}$$

$$\frac{198}{17} + \frac{8 \times 12}{60} = \text{ROAD SPACE}$$

$$11.65 + 1.6 = \text{ROAD SPACE}$$

ROAD SPACE = 13.25 MILES

TO DETERMINE TIME LENGTH:

$$\frac{\text{ROAD SPACE (MILES) X 60}}{\text{RATE}} = \text{TIME LENGTH}$$

$$\frac{13.25 \times 60}{12} = \text{TIME LENGTH}$$

TIME LENGTH = 66.25 MINS

Figure 43. Procedure for computing road space and time length of column.

Time lengths derived from the table will differ by less than a minute from those derived from the formula. The figures obtained in the example shown in figure 43 could be derived from the table (*fig.* 44) as follows:

(1) An armor battalion of 198 vehicles is moving in open column (density—17 vehicles) at a rate of march of 12 mph. The battalion is moving in five march units with two minutes between march units. What is the total time length of the battalion?

(*a*) Time length of 100 vehicles—29. 50 minutes
Time length of 50 vehicles—14. 75 minutes
Time length of 40 vehicles—11. 80 minutes
Time length of $\frac{8}{198}$ vehicles— 2. 36 minutes
58. 41 minutes
Plus time distance between march units 8. 0 minutes
Total time length —66. 41 minutes

(*b*) A still simpler method is to use the basic factor shown for one vehicle—198×.295 equals 58.41 minutes, plus 8.0 minutes totals 66.41 minutes.

(2) Figure 44 also includes data for determining the road space occupied by the column. If this table is used in computing road space, it is necessary to convert the time distance between march units and serials to a corresponding distance in miles. This may be accomplished by using the following formula:

$$\frac{\text{Time Gaps (minutes)} \times \text{Rate (mph)}}{60}$$

(*a*) The figures obtained in the example shown in figure 43 could be derived from the table (fig. 44) as follows:
Road space for 100 vehicles—5. 90 miles
Road space for 50 vehicles—2. 95 miles
Road space for 40 vehicles—2. 36 miles
Road space for 8 vehicles— .472 miles
198 vehicles 11. 682 miles
Plus road space required for time distance between march units: $\frac{8\times12}{60}$ equals 1.6 miles
13.28

(*b*) A still simpler method would be to use the basic factor shown for one vehicle: 198×.059 equals 11.68 miles, plus 1.6 miles totals 13.28 miles.

NUMBER OF VEHICLES IN THE COLUMN	ROAD SPACE (MILES) (LESS TIME DISTANCE BETWEEN ELEMENTS IN MILES)		TIME LENGTH (MINUTES)									
			6 MPH		10 MPH		12 MPH		15 MPH		20 MPH	
	CLOSE	OPEN	CLOSE	OPEN	CLOSE	OPEN	CLOSE	OPEN	CLOSE	OPEN	CLOSE	OPEN
1	.029	.059	.29	.59	.174	.354	.145	.295	.116	.236	.087	.177
2	.058	.118	.58	1.18	.348	.708	.290	.590	.232	.472	.174	.354
3	.087	.177	.87	1.77	.522	1.062	.435	.885	.348	.708	.261	.531
4	.116	.236	1.16	2.36	.696	1.416	.580	1.180	.464	.944	.348	.708
5	.145	.295	1.45	2.95	.870	1.770	.725	1.475	.580	1.180	.435	.885
6	.174	.354	1.74	3.54	1.044	2.124	.870	1.770	.696	1.416	.522	1.062
7	.203	.413	2.03	4.13	1.218	2.478	1.015	2.065	.812	1.652	.609	1.239
8	.232	.472	2.32	4.72	1.392	2.832	1.160	2.360	.928	1.888	.696	1.416
9	.261	.531	2.61	5.31	1.566	3.186	1.305	2.655	1.044	2.124	.783	1.593
10	.290	.590	2.90	5.90	1.740	3.540	1.450	2.950	1.16	2.360	.870	1.770
20	.58	1.18	5.8	11.8	3.480	7.08	2.90	5.90	2.32	4.72	1.74	3.54
30	.87	1.77	8.7	17.7	5.22	10.62	4.35	8.85	3.48	7.08	2.61	5.31
40	1.16	2.36	11.6	23.6	6.96	14.16	5.80	11.80	4.64	9.44	3.48	7.08
50	1.45	2.95	14.5	29.5	8.70	17.70	7.25	14.75	5.80	11.80	4.35	8.85
100	2.90	5.90	29.0	59.0	17.40	35.40	14.50	29.50	11.60	23.60	8.70	17.70
200	5.80	11.8	58.0	118.0	34.80	70.80	29.0	59.0	23.20	47.20	17.40	35.40
300	8.70	17.7	87.0	177.0	52.20	106.20	43.5	88.5	34.80	70.80	26.1	53.10

NOTE: 1. IN COMPUTING TOTAL TIME LENGTH, TOTAL TIME DISTANCE BETWEEN MARCH UNITS AND SERIALS MUST BE ADDED TO TOTAL TAKEN FROM TABLE.

2. IN COMPUTING TOTAL ROAD SPACE, TOTAL TIME DISTANCE BETWEEN MARCH UNITS AND SERIALS MUST BE CONVERTED TO DISTANCE IN MILES AND ADDED TO TOTAL TAKEN FROM TABLE TO CONVERT TIME DISTANCE TO MILES:

$$\frac{\text{TIME DISTANCE (MINS) X RATE (MPH)}}{60} = \text{TIME DISTANCE IN MILES}$$

Figure 44. Road space/time length table.

225. March Table

a. A march table (app. III) should be published as an annex to the march order, and should contain information concerning the serials or march units involved in the movement, including their numbers, rate of march, routes, IP, time of crossing the IP, and other pertinent details. The march table gives the answers to such questions as—"How much space will the unit occupy on the road?" How long will it take for the unit to pass a given point?" and "How long will it take for the unit to complete the march?" Calculations are made as accurately as possible. It generally is impossible for a marching column to maintain a constant density and a uniform time interval between march units; this causes such factors as road space, time interval, elapsed time, time length, and distance to vary somewhat from the calculations, even in well-disciplined and well-controlled marches. The state of training of a unit will affect its ability to maintain the schedule. If possible, a safety factor should be included in the calculations so that minor deviations from the schedule will not disrupt the march plan.

Section III. BIVOUAC AND ASSEMBLY AREAS

226. General

a. A bivouac is a rear assembly area where troops rest and prepare for further movement. Although in a bivouac area the possibility of contact with the enemy, except by air, is relatively remote, normal security measures are taken. Troops are usually not committed to battle from this position.

b. An assembly area is an area where units assemble to organize and complete preparations for the attack, or to regroup after an attack, landing, or other movement. In this area, the unit services and repairs vehicles, resupplies, and feeds troops. The assembly area, when used to prepare for an attack, is usually well forward but if possible should be out of range of enemy light artillery. Key personnel usually go forward to the attack position to receive orders, while the bulk of the unit remains in the assembly area.

227. Desirable Characteristics of Assembly Areas

a. Desirable characteristics of assembly areas include (figs. 45 and 46).

(1) Concealment from air and ground observation.
(2) Cover from direct fire.
(3) Hardstanding.
(4) Good exits and entrances, and adequate internal roads or trails.

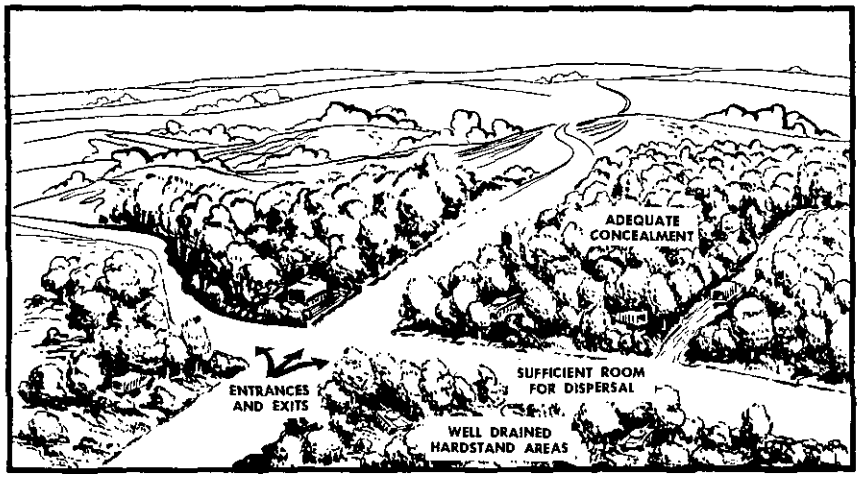


Figure 45. A good site for an assembly area.

(5) Ample space for dispersion of vehicles, personnel, and equipment.

(6) Adequate communication sites.

b. Overhead concealment is important if the battalion is to remain in the area for any length of time. Vehicles, equipment, entrances, and exits are camouflaged to keep the enemy from detecting the location of the unit. Maximum use should be made of available Army aircraft to inspect overhead camouflage.

228. Organization of Assembly Areas

a. If the commander of a quartering party determines, from his reconnaissance, that the area is unsatisfactory, he immediately notifies the commander of the higher headquarters' quartering party and requests a change of area. If a change cannot be made in the time, available, the unit is located under the best available cover and concealment as soon as it arrives, and necessary adjustments are made later.

b. The commander of a battalion quartering party divides the area among the companies, the command post, and the battalion trains. It is desirable to have the battalion trains centrally located in the area and near the main axis, or main road, through the area. Special attention is given to insuring suitable working conditions for the maintenance elements.

229. Occupation of Assembly Areas

Upon the arrival of a battalion at a new area, it is essential that units move off the road and clear the route of march without halting (figs. 47 and 48). The posting of guides, the selection of routes, and

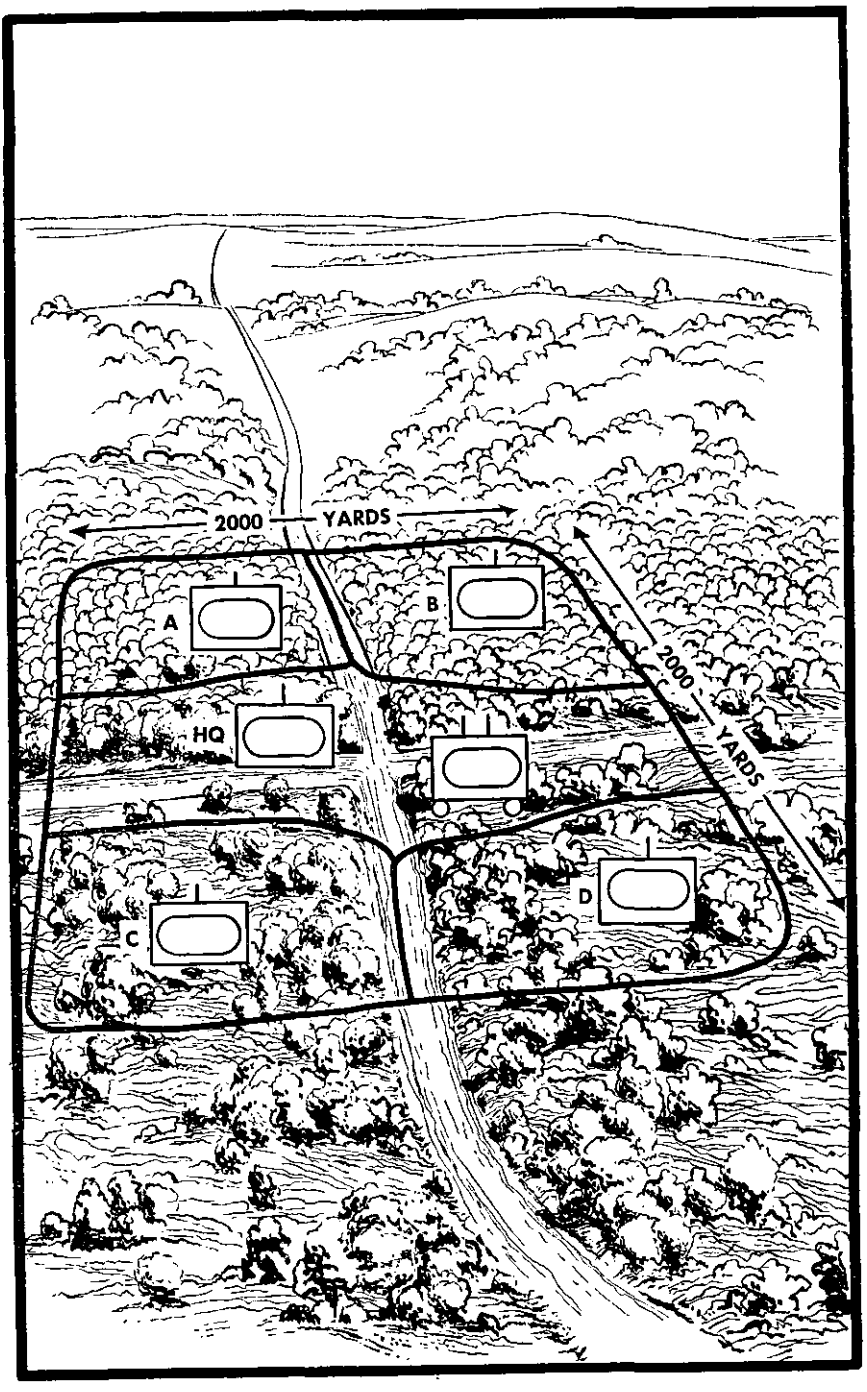
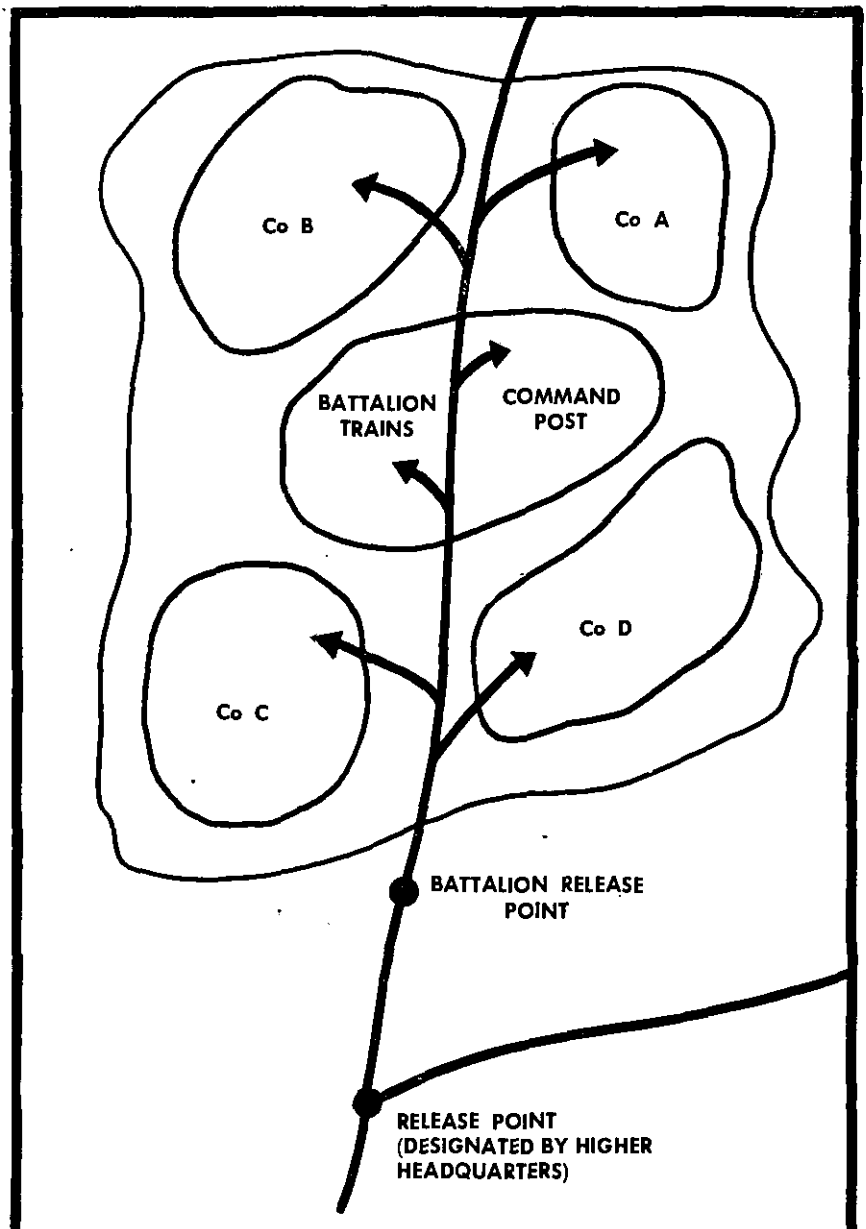


Figure 46. Size of assembly area for a battalion-size armor unit.



A guide from quartering party meets the battalion at a release paint designated by higher headquarters. Company guides pick up their companies at the battalion release point and guide them to their company areas. All vehicles clear the road rapidly. Do not halt on the raad.

Figure 47. Movement into an assembly area.

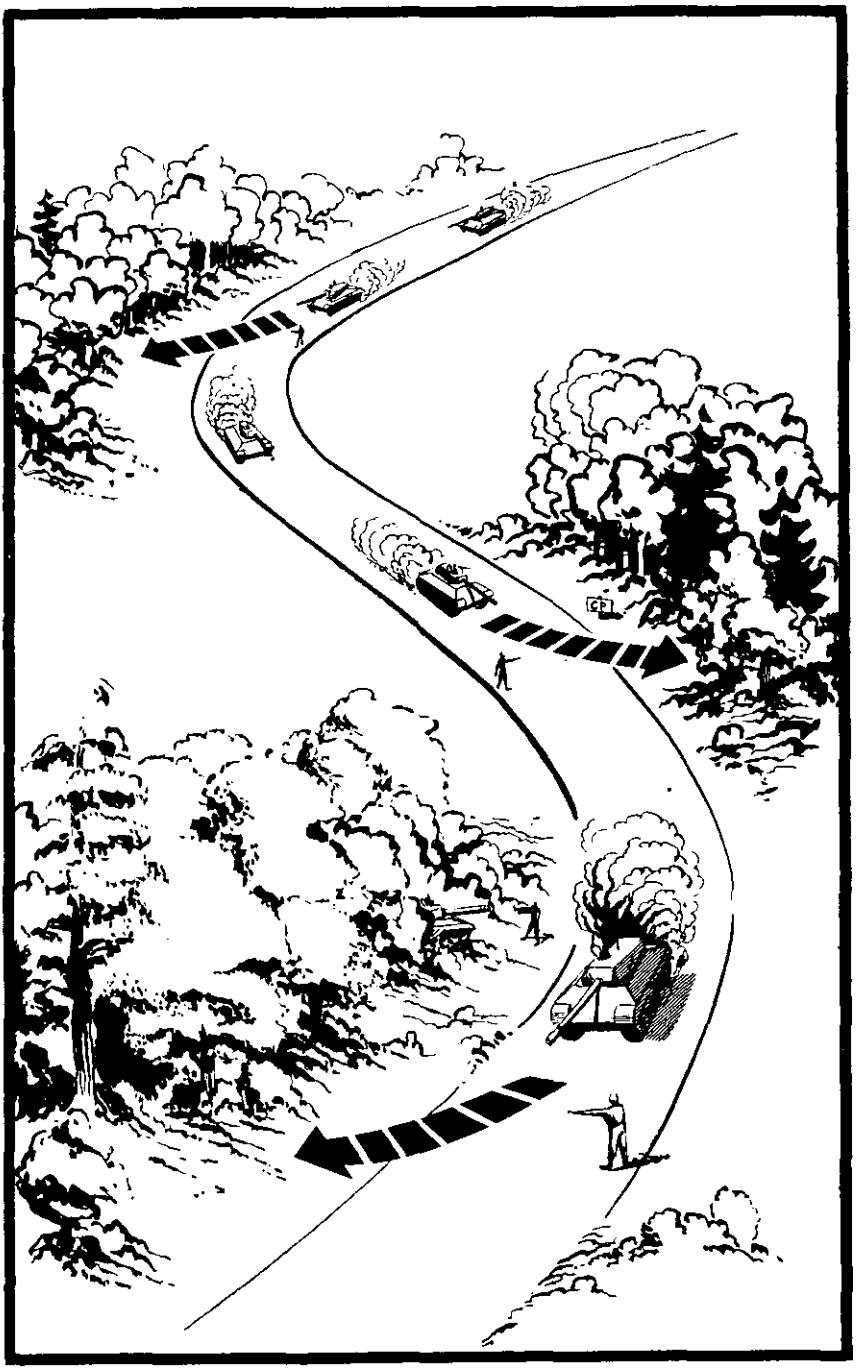


Figure 48. Vehicles enter their assigned area without halting or reducing their speed more than is required by the condition of the entrance.

the allocation of areas by the quartering party are all done with this objective in mind—*Clear the route of march without halting and without obstructing the movement of other units.* This requires aggressive action on the part of guides and close supervision by commanders and staff officers. The quartering party improves entrances into and routes within the area as much as it can. In designating locations within the area, the quartering party considers the units' positions in the march column. It should arrange for an area into which a march unit can coil up, if necessary, and should take measures to insure that stalled vehicles can be quickly bypassed. After the march serial has cleared the route, any desired adjustments of vehicles can easily be made without holding up the flow of traffic.

230. Security in Assembly Areas

a. Security in assembly areas is obtained by tactical disposition of troops, concealment (fig. 49), use of natural and artificial obstacles (including mines), local security measures, reconnaissance, and the establishment of blocking positions and observation or listening posts covering all critical terrain features and likely avenues of enemy approach. It may be desirable to establish liaison with front-line units.

b. The size and disposition of security elements depend upon whether contact with the enemy has been established or is imminent (figs. 50 and 51). Blocking positions and observation posts or listening posts will be of sufficient strength to provide security, but are made no stronger than is necessary, since such duty is tiring and reduces the subsequent combat efficiency of troops involved. The striking power of the main body should not be dissipated on unnecessarily large security detachments. The basic consideration is that the command must not be surprised.

c. The commander divides the perimeter among all units of the force. He assigns boundaries between adjacent units and designates specific contact points at which liaison will be established and maintained.

d. Protective minefields may, when authorized, be placed to provide local, close-in protection and to provide warning of enemy approach. They are removed before the unit leaves the area. Both antitank and antipersonnel mines may be used, provided they can be quickly removed and are not booby-trapped. Guards are posted to prevent casualties to friendly troops. For a detailed discussion on the employment of mines, see FM 20–32.

e. Assembly areas in the rear of friendly troops require less security than do areas that are well forward. However, every area, regardless of location, must have adequate security.

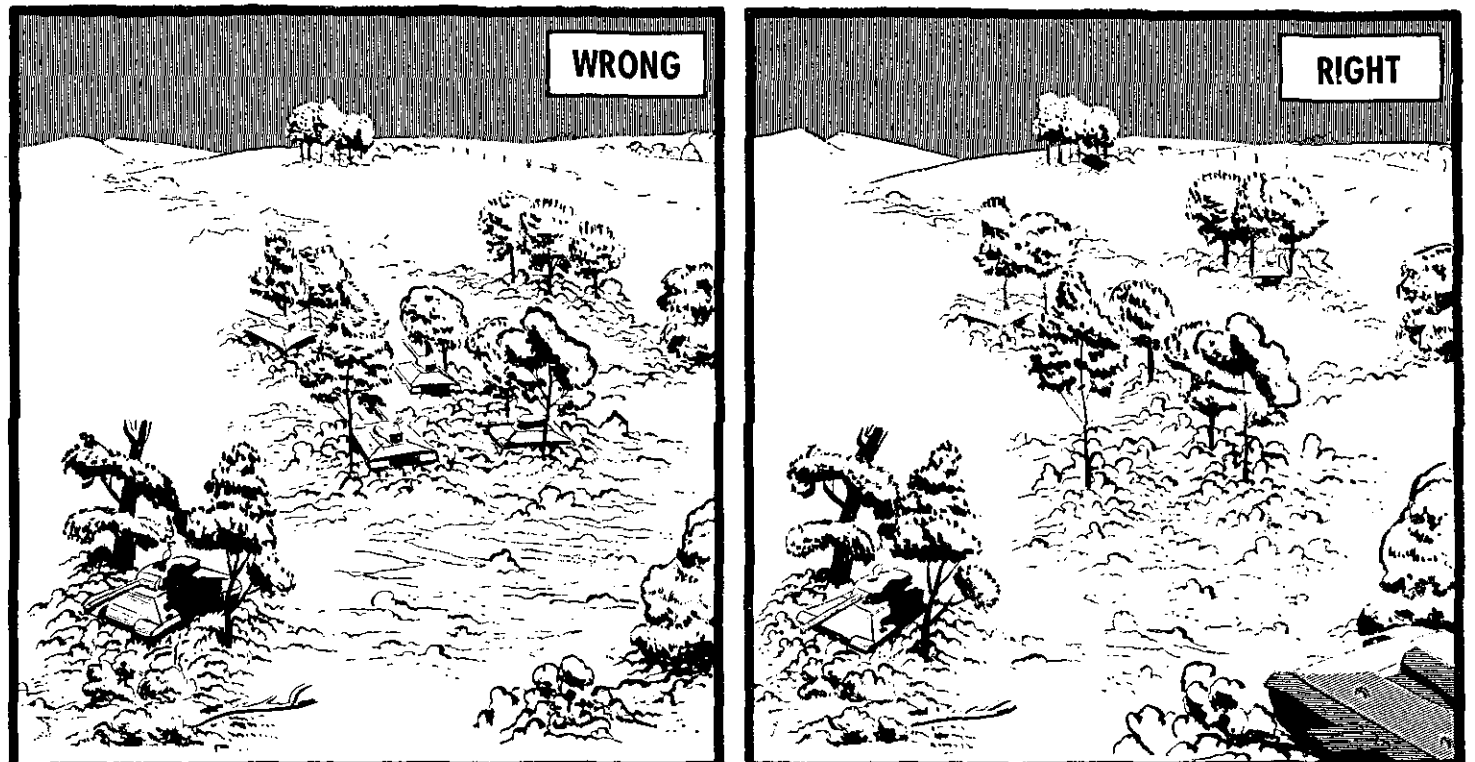


Figure 49. Dispersion and concealment provide security from artillery fire and air attack in assembly areas.

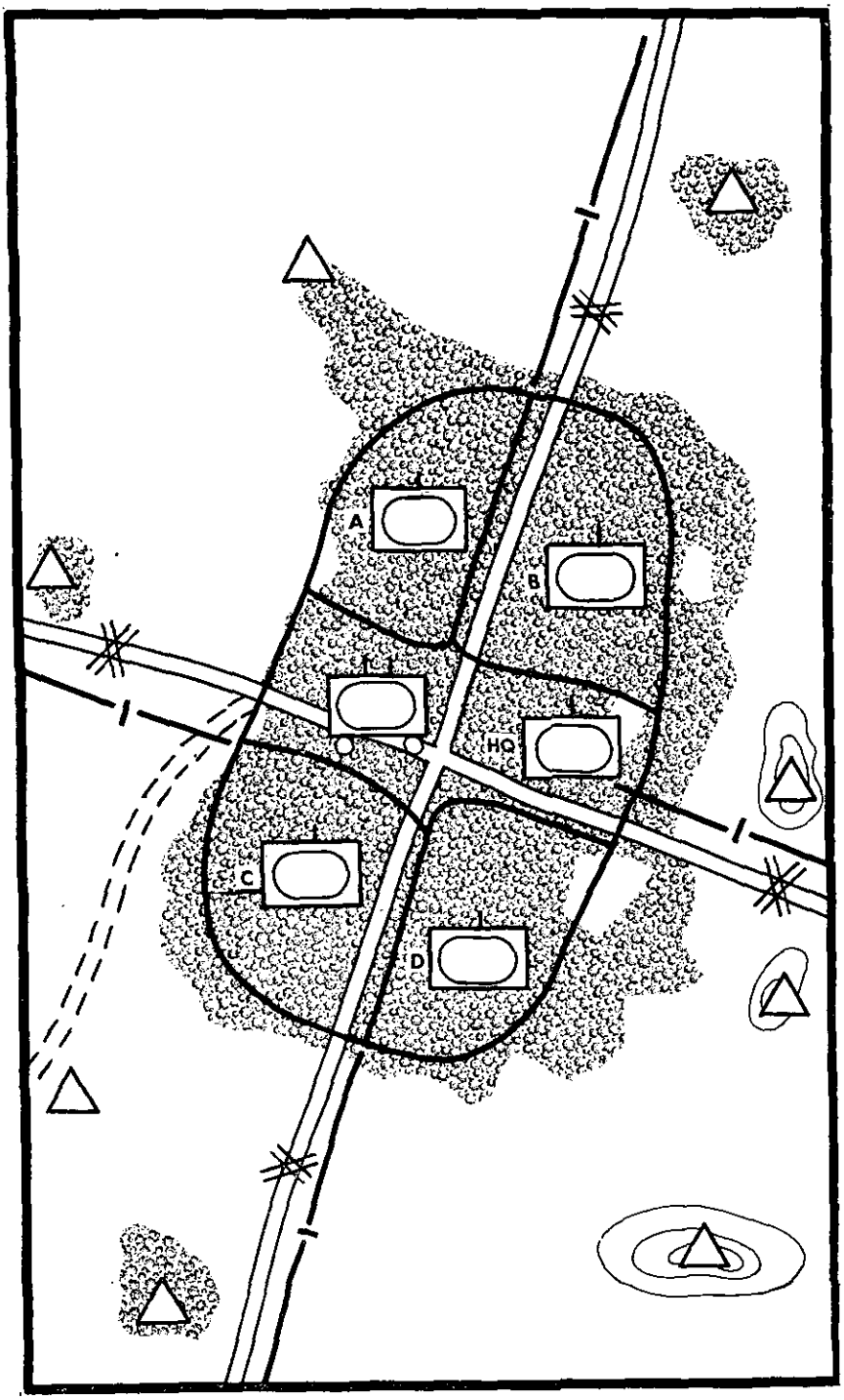


Figure 50. Security in the assembly area.

Figure 51. Sentinels are posted in pairs. They stop all foot traffic and all vehicles. They learn the mission of all friendly parties and, if necessary, explain the local situation to identified friendly patrols.

231. Communication and Liaison in Assembly Areas

a. The signal communication system of an armor unit in a bivouac or assembly area consists of messenger, wire, radio, and visual means. Normally, radio operation is minimized. Radio silence or listening silence may be directed. For security purposes, greater dependence is placed on wire and messengers.

b. Wire lines are kept to the minimum, depending on the time the area is to be occupied, but may be laid to companies as necessary to complete the wire net.

c. Each company sends a liaison agent (messenger) to the battalion command post. The battalion sends a liaison officer to the next higher headquarters.

232. Departure from Assembly Area

When he learns that his unit is going to move, the commander issues a warning order and sends a liaison officer or agent to the unit which will precede his unit (par. 202). See figures 52 through 54.

233. Resupply in Bivouac and Assembly Areas

a. In bivouacs, resupply of all classes of supply is accomplished. If sufficient time is available—

(1) Requisitions for needed supplies, particularly class II and IV (clothing and equipment), are prepared and submitted to higher headquarters; items to fill shortages are drawn and issued. Unserviceable items are repaired or salvaged.

(2) Supply records are checked, and action is taken to bring them up to date.

b. In an assembly area, ammunition and fuel and lubricants are resupplied. This resupply must be closely supervised to insure that all vehicles have prescribed and basic loads prior to combat operations. When an assembly area is occupied for an extended period of time, additional resupply is accomplished in accordance with the situation.

234. Maintenance and Evacuation in Bivouac and Assembly Areas

a. When a unit is in a bivouac or assembly area, vehicular inspections and maintenance are among its primary considerations (fig. 55). All commanders, vehicle crews, and maintenance personnel do everything possible to insure efficient vehicular operation. Maximum effort should be devoted to completing those maintenance checks and repairs that cannot be properly accomplished during periods of combat. All vehicle engines and suspension systems should be thoroughly checked. All weapons and signal equipment should be inspected, cleaned, and put in the best possible condition. Materiel

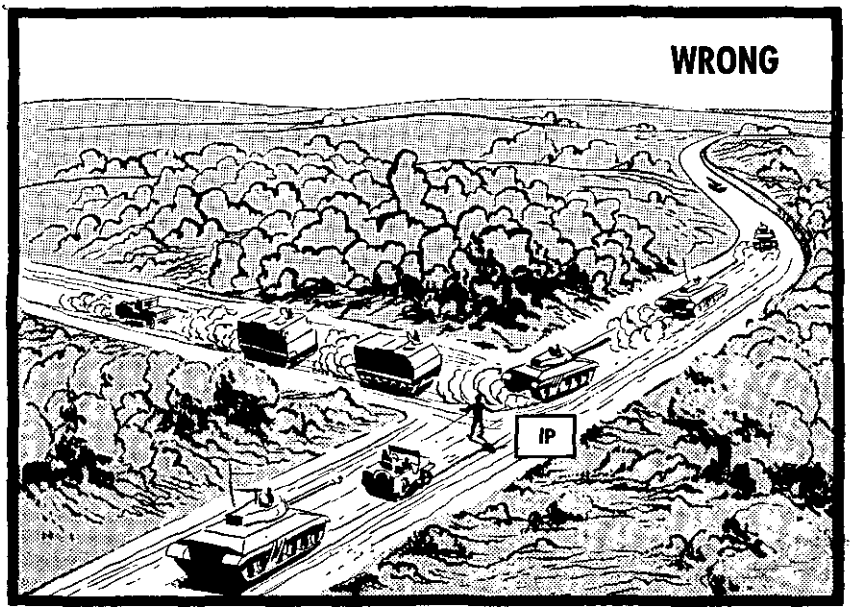


Figure 52. Do not move out too early. Here a unit, having done so, must halt at the IP until the preceding unit clears it.

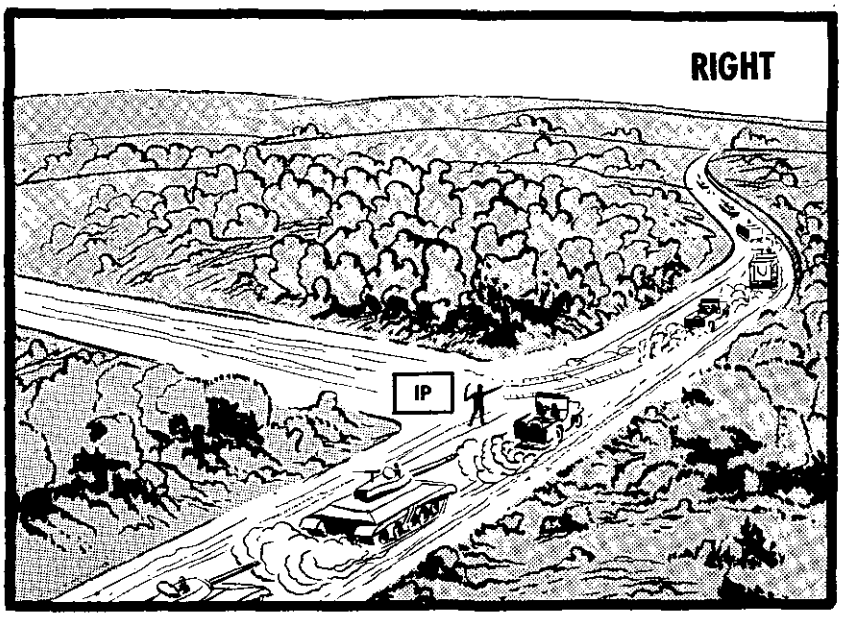


Figure 53. Move out from the assembly area so that the IP may be crossed at the proper time without halting.

which the battalion cannot repair should be evacuated to the next higher maintenance unit.

b. Normally, in a bivouac or assembly area, personnel casualties receive only emergency treatment. Personnel requiring further treatment are evacuated.

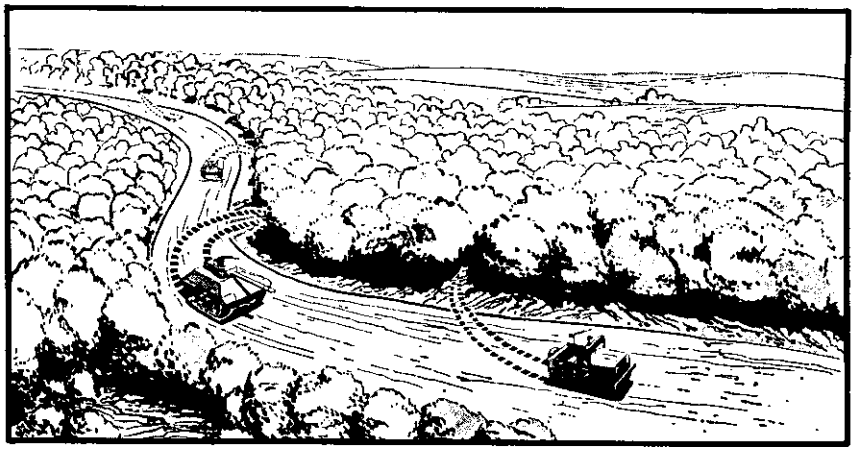


Figure 54. When forming the column from an assembly area, vehicles move directly to their proper place in column and keep moving.

Figure 55. As soon as the new assembly area is occupied, camouflage is erected, vehicles are serviced and maintenance is begun.

CHAPTER 8

OFFENSIVE OPERATIONS

Section I. GENERAL

235. Purpose of the Offensive

The purpose of offensive action is to destroy the enemy's armed forces, to impose the commander's will on the enemy, or to seize territory in order to further operations against the enemy. On the battlefield, offensive action gives the commander the advantage of the initiative and the opportunity to create or exploit favorable situations.

236. Types of Offensive Action

Small armor units may be employed in the offense in a penetration, envelopment, turning movement, or exploitation, or as part of the covering force in an advance to contact. See FM 17–100.

Section II. THE ATTACK, GENERAL

237. General

The methods and techniques of the attack as discussed in this chapter are those normally employed by small armor units when attacking through friendly forces or when contact has been made with the enemy.

238. Objectives for the Attack

a. The commander selects as his final objective the objective whose control will best facilitate the accomplishment of his mission. It is the focal point toward which the efforts of all attacking units are directed. An objective may be a terrain feature or a body of troops. Characteristics of the objective should include the following:

(1) Its capture must be possible within the time and space limits imposed.
(2) It must be easily identified.
(3) Its capture should facilitate future operations.
(4) It must produce a convergence of effort.
(5) Its capture must compel the enemy to evacuate his position or risk destruction thereon.

b. Other terrain features whose seizure and control will materially assist in the attainment of final objectives are designated as intermediate objectives. However, the designation of numerous inter-

mediate objectives tends to slow the advance and cause the attack to lose momentum.

c. In atomic warfare, objectives normally will be deeper than in nonatomic warfare. Objectives are more likely to be directed toward the destruction of the enemy force than toward the seizure of terrain.

239. Frontages in the Attack

a. Frontages in the attack are determined by the enemy dispositions, the mission of the unit, the terrain and weather, and the volume of supporting fires. In general, armor units are best employed when they attack in depth on a narrow front.

b. In wooded terrain, a narrow frontage will facilitate control. Impassable ground may force a narrowing of the formation. In open terrain, wider frontages are practical and desirable.

c. When adequate support is provided by artillery and tactical air, the frontage may be greater than when the support is light or lacking and the armor unit must furnish its own supporting fires.

240. Distribution of Forces in the Attack

The attacking force usually employs two elements—the maneuvering force, which closes with the enemy; and the base of fire, which aids the maneuvering force by pinning down the enemy by fire (fig. 56). A third element, the reserve, may be designated under certain conditions (par. 49).

241. Maneuvering Force

a. Mission. The mission of the maneuvering force is to close with the enemy by maneuver and to destroy him by fire and shock action.

b. Composition. The maximum possible strength should be placed in the maneuvering force. The composition of the maneuvering force will be determined by the factors of METT (mission, enemy, terrain and weather, and troops available). When possible, the maneuvering force should be a combined-arms team of tanks and armored infantry.

c. Employment. The maneuvering force makes the main effort of the attack. It closes with the enemy as quickly and directly as possible, using fire and movement. It is usually committed so that it has mass and depth, and it normally seeks to attack one or both flanks of the enemy. Once the maneuvering force is committed, it should proceed with all the speed and violence at its command. The advance should be so timed that the elements of the maneuvering force arrive on the objective simultaneously, so that the tanks and armored infantry can provide mutual support. As the objective is reached and overrun, assault fires of all weapons of the maneuvering force are intensified. Artillery air bursts may be employed over tanks and mounted armored infantry.

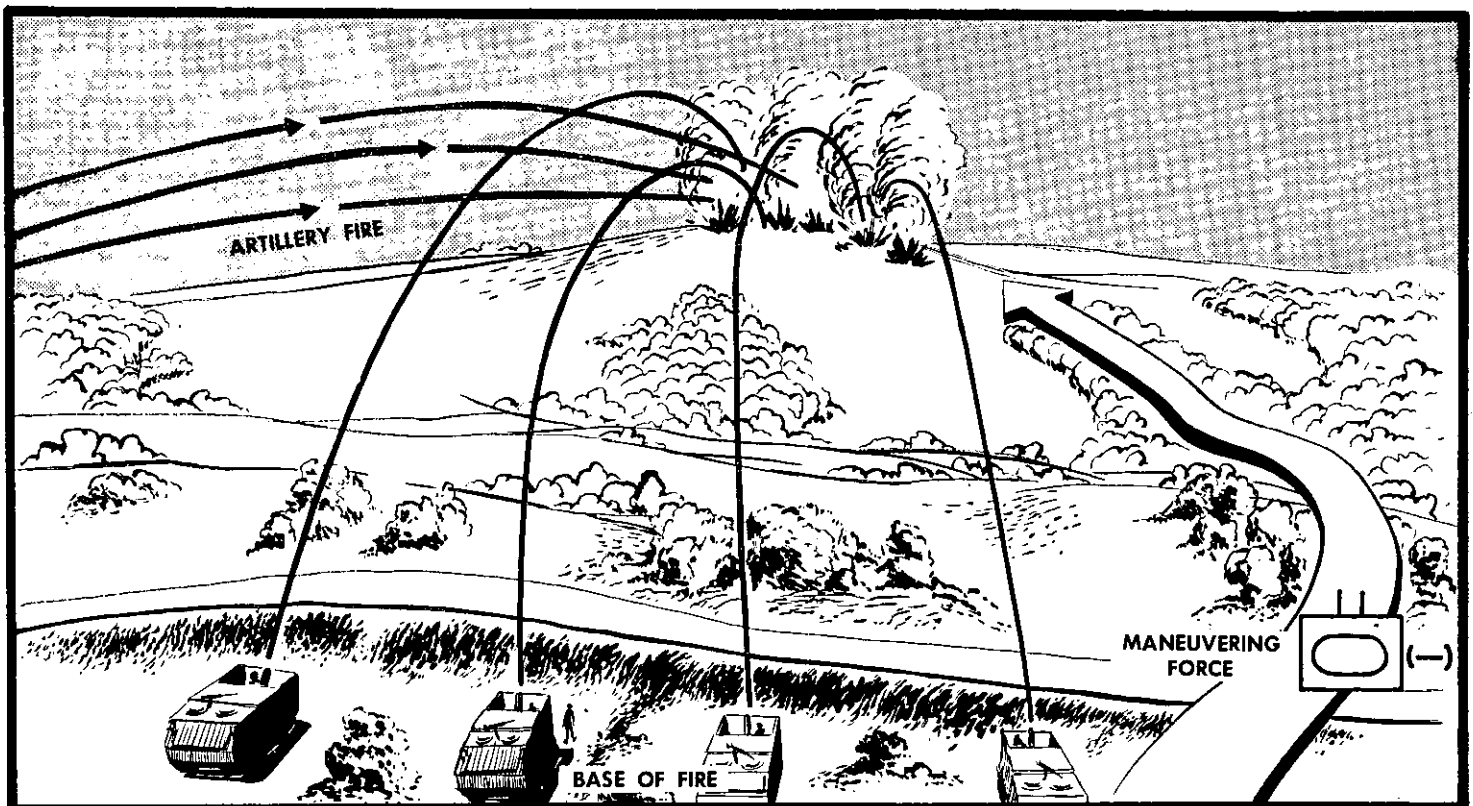


Figure 56. Distribution of forces in the attack.

242. Base of Fire

a. Mission. The mission of the base of fire is to pin the enemy to the ground and neutralize his weapons, thereby permitting freedom of action by the maneuvering force.

b. Composition. The base of fire should contain the minimum force necessary to accomplish the mission. In an armor unit, the base of fire usually consists of only organic mortars and supporting artillery, with tactical air if available. The base of fire may be reinforced with tanks and armored infantry, which support the attack by direct fire, and may have the added mission of protecting the flanks of the maneuvering force. Tanks are placed in the base of fire only if the terrain or enemy-emplaced obstacles prevent their employment in the maneuvering force, or if the supporting fires provided by other sources are inadequate. Also, the base of fire may contain tanks when the enemy position contains tanks that must be engaged, if the objective is within effective range of main tank guns. The base of fire may contain automatic weapons when available supporting fires are inadequate or when the composition of the enemy force is such that automatic weapons can assist in pinning it to the ground. When both tanks and armored infantry elements are used in the base of fire, they are formed into a combined-arms team to facilitate control for possible maneuver and for movement forward.

c. Employment.

(1) The base of fire should be assigned specific targets and target areas on which to fire during the advance of the maneuvering force, during the assault, and during the consolidation of the objective. Signals for lifting or shifting these fires must be prearranged and should include visual signals. The base of fire must be prepared to deliver fire on targets of opportunity, as called for by observers with the maneuvering force.

(2) The base of fire is located in a position from which it can continuously deliver fire to support the movement of the maneuvering force from the line of departure to the objective. The position must possess good fields of fire. Cover and concealment are highly desirable, cover being the more valuable. Alternate positions are selected for all weapons.

(3) The base of fire must remain mobile at all times. Direct-fire elements must be prepared to move forward and assist in the attack when the movement of the maneuvering force masks their fire. Indirect-fire elements must be prepared to shift fires to assist in consolidating and holding the objective, and to displace forward to support the continuation of the attack.

243. Reserve in the Attack

A reserve is a means for influencing the action and thereby obtaining a favorable decision (par. 49). Seldom will small armor units possess sufficient strength to withhold a reserve. Their commanders therefore must seek other means of influencing the action at the decisive time. A commander may adopt a formation for the maneuvering force that provides depth, thereby permitting him to employ uncommitted units in the reserve role.

Section III. COORDINATION AND CONTROL DURING THE ATTACK

244. General

a. Control is essential to coordinated and effective action. The armor commander must be able to direct the maneuver of his subordinate units, and to concentrate his firepower, as he desires. Once lost, control is difficult to regain. Control is enhanced by thorough planning and effective orders. During the attack itself, control is usually decentralized; centralized control is regained during the reorganization. Control is facilitated by the effective use of all *means* available and by the use of *measures* designed to assist in maintaining the direction and momentum of the attack. The armor unit commander uses radio communication as the primary means of control. In addition, he may use liaison officers or agents, staff officers, messengers, Army aviation, and all available signaling devices. Effective control and coordination of subordinate units during the attack may be aided by the employment of control measures. These measures include—

(1) Assembly area.
(2) Attack position.
(3) Objective.
(4) Line of departure.
(5) Time of attack.
(6) Axis of advance.
(7) Route of advance.
(8) Zone of action.
(9) Boundary line.
(10) Phase line.
(11) Check point.
(12) Contact point.

b. When the attack is to be supported by tactical air, artillery, and/or atomic weapons, certain additional control measures should be employed. These include—

(1) Bomb line.

(2) No-fire line.
(3) Atomic safety line.

c. In order to obtain complete coordination, early and detailed plans must be made. Commanders and staffs must thoroughly understand both the tasks of all units and the integrated operation of the force as a whole. Conferences should be held to insure this understanding. So far as possible, troops must be instructed in the parts they will play in the operation. Liaison is established between units as appropriate. Communication is checked.

d. The commander must be guided by the control measures specified in orders from higher headquarters. He may specify other control measures if they are essential to the operation. A commander should specify the minimum number of control measures that will insure his control of subordinate elements.

245. Assembly Area for Attack

An assembly area (pars. 226–234) is used to prepare the unit for the attack. The assembly area is usually well to the rear in order to reduce the chance of its being hit by an enemy atomic attack. Armor units must be prepared to move directly to the attack from the assembly area. Such movements are usually made in multiple columns, halting enroute only to refuel. In the assembly area the attack order is issued, and cross-reinforcing of subordinate units is completed. Attached units are integrated into the attacking force, primarily by accomplishment of the following:

a. Liaison. An attached unit immediately establishes liaison with the headquarters of the unit to which it is attached.

b. Communication. Immediately upon attachment of units, the communication officer (or chief) must see that the attached units have the proper channels set on their radios and that they receive the current SOI. He must be ready to give them any assistance they need relative to communication.

c. Orientation. Newly attached units may not be familiar with the immediate situation and the mission. The commander and his staff must conduct an early orientation for such units and give them all available pertinent information.

246. Attack Position

a. The attack position is the last position used prior to crossing the line of departure. Troops in the attack position include only those units actually attacking. The general location of the attack position is usually designated by the higher commander, but subordinate commanders select the exact positions for their units within that general location.

b. Troops remain in the attack position only long enough to assume the prescribed formation and to insure a coordinated movement across the line of departure. No resupply is accomplished in the attack position. If possible, units should not even halt in the attack position. They should move into the position, deploy into the prescribed formation, and move out, all without stopping. If the attack is being made on a broad front, but the terrain makes it necessary for the attacking force to move to the attack position in a single column, it may be necessary for the leading elements to halt briefly. As soon as the rearward elements of the column reach their assigned positions in the formation, all units should immediately move out and cross the line of departure.

c. There may be times when the terrain and situation make it inadvisable to employ an attack position. For example, an attack position might not be used by a unit making a surprise daylight attack. Instead, the assault units would move into a combination assembly area and attack position during darkness. Here they would make combat groupings, refuel, conduct maintenance, and resupply, then launch the attack.

247. Objective

The assignment of objectives (fig. 57) assists in coordination and control of an attack. The fact that an objective is assigned indicates that some degree of control over the objective is to be gained and maintained. The degree of such control may be stated in the order, or it may be implied by the commander's statement of his mission and his concept of the operation. It may vary from a limited degree, in which the objective is to be merely denied to the enemy, to actual physical occupation of the objective. In atomic warfare, caution must be exercised in requiring units to physically occupy objectives, because such objectives are ideal locations for preplanned atomic strikes by the enemy. The seizure of a properly selected physical objective will assist in accomplishing the primary purpose of offensive action—the destruction of the enemy's armed forces.

248. Line of Departure

a. A line of departure is a line designated to coordinate the departure of attacking forces. The line of departure is usually located on the last available terrain that can be reached without undue exposure to enemy observation and flat-trajectory fire. A good line of departure has the following characteristics:

(1) It is easy to recognize.
(2) It is approximately perpendicular to the direction of attack.
(3) It should be as far forward as the attacking force can advance without employing fire-and-movement techniques.

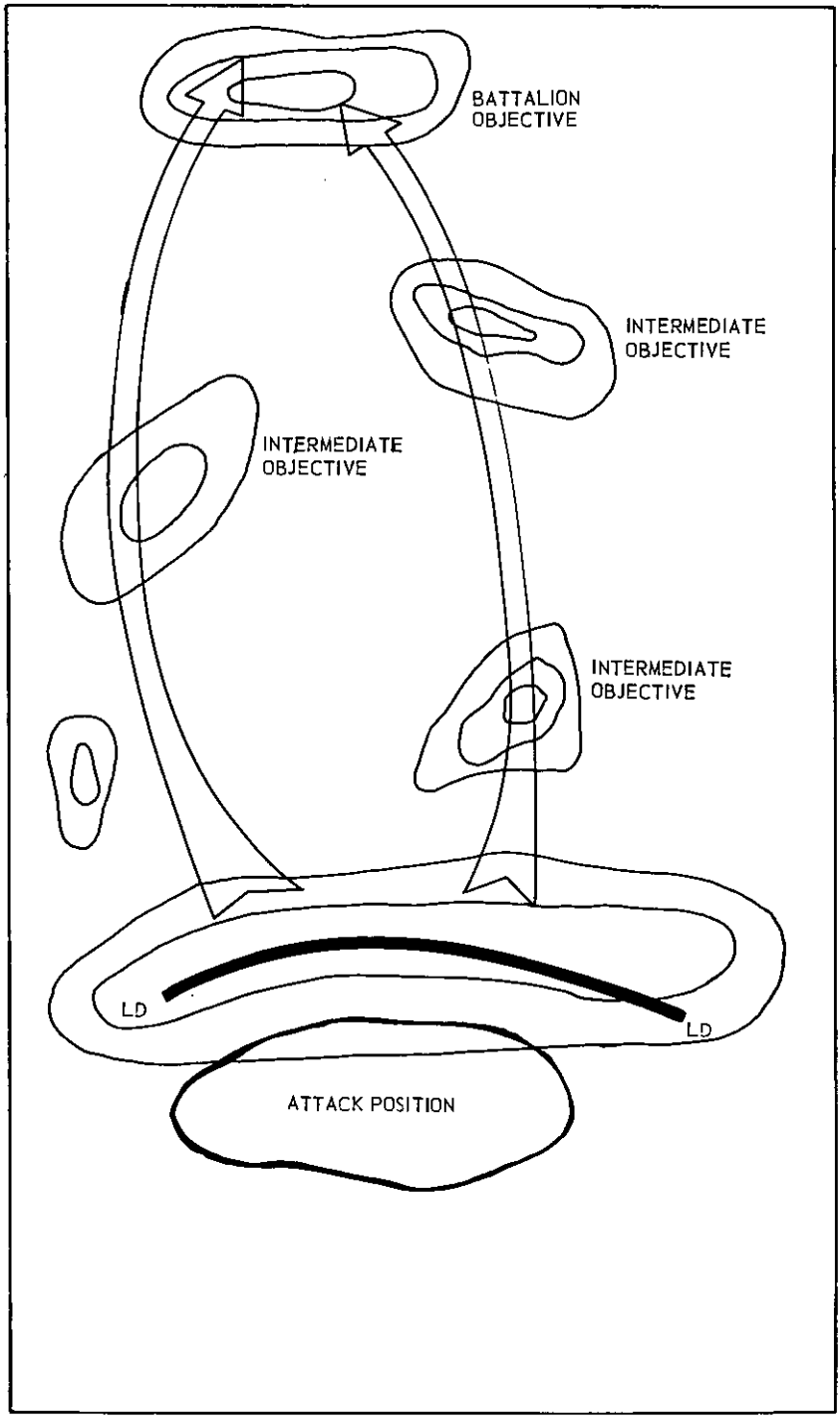


Figure 57. Use of objectives in control of the attack.

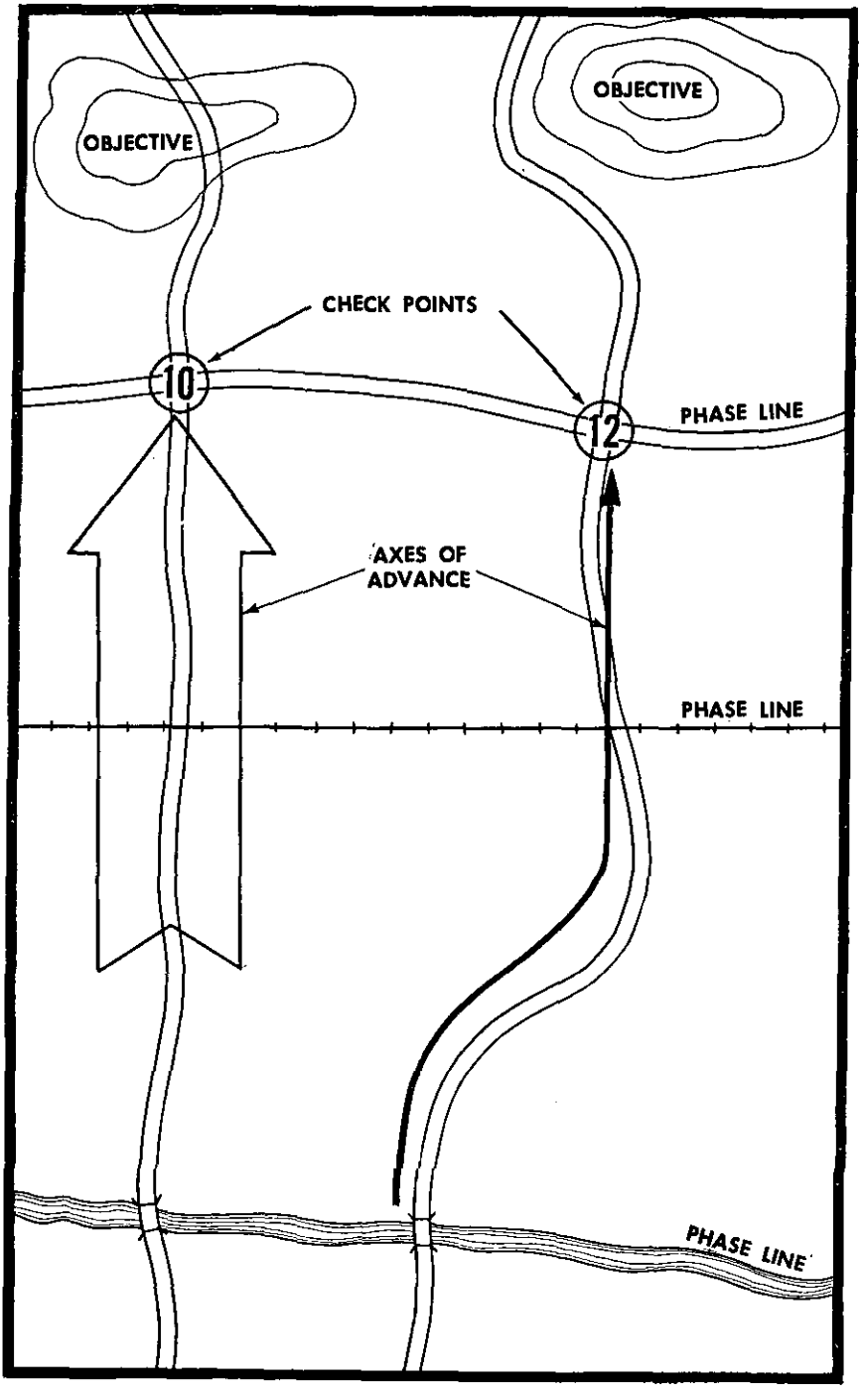


Figure 58. Axis of advance.

(4) Its use should require a minimum of coordination with other friendly forces operating in the area.

b. When the terrain or the plan of attack makes it necessary for subordinate units to attack from separate locations, a separate line of departure may be designated for each force.

249. Time of Attack

Setting a definite time of attack insures a coordinated movement across the line of departure. The time of attack normally is designated by higher headquarters and is announced in the attack order. On occasion, particularly when the time of attack is based on the progress of friendly force, it may be omitted from the attack order and announced in a written or oral fragmentary order at a later time; or the attack order may state that the attack is to be launched "on order." In such a case, all preparations for the attack will be accomplished, and the units will be prepared to begin the operation with little or no additional warning. The commander who will order the attack to start must establish liaison with the friendly force on whose progress the time of attack depends. He may announce the time of attack by radio or by sending staff officers and liaison personnel to the units involved.

250. Axis of Advance

a. An axis of advance (fig. 58) is employed to indicate the general direction of movement of a unit. The designated axis usually follows a well-defined terrain feature such as a road, a ridge line, or a valley. A unit advancing on an axis is not required to clear the area along the designated axis. Units moving on an axis may bypass enemy forces which cannot threaten the accomplishment of the mission, provided the higher commander is promptly informed of this bypassing. Obstacles may be bypassed based on similar considerations. Commanders should insure that a deviation from the assigned axis does not interfere with the maneuver of adjacent units. If it does, prior clearance must be obtained from higher headquarters.

b. When an armor commander is assigned an axis of advance, he is authorized to maneuver his troops and supporting fires freely to either side of the axis. An attack along an axis allows more freedom of maneuver than does one along a route of advance. This method of controlling the attack is preferable whenever the situation permits its use, particularly in atomic warfare.

c. In areas covered with heavy undergrowth, or on flat terrain without suitable landmarks, the axis of advance may be indicated by an azimuth.

251. Route of Advance

A route of advance is a specific route which must be followed in the attack. The route of advance usually follows a road or a trail. It is a very restrictive control measure and normally is used only under conditions which require that a specific road be cleared of all enemy. A unit assigned a route of advance must clear all enemy from the route and may not deviate from the route except to maneuver against enemy forces interfering with the advance.

252. Zone of Action

a. A zone of action is a tactical area limited in width by two boundary lines running approximately perpendicular to the front. A narrow zone usually makes necessary an attack on a narrow front, while a wide zone provides the commander with maneuver room and thereby gives him freedom of action in the accomplishment of his mission. Subordinate units may be assigned axes or routes of advance within the assigned zone unless there is a requirement for the zone to be cleared.

b. Zones are assigned by a higher commander when close coordination and cooperation between units are required. Normally, a zone is not cleared of organized resistance unless a higher commander orders that it be cleared. When assigned a zone, a unit cannot maneuver or fire into another zone unless it coordinates with adjacent units or higher headquarters. However, the commander may, through his artillery liaison officer, request artillery fires in another zone; these fires will be coordinated through artillery channels.

253. Boundary Line

A boundary line (figs. 59 and 60) is used to designate the lateral limits of a zone of action. Normally, boundaries between units will not be so located as to divide responsibility, between these units, for important avenues of approach, roads, or critical terrain features which one unit is capable of controlling. Boundaries should be easily identified and should extend through the objective.

254. Phase Line

a. A phase line is a control and coordination line running approximately perpendicular to the direction of movement. It should be an easily recognizable, well-defined terrain feature such as a river, a road, or a railroad. It usually is identified by a code name.

b. Advancing units report their arrival at, and their clearance of, phase lines. They do not halt at phase lines unless specifically ordered to do so. The use of phase lines assists the commander to change unit missions, halt some units while others continue to advance,

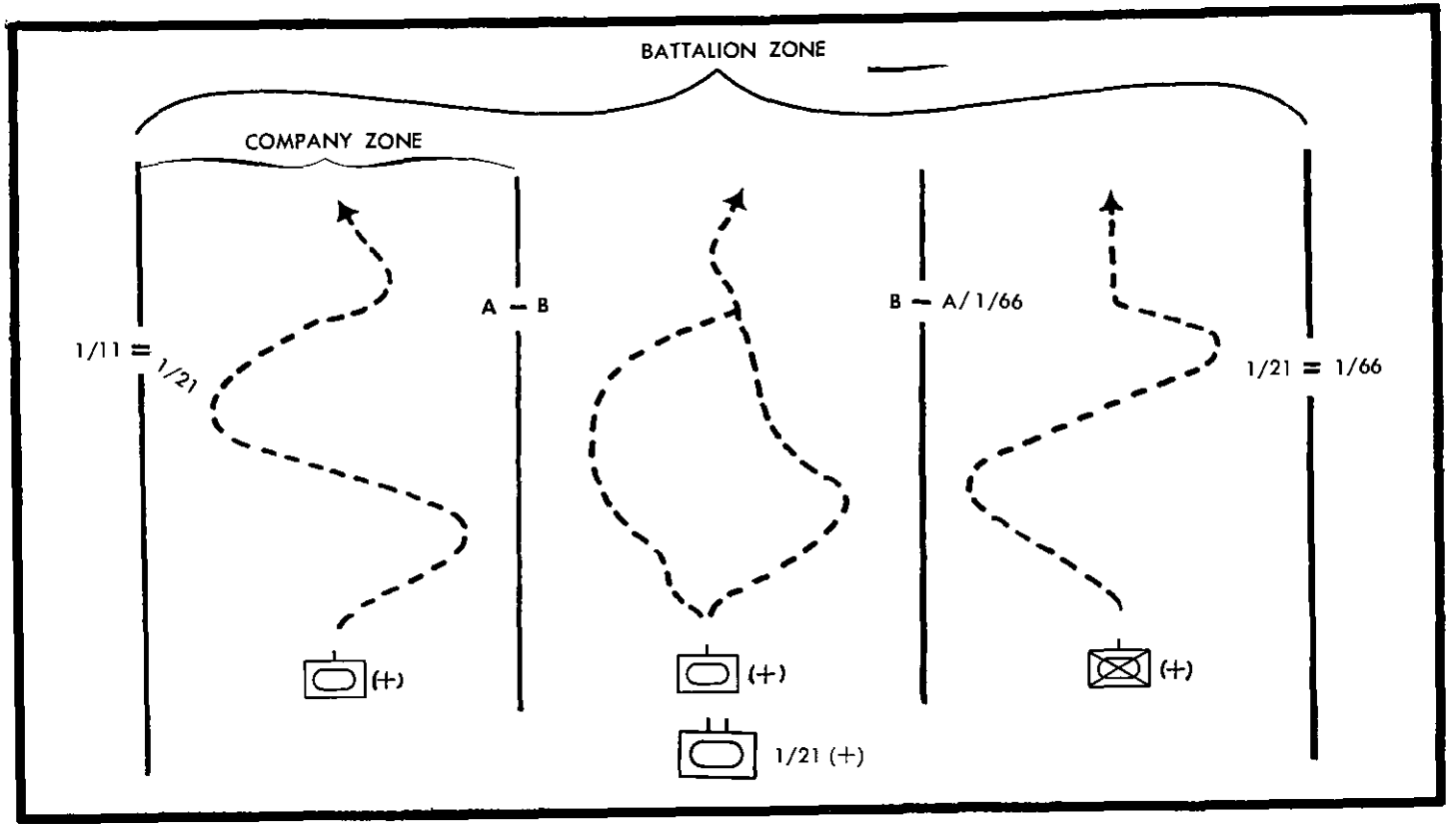


Figure 59. Boundary lines.

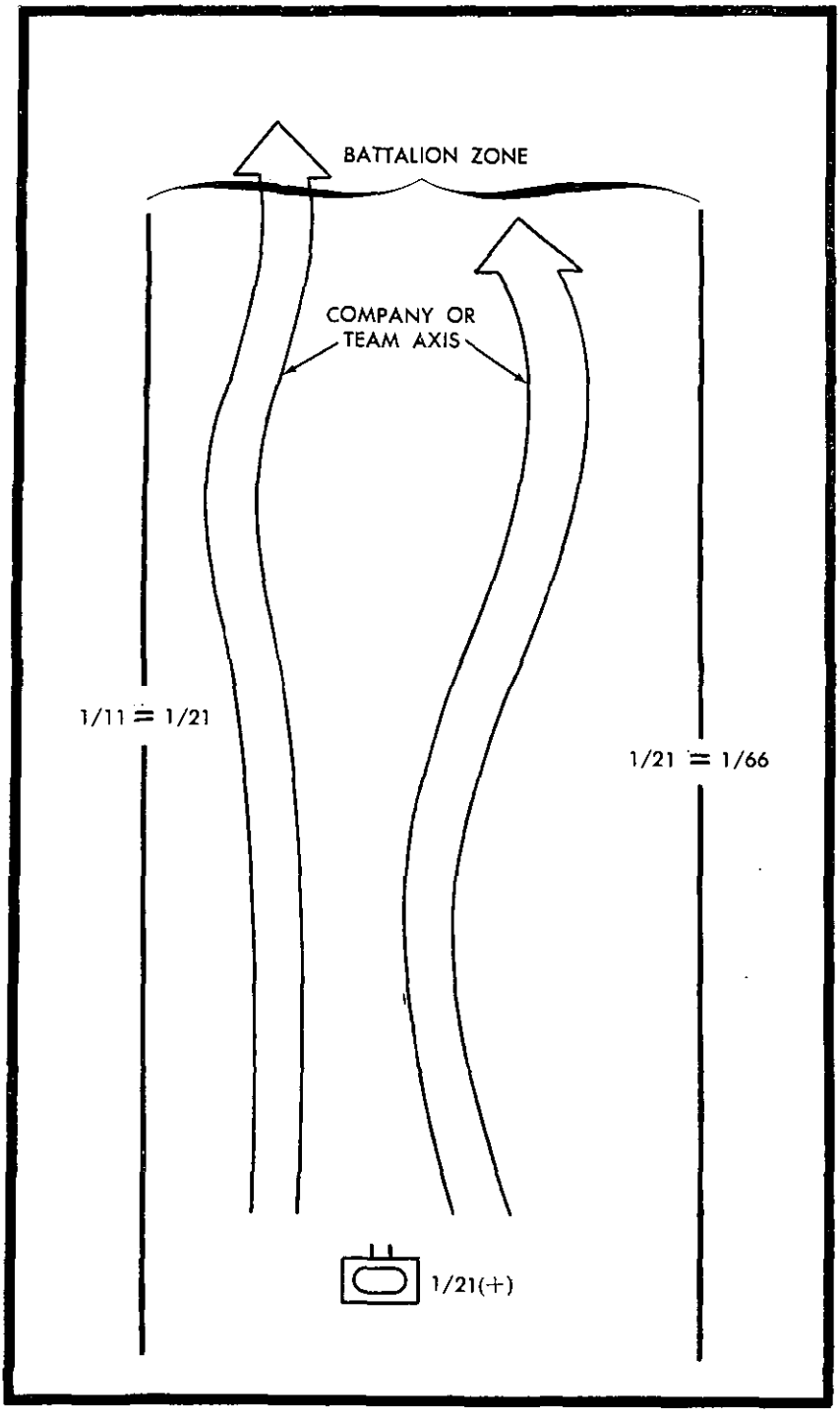


Figure 60. Boundary lines with axes of advance.

rearrange the combat formation, or regain control of units temporarily separated from the main effort.

255. Check Point

a. A check point is a point designated on the terrain either to control movement or as a reference point for reporting locations of friendly units. Check points may be used in radio transmissions, in the clear, to report locations of units or to designate targets for supporting weapons. Check points should be conspicuous terrain features, such as crossroads, road junctions, towns, bridges, and isolated buildings or groups of buildings.

b. Check points are designated by numbers. They may be disseminated in the form of a list of the check point numbers together with their map coordinates, or by overlay. The symbol for a check point on an overlay is an open circle, enclosing the designated terrain features, with a number inside designating the check point number; for example, check point 22 is shown as ㉒.

256. Contact Point

a. A contact point is a designated point on the ground where two or more units are required to make physical contact. Contact points, like check points, should be conspicuous terrain features.

b. When a contact point is designated between the axes or routes of two advancing units, these units must make physical contact at that point. The commander may designate such a contact point because he is concerned about the area between units along a lateral road, or because he wishes to insure detailed coordination between advancing units.

c. Contact points are normally indicated on the operation order overlay. Each is shown as a circle with a line drawn through it as follows:

257. Bomb Line and No-Fire Line

a. Bomb Line. The bomb line is a line established by ground forces beyond which the Air Force may attack targets without danger to, or approval from, ground troops. The location of a bomb line is established at the joint operations center and is disseminated to all subordinate units. Tactical aircraft may attack targets short of the bomb line when ground troops request, or give clearance for, such an attack.

b. No-Fire Line. The no-fire line is a line beyond which all artillery units may fire without prior clearance from the direct-support artillery. The location of the no-fire line is established by the direct-support artillery commander in coordination with the supported unit commander. Direct-suport artillery is authorized to fire short of

the no-fire line in its own sector, but other artillery units must obtain clearance from the direct-support artillery before doing so.

258. Atomic Safety Line

Atomic safety lines are normally prescribed by a headquarters controlling a tactical atomic attack, and their locations are usually contained in the message announcing the attack. These lines should be easily identifiable. They indicate the closest distance to a particular atomic explosion that friendly forces, under various degrees of protection, may be positioned without exceeding the prescribed troop safety criteria. Atomic safety lines may be perpendicular to the axis of advance, or they may be circular lines around the ground zero of the atomic burst. The circular lines more accurately show the actual area of danger, and are less restrictive because they permit maneuver around the danger area.

Section IV. PREPARATION AND PLANNING FOR THE ATTACK

259. General

a. The commander of an armor unit normally receives his offensive mission from a higher commander, who specifies the composition of the unit for the projected operation. The commander then must prepare to receive troops placed at his disposal, to effect the necessary coordination, and to plan his attack. He must insure that attached units are thoroughly briefed and that adequate communication is established. Whenever the situation permits, he makes a thorough personal reconnaissance. He makes an estimate of the situation. He plans the operation, including supporting fires and the use of smoke. He prepares his order and issues it to key personnel of the command. The commander is responsible for the completion of all of the steps, even if he has a staff to assist him by working out many of the details. He must make all decisions personally. See paragraph 75 for a discussion of these troop-leading procedures.

b. Because of the dispersion required in atomic warfare, battalion task forces are often organized as self-sufficient combat units. Task forces can expect more frequent attachments of tactical and logistical support elements than in nonatomic warfare. The battalion task force commander must have greater freedom of action and a more complete organization under his control. He must be prepared to carry out broad missions which require the utmost in initiative and flexibility. Very detailed planning is required for an attack supported by atomic weapons. Units must mass rapidly at the latest possible time in order to avoid creating a profitable atomic target; the timing of the attack, control, and atomic safety measures assume

great importance. These attacks will be characterized by greater detailed planning and control prior to the delivery of the atomic weapon, and more freedom of action subsequent to its delivery.

260. Plan of Attack

a. General. After the commander has completed his estimate (pars. 91–93) and has arrived at his decision, he completes his plan of attack. This plan is simply a detailed translation of the fifth step of the estimate—the decision. At battalion level, details usually are worked out by members of the staff. Subordinate commanders must be kept informed of the part they will play in the plan, in order to insure adequate time for them to complete their reconnaissance and plan the details of their action. The plan of attack is designed to insure teamwork and coordination within the attacking force throughout the operation. The plan must be simple, but it must cover all essential details. It includes the *plan of maneuver* and the *fire-support plan.*

b. Plan of Maneuver. The plan of maneuver (fig. 61) is the detailed plan for the *placement* and *movement* of subordinate units in carrying out the mission. The plan of maneuver is designed to move or place the various elements of the attacking force into advantageous positions with respect to the enemy or the objective. In developing the plan of maneuver, consideration is given to its possible effects on future operations. The plan of maneuver includes—

(1) Task organization.
(2) Objectives.
(3) Formation.
(4) Direction of movement.
(5) Line of departure.
(6) Time of attack.
(7) Attack position.
(8) Other control measures, as appropriate.

c. Fire-Support Plan. A well-coordinated fire-support plan covers all available fires, including those of organic and attached weapons, tanks, and supporting artillery, plus tactical air and atomic weapons (fig. 62). Supporting fires move with the advance, lifting or shifting at the last possible moment in order to keep enemy personnel pinned down until the assault elements are upon them. However, these fires must lift or shift soon enough to prevent losses to friendly troops. The plan for supporting fires must be highly flexible. The fire-support plan includes fires prior to the attack, supporting fires during the attack, and supporting fires after the objective has been taken. Enemy positions located before the attack are destroyed or neutralized by prearranged fires. In larger units, the fire-support plan is issued as an annex to the operation order. Complete details

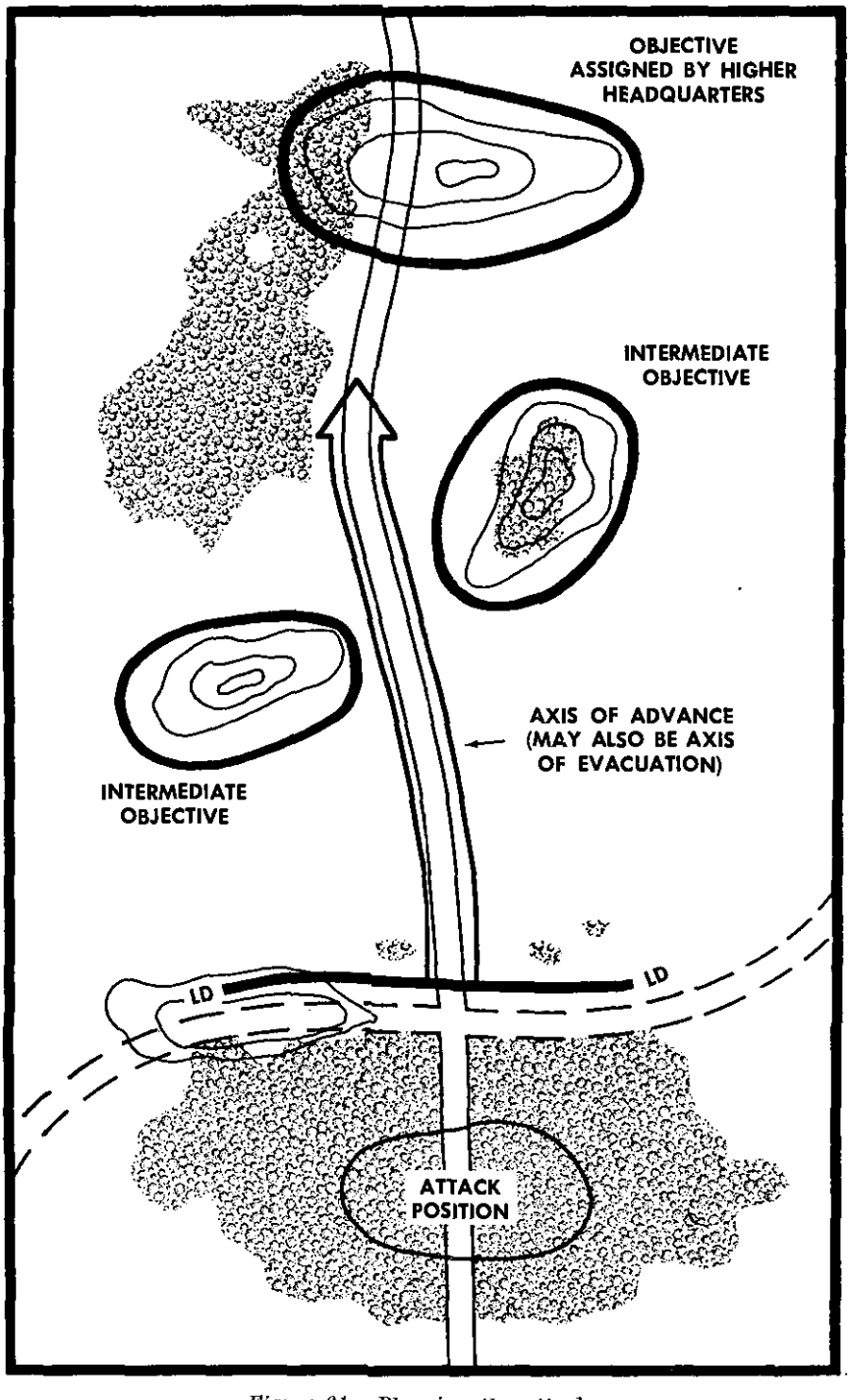


Figure 61. Planning the attack.

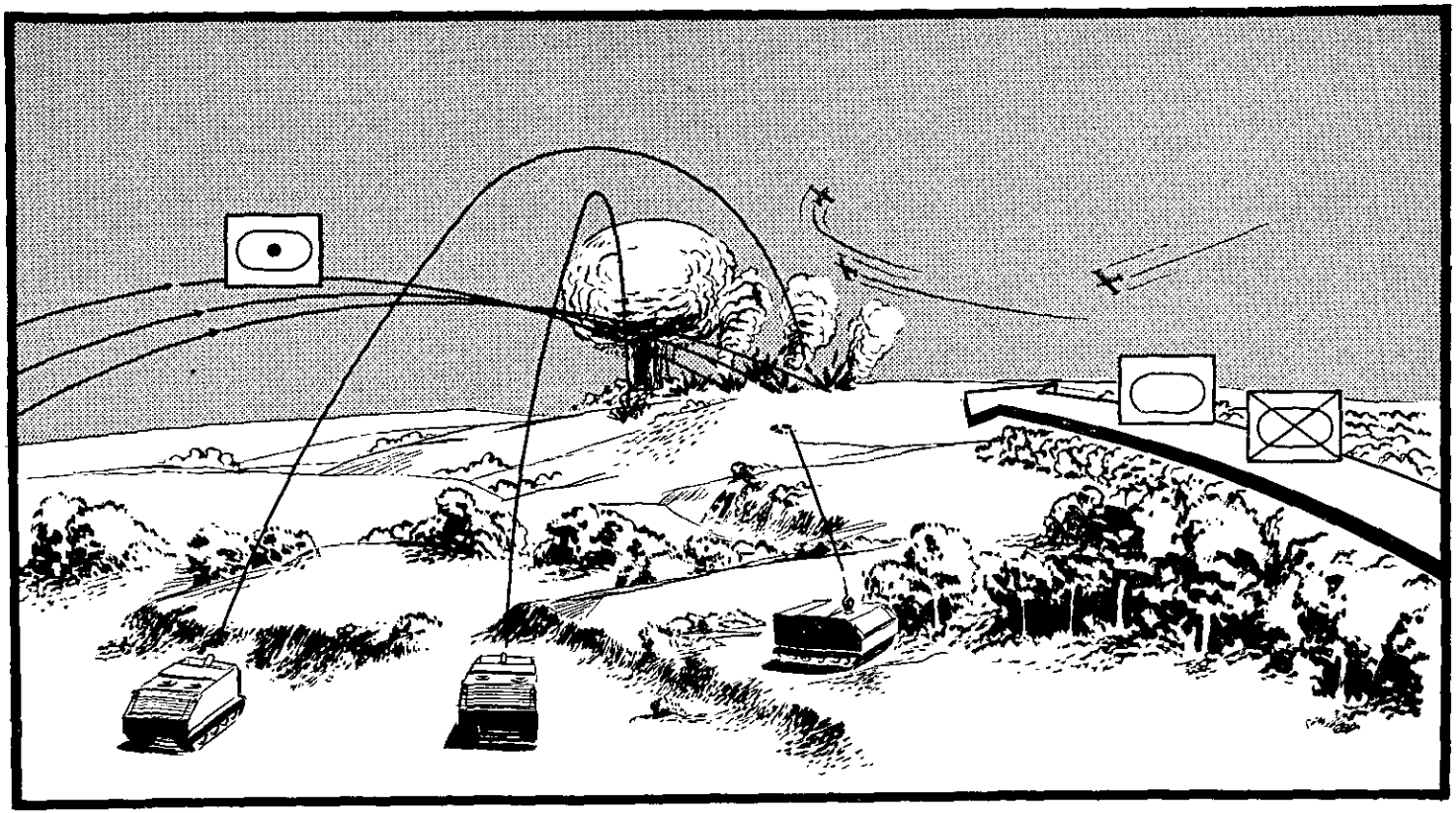


Figure 62. Supporting fires.

for *all* fire-support planning are contained in FM 6–20. Each armor commander keeps his fire-support plan up to date and effective. Armor unit commanders habitually concern themselves personally with the preparation of fire-support plans and their execution throughout the course of the battle.

261. Close-Support Plan

The artillery liaison officer considers the requests from artillery forward observers with the line companies and, in accordance with the requirements of the supported battalion commander, prepares the artillery fire plan. This plan, termed the close-support plan, is developed after consideration of—

a. Information of the enemy, including definite and suspected enemy locations.

b. The mission and plan of maneuver.

c. Present locations of leading elements.

d. Areas likely to cause difficulty during the attack, or possible avenues of enemy approach.

e. Plan of fire for organic or attached supporting weapons.

f. Known targets to be attacked by artillery.

g. Protective fires desired.

h. Illumination and smoke missions desired.

i. Capabilities and limitations of the supporting artillery.

262. Direct-Support Plan

The artillery liaison officer transmits the close-support plan to the artillery battalion supporting the combat command. There the various close-support plans are consolidated into a single plan of artillery fires. When this plan of artillery fires has been approved by the combat command commander, it becomes the *direct-support plan* and is sent to division artillery. After the plan is approved at division level, it is disseminated to all concerned.

263. Artillery Support During the Attack

a. During the attack, an artillery liaison officer working with a battalion remains with the battalion and coordinates artillery fires with the other available fires (par. 60).

b. The following types of support may be expected from artillery:

(1) Support during movement to the attack position. Although fire against hostile weapons is still of great importance at this point, neutralization fires on forward areas and on known and suspected enemy positions, and covering fires for mine-removal parties, are provided.

(2) Support during the actual attack. All available artillery fire is used to protect the assault echelon. During the at-

tack, fire is placed on observation posts, enemy artillery, targets of opportunity, and areas of resistance (fig. 63). When tanks and mounted armored infantry compose the first force to reach the objective, they may be supported by artillery air bursts until the armored infantry dismount (fig. 64).

(3) Support during consolidation and reorganization. Artillery assists in the protection of forces consolidating and reorganizing on the objective by massing fires as needed on threatening hostile elements, by counterbattery, and by interdiction.

(4) Support against counterattack. Artillery fire is massed to assist in breaking up counterattacks, especially enemy thrusts from the flanks. Prearranged interdiction fires may be delivered on routes of approach.

264. Tactical Atomic Weapon Support During the Attack

Tactical atomic weapons may be available to support an attack (par. 66). Except for the considerations necessary because of the nature of atomic weapons, the utilization of these weapons is essentially the same as that of conventional artillery fires.

265. Air Support During the Attack

See paragraph 59.

266. Employment of Battalion Mortar Platoon During Attack

The mortar platoon (app. IV) supports the attack by firing on targets that cannot be engaged by flat-trajectory weapons, and by providing screening smoke. Fires of the mortar platoon are coordinated with the fires of the artillery. Mortars deliver close supporting fires throughout the attack to—

a. Assist the advance of the maneuvering force.

b. Assist in holding the ground gained.

c. Prevent the enemy from shifting or disengaging his forces.

267. Use of Smoke in the Attack

a. Skillfully used, smoke can be of great assistance to attacking armor; careless and poorly planned use of smoke may be a hindrance. Artillery and mortars are the principal sources of smoke. Smoke may be used to—

(1) Blind crews of enemy tanks and antitank guns (fig. 65).

(2) Blind crews and observers of antitank guided missiles.

(3) Disorganize enemy attacks.

(4) Indicate targets, and mark front lines, for supporting aircraft.

(5) Blind hostile observation (fig. 66).

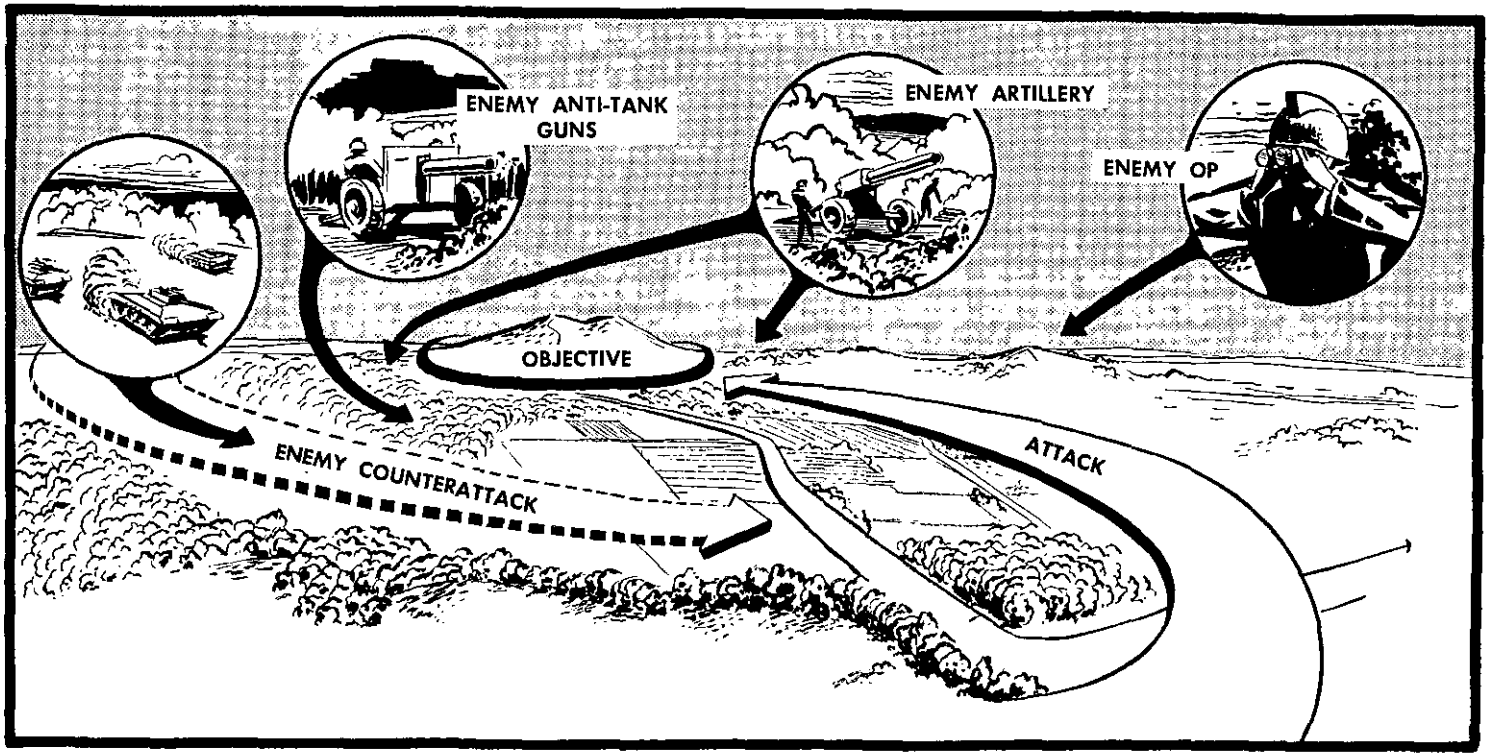


Figure 63. Artillery may support the attack by placing fire on the objective and on enemy observation posts, by engaging enemy artillery and antitank guns, and by disrupting enemy counterattacks.

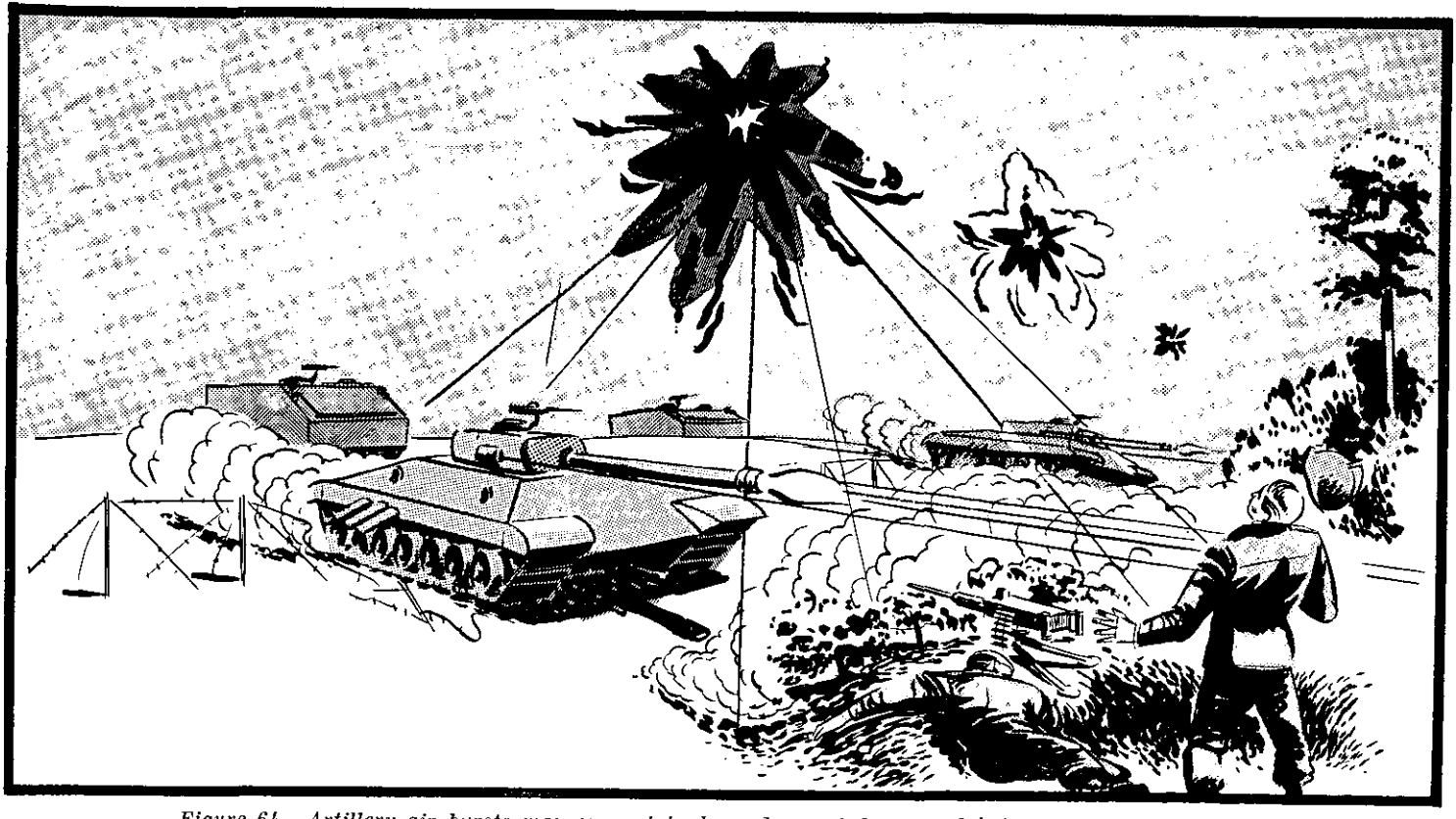


Figure 64. Artillery air bursts may support tanks and mounted armored infantry seizing an objective.

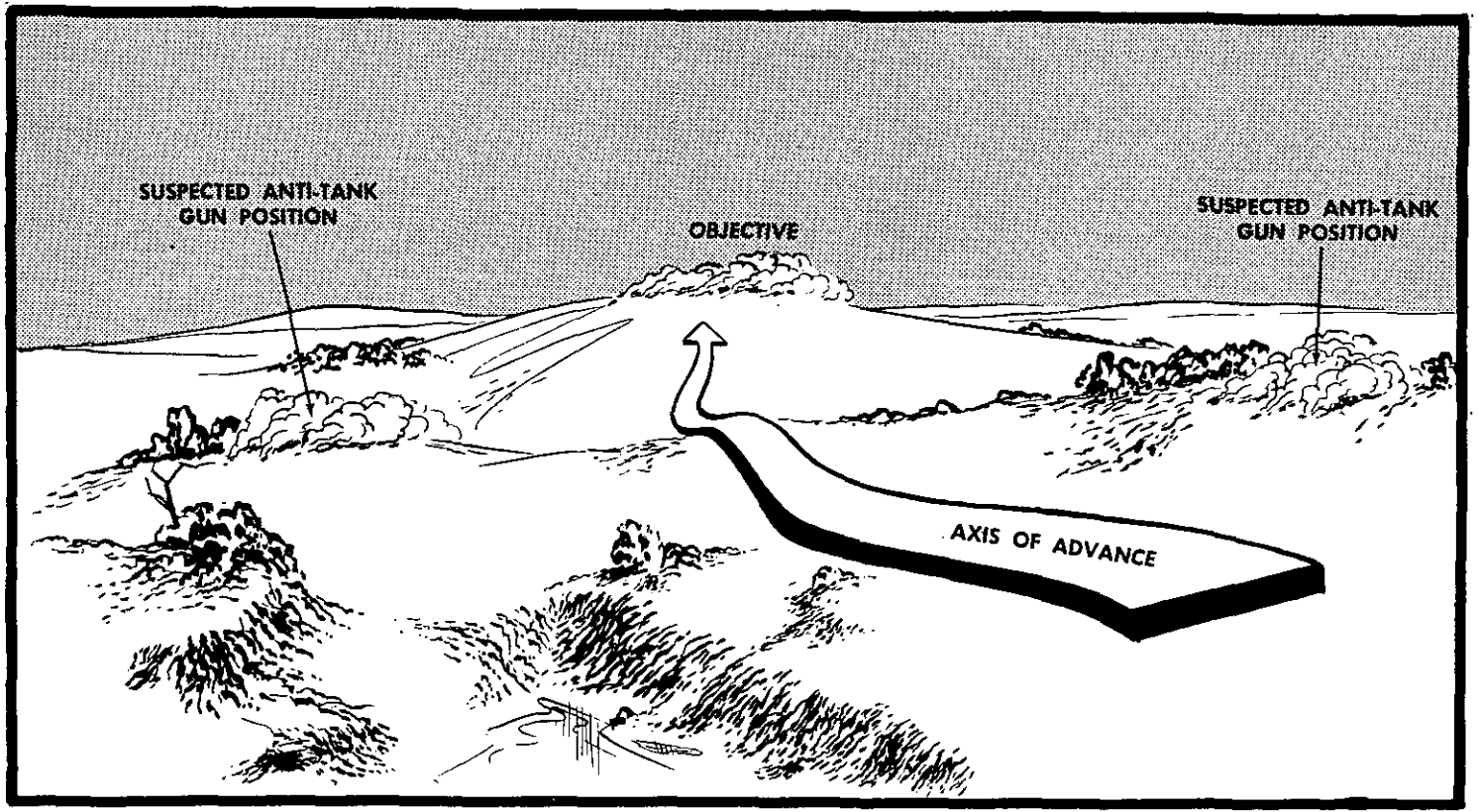


Figure 65. Smoke may be used to blind enemy antitank gun positions.

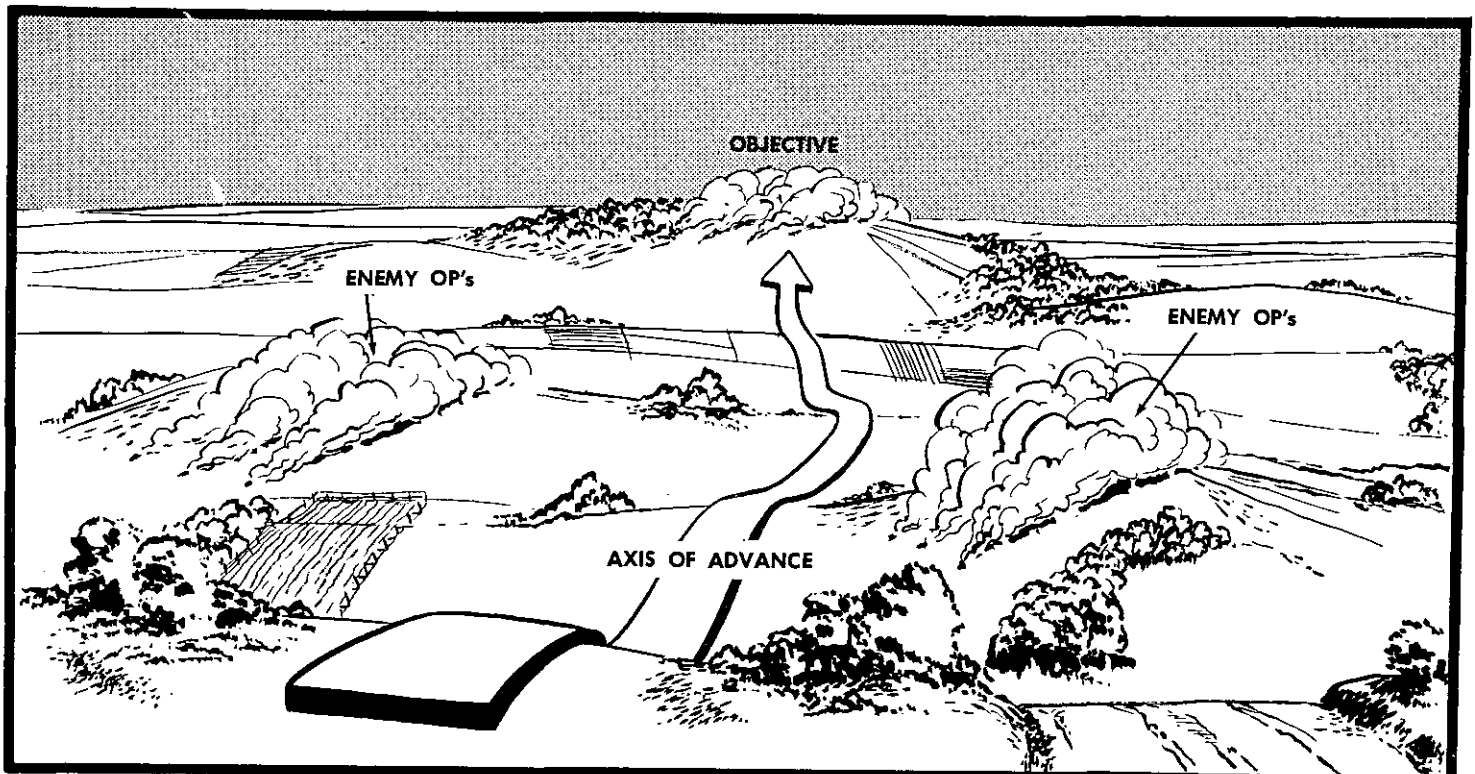


Figure 66. Smoke may be used to blind enemy observation posts and enemy troops on the objective.

(6) Screen mine-lifting operations.
(7) Screen movements of tanks and infantry (fig. 67).
(8) Screen reorganization.
(9) Screen the escape of crews from disabled vehicles.
(10) Isolate enemy areas.
(11) Separate attacking enemy elements from their supporting fires.

b. The probable effects of the use of smoke must be carefully estimated. Smoke must not be permitted to interfere with the operations of the attacking force and adjacent units. Careful consideration must be given to the plan of maneuver, the direction and velocity of the wind, atmospheric conditions, and the types and amount of smoke-producing agents available.

268. Engineer Support During the Attack

See paragraph 64.

269. Security in the Attack

Each commander must take steps to provide security during the preparation for, and the conduct of, the attack. The unit must not be surprised or harassed by enemy forces. After considering all available information, the commander determines the requirement for security and fulfills that requirement with the minimum forces necessary. Security must be provided during the occupation of the assembly area, the movement to and through the attack position, the conduct of the attack, the consolidation of the objective, the reorganization of the unit, and the continuation of the attack. Security is provided both by assigning security missions to specific portions of the attacking unit and by the formation adopted for the attack. Depth in the formation gives added security; uncommitted elements can maneuver to meet enemy threats. Security may also be obtained by echelonment of a unit to a threatened flank. Security for the maneuvering force may be provided by troops used in the base of fire.

270. Formation for the Attack

a. The initial formation for the attack, and subsequent changes to the formation, are based upon the factors of METT (mission, enemy, terrain and weather, and troops available).

b. It is desirable to attack in depth. A formation with depth permits greater flexibility in the employment of the attacking force. It also assists in maintaining the momentum of the attack. However, the primary consideration in selecting a formation is that the commander must be able to place all available fire upon the objective at the decisive time.

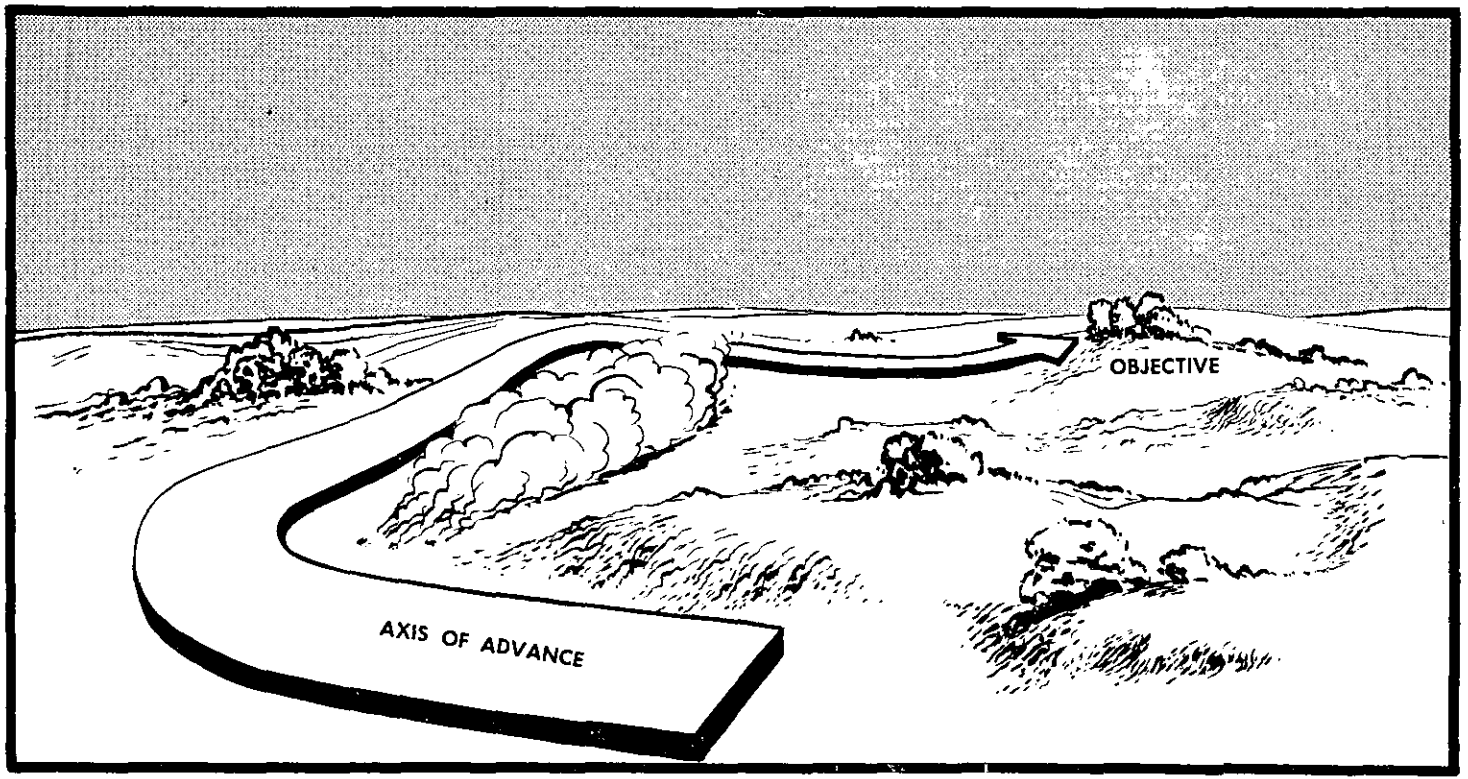


Figure 67. Smoke may be used to screen the movement of the maneuvering force.

c. An attack in depth is favored—

(1) Against deep objectives.

(2) When the enemy situation is vague, and major enemy strongpoints or troop locations are not known.

(3) When there exists a requirement for security against a counterattack.

(4) During periods of poor visibility when maximum control is desired.

d. A formation with less depth is favored:

(1) Against limited objectives.

(2) When major enemy strongpoints and troop concentrations are known.

(3) When the objective is strongly held by the enemy, and there is a requirement to place maximum fire upon the objective.

(4) When the situation requires maximum freedom of action by subordinate units.

271. Types of Formations for Attack

An armor unit may attack in either of two basic formations: *column* or *line*. A unit is in a column formation when only one major subordinate unit is leading the attack. A unit is in line formation when two or more major subordinate units are leading the attack. Variations of these two basic formations are the echelon right or left, the wedge, and the inverted wedge.

a. The column formation (figs. 68 and 69) gives maximum control. The unit can be deployed quickly to either flank. This formation is useful in passing through woods or defiles. It may be used in a penetration when depth to the attack is essential. It may be the initial formation for a unit with an enveloping mission.

b. The *line* formation (figs. 70 and 71) may be used to provide maximum fire to the front. The amount of depth in this formation depends on how many subordinate units are in line. The control and maneuverability of the formation are improved as the depth is increased. For example, a battalion task force which is advancing with two company teams abreast and two following is in line formation, but it is easier to control and has more maneuverability than if all four of its teams were advancing abreast.

272. Choice of Elements to Lead the Attack

A major consideration in armor operations is that tanks should lead in a mounted attack. This insures maximum utilization of the mobility, firepower, and shock action of armor. However, armored infantry should lead the attack when—

a. The terrain that must be crossed is unfavorable for tanks.

b. Antitank obstacles are present and must be reduced.

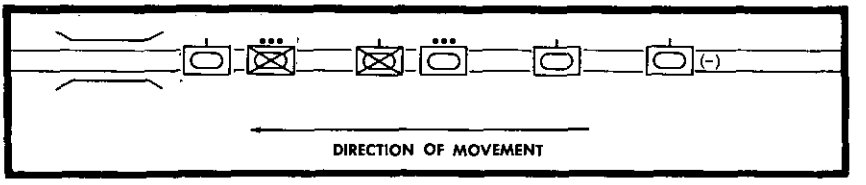


Figure 68. Column formation, battalion.

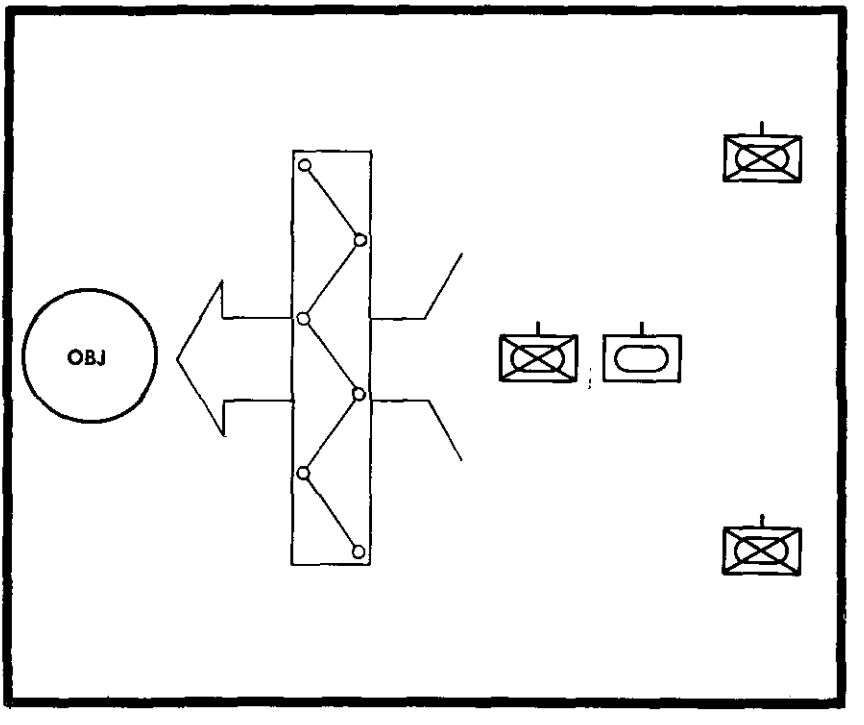


Figure 69. Column formation, battalion.

c. Rivers must be crossed against enemy opposition.

d. The attack is made in a densely wooded area where antitank guns, minefields, or other obstacles for tanks may be encountered.

273. Issuance of Operation Order for Attack

a. The battalion attack order should be complete, covering all details of the operation. Brevity is desirable, but clarity must not be sacrificed for brevity. Oral orders, fragmentary orders, and warning orders should be considered standard. Orders must be issued early enough to permit dissemination through the chain of command to all subordinate commanders. When time permits, it is desirable to supplement battalion oral orders with written orders of the overlay type, which should be as detailed as the situation requires. Once the attack is under way, orders will be oral and fragmentary.

b. The company commander's order should be brief and to the point. To insure completeness and to avoid omission, the form for operation orders should be followed. If feasible, this order should be issued at a point from which the zone of advance can be seen. If necessary, the order is issued in the assembly area. The order should be issued in time to allow the platoon leaders to make their reconnaissance, issue their orders, and prepare their platoons for combat. The platoon leaders, attached unit commanders, liaison personnel, and artillery forward observers usually receive the order. When practicable, the first sergeant, platoon sergeants, supply sergeants, and other key non-commissioned officers are present. Warning and fragmentary orders

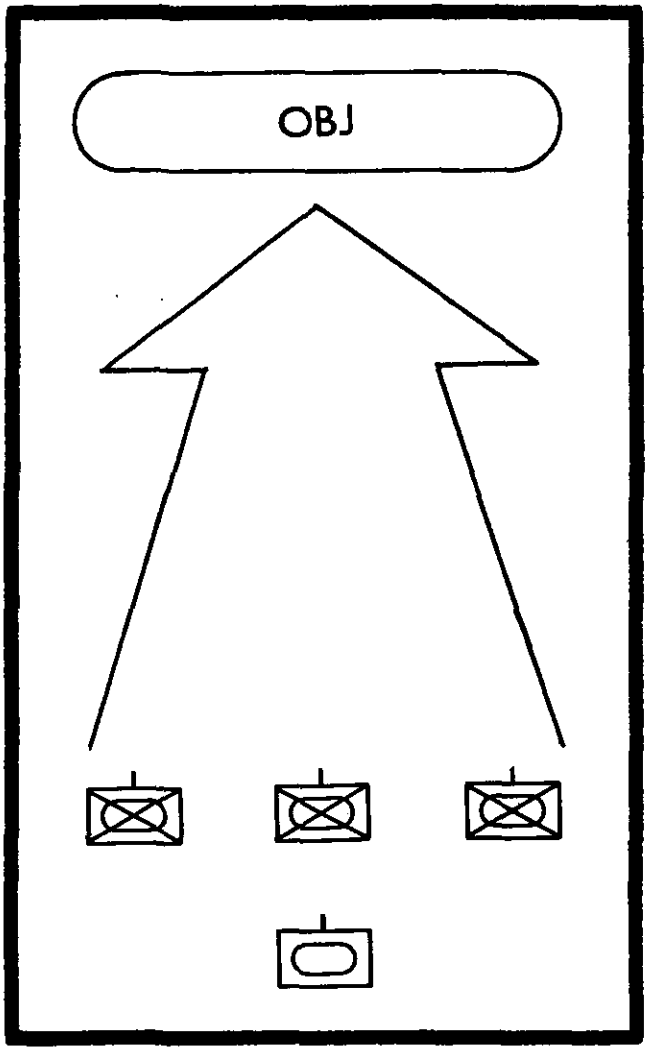


Figure 70. Line formation, battalion.

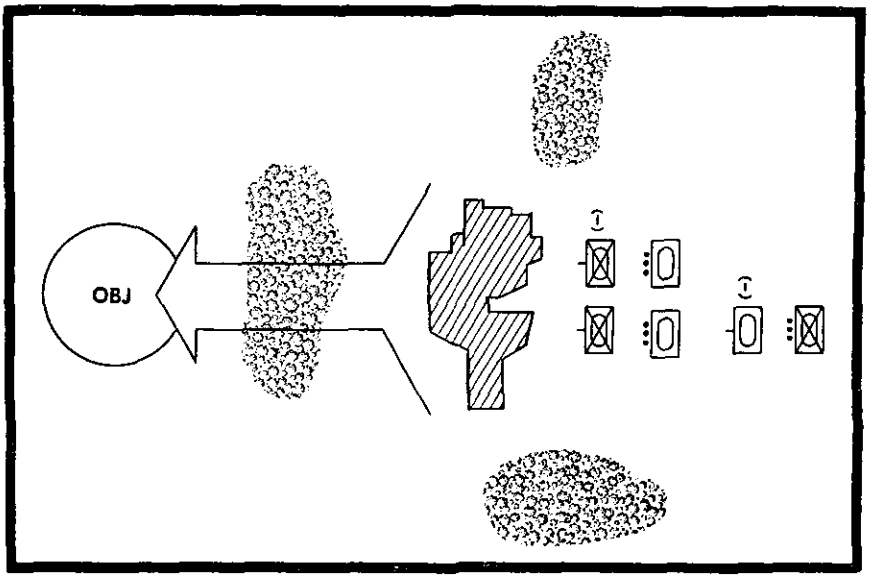


Figure 71. Line formation, battalion.

are often used to further the prompt, continuous action needed in the employment of tank-armored infantry teams.

c. Following receipt of the company commander's order, the platoon leaders make their reconnaissance; they then issue their orders to at least the section and squad leaders and tank commanders.

d. The platoon leader usually issues his order at a previously selected vantage point. He orients his subordinate leaders by pointing out important terrain features. He may issue the order in a covered position after orienting leaders at the vantage point.

274. Movement to Attack Position

a. The movement from the assembly area to the attack position is made as a tactical march, normally during darkness. The formation of the column should permit all elements to reach their attack positions without having to countermarch or to move through an area occupied by another element. Markers are posted along the route and at the entrance to the attack position. Listening silence normally will be in effect prior to the attack.

b. On occasion, during the time the company commander and platoon leaders are making their personal reconnaissance, the company commander may direct the company executive officer and the platoon sergeants to march the company forward from the assembly area to the attack position. In this event, the platoon leaders and attached unit commanders rejoin their units in the attack position and immediately issue their orders. This allows the company commander

and the platoon leaders additional time for reconnaissance and observation.

275. Logistical Support for the Attack

a. In offensive operations, the commander must plan to have adequate logistical support readily available. The lack of such support can cause loss of the initiative or prevent full exploitation of success. The commander must insure that the logistical elements have the necessary flexibility to meet a changing situation.

b. In the attack, the battalion combat trains normally move by bounds in rear of the combat elements. Security for the trains may be provided by their proximity to combat elements, or it may be necessary for the commander to designate combat elements to provide security for the trains.

c. See FM 17–50 for a detailed discussion of logistical support of offensive operations.

Section V. CONDUCT OF THE ATTACK

276. General

a. As the attack progresses, unforeseen circumstances frequently make it necessary for the commander to change his plan of action. He avoids drastic changes as much as possible. However, he must exploit favorable developments without hesitation and must overcome obstacles as quickly as possible. As a rule, the most effective way to meet changing situations, with minimum change in the plan of attack, is to utilize any uncommitted portion of his force.

b. Fire and Maneuver begin immediately with the first definite hostile contact. The fire-and-maneuver technique is employed by the commander conducting the attack, who establishes a base of fire and designates a maneuvering force (par. 240–242).

c. Fire and Movement is the technique employed by and within the maneuvering force to advance on the objective. In fire and movement, one element of the maneuvering force fires while another element advances, taking advantage of all available cover and concealment. Fire and movement are alternated until the units reach a point from which they can effectively launch an assault.

277. Conduct of the Maneuvering Force

a. The maneuvering force must close on the objective in the shortest possible time. Therefore, it is desirable to commit this force intact and on terrain that is favorable for the rapid and continuous movement of tanks and armored personnel carriers (fig. 72). The longer the force is exposed to enemy fire, the greater will be the losses. The movement is made by routes which afford the best available cover and

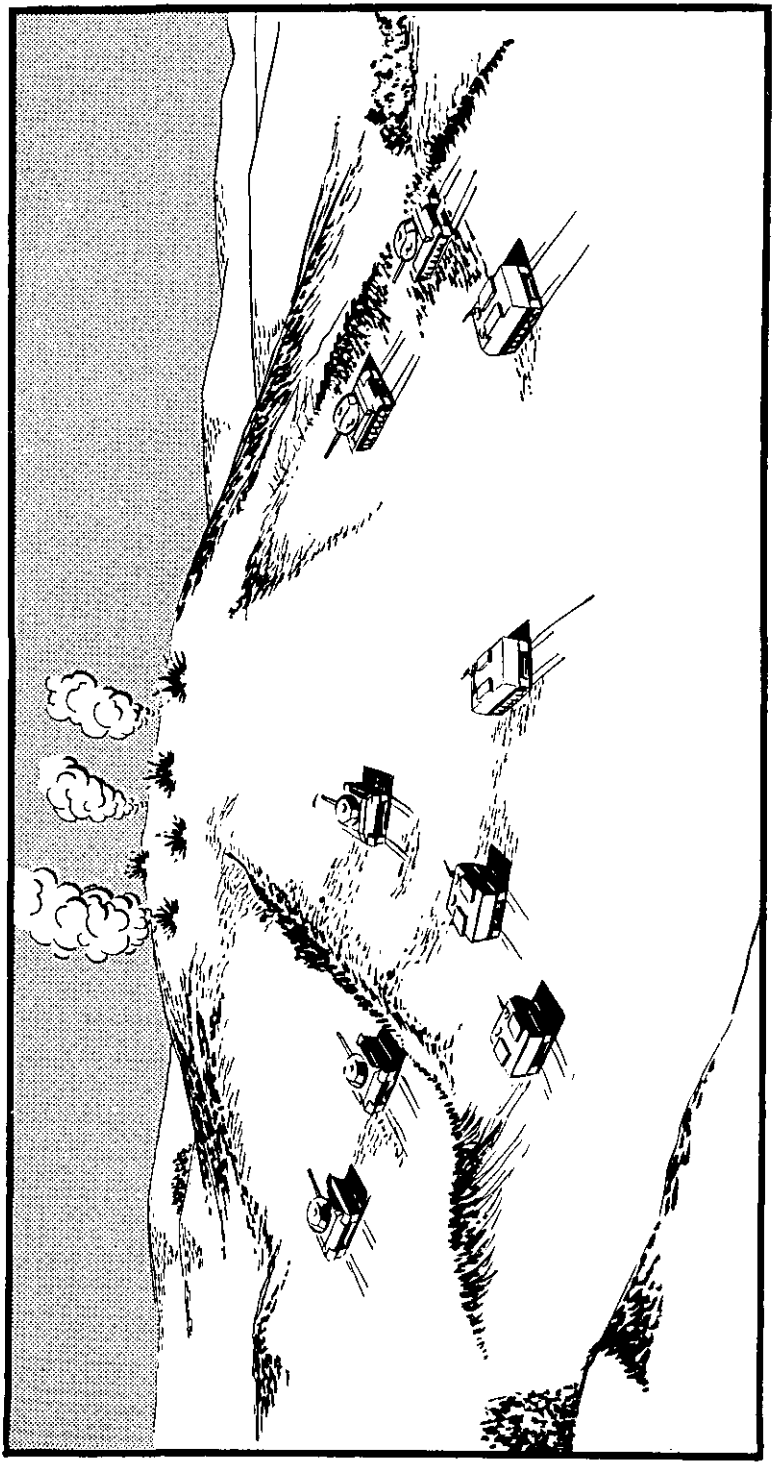


Figure 72. The maneuvering force closes on the objective in the shortest time possible; therefore, armored infantry should remain mounted as long as possible.

concealment. Rapid movement multiplies the effect of the firepower and shock action possessed by the maneuvering force. If the maneuvering force is forced to employ fire and movement and to advance by bounds, aggressive action must be taken to insure that the movements are executed rapidly and that continuous movement of the entire force is resumed as soon as possible.

b. The maneuvering force places maximum fire on the enemy as soon as it is within effective range. The fire of the maneuvering force, reinforced by all available supporting weapons, pins down the enemy, denies him observation and movement, and destroys his personnel and defenses.

c. Armored infantry remain mounted as long as possible. They may dismount to mop up any enemy personnel not destroyed by the tanks. They may also advance dismounted ahead of the tanks to clear buildings or to locate well-hidden antitank weapons. Infantrymen designate targets to the tanks according to a prearranged system. Radio, the external tank interphone, flares, smoke grenades, and tracer fire are common methods of target designation. Whenever possible, an infantryman mounts a tank and personally points out the target to the tank commander. Machine guns of the armored personnel carriers reinforce the tank fires and support the assault of the dismounted armored infantry.

d. The assault is the actual closing with the enemy. Supporting fires should be lifted or shifted at the latest possible time, but must be lifted soon enough that the maneuvering force will not be required to halt or slow its advance before assaulting the objective. In all cases the assault continues to the far edge of the assigned objective.

278. Technique of Fire and Movement

a. When terrain and enemy dispositions require that movement of some elements be covered by others, the maneuvering force advances by bounds, employing fire-and-movement techniques. The unit making a bound usually is an organizational subdivision of the attacking force. For example, bounds are made by platoons within a company, by sections or squads within a platoon, and by fire teams within a squad.

b. A bound is a type of movement from one position to another in which one element advances to a predesignated limit, covered by a rear element. The length of each bound is determined by the effective range of the weapons covering the advance, the location of suitable terrain features, and the visibility. Generally, the larger the element making the bound, the longer the bound. The advance may be made by either of the following methods:

(1) Successive bounds. In this method (fig. 73), the leading element, covered by the rear element, advances to the limit of the first bound and takes up positions to support the

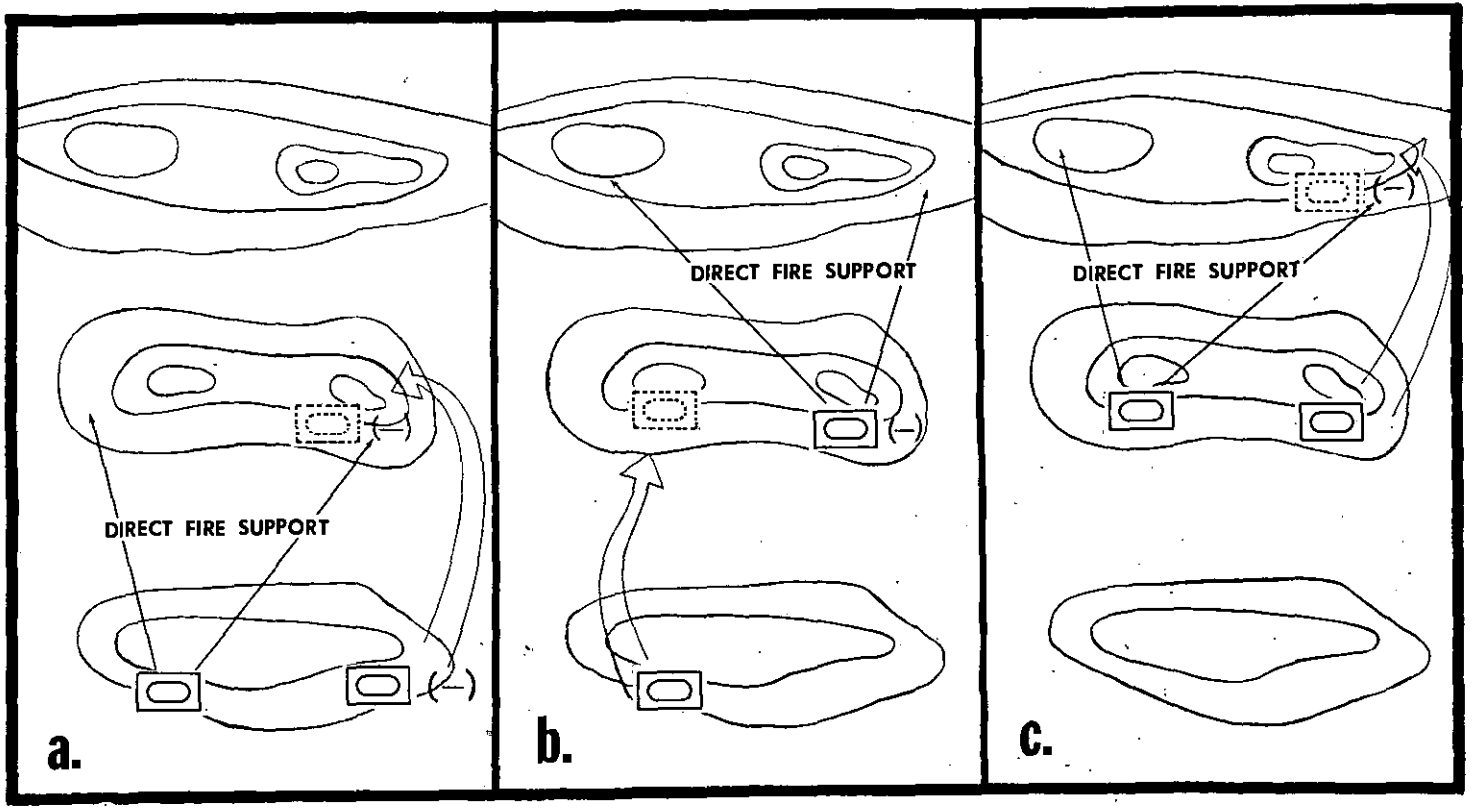


Figure 78. Movement by successive bounds.

advance of the rear element. The rear element, upon arriving at a position abreast of the leading element, halts and supports the advance of the leading element to the limit of the second bound. This operation is repeated as many times as necessary. This is the slower of the two methods.

(2) Alternating bounds. In this method (fig. 74), the leading element halts at the limit of the first bound and takes up positions to support the advance of the rear element, which then advances to the limit of the second bound and takes up positions. The initial leading element then advances to the limit of the third bound.

279. Conduct of the Base of Fire

a. The base of fire furnishes continuous fire support to the maneuvering force from the time the maneuvering force crosses the line of departure until the operation is completed. The base of fire opens fire on order and distributes its fire over the entire objective. Its fires pin the enemy to the ground and neutralize his weapons. The base of fire may be controlled by radio or prearranged signal.

b. Supporting fire are lifted, or shifted to flank or rear targets, when they are masked by the maneuvering force. It is desirable for supporting fires to continue directly on the objective until the assault is completed and the armored infantry prepare to dismount.

280. Use of the Reserve

a. The reserve, when constituted, is an offensive weapon. It is a means for retaining the initiative, primarily through its employment to exploit initial successes (par. 49). The reserve normally follows the maneuvering force. As soon as the maneuvering force reaches the objective, the reserve closes on the position to assist in consolidating the position and repelling counterattacks. The reserve may be so placed in the formation as to provide security for the command; this is especially true of troops which are considered as a reserve merely because they have not been committed.

b. Small armor units normally will not have reserves. Uncommitted elements of the maneuvering force, or combat units in the base of fire, must be prepared to perform the role of the reserve.

c. The reserve is prepared to exploit success, to repel a counterattack, to pursue a defeated enemy, or to move rapidly to a flank to extend an envelopment. The reserve is located in the position from which it can best support the main attack and cover the flanks.

d. The commander of the reserve keeps abreast of the situation by liaison, observation, and frequent visits to higher headquarters. He formulates plans to cover the commitment of his unit to any type of action or mission. He gives primary consideration to plans for the

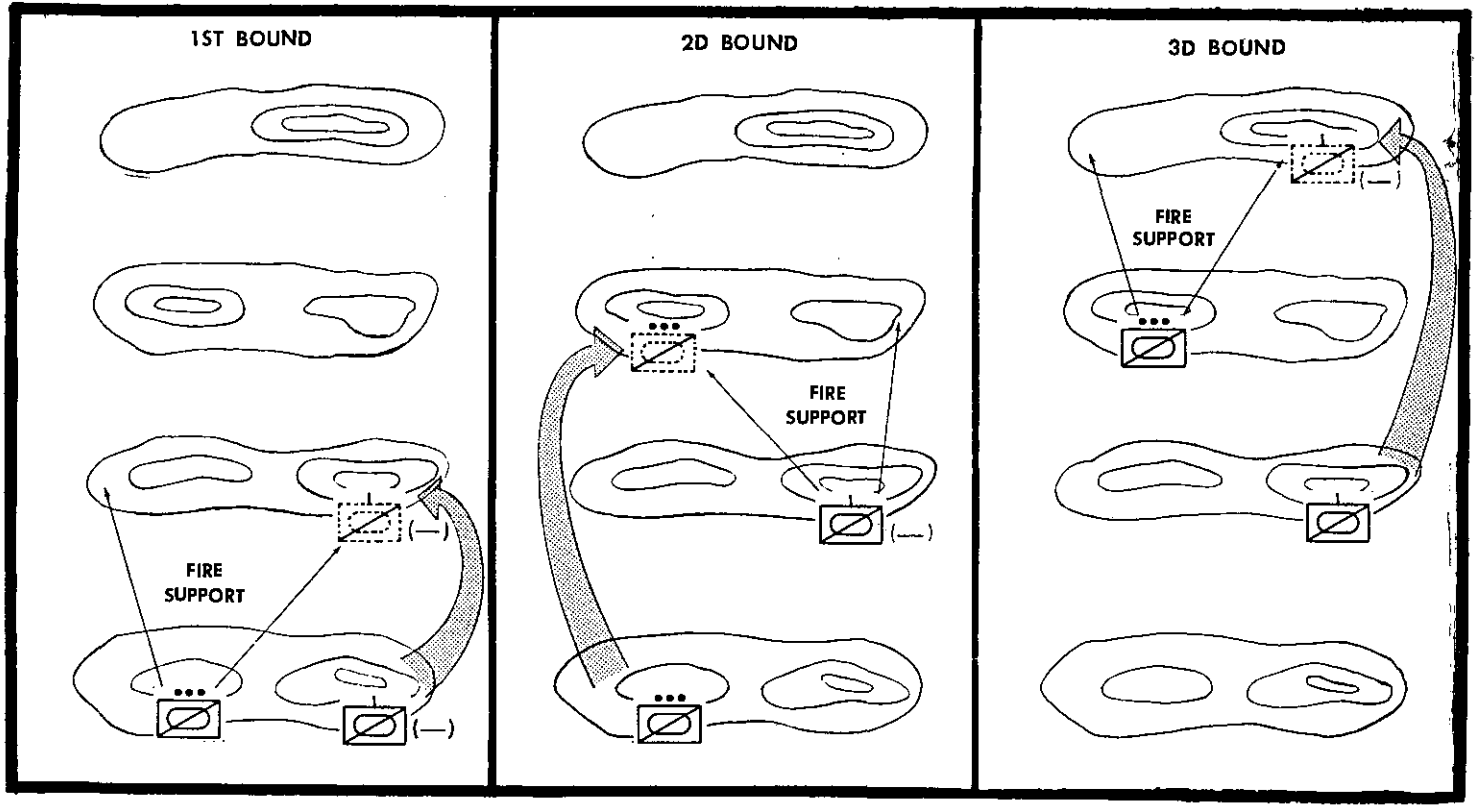


Figure 74. Movement by alternating bounds.

most probable missions, but he must always be ready to carry out any assigned mission. It is his responsibility to visualize all possible situations and to determine the best means for putting the reserve into action under each such situation. Changes in the situation make it necessary for the reserve commander to constantly revise his plans. Continuing route reconnaissance and map studies must be made. Subordinate elements of the reserve must be kept informed of the situation.

281. Conduct of the Assault on the Objective

The assault of the objective may be made with tanks and armored infantry on line, or with tanks followed immediately by dismounted armored infantry. Whichever method is used, the tanks destroy enemy groups, defensive works, weapons, and emplacements by direct fire. The riflemen close with and destroy the enemy in close combat and protect the tanks from individual antitank weapons. Each rifle squad is located in a formation according to the directions of the armored rifle platoon leader. One member of the rifle squad is selected by the squad leader to walk behind the tanks and watch for signals from both the commander of the tanks and the squad leader. Supporting fires increase as the company and its platoons close on the objective. They shift to isolate the objective just before the company begins the assault. As soon as the assault starts, the tanks advance onto the objective, firing their machine guns. Armored personnel carrier machine guns are used to support the assault until masked by advancing riflemen. The riflemen and automatic riflemen use assault fire to close with the enemy. During the assault, the tanks provide close-in support of the infantry, who will be mopping up on the objective. The platoons advance to the far side of the objective, where they prepare for a possible counterattack and for the continuation of the attack to the next objective.

282. Actions on the Objective

The actual occupation of the objective is the critical stage of the attack. This is the stage during which control is most difficult and the time when an aggressive enemy delivers a carefully planned and coordinated counterattack, covered by all available supporting fires. When a small armor unit has assaulted and seized an assigned objective, it enters into activities called "actions on the objective." These actions are *consolidation* of the objective and *reorganization*. In atomic warfare, the actual seizure of the objective may often be followed by either a continuation of the attack or a rapid move to dispersed locations from which the unit can dominate the objective, to avoid presenting a lucrative atomic target. Such actions will be in accordance with plans made by a higher commander. Nevertheless,

all individuals must be impressed with the urgent requirement for speed in actions on the objective. Often any reorganization required must be accomplished on the move.

283. Consolidation of the Objective

Consolidation of the objective is defined as "organizing and strengthening a newly captured position so that it can be used against the enemy." The attack order should contain instructions for consolidation of the objective, in as much detail as possible. These instructions may be changed or supplemented by fragmentary orders as the attack progresses. The actions taken vary from the immediate establishment of local security to the complete organization of the objective for defense. These actions may include any or all of the following:

a. Security. Establishment of outposts and observation posts, and the dispatching of combat patrols.

b. Reconnaissance. Measures which are similar to, and may be employed in conjunction with, the security measures, depending on the mission of the unit.

c. Fire Support. Displacement of organic supporting weapons for continuation of the attack or for defense of the objective; submission of requests for fire support to artillery, air, and other fire-support agencies.

d. Positioning. Positioning the unit to continue the attack or to defend the objective.

284. Reorganization

Reorganization pertains to the unit. It includes all the actions taken to restore maximum combat effectiveness and control. Actions that may be included in the reorganization are—

a. Reports. All subordinates report accomplishment of their mission, and report the status of personnel, equipment, and supplies.

b. Replacement of casualties. So far as possible, personnel are assigned to fill losses.

c. Evacuation. Arrangements are made for the evacuation of personnel casualties, prisoners of war, and damaged equipment.

d. Resupply. Ammunition and equipment are redistributed as required; requests for additional ammunition, fuel, and other supplies are initiated; any supplies received are issued if time permits.

e. Communication. Contact is restored with any units temporarily out of communication.

285. Continuation of the Attack

a. Each commander should have a complete picture of the overall plan of action of the higher commander. He also makes a continuous estimate of the situation. From this estimate and his knowledge of

the higher commander's plan, he can adopt formation which enable him to readily resume operations. If he follows this procedure, he will need only brief orders to resume operations.

b. If the mission permits, armor units seek to continue the attack. Plans for rapid reorganization are made prior to the attack. Frequently, units reorganize while continuing to move, and continue the advance without even halting after taking an objective.

Section VI. METHODS AND TECHNIQUES OF EMPLOYING TANKS AND ARMORED INFANTRY IN THE ATTACK

286. General

a. Small armor units attack using fire and maneuver, and fire and movement (par. 276). This section covers the methods and techniques employed to integrate the actions of tanks and armored infantry when they are supporting each other in execution of their mission in the maneuvering force and/or in the base of fire.

b. There are three general methods of employment of tanks and armored infantry together in the attack—

(1) Tanks and armored infantry attack on one axis.

(2) Tanks and armored infantry attack on two converging axes.

(3) Tanks support by fire only.

c. During any attack, any one or more of the three methods may be used. As the combat situation changes, it may become necessary to employ a method other than the one which was initially used. The attacking force must be capable of changing from one to another as the attack progresses.

d. Regardless of the method or combination of methods used, the following fundamentals apply.

(1) The tank must be employed so that maximum use is made of its battlefield mobility, armor-protected firepower, speed, and shock action to carry the fight to the enemy.

(2) The rate of advance of the attack should be the maximum rate permitted by the terrain and enemy situation.

(3) The mobility, shock action, and armor protection of the armored personnel carrier must be utilized to the utmost. The armored infantry should remain mounted as long as possible so that—

(*a*) The attacking force can move forward at the speed of the tanks and armored personnel carriers in order to rapidly close with and destroy the enemy.

(*b*) The battlefield mobility of both elements of the tank-armored infantry team will be retained.

(*c*) Casualties will be minimized in areas swept by small-arms and artillery fire.

(*d*) Artillery air bursts can be employed in support of the attacking force.

(*e*) A degree of protection will be afforded against the effects of atomic weapons.

(*f*) The energy of the armored infantry will be conserved so that they will be better able to fight when needed.

(4) Armored infantry normally dismount when it is necessary for them to—

(*a*) Breach or remove obstacles which prevent the forward movement of the tanks.

(*b*) Assist in the neutralization or destruction of antitank weapons which are holding up the forward movement of the tanks and armored personnel carriers.

(*c*) Take part in an assault through heavily wooded areas or very rough or broken terrain.

(*d*) Lead an assault across defended rivers which cannot be crossed by armored personnel carriers.

(*e*) Take part in an assault through fortified areas or through defended towns and villages which cannot be bypassed.

(*f*) Assist the tanks forward under certain conditions of low visibility and restricted fields of fire (darkness, smoke, heavy woods, broken terrain, etc.).

(*g*) Mop up a defended objective and assist in the consolidation.

287. Tanks and Armored Infantry Attack on One Axis

a. General. In this method, one axis is used by the entire attacking force to approach an objective.

b. Advantages. This method promotes coordination and control, since the entire attacking force is moving in one direction on the same axis. In comparison to other methods, it permits close mutual support among elements of the attacking force.

c. Tanks with Mounted Armored Infantry.

(1) The attack of tanks and mounted armored infantry units can be coordinated by combining the combat formations of each into one mutually supporting, integrated formation (fig. 75). The positions of elements in the formation are based on the tactical situation. Normally, tanks lead so they can best utilize their firepower. The armored personnel carriers should be so placed that their vehicular caliber .50 machineguns can be used to augment the fires of the tanks; however, this should not be done if it will unduly expose the carriers to enemy antitank fire.

(2) Mounted armored infantry may follow the tanks by bounds (fig. 76). This technique of movement increases the se-

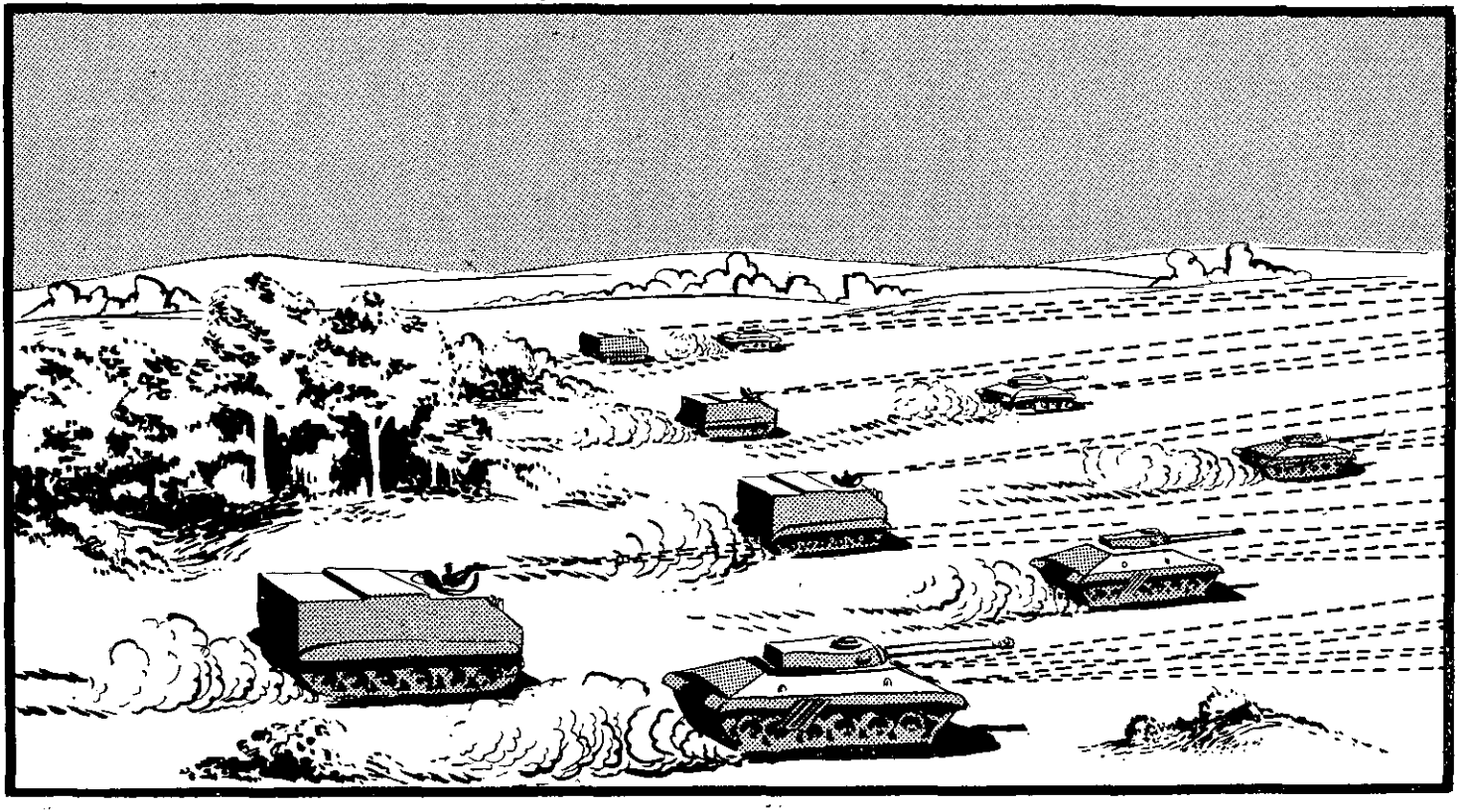


Figure 75. Tank-armored infantry team using integrated formation.

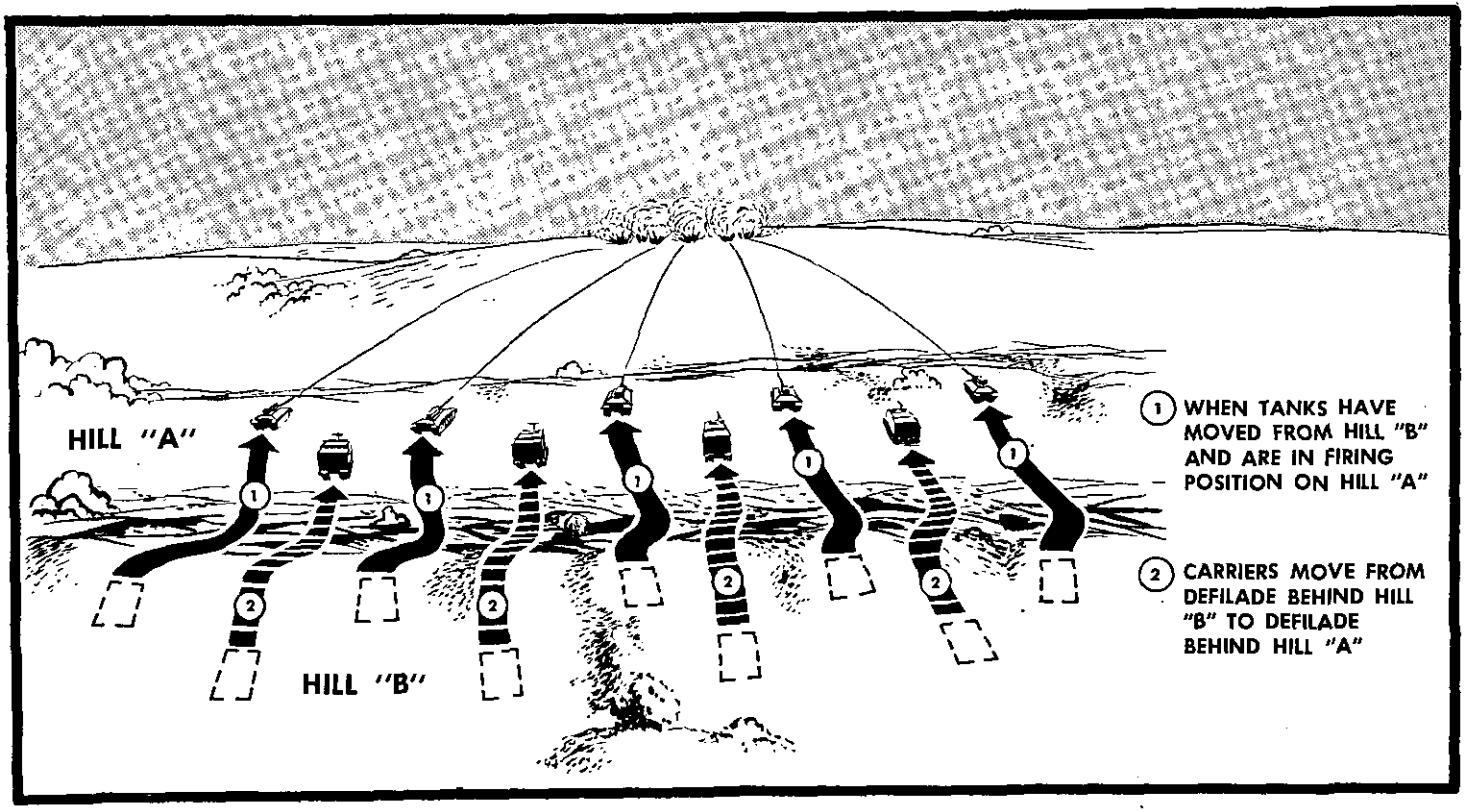


Figure 76. Armored rifle platoons following tank platoon by bounds.

curity of the armored infantry but reduces the speed of the advance. If the tanks advance as a unit from one terrain feature to the next, the armored personnel carriers must rapidly move into defilade behind each successive terrain feature as soon as it is occupied. In some situations, the leading tank unit may itself advance by alternate or successive bounds. In such a situation, the armored personnel carriers advance with one of the rear tank elements and halt in defilade behind the terrain feature occupied by the tank element already in position.

(3) The distance between the tanks and armored personnel carriers must not become great enough to let enemy tanks move into the gap, thereby separating the tank and armored infantry units; nor can it be so great as to deny the tanks rapid infantry support when needed. In determining the relative positions of his tanks and armored personnel carriers, the commander must continuously evaluate the relative importance of having armored infantry quickly available and exposing the armored personnel carriers to effective enemy fire.

(4) Tanks and mounted armored infantry should arrive on an enemy-occupied objective simultaneously, in order to provide close mutual support. The use of artillery air bursts on the objective will assist the tanks in neutralizing enemy personnel equipped with individual antitank weapons, thus permitting the armored infantry to advance farther before dismounting.

d. Tanks with Dismounted Infantry.

(1) When armored infantry are required to dismount (par. 286*d*(4)), the tanks and infantry operate close together so that they can provide mutual support (fig. 77). The infantry may move slightly in advance of the tanks, (being sure not to mask tank fire) between them, or immediately in rear. As the advance progresses, the relative positions of tanks and infantry are adjusted according to the enemy resistance and the terrain. This technique of movement permits close coordination and maximum mutual support but sacrifices speed. The slow speed makes the tanks more vulnerable to antitank fire.

(2) When terrain, obstacles, or enemy antitank weapons restrict or stop the movement of the tanks but permit dismounted infantry to move forward, tanks may temporarily support by fire while the infantry advance. When the dismounted armored infantry attack has progressed sufficiently or an obstacle has been removed, the tanks may move forward, pass

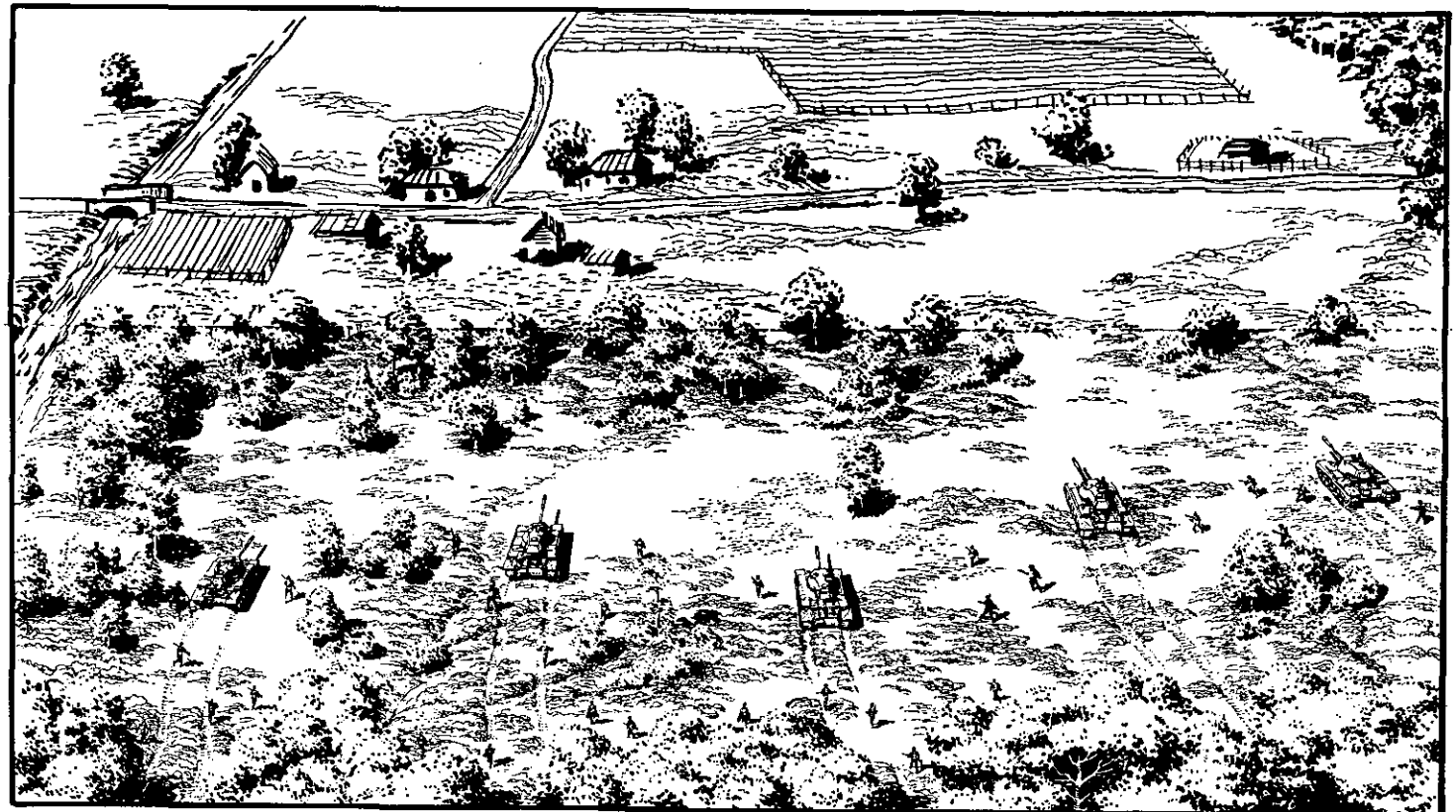


Figure 77. Tanks and dismounted armored infantry on the same axis.

through the infantry, and lead the assault. This type of action must not be confused with the method of tanks supporting by fire only, since the intent is for the tanks to participate in the assault of the objective.

(3) When artillery air bursts are used to support the attacking force, dismounted armored infantry must be kept well to the rear of the tanks.

(4) The armored personnel carriers should follow close enough behind dismounted armored infantry so that they will be readily available when needed to continue the attack mounted or to assist in the consolidation of the objective. They may move forward by bounds, or they may closely follow the attacking force and augment the fires of the tanks and dismounted armored infantry with their vehicular machineguns.

e. Infantry Riding On Tanks. When armored personnel carriers are not available, or when there is a requirement to have infantry immediately available with leading tanks, infantry may ride on tanks in the advance to contact and when it is desired to speed the attack to the final assault. However, when infantry are mounted on tanks, they are extremely vulnerable to all types of fire; also, the maneuverability and firepower of the tanks are reduced.

288. Tanks and Armored Infantry Attack on Two Converging Axes

a. General. In this method, the attacking force uses two different axes for the approach to an objective (fig. 78). This method normally achieves the maximum surprise effect, particularly when the elements on both axes are mounted. It provides a greater opportunity for the attacking force to strike the enemy flanks or rear, and it has the advantage of forcing the enemy to fight in two directions. When tanks are employed on both axes, hostile tanks are more often forced to expose their vulnerable sides and rear to fire from one of the friendly tank elements. Coordination of the assault is more difficult than in other methods.

b. Tanks With Mounted Armored Infantry.

(1) Normally a force made up of both tanks and mounted armored infantry attacks along each axis. Situations may arise in which it is necessary to employ mounted armored infantry alone on one axis, but this should be an exception. The element on one axis may initially support by fire the maneuver of the element on the other axis until both are in position to move forward onto the objective. The attack should be so timed that both elements arrive on the objective simultaneously, to insure that the enemy receives the max-

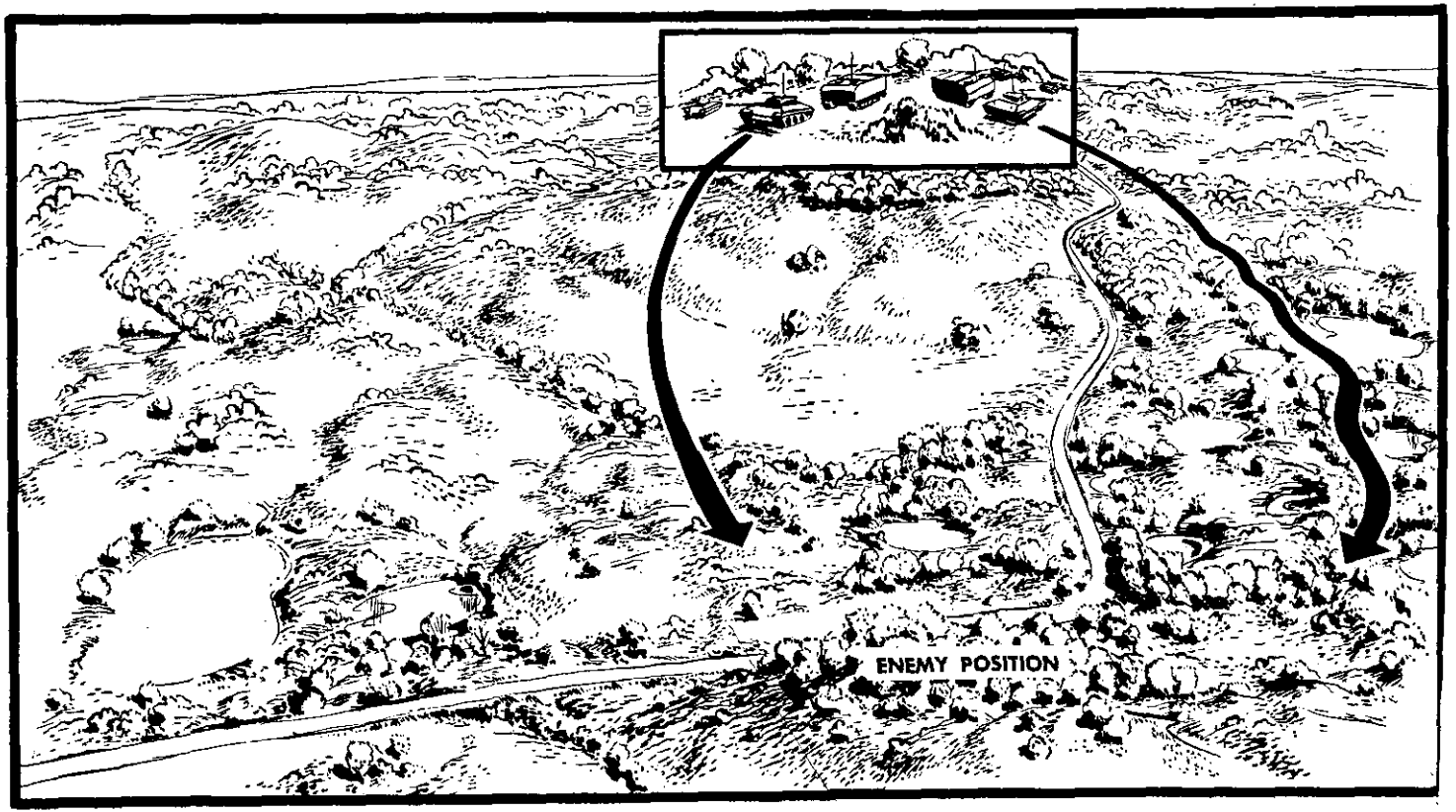


Figure 78. Tanks and armored infantry on two converging axes.

imum shock action of the entire force. Close coordination is required to prevent one element from firing into the other.

(2) The movement of tanks and armored personnel carriers together is governed by the same considerations as when a single axis is used (par. 287*c*).

c. Tanks With Dismounted Infantry.

(1) The movement of tanks and dismounted infantry together is governed by the same considerations as when a single axis is used (par. 287*d*).

(2) When the attacking force is held up by enemy antitank fire or obstacles, dismounted armored infantry may move along a covered route that is impassable to tanks in order to strike the enemy flank. In this situation, the tanks initially support by fire, then move on their axis to the objective. The elements on each axis should arrive on the objective at approximately the same time; or the attack may be so timed that the tanks arrive first, under artillery air bursts, with the infantry following closely.

(3) This technique is most often employed when the following conditions exist.

(*a*) Armored personnel carriers are not available.

(*b*) Two avenues of approach exist, one of which is suitable for tanks but unduly exposes the dismounted armored infantry while the other can be used by dismounted armored infantry but restricts or prevents the movement of tanks.

289. Tanks Support by Fire Only

a. In this method, the armored infantry attack to seize the objective, and the tanks support the attack by fire only (fig. 79). Conditions that make it necessary to use this method are—

(1) Obstacles prevent the tanks from moving in the attack, and an objective must be seized to protect the reduction of the obstacles. For example, it might be necessary for armored infantry to seize a terrain feature from which the enemy is covering a minefield or roadblock that is holding up the advance of the tanks.

(2) Ground which must be seized is completely impassable to tanks.

b. When unfordable streams must be crossed, tanks support mounted armored infantry by fire only. Armored personnel carriers can cross streams which are unfordable for tanks; therefore, the tanks should take up defiladed firing positions from which they can support by fire the crossing by the armored personnel carriers.

c. This is the least desirable of the three methods and should be employed only when necessary. Even though the shock action (and to

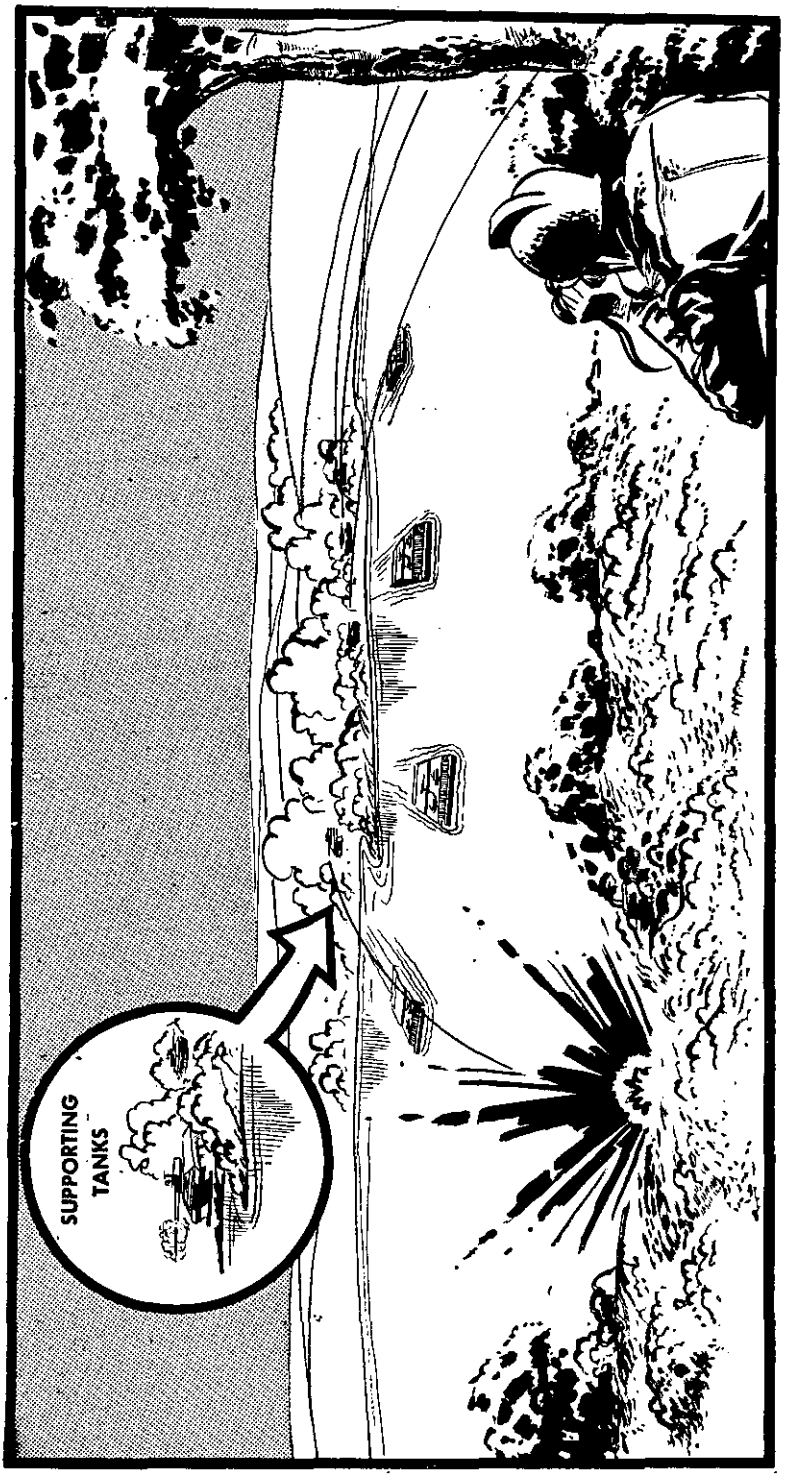


Figure 79. Tanks support by fire only.

some extent the firepower) of the tank is lost, its fire support can greatly assist the armored infantry. As soon as the obstacles are breached or a suitable avenue of approach is uncovered, the tanks must move rapidly to join the armored infantry on the objective.

Section VII. ADVANCE TO CONTACT

290. General

a. An advance to contact is a ground movement conducted for the purpose of placing troops in position to engage the enemy. It takes place whenever a unit moves to establish or regain contact with an enemy force.

b. During an advance to contact, reconnaissance and security forces (ch. 5) may be employed to locate the enemy and to cover the movement. When contact becomes imminent, reconnaissance and security measures are intensified, and formations are adopted which allow a continuation of the movement but facilitate immediate entry into combat.

c. Armor units usually make advances to contact during the exploitation or when contact has been lost during other operations.

291. Conduct of Advance to Contact

a. General. The commander of the advancing force makes an estimate of the situation and adopts a formation which provides the required degrees of security and readiness for combat.

b. Contact Remote. When the possibility of contact with enemy forces is remote, march dispositions which expedite movement are adopted. The movement is normally made as a tactical march. Subordinate units are kept intact and are positioned close to units that they will support or be employed with.

c. Contact Imminent. When contact with enemy forces is imminent, tactical considerations govern all actions. Forward elements of the command are deployed in a tactical formation suitable for immediate combat. The bulk of the force may continue in column until it in turn is required to deploy.

d. Organization of the March Column. A highly mobile reconnaissance and security force is required. The main force must be so organized as to permit rapid deployment into attack formations from march column. The type of action anticipated will affect the grouping of elements in the column.

292. Security in the Advance to Contract

a. Security during the advance to contact depends upon continuous receipt of timely and accurate information. Ground and air reconnaissance are employed to obtain this information, which is the basis

for plans and actions by the advancing force. Accurate information decreases the possibility of premature deployment, with consequent loss of speed and control.

b. The commander of the advancing force prescribes the security measures to be taken for the protection of the force as a whole and coordinates the measures adopted by higher and subordinate commanders. The measures he adopts are those which are appropriate to the hostile threat. As the danger becomes greater, he increases his security measures.

293. Attack from March Column

a. In the exploitation and other fluid situations, armor units frequently attack from march column (fig. 80). An attack from march column is an operation in which units move directly to the attack from their positions in the column.

b. Attacks from march column are characterized by—

(1) Immediate orders and rapid action.

(2) Initial issuance of fragmentary orders in a sequence based upon the order of their execution and upon the time required to execute them.

(3) Decentralized control, because of the lack of time for full coordination.

(4) Deployment under cover of the advance guard.

(5) Use of staff officers to expedite the issuance of orders.

c. The following are typical steps in the attack by an armor unit from march column:

(1) The advance guard develops the situation of an enemy strongpoint which it cannot neutralize.

(2) The commander makes a reconnaissance and decides to attack.

(3) As soon as he makes his decision to attack, the commander issues his order and requests the artillery to cover both the deployment and the attack (fig. 81).

(4) The subordinate commanders issue their orders.

(5) The attack is launched, usually on order of the major unit commander.

d. Attacks from march column must be characterized by extreme boldness. Speed in launching the attack is enhanced by having subordinate commanders and representatives of fire-support elements well forward in the column, riding in their own vehicles, when contact is imminent. In this position, they are immediately available when the main body commander desires to issue orders, and he can often point out objectives on the ground. Having their own vehicles, subordinate commanders can quickly move their units into the attack.

e. Against weak delaying forces, the commander may wish to em-

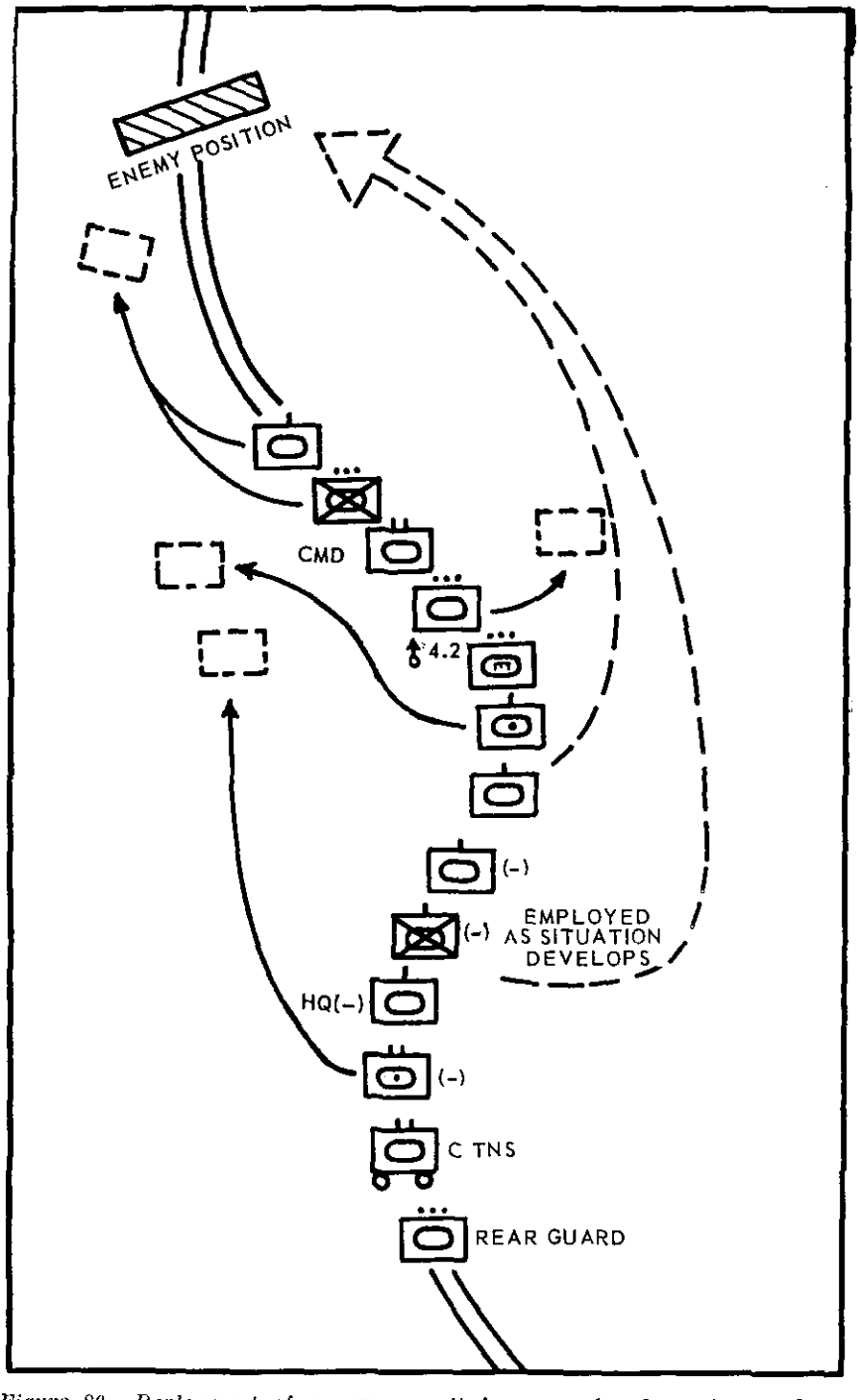


Figure 80. Deployment of an armor unit from march column to attack an enemy position uncovered by the advance guard.

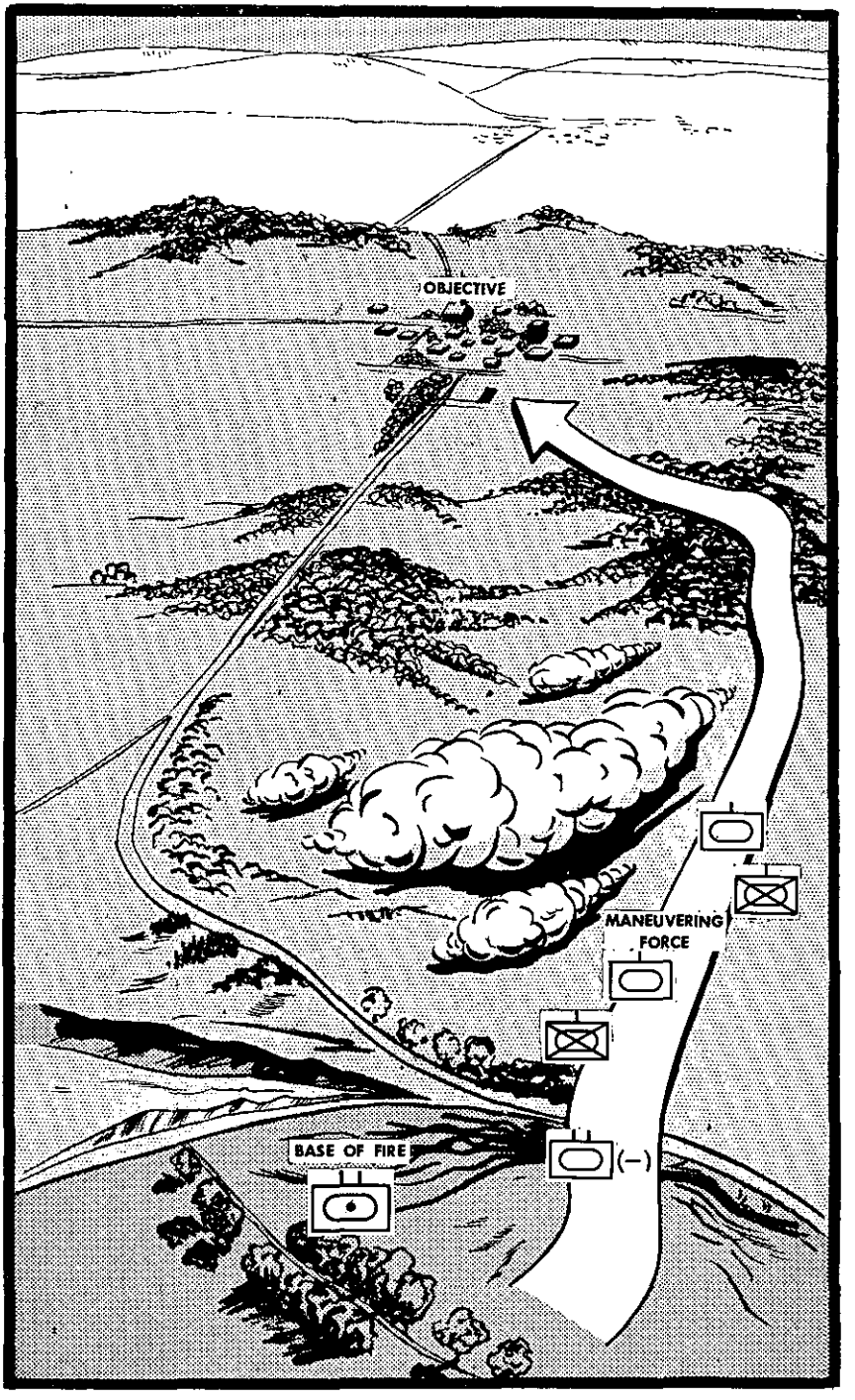


Figure 81. As soon as he makes his decision to attack, the battalion commander requests the artillery to cover the deployment and movement.

ploy his main body against the hostile position without delay, under supporting fire from the advance guard. He may accomplish this by directing each subordinate commander to a designated objective as the entire column moves forward. As the leading unit assumes its attack formation, the commander awaits, or goes to, the next commanders in column and orders their units successively into the attack. Elements may be committed in column or line.

f. If the column is unexpectedly attacked from a flank, each subordinate unit may move directly to the attack. Each unit reorganizes at a place designated later by the company or battalion commander.

Section VIII. EXPLOITATION

294. General

a. Exploitation is a phase of offensive action which is usually a continuation of a successful envelopment, penetration, turning movement, or frontal attack. Exploitation takes full advantage of success in battle and is dependent upon the retention of the initiative. Armor's battlefield mobility and armor-protected firepower make it the ground forces' most effective exploitation force.

b. Pursuit is a phase of exploitation which has as its primary purpose the capture or destruction of a retreating enemy force.

295. Characteristics of the Exploitation

a. General. The techniques described in paragraphs 290 through 293 are used in the conduct of an exploitation. An exploitation force operates through a gap or around a flank and is usually assigned a decisive physical objective deep in the enemy rear. The exploiting force strives to reach the objective with maximum force in the shortest possible time. The exploiting force does not concern itself with any actions of the enemy except those which could seriously interfere with, or prevent accomplishment of, the assigned mission. Thus, enemy forces may frequently be bypassed and reported for following units to capture or destroy. Terrain permitting, exploitation forces advance on a broad front, especially in the vicinity of the objective.

b. Enemy Situation. When the exploitation stage has been entered, the local enemy situation will almost certainly be one of confusion and partial disorganization. The rapid continuation of exploitation will further cause the enemy positions to disintegrate. Enemy resistance will consist mainly of delaying actions by small units, defense of scattered strongpoints, and reliance on obstacles, both defended and undefended. As the attack penetrates deeper into the enemy's positions, his disorganization increases proportionately.

c. Objectives. Objectives in enemy rear areas include—

(1) Enemy reserves and artillery.
(2) Command, communication, and supply installation.
(3) The rear or flank of strongly held positions.
(4) Vital terrain features or critical points, such as defiles, road junctions, railroad centers, and bridges.
(5) Link-up with friendly airborne forces.
(6) Atomic delivery agencies or storage sites.

d. Freedom of Action. After entering the exploitation phase, the armor commander should have greater freedom of action than before, because the rapidity of the attack necessitates instant decisions. However, when it is necessary for him to make major deviations from the original plan, he should immediately notify the next higher headquarters of these changes.

e. Atomic Support During the Exploitation. During the conduct of an exploitation, the small armor unit commander may expect a higher commander to provide frequent atomic support in order to ensure that the momentum of the attack is maintained. In such instances, the small armor unit commander's main concerns are—

(1) To take adequate precautions for the safety of his unit when in the vicinity of friendly detonations.
(2) To integrate his fires with the atomic bursts.
(3) To rapidly exploit the effects of friendly atomic weapons so employed.

296. Composition of Exploiting Force

a. In the exploitation, armor units must be capable of performing any type of ground operations, and must be able to start an action in the minimum amount of time. It is essential that they be so organized that the commander has under his control all elements which he may need to accomplish his mission. A battalion task force must include tanks, armored infantry, engineers, and adequate logistical support elements; supporting fires must be provided by organic indirect-fire weapons and field artillery. Close coordination with supporting air must be achieved.

b. Mobility becomes increasingly important during exploitation. Combat and service support elements must be completely mounted and must remain highly mobile.

297. Organization of the Exploiting Force

The task organization and order of march are based on consideration of the factors of METT (mission, enemy, terrain and weather, and troops available). The order of march must correspond to the order of anticipated employment.

a. Tanks and Armored Infantry. Tanks and mounted armored

infantry are distributed in depth throughout the column. These units are employed to lead the attack, maneuver to either flank, and secure the column by their positions. A tank-heavy force will normally be the leading element.

b. Command Group. The commander must be well forward in the column, so that he can obtain early firsthand information of any situation arising to the front. His personal observation will permit rapid decisions, formulation of plans, and issuance of orders. The command group normally travels in rear of the leading subordinate unit of the main body.

c. Forward Air Controller. See paragraph 59.

d. Artillery. The attached or supporting artillery normally remains in column until resistance is met. To insure adequate fire support for the leading elements, artillery elements must be well forward in the column. Artillery pieces should be so placed in the column that they can support the head of the column. An artillery battalion may employ an advanced battery, or the entire battalion may be placed in one position well forward in the column. In either case, it is essential that sufficient tanks and armored infantry precede the artillery to crush moderate resistance, to develop the situation in the event of heavy resistance, and to provide protection for the artillery itself.

e. Engineers. See paragraph 64.

f. Command Post. The command post is located where its control facilities can best be utilized in the conduct of operations. In order to insure radio communication under unfavorable conditions, it may be necessary to replace radio relay elements near the tail of the column.

298. Speed in the Exploitation—General

Speed is essential to successful exploitation. Speed and aggressiveness assist in achieving surprise, a vital factor to success. When the exploiting force moves rapidly, the enemy is seldom able to maneuver his troops to seriously interfere with the exploitation. However, speed must not be confused with haste.

299. Factors Affecting Speed of Exploitation

a. Enemy Opposition. Isolated defensive areas normally are bypassed for more profitable objectives. However, an enemy force is not bypassed if it is capable of interfering with the accomplishment of the mission. The decision as to whether the unit will bypass a strongpoint is normally made by the next higher commander. Commanders may indicate, in orders to subordinate commanders, what types of resistance may be bypassed.

b. Terrain. An exploiting force advances in column on roads. The best available roads normally are used; however, secondary roads

may be used to achieve surprise and to bypass enemy resistance, which is often concentrated on the best roads. Cross-country movement is made only when use of roads is denied by enemy action and when the terrain permits such a movement. Roads normally are necessary for the movement of supplies and for evacuation.

c. Changes in Direction of Attack. Frequent changes in the direction of the attack enhance surprise and thus add speed to the advance. However, once a commander has been assigned an axis to follow, he must not deviate from this axis, without permission of his next higher commander, except to maneuver against an enemy position or to bypass a physical obstacle. Unnecessary changing of routes slows the advance.

d. Composition and Organization of the March Column. The exploiting force must be so organized as to permit rapid deployment into effective attack formations from march column.

e. Attack of Strong Points. The exploiting force must quickly destroy enemy strong points which its leading elements surprise, or which are lightly held. The leading elements quickly deploy and rapidly close on the strong point. Reconnaissance will usually consist only of observation of the objective and intervening terrain prior to launching of the attack. Orders are quickly disseminated by voice radio. If surprise is not attained, the unit may have to deploy, although extensive preparations are unnecessary unless the enemy is strong. If a strong enemy force is encountered, detailed preparations may be necessary.

f. Command. Command in exploitation demands, to an unusual degree, aggressiveness, initiative, boldness, an understanding of tactics, constant alertness, and force. In addition, a thorough knowledge of the higher commander's plan will assist in carrying out the assigned mission.

g. Control. The column must be kept under control at all times so that it can react quickly and best apply its force. Strict march discipline is a basic requirement. The higher commander may require the unit to report passage of designated phase lines; armor units report crossing of phase lines, but do not halt on them unless ordered to do so.

h. Halts. If the unit is ordered to halt for the night or must halt for resupply, preparations must be made to continue the mission as early as possible.

300. Security in the Exploitation

a. General. Each commander is responsible for the security of his unit. An armor unit engaged in exploitation is, because of its position deep in enemy territory, particularly vulnerable to enemy attack on its flanks and rear and to harassment by small pockets of

resistance and guerilla forces. Therefore, security becomes increasingly important.

b. Security During Movement. On the move, security is provided by security forces; by air and ground reconnaissance to the front, flanks, and rear; by liaison with adjacent units; and by the formation of the column. Administrative and service elements in the column are protected by placing combat elements close to them. Depending on the situation, column security may be provided by one or all of the following types of security forces (ch. 5):

(1) Advance guard. This normally is used by the leading elements and should be a reinforced tank unit.
(2) Flank guard or guards. Units are responsible for their own flank security.
(3) Rear guard. This may be a reinforced tank unit or a reinforced armored infantry unit.
(4) Army aircraft. Army aircraft reconnoiter to the front, flanks, and rear.

c. Security at the Halt. When the head of the column is halted, the remainder of the column should continue to move forward, coiling up in available space on each side of the axis and near the head of the column. Elements should group themselves in prearranged formations, ready for instant action in any direction. Local security measures must be taken. Commanders immediately move to the head of their units to determine the reason for unexplained halts.

301. Attack of Successive Objectives

a. In the fluid situations characteristic of the exploitation, an extremely effective form of offense is the attack against successive objectives (*fig.* 82). Such attacks are characterized by the employment of elements of the unit against several objectives in rapid succession—sometimes concurrently. This method of attack can be used to save time when the entire strength of the unit is not needed to take each individual objective.

b. Within a battalion task force, company teams may be formed for the attack of successive objectives. The strength of each company team will vary with enemy strength on the objective. The operation begins with an attack on the first objective. As soon as it has been seized, or as soon as the task force commander is certain that the attack force will be able to clear it of enemy troops, he orders the second team to attack the second objective while the mopping-up process on the first is being completed. In a like manner, a third team may attack through or around the team on the second objective, to seize a third objective. The attack by each team should be supported by the fires of another team if possible.

c. This method of attack may be used to clear small inhabited areas

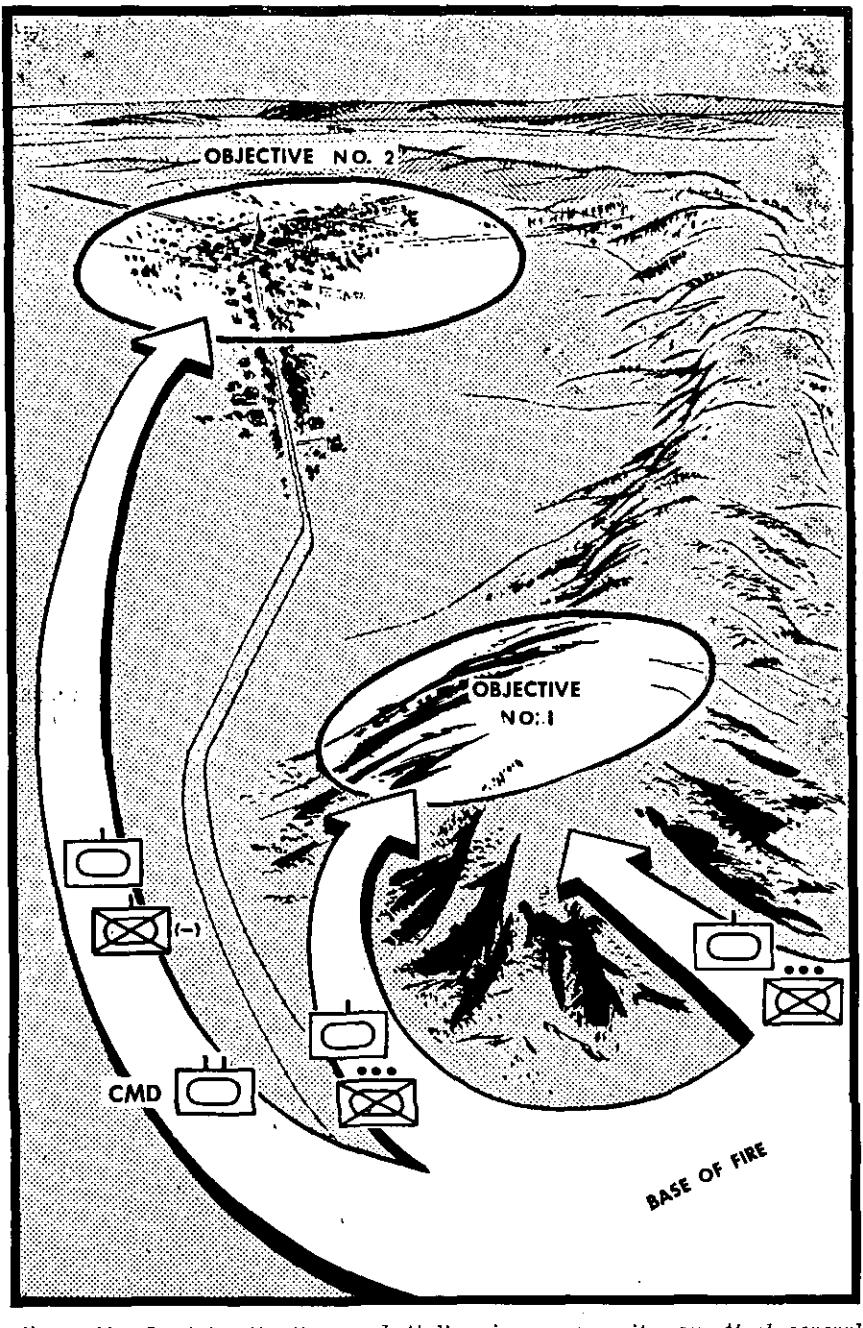


Figure 82. In fluid situations, a battalion-size armor unit may attack several objectives in rapid succession. The operation begins with an attack on the first objective; as soon as the situation there is under control, an attack is launched against a successive objective.

on the route of an exploiting column. A battalion task force often can clear a series of villages in a relatively short length of time, thereby quickening the overall rate of advance of the column.

302. Continuation of the Exploitation During the Night

In order to exploit success to the fullest, the advance is frequently continued throughout the night. A night advance is conducted in generally the same manner as a daylight advance; however, security forces are strengthened, the distance between vehicles is shortened, and the leading tank elements are more heavily reinforced with armored infantry. When enemy resistance is encountered and it is necessary to attack, the attack will be conducted in accordance with the principles set forth in paragraphs 310 through 318. The rate of advance is usually slower at night, and supporting fires are less effective; but there is a better chance of gaining surprise. This type of operation varies greatly from the planned night attack.

303. Night Defense During Exploitation

When halted for the night, the exploiting force is subject to attack from any direction and must establish a perimeter defense (par. 389–392). If the force is not within supporting distance of elements of the higher command, it conducts the defense alone.

304. Pursuit

Pursuit is a phase of exploitation which has as its mission the capture or destruction of a specific body of enemy troops. The enemy troops may be static or moving, and the pursuit force must orient its movement on the enemy concentration. Divisions or combat commands may be simultaneously assigned pursuit missions and missions of taking physical objectives. However, battalion-size armor units normally execute one type mission at a time.

305. Conduct of the Pursuit

a. Contact with the enemy must be gained and maintained. The employment of Army aircraft provides observation of the enemy's movements and early warning of substantial buildups.

b. Pursuit is accomplished by the use of two distinct forces. A *direct-pressure force* exerts heavy pressure on the enemy. This force drives in or envelops the enemy's covering forces or rear guards, forcing the enemy's main body to halt and deploy to defend itself. The direct-pressure force contains the enemy until an attack by the *encircling force* accomplishes the pursuit mission (fig. 83). At battalion level there is a little difference between pursuit and other phases of exploitation; at platoon and company level, there is almost none.

c. The mission of the encircling force is to get in the rear of the enemy, block his retreat, then attack to destroy him in conjunction

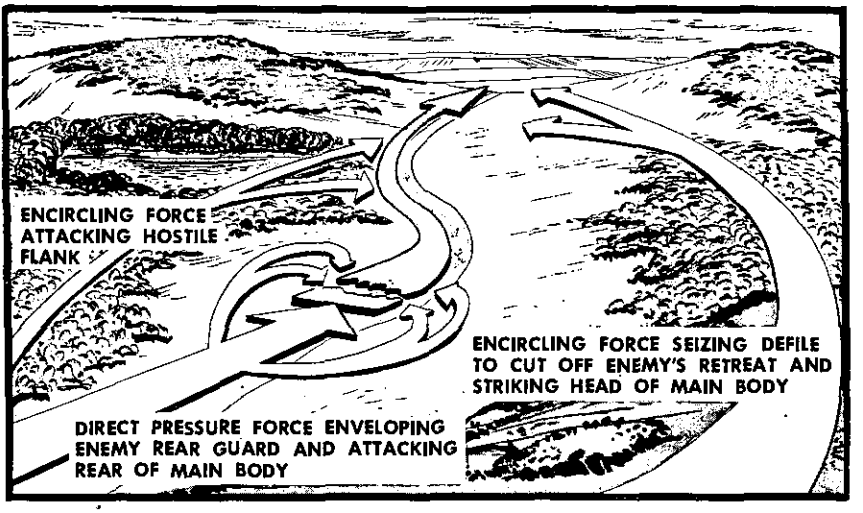


Figure 83. Actions of the direct-pressure force and encircling force in pursuit.

with an attack by the direct-pressure force. When terrain and tactical conditions permit, the encircling force advances along routes parallel to the enemy's route of withdrawal to reach critical points—defiles, bridges, etc.—prior to the arrival of the enemy's main body. However, when the enemy cannot be outdistanced, the encircling force may strike the enemy's flank.

306. Logistics During Exploitation

a. In the exploitation, battalion combat trains usually are located near the tail of the battalion column. Security for the trains is provided by their proximity to the combat elements and by the rear guard. When the battalion becomes engaged, the combat trains move into an area which affords some security by reason of cover, concealment, and proximity to combat elements. At night the combat trains occupy the center of the battalion's perimeter defense.

b. Supply lines for an exploitation usually are extended over long distances. This necessitates increased protection for trains and supply convoys. The extended supply lines may make it necessary to increase the number of vehicles in the combat trains. In rare instances, all the battalion logistical elements may be located in the combat trains. Plans should be formulated and fully coordinated with the supporting agencies for resupply by air in the event surface means are over extended or interrupted by enemy action.

c. Ammunition expenditures during an exploitation are usually light, while consumption of fuel and lubricants is heavy. To meet this increased need for fuel and lubricants, all kitchen equipment may be unloaded or consolidated on a few trucks, with the empty kitchen trucks being used to supplement the fuel and lubricant trucks.

d. Each vehicle should carry at least a five-day supply of operational rations (either small-detachment or individual combat type) rather than the normally prescribed three-day supply.

e. During an exploitation, the percentage of vehicles lost due to combat action decreases, but the percentage lost through mechanical failures increases. Maintenance personnel must direct their efforts toward making minor repairs on the maximum number of vehicles rather than major repairs on a few. Vehicles which can be repaired by the battalion may be towed forward, by organic means, to the next assembly area. Vehicles which cannot be repaired by the battalion are towed to the battalion axis of evacuation, and their location and condition are reported to the supporting ordnance elements.

f. Personnel casualties from combat decrease, but problems of medical evacuation increase because wounded men must be moved over longer distances to medical installations.

g. Plans should be made for the use of Army aircraft to deliver critical items of supply and to evacuate serious medical casualties.

Section IX. PASSAGE OF LINES

307. General

a. The commitment of one unit through another constitutes a passage of lines. A passage of lines may be required in order to continue the momentum of the attack with fresh troops, to change the direction of the attack, or to exploit a weakness in the enemy position.

b. The passage of an armor unit through another unit requires careful planning and close coordination between the units involved. Due to differences in organization and techniques of operation, the passage of armor through infantry is more difficult than is its passage through another armor unit. Regardless of the type unit being passed through certain principles and procedures must be applied.

308. Planning for Passage of Lines

a. Plan of Maneuver. The plan of maneuver is based on the factors of METT (mission, enemy, terrain and weather, and troops available). The plan of maneuver normally determines the location at which the passage of lines will take place. If possible, the passage should be made through an area lightly held by the forces in contact; ideally, it is made through a gap in the front lines of the forces in contact.

b. Reconnaissance. A thorough reconnaissance should be made by commanders and key personnel of the unit making the passage. This reconnaissance should cover routes to the area of the unit through which the passage will take place. It also covers the area itself, including existing troop locations, proposed positions, and proposed locations of individual combat vehicles if necessary. A visual reconnaissance should be made of the area forward of the front-line posi-

tion; Army aircraft may make or assist in this reconnaissance. In reconnoitering, particularly in the area forward of friendly front lines, care must be taken not to alert the enemy by offering indications that a passage of lines is to be made. It may be necessary to limit the number and size of reconnaissance parties, or it may be advisable to use vehicles and aircraft of the units in contact.

c. Intelligence. The units in contact should provide all possible information of the enemy and the terrain to their front. This information should include strength, disposition, and composition of enemy forces, and location of enemy armor, antitank weapons, and antitank obstacles within the proposed zone of action.

d. Location of Antitank Obstacles. The units in contact should provide detailed information on locations of friendly antitank obstacles that have been installed forward of their positions. This is especially important if the passage is to take place at night. Provision must be made to clear lanes through friendly minefields. If friendly obstacles are likely to seriously interfere with the progress of the armor unit, it may be necessary for units in contact to remove some of them.

e. Fire Support. The fire-support agencies of the units in contact normally are integrated into the fire-support plan of the unit making the passage. Artillery liaison officers, forward observers, forward air controllers, and mortar platoon leaders of the unit making the passage should contact their counterparts within the unit in contact, in order to exchange information and to make detailed plans for supporting the operation.

f. Priorities of Routes and Areas. The higher headquarters directing the passage normally establishes an overall priority on routes and areas. If it does not, such a priority must be established by agreement between the commanders concerned. Complete information on routes to be used and areas to be occupied should be disseminated as early as possible, to avoid confusion and delay.

g. Movement Into the Area. The routes established for movement into the forward areas must be well marked and controlled. The unit in contact provides capable guides, down to platoon level if possible, instructing and rehearsing them in their duties. Each guide meets his elements of the passing unit before it enters the area, and conducts it to a prearranged position within the area. For increased security, the movement of armor into the forward areas normally is conducted at night; such movements require stringent control and thorough planning and reconnaissance. Artillery fire may be employed during the movement, to cover the noise of the armor vehicles. If the movement is conducted during daylight, smoke may be placed on known enemy observation posts and forward positions. While the passing unit and the unit in contact are together

in the area, the resulting concentration presents a good target for enemy atomic attack. Therefore, the passage should be completed as quickly as possible. During the period of concentration, maximum passive defense measures against atomic attack should be taken.

h. Line of Departure. When a passage of lines is being made at night, the line of departure for the attack is the line held by the forward elements of the unit in contact. In a daylight passage, normal considerations apply in the selection of a line of departure.

309. Liaison and Coordination in Passage of Lines

a. Liaison. As soon as it is determined that a passage of lines will be made, liaison must be established between the passing unit and the unit in contact. At battalion level, liaison officers are exchanged until completion of the operation. At company and platoon level, command liaison is maintained.

b. Coordination. Thorough coordination is essential to the success of a passage of lines. This cannot be overemphasized. Normally, the unit in contact is given the definite mission of "assisting in the passage."

Section X. NIGHT ATTACKS

310. General

a. Night attacks may be launched to exploit success, to gain an important terrain feature for further operations, to avoid heavy loss in an attack on a strongly defended locality, or to attract enemy reserves from some other sector of the line. The employment of armor insures taking full advantage of the psychological advantage an attacker possesses at night. Many night attacks by armor are continuations of actions started during the day. Frequently, night attacks by armor will be attacks from march column. Basically, night attacks are conducted in the same manner as daylight attacks. However, in night attacks the problem of control and coordination is greater, dispersion is less, and movement is slower.

b. Simplicity, secrecy, and surprise are particularly important in night attacks. Such attacks require detailed and careful planning, and precision and coordination in execution. This is particularly true of night attacks against organized resistance.

311. Illumination for Night Attacks

a. General. Night attacks may be conducted with or without illumination. When illumination is used, the attacker may sacrifice much of the secrecy ordinarily gained at night. However, a skillful use of battlefield illumination devices over a period of time may assist in deceiving the enemy as to the exact location of the real attack. The illumination may be extended for a considerable distance on both

flanks, so as not to disclose the exact area of the attack. Otherwise, only the amount of illumination required to accomplish the mission should be used. Illumination may be used during all phases of the attack or during the final assault only. For example, in order to maintain secrecy and gain maximum surprise, all movements prior to the final assault may be made without illumination. When the enemy becomes aware of the attack and no further surprise can be gained by continuing it in darkness, illumination is provided and the attack continues in the same manner as a daylight attack.

b. Illumination by Searchlight. Illumination by searchlight is of two types—direct light and indirect light.

(1) When used for direct illumination, searchlights are placed where the light beams can shine directly on the target area. Direct illumination tends to blind the enemy. The searchlights may have to move frequently.

(2) When used for indirect illumination (artificial moonlight), searchlights are placed in defiladed positions 3,000 to 8,000 yards behind the area to be illuminated. Illumination is obtained either by reflection from the clouds or by diffusion of the beams. Under good conditions, the intensity of indirect light will be approximately that of a quarter to half moon. The lighted area is relatively large, so that the exact location of the attack is not apparent to the enemy.

c. Illumination by Pyrotechnics. Pyrotechnics are devices which burn to furnish a bright light for a limited time (fig. 84). Illuminating shells and air-delivered flares provide rapid, accurate, and flexible means of providing illumination. Ground signals, illuminating grenades, and trip flares can temporarily illuminate an area in the immediate vicinity of an individual or a unit. They are not suitable for producing continuous illumination.

d. White phosphorus ammunition may be used for designating points or small areas, such as the limits of the objective; it is of little value for illuminating a larger area.

312. Fire Support for Night Attacks

a. Supporting fires are planned as for a daylight attack and may be employed before, during, and after the attack. To assist in gaining surprise, the attacking force may advance within assaulting distance of the objective without the aid of supporting fires. Once the assault on the objective begins, fires are delivered to support the attack, to isolate the objective, and to prevent or limit counterattack. Special precautions must be taken to avoid the effects of night blindness when atomic weapons are used in support of night attacks.

b. The continuation of normal supporting fires does not alert the enemy to an impending attack, but it does assist in maintaining secrecy

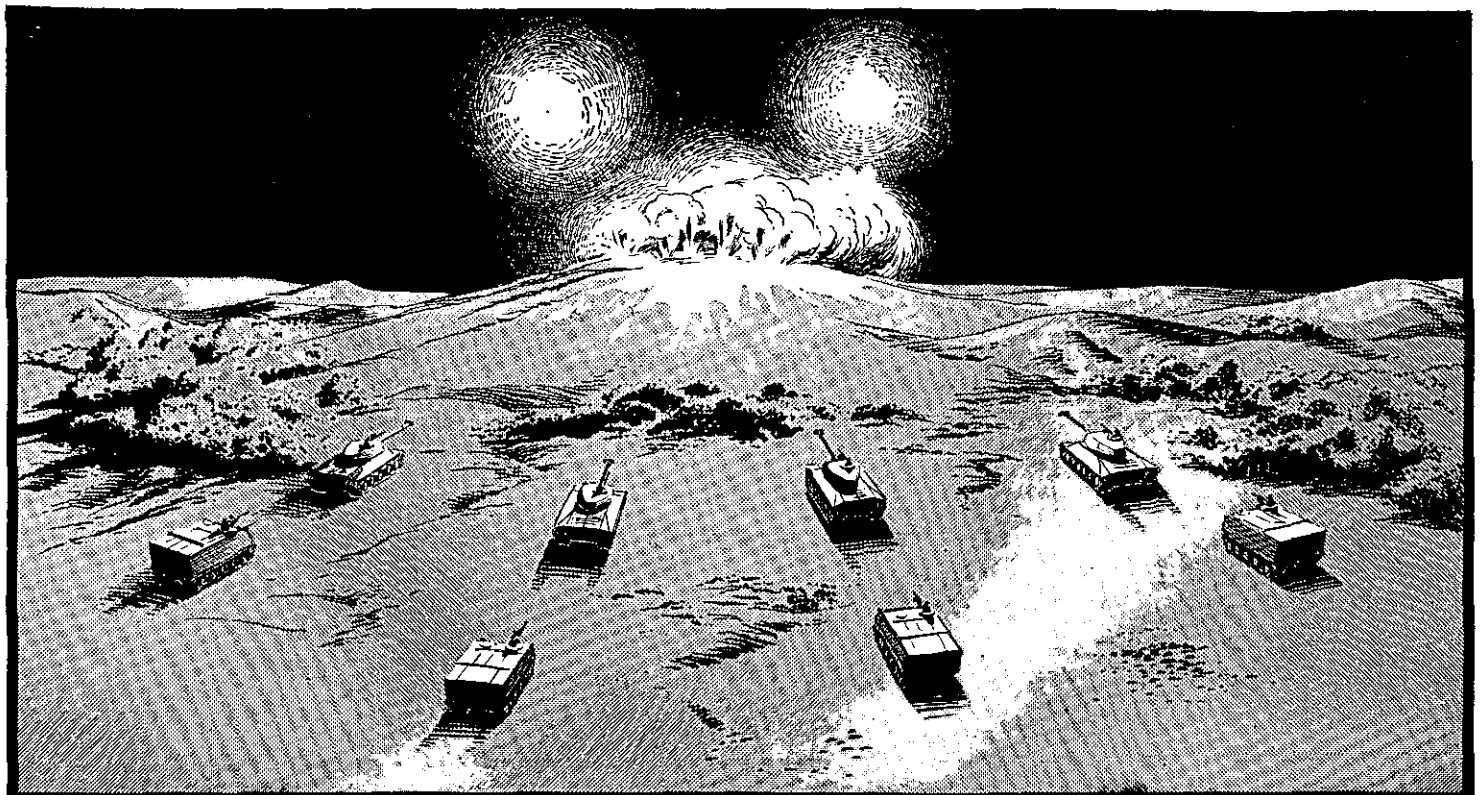


Figure 84. Use of illumination shells and flares in a night attack.

by hiding the noise of moving tanks and armored personnel carriers.

c. Positions for supporting weapons are reconnoitered and marked, and firing data is prepared, during daylight. Movement of weapons is accomplished under cover of darkness. In a night attack by a battalion task force, it may be desirable to provide all supporting fires from units not in the task force. When this is done, all the battalion's supporting weapons can follow the attacking echelon to the objective by bounds.

313. Preparation for the Night Attack

a. The preparations made by the battalion commander for a night attack against an organized position are similar to those made for a daylight attack. Emphasis is placed on—

(1) Prompt issuance of warning orders.

(2) The exact lateral limits, and the limit of advance, for each unit.

(3) Plans for illumination and for supporting fires.

b. Daylight reconnaissance by all leaders is desirable in preparing for any night operation. Aerial photographs of the area should be obtained and distributed at least down to company level. Daylight reconnaissance of terrain not held by friendly troops is usually limited to observation from Army aircraft and from friendly front lines. It may be necessary to send out night patrols to obtain detailed information of the terrain and of the location and strength of enemy security elements. Maximum effort is made to locate enemy minefields, and plans are made to breach these and other obstacles before the attack.

314. Plan of Night Attack

In general, the plan for a night attack goes into greater detail than one for a daylight attack. Detailed measures are prescribed to insure coordination and control between attacking and supporting elements, and to maintain security, secrecy, and communication.

a. Whenever possible, units advance in column formations with minimum distances. Roads, fences, stream lines, and similar terrain features are designated as directional guides and as boundaries. Artificial aids to keeping direction include wire and tape. Tracers and pyrotechnics may be used to mark the objective, to assist in maintaining direction. Infrared vision devices may be used to assist in control.

b. In a night attack, surprise is obtained chiefly through secrecy. Measures to obtain secrecy include—

(1) Restricting the size and activities of parties engaged in reconnaissance and other preparations.

(2) Periodically firing concentrations along the entire front.

(3) Illuminating areas other than the attack area, to mislead the enemy.

(4) Attacking at an unexpected time from an unexpected direction.

(5) Allowing firing only on order of designated leaders.

c. Means of identification for all personnel and vehicles during darkness are prescribed. Standard items of issue, such as luminous buttons and tape, may be used. A white cloth armband around each upper arm is suitable. Vehicles should be marked on the rear. Electronic equipment should be used extensively for friend-or-foe identification.

d. The illumination plan is coordinated with the battalion plan of attack. When illuminating shells are fired by mortar and artillery units, liaison agents and forward observers of such units provide control. If flares are dropped by aircraft, control measures are arranged with the air unit making the flight. When the illumination is by searchlight, the searchlight units may be attached to, or placed in general or direct support of, attacking units.

e. Communication facilities are coordinated during the planning phase. Radio is the primary means of communication. Supplementary means, such as wire and pyrotechnic signals, are planned and are used if necessary. Electronic devices may be used for guiding troops to the objective or for assembling units that have lost control.

315. Plan of Maneuver for Night Attack

a. Extent of Maneuver. The amount of maneuver possible during a night attack depends mainly on the objective and the visibility. It is difficult to change direction. Extensive maneuvering increases the danger of firing on friendly troops. Attacks normally are made in one direction and in a relatively close formation.

b. Movement After Crossing Line of Departure. If possible, the attack should be made against an enemy flank. However, after the line of departure is crossed, all movement should be made directly toward the objective without any changes in direction.

c. Time of Attack.

(1) When a general attack is to be continued at daylight, a night attack may be made after midnght to deny the enemy enough time to organize an effective counterattack. The attack should begin early enough to complete the capture of the objective before daylight.

(2) When the mission is to capture, organize, and defend an objective, the attack should be made as soon after dark as possible. A limited-objective attack may be launched soon after dark to strike the enemy when he is attempting to

organize or reinforce his position, or when enemy attack or withdrawal is expected.

(3) To obtain surprise, a time unpredictable to the enemy should be designated.

d. Formation. Companies usually cross the line of departure abreast in column of platoons. Intervals between company columns are such that units may be further deployed when necessary. Deployment to a line formation is made when forced by enemy action or for the final assault. A line formation may be used from the attack position forward if conditions of visibility permit visual observation between vehicles. The rate of advance is timed to produce a simultaneous assault on the objective by the leading units.

e. Line of Departure. If no suitable terrain feature is available for the line of departure, it may be indicated by improvised means.

f. Attack Position. If possible, the attack position should accommodate the attacking unit in the exact formation that it will use in crossing the line of departure. The selected area should have a minimum of obstacles and should be on the axis of advance, immediately behind the line of departure. Positive control measures are used during the movement to the attack position in order to minimize confusion, loss of direction, and loss of secrecy.

g. Limit of Advance. To retain control and to prevent the assault echelon from being endangered by friendly fires, the commander establishes a limit of advance, both in depth and to the flanks of the objective, beyond which troops do not go. This limit should follow terrain features that are recognizable at night. Protective fires delivered just beyond this limit will isolate the objective.

316. Orientation of Personnel for Night Attack

Briefing of *all* personnel of the attacking units is necessary. Whenever possible, the briefing is accompanied by an illustration of the plan of attack on a terrain model. The attack is rehearsed when possible, to a degree consistent with the time available and secrecy desired.

317. Conduct of the Night Attack

a. Control. The commander of each unit remains well forward. Column commanders constantly check on direction and contact, and closely control their units to prevent premature assault.

b. Security. If enemy security forces are encountered during the advance, the leading elements dispose of them. Lateral contact is made by patrols.

c. Unplanned Deployment. Action of enemy security forces may force leading elements to deploy before the time planned. If possible, elements that are forced to deploy will re-form in column after the resistance has been reduced. Unless forced to halt by the action of

the leading units, the remaining elements continue to advance. Units that lose contact with the adjacent units should regain contact while continuing to move forward toward their own objectives.

d. Assault. Deployment may be forced by enemy action, or it may be done according to prearranged plan. The deployment is completed without halting; any prolonged halt at this stage of the attack increases the chance of detection. Precautions are taken to prevent units from launching a premature assault because of scattered enemy firing. After deployment, the attack is continued as rapidly as possible. Armored infantry remain mounted until they arrive on the objective or until dismounted action is required. When further surprise cannot be achieved, illumination is initiated or increased to allow assaulting troops to take aimed shots and to move more rapidly. Every effort is made to maintain the line formation and prevent it from breaking up into isolated groups.

318. Actions on the Objective in a Night Attack

Security elements are sent out far enough to warn of enemy forces forming for counterattack within assaulting distance of the captured position. If they must go beyond the established limit of advance, their movements are carefully coordinated with the protective fires of artillery and mortars. Prior to daylight, all elements should be in position, prepared to continue the attack or defend the position.

Section XI. ADDITIONAL CONSIDERATIONS IN OFFENSIVE OPERATIONS

319. General

a. This section discusses situations in which the nature of the enemy position or terrain requires additional considerations in the planning and execution of offensive operations. Included are the following:

(1) Attack of a fortified area (pars. 320–322).
(2) Attack of a built-up area (pars. 323–329).
(3) Attack of a defile (pars. 330 and 331).
(4) Attack in woods (pars. 332–337).
(5) Attack of a river line (pars. 338–342).
(6) Minefield breaching (pars. 343–345).

b. Attacks made at night or during periods of poor visibility, which also require additional considerations, are covered in paragraphs 310 through 318.

c. Special operations are covered in chapter 11.

320. Attack of a Fortified Area—General

The attack of a fortified area is made by a combined-arms assault force consisting of tanks, armored infantry, field artillery, engineers,

and tactical air when available. FM 31–50 covers in detail the attack of fortifications.

a. Reconnaissance of Fortified Positions. A thorough estimate of the situation, and detailed plans and orders, are essential in an attack against a fortified position. The estimate is based on a thorough reconnaissance. The reconnaissance starts with a preliminary map and aerial photo study, after which all commanders make extensive personal reconnaissance. Observation posts, patrols, interrogation of civilians, and Army aircraft are used to gain information. The reconnaissance seeks information on—

(1) Location of fortifications, such as pillboxes.
(2) Location of obstacles, such as minefields, wire, and trenches.
(3) Details of fortifications—embrasures, thickness of concrete and steel, entrances and exits, underground organization, etc.
(4) Location and type of enemy weapons.
(5) Defiladed approaches to the position.
(6) Positions from which direct-fire support can be furnished to the assaulting force.

b. Organization of the Assault Teams. The assault teams normally are built around armored rifle platoons with tanks supporting each team. The assault team is normally divided into one or two flank groups as needed, an assault group, and a support group. Each group may have tanks in support. Each man and each vehicle on the team is given a special mission to perform. The teams must be allowed as much time as possible for rehearsals and reconnaissance. Normally, each team is assigned only one pillbox, bunker, or similar fortification at a time.

c. Employment of Tanks Against Fortifications. The tanks normally provide direct-fire support to the assault teams (fig. 85). They fire at embrasure openings and attempt to destroy the fortification. Tanks usually follow other elements of the team, but must be close enough to give direct support at all times. Tanks not attached to an assault team may be used to give additional fire support from hull-down positions.

d. Employment of Flame Throwers Against Fortifications. Both portable and mechanized flame throwers may be used in the assault teams. The flame thrower is an effective weapon for the last-minute, close-in protection of men placing breaching charges and for mopping up the fortification after it has been breached.

e. Use of Smoke Against Fortifications. Smoke may be used to screen the entire front, to cover the movement of troops into position, to screen one or both flanks of a gap created by unequal advance of units, to screen an area outside of the immediate action, or to blind observation posts and fortifications that cannot be neutralized by other weapons. Even though the attack is made during darkness, smoke

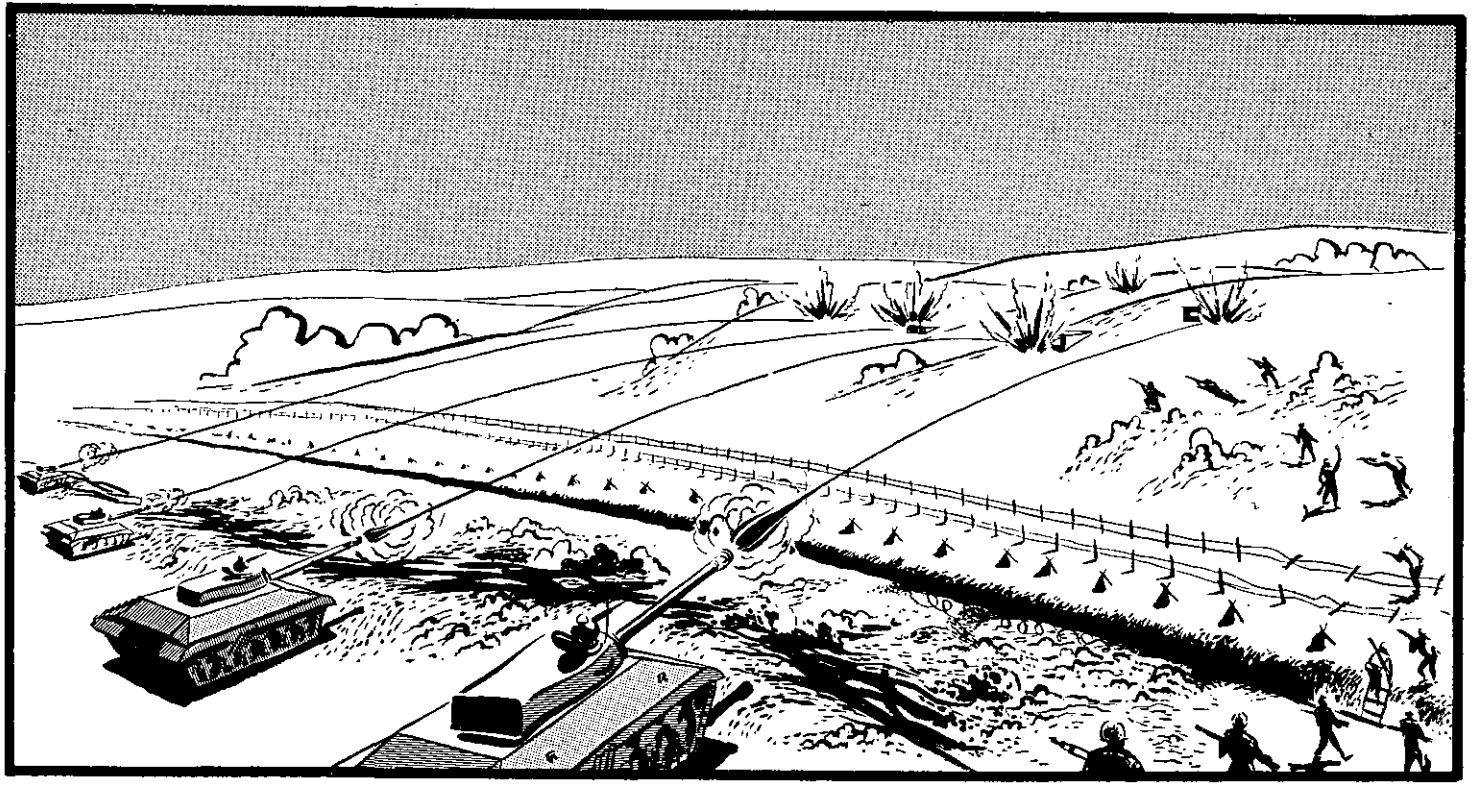


Figure 85. In the attack of fortified areas, tanks provide direct support to the assault teams.

may be valuable to counter the possible enemy use of illuminating flares and shells. The use of smoke must be coordinated, to insure that it will not interfere with the need for direct fire on fortifications and for ground observation by the assault teams. If conditions are at all favorable, every effort should be made to blind fortifications that can support those being attacked.

f. Orders for Attack for Fortifications. Orders for an attack on a fortified position normally are issued in great detail. The attack on each bunker and defensive work is individually planned and is coordinated with attacks on adjacent fortifications. The order includes detailed instructions to each assault team, including positions, routes to be followed, time to open fire, types of fire to be used, areas in which teams may fire, and the general conduct and action of each team.

321. Conduct of the Attack of Fortifications

a. The attack usually starts with intense artillery fire and with the laying of a smoke screen if conditions are favorable. Aerial bombardment of the fortifications is also desirable. While the artillery is firing, routes are cleared of antipersonnel mines by use of grapnels or other means. Demolition snakes may be used to clear antitank mines (fig. 86). When paths have been cleared, the assault teams move forward as rapidly as possible (fig. 87), under the cover of maximum fires. Supporting direct-fire weapons fire at embrasures and ports in the fortifications.

b. The flank groups direct their fire at any open emplacement on the flanks of the fortification. The tanks and machineguns of all groups fire at embrasures to keep them closed. If the fortification is protected by wire, a path through the wire must be made by wire-cutting parties, by tanks, or by bangalore torpedoes. If possible, the assault group advances over ground not covered by fire from the embrasures. The tank guns cease fire on signal of the assault team commander; and the machineguns, both tank and ground, cease fire when masked. Fire from antitank rockets and flame throwers, directed against embrasures, may be used by the assault group to assist in covering the advance of a demolition party at close range. Upon breaching the fortification, the assault group rushes the emplacement and, with hand grenades and portable flame throwers, overcomes all enemy resistance. Flank and support groups move up and cover the reorganization of the team.

322. Other Considerations in Attack of Fortifications

a. Reorganization After Attack. During the mopup stage, tanks are prepared to fire on probable avenues of enemy counterattacks. Tanks which have been supporting the attack by fire are moved forward to assist. Fresh teams are quickly moved forward to continue

the attack without delay, and the process of deepening and widening the breach is continued.

b. Use of Tank Dozers. In the initial phase of the attack, the tank dozer may be used to assist in reducing obstacles. As soon as the assault team closes on the fortification, the tank dozers are moved

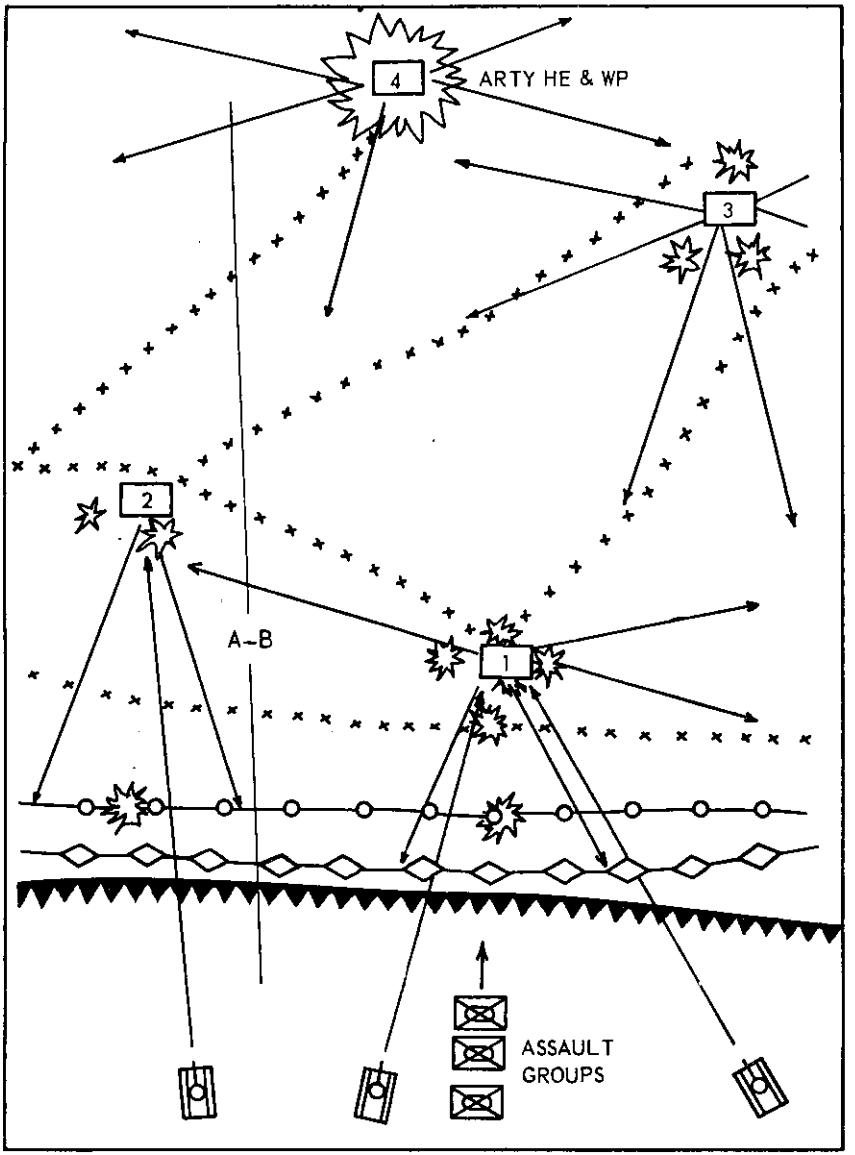


Figure 86. Attack of a fortified position, tanks supporting infantry assault groups. Tanks, and other supporting weapons, fire on all the pillboxes in the area as the assault groups attack pillbox No. 1. To the rear, another assault team prepares to advance against pillbox No. 3 as soon as No. 1 is reduced.

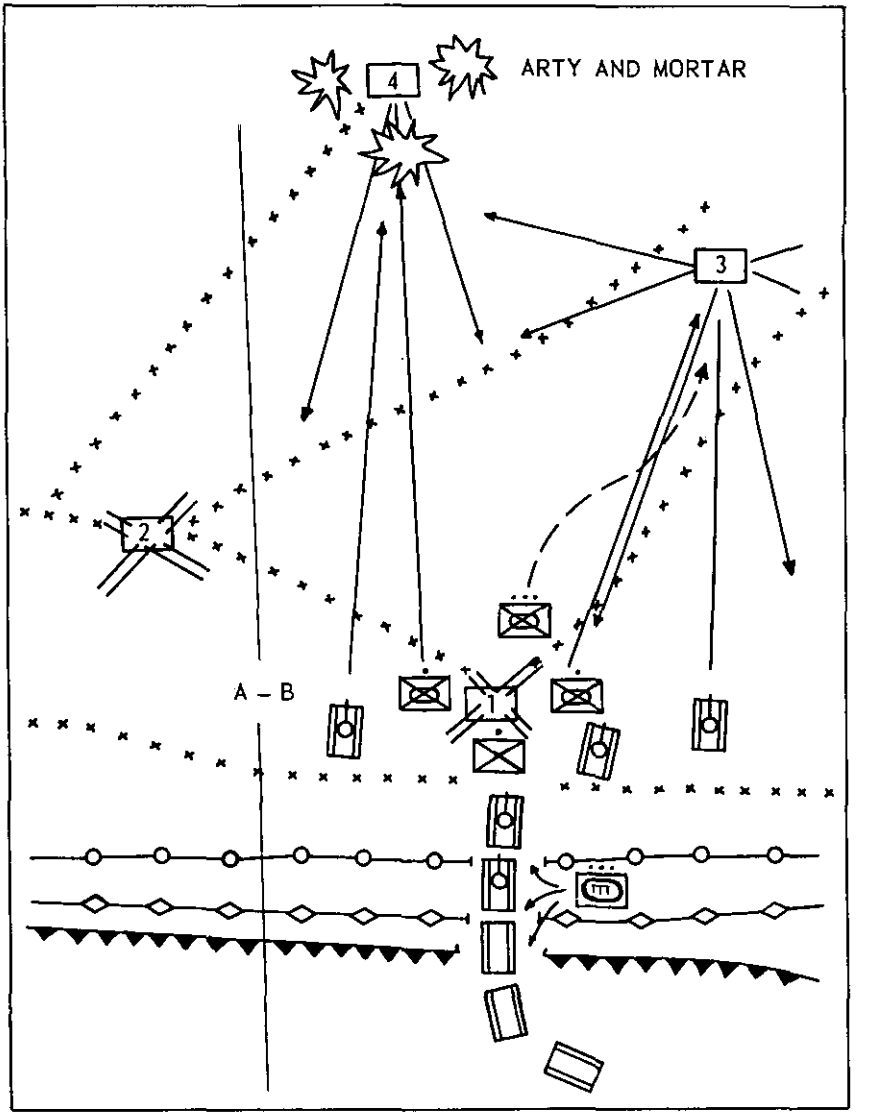


Figure 87. Assault of the objective. Antitank obstacles are quickly reduced to enable tanks to move in. The attack is about to continue to pillbox No. 3.

forward in order to be available to cover the openings of the fortification with dirt. This is an effective way of immobilizing any enemy troops who refuse to surrender.

c. Artillery Assault Fire. When the nature of the enemy position is such that usual direct-fire means and supporting fires cannot neutralize the fortification, self-propelled medium or heavy artillery may be used in an assault fire role.

d. Use of Atomic Weapons. Extensively fortified areas present a difficult target for destruction by atomic weapons. By careful selection of weapons and height of burst, however, severe damage and resultant shock action can be created to permit exploitation by armor units without causing an unacceptable hazard from radioactive fallout. In this connection, even if a moderate degree of contamination is present, which would be dangerous to dismounted troops, armor is capable of exploiting quickly while the shock action and confusion created by the use of atomic weapons still exist.

323. Attack of a Built-Up Area—General

Armor units bypass built-up areas if practicable; however, it is impossible to avoid all villages and towns. Combat in built-up areas is characterized by close fighting, restricted maneuver, restricted observation and fields of fire, and difficult control and coordination. As a result, combat in such areas consists of a series of small-unit actions. For details of combat in towns, see FM 31–50.

a. When it is known that a built-up area is defended, a coordinated attack is launched. The attacking force may be composed of an armored-infantry-heavy *direct-assault force* and a tank-heavy *enveloping force* (fig. 88). Both forces are supported by coordinated fires.

b. The enveloping force has the following mission:

(1) Prevent the escape of the enemy.
(2) Prevent reinforcements from entering the town.
(3) Provide direct-fire support for the direct-assault force.
(4) Protect the direct-assault force from counterattack.

c. Regardless of the size of the town, and whether or not an enveloping force is used, the attack normally is planned in four phases.

(1) Phase I is designed to isolate the city by seizure of terrain features which dominate approaches.
(2) Phase II consists of the advance of the assault force into the built-up area and penetration of the area on a narrow front.
(3) Phase III begins at the point where the main enemy defenses have been penetrated. A rapid advance, mounted if possible, is made to a preselected, defendable location well within the built-up area (fig. 89).
(4) Phase IV is the systematic clearance of enemy defenders from the built-up area. This phase takes place from the interior base of operations occupied in phase III.

d. The attack does not stop or slow down between phases I and II. Phase III frequently begins while phase II is still under way, since each unit acts immediately to exploit any foothold it gains.

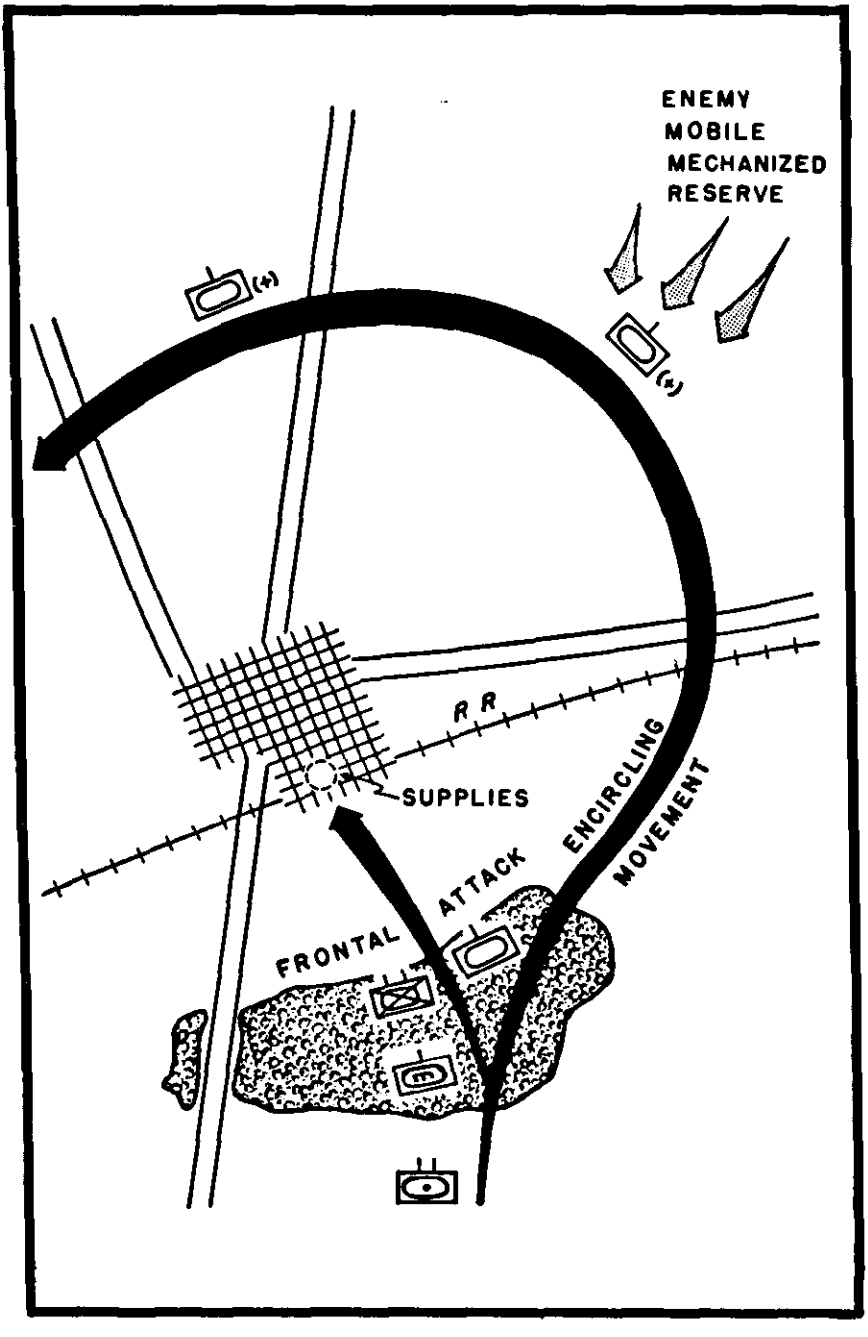


Figure 88. When it is known that a town is defended, a coordinated attack is launched. The attacking force may be composed of a direct-assault force strong in armored infantry and an encircling force strong in tanks.

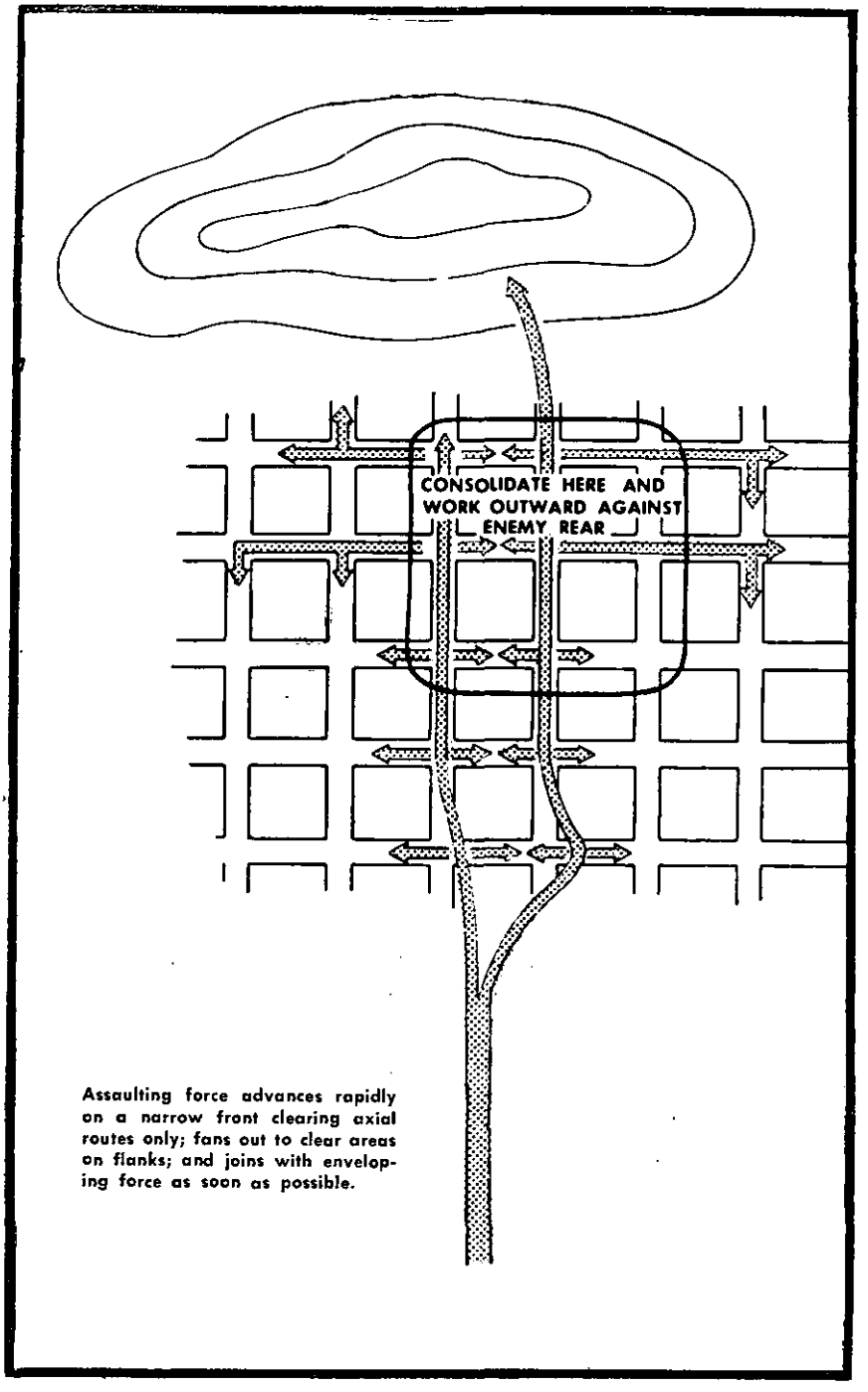


Figure 89. Attack of a built-up area.

324. Missions of the Armored Infantry in the Attack of a Built-Up Area

The missions of the armored infantry element of a combined-arms force engaged in the attack of a built-up area include—

a. Location of targets for engagement by tank weapons.

b. Neutralization and destruction of enemy antitank weapons.

c. Assaulting and reducing positions, and clearing buildings under the covering fire of tanks.

d. Protection of tanks against individual antitank measures.

e. Security and defense of the area once cleared.

325. Mission of Tanks in Street Fighting

Typical tank missions during street fighting are to—

a. Neutralize enemy positions by machinegun fire to allow the armored infantry to rush them and close with the enemy.

b. Destroy enemy strongpoints by fire of their main guns. The tank commander employs armor-piercing ammunition to breach walls, and follows with high explosive or white phosphorus to kill or drive out the enemy. The tanks first fire into the ground floor of a defended building, forcing defenders either into basements, where armored infantry can attack them, or into upper stories, where tank fire can destroy them.

c. Destroy barricades across the streets.

d. Force entry for infantry into buildings when doorways are blocked by debris, obstacles, or enemy fire.

e. Take under fire any other targets indicated by the armored infantry (fig. 90).

f. Establish roadblocks, and barricades if necessary.

326. Employment of Tanks in Street Fighting

a. Streets and alleys constitute readymade fire lanes and killing zones. All vehicular traffic is greatly restricted and canalized and is subject to ambush and close-range attack by various weapons. Individual tanks are at a further disadvantage because their main guns cannot be depressed or elevated sufficiently to fire into the basements or upper floors of buildings at close range.

b. When a platoon of tanks forms part of the team of combined arms, one section advances with the leading armored infantry. The other section supports by overhead and flank main gun and machinegun fire (fig. 91). At least a squad of armored infantry should remain with these tanks to furnish local security.

c. Tanks employ high explosive ammunition against street barricades and houses containing snipers. Steeples, tall chimneys, and other structures likely to contain enemy artillery observers are promptly destroyed. Crew members must be alert to detect pillboxes

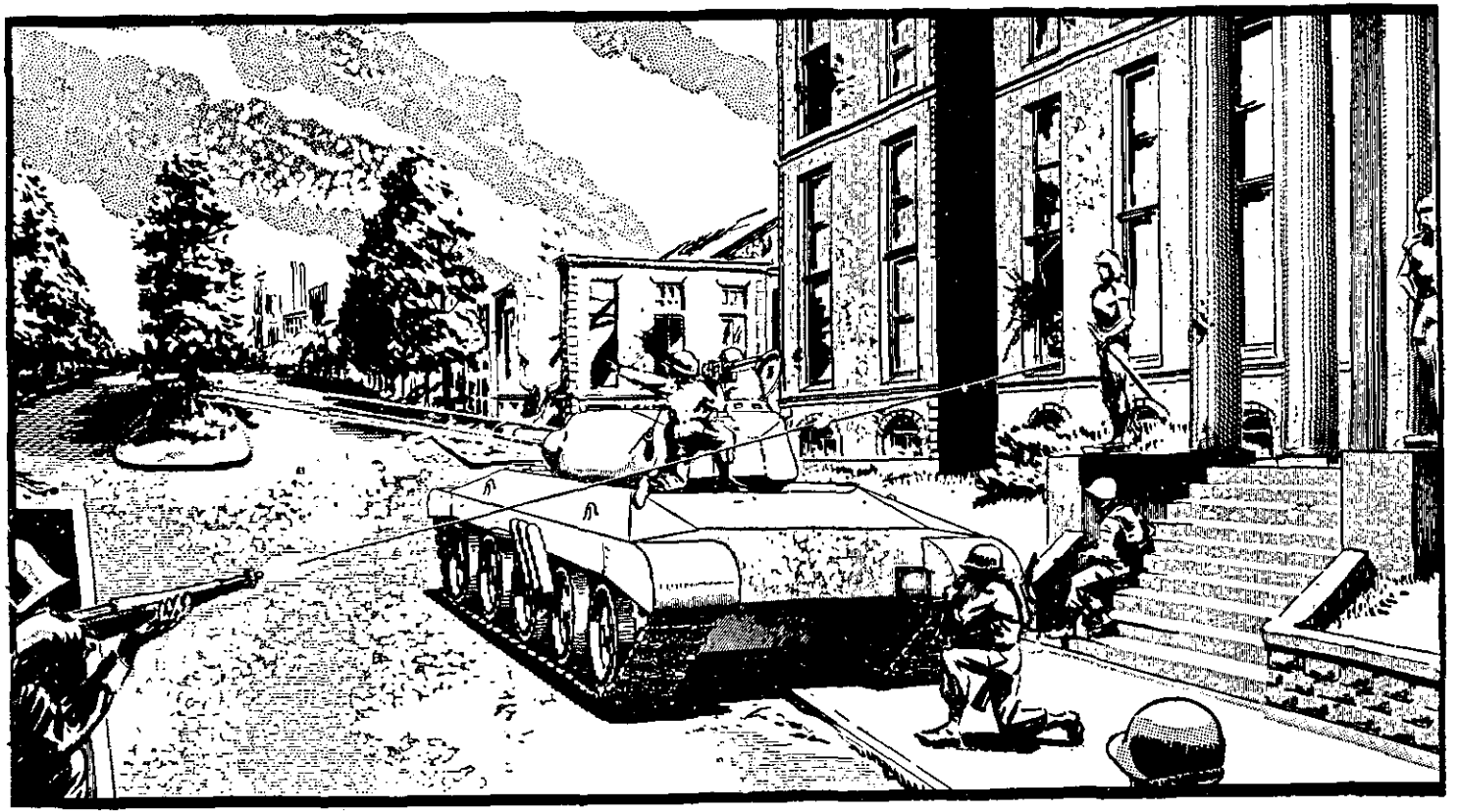


Figure 90. Tanks take under fire any targets indicated by the armored infantry.

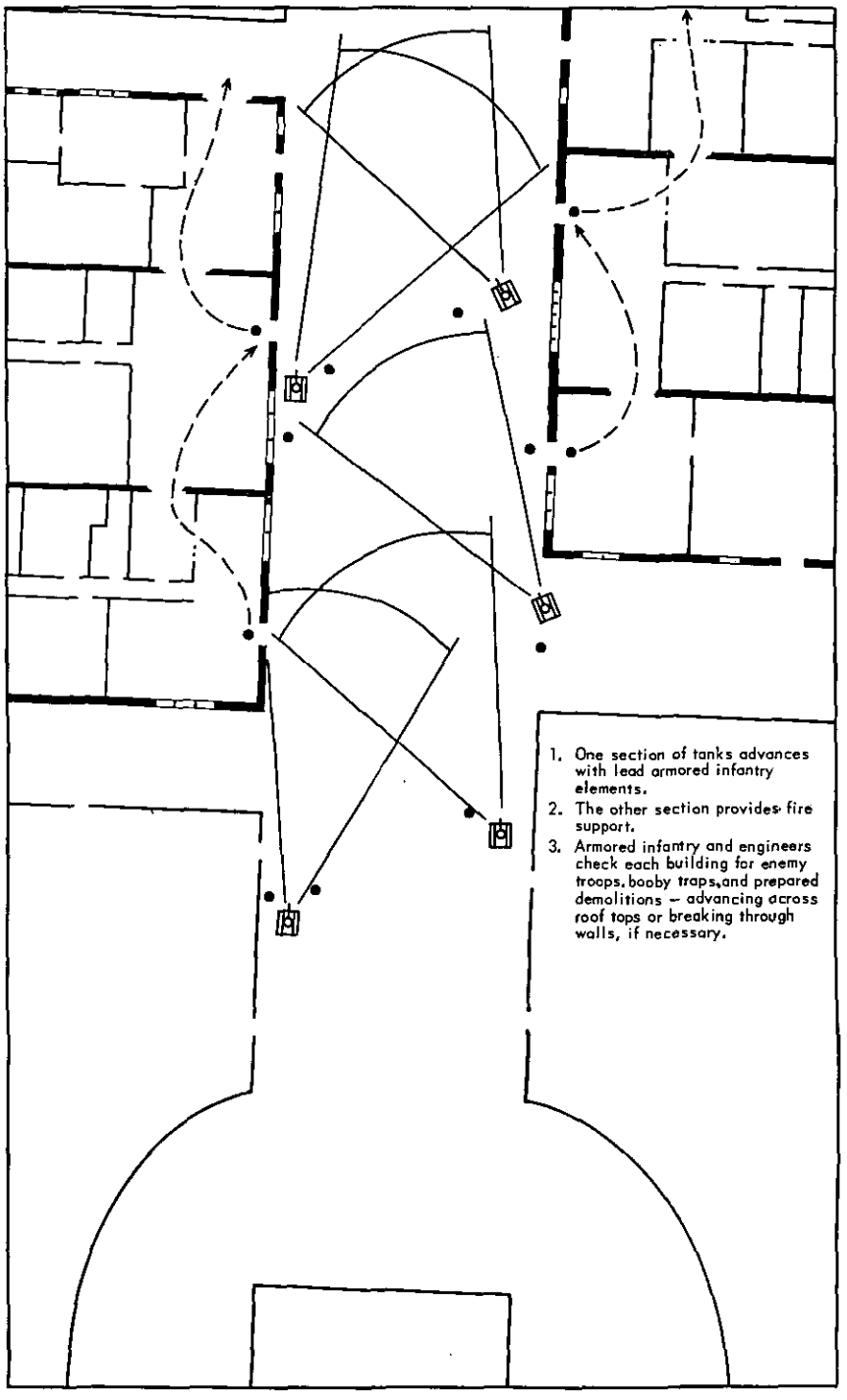


Figure 91. Tanks operating with dismounted armored infantry.

which may be built into houses along the street and camouflaged. Tanks should not halt, nor move slowly, too close to buildings not held by friendly troops, because enemy troops might drop explosives or inflammables upon them. All bridges and overpasses should be checked for mines and for weight-carrying capacity. Booby traps of all varieties are to be expected. Tanks should not move singly, and specific riflemen should be charged with protection of specific tanks.

d. Moving tanks keep fairly close to the buildings on either side of the street, covering the opposite side and firing at anything suspicious (fig. 92). If the street is narrow and resistance is determined, tank commanders may button up, but this is avoided whenever possible. All tank crew members are alert to detect signals from the infantry details in the houses to each flank. Tank commanders keep their personal weapons and hand grenades ready for close-in defense. The platoon leader is on the alert for ambushes or attacks from the rear (fig. 93).

327. Planning the Attack of a Built-Up Area

a. Obtaining Information. In addition to the usual items of information, the commander needs to know the layout of the town; the location of the public utility plants, government buildings, and supply installations; the type of buildings; and the size of city blocks. Sources of information are normal intelligence channels, local inhabitants, maps and aerial photos, reconnaissance patrols, prisoners, and standard travel publications. Town plans (fig. 94) are valuable sources of information. If town plans are not available, large-scale maps (1:25,000 or larger scale if available) should be used.

b. Control Measures. The conduct of a systematic house-by-house clearance of all or a major portion of a built-up area requires the adoption of specific and well-disseminated control measures. Such measures include—

(1) Boundaries. When the area in which the clearing operations are being conducted contains buildings which are widely scattered with open spaces between and behind them, the boundaries are habitually located in the center of the block, both sides of the street being assigned to one unit. The problem is somewhat more complex when the area is completely built up; however, the principle of one unit being responsible for both sides of the street (usually a company in a major built-up area) is still sound, and the boundaries should be so placed rather than having a divided responsibility on a single street.

(2) Objectives. Objectives are specific but limited. The assignment of major road intersections, principal buildings, or

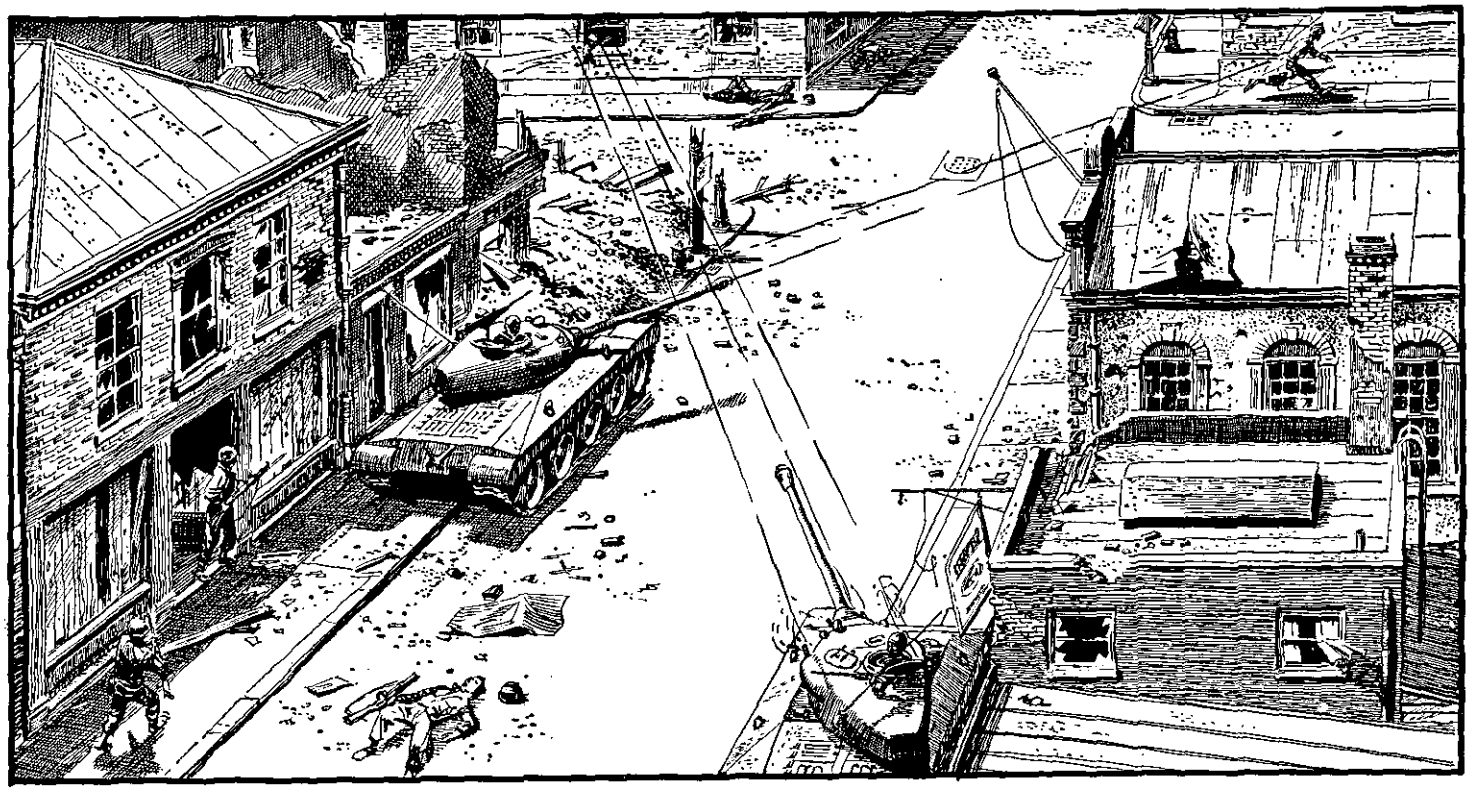


Figure 92. Each moving tank keeps fairly close to the buildings on one side of the street, covering the opposite side and firing at anything suspicious.

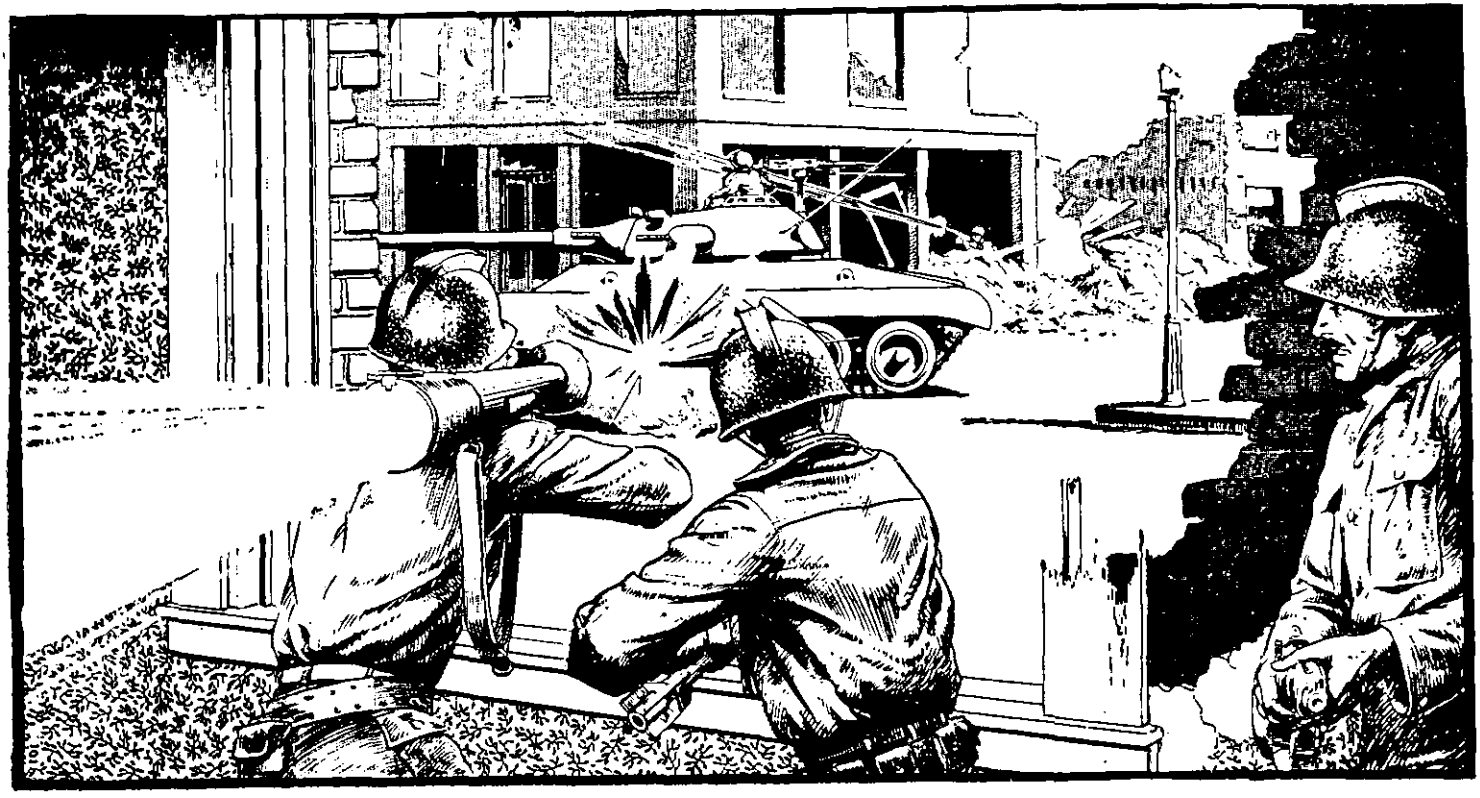


Figure 93. Tank commanders and platoon leaders must be on the alert for ambushes during street fighting.

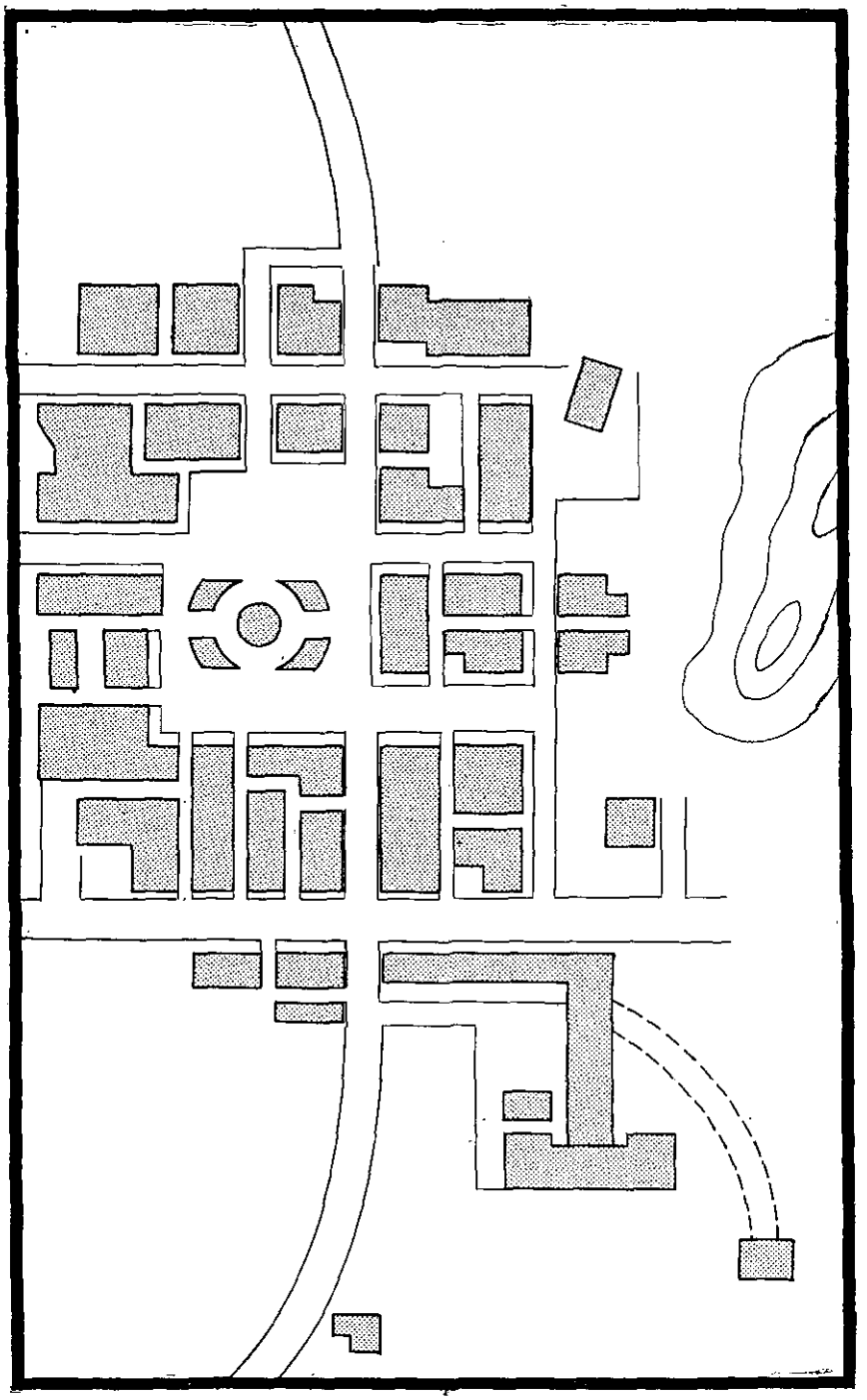


Figure 94. Town plans show all buildings, streets, and alleys of the town.

other readily identifiable physical features facilitates control. The numbering of the buildings along the route of attack simplifies the assignment of objectives and reporting.

(3) Phase lines. Phase lines may be employed to further control or regulate the advance of attacking forces. Physical features such as principal streets, rivers, trolley lines, or railroads are appropriate for use as phase lines.

(4) Check points. Street corners, buildings, railway crossings, or bridges may be designated as check or contact points.

(5) Communication. Radio communication within major built-up areas will normally be greatly restricted. Increased reliance must be placed on visual signals and messengers. In extended operations, extensive use may be made of wire.

c. Use of Atomic Weapons. Atomic weapons are unlikely to be used in conjunction with a ground attack on a built-up area. Except in the case of a large city, the atomic weapon alone would effectively destroy the built-up area. In any event, the progress of the ground attack would be seriously hampered by the effects of an atomic explosion. Too, an atomic explosion would tend to make the town or city unusable as a base for future operations by friendly forces.

d. Evacuation of Wounded. Fighting in built-up areas presents the problem of evacuating wounded from rooftops and the upper stories of buildings. This may require additional litter bearers and the use of special evacuation equipment. A plan should be made for marking buildings which contain wounded personnel.

e. Resupply of Ammunition. Plans must be made to provide the types of ammunition which are used in this type of operation, and to keep ammunition supply points well forward. Mobile supply points down to team level may be necessary. Armored personnel carriers may be used to resupply assault echelons.

328. Conduct of the Attack of a Built-Up Area

a. Phase I. This phase is best accomplished through the use of a minimum force of combined arms, heavy in tanks, to secure critical terrain commanding the approaches to the built-up area. Through the establishment of roadblocks, long-range fires, and, if necessary, limited offensive action, this force secures the built-up area from reinforcement and destroys forces that may attempt to withdraw.

b. Phase II. The initial penetration is made on a narrow front with tanks leading. All available supporting fires are concentrated at the point selected for entry. During this phase the advantage is with the defender, and his resistance will be the strongest. The assaulting force can expect to encounter barricades, antitank mines and obstacles, and effective direct antitank fire with good fields of fire. This advantage can be minimized if the initial assault is conducted

with maximum speed, capitalizing on the concentrated organic and supporting fires and the psychological effect of massed armor. The probabilities of success are increased if the assault is launched from an unexpected direction, preferably in the early morning just before first light, during other periods of limited visibility, or under the cover of smoke. In order to effect the penetration on a narrow front, a column formation is normally employed in the initial assault. The use of a column formation should not imply that all elements of the assaulting force are in column. A wide variety of column formations may be employed by a commander conducting the assault. For example, a battalion task force may employ a task force column with each of its company teams in line, wedge, or echelon. Such a formation tends to shorten the length of the task force column, thus reducing the time necessary to move the column into the built-up area. Regardless of the formation employed, the leading elements of the assaulting force should use a formation which facilitates the delivery of maximum fire on the point of penetration. Engineers, mechanized flame throwers, and mine-detection or mine-detonating tanks or vehicles (if available) should be included in the assaulting force. Artillery air bursts are placed over the point selected for entry to prevent the enemy from manning crew-served or individual antitank weapons. The armored infantry remain mounted and are carried as far forward as possible. In the attack of a strongly defended area, the armored infantry will usually have to dismount to assist in the assault of the outer defense and to provide close-in protection for the tanks. Designated fire teams or squads may be assigned to work with a particular tank. Direct communication between the rifle squad or fire team leader and the tank commander is maintained by visual signals and by use of the external interphone. When operating dismounted, the armored infantry should remain to the rear of their assigned tank to avoid masking its fires and to protect themselves from fires directed at the tank. The armored infantrymen working with each tank report to the tank commander targets he cannot observe. The armored infantry are prepared to deliver fire on targets the tanks cannot engage and to protect the tanks from short-range individual antitank weapons. When it is necessary for the dismounted armored infantry to maneuver to engage or destroy resistance holding up the advance, the tanks support the armored infantry by fire, moving forward as soon as possible. The armored personnel carriers follow as closely as possible the advance of the tanks and dismounted armored infantry. When possible, the fires of their vehicular machineguns augment the other fires of the assault or are used to cover critical areas on the flanks of the assaulting force. As soon as the situation permits, the armored infantry remount their carriers and the advance continues mounted.

c. Phase III. Phase III is primarily a street fighting action as the

force advances to a preselected position well within the area from which other operations will be conducted. This phase is conducted as rapidly as possible but with positive measures being taken to protect the flanks of the column during the movement. Tanks lead the column, closely followed and supported by armored infantry. Except when advancing on a wide street, rarely will it be possible to effectively employ more than three tanks at the head of the column. The leading tanks are followed by a mounted armored rifle platoon, followed by the other section of the tank platoon. The automatic weapons of the tanks and the vehicular machineguns of the carriers deliver continuous fire, concentrating on the windows and rooftops of buildings. The armored infantry remain mounted in their carriers until forced to dismount to protect the tanks from individual antitank weapons fired from buildings being passed, or fires from longer-range antitank weapons fired from side streets or other emplacements. The armored infantry may dismount to assist in the removal of obstacles or barricades which have halted the advance of the tanks. When required to dismount to secure the tanks from fire being received from buildings, a rifle squad moves along each side of the street, keeping approximately abreast of the lead tanks. Depending upon the resistance being encountered, the squad may challenge every doorway or ground floor window by throwing in hand grenades and spraying the interior with small-arms fire. Selected men in each squad should be assigned the mission of observing for targets and engaging them in the upper floor windows and rooftops of the building on the *opposite* side of the street. The leading tanks meanwhile continue to fire at suspected enemy locations farther down the street. When resistance is heavy, each alley or side street presents an ideal fire lane for enemy high-velocity tank or antitank fire, and should be crossed with caution. The armored infantry assist in crossing intersections by observing down the side streets prior to the tanks crossing and by emplacing light machineguns on each corner, covering or firing in both directions. When a serious antitank threat to the column's flank exists, a tank section and a rifle squad with its carrier may be dropped off at each intersection along the route. The forces may remain in position until the entire force has passed, with the following company team assuming the lead in the advance as the dropping off of these security forces depletes the original lead company team (fig. 95); or following company teams may relieve these forces, permitting them to continue the advance with their company team. The procedure to be used must be determined prior to the initiation of the operation.

d. Phase IV. Upon arrival at the previously selected position well within the built-up area, immediate measures are taken to initiate a position defense. As succeeding units arrive, they are placed in position to strengthen its all-round defense. Barricades and roadblocks

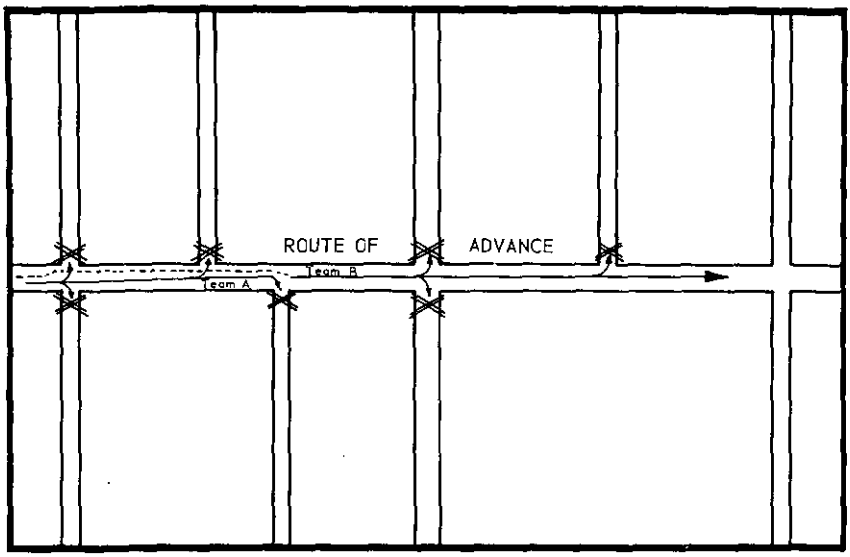


Figure 95. When the antitank threat to the column's flank is critical, security forces may be dropped off at each major intersection, with the following company team assuming the lead as these security forces deplete the original company team.

are emplaced where tank and small-arms fire can be directed down principal streets leading into the area. Buildings in the immediate vicinity are cleared of enemy and secured to deny their use by the enemy. Particular attention must be paid to rooftops, with armored infantry observation and security posts being established and maintained on the highest roofs overlooking the area. The armored personnel carriers and the light machinegun squads are placed where their fires can cover the primary dismounted routes into the area. If necessary, tanks may be used to knock out the ground level fronts of buildings so that thin-skinned and administrative vehicles may be parked under cover. Platoon-size patrols of armored infantry should reconnoiter the immediate area surrounding the position to determine the presence of any enemy forces posing an immediate threat to the position. Local civilians, if any remain, and prisoners should be thoroughly interrogated in an effort to determine the location, composition, and strength of the enemy forces within the built-up area. The mission of the unit will determine the extent of the methodical block-by-block, house-by-house clearance of the area following the completion of phase III. Missions assigned to a battalion task force may vary from the seizure and holding of certain critical installations—such as a bridge, major road or rail confluence, or utility facility within the area—to the complete clearing of enemy forces from the area. When the mission is the seizure of a specific critical objec-

tive within the built-up area, the critical objective is usually within the defended area described above, and the technique employed to reach it is as previously covered in the conduct of phases II and III. The mission of clearing the built-up area may be limited to the elimination of isolated but organized groups of defenders. Platoon-size combat patrols, usually with tank support, conduct aggressive reconnaissance to determine the location of these resisting forces. Combined-arms forces, usually of company team size, operate out of the defended area to eliminate the enemy defenders located by the combat patrols. Street fighting, if utilized, is conducted in the same manner as described for phase III. The actual operation of clearing enemy from dwellings and other buildings is conducted in the manner outlined in FM 31–50. If the mission requires the complete clearance of all defenders from the entire built-up area, detailed plans must be made and specific control measures adopted. The area to be cleared by a methodical house-to-house operation is divided into company team zones of responsibility. Movement down defended streets, and the mutual support provided by the tanks and armored infantry, are conducted in the same manner as discussed for phase III. The fires of the vehicular weapons of the armored personnel carriers and the machinegun squads augment the fires of supporting tanks and are employed to protect the flanks and rear and to isolate groups of buildings which the rifle platoons are in the process of clearing.

329. Surprise Attack of a Weakly Held Town

When the enemy defenses are weak, or when the enemy is just beginning to organize the town, the leading armor unit immediately attacks from march column. In this situation, it is not essential that the attacking force be predominantly armored infantry. It is important that armored infantry be with the leading tanks as they enter the town. The assaulting force drives directly to the center of the town, then proceeds to attack outward.

330. Attack of a Defile—General

The methods of attacking a defile are similar to those used in the attack of a fortified area. All armor units may be utilized, with the tanks' principal mission initially being to provide close support. Helicopters will be used to lift armored infantry if possible.

331. Conduct of the Attack of a Defile

a. The defile itself is the logical avenue of approach; but before the attack can be launched, the defenses of the defile must be reduced. As a rule, these defenses are not in the defile itself, but on the high ground nearby. Seizure of this high ground usually forces the enemy to evacuate the defile.

b. In some cases a poorly defended defile can be rushed. Supporting tanks are used to cover the advance of the assaulting units. The advance through a short defile is by a single bound, and should be completed by the assaulting element before any other units advance. If the defile is long, units may have to advance through it by bounds, being careful to protect themselves against surprise.

c. The first elements to pass through the defile rapidly organize a "bridgehead" on the far side to protect following units as they exit from the defile. Tanks are placed in position to counterattack to protect this bridgehead. Units can also use this position to reorganize after passing through the defile.

d. The manner of forcing a defile depends largely upon the manner in which it is held and the accessibility of the enemy's flanks. If small forces can be moved through or around the obstacles creating the defile, an advance can be made on a broad front to outflank defended areas.

332. Attack in Woods—General

The attack of a wooded area is a task best suited for an infantry-heavy force. Heavily wooded areas, like built-up areas, restrict mobility, limit visibility and fields of fire, and increase problems of control. Fighting in woods is characterized by many small units actions. As a result, attacks in woods require detailed planning and control measures, decentralized control, and thorough briefing of subordinate commanders. Whenever possible, tanks avoid combat within wooded areas. They are better employed to bring direct fire on positions located on the outer edges and to encircle the defended wooded area. In the event that combat within the woods is unavoidable, dismounted infantry are essential for the protection of armored vehicles. A frontal attack in woods is divided into three phases—

a. Attack and occupation of the near edge.

b. Advance through the woods.

c. Exit from the woods.

333. Planning for Attack in Woods

Detailed planning, and the careful coordination of all the arms and services involved, extend downward to every member of the individual tank crews and of the rifle squads which support them. Methods of communication and target designation are especially important. It is also necessary to develop a plan of supporting fires from artillery and infantry weapons as well as from the organic battalion support weapons, and to make arrangements with the engineers for route clearance or improvements. Tank dozers may be used to advantage. In atomic warfare, careful consideration must be given to tree blowdown and fires which may occur in the area of attack as a result

of employment of friendly atomic strikes. Similar consideration must be given to the enemy atomic capabilities and the resultant obstacles to tank movement which could result.

334. Attack of the Near Edge of the Woods

a. Accurate information is obtained about the density of the woods and about roads, trails, streams, natural landmarks, and obstacles within the woods. Much of this information can be obtained from photographs. In addition, intensive ground patrolling determines the location of hostile units defending the near edge of the woods. The attack of a defended area near the edge of the woods is similar to the attack of any organized area. The near edge of the woods, or a terrain feature in which the near edge is included, is designated as the objective. When the attack must cover ground entirely exposed to the observation and fire of the enemy, it may be made under the concealment of smoke or darkness. The methods of attack used are the same as in the attack of an organized position.

b. When a foothold has been established in the woods, the assault echelon consolidates and reorganizes. Distances and intervals between smaller units and supporting weapons are reduced, so that contact can be maintained during the advance through the woods. Since the edge of the woods is a good target for hostile artillery and aviation, the consolidation and reorganization must be rapid. The commander plans the reorganization and advance through the woods at the same time he plans the attack against the near edge.

335. Advance Through the Woods

a. The actual tactics employed must be designed to overcome the weapons and tactics of the enemy. Tanks will have to move slowly, at short intervals and distances, to facilitate control and contact and to insure mutual support. In heavily wooded areas, there are frequent halts for reorganization, resupply, and orientation. Consumption of fuel and ammunition is heavy.

b. Figure 96 shows a typical formation of a tank platoon advancing with dismounted armored infantry along a trail in a wooded area. The two leading tanks are echeloned to the right and left of the trail. Dismounted infantry accompany each tank. This formation presents a less lucrative target to the enemy and provides mutual fire support for each tank. The following section proceeds along the trail ready to support the leading tank section.

c. The team of combined arms advances together, the armored infantry always maintaining close visual contact with the leading tanks and locating targets for them. It is occasionally necessary for the armored infantry to place fire on their own tanks in order to destroy enemy tank hunters with magnetic mines and hand charges (fig. 97).

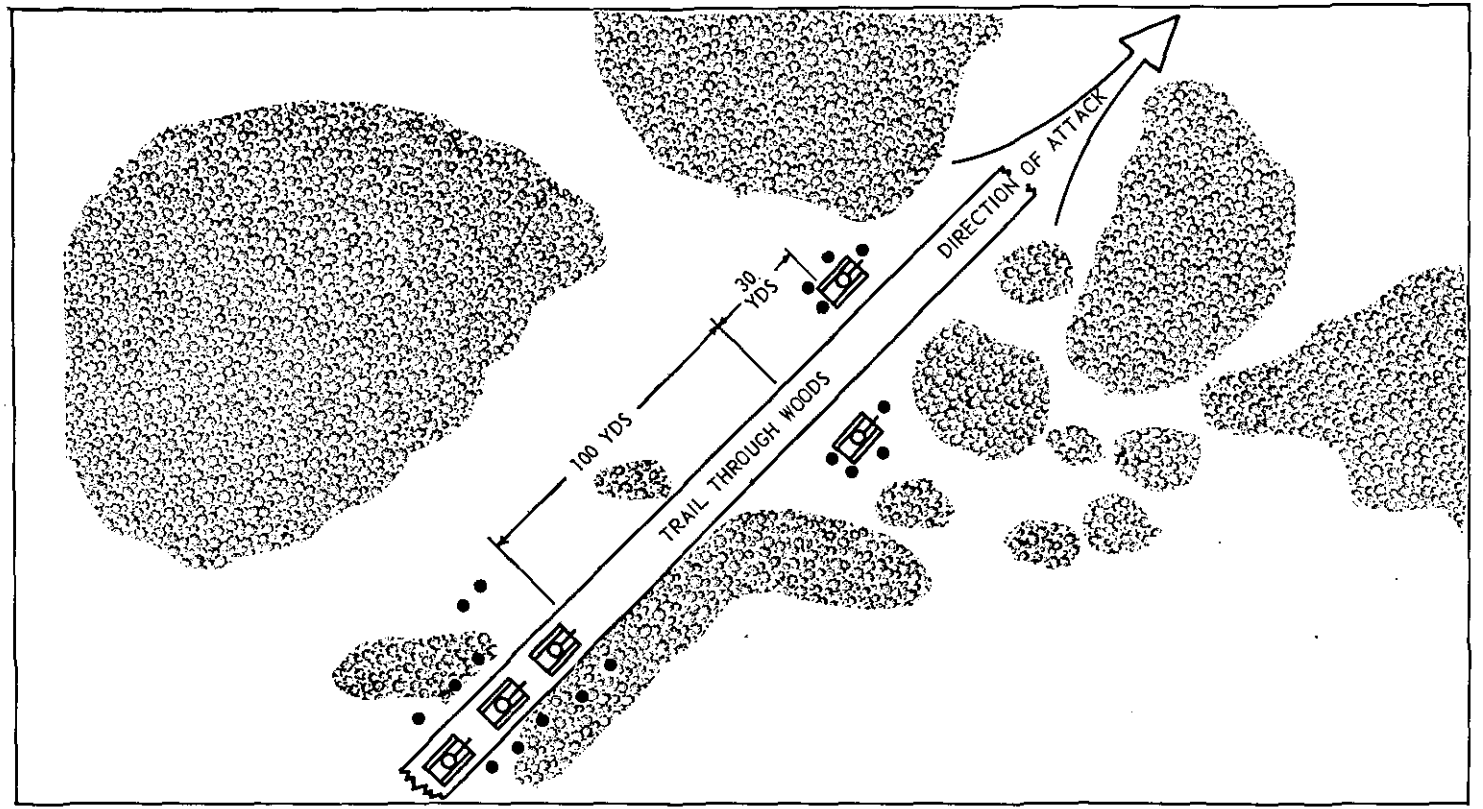


Figure 96. Tank-armored infantry formation in wooded areas.

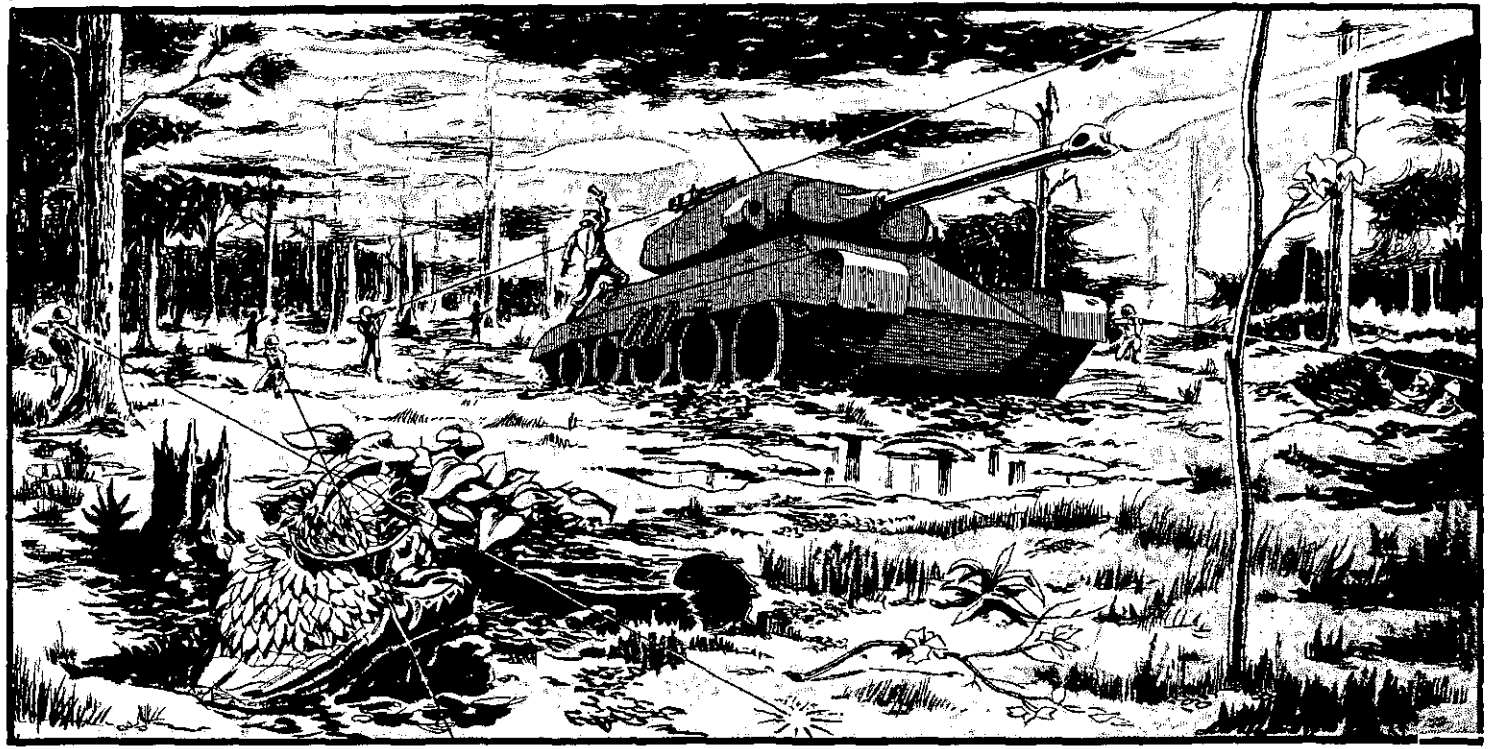


Figure 97. During combat in heavy woods, the armored infantry constantly are alert to defeat enemy individual antitank measures. Rifle and submachinegun fire is placed on the tanks when necessary.

d. Though wooded areas often severely limit maneuver, the possibility of flanking action or flanking fire by a portion of the tanks is always considered. The more difficult the terrain, the greater the surprise obtained if a tank attack can be successfully launched across it. The armored infantry must never let the leading tanks advance out of sight. If this happens, the tanks may be knocked out by tank hunters and antitank guns and the armored infantry subsequently stopped by machinegun fire. Proper coordination of effort (fig. 98) will prevent the enemy from separating tanks and armored infantry.

e. The armored infantry indicate targets by using tracer ammunition, the external tank interphone, or prearranged signals.

f. Resupply is a serious problem because of the large quantities of fuel and ammunition consumed and difficulty of getting supplies forward. Consequently, maintenance and supply personnel must operate close behind attacking elements. In some instances, it may be necessary to establish an advance supply point, or service park, at company level.

336. Security in Wooded Areas

Security is of the utmost importance in operations in wooded areas, where surprise, ambush, sniping, and infiltration tactics constantly are employed. Whenever an attacking tank-infantry element halts for any reason, immediate provision must be made for all-round security. Enemy groups may attack at any time from any direction. Security demands constant vigilance, continuous and painstaking reconnaissance, and intimate knowledge of the tactics and characteristics of the enemy. A perimeter defense system is established behind mines, booby traps, and barbed wire, and is covered by an outer ring of dismounted armored infantrymen. Logistical elements should be located in the center of the perimeter defense in order to give them maximum protection.

337. Exit from Woods

The continuation of the attack from the far edge of the woods is conducted like any other attack. Plans are usually made to reorganize the assault echelon before it reaches the far edge, especially when strong enemy resistance is expected after the woods are cleared. Units and supporting weapons are redisposed, and frontages, zones of action, and the formation of the unit are rearranged as necessary. New objectives are assigned; if possible, they are terrain features whose capture will mask the far edge of the woods from hostile ground observation and direct fire. When practicable, supporting weapons are given general-support missions. Artillery and mortar fires and smoke are planned to assist the exit.

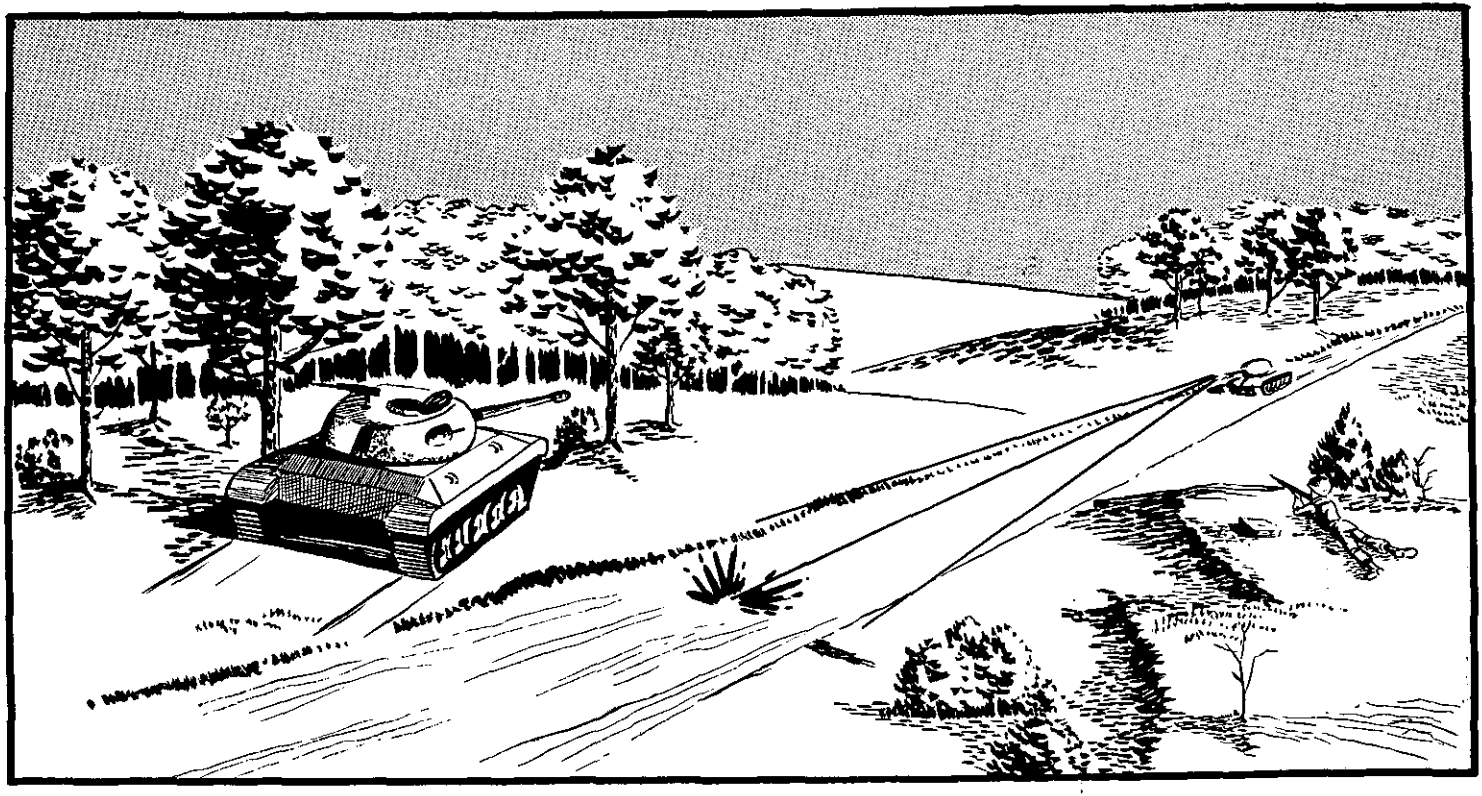


Figure 98. When resistance is met, deploy and overcome it. Armored infantry support closely.

338. Attack of a River Line—General

Unfordable rivers have a decisive effect on armor operations, because of the restrictions they impose on mobility. Plans for crossing rivers are made well in advance. Armor should attempt to seize bridges, or should make a hasty crossing rather than a more time-consuming deliberate crossing. The advance to the river line is made on a broad front and at great speed, to enhance the possibility of seizing existing crossings or of permitting a hasty crossing. The "swimming" capability of the armored personnel carrier provides the armor unit commander with a limited crossing means for use in either hasty or deliberate crossings.

339. Assault River Crossings

a. Assault river crossings are classified as hasty and deliberate. A hasty river crossing is defined as one in which the crossing is executed in the shortest possible period of time with a minimum of planning. As a result, a hasty river crossing is often characterized by the piecemeal commitment of units as they become available. A deliberate crossing is one in which a coordinated attack is launched to seize and secure a bridgehead across the river to permit engineer construction of a tactical bridge. Small armor units usually take part in a deliberate crossing only as part of a penetration force which is committed after the crossing has been made and the bridgehead has been established. Deliberate crossings normally require a concentration of troops which presents a lucrative target for enemy atomic weapons. See FM 31–60.

b. Armor units should take advantage of their speed and mobility to make crossings of opportunity whenever possible. These crossings generally can be divided into three groups—

(1) Seizing crossing means (primarily bridges) intact by speed and aggressiveness.

(2) Forcing crossings at fords against light or poorly organized defenses.

(3) Forcing crossings of lightly defended streams with the assistance of armored infantry and engineers.

An aggressive attack often makes it possible to seize bridges before the enemy has had the opportunity to destroy them. Tanks attack the bridge, killing, driving off, or capturing the defenders (fig. 99). Armored infantry and engineers closely follow the tanks; the engineers remove or neutralize any demolitions found on the bridge, and the armored infantry assist in defending it. Sometimes bridges are only slightly damaged by enemy demolition and, if immediately seized and repaired, can be used for the crossing of sufficient forces to make a full-scale assault crossing unnecessary. When a ford must

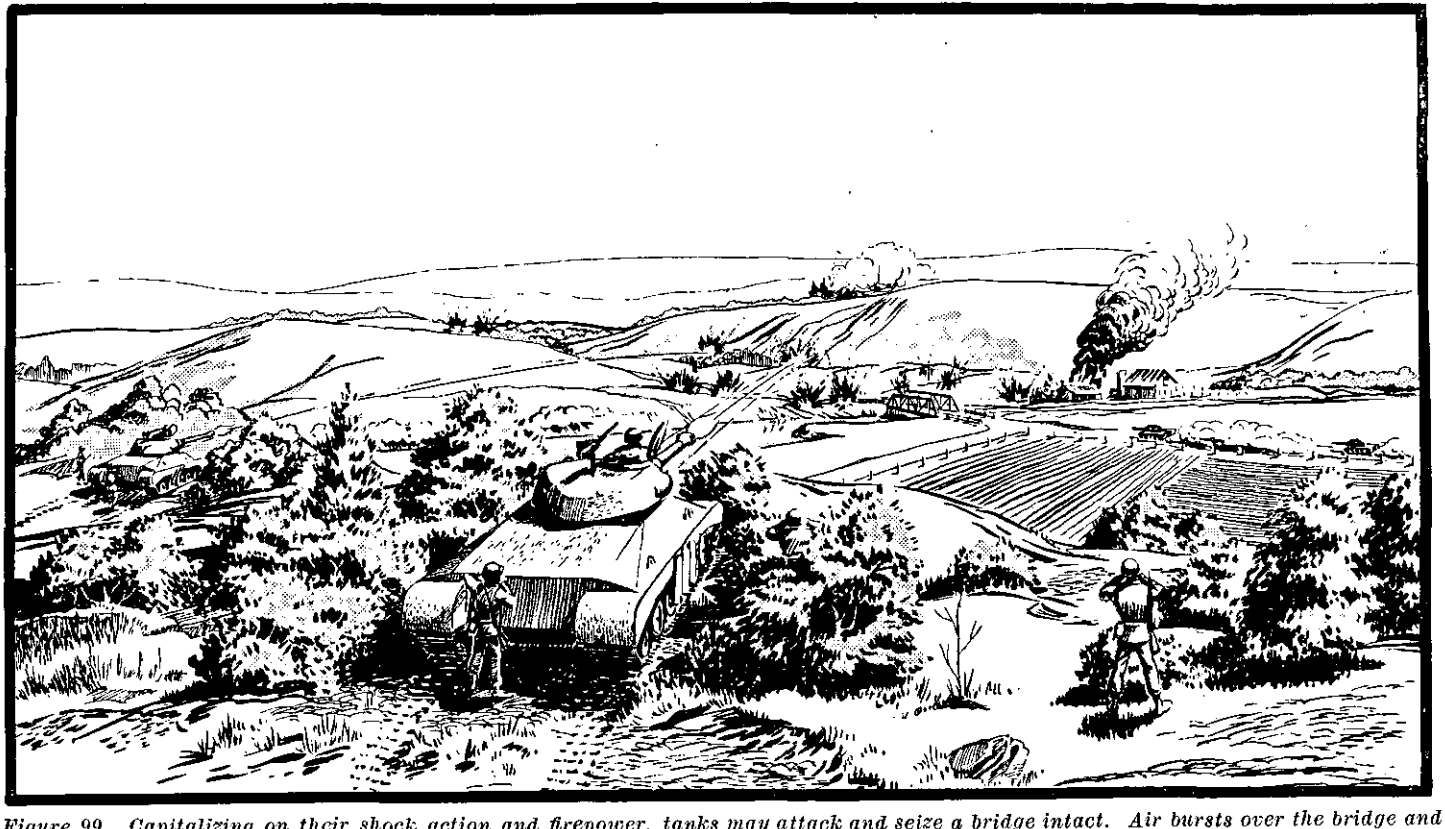


Figure 99. Capitalizing on their shock action and firepower, tanks may attack and seize a bridge intact. Air bursts over the bridge and its approaches greatly assist the attack.

be improved before the tanks can cross, it may be necessary for armored infantry to establish a bridgehead on the far bank to protect engineer personnel doing pioneer work on the ford.

340. Employment of Armored Infantry in River Crossing

Armored infantry is ideally suited for a hasty river crossing, due to the amphibious nature of the armored personnel carriers (fig. 100). For a detailed discussion of the employment of the armored personnel carrier in river-crossing operations, see appendix V. A hasty river crossing is executed as is any attack, with minor differences or points of emphasis as is discussed below.

a. Reconnaissance. This includes determination of the best crossing sites, locations of fords, steepness of banks on both shores, speed of current flow, and conditions of banks. Other information sought during reconnaissance is the same as for a normal attack.

b. Fire Support. Maximum fire support is brought to bear against known and suspected enemy positions on the far shore. Smoke is often employed to screen the crossing, particularly on the flanks. Tanks support the crossing with direct fire.

c. Preparations for the Assault. The precrossing procedures outlined in appendix V are completed for each carrier. Life preservers are worn by crew members.

d. Speed of Execution. The total elapsed time between approach to the river line and the execution of the crossing must be held to a minimum in order to insure success. Once started, the crossing is completed with speed.

e. Formations. Formations depend on the availability of crossing sites and of fire support. The crossing should be made in waves, preferably formed by platoons, each in line formation.

f. Action on Far Shore. Should the steepness or condition of the banks on the far shore not permit the armored personnel carriers to leave the water, they are held against the banks while their squads dismount through the top hatches and move onto the shore. Armored personnel carriers may be used to ferry across other troops, ammunition, and fuel and lubricants should the need arise.

g. Crossings at Other Than Bridge Sites. Armored infantry may make crossings at an undefended area other than the desired bridge or crossing site, then move to the desired area. Once there, they hold a bridgehead while the main crossing by following units is made.

341. Employment of Tanks in the Attack of a River Line

a. General. Tanks usually participate in an attack of a river line as a part of a combined-arms team. The greater part of the available tank units are held in reserve until a satisfactory bridgehead is estab-

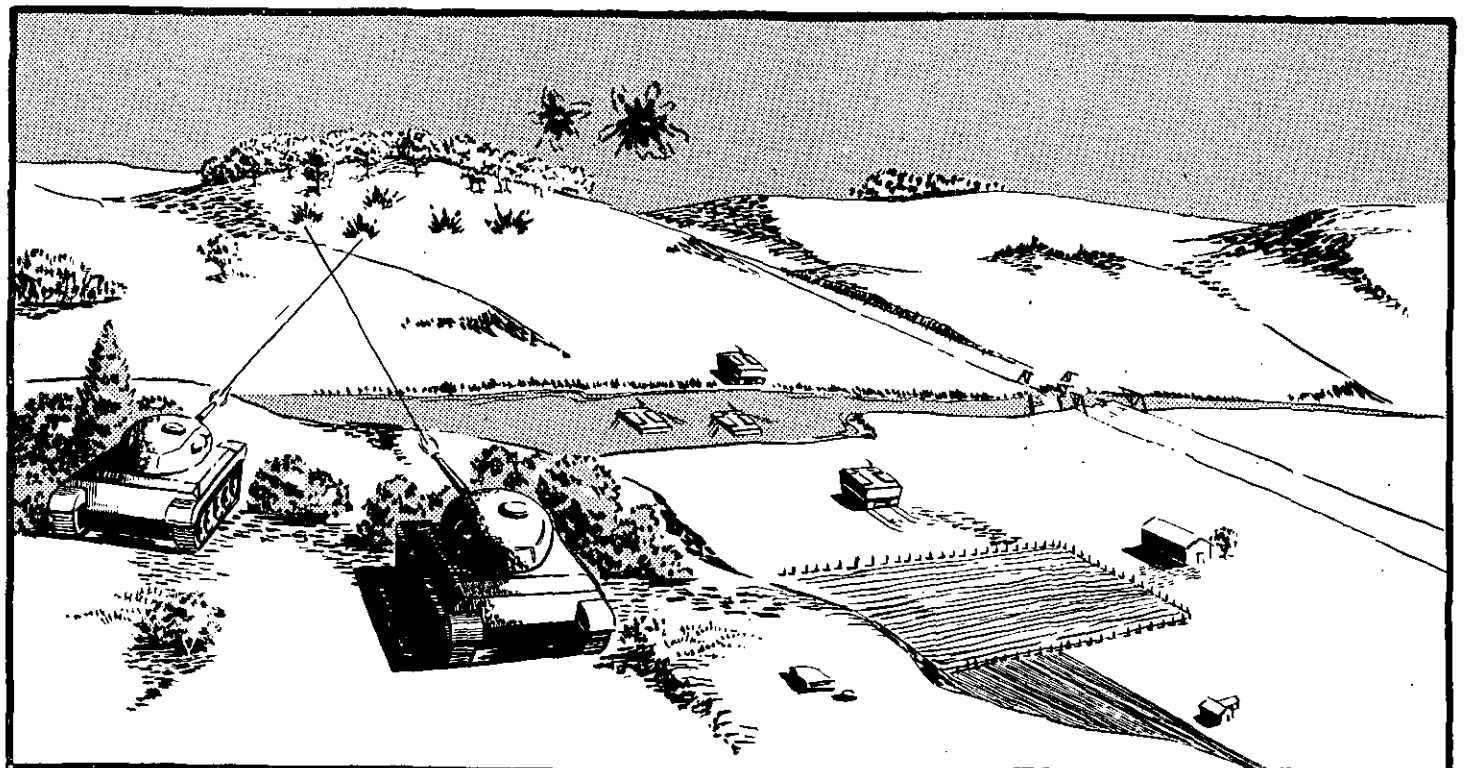


Figure 100. Small armor units, on failing to seize existing bridges, should immediately attempt to make a hasty river crossing.

lished on the far bank. Certain tank units may be assigned the mission of direct-fire support of the armored infantry crossing.

b. Fire Support. If tanks are to support the assault crossing by direct fire, a reconnaissance must be made to determine the best positions from which tank fire support can be delivered. Tanks are brought forward by covered routes to defiladed or dug-in positions. Alternate positions are prepared as required. Positive arrangements for control of the fire must be made with the units being supported, so that the tank fires may be lifted, shifted, or stopped in a manner similar to that of artillery and mortar fires. When employed in such a role, tanks must be supplied with ammunition in excess of their normal loads so that all tanks, when later employed across the river, will have full loads of ammunition. Ammunition should be placed at tank positions to avoid depleting basic loads and possible consequent delay in moving across the river when crossing facilities are available.

c. Movement into Bridgehead. As soon as the armored infantry have gained a foothold on the far bank, some reserve tank units may be ferried across by the engineers to aid in enlarging the bridgehead and defending it against hostile armor. In atomic warfare, care must be taken to avoid overconcentration of tanks in the bridgehead area prematurely, to avoid presenting a lucrative atomic target to the enemy; it is necessary to expand the bridgehead quickly to avoid congestion. However, because tank ferrying requires the same equipment used in the floating bridge, ferrying over small streams is unusual. Since the crossing site probably will be heavily smoked and under enemy fire, the tank commander and his platoon leaders must act swiftly and aggressively in moving to their assigned positions and establishing liaison with the appropriate armored infantry units.

342. Expansion and Exploitation of a Bridgehead

Any bridgehead must be quickly expanded and secured to protect the bridge site and permit assembly of forces within the bridgehead area. The initial security and expansion of the bridgehead are normally accomplished by armored infantry, with tanks supporting by direct fire from across the stream until they can cross. The attack from the bridgehead and subsequent exploitation is a mission for which armor is particularly well suited.

343. Minefield Breaching

a. General. When an armor unit has the mission of attacking through defended minefields or other obstacles, the commander normally uses armored infantry to gain a bridgehead on the far side of the obstacle. As soon as the bridgehead is gained, engineers, often assisted by armored infantry, reduce the obstacle and mark the gap (fig. 101). Tanks, artillery, and mortars provide fire support during

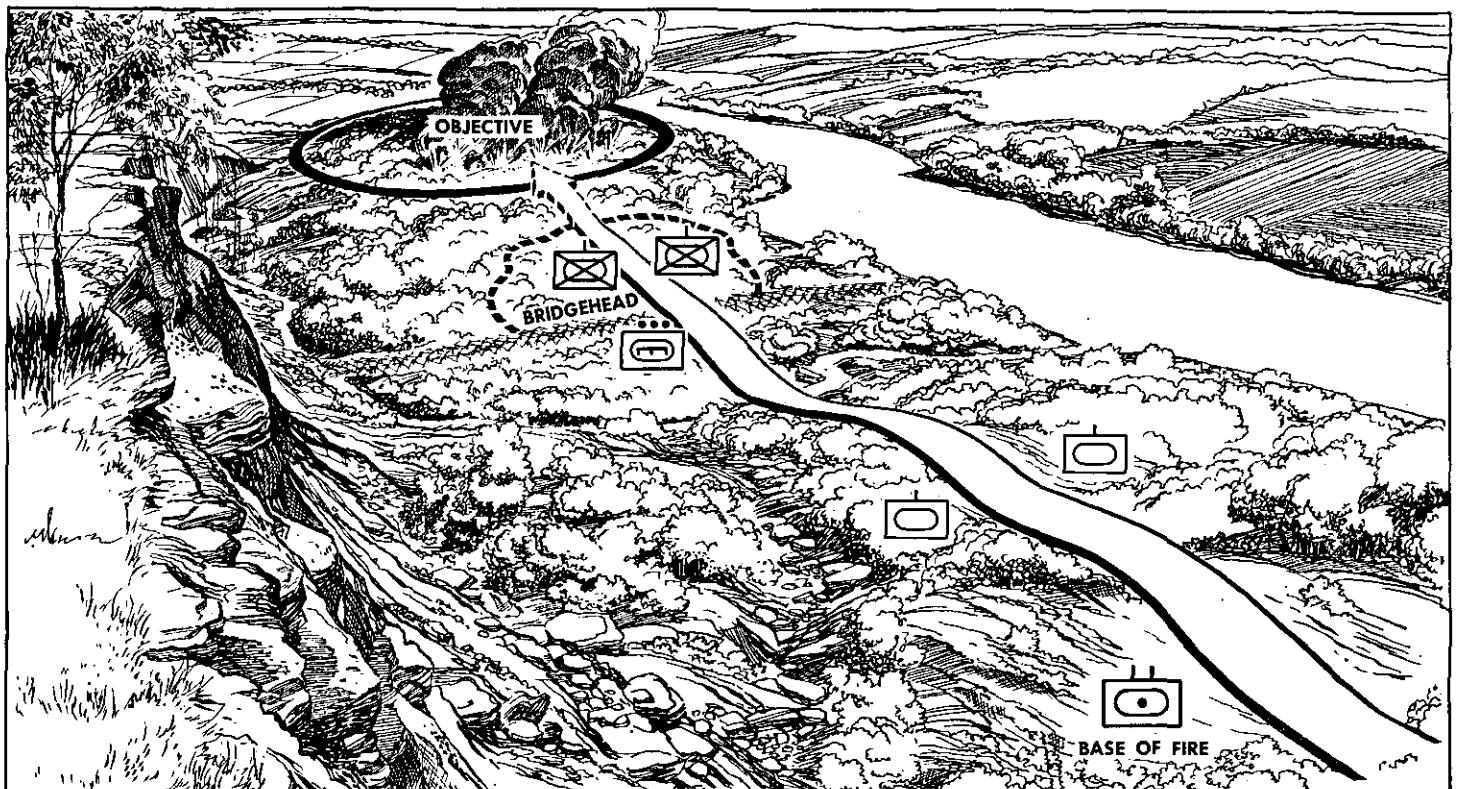


Figure 101. Battalion task force attacking through a minefield.

the operation. As soon as the obstacle is breached, the tanks and other vehicles pass through it.

b. Locating Minefields.

(1) FM 20–32 covers in detail the procedures for detecting minefields.

(2) Minefields should be expected in the following locations:

(*a*) In areas where there are prepared enemy defenses.

(*b*) On avenues of approach to enemy positions.

(*c*) On beaches and just off shore.

(3) Mines may be expected in the following locations:

(*a*) On roads.

(*b*) On the shoulders of roads, especially at turnouts, turns, and defiles.

(*c*) In parking areas.

(*d*) At culverts.

(*e*) At crossroads and road junctions.

(*f*) In areas favorable for troop concentrations.

(4) When available, helicopters may be used to assist in the detection of minefields. The helicopters operate generally in the vicinity of leading elements of the advancing armor units, reconnoitering suspected locations for mines as discussed in (2) and (3) above. Observed or suspected locations of mines are reported by radio. This technique is especially useful in locating protective minefields during the exploitation, pursuit, or advance to contact.

344. Action on Encountering a Minefield

Whenever a minefield is encountered, an attempt should immediately be made to bypass it. However, the minefield may have been installed for the specific purpose of causing our forces to bypass into an area, or along a route, which is favorable to the enemy. This permits the enemy to employ intense concentrated fire or a counterattacking force at his choosing. Consequently, obvious bypasses should be approached with caution. When a minefield cannot be bypassed, because of the terrain or tactical situation, breaching operations must be conducted.

a. If a minefield is detected before the unit has been committed—

(1) A reconnaissance is made for possible positions for enemy antitank guns and machineguns which may be covering the minefield.

(2) If the attacking force includes infantry, the tanks cover the infantry's advance and reconnaissance of the minefields.

b. If a minefield is discovered during an attack and the field is covered by enemy fire—

(1) If an armored vehicle is disabled by an exploding mine, nearby tanks stop and fire smoke to screen the disabled vehicle and themselves, if necessary. All observe for antitank guns which may be covering the minefield, and reconnoiter by fire.

(2) Behind this smoke, the crew of the disabled vehicle usually evacuate the vehicle. However, when the surrounding terrain provides some cover or concealment and the vehicle is a tank whose weapons are still usable, the crew should continue to fight from the tank. Evacuating crew members take cover promptly, because the minefield is probably covered by machineguns, sited to fire effectively through smoke, and by mortars. Crew members must also beware of antipersonnel mines.

(3) Other vehicles back to cover, following exactly the same route that they used to move forward.

(4) Neutralizing fire is placed on any enemy antitank guns located. This fire may be supplied by tanks, by the unit's supporting weapons, by supporting artillery, or by other troops in the area.

(5) If the disabled vehicle is not under too heavy enemy fire, it is withdrawn by a recovery vehicle, using a tow bar, or by another armored vehicle if no recovery vehicle is available. Crew members reconnoiter the terrain for mines before the recovery vehicle advances.

(6) Reconnaissance immediately begins to determine the edge, the depth, and the width of the minefield.

345. Passage of Minefields

a. Armored infantry or engineer personnel, or occasionally tank personnel alone, may be used to breach a minefield. Under cover of darkness, smoke, or heavy fire, dismounted troops clear antipersonnel mines from a lane four yards wide, move through the minefield, and establish a bridgehead. Antitank mines are located and removed by probing parties, using the methods prescribed in FM 20–32. Some tanks are immediately moved through the gap to provide protection in the bridgehead. The bulk of the armored vehicles then move through the gap to an assembly area within the bridgehead, and the attack is continued.

b. A minefield may be breached by the use of a demolition snake, a chain bangalore torpedo, or other mine-clearance devices such as the High Herman or Larruping Lou (par. 140).

CHAPTER 9
DEFENSE

Section I. GENERAL

346. Definition

Defense is the employment of all means and methods available to prevent, resist, or destroy any or all forms of enemy attack. The defensive is the attitude or condition of a force when it is prepared to protect itself against enemy attack.

347. Scope of Chapter

This chapter covers the planning, organization, and conduct of the basic types of defense in which small armor units might participate. Information contained herein generally applies to actions of battalion and lower level units; discussion includes actions of higher echelons only where necessary to give a correct perspective. The mobile defense is emphasized because it is the more desirable type for armor units. Chapter 6 describes defense against enemy use of atomic weapons and CBR weapons. Counteroffensive actions employed in conjunction with defense follow the principles discussed in chapter 8. Security force and delaying force tactics are found in chapters 5 and 10, respectively.

348. Purpose of Defense

Defensive combat has two general purposes—first, to gain time pending the development of more favorable conditions for undertaking the offensive; second, to economize forces in one area in order to concentrate superior forces for decisive offensive action elsewhere. Additionally, armor units may defend as part of a plan to punish, weaken, or destroy the enemy force prior to initiating a counteroffensive, or for protection during reorganization, resupply, and temporary halts before the initiation of some other action.

349. Mission in Defense

The mission in the defense may be to deny a vital area to the enemy, to protect a flank, to contain an enemy force, to weaken and disorganize the enemy as a preliminary to offensive action, or self-protection pending some other action. The factors of METT (mission, enemy, terrain and weather, and troops available) dictate the type

defense to be adopted and the position or area to be defended or denied the enemy. A defensive mission may be required by the situation, directed by higher headquarters, or adopted voluntarily.

350. Basic Considerations of Defense

The commander organizes and conducts the defense through the application of the following basic considerations:

a. Proper Utilization of the Terrain. The defender must take maximum advantage of the military aspects of the terrain so that the enemy will be forced to attack on terrain unfavorable to him or make time-consuming maneuvers to avoid the defending force. The defender normally has the choice of ground on which the decisive battle is to be fought. In an analysis of terrain, the following factors are considered:

(1) *C*ritical terrain.
(2) *O*bservation and fields of fire.
(3) *C*over and concealment.
(4) *O*bstacles.
(5) *A*venues of approach.

b. Security. Security is especially important in the defense. It can reduce the attacker's advantage of the initiative—that is, the advantage he holds because he can choose the time, place, direction, strength, and composition of his attack. All commanders will take aggressive action to provide all-round security to obtain early warning of the enemy and maintain continuous contact after the enemy enters the defensive area. All units, regardless of their size, are responsible for their own security.

c. Mutual Support. Units within a defensive area are located and employed so they can assist one another. Mutual support is designed to prevent defeat of units one at a time. Mutual support is provided by moving to the assistance of the threatened unit, supporting it by fire, reinforcing it, or counterattacking the enemy force.

d. Defense in Depth. Since the attacker can select the place for his main attack and can concentrate his forces on a narrow front, he can usually penetrate a defensive position if he is willing to pay the price in loss of lives and materiel. For this reason, defensive units are placed in depth to insure that enemy penetrations can be stopped and destroyed. Situations will exist when the area being defended is of such width that organization in depth is not possible. In such situations, armor units obtain depth by rapid movement to supplementary positions or areas.

e. All-Round Defense. Although primarily oriented to the front, a good defense meets the enemy attack from any direction and prevents the enemy from taking the defending unit by surprise from an unexpected direction. This is done by selecting and organizing supple-

mentary positions so troops may be shifted to meet threats from any direction, and by preparing counterattack plans which will permit counterattacks in any direction.

f. Fire-Support Plan. Plans are made and thoroughly coordinated to make maximum use of the tremendous firepower available to armor units. Coordination of all available organic and supporting weapons is carefully planned and is included in the operation order. The fire-support plan provides for bringing the enemy under fire as early as practicable, subjecting him to increasingly heavy fires as he advances, and supporting the counterattack. Fires are also planned on likely enemy reserve positions and supply installations. When atomic weapons are available, the use of these weapons is integrated into the plan.

g. Strengthening of Defensive Area. Strengthening and improving the defensive area continues as long as time and enemy actions permit. This includes improving positions of individuals and crew-served weapons, reconnaissance and improvement of counterattack routes, maximum use of natural and artificial obstacles, and installing protective and defensive minefields. Obstacles and minefields must not restrict the movement of the defending force, particularly in counterattacks.

h. Flexibility. Defense by armor units is flexible. It includes the ability to shift and to regroup units rapidly, to counterattack in any direction, and to shift massed fires to meet any attack. Plans include the selection of supplementary positions for units in the forward defensive area. Counterattack plans are made to cover possible penetrations of the defended area along logical avenues of approach. In the execution of these plans, the commander often must alter them as the situation dictates to take the fullest advantage of the opportunities which may develop.

i. Maximum Use of Offensive Action. The characteristics of armor units are essentially offensive in nature. In any defensive situation, these characteristics must be exploited at every opportunity by moving rapidly from the defensive to the offensive. In fluid situations on the atomic battlefield, there will be many opportunities to regain the initiative by offensive action. Destruction of the attacker's forces by atomic-supported counterattacks will be a frequent occurrence.

j. Maximum Dispersion Against Atomic Attack Consistent With the Mission. The degree of dispersion of units required in atomic warfare is one of the more serious considerations of the defender. This dispersion applies to both administrative and tactical units and is but one method for minimizing the effects of enemy atomic attacks. The dispersion within battalion-size unit formations and areas may not vary from nonatomic dispersion. Atomic dispersion will be taken between battalion-size units and separate installations, so long

as it does not preclude the accomplishment of the mission. The exact amount of atomic dispersion to be taken will be determined by a consideration of the mission and situation.

351. Basic Types of Defense

There are two basic types of defense, the *mobile defense* and the *position defense.*

a. The *mobile defense* employs a combination of offensive, defensive, and delaying actions, with the success of the defense depending upon offensive action. The primary objective of the mobile defense is the destruction of the attacking force. In the mobile defense, minimum forces detect the enemy and canalize him into preselected killing grounds, where the striking force attacks and destroys him. The mobile defense is primarily oriented toward the enemy, and is designed to cause his destruction in front of or within the defensive area. The holding of terrain is less critical in the mobile defense than in position defense.

b. In *position defense*, the efforts of the defending force are directed toward stopping the enemy at a preselected line of defense. The reserve is used to add depth, to block, or to restore the position by counterattack. The position defense is oriented toward holding ground rather than toward destroying the enemy.

352. Combinations of the Basic Types of Defense

a. There are many variations of both the mobile defense (pars. 367–378) and position defense (pars. 379–388). The two types lie at the opposite ends of a scale with a wide range of variations between (fig. 102). Commanders of armor units engaged in defensive operations must realize that to follow rigid patterns of thinking, or to adopt routine or habitual organization of the ground in all situations, may bring about the destruction of the command and failure in the mission. It is essential that small armor unit commanders understand and apply the fundamentals of the two basic types of defense prior to their application in combination.

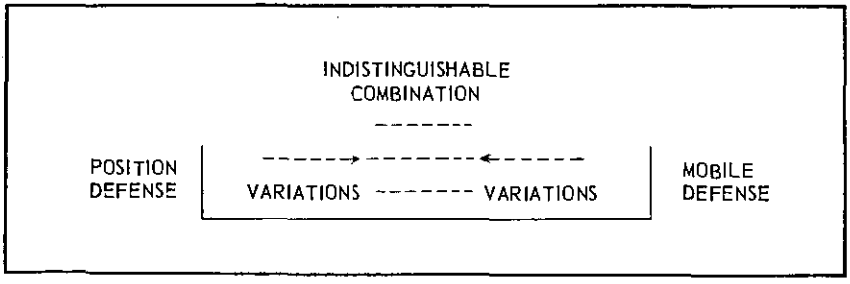


Figure 102. Types and variations of defense.

b. The primary difference between the two types of defense is in the concept of the commander as to the manner in which the forces are disposed, and the size and intended use of the reserve or striking force. Figure 103 illustrates these differences.

(1) The compact variation of position defense (A, fig. 103) is characterized by mutual support between elements on the forward edge of the battle area (FEBA), with the battle area being strongly held. The reserve is considerably smaller than that employed in mobile defense and is primarily employed to restore positions on the FEBA if these positions are overrun. It may also be employed to block penetrations of the FEBA. Under atomic conditions, this type of defense will seldom be adopted, because of its excessive vulnerability to atomic attack.

(2) The extended variation of position defense (B, fig. 103) is characterized by increased distances between elements on the FEBA, strong firepower forward, and adequate reserves. Because forces occupying the FEBA cannot provide mutual fire support, there must be increased surveillance between these forces, and carefully planned and coordinated fires to cover the areas between these forces. The reserve in this type defense may be somewhat larger than in the compact position defense; it is normally disposed linearly behind the forces occupying the FEBA in order to facilitate rapid employment at any threatened portion of the unit sector. The mission of the reserve is essentially the same as in the compact position defense, with increased emphasis being placed on counterattack to restore the FEBA.

(3) At the opposite end of the scale from compact position defense is the extreme mobile defense (E, fig. 103). It is characterized by only a thin line of outposts along the FEBA; practically all of the available forces are assembled behind this outpost line, prepared to fix and strike enemy forces penetrating the outpost line. This form of mobile defense is visualized as a most fluid type operation conducted in open terrain against a large, mobile enemy force. In this case, the disposition of forces is such as to permit, but to control and destroy by counterattack, a penetration by the enemy.

(4) A variation of the mobile defense (D, fig. 103) is characterized by initially placing more forces along the FEBA to accomplish the task of detecting the enemy and canalizing him into a killing ground where the striking force, the bulk of the command, destroys him. In all variations of the mobile defense, minimum forces are used to canalize the enemy

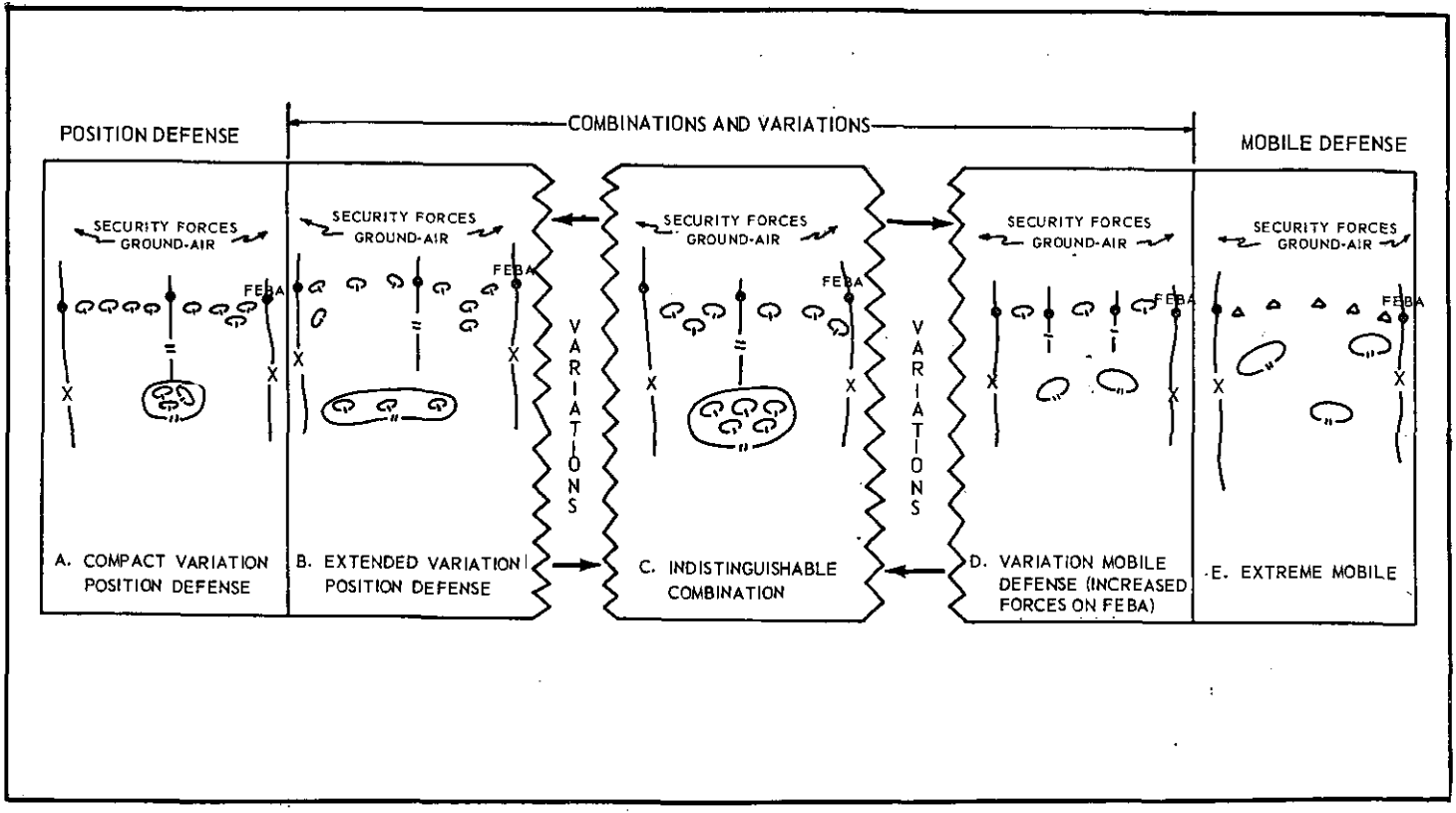


Figure 103. Variations of defense.

into preselected killing grounds, with emphasis being placed on the destruction of the enemy through counterattack rather than holding ground along a preselected line.

(5) Sometimes mobile and position defense techniques are employed in equal or almost equal ratio (C, fig. 103); the combination is indistinguishable as either type. The reserve or striking force is heavy, but may or may not contain the bulk of the forces of the command. The scheme of defense, for example, may call for an additional position-type defense by elements along the FEBA, followed by maneuver to canalize the enemy, as the situation develops, into killing grounds within the battle area. In such a case, the initial disposition of forces does not indicate a clear-cut mobile or position defense; the actual conduct of the operation involves use of the techniques of both types.

c. Armor units, in order to fully exploit their inherent characteristics, normally operate in the mobile defense portion of the scale (fig. 103).

d. Still another variation of the two basic types of defense is the perimeter defense (pars. 389–392). It may be accomplished by using the techniques of mobile or position defense, or a combination of the two. A perimeter defense, which is organized to meet an enemy attack from any direction, is normally used when an armor unit is operating as an independent or semi-independent force. It is directed primarily toward protecting the defending force while it is preparing for some other action.

353. Selection of the Type Defense

a. Selection of the type defense to be used depends on the mission of the defending forces; the composition, relative strength, and combat power of the opposing forces; the nature of the terrain and the weather; the air situation; and disposition and planned employment of all friendly forces by higher headquarters.

b. Mobile defense is the normal and preferred type of defense for armor units. Its adoption is favored when—

(1) The mission permits the battle to be fought in sufficient depth.

(2) Terrain permits relatively free movement by the defending force.

(3) The mobility of the defending forces is equal or superior to the mobility of the attacking force.

(4) The enemy has the capability of employing atomic weapons.

(5) Reserves available at higher echelon are limited.

c. The position defense is less desirable for armor units because it does not make maximum use of the inherent characteristics of armor. It is usually employed when ordered by a higher commander to fit

his overall scheme of defense. It may be selected by armor commanders when the mission or terrain will not permit the maximum use of armor's mobile combat power. Its adoption is favored when—

(1) A specific terrain feature must be held and the terrain and mission favor the position defense.
(2) The terrain restricts the ability of the armor units to maneuver freely and when, similarly, terrain restricts the enemy's room for maneuver and affords natural lines of resistance.
(3) A very narrow front is to be defended in conjunction with adjacent forces conducting the position defense.

d. The perimeter defense is normally employed—

(1) When an armor unit is in the exploitation, and is required to halt pending resupply or for other reasons.
(2) At night for protection in any type of area.
(3) When an armor unit is required to halt temporarily, pending orders to initiate some other action.

Section II. ORGANIZATION OF THE DEFENSE

354. General

In either the mobile or position defense, small armor units may be required to organize the defense of specific terrain in accordance with the overall scheme of defense of the higher commander. In mobile defense, a small armor unit may be required to organize a sector of the forward edge of the battle area (FEBA) or one or more strong points. In the position defense, the unit may be assigned a sector to defend as part of the forces in the battle area. Techniques in organizing the defense of the ground in these cases are basically the same and are discussed in this section. They include the conduct of reconnaissance, planning, organization of the ground, command and control, fire planning, surveillance, and the employment of supporting troops.

355. Reconnaissance for Defensive Action

a. Upon receipt of an order to assume the defensive, the commander makes a map study and formulates tentative plans. As soon as possible, he reconnoiters his assigned sector as completely as time and the situation will permit. While on reconnaissance he determines—

(1) The probable avenues of enemy armor and dismounted approach.
(2) The terrain that is to be occupied by security forces.
(3) Key terrain that is to be occupied and from which forces will operate to deny the area to the enemy.

(4) Natural obstacles forward of and within the area which can be used by the defenders.
(5) Location of possible penetration areas.
(6) Location of striking forces or reserves.
(7) Location of command posts.
(8) Location of trains and logistical support installations.

b. The commander should make an aerial reconnaissance to determine whether the proposed tactical disposition of his forces is sound, and to study the terrain from the enemy's point of view.

356. Planning for Defense

a. Detailed planning is very important in the defense. Normally, the defender has an advantage in that he can select the terrain, has time for organization of the ground, and has the opportunity to improve natural obstacles. Initially, the commander develops a tentative plan from his reconnaissance and issues a warning order. Then a more detailed plan is developed for the organization of the defense. Based upon the commander's scheme of defense, this plan includes—

(1) Organization of the ground.
(2) Command and control.
(3) Fire-support plan.
(4) Security and surveillance plan.
(5) Plans for employment of supporting troops.

b. The logistical plan in support of defensive operations must be flexible enough to permit immediate change to support an offensive operation. Such requirements as alternate supply and evacuation routes, multiple means of resupply and evacuation, the location and employment of the trains, and security of the logistical elements must be thoroughly considered by the commander and his S4 in planning for the defense. See FM 17–50 for a detailed discussion of logistical support in the defense.

357. Priority of Work in Organization of the Ground for Defense

In the defense, measures for increasing the effects of fire and movement take precedence over all other work. The goal is to insure that accurate fire can be delivered on the attacker, to render his fires ineffective and to impede his movements while facilitating the movement of defending forces. The normal priority of work is indicated below, although most tasks are accomplished concurrently.

a. Preparation of counterattack routes.
b. Preparation of defensive positions, to include alternate positions.
c. Strengthening the defensive position.
d. Preparation of routes for resupply and evacuation.
e. Establishment of a communication system, with emphasis on warning of enemy approach.

f. Preparation of dummy positions (in accordance with the overall plan of higher headquarters).

358. Preparation of Counterattack Routes

The preparation of counterattack routes receives first priority. A reconnaissance is conducted for each counterattack plan to determine the requirements for improving the route so as to facilitate the movement of forces over the route. This task includes the reconnaissance and improvement of routes to supplementary positions, and the preparation of routes to permit the rapid movement of troops. Normally, engineers will be used to accomplish this mission.

359. Preparation of Defensive Position

a. As soon as possible, the defensive positions are occupied, and units immediately organize the ground for defense. Fields of fire are cleared, tanks are placed in hull defilade, emplacements are dug for crew-served weapons. Foxholes and slit trenches are dug for all personnel where necessary.

b. Armored personnel carriers are integrated into the defense system. If possible, they should be employed in squad areas. Their vehicular machineguns can be assigned sectors of fire to augment the long-range, close-in, and final protective fires of other automatic weapons and dismounted armored infantry. However, because of their high silhouette and vulnerability to certain types of enemy fire, it is usually necessary to place the majority of the armored personnel carriers in defilade to the rear, with provision for moving them, as the situation requires, to previously selected firing positions from which they can augment final protective fires. When in defilade, they can provide flank and rear protection.

c. Range cards are prepared for all weapons. All vehicles, weapons, and emplacements are camouflaged. Every effort is made to deceive the enemy as to the true location of the defensive positions. Once units reach their assigned areas, immediate action is taken to camouflage them against air and ground observation. Movement of individuals and vehicles within the defensive areas should be kept to a minimum.

360. Strengthening the Defensive Position

Strengthening of the defensive area includes the establishment of obstacles and minefields and, when directed, the planned use of chemical weapons. Armor units use protective obstacles and mines to provide close-in protection for the individual strong points. Obstacles are designed to disrupt any assault upon the strong points. Tactical obstacles may be located in areas that are to be denied to the enemy or where he is to be stopped or diverted. Care must be taken in the

establishment of obstacles and minefields to insure that they do not hinder the counterattacking force or restrict the freedom of maneuver of troops in the strong points. Only protective and defensive minefields will be installed. Protective minefields may be installed, upon authority of the battalion commander, to the front and flanks of the strong points to provide security. Time permitting, and upon authority of the combat command commander, defensive minefields may be installed to add strength to each individual strong point. Each minefield must be properly marked and recorded.

361. Use of Chemicals in the Defense

Toxic chemicals may be used to destroy the enemy force as it forms for the attack or to deny critical areas to the enemy. Authority for the use of toxic chemicals must be given by higher headquarters, since higher headquarters must coordinate their employment. Smoke may be employed to neutralize enemy observation and to create confusion in the enemy attacking force by limiting its vision. Smoke may also be used to cover the movements and activities of the defending force.

362. Preparation of Routes for Resupply and Evacuation in Defense

Supply routes are established for each battalion task force. The main supply routes (MSR) must be coordinated with the scheme of defense, to insure that they do not conflict with the maneuver of forces conducting the defense; alternate supply routes may be required. Supply routes should be marked, and measures should be taken to control traffic entering the forward defensive area.

363. Command and Control in Defense

a. General. The defense commander must insure positive control and coordination of the defensive action; however, such control must permit maximum flexibility of employment of the forces conducting the defense and allow freedom of action by subordinate commanders. The commander initiates control and coordination by announcing his concept of the operation and the plan of defense, by insuring adequate communication, and by employing necessary control measures, together with priorities of effort and sequence of action.

b. Control Measures.

(1) Objectives are established for the coordination of each counterattack plan. In addition, routes, lines of departure, and direction of attack are established for each counterattack plan.

(2) Phase lines are used to control the rearward movements of the security force, to establish the general area of the forward

defensive area, to delineate areas for surveillance, and to coordinate the movement of the striking force and reserves.

(3) Boundaries may be used to delineate lateral responsibilities in the forward defensive area. Boundaries normally extend to the front to the limit of organic weapons, and to the rear to include the depth of the strong points or other major elements of the defense.

(4) Limiting points are used in the forward defensive area for the coordination of the fires of adjacent units.

(5) Contact points are designated to insure coordination of units performing surveillance missions, and of units operating observation posts or combat outposts.

c. Communication. Although radio is the primary means of communication for armor units, supplementary means should be established to insure positive communication under all conditions. Based on the type defense to be employed and availability of equipment, one or more of the following supplementary means may be used:

(1) Time permitting, wire communication can be established down to and including companies, and wire should be laid to the observation posts or combat outposts.

(2) Liaison agents, familiar with their unit's scheme of defense, should be sent to higher and adjacent headquarters to coordinate the implementation of attack and counterattack plans.

(3) Pyrotechnics and prearranged visual signals should be used to the maximum. These signals are used for identification of friendly units and to call for lifting and shifting of supporting fires, execution of counterattack plans, and movement to supplementary positions.

(4) Provisions should be made for use of Army aircraft to act as radio relays and to pick up and deliver messages.

(5) Both mounted and dismounted messengers should be used. A messenger service should be established with regular messenger runs to higher and adjacent units. Overlays, reports, and lengthy deferred messages are sent by this method.

364. Fire Planning in Defense

a. Mission. The fires of organic weapons and available fire support are coordinated to—

(1) Bring the enemy under effective fire as early as possible.

(2) Subject the enemy to progressively heavier fire as he approaches the defensive area.

(3) Destroy the enemy by fire if he attacks the strong points.

(4) Support the counterattack and movement of other units to support the scheme of defense.

b. The Fire-Support Plan. The fire-support plan is the coordinated and integrated plan for the employment of all fires, organic and supporting, available to the commander at each echelon. Components of the fire-support plan include detailed plans for fires of automatic weapons, tanks, mortars, and all available fire-support agencies. Planning for the employment of fires is continuous and is as detailed as the situation and the time available permit. Fires are planned on all targets and areas on which a need for fire might exist, to permit prompt and effective delivery of fires under all conditions of visibility. Provision must be made to allow departures from the plans to meet unforeseen situations and to permit prompt attack of targets of opportunity.

(1) Each unit develops plans for employment of its organic weapons. It also makes plans for supporting fires, and the request for these supporting fires is included in the unit fire-support plan which is submitted to the next higher headquarters. Subordinate fire-support plans are incorporated in the next higher echelon's fire-support plan.

(2) Fires are integrated into the plan of defense, with special emphasis on the support of counterattacks and the application of fire and maneuver by all echelons. Planned fires for the defense fall into four categories—long-range fires, close defensive fires, final protective fires, and fires within the defensive area.

c. Long-Range Fires.

(1) Long-range fires are planned to engage the enemy as early as possible to inflict casualties, to delay his advance, and to disrupt his organization. The employment of long-range organic fires must be planned carefully in atomic warfare. Premature use of long-range organic fires might disclose the small armor unit's position as a potential enemy atomic target.

(2) Long-range fires may initially be employed in support of the security force.

(3) As the enemy advances, personnel of the observation posts and combat outposts adjust long-range fires on him as soon as they observe him.

(4) As the enemy continues his advance and comes within range of additional weapons, he is brought under an increasingly heavy volume of fire.

(5) Long-range fires should also support counterattacks conducted in front of the forward edge of the battle area (FEBA).

d. Close Defensive Fires. Close defensive fires are planned to disorganize the attacking force, before it can assault a strong point,

by inflicting the greatest possible number of casualties; by disrupting command, control, and communication; by denying observation; and by neutralizing its supporting fires. Close defensive fires must support counterattacks which are made immediately in front of the strong points.

e. Final Protective Fires. Final protective fires, designed to break up an enemy assault, are planned for all strong points in the forward defensive area. Such fires normally consist of individual and automatic weapons firing on a final protective line, coordinated with mortar and artillery barrages. Tanks within the strong points fire at targets of opportunity.

f. Fires Within the Forward Defensive Area. Fires within the position are planned to limit possible penetrations of the strong points and to assist in the canalization of the enemy into preselected killing grounds. Fires are planned to seal off the penetrating force and to prevent movement of reinforcements. Plans should be made for fires of adjacent units to support the penetrated units by firing on the flanks and rear of the penetration force. Fires within the position should support the counterattack plans developed by the defending force. In addition, fires should be planned to cover the intervals between strong points.

g. Air Support. If available, close air support is integrated into the fire-support plan. If possible, ground alert or air alert aircraft should be provided to engage targets of opportunity. Preplanned on-call missions should be planned on locations where enemy troop concentrations are likely to occur during the conduct of an enemy attack. Preplanned missions should be requested to support counterattack plans; these preplanned missions should seal off enemy forces that have penetrated the defense. This will help to insure that the enemy does not reinforce these forces.

h. Atomic Weapons Support. Atomic weapons are employed by higher headquarters in support of the overall scheme of defense. Tactical atomic weapons are employed in two general ways—on likely enemy attack positions, and on targets of opportunity which may be created by the actions of the defending force. The successful employment of atomic weapons is primarily based upon timely information provided by aggressive and continuous target acquisition.

365. Security and Surveillance in Defense

a. It is important that the intervals between units, and the rear areas, be secured against infiltration, guerilla action, or airborne attacks. Based upon plans of higher headquarters, the commander develops a detailed plan for the employment of all available means in providing adequate surveillance of the defensive area (fig. 104). Elements of the defense are directed to patrol and observe designated

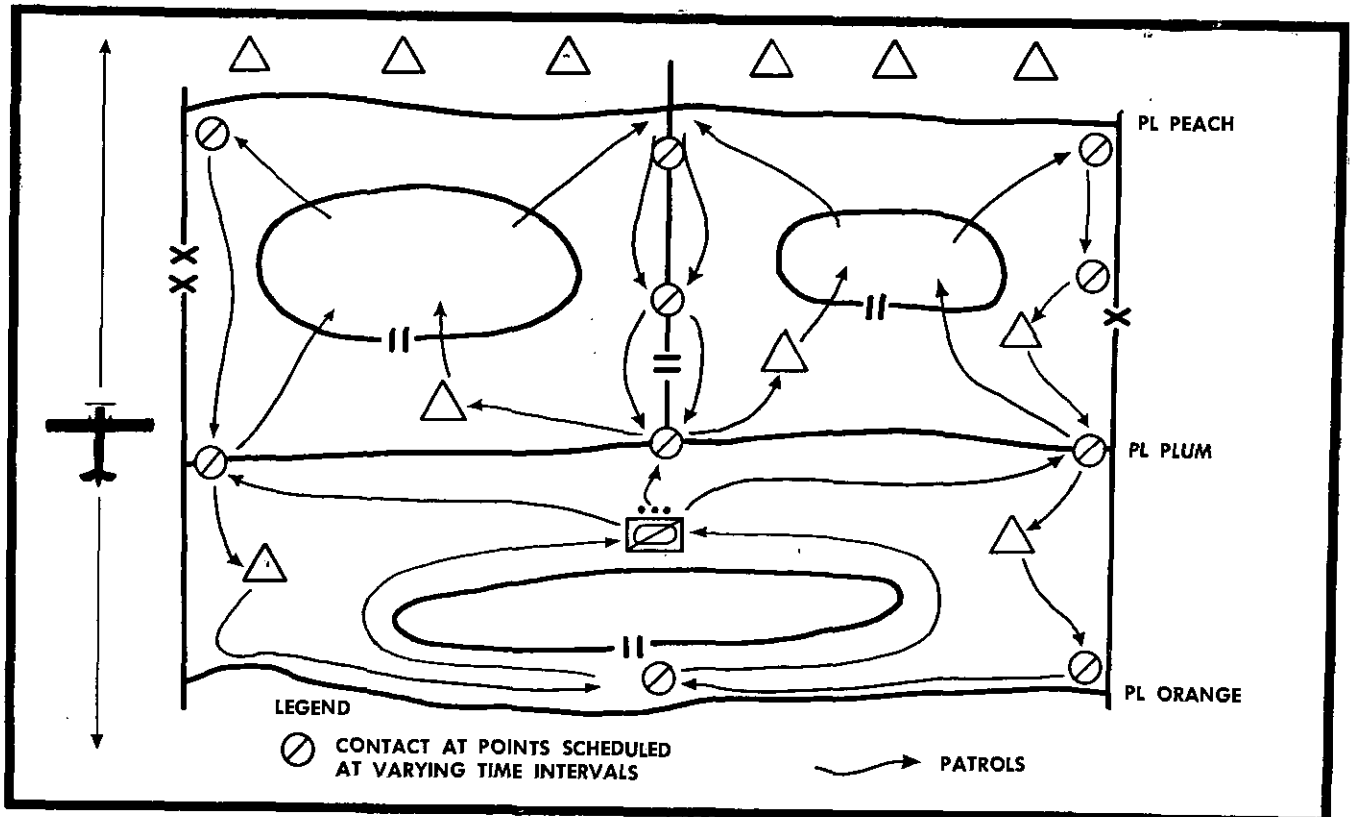


Figure 104. Example of surveillance plan.

areas. Surveillance measures can be augmented by the employment of Army aviation.

b. Surveillance plans normally are prepared by battalions and larger units. Company-size units normally are required to provide patrols and observation posts to augment the battalion's surveillance plan. Definite areas for surveillance are established for battalions. These areas are usually defined by lateral boundaries, and by the use of phase lines to delineate the forward and rear limits of the area. Contact points are established for coordination between adjacent units. Time of contact at each contact point is established in the surveillance plan or covered by the unit SOP. The surveillance plans of subordinate units are incorporated into the overall surveillance plan of each major unit. Surveillance plans must provide for destruction of any infiltrator groups detected. In this connection, the higher commander must be kept constantly informed of any build-up of infiltrators and what action is being taken to reduce the threat.

c. Armored cavalry units are ideally organized and equipped to perform surveillance missions and normally are assigned this task when not employed on other security missions. Troops of the armored cavalry squadron may be attached to combat commands in the forward defensive area if required.

366. Combat Support Units in Defense

a. Artillery.

(1) The massed fires of supporting artillery are essential to the success of the defense. Every effort is made to meet the main enemy attack with massed artillery fires. If the frontage is so great that artillery fires cannot be massed across the entire front, plans must be developed for concentrating fires on likely avenues of enemy approach and on areas to be denied to the enemy.

(2) Light artillery normally is placed in direct support of a combat command conducting a defense. Direct-support artillery units are usually located within the combat command area of responsibility. Artillery liaison officers are provided to battalions, with forward observers being provided to each company-size combat unit.

(3) Fires of general-support artillery may be made available by request through direct-support artillery channels.

(4) Artillery elements normally are attached to the security force during the initial conduct of the defense. When the security force is forced to withdraw, the artillery withdraws to preselected positions to support the defensive action.

b. Engineers. In the position defense, the engineer effort is centralized at the highest practical echelon; the engineer effort may be

centralized at division, or elements of the engineer battalion may support the combat commands. In the mobile defense, engineers may be attached to battalions in the forward defensive area (par. 367*b*), primarily because of the increased distances involved. The priority of engineer effort should be placed on the preparation of obstacles, which can be covered by fire, in front of battalion strong points on principal avenues of enemy approach.

c. Army Aviation. Army aviation is used to augment the ground reconnaissance and security effort. Initially, maximum air support is provided to the security force. After the security force has withdrawn through the forward defensive area, Army aircraft may be used to provide surveillance of the flanks and the areas between strong points. Army aircraft may also be used to assist the movement of forces in the counterattack, or other movements required to support the scheme of defense. Cargo helicopters and airplanes may be used for limited resupply and evacuation of casualties.

Section III. MOBILE DEFENSE

367. General

a. The mobile defense is the type of defensive action which makes maximum use of the mobile combat power of armor units. Mobile defense is an active defense that employs offensive and delaying action as well as defensive measures. This type of defense reduces vulnerability to attack by atomic weapons and offers greater opportunity for freedom of movement on the battlefield.

b. In mobile defense, the forward defensive area is occupied by the minimum forces necessary to warn of impending attack, to canalize the attacker into less favorable terrain, and to block, impede, destroy, or disorganize the attacking force. The bulk of the defending force is employed in offensive action to destroy the enemy at the time and place most favorable to the defenders. This is accomplished by establishing a forward defensive area (or areas) in which critical terrain is denied the enemy and by selecting killing grounds into which the enemy is canalized to be destroyed by the striking force. Offensive action in conjunction with atomic strikes, if available, may be launched during the enemy's approach to the defensive area, during the enemy's build-up for the attack, or when the enemy is in the attack position. Elements of the mobile defense consist of security forces, fixing forces, and striking forces.

c. Accurate and timely information of the enemy must be obtained during his approach toward the defensive area. The situation must be developed by the security force and the fixing force. This is accomplished by actively engaging the enemy. Based upon the informa-

tion obtained by the development of the situation, the striking force is employed at the decisive time and place to destroy the enemy.

368. Distribution of Forces in the Mobile Defense

a. General. The mobile defense is organized to perform three functions—

(1) To provide security for the defending forces.
(2) To fix the enemy.
(3) To strike and destroy the enemy.

In the initial plan, specific forces are assigned to perform these functions; but during the course of battle, the commander may use all or a portion of his forces to assume or assist in the mission of another force.

b. Security Forces. Security forces are employed in the mobile defense to provide early warning of enemy approach, to develop the situation, and to prevent surprise. Security forces consist of a covering force, observation posts, listening posts, and patrols. Additional security forces in the form of tactical air, Army aviation, and special units may be employed to assist the ground security forces. The size and composition of the security force depend upon the width and depth of the defensive zone. The security force must be highly mobile and capable of operating on a wide front; in addition, it must possess the necessary communication facilities for the rapid transmission of warning of enemy approach. Army aviation and electronic and surveillance equipment may be employed to augment the security force.

c. Fixing Forces. The fixing forces are the forces in the forward defensive area. The mission of the fixing forces is to warn of impending attack; to delay, disorganize, and inflict maximum destruction upon the enemy; and to canalize him into a killing ground suitable for attack by the striking force and atomic weapons. Sufficient forces—forces tailored to meet the situation—are given fixing missions so as to insure that the striking force may be employed to deal decisively with the enemy. Fixing forces accomplish their mission by the establishment of observation and listening posts, patrolling, occupation and defense of strong points, offensive action, and delaying action. Strong points are areas covering critical terrain, such as positions dominating avenues of approach into the area, or positions or areas located so as to canalize the attacking force into a killing ground. They may be occupied or unoccupied in accordance with the situation. Forces varying in size from a few tanks and armored infantry to a battalion task force occupy and defend these strong points. Forces assigned to the defense of a strong point or critical area do not always hold their initial position and frequently fight offensive and delaying actions from one position to another. Forces

occupying a strong point may be allowed to become closely engaged in order to force the enemy to mass and present a lucrative atomic target. A fixing force may be required to—

(1) Counterattack forward of the forward edge of the battle area with all or part of its force.

(2) Defend specific critical terrain by employing the techniques of position defense with part of its force, while conducting a counterattack with other portions of its force.

(3) Assume the role of the striking force and conduct a counterattack to the flanks or rear of the enemy.

(4) Become the security force for a larger command by covering the withdrawal of other elements of the mobile defense.

d. Striking Forces. The striking force is organized to destroy the enemy by offensive action in front of, within, or behind the forward defensive area. Maximum combat power consistent with requirements for the fixing force and security force is assigned to this force. This combat power includes maximum fire support, with atomic weapons if available. The striking force prepares counterattack plans for the destruction of the enemy anywhere within its area of responsibility. Killing grounds may be created by enemy action; therefore, the striking force must be prepared to conduct a counterattack wherever the enemy presents a target. Ideally, the striking force is employed following an atomic strike against enemy forces previously canalized into killing grounds. In addition, the striking force must be prepared to assume functions of the fixing force, such as blocking enemy penetrations and canalizing the enemy into preselected killing grounds. The striking force also must be prepared to act as the security force.

e. Small Armor Units. Small armor units may be employed as all or part of the security force, the fixing force, or the striking force. Frequently, when operating independently or semi-independently, small armor units may employ the techniques of mobile defense to deny an area or a critical terrain feature.

369. Organization and Functions of the Security Force, Mobile Defense

a. General. Commanders at all levels establish security forces to guard against surprise and to obtain reaction time against an enemy threat.

b. Covering Force.

(1) The covering force (par. 175) normally operates from 10 to 15 miles in front of the defensive area. The mission of the covering force is to detect the approach of the enemy, to delay and disorganize his advance, and to deceive the enemy as to the location of the main force. The covering force seeks to

destroy the enemy within its capability, employing atomic weapons and other supporting elements.

(2) The tactics employed by the covering force are basically delaying actions. The covering force commander organizes his forces to operate on a broad front with little depth. Early development of the situation is essential; therefore, it is important that the mobile defense commander receive information of the enemy by the most expeditious means available.

(3) The armored cavalry squadron possesses the best organization to accomplish a security force mission. An armored cavalry regiment, or squadrons thereof, may be attached to the division for this mission. An armored cavalry squadron normally is reinforced with a battalion of artillery and a company of engineers. Additional Army aviation flights may be attached for the operation. If additional strength is desired, a company team of tanks and armored infantry may be attached. The organic electronic surveillance equipment of the armored cavalry increases its capability of detecting the enemy approach over a broad front.

(4) If the situation requires, a battalion task force may be assigned a security force mission.

c. Observation Posts.

(1) General. Observation posts are established on dominating terrain to the front of the defending forces. They are generally located from 800 to 2,000 yards in front of the forward edge of the battle area (FEBA). The mission of the observation posts is to provide early warning of the enemy's approach and to adjust long-range supporting fires on the enemy. The minimum number of troops necessary are used to accomplish this mission; however, there should be enough troops to provide personnel for both observation and close-in protection of the observation post. Personnel manning these observation posts should be capable of adjusting supporting artillery and mortar fires. Normally, the locations of observation posts are prescribed by the battalion task force commander and coordinated with adjacent units. The locations also are coordinated with the combat command commander, who insures that the entire front of the fixing force is covered. Observation posts are augmented by patrols and Army observation aircraft. Observation posts should make all preparations which time will allow to permit the use of atomic weapons close to their positions. This should include improvement of personnel shelters, protection of vehicles, and preparation of alternate positions on reverse slopes which

can be occupied just prior to detonation of friendly weapons.

(2) Battalion task force observation posts. The scout platoon, organic to the armor battalion and armored infantry battalion, normally is assigned the mission of manning observation posts. The platoon will accomplish this mission by screening as described in FM 17–35.

(3) Company team observation posts. Situations will exist where company teams are required to establish observation posts under team control. The necessary transportation and communication facilities are provided by the team; available ¼-ton trucks with radios should be used. If none are readily available, armored personnel carriers may be used. Only under extreme circumstances should tanks be used in observation posts. The locations of observation posts should be coordinated with adjacent units, along with the establishment of contact points for patrols and other measures for coordination.

d. Surveillance Forces. Battalion task forces and company teams employ security forces to prevent or detect enemy infiltration and to maintain surveillance over assigned areas (par. 365). This is accomplished by patrols, observation posts, and listening posts.

370. Battalion Task Force as Part of a Fixing Force—General

The battalion task force commander bases his scheme of defense upon the employment of his troops to stop, slow, destroy, and repel and disorganize enemy attacks, and to canalize the enemy into a killing ground suitable for attack by striking forces of higher headquarters. This may be accomplished by offensive or defensive action, or a combination of both. The scheme of defense must take into consideration the use of the battalion task force as a striking force for higher headquarters; this may require an attack in another sector. The scheme of defense should also take into consideration the plan employed by the battalion task force commander to deny critical terrain within his defensive area. The battalion task force commander may elect initially to accomplish his mission utilizing the techniques of mobile defense, which contemplates a series of limited-objective counterattacks to disrupt the enemy's attacks. However, the terrain along the FEBA may restrict his mobility and may require him to employ techniques of position defense by defending certain critical terrain. In addition, he selects strong points in depth on critical terrain which will permit him to move his company teams to switch positions from which fire can be delivered into the flanks of a penetration, from which a penetration can be contained or from which a counterattack can be launched.

371. Organization of the Battalion Task Force Sector as Part of Fixing Force

a. After studying the terrain and reconnoitering the area, the battalion task force commander develops his scheme of defense (fig. 105). His scheme of defense is based upon counterattack plans developed by higher headquarters and the actions required of his units to support the counterattacks. In addition, it includes plans to deny critical areas within his battalion task force sector. These plans include counterattacks by the battalion task force, company team counterattacks, and the selection of strong points that are critical to his scheme of defense. Based upon the battalion task force counterattack plans, the size and number of strong points, and the terrain, the

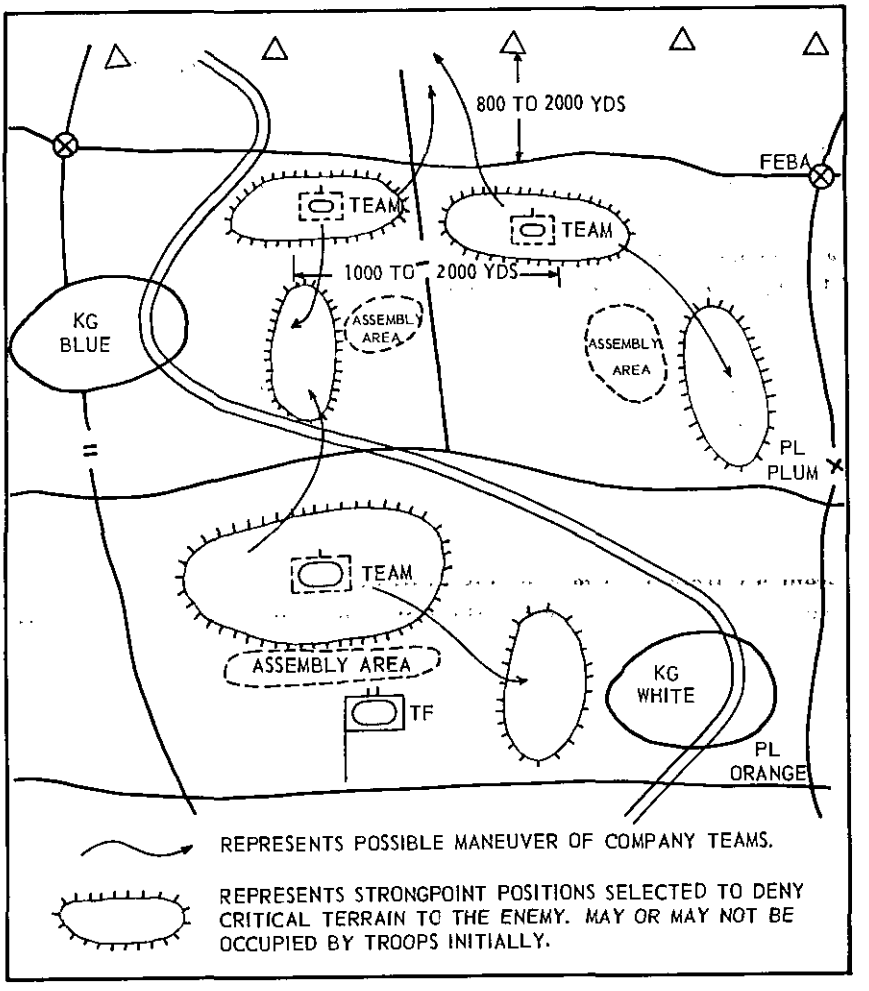


Figure 105. Example of battalion task force organization of defensive sector.

commander determines the tactical disposition and width of sectors for company teams and the composition of each team.

b. The battalion task force commander indicates to his company team commanders the general trace along the forward edge of the battle area (FEBA) to be occupied by the company teams, and designates strong points that each company team will be prepared to occupy on order. In certain situations, the battalion task force commander may order one or more of his company teams to initially occupy a strong point.

c. If the width of the sector and the terrain permit, the battalion task force commander selects a formation which will provide depth to his defensive sector. This is accomplished by placing one or more company teams in depth.

d. The battalion task force commander, in organizing his task force for combat, normally assigns tank-heavy teams in sectors favorable to hostile armor approach, and armored-infantry-heavy teams in sectors to cover likely avenues of dismounted enemy approach. Terrain within the task force sector may favor balanced teams. The battalion mortar platoon is located to provide fire support across the front of the battalion task force sector and at maximum possible range in front of the FEBA.

e. The battalion task force commander next considers the security of his task force during the organization and preparation for the defense. The battalion scout platoon normally is assigned the mission of establishing the observation posts to the front of the forward defensive positions. Communication is established between the observation posts and the forward company teams. If required, patrols and observation posts may be established to the flanks to insure security for the battalion formation.

f. To preserve security during the organization of and preparation for the defense, and to insure that the battalion task force does not present an atomic target, the task force commander may assign company team assembly areas for the initial movement of his teams into the forward defensive area. The assembly areas are normally 1,000 to 2,000 yards apart, well forward in the company team sectors, and are located in defiles where ground masses on the flanks provide maximum protection from atomic weapons. The assembly areas are used as bases from which the company teams organize and prepare assigned strong points and their initial defensive positions. The assembly areas should provide maximum cover and concealment and should permit rapid movement to assigned positions.

g. Counterattack plans are developed concurrently with the organization of strong points and initial defensive dispositions. Battalion task force counterattack plans are made for battalion-size spoiling attacks to the front, counterattacks to the flanks in support of the

striking force, and company team counterattacks required to accomplish the battalion task force commander's scheme of defense of denying the critical terrain within the battalion task force defensive sector. Routes, attack positions (where necessary), lines of departure, and objectives are designated for each counterattack plan.

h. Certain strong points may be used as switch positions from which the enemy can be engaged if penetrations or attacks from certain directions occur. The scheme of defense also includes the use of strong points from which units therein can support by fire, or conduct limited-objective attacks against enemy forces that threaten another strong point.

i. The battalion task force command post is located well to the rear, where it will receive maximum protection by the tactical disposition of the company teams. Communication with each company team is checked. If time permits, wire is laid to each major subordinate unit. Frequently, elements of the division artillery will be located within the battalion task force area. Liaison and communication will be established with such elements, and the location of the artillery units will be coordinated with the dispositions of the company teams. The battalion combat trains are located near the battalion task force command post; all vehicles not essential to the immediate defense are organized into field trains and located with the combat command trains.

j. On occasion, the situation permitting, the battalion task force may be assigned a position in depth within the fixing force. In such a case, the battalion task force may be assigned any one or a combination of the following tasks to support the fixing force commander's scheme of defense:

(1) Deny critical terrain within the forward defensive area.
(2) Cover the withdrawal of forward troops.
(3) Move to switch positions to support counterattacks.
(4) Act as a counterattack force for the fixing force.
(5) Be prepared to join the division striking force in the conduct of a counterattack.

372. Organization of the Company Team Sector in Mobile Defense

a. When the company team commander receives the battalion task force order for defense, he coordinates the team's movement into the initial assembly area. As soon as possible, he initiates a reconnaissance of his area to develop his plan for the defense (fig. 106).

b. The company team commander develops his plan to support the battalion task force scheme of defense. This includes selection of routes, lines of departure, task organization, and initial formations

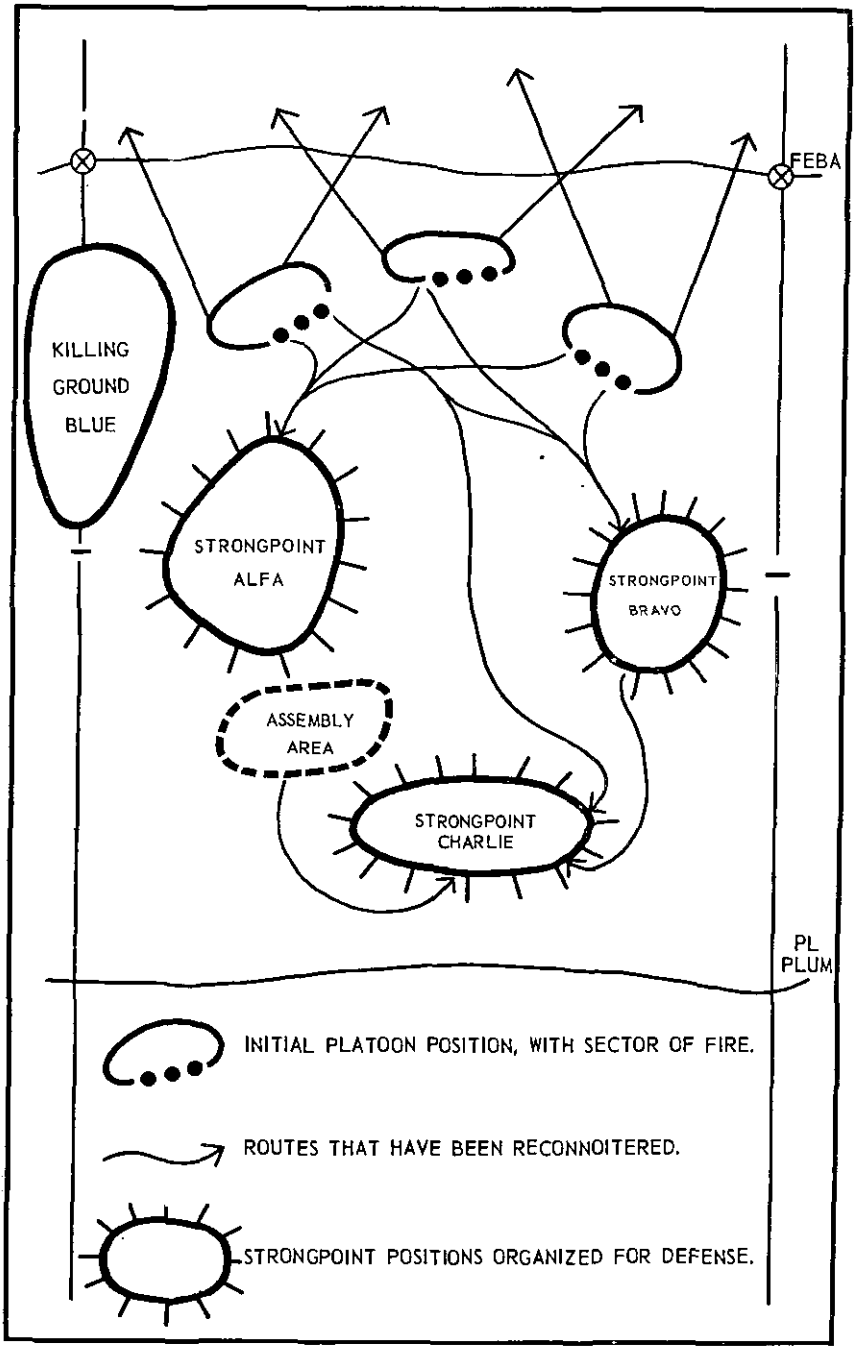


Figure 106. Example of company team organization of defensive sector.

for each counterattack plan and the organization of each strongpoint as required. In addition, the company team commander studies the terrain to determine his scheme of defense of his initial position. This may include limited counterattack, occupation of defensive positions to defend the FEBA, and delaying back to strongpoints selected by the battalion task force commander. Each route is reconnoitered by key personnel, and movements are rehearsed if time permits.

c. Positions for platoons are selected in each defensive position to provide long-range fires and to ensure that they are mutually supporting by fire. Tanks are located to provide long-range fires; armored infantry are located to provide protection for the tanks and to cover likely avenues of dismounted enemy approach. Security sentinels are located to the front and flanks to provide local security. Routes to switch positions are reconnoitered, and the task organization for the occupation of each strongpoint in the sector is determined.

d. The fire-support plan is developed, and range cards are made for tanks and weapons for all positions. Overlays are made, and submitted to the battalion task force commander, showing the organization and planned fire for the initial position and for each strongpoint within the company team sector.

e. Strongpoints normally are selected on critical terrain, and this critical terrain will most likely draw atomic or conventional fire. When possible, the company team commander should not place the bulk of his forces in the strongpoints until the enemy has advanced to a point where an atomic weapon placed upon the strongpoint would also endanger the attacking force. The bulk of the company team may be located in the company team assembly area or other covered position that will permit rapid movement in the accomplishment of the mission.

f. The company team commander, in organizing the ground, uses the techniques discussed in paragraphs 354 through 366.

g. The company team command post and trains are located where they will receive protection by the tactical disposition of the platoons.

373. Battalion Task Force as a Striking Force or as Part of a Larger Striking Force

a. General. The striking force normally should be tank-heavy, although its exact composition will depend upon the requirements of the fixing forces and the nature of the terrain. Striking forces are located in dispersed positions, but are capable of moving rapidly to strike when the enemy is canalized into the preselected killing grounds or into killing grounds developed by his attack. The units in the striking force initially organize blocking positions on a road net that permits rapid movement within the defensive area.

b. Battalion Task Force as Part of the Division's Striking Force. A battalion task force normally is part of the division's striking force and is employed under a combat command. The combat command commander will develop the striking force's counterattack plans and, based upon the scheme of defense, develop task organizations for each battalion task force within the striking force. In this connection, these plans are coordinated with the scheme of defense of elements comprising the fixing force, including their counterattack plans. The counterattack plans include routes, lines of departure, and objectives to support each counterattack plan (fig. 107). Based upon the combat command counterattack plan, the battalion task force commander develops the battalion task force counterattack plans. The battalion task force commander and key personnel conduct reconnaissance and rehearse each counterattack plan if possible. The battalion task force units are located to facilitate rapid employment, on blocking positions which can be defended in case of deep penetration by the enemy. The battalion task force commander takes active steps to preserve secrecy as to the location of his unit by emphasizing camouflage and concealment and by keeping movement of vehicles to the minimum. The battalion task force is prepared to move at a moment's notice, and normally receives a mission-type order to initiate a given counterattack plan. In selection of attack positions, effects of friendly atomic fires on the area (e. g., blowdown) should be considered.

374. Conduct of the Mobile Defense, General

The success of the mobile defense depends upon timely and accurate information of the enemy, and the ability of forces within the defensive area to move rapidly. Aggressive reconnaissance is conducted to determine the strength, composition, direction, and time of the enemy attack, together with all pertinent information of the area of operation. Security is of vital importance in the mobile defense; units must not be surprised or prematurely engaged. All commanders must take positive action to insure that communication is maintained and that their units are prepared at all times to move rapidly to support the scheme of defense.

375. Actions by the Covering Force in Mobile Defense

a. The covering force initiates aggressive reconnaissance to make and maintain contact with the enemy. It provides early warning of enemy approach, and develops the situation as the enemy advances toward the defended area. Maximum use should be made of available Army aircraft and tactical air force to supplement the early warning effort of the covering force. Communication must be maintained between the covering force and the mobile defense commander.

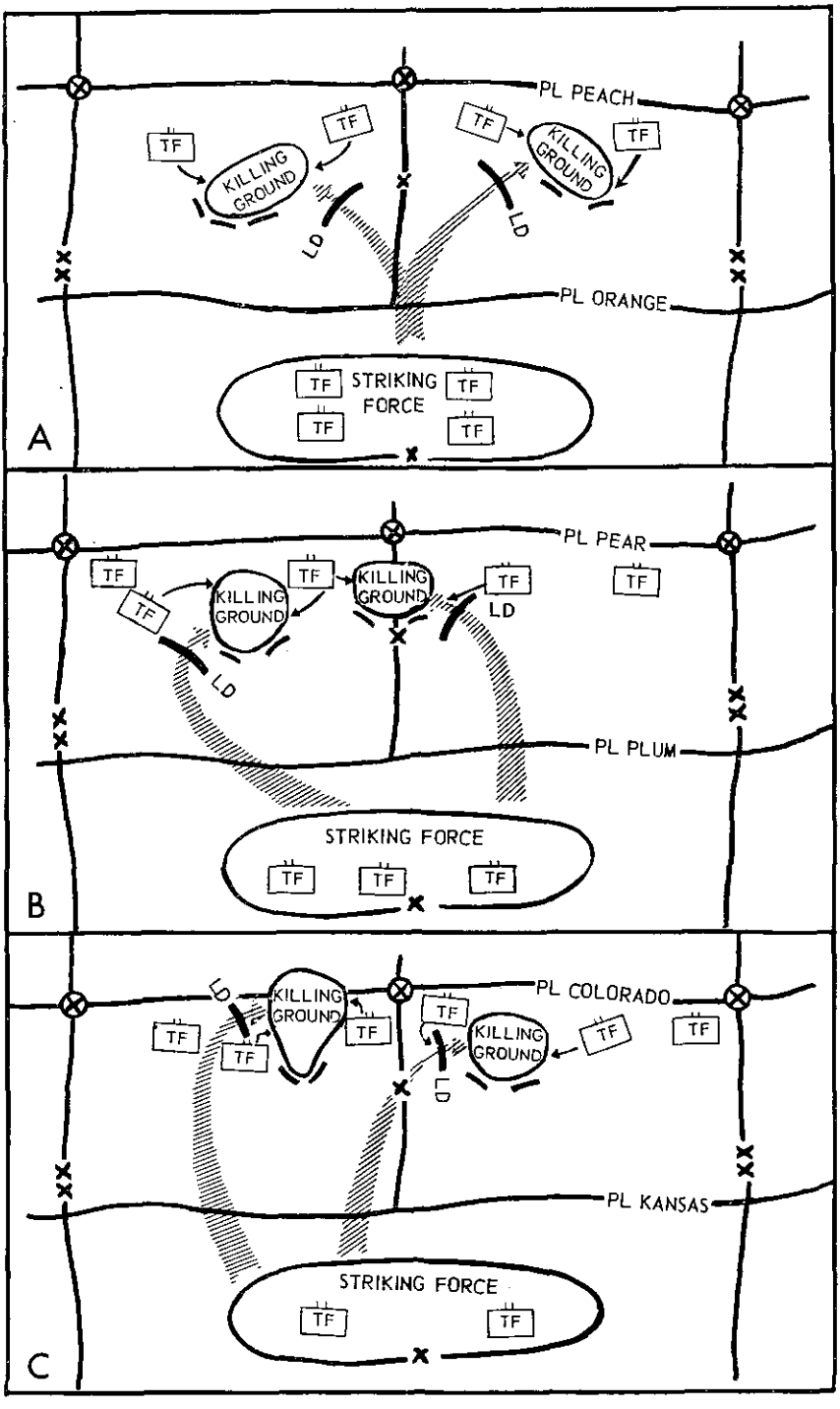


Figure 107. Counterattack plans, striking force.

b. The covering force seeks to destroy enemy forces within its capability. As the enemy increases his strength, the covering force conducts a delaying action, disorganizing the enemy and attempting to deceive him as to the location of the main force. Once it gains contact with the enemy, the covering force maintains this contact until it withdraws through the forward edge of the battle area (FEBA).

c. As the enemy advances, every effort is made to harass his forces, slow their advance, and inflict maximum destruction upon them. This is done by making full use of supporting fires, particularly artillery, close-support tactical air, and engineer demolitions.

d. The covering force must be alert to capitalize on opportunities to employ atomic weapons.

e. The covering force continues to delay and inflict casualties upon the enemy until it passes through the FEBA. Prior to the passage of lines by the covering force, liaison is established to expedite the movement. Upon passage of lines, the covering force moves to conduct another mission or to a preselected position (fig. 108).

376. Actions by Battalion Task Force as Part of Fixing Force

a. As early as possible, depending upon the development of the situation by the covering force and actions of the enemy attacking force, the combat command commander will indicate to the battalion task force commander the primary plan of defense to be conducted by the combat command. This plan may be any or a combination of the following:

(1) Counterattack to the front to destroy the advancing elements of the attacking enemy.

(2) Stop and fix the enemy in front of the FEBA for a counterattack by the division striking force.

(3) Have one battalion task force stop and fix the enemy in front of the FEBA for a counterattack by one or more battalion task forces of the combat command.

b. If the scheme of defense is a counterattack by the combat command, the combat command commander will indicate the counterattack plan to be executed or develop a conterattack plan based upon the enemy's action. The battalion task force commander ensures that his companies remain highly mobile and are prepared to execute the counterattack.

c. If the scheme of defense is to stop and fix the enemy in front of the FEBA, the task force commander initiates his scheme of defense to accomplish this mission. One or more company teams may be ordered to defend critical terrain while others conduct a limited-objective attack, or the scheme of defense may require the battalion task force to conduct a position defense on critical terrain.

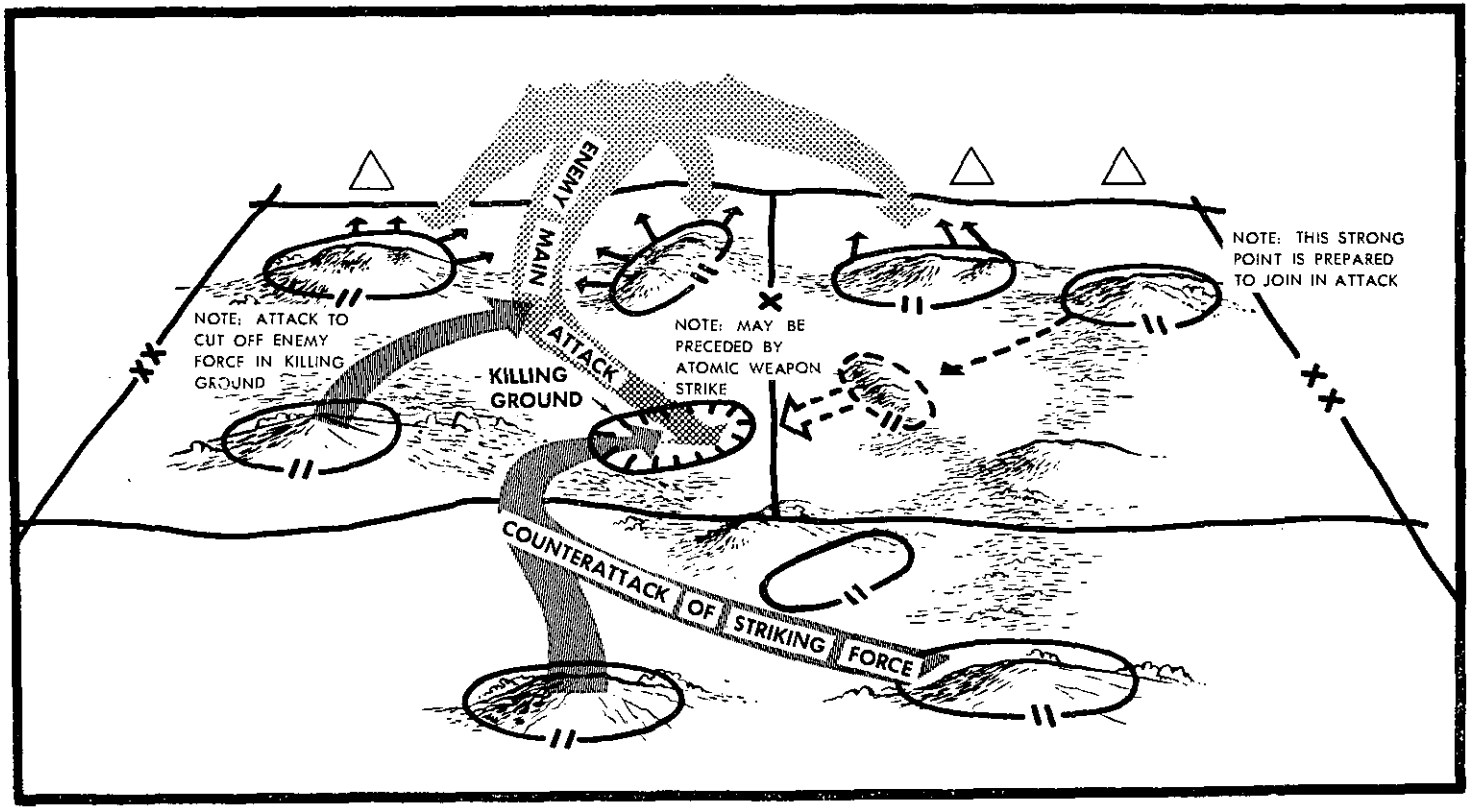


Figure 108. Example, conduct of mobile defense.

d. The observation posts adjust long-range supporting fires on the enemy to slow or stop his attack. Army aircraft are used to locate enemy reserves behind the initial attacking formation and to seek targets of opportunity for artillery and atomic weapons. When forced by enemy action, individual observation posts withdraw through the FEBA to assume new missions.

e. As the enemy attacking force comes within effective range of the defending forces, supporting fires are delivered against the enemy to inflict maximum casualties. As contact is gained, the battalion task force commander initiates actions to stop, destroy, repel, and disorganize the enemy and to divert him toward a preselected killing ground. The enemy is kept under relentless pressure and is given no opportunity to establish himself in the battalion task force area. Every effort is made to disorganize the enemy attack formation, to separate elements of his attacking force, and to upset his plan of attack.

f. When a main enemy attack is directed against the battalion task force sector, the commander seeks to retain his mobility in order to shift his firepower to the critical area. If certain strong points are in danger of being overrun, he may order forces on these strong points to occupy switch positions. Company teams may be ordered to support strong points that are under heavy enemy attack. This may be accomplished by a limited-objective counterattack, supporting fire, or actual reinforcement of the forces on the strong points.

g. As the main attack increases in strength and the initial company team positions are in danger of being defeated, the battalion task force commander may be forced to conduct a delaying action, utilizing the switch position selected in depth.

h. In the conduct of his mission, the task force commander must keep the combat command commander informed of the situation in his area and of his anticipated action. It is through this information that the combat command commander employs his striking forces and the situation is developed for the employment of the division striking force.

377. Conduct of Company Teams as Part of the Fixing Force

a. The actions described in paragraph 376 are generally applicable to the company teams. Within their area of responsibility, the company teams may resist the advance of the enemy by counterattack, defense of critical terrain, or delay of the enemy.

b. Depending upon the advance of the enemy, particularly when contact becomes imminent, the company team commander insures that his team is highly mobile and is prepared to immediately execute the announced scheme of defense.

c. If the scheme of defense requires a counterattack, it is conducted in the same manner as an attack (ch. 8). The necessary coordination is effected, the attack formation is announced, and the company team executes the plan as ordered.

d. If the scheme of defense requires the occupation of one or more strong points, the company team commander executes this plan by moving his forces to previously prepared positions within his sector.

e. Prior to the passage of the covering force through the company team's forward position, liaison is normally established by the covering force. The company team commander assists in expediting the passage of the covering force.

f. When enemy action forces the observation posts in front of the company team sector through his front lines, the company team commander orders his units to open fire at the maximum effective range of weapons, and calls for supporting fires upon the enemy. Every effort is made to stop and disrupt the enemy's attack.

g. As the enemy attack develops, the company team commander must be prepared to move to switch positions, conduct limited-objective counterattacks to relieve pressure on other strong points, or move to a position from which the company team can support by fire.

h. Situations will exist when it is necessary to hold critical terrain, and when there is a requirement for the company team to conduct a position defense of a strong point. In this situation, the company team conducts the defense as described in paragraphs 379 through 388. Maximum effort is made to stop and disrupt the enemy attack before the enemy can assault the position. If the enemy succeeds in advancing to a position where he can assault, the commander calls for final protective fires and barrages in front of his position.

i. If the battalion task force is receiving the main enemy attack, and terrain is not critical to the defense, the company team commander may be ordered to conduct a delaying action in his sector. He uses the strong points and other terrain features as delaying positions from which he can inflict casualties upon the enemy.

378. Actions of the Striking Force

a. At the decisive time and place, the striking force is employed in a counterattack role to destroy the enemy. If possible, the counterattack is launched before the enemy attack gains momentum. Once the enemy has been canalized into a killing ground and orders have been issued committing the striking force, all available fires are brought to bear on the enemy. An atomic strike may be used initially to destroy enemy forces within the killing ground. Close air support is used to attack enemy concentrations and to prevent reinforcement of the enemy force in the killing ground.

b. The higher commander may order battalion task forces employed as striking forces to conduct a preplanned counterattack when the situation requires. In this situation, the battalion task force uses the route, the line of departure, and the objective previously designated.

c. Frequently it may not be possible to canalize the enemy into the preselected killing ground, but the action, as it develops, may create other killing grounds. The striking force must remain flexible and prepared to execute counterattacks against the enemy in killing grounds which have been created by the enemy action.

d. Upon completion of a successful counterattack, the battalion task force may return to a prearranged location or assume another mission.

e. In the event of a major penetration of the forward defensive area, the battalion task force must be prepared to assume the mission of fixing forces while other elements of the division conduct a counterattack. The battalion task force must also be prepared to conduct a delaying action if the strength of the enemy attack makes such action necessary.

Section IV. POSITION DEFENSE

379. General

a. The position defense, either compact or extended (fig. 103), is used when it is essential to hold terrain beyond which the enemy is not permitted to pass. In position defense, the bulk of the defending force is disposed in selected tactical localities, with the mission of holding its positions and controlling the terrain between them. The reserve is used to add depth, to block, or to restore the battle position by counterattack. Because of the requirements for increased dispersion in atomic warfare, a compact form of position defense will rarely be adopted. The battalion task force is capable of organizing an extended variation of the position defense but is frequently limited by the amount of armored infantry available.

b. The defending forces are oriented on the terrain, and the defensive area is organized into a series of mutually supporting defensive positions at which the enemy is stopped, destroyed, or driven back. Fields of fire are cleared, individual shelters are constructed, emplacements for dismounted weapons and tanks are prepared where necessary, and obstacles covering likely avenues of approach are constructed. Concealment and camouflage tasks are carried out concurrently with construction tasks. A large proportion of the available firepower is placed in the battle area, and a reserve—rarely in excess of one third of the force—is held out initially.

c. Position defense is rarely adopted voluntarily by large armor formations. Small armor units may frequently adopt the techniques of position defense in the perimeter defense, or when assigned the mission of occupying a strong point in the mobile defense.

380. Distribution of Forces in the Position Defense

a. General. In position defense, forces are distributed to accomplish three functions—first, to provide security and to prevent surprise attacks; second, to stop and repel the enemy's attack; and third, to destroy or eject penetrations of the defensive area. To accomplish these functions, three tactical groupings are organized—the security force, forces in the battle area, and the reserve (fig. 109).

b. Security Force. The security force has the mission of detecting the enemy, destroying enemy forces within its capability, delaying and disorganizing the enemy, and deceiving him as to the location of the main force. The security force may consist of a covering force and/or a general outpost, and combat outposts established by front-line battalion task forces.

(1) The covering force normally is provided by higher headquarters. Its organization and functions are the same as those of the security force in the mobile defense (par. 369).

(2) The mission of the general outpost is similar to that of the covering force. It develops the enemy situation and deceives the enemy as to the location of the main defensive force. In addition, it covers the withdrawal of the covering force. When large armor formations are conducting the position defense alone, the general outpost is normally omitted, its mission being performed by the covering force.

(3) The missions of combat outposts are to warn of enemy attack and to provide a counterreconnaissance screen.

c. Forces in the Battle Area. The forces in the battle area are charged with the immediate defense of the forward defensive area. They organize a series of defensive areas; these areas should provide good observation and natural defensive strength. Each defensive area is organized into a number of strong points; forces in these strong points should be mutually supporting by fire, disposed irregularly in width and depth, and organized for their own all-round defense. Defensive areas are distributed in depth so as to provide mutual support, to limit enemy penetrations of forward areas, to diminish the effect of hostile fire, to provide continuity to the defense, and to establish bases from which counterattacks can be launched. Combat outposts are located on the first high ground in front of the forward edge of the battle area (FEBA). The combat outposts have the same functions as observation posts in the mobile defense. Armor units may assign either observation posts or combat outposts in the position defense, as the situation dictates. Their activities are tied in with the activities of Army aircraft on surveillance missions.

d. Reserve. A reserve is used to make counterattacks for the purpose of destroying or rejecting enemy penetrations, or to attack for-

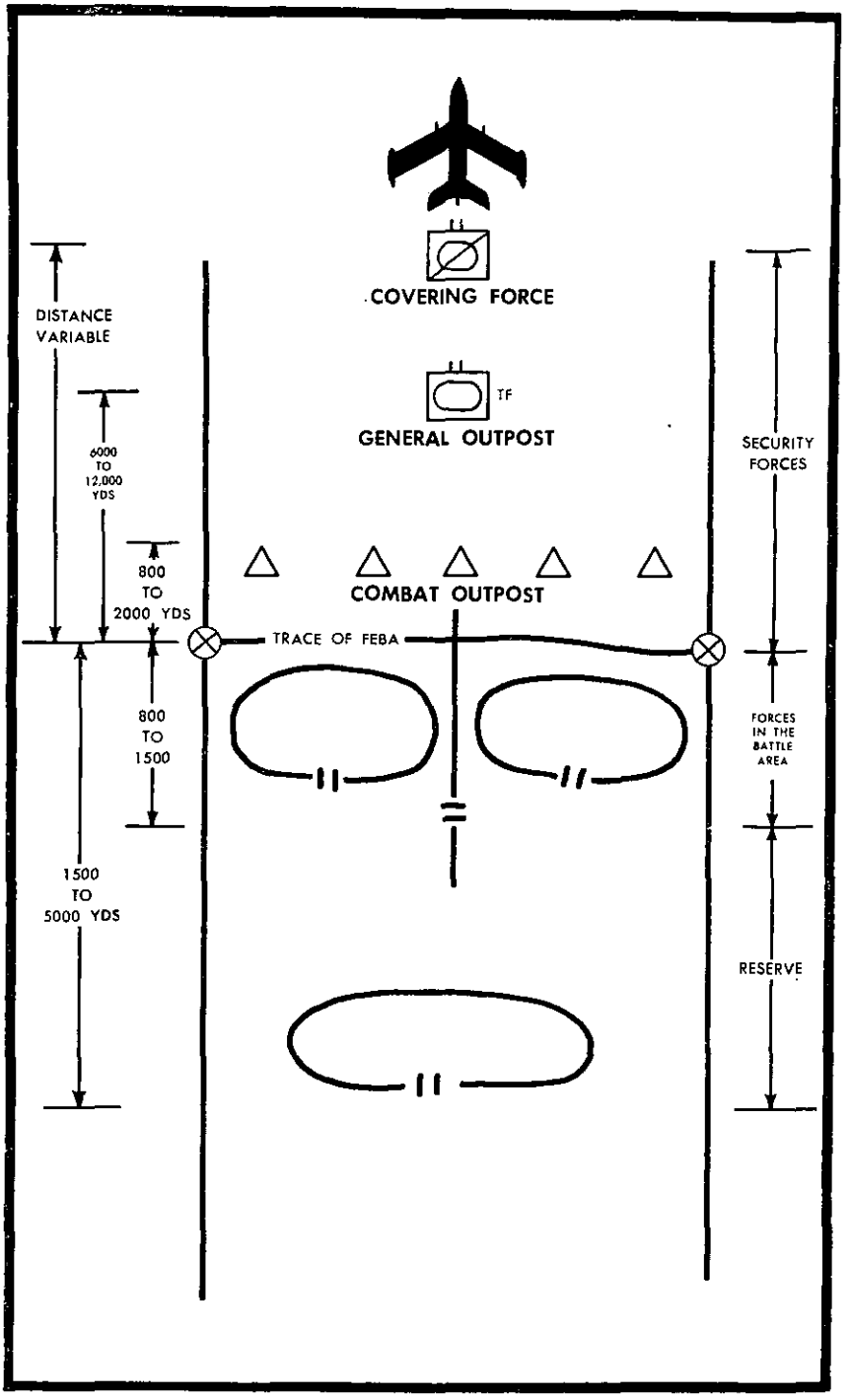


Figure 109. Disposition of forces, position defense.

ward of the FEBA against elements of the attacking force. Reserves may be used to block enemy penetrations and to extend the flanks of the forward defensive area. In addition, they may be employed to occupy a rear position or to reinforce front-line units. Reserves may also be used to combat guerillas or infiltrating units, or to cover a retrograde movement. Plans are prepared for employment of the reserve in all contingencies.

381. Selection of the Battle Area and Reserve Positions

a. The Battle Area. Higher headquarters may designate the battle area by establishing limiting points where the boundaries intersect the FEBA. Nevertheless, the defense commander studies the terrain and selects key terrain features that must be held to provide continuity to the defense.

b. The Reserve Position. The reserve should be located where it can best execute prepared plans for its employment, taking into consideration the probable direction of the enemy's main effort, the terrain, routes of communication, concealment, and the need for security. The characteristics of a good reserve position include—

(1) Accessibility. It should have good routes for rapid movement to the anticipated sectors of employment.
(2) Concealment. It should not be under enemy ground observation, and should offer the best possible concealment from air observation.
(3) Dispersion. It must permit dispersion of units and vehicles.
(4) Firm standing. It must offer standing that permits free movement of all vehicles in the reserve force.

382. Organization and Function of the Security Force, Position Defense

a. Covering Force. The covering force normally operates from 10 to 15 miles in front of the FEBA. The size and composition of the covering force depends upon the amount of time required for the defenders to prepare the defensive positions, and the troops available. Actions of the covering force are essentially the same as those outlined in paragraph 375.

b. General Outpost. The general outpost normally operates 6,000 to 12,000 yards in front of the FEBA. The general outpost usually is provided by the reserves of large armor units (divisions) conducting the defense. The location of the general outpost normally is designated by higher headquarters, and coordinating instructions are issued for contact with adjacent units.

c. Battalion Task Force as General Outpost. A battalion task force may be assigned the mission of general outpost as an inde-

pendent force or as part of a combat command conducting a general outpost mission. The composition of the task force depends upon the factors of METT (mission, enemy, terrain and weather, and troops available). It is organized and disposed to conduct a delaying action across the front assigned, and may have an artillery battalion and a company of engineers attached, and an Army aviation flight in support. The technique employed to accomplish this mission is the same as for a covering force.

383. Organization and Functions of Forces in the Battle Area

a. General. The commander makes a reconnaissance of the terrain to determine the likely avenues of enemy approach, and selects critical terrain that must be held. The commander then designates defensive areas. Boundaries are established between major subordinate units; these boundaries are extended to the front to the limit of supporting weapons, and to the rear to include the subordinate reserve location. The intervals between defensive areas are covered by fire and obstacles. Fires are coordinated between adjacent units by establishing limiting points along the boundaries.

b. Battalion Task Force as Part of the Forces in the Battle Area. The battalion task force commander assigns company-size defensive areas covering the FEBA. If conditions permit, a battalion task force reserve may be designated. Boundary lines are designated between company teams in the forward position, and limiting points are established for the coordination of fires. The terrain in each team sector is studied in determining the task organization for that sector. Tank-heavy teams should be employed to cover avenues of approach which are open and which provide long-range fields of fire, particularly likely avenues of armor approach. Armored-infantry-heavy teams are positioned to cover areas of poor visibility and likely avenues of dismounted approach. Terrain permitting, a tank-heavy team should be assigned as the reserve. The defensive areas should be mutually supporting by fire if the terrain and the width of sector permit. Supplementary positions are designated to the flanks and rear to meet enemy threats from those directions. Supplementary positions are also selected to which the company teams can withdraw if forced from their primary positions. A plan for organization of the ground, a fire-support plan, and a surveillance plan are made (pars. 354–366). The battalion task force establishes a combat outpost on the first high ground in front of the FEBA and within supporting distance thereof. The battalion scout platoon normally is assigned this mission, the platoon may be reinforced if necessary. The reserve team, or elements thereof, may be assigned the combat outpost mission. Communication is established between the outpost and the task force command post. Routes are reconnoitered, and

coordination is effected for the rearward movement of the combat outpost through the front lines.

c. Company Team as Part of the Forces in the Battle Area. Based upon the company team commander's reconnaissance, platoon strong points are selected covering the major avenues of approach. These strong points are positioned to provide mutual fire support. If the width of sector and the terrain permit, the platoon strong points are organized in depth, with the rear platoon considered as a reserve. Tanks are located where they can deliver long-range fire, and armored infantry units are located on positions covering avenues of dismounted approach. Since the platoons are located to provide mutually supporting fires, the armored infantry elements provide the necessary close-in protection for the tanks; the armored infantry must be positioned with this in mind. Boundaries normally are not designated between platoons; however, on occasion, boundaries may be required for coordination. Normally, the company team commander indicates to the platoons their assigned sectors of fire, and the points on the ground where their fires with adjacent platoons will be coordinated. Supplementary positions are designated to meet attacks from the flanks and to contain penetrations. Each platoon prepares primary and alternate positions for its weapons. The organization of the defense is conducted as described in paragraphs 354 through 366 (fig. 110).

384. Organization and Functions of the Reserve

a. General. The reserve is constituted from forces not required to hold the battle area. The reserve is located on, or to protect, critical terrain. It is positioned to block penetrations from the front and flanks. Counterattack plans are developed for possible penetrations by the enemy; in addition, counterattack plans are developed to strike the enemy in front of the FEBA or to the flanks. Objectives, routes, lines of departure, and direction of attack are selected for each counterattack plan. Each counterattack plan is given a code designation. Key personnel should reconnoiter the terrain of each counterattack plan. The reserve also makes plans to reinforce front-line units or to act as a covering force to protect the withdrawal of front-line units. The reserve should be heavy in tanks; however, the exact composition of the reserve is determined after a study of the factors of METT. Depending upon the frontage assigned and the terrain, each unit in the position defense, from the company team through the division, will retain a reserve if possible.

b. Battalion Task Force as Reserve. A battalion task force may be assigned a reserve mission as part of a combat command. The task force commander studies the terrain and selects company team positions that block likely avenues of enemy penetration. After consid-

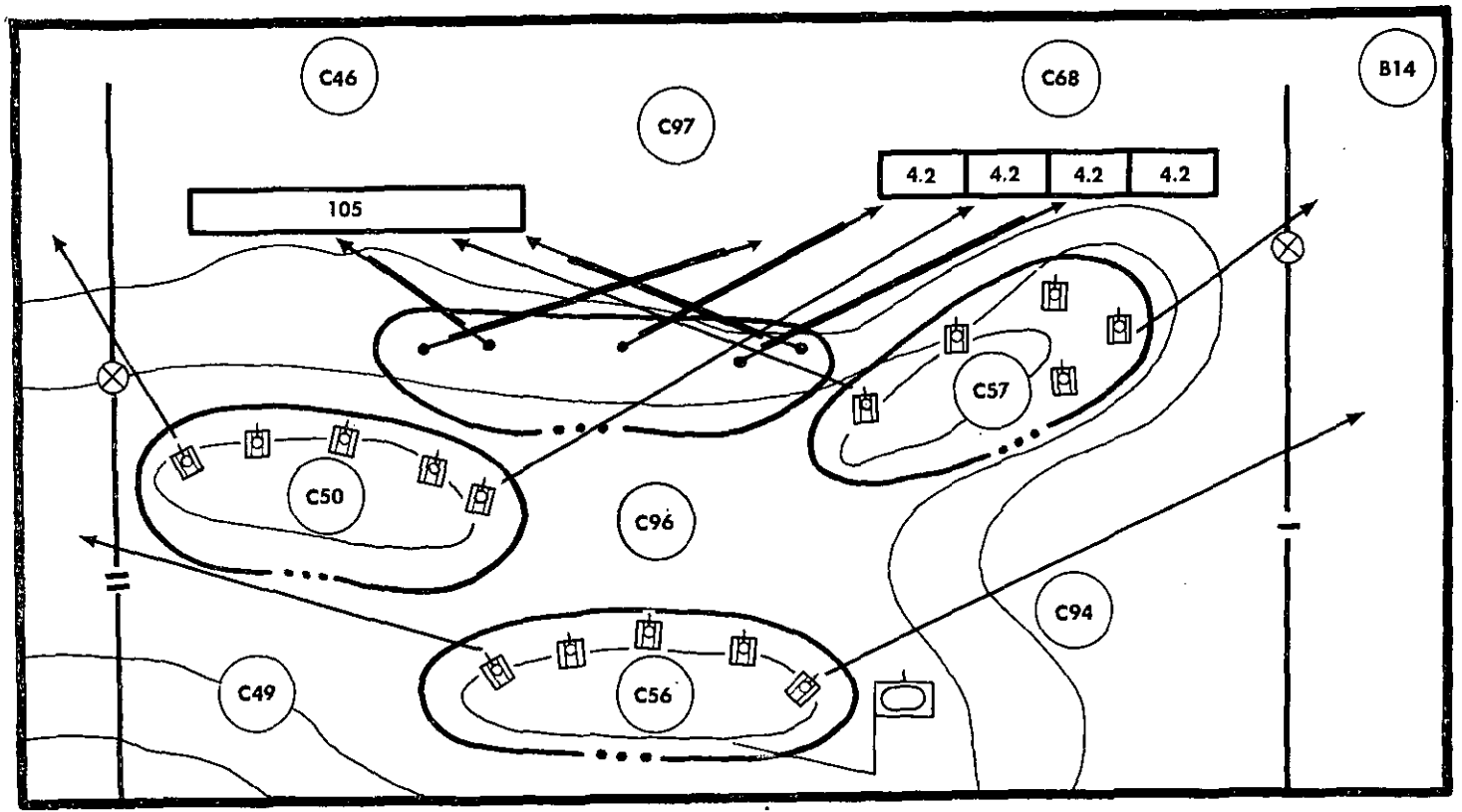


Figure 110. Organization of defense, company team.

eration of the factors of METT, he determines the task organization for each team to occupy these positions. In locating and organizing his forces, he must consider the counterattack plans developed by higher headquarters. Plans are developed for rapid movement to execute these counterattack plans. Supplementary positions are selected to meet enemy threats from the flanks, and each is reconnoitered and organized.

c. Company Team as Reserves. A company team may be assigned a reserve mission as part of a battalion task force. When a team is given such a mission, the task force commander will designate its position. This position provides depth to the task force defensive formation and constitutes a base from which the team may conduct limited counterattacks. The reserve position is organized for all-round defense. Normally the position will permit the team to support forces on the forward strong points by fire. Supplementary positions to the flanks are selected and organized. Plans are developed to carry out or support the counterattack plans of the task force, to reinforce forces on the strong points, and to block enemy penetrations.

385. Conduct of Position Defense, General

The success of the position defense depends upon the solidity of the defense, maximum application of firepower in front of the FEBA, and timely execution of counterattacks to destroy or eject enemy penetrations. The commander conducts the defense aggressively. He maintains continuous surveillance, using Army aircraft and other reconnaissance agencies to locate enemy formations and attack positions and to adjust supporting fires on profitable targets. Once contact has been established, he makes every effort to obtain detailed and timely information about the enemy. He takes advantage of the enemy's errors and failures. The defense progressively disrupts and weakens the enemy from the time he comes within range of the covering force. In the position defense, the armor commander must remain flexible and must not hesitate to employ techniques of the mobile defense in the accomplishment of the mission of position defense (fig. 111). However, the situation may require that certain ground be held regardless of the cost or risk involved; therefore, no commander may ever evacuate his position without approval of his higher commander.

386. Actions of Security Forces in Position Defense

a. Covering Force. The covering force accomplishes its mission in the same manner as the covering force in the mobile defense (par. 375). Frequently the covering force will assume the mission of a general outpost; when it does so, it conducts a delaying action through

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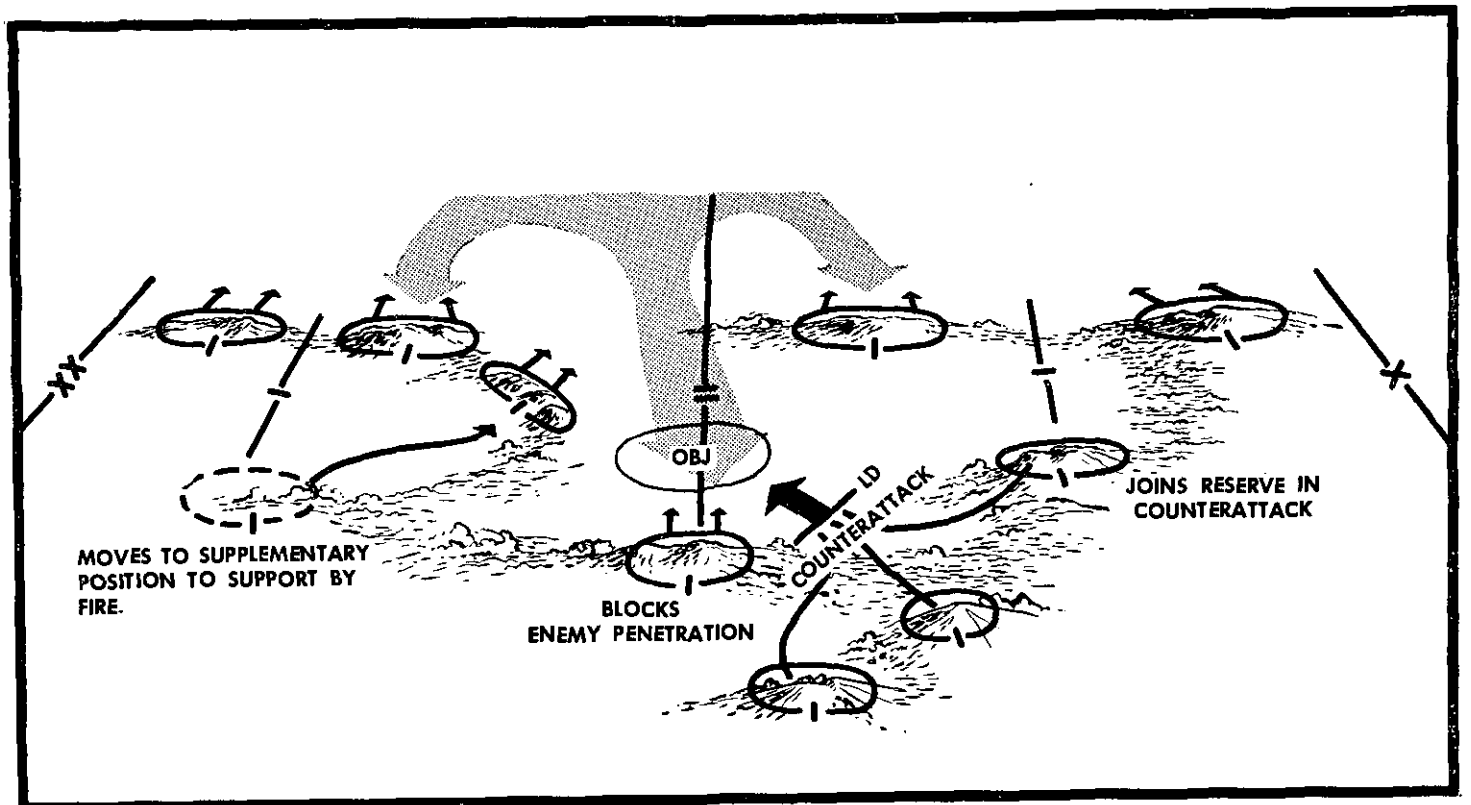

Figure 111. Conduct of the position defense.

the FEBA. The covering force maintains contact with the enemy until it withdraws through the general outpost or the FEBA.

b. General Outpost. When the covering force has withdrawn through the general outpost, the general outpost maintains contact with the enemy. It effects maximum delay on the enemy, adjusting long-range supporting fires to stop the enemy or force his early deployment. It conducts aggressive reconnaissance and reports timely and accurate information of the enemy. As the general outpost is forced back by enemy action, it maintains contact and continues to delay until it reaches the FEBA. After passing through the FEBA, the general outpost moves to preselected positions to assume another mission.

387. Actions of Forces in the Battle Area

a. Combat outposts assume responsibility for maintaining contact with the enemy once the general outpost has withdrawn through their positions. The combat outposts adjust long-range fires upon the enemy and attempt to cause his early deployment. Once the combat outpost has been driven in by the enemy's attack, it moves to preselected locations.

b. Forces in strong points of the battle area engage the enemy at maximum effective range. Initially, long-range fires are delivered on the enemy; as he continues to advance within range of other weapons, the volume of fire is increased. If the attack is not disrupted by the close defensive fires and the enemy prepares to assault the position, final protective fires are delivered. Commanders may reinforce these final protective fires with the fires of additional weapons. Adjacent units may be moved to supplementary positions from which they can deliver additional fires upon the flanks of the enemy.

388. Actions of the Reserve in Position Defense

a. If the enemy penetrates the battle area, the commander uses his reserve or other forces to limit the penetration. Once the penetration has been slowed or stopped, the commander launches a counterattack to destroy forces in the area and to restore the lost ground.

b. All available combat and combat support forces of the defenders may be used to participate in the counterattacks. Plans must be sufficiently flexible to permit the reserves of front-line battalion task forces to participate in the counterattack.

c. Forces in strong points of the battle area which are not heavily engaged may be moved to supplementary positions from which they can deliver fires upon the flanks of the penetration. These forces may conduct limited-objective attacks to seal off the enemy force in the penetration.

d. Once the enemy force has been destroyed or ejected, the reserve may return to its original positions or may occupy and defend the regained ground.

e. The reserve may be used to conduct limited-objective attacks to the front of the FEBA to destroy or disrupt the enemy as he forms for the attack.

f. The reserve may be used to reinforce a threatened strong point in the battle area.

g. If a strong enemy attack penetrates the battle area, and counterattacks are unsuccessful, the reserve may be used to cover the withdrawal of troops in the battle area.

Section V. PERIMETER DEFENSE

389. General

a. The perimeter defense is a variation of mobile or position defense in which units are disposed to meet an attack from any direction. The purpose of the perimeter defense is self-protection; it is normally conducted by armor units acting independently or when separated from friendly forces, as a temporary measure to protect themselves while preparing for some other action.

b. In perimeter defense, it is not absolutely necessary to either hold critical terrain or destroy the enemy force; therefore, the commander is permitted maximum freedom of action. Usually the situation will allow minimum time for reorganization prior to disposition of forces. Similarly, the time element will permit less detailed planning and less preparation of positions by small armor units. Therefore, the techniques of perimeter defense should be included in unit standing operating procedures.

390. Distribution of Forces in the Perimeter Defense

a. General. The functions of forces in the perimeter defense are, in general, the same as for the mobile and position defense. Forces are established to provide early warning of enemy approach; to prevent surprise; to slow, stop, and contain the enemy attacks; and to destroy the enemy force or eject it from the position (fig. 112).

b. Security Forces. Security forces are disposed on the exterior of the perimeter with the mission of preventing surprise by providing early warning of enemy approach. The frontage assigned to the security force is much greater than in the position or mobile defense, and must be covered with the minimum force; therefore the security force will have little depth. Because of the wide frontages, the security force is assigned a screening mission rather than a covering force mission.

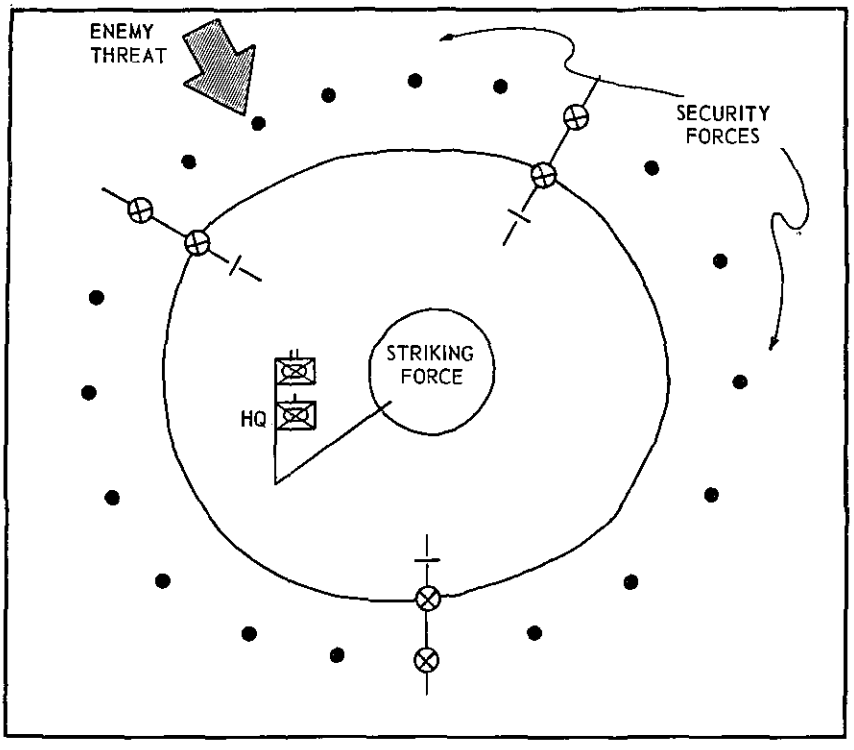

Figure 112. Battalion task force perimeter defense.

c. Strong Points. Forces in strong points are used to slow, stop, and contain the enemy attacking force. Strong points are established on defensible terrain which will provide tactical advantage and from which maximum fire can be delivered upon the enemy. Strong points are established in an irregular pattern on the outer edge of the perimeter.

d. Striking Force. The striking force of the perimeter defense has the same mission as the striking force of the mobile defense and the reserve of the position defense. The striking force must be prepared to attack forward of, within, or to the rear of the strong points. The striking force normally is located near the center of the perimeter and must be prepared to occupy a strong point, to block enemy penetrations, or to cover the withdrawal of forces from a strong point.

391. Organization of the Perimeter Defense

a. General. The commander normally assigns areas of responsibility to the subordinate units by the use of boundaries. He assigns a smaller sector to the subordinate unit oriented toward the most likely direction of enemy attack, and may assign as much as half of the per-

imeter to a subordinate unit that is oriented away from the anticipated direction of enemy attack.

b. Security Force. Each unit assigned a sector of the perimeter defense establishes a security force. The distance at which the security force operates in front of the strong points will depend upon the enemy and terrain. Coordination is effected between units by the designation of limiting points. The scout platoon may be employed intact under battalion control within the security echelon at a point designated by the battalion commander, or it may be attached by section to the companies occupying the perimeter.

c. Strong Points. The minimum force necessary to accomplish the mission of slowing, stopping, and containing the enemy is assigned to the strong points. The intervals between strong points must be secured. Supporting fires are planned to cover the intervals between units. The organization of forces in the strong points is the same as in mobile defense.

d. Striking Force. The striking force should be as strong as possible. Its task organization should produce the maximum combat power and is determined after a consideration of the factors of METT (mission, enemy, terrain and weather, and troops available). Counterattack plans are developed to cover the areas of likely penetration by the enemy. Plans are also developed for the defense of critical terrain in the sector, and for covering the withdrawal of forces from the strong points.

392. Conduct of the Perimeter Defense

During conduct of the perimeter defense, actions by the security force, forces on the strong points, and the striking force are essentially the same as the actions of similar elements as discussed in paragraphs 367 through 388.

Section VI. ADDITIONAL CONSIDERATIONS IN DEFENSE

393. Defense of a River Line—General

The fundamentals of defense of a river line are basically the same as those discussed in paragraph 350. A river line may be defended from either the near or far side, depending on the capabilities of the troops and the plans of the higher commander. Either mobile or position defense may be employed; the mobile defense is best suited for small armor units. A small armor unit seldom is employed alone to defend a river line; when so used, it should be appropriately reinforced. When a battalion task force is assigned the mission of defending a river line, either alone or as part of a larger force, the commander should accomplish the following, regardless of the type of defense employed:

a. Establish reconnaissance patrols along both banks, using the scout platoon and any attached armored cavalry elements. These units should tie in their actions with security elements of any larger command which might be operating across the river. If possible, these elements delay the enemy's approach to the river.

b. Hold back the greater part of the task force in a concealed position.

c. Use engineer units to prepare fords and bridges for destruction, and to demolish those not being used by units operating on the far bank. Routes of approach are prepared to attack positions and to possible objectives. Minefields are installed, and all possible obstacles are constructed. Fire rafts, floating mines, and like items are prepared for use against enemy assault bridges. If no engineers are available, this work must be done by other troops.

d. Insure that all boats, ferries, and other craft along both banks of the river within the assigned sector, except those needed for local security, are located and destroyed. All buildings on the far bank which might furnish the enemy with material for bridge construction are burned or otherwise destroyed.

e. Cover, with security detachments, all bridges and fords that are not destroyed. When the units on the far bank are driven in, these crossings are demolished. A responsible officer is stationed at each crossing. He constantly checks to make sure the prepared demolition charges are ready, and detonates them either on specific orders from higher headquarters or in accordance with prior instructions, which must prescribe exact conditions under which the bridge is to be destroyed by the officer on his own initiative. Units with elements remaining across the river should have representatives at the bridge site to keep the officer in charge informed of their locations.

f. Use reconnaissance elements driven back across the river to reinforce and extend patrols on the near bank. Units that have been cutoff by a rapidly advancing enemy may be withdrawn by helicopter, boat, or armored personnel carriers. They should destroy any vehicles they cannot evacuate.

394. Mobile Defense of *a* River Line

a. Strong points are organized across the entire sector and along the river line, covering the most likely crossing sites. No attempt is made to hold the river line itself in force. Troops manning this strong point system are predominantly armored infantry or armored cavalry, with some tanks for direct support. Their positions are selected to provide good observation and fields of fire over the river. They should change positions at intervals, maintaining dummy installations at their former sites to confuse the enemy. Patrols operating between these strong points must not follow any routine schedule

with which the enemy can become familiar. Forces on strong points should lose no chance to surprise the enemy. Small hostile patrols observed crossing the river may be allowed to land; they then are ambushed and disposed of as quietly as possible. If the enemy attempts to cross in strength, forces on the strong points request artillery support and resist stubbornly in order to make him reveal the direction of his main effort.

b. Particular stress is laid upon striking the hostile forces with a strong counterattack while they are astride the river. The striking force should include most of the tank units available; it is not committed until the location of the enemy's main crossing effort is determined. The striking force counterattacks as in any other defensive operation, moving in swiftly to entrap and destroy those enemy elements which have succeeded in crossing the river. The counterattack must strike before the hostile bridgehead can be expanded sufficiently to protect the crossing site from direct fire and before an effective antitank defense is organized. The first enemy forces to cross probably will include engineers, who will attempt to install hastily minefields around the bridgehead perimeter; artillery air bursts are an effective means of preventing the establisment of such obstacles.

395. Position Defense of a River Line

Armor units seldom will employ position defense to defend a river line. If this type defense is considered appropriate after a consideration of the factors of METT, techniques described in paragraphs 379 through 388 and in FM 7–10 and FM 7–40 will be employed.

396. Use of Tanks in River Line Defense

a. Tanks in Direct-Fire Support of River Line Defense. When tanks are used to occupy strong points on the river line position, they fire on crossing troops. For this mission, tanks are placed in mutually supporting, hull-defilade positions at likely crossing sites. Only the necessary number of tanks should be employed on the river line; the bulk of the tanks should be included in the striking force or reserve.

b. Tanks Acting Alone in River Line Defense. Tank units are seldom employed alone to defend a river line. They should be reinforced with armored infantry, engineers, and artillery whenever possible.

397. Defense of Wooded Areas

a. Defense in woods is, in some respect, similar to defense in towns (par. 401) because of the short fields of fire and limited observation. Small-caliber fires are closely coordinated, antipersonnel mines are used, patrolling is constant, local security groups are used extensively, and routes are prepared for the rapid shifting of reserves.

b. Distances and intervals between individuals and units are reduced. Reserve units are positioned to counterattack infiltrating groups.

c. Those machineguns not in use on the forward edge of the battle area are sited well forward to limit penetrations and to protect the flanks of forward elements. Their crews prepare supplementary positions. Fire lanes are cut, through which bands of machinegun fire are laid down along the front and flanks of organized areas. Mortars are emplaced in openings in the woods, or openings are cut to make firing possible. Where possible, fires are registered before contact. Supporting artillery and mortars cover avenues of approach with concentrations that can be fired without observation. Dug-in tanks may be used effectively if sufficient fields of fire can be cleared.

d. Patrolling is constant to the front and flanks and within the position. Local security groups are equipped with means of rapid communication, including radios, to give immediate warning of hostile advance. Successful defense depends upon vigilance, constant surveillance of hostile movements, close defensive fires, close combat, rapid counterattack, and the mopping up of groups that infiltrate the position.

e. After a consideration of the factors of METT, with particular emphasis on the size and density of the wooded area to be defended, a commander of a small armor unit may establish his battle area in front of, at the forward edge of, within, or in rear of the woods. In making his decision, he should consider the following advantages and disadvantages of these locations:

(1) Defense in front of woods.
  (*a*) The defender escapes fire delivered against the edge of the woods.
  (*b*) Reserves can remain concealed.
  (*c*) The enemy must make separate attacks against the battle area and the woods.
  (*d*) The position facilitates counterattack.
  (*e*) The position facilitates close artillery support.
  (*f*) The defender has little concealment for the forward edge of his battle area.
  (*g*) There are few natural obstacles against mechanized attack.
(2) Defense at forward edge of woods.
  (*a*) Good fields of fire are available.
  (*b*) Effective defensive fires can be delivered.
  (*c*) Reserves can remain concealed.
  (*d*) The battle area becomes a well-defined target.
  (*e*) The movement of reserves in counterattack is restricted.
(3) Defense within woods.
  (*a*) The woods become an obstacle to the attacker.

(*b*) Operation of hostile tanks is difficult.
(*c*) Problems of coordination and control for the attacker are increased.
(*d*) Reserves can remain concealed.
(*e*) Observation and fields of fire are restricted.
(*f*) The movement of reserves in counterattack is restricted.

(4) Defense in rear of woods.
(*a*) The woods become an obstacle to the attacker.
(*b*) The defender is in position to cover exits from the woods with observed and coordinated fire.
(*c*) The attacker can use the woods to conceal his movements, and thereby is in a position to effect surprise.

f. Numerous small reserve units may be placed throughout and closely behind the battle area to repel, by prompt local counterthrusts, any hostile forces that may succeed in passing through the FEBA. Small tank units may be of great value for this purpose if areas for their commitment have been carefully reconnoitered and prepared. In heavy woods, too much reliance cannot be placed on organized counterattacks, because of restricted maneuver room. Lateral routes behind the front must be reconnoitered and improved to permit shifting of counterattack forces and other reserves.

g. Should the enemy succeed in penetrating a battle area in forests or swamps, those units that have not been dislodged must protect their flanks and stand their ground. Forces on individual strong points must provide for all-round defense and must hold their positions until counterattacks by reserves have restored the situation.

398. Defense of a Defile—General

In the defense of a defile, care must be taken to prevent massing of troops and equipment and to protect against air attack and atomic weapons. Basic defense fundamentals are used by armor units when defending a defile.

399. Defense at a Defile

a. Flank of the Defile. The bulk of the defending forces are placed on high ground to the flanks which command the defile. If the terrain permits the movement of tanks to high ground overlooking the defile, they may render effective direct-fire support. If the enemy forces are composed of trained mountain troops, the flanks cannot be considered completely secure.

b. Other Defile Defenses. Artillery fire, demolitions, mines, barriers, and chemical weapons are employed within the defile to delay the enemy advance. While in the defile, the enemy is a lucrative target for air attack and atomic weapons.

400. Defense in Rear of a Defile

a. Characteristics of the Position. Conducting the defense in rear of a defile provides maneuver room for armor units to attack enemy forces coming through the defile. The position may be a series of strong points, arranged in a concave line opening toward the exit and with the flanks resting on obstacles. The distance from the strong points to the defile exit is such that converging fire can be brought upon the attacker before and during his movement from the defile.

b. Action of the Reserve. A tank-heavy reserve is withheld to be used as a mobile striking force. Enemy forces which succeed in emerging from the defile are taken under fire by the strong points, canalized, and then hit by the reserve. Maximum delay and disorganization is effected within and in front of the defile.

401. Defense of a Built-Up Area—General

A built-up area is an obstacle primarily because it canalizes and impedes an attacking force. The use of a built-up area as an obstacle depends on its size, its location, and the protection it offers. Inflammable material gives little protection and may become a hazard to the defender. Buildings of masonry can be developed into well-fortified defensive positions or islands of resistance. A built-up area that can be easily avoided has little defensive value. To be useful it must be located to force the enemy to make a direct attack or a time-consuming maneuver (FM 31–50). Defending armor units should be infantry-heavy in this situation.

402. Selection of Positions in Defense of a Built-Up Area

a. The defense of a built-up area is comparable to the defense of any battle area. The organization of a built-up area is influenced by the characteristics of such an area, which include—

(1) Limited observation for the attacker and the defender.
(2) Reduced fields of fire and reduced effectiveness of indirect fire.
(3) Restricted communication.
(4) Increased cover and concealment for troops and weapons.
(5) Numerous obstacles, which limit maneuver of troops and tanks.

b. A defense completely within a town or city should be organized around key features whose retention preserves the integrity of the defense and permits the defenders to move readily.

c. The forward edge of the battle area (FEBA) is placed well forward in the town. This prevents the enemy from entering the outskirts and massing his troops and direct-fire weapons under that protection. The FEBA must not be along a clearly defined line on

which the attacker can mass supporting fires. When the FEBA is inside the town, all approaches to the built-up area and the edge itself are occupied by security elements. They provide observation, give warning, and adjust supporting fires.

403. Distribution of Troops in Defense of a Built-Up Area

a. Cities and Towns. The frontage and depth assigned to units defending a built-up area are less than normal. An infantry-heavy battalion task force on the FEBA in a city or town might have a frontage of four to eight city block (average block being 200 yards). The amount assigned depends on the defensive strength of the locality. The depth of the defensive area is from three to six city blocks. The FEBA is generally located along streets. Boundaries are placed along streets that are perpendicular to the FEBA. They extend to streets parallel to the FEBA. Each unit is assigned a clearly defined area of responsibility and is organized as a self-sustained unit. These units are mutually supporting and capable of all-round defense. To provide fields of fire, open areas within the town are defended from the near side. Reserves organize positions across the rear part of the assigned area. These add depth to the position and give flank protection.

b. Villages. The FEBA may be outside the village, in which case a normal defensive area is organized. The FEBA may be within the village, if the village offers adequate advantages for defense, in which case the defense resembles that of a town or city. When terrain features dominate the village, they are secured.

404. Use of Organic and Supporting Weapons in Defense of a Built-Up Area

a. Units prepare for speedy movement of supporting weapons to alternate and supplementary positions. Such preparations include cutting passages through buildings. When fields of fire are short within the built-up area, machineguns may be used singly. These weapons are sited to place flanking fire on streets and to provide interlocking bands of fire across the front and flanks of the area. Machineguns assigned close defensive missions are emplaced at or near ground level, covering avenues of approach. Machineguns toward the rear may provide long-range fires from upper stories of well-constructed buildings.

b. If mortars cannot be fired by battery, they can be divided into sections, with one squad in direct support of each front-line company.

c. Tanks cover intersections, barricades, open streets, parks, and other areas along which enemy armor can approach. When enemy armor is not a great threat, tanks may engage targets of opportunity.

In built-up areas, the maneuver of tanks is usually restricted. For that reason, the positions assigned to tanks are unusually important.

405. Fire-Support Plan for Defense of a Built-Up Area

If the FEBA is along a street, the fires of automatic weapons are coordinated on the street. Barricades for machineguns are constructed in entrances to buildings or other places far enough from street intersections to be out of the line of fire directed down the approaches. Concentrations are planned to cover hostile assembly areas and approaches, to limit penetrations, and to support counterattacks. Barrages cover such approaches as streets, open areas, and areas of light construction.

406. Defense at Night and During Periods of Poor Visibility

a. General. The basic fundamentals involved in night defense by armor units are the same as for daylight defense. At night, greater emphasis must be placed on security measures to prevent surprise and on the use of obstacles and prearranged fires to break up an enemy assault.

b. Planning. Plans for defense must provide for actions to be taken against enemy infiltration, guerilla action, and airborne attack. When the mobile defense is being used, infiltration between strong points must be prevented. Strong points must also be prepared for all-round defense. Defensive fires are planned to cover avenues of hostile approach and areas within the defensive area.

c. Security. Timely warning of an enemy attack must be provided by listening posts and patrols. Electronic devices, minefields, obstacles, and illumination are used to give such warning. Infantry must provide close-in security for tanks positioned in forward defensive areas.

407. Conduct of Defense at Night

a. Fire Control. Positive fire control and fire discipline are necessary to prevent premature firing. Predetermined data, such as range cards, may be used. Tanks should be moved into positions where armored thrusts are most likely.

b. Counterattacks. Aggressive patrolling and other security devices must keep the enemy accurately located. If an enemy force infiltrates or breaks through the defense, it may be desirable to counterattack before daybreak in order to capitalize on the defender's knowledge of the terrain. A night counterattack by a tank-heavy force can be very effective if battlefield illumination, preplanned fires, and terrain are properly used. The counterattack must be bold and aggressive. If it fails, the next action is to block the penetration.

408. Defense Against Airborne Attack

a. General. Airborne attacks are delivered against undefended or lightly defended areas. The speed of air movement permits such attacks to strike deep in the rear and allows the selection of objectives within a large area. To successfully defend against airborne attack, the defender must know the capabilities and limitations of airborne troops. This knowledge is imparted by training in airborne equipment and methods. The airborne force can be expected to have initial numerical superiority, but the defending force is initially much stronger in heavy supporting weapons. The defender must capitalize on this advantage by conducting a mobile defense characterized by rapid, coordinated counterattacks. By doing this, he can prevent the airborne force from accomplishing its mission, and will pave the way for its ultimate destruction.

b. Reconnaissance for Defense Against Airborne Attack. Upon receiving orders directing the preparation of a defense against airborne attack, the commander immediately reconnoiters the area he is to defend. During his reconnaissance he determines the probable landing areas and likely objectives of the airborne force. He makes plans both for setting up a warning system and for moving his forces to counterattack.

c. Warning System for Airborne Defense. A small portion of the unit should be employed as a warning force, to insure prompt dissemination of information concerning the location and strength of the attacking force. Observation posts and mobile patrols, equipped with radio and other means for giving alarms, should occupy dominant terrain features and travel selected routes to insure complete coverage of the sector of responsibility.

d. Defensive Measures Against Airborne Attack. Defensive measures against airborne attack include erection of obstacles, such as poles or stakes, and laying of mines, in probable landing areas. Positions are prepared for defense of these areas. Obstacles are prepared on routes out of probable landing areas. Bridges are prepared for demolition, with the demolition switches located at a distance from the bridge itself. Everything possible is done to reduce the advantage given the attacker by his initial numerical superiority.

e. Conduct of the Defense Against Airborne Attack. Successful defense against an airborne attack depends upon the coordination of the defender and the speed with which he is able to initiate defensive action. When the commander of a defending unit receives an alert from his higher headquarters, he should require his troops to prepare for action on a moment's notice. Vehicles should be manned, ammunition loaded, and communication facilities checked. After the commander has made sure that his unit is ready for action, he should

insure that observation posts and other positions are manned on a rotation basis so that troops get as much rest as possible. If an airborne landing is made, the alarm will normally be given by the unit's warning force, or by higher headquarters if the landing is made outside the unit's area of responsibility. Of immediate concern to the commander is the exact location of the attackers. He must determine this through information supplied by his warning force, or through additional reconnaissance. Any additional troops sent out to obtain information of the enemy must be careful not to allow the attackers to destroy or capture them. As soon as the commander has determined the position of the airborne attackers, he must immediately move to strike them with the full weight of his forces. The unit's mission will be to destroy or contain the enemy if possible. If it cannot do this, it impedes the enemy's progress by defensive action, including counterattacks. Immediate action is essential to keep the airborne force from receiving reinforcement and improving its position. The defenders must insure that plans are made to assemble a force large enough to destroy the airborne enemy, by a coordinated attack, before it can become effective.

409. Defense Against Guerilla Action and Infiltration

a. General. The term *guerilla warfare* is used loosely to describe all kinds of irregular warfare. It is generally associated with broad movements that may be described as—

(1) A people's war or revolution against existing authority.
(2) A war conducted by irregular forces, in conjunction with regularly organized forces, as a phase of normal operations.
(3) Operations, generally of short duration, conducted by detached regular forces in the enemy's rear areas.

An area confronted with a serious guerilla menace is as much a combat area as the front lines. Commanders and troops in such an area must maintain the same alert and aggressive attitude as front-line troops, since guerilla action is often directed at lines of supply and communication.

b. Defensive Action.

(1) Defense against guerilla attack. All troops must be trained to repel guerilla attacks and to destroy the attackers. Seldom will it be possible to divert combat forces for protection of rear areas. Armor units must make plans for ground and aerial reconnaissance of rear areas, mutual assistance by adjacent units, defense of installation perimeters, and armed escorts.
(2) Prevention of infiltration. Measures to prevent infiltration are extensive counterreconnaissance, combat patrolling, and ambushing by front-line units; the use of dogs; battlefield

illumination; and the systematic search of captured terrain. Barbed wire, trip flares, minefields, and other antipersonnel obstacles and warning devices may be installed along possible routes through friendly lines. Once an infiltrator has penetrated to a rear area, he operates as a guerilla.

410. Defense Against Air Attack

a. General. Air defense by armor units includes all measures designed to nullify or reduce the effectiveness of an attack by hostile aircraft or guided missiles (pars. 195 and 196). Security against hostile air attack is maintained by air warning systems, concealment, dispersion, and fire.

b. Air Warning System. Air attack alerts are given by radio, siren, flares, whistles, or hand or flag signals, depending on the situation. Air alert sentries are on duty in every vehicle during a march. Air alert observation posts are established in bivouacs and assembly areas. Sectors of observation usually are assigned by higher headquarters. If the small armor unit is acting alone, it observes in all directions. Personnel are trained in the recognition of both friendly and enemy aircraft.

c. Concealment. Natural concealment is used whenever possible; camouflage is used to supplement it when necessary. When within range of hostile artillery, the entire unit must not be crowded into a limited area of natural concealment, such as a small isolated woods; that merely provides the enemy with a profitable target. Groves, orchards, hedgerows, and shadows of buildings should be used for protection against observation. Every effort is made to fit vehicles into the natural lines of the terrain. Vehicles parked in shadows must be moved as the shadows shift. Tracks made by vehicles moving into a new area must be brushed out or camouflaged.

d. Dispersion. Dispersion is achieved by increasing the distances and intervals between individual vehicles and by distributing the unit in small groups. Dispersion is employed on the march, during halts, and in bivouacs, assembly areas, and attack positions. If possible, dispersion is increased when the unit actually is under air attack. While advancing in open country, an armor unit that is attacked by enemy aircraft may disperse off the road and continue its advance, the individual vehicles taking evasive action. Such action requires expert driving and complete control. If vehicles cannot leave the road, they continue to advance on the road while firing at the attacking aircraft. This may be taught as an SOP battle formation.

411. Use of Vehicular Antiaircraft Weapons in Defense Against Air Attack

The organic antiaircraft weapon of small armor units is the caliber .50 machinegun.

a. During a march, all antiaircraft weapons are kept manned, uncovered, and ready for instant action. Platoons or separate vehicles are assigned zones of fire. In bivouacs or assembly areas, certain guns are trained on points where low-flying planes are likely to appear, such as the top of a nearby tree line.

b. No aircraft will be fired upon unless they attack or the higher unit commander gives the order to fire. Frequently, planes flying fast and high do not observe ground troops. To fire at them merely attracts their attention without probability of damaging them.

c. When the order is given, or when low-flying aircraft attack the unit, all automatic weapons (except submachineguns or carbines) which can be employed effectively are fired at the attacking aircraft.

d. Against fast-flying aircraft, it is best to have all guns fire at maximum elevation in the direction from which the aircraft is making its approach. This method forces the aircraft to fly through a curtain of fire and results in a greater probability of hits than does aimed fire. Against slow-flying aircraft, gunners may obtain the best results by employing aimed fire techniques.

e. The above procedures should be covered in the unit SOP.

CHAPTER 10

RETROGRADE MOVEMENTS

Section I. GENERAL

412. General

A retrograde movement is any movement away from the enemy. It may be forced or may be voluntary. A retrograde movement may be further classified as a delaying action, a withdrawal from action, or a retirement. Each of these actions involves movement to avoid decisive combat with the enemy, is conducted to trade space for time, and requires the sacrifice of terrain. In avoiding the enemy, the movement may be to the rear or laterally. Lateral movements (sideslipping) on occasion are employed by elements of the security force to gain favorable terrain for further delaying action, and by units in the forward defensive area in the mobile defense when one strong point merges with another under enemy pressure. Regardless of the direction of movement, retrograde actions by small armor units are conducted in accordance with the techniques explained below.

413. Purpose of Retrograde Movements

Retrograde movements are made for one or more of the following reasons:

a. To disengage from combat.

b. To avoid combat under undesirable conditions.

c. To draw the enemy into an unfavorable situation.

d. To gain time without fighting a decisive engagement.

e. To place friendly forces in a more favorable position with relation to other friendly forces.

f. To permit the employment of a portion of the command elsewhere.

414. Types of Retrograde Movements

a. Delaying Action. A delaying action is a retrograde movement in which space is traded for time and in which the delaying force inflicts maximum punishment on the enemy without becoming decisively involved in combat.

b. Withdrawal From Action. A withdrawal from action is an operation in which all or part of a deployed force disengages from the enemy in order to reach a position from which it can initiate some other action.

c. Retirement. A retirement is an operation in which a force avoids engagement under the existing situation by moving away from the enemy without direct pressure.

d. Combination of Types. Within a large command which is in contact with the enemy, a combination of these types of retrograde movements usually is necessary. Adjacent units may employ different types simultaneously, or one type may develop into another during the course of the action. For instance, a retirement may be preceded by a withdrawal from action or may be covered by a force executing a delaying action.

415. Leadership in Retrograde Movements

Retrograde movements require constant control and supervision by commanders. Such movements often have a detrimental effect on the psychological outlook of the average soldier; to counteract this effect, the purpose of the retrograde action should be thoroughly explained. Leaders must show confidence, enthusiasm, and initiative in the prompt execution of orders.

Section II. DELAYING ACTION

416. General

In a delaying action, the force conducting the action occupies a series of delaying positions. From each position, it takes the enemy under fire at maximum effective range, and intensifies its fires as the enemy moves forward, to slow his advance. Sometimes limited-objective counterattacks are made forward of the position to further delay the enemy. When the force conducting the action has delayed the enemy as much as it can without becoming decisively engaged, it makes an orderly withdrawal to a position to the rear and repeats the operation. Usually the force conducting the action will be ordered to hold the enemy forward of a specific line for a specified length of time. Plans for and conduct of the action must ensure that this mission is accomplished.

417. Types of Delaying Positions

a. Successive Positions. Small armor units normally delay on successive positions (fig. 113). The delaying effort of the entire force is concentrated on one position at a time.

b. Alternate Positions. If the force conducting the action is assigned a relatively narrow zone, it may delay on alternate positions. The force is divided into two elements. One occupies the first delaying position, the other occupies the second. When the forward element withdraws, it leapfrogs the other and moves back to the next position. Use of alternate positions allows more time for organizing

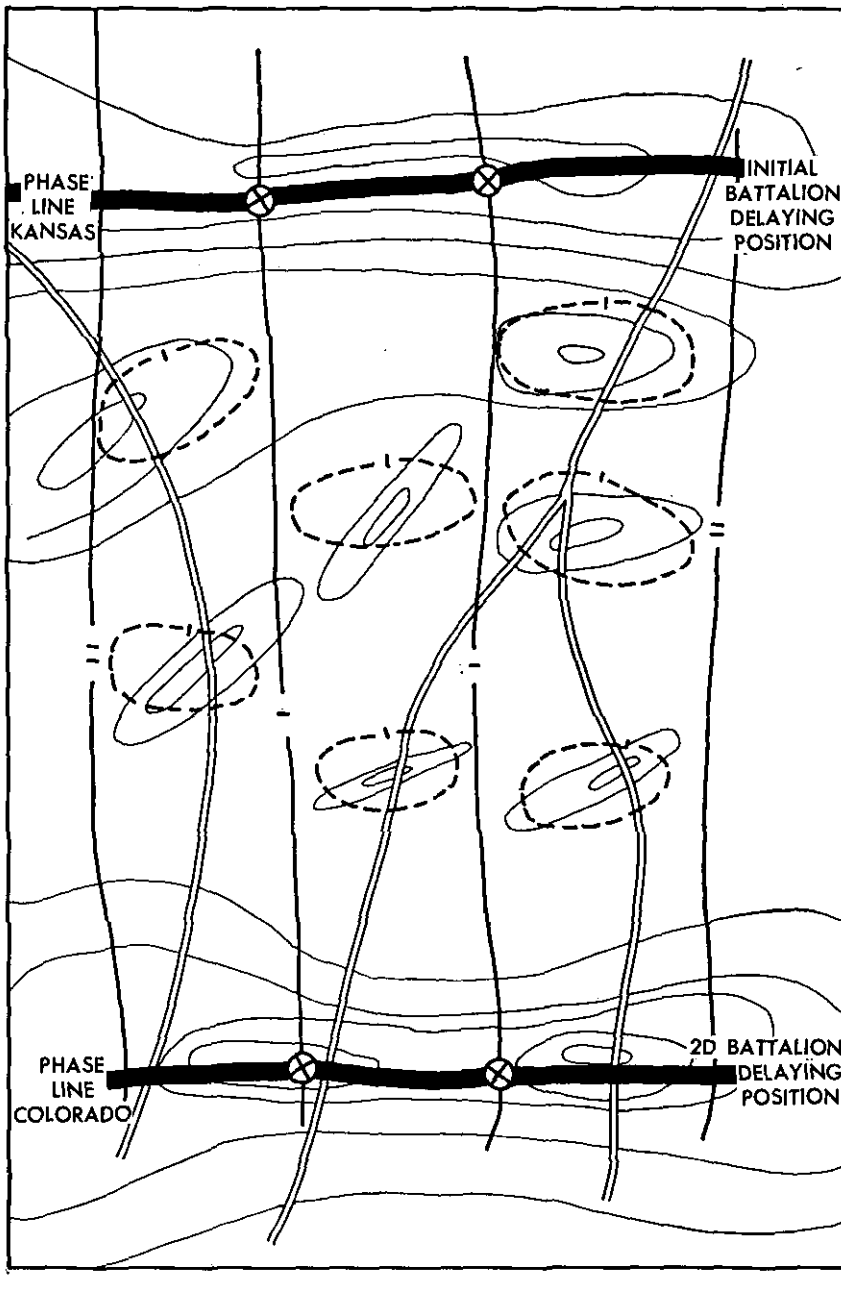

Figure 113. Successive delaying positions.

and preparing positions and gives more opportunity for rest, maintenance, and resupply. However, it will seldom be practical for armor units to delay from alternate positions.

418. Fundamentals of Delaying Action

Fundamentals which must be considered in planning and conducting delaying action are—

a. Centralize Control and Decentralize Action. A delaying action is conducted on a wide front. It consists of a series of independent unit actions, in which each commander must be permitted freedom of action in engaging the enemy. However, the movements of all units must be closely controlled by the higher commander. This will insure that the enemy does not bypass or envelop elements of the delaying force, nor make a penetration which would prevent the successful accomplishment of the delaying mission.

b. Make Maximum Use of Terrain. Delaying forces must make maximum use of all terrain from which delay can be obtained. Delaying positions should be located on terrain features which dominate likely avenues of enemy approach.

c. Force the Enemy to Deploy and Maneuver. The enemy should be engaged with all weapons, at maximum effective range. This will slow his progress by causing him to deploy, to develop the situation, and to maneuver in an attempt to drive the delaying force from its position.

d. Make Maximum Use of Obstacles. Natural and artificial obstacles are used to the maximum to delay and canalize the enemy, and to provide security to the flanks of the delaying force.

e. Maintain Contact With the Enemy. Continuous reconnaissance must be conducted to establish and maintain contact with the enemy.

f. Avoid Decisive Engagement. Each delaying position is held only long enough to cause the enemy to deploy, to develop the situation, and to maneuver to attack the position. The delaying force must withdraw to the next delaying position before becoming decisively engaged; if it does not, it may fail to accomplish its mission.

419. Distribution of Forces in Delaying Action

a. General. Delaying positions are not organized in great depth. Firepower is forward, with the bulk of the force concentrated at likely avenues of approach. The force conducting the delay is divided into two major echelons—the delaying force and the reserve. The reserve is normally established at battalion level and higher; units smaller than battalion usually do not have a reserve.

b. Delaying Force. The delaying force is the element that occupies each successive delaying position. The mission of the delay-

ing force is to slow the enemy advance by delivering long-range direct and indirect fires.

c. Reserve. The reserve should be centrally located to permit its employment at any point within the area of operations.

d. Task Organization. Both the delaying force and the reserve should be composed of both tanks and armored infantry. The ratio of tanks to armored infantry will vary with each situation. If the enemy force is heavy in armor, the delaying force needs more tanks than when the enemy force is largely made up of infantry. If the terrain favors the maneuver of tanks in offensive action, the reserve can properly contain more tanks than when the terrain is so rough that tanks would have difficulty in maneuvering. Basically, the delaying force should be capable of delivering an ample amount of long-range direct fire; at the same time, the reserve should be a highly mobile, responsive unit for local offensive action.

420. Command Post in Delaying Action

The command post is normally centrally located on the delaying position behind the one occupied by the delaying force. The command post should move to the next delaying position as soon as possible after a decision has been made to withdraw. It should be located on terrain that favors voice radio communication. The command group normally stays well forward with the delaying force.

421. Combat Support of Delaying Action

Artillery, engineers, and Army aviation will habitually be employed in delaying actions. These forces may be either attached to or in direct support of tank and armored infantry units. In addition, tactical air support normally will be available, and is requested and controlled the same as in defense.

a. Artillery. The fires of artillery and organic weapons must be integrated and coordinated. Primary consideration is given to long-range and massed fires forward of the delaying positions; however, plans also include close fire support of movements to successive positions. When the frontage is so great that supporting fires cannot be massed along the entire front, they are concentrated on the most likely avenues of enemy approach.

b. Engineers. In delaying actions, engineers operate much as they do in defense. Their general duties include—

(1) Participating in denial operations.
(2) Delaying the enemy by destroying bridges and railroads, blocking roads, and erecting barriers.
(3) Engaging in combat as infantry when required.
(4) Improving roads and bridges to assist the withdrawal of the delaying force.

Supporting engineers are usually held under the control of the commander of the force conducting the action. This centralization of control ensures maximum effort on priority missions, such as creating major obstacles. For a detailed discussion of the employment of engineers, see FM 5–134.

c. Army Aircraft. Army aircraft should be used to the maximum during delaying action. They perform aerial reconnaissance, provide liaison, and relay information.

d. Use of Atomic Weapons and CBR. The small armor unit commander generally will not be involved directly in the planning for employment of atomic weapons and CBR. However, he is vitally concerned with the effects that friendly employment of these weapons may have on the actions of his unit in a retrograde action as well as the protective measures his unit must take when the enemy has such a capability. Additionally, his employment of long-range organic fires may be considerably restricted in atomic operations. For example, improper use of long-range fires might establish his own position as a potential enemy atomic target, or he might alert the enemy formation to its own situation as an atomic target.

422. Reconnaissance and Selection of Delaying Positions

a. Higher headquarters assigns the armor unit a zone in which to conduct delay. Higher headquarters also specifies the general area of the first delaying position, the general lines on which successive positions are to be established, and the length of time that delay is required. A reconnaissance to select successive delaying positions must be made as early as possible (fig. 114). Likely avenues of approach are located, and plans are made to deny their use to the enemy. In selecting delaying positions, the commander considers the same factors as those considered in selection of any defensive position, and in addition selects routes suitable for withdrawal and lateral movement.

b. Intermediate delaying positions are selected between the delaying positions specified by higher headquarters (fig. 115). These positions should be on dominating terrain which, when occupied, provides control of likely avenues of enemy approach. If the area of operations has sufficient depth, successive delaying positions should be far enough apart to force the enemy to reorganize, renew his advance, and deploy and maneuver for an attack at each position.

423. Security in Delaying Action

Because of the nature of delaying action, the flanks of a delaying force are extremely vulnerable. If friendly troops are on the flanks, coordination with these troops is essential. Obstacles—such as rivers, mountains, thick woods, or rugged terrain—should be used to secure

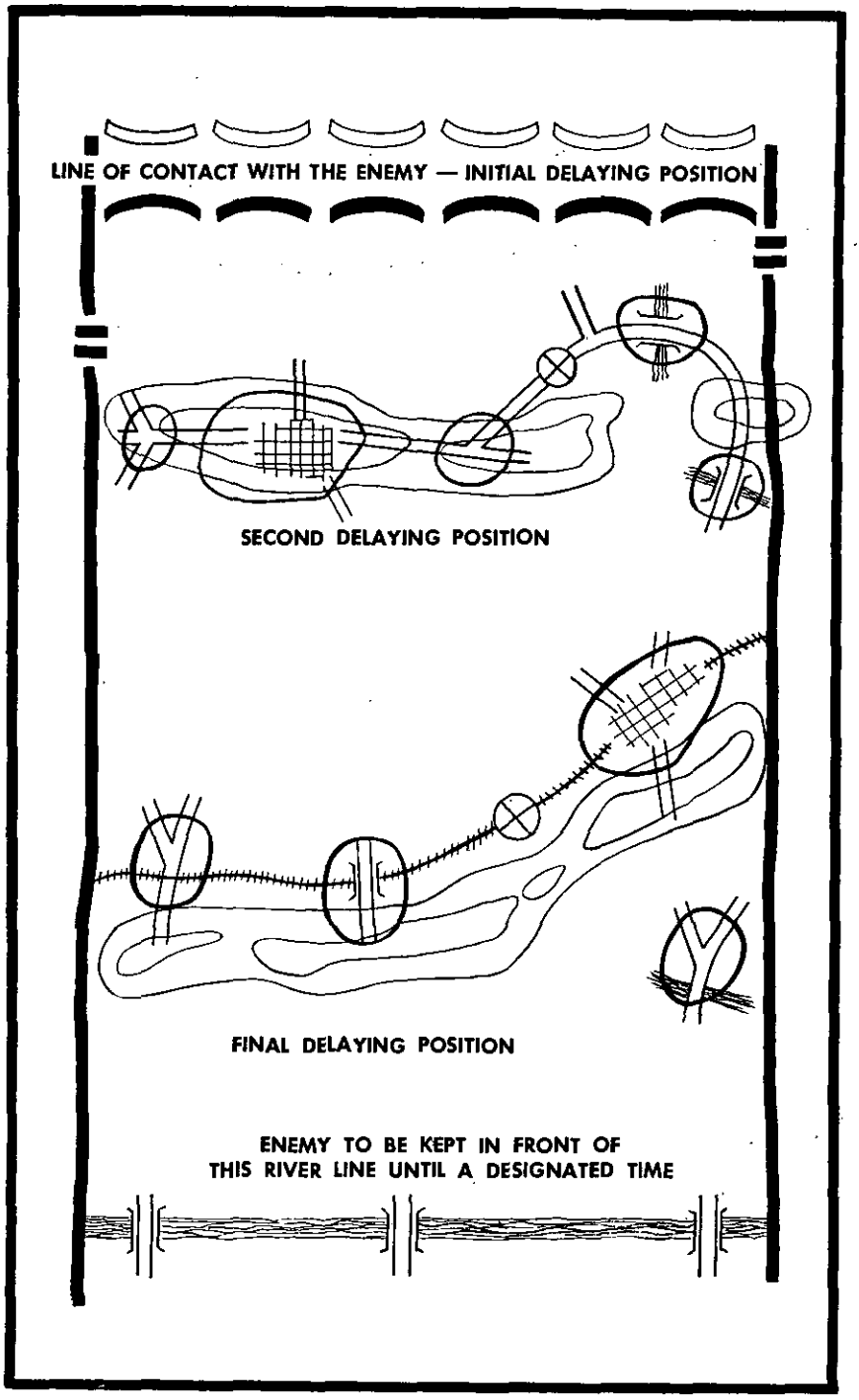

Figure 114. Selection of delaying positions in delaying action.

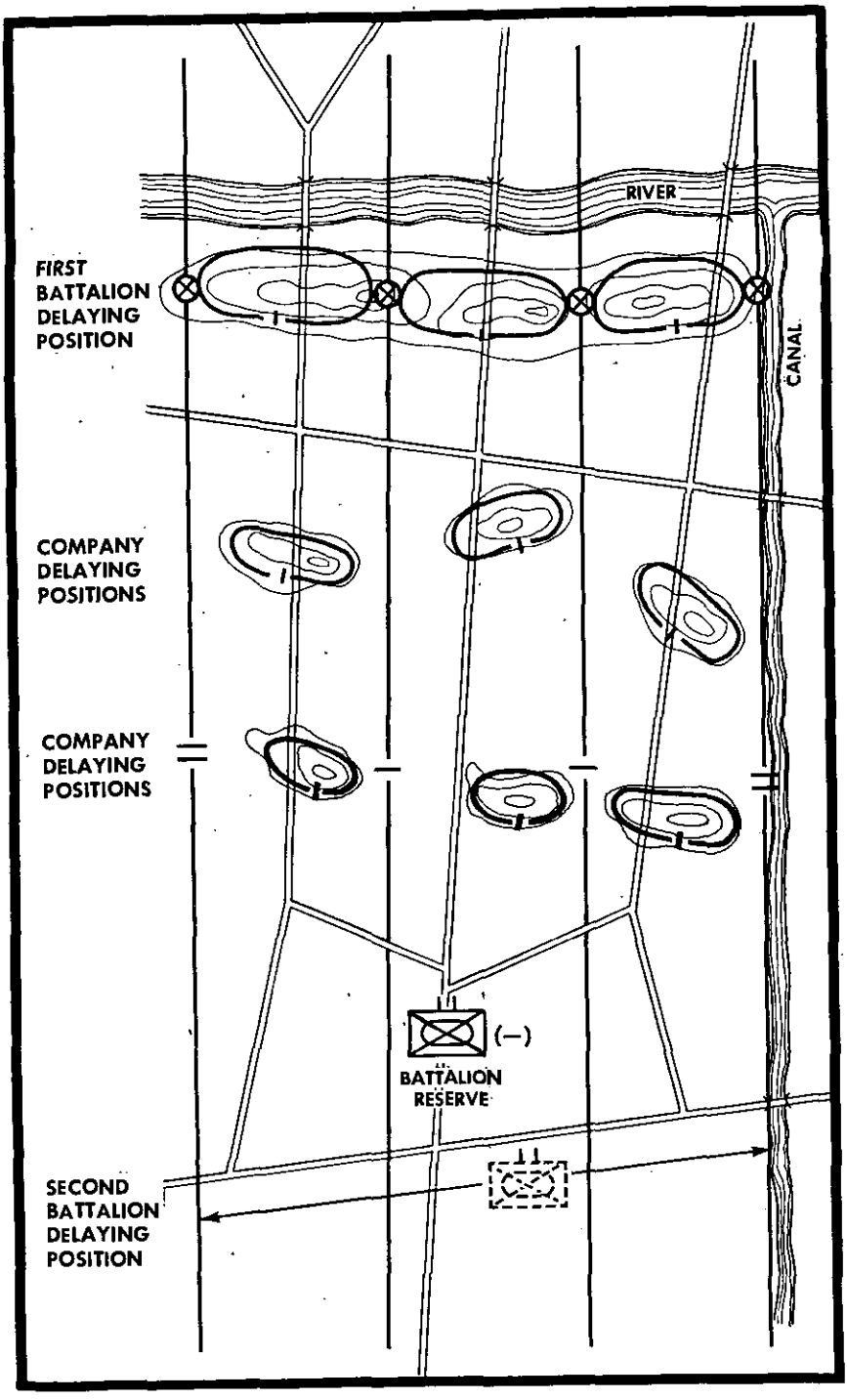

Figure 115. Company delaying positions between battalion delaying positions.

open flanks. Continuous reconnaissance, both ground and air, should be conducted to the front and flanks throughout the delaying operation. Maximum use is made of observation posts during the day and of listening posts at night. An aggressive enemy will make every effort to infiltrate sizable forces around and behind delaying positions, particularly during the hours of darkness. Routes of withdrawal must therefore be continuously reconnoitered.

424. Control Measures in Delaying Action

Control measures normally used in delaying action include boundaries, contact points, phase lines, check points, and routes of withdrawal.

a. Boundaries between units are assigned so that terrain features which control fire and observation in one zone, as well as any avenues of approach into that zone, are within the area of responsibility of one unit. Boundaries extend forward to the limit of the effective range of organic weapons and rearward through the next delaying position. If desired, they may be extended through the final delaying position.

b. Phase Lines are used to designate the general location of successive delaying positions by the division commander. At combat command and lower levels, actual delaying positions are designated rather than phase lines.

c. Routes of Withdrawal are designated to control movements of both combat forces and supporting elements.

425. Employment of Fires in Delaying Action

The fire-support plan of an armor unit engaged in a delaying action should cover three types of fires—normal defensive fires, with particular emphasis on long-range fire on advancing enemy formations; fires in support of counterattack by the reserve or other elements of the force; and fires to be employed in the withdrawal. Details of all preplanned fires should be made known to the lowest possible echelon.

a. Defensive Fires. Long-range fires are normally provided by supporting artillery and tactical aircraft. They are adjusted by any person capable of observing the target, including observers in aircraft. Mortars open fire as soon as the enemy comes within effective range. The closer the enemy comes, the more fire is placed upon him.

b. Fires To Support a Counterattack. Preplanned fires to support a counterattack must cover critical terrain features both in front of and within the delaying positions. They should cover all likely avenues of enemy approach, and probable routes and objectives of a counterattacking force.

c. Fires To Cover the Withdrawal. Fires to cover the withdrawal should include the routes of advance available to the enemy. They

help to cover the noises of forces withdrawing and to deceive the enemy as to the amount of artillery that has withdrawn.

426. Use of Obstacles in Delaying Action

Every effort is made to strengthen delaying positions by engineer and pioneer work. Natural obstacles are improved. Artificial obstacles are placed to break up the enemy's attack formations, delay him, restrict his maneuver, and hold him in areas covered by intense defensive fires, particularly those of automatic weapons and main tank guns. Obstacles should be concealed from enemy observation and should be covered by fire to prevent their neutralization. Artificial obstacles may include abatis, craters, barbed wire, and the destruction of bridges. Authority to destroy bridges within the unit zone must be obtained from higher headquarters. Mines are best employed to deny likely avenues of approach for enemy armor or to canalize enemy forces into areas which are favorable for the employment of fires and of the reserve. Nuisance minefields may be used; however, authority to install them must be obtained from higher headquarters, and their locations must be recorded and reported as directed by FM 20–32. Too much reliance must not be placed on obstacles, man-made or natural; no ground is considered impassable to a well-trained, determined, and resourceful enemy. The enemy may attempt to gain surprise by attacking over ground considered impassable.

427. Occupation of a Delaying Position

a. Delaying Force. In general, the occupation of a delaying position is similar to the occupation of a strongpoint in the mobile defense. Most of the firepower is oriented toward the enemy; however, a portion of the unit must provide protection to the flanks and rear. Tank elements of the delaying force are located to cover likely avenues of hostile armor and mechanized approach and to deliver long-range direct fires. Armored infantry elements are placed where they can protect and support the tanks and cover portions of the zone not covered by other fires. Whenever possible, fires of machinegun and other automatic weapons are interlocked. Each element of the delaying force must be able to move quickly to its assigned route of withdrawal.

b. Reserve. The position selected for the reserve should be far enough behind the delaying position that enemy fires which might hinder the movement of the delaying force will not affect the reserve. It should have access to a good road net. It should be so located that the reserve can block any enemy penetration of the delaying position.

428. Employment of the Reserve in Delaying Action

a. Counterattacks. If it appears that the fires of the delaying force cannot slow the enemy as much as is necessary, the reserve (or uncom-

mitted elements of the delaying force) may counterattack forward of the delaying position. Counterattacks by the reserve (fig. 116) are made against limited objectives. Such attacks must be thoroughly preplanned and coordinated with the delaying force. Every effort should be made to obtain surprise. The counterattack should be directed against an enemy flank. It is often possible to draw the enemy into a trap; the withdrawal of the delaying force is planned to draw the enemy force along a prearranged axis favorable to employment of the reserve. Offensive action by the reserve is conducted as discussed in chapter 8.

b. Blocking of Penetrations. If the enemy force should penetrate the delaying position prior to the designated time of withdrawal or before the delaying elements have been able to withdraw, the reserve may be committed behind the position. Plans for such a contingency should provide for maneuver and fire support. Piecemeal commitment of the reserve must be avoided.

c. Fire Support For or Reinforcement of Elements of the Delaying Force. The reserve commander must be prepared to move to positions from which direct fire can be delivered to support the delaying force. Occasionally the reserve may even be committed to reinforce an element on a particularly critical position. Such a mission should be temporary; if it is required for an extended period of time, a new reserve should be constituted if possible.

d. Attack To Assist in the Withdrawal of Elements of the Delaying Force. The reserve must be prepared to conduct counterattacks to assist in the withdrawal of elements of the delaying force which have become heavily engaged. These attacks are preferably directed against the flank of the enemy. They are intended to cause the enemy to devote his entire attention to his own defense, thereby permitting the heavily engaged unit to withdraw. Under such circumstances the reserve may, after withdrawal of the element of the delaying force, become part or all of the delaying force while another element takes over the mission of the reserve.

429. Withdrawal in Delaying Action

The decision as to the exact time to withdraw to the next delaying position is dependent upon many factors—strength and composition of the attacking force, status of adjacent units, strength of the position, condition of the delaying force, and the amount of delay required in the mission. The withdrawal must be commenced while the delaying force still has freedom of movement.

a. Routes of Withdrawal. A battalion commander selects a route of withdrawal within each company zone. These routes are used for movement of logistical support, combat support, reserve units, and the battalion command post and trains, in addition to serving as

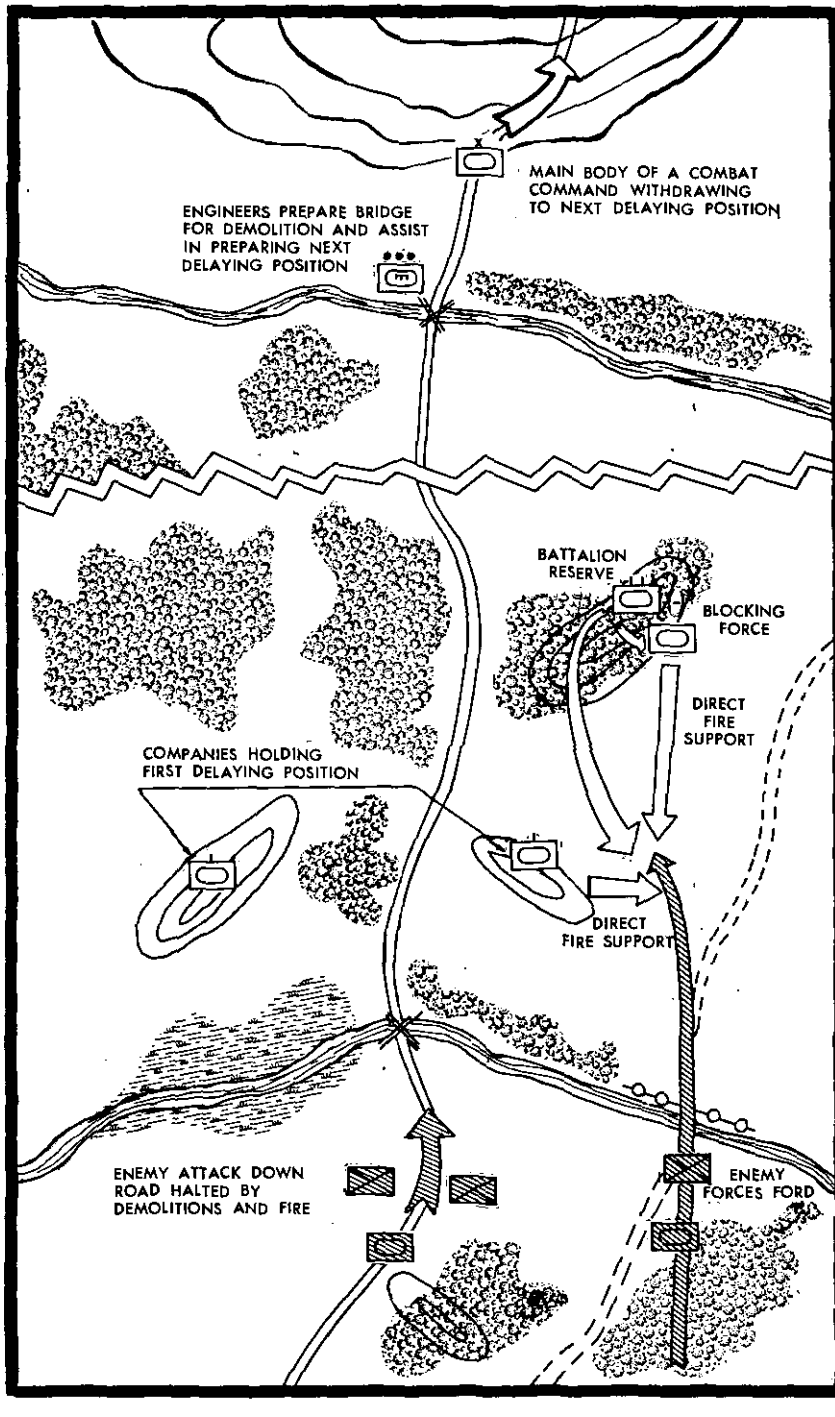

Figure 116. Counterattack by the reserve.

routes of withdrawal for combat elements. Enemy action will occasionally make it impossible to use the primary preplanned routes of withdrawal; alternate routes must therefore be included in the plan. Companies must insure that routes of withdrawal within their zones are protected and kept open. Although priorities for use of these routes are assigned by the battalion commander, companies may use them freely in the actual conduct of the delaying action. Main highways should not be used for withdrawals unless necessary, as these routes will generally receive heavy enemy artillery fire and attacks by enemy aircraft.

b. Withdrawal of the Delaying Force. The delaying force does not withdraw all at one time. Elements withdraw on order, according to prearranged plans, or when withdrawal is made necessary by the action of the enemy. Normally, elements which are least engaged with the enemy withdraw first. The remainder of the delaying force then employs fire and movement to withdraw, supported by fires of the elements previously withdrawn, artillery, mortars, and tactical air. Contact with the enemy is maintained. Delay is continuous, between as well as on delaying positions. If the situation permits the effective use of tanks, they are retained with the delaying force throughout the withdrawal. At night or in withdrawals over very restrictive terrain, most of the tanks may be withdrawn first so that they will be in position to provide covering fire for armored infantry elements during their withdrawal. Heavily engaged units may require assistance to disengage from the enemy; such assistance may be given in the form of a counterattack by the reserve. Units withdraw only after approval by, or at the direction of, the next higher commander. This commander must be kept fully informed of the situation so that he can order withdrawals before units become too heavily engaged. If communication with the higher headquarters is temporarily disrupted, subordinate commanders must use their best judgment. They must attempt to insure that they withdraw soon enough that their units will not be overrun, but not so early as to endanger the mission and the security of other units. A subordinate commander who is out of contact with higher headquarters must do everything possible to reestablish communication. If forced to withdraw before contact is regained, he must inform higher and adjacent units of his actions by the fastest means available.

c. Withdrawal of the Reserve. If no immediate commitment is anticipated, the reserve may be the first element withdrawn to the next position. This will insure that it does not interfere with the delaying units and that it is not prematurely engaged. If the reserve is not withdrawn first, it may be retained in a centrally located position from which it supports by fire the withdrawal of the delaying force.

d. Withdrawal of Mortars and Artillery. Mortars and artillery displace by echelon so that they can furnish continuous fire support.

430. Logistical Considerations in Delaying Action

a. The battalion S4 must keep fully informed as to the location of all combat elements and must exercise rigid control over the movements of supply and maintenance elements so that they do not interfere with the combat elements. As the delaying force withdraws, service elements must be moved to the rear as early as possible.

b. Although it is desirable to keep each unit's supplies completely mobile, it may become necessary to preposition certain supplies on successive delaying positions or along routes of withdrawal. In the delaying action, requirements for ammunition, demolitions, barbed wire, and other barrier supplies normally increase. A decision to preposition supplies is based on supply requirements, the distance to supporting supply agencies, and the amount of transportation available.

c. Maintenance support during a delaying action consists of minor repair work only. Disabled vehicles are evacuated to battalion vehicle collecting points. Vehicles and equipment which cannot be evacuated are destroyed.

d. For detailed discussion of logistical support for this type of operation, see FM 17–50.

Section III. WITHDRAWAL FROM ACTION

431. General

a. A withdrawal from action is classified as either a daylight or a night withdrawal. In either type, a security force maintains contact with the enemy to prevent a rapid enemy advance, to deceive the enemy, and to provide for security.

b. The decision to withdraw at night must be made sufficiently in advance to permit planning and coordination, and in time for subordinate units to conduct a reconnaissance.

c. The disengagement of withdrawing forces is conducted in the same manner as the withdrawal from a delaying position in the conduct of a delaying action (par. 429).

432. Daylight Withdrawal From Action

a. Successful daylight withdrawals from action depend on speed, control, and effective employment of a security force.

b. A daylight withdrawal can best be made on terrain which limits enemy observation and which permits use of cover and concealment for assembly and movement of forces. Weather conditions which limit

enemy ground and air observation provide an advantage to the withdrawing force.

c. Control may be a serious problem in a daylight withdrawal, because it is necessary to move rapidly with great dispersion when effective enemy observation of the movement is possible.

d. Armor units frequently initiate withdrawal through offensive action. Limited-objective attacks are made to divert the enemy's efforts. Smoke, increased artillery support, and tactical air should be employed to assist in the withdrawal.

e. Units not engaged with the enemy are the first to withdraw. When all units have broken contact with the enemy, they withdraw rapidly under protection of the security force.

433. Night Withdrawal From Action

a. Successful night withdrawal from action depends primarily upon deception, secrecy, and control. Darkness limits hostile air and ground observation, and this must be exploited. The intention to withdraw is concealed by continuing normal activities, including aggressive patrolling.

b. A night withdrawal normally is slower than a daylight withdrawal.

c. Effective movement control measures will offset, to some degree, the difficulty caused by loss of visual contact.

d. Troops left in contact use whatever deceptive measures are available to create the impression that a much larger force is on the position. Such deceptive measures includes firing artillery, moving tanks so that their engines can be heard, and keeping up the normal sounds usually associated with a completely manned position.

e. Withdrawing units move simultaneously if possible. Formations are closer than in a daylight withdrawal, and movements are conducted with greater emphasis on secrecy and security.

f. The security force withdraws at a prescribed time or on order.

434. Planning for a Withdrawal From Action

a. Location of the New Position or Assembly Area. The new area should be within friendly lines and must be designated early enough to permit reconnaissance of the area. When an armor unit is operating as part of a larger command, the higher headquarters will designate the new position. However, the armor unit must select the exact location of its subordinate units.

b. Provisions for Preparation and Occupation of the New Position. These provisions should include necessary defensive measures, dispositions of trains, and guides for units moving into the area.

c. Zones or Routes of Withdrawal. A battalion task force usually will be assigned a zone of withdrawal. The boundaries of the zone

will extend back to include the new position. If more than one unit of the higher command is using routes in the zone of the task force, the higher headquarters may assign a route to the task force. The task force commander usually assigns routes to his subordinate units. If routes are available, he may assign a separate one to each unit, to speed the withdrawal. The commander must exercise strict control and supervision of the withdrawal, in order to maintain the schedule prescribed. If the withdrawal includes passage through friendly front-line units, close coordination with these units must be made. Plans should include provisions for guides from the unit being passed through, liaison, and recognition signals. Designated routes must be reconnoitered to insure that they are adequate and well marked.

d. Security. The commander may designate one or more elements as a security force, or he may utilize elements of each front-line unit for this purpose. It is desirable that all elements of the security force be controlled by one commander. The strength of the security force depends primarily on—

(1) The number of troops available.
(2) The degree of enemy activity.
(3) The amount of front to be covered.

The security force normally conducts a delaying action. The length of time that the force remains in contact with the enemy depends upon the unit's mission. If the unit is moving to a defensive position to the rear, the security force remains in contact with the enemy until the new position is occupied. When the withdrawal is part of a retirement, the security force remains in contact with the enemy until the main body forms march columns. The security force may then act as the rear guard.

e. Time Schedule. Higher headquarters normally designates the time of withdrawal. A schedule must then be prepared to cover the entire movement. The security force must not withdraw until the main body has completely broken contact with the enemy. Mortars and attached or supporting artillery must withdraw by echelon, so that they can provide fire support for the security force. The time schedule must be followed exactly.

f. Priority of Withdrawal. As a general rule, supply and service units, and headquarters elements not needed for tactical control, are withdrawn first, followed by the reserve or uncommitted units. Then front-line units are withdrawn, beginning with the least heavily engaged. The security force is the last element to withdraw.

435. Logistics in Withdrawal From Action

For discussion of logistical support during a withdrawal from action, see FM 17–50.

Section IV. RETIREMENT

436. General

A retirement may be made following a withdrawal from action or when no actual contact with the enemy has been made. Small armor units usually participate in a retirement as part of a larger force.

437. Small Armor Units in the Retirement

As part of a larger force conducting a retirement, an armor unit may be directed to march to a designated objective or assembly area; or the armor unit may furnish all or part of the flank guard, rear guard, or covering force for the higher command.

438. Logistics in Retirement

For discussion of logistical support during a retirement, see FM 17–50.

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CHAPTER 11

SPECIAL OPERATIONS

Section 1. ARMOR UNITS OPERATING WITH INFANTRY UNITS

439. General

When a small armor unit is operating as part of a force which is predominantly infantry, the same basic fundamentals of tactical employment apply as when it is operating as part of an armor force. Some differences in the application of these fundamentals are made necessary by differences in organization, equipment, and technique of operations between armor and infantry.

a. Mission. The missions assigned armor units operating with infantry should make maximum use of the combat characteristics of the armor unit—armor-protected firepower, mobility, shock action, and extensive and flexible communication. Armor units can best be used on missions in which surprise, fire and maneuver, concentration of effort, and retention of the initiative are particularly important.

b. Command. The tactical unity of an armor unit operating with infantry should be retained at the highest level possible. The dissipation of armor power through the attachment of elements of a small armor unit to several infantry units prevents maximum utilization of the capabilities of armor.

c. Employment. Whenever possible, armor units attached to infantry units should be used as the nucleus of a mobile combined-arms team or should be used to provide armor reinforcement to an infantry unit. These forces should be employed on missions of penetration or envelopment of a decisive objective.

d. Coordination. Coordination is the timing, the mutual action, and the control which enable a team of combined arms to strike the enemy and destroy him. The capabilities and function of each unit comprising an armor-infantry force should be carefully considered. This coordination is attained by thorough planning, establishment of adequate communication and liaison, and the wholehearted cooperation of each member of the force.

e. Signal Communication. Communication between armor and infantry units is complicated by differences in organic signal equipment. When units of the armored division, or armored cavalry units not organic to the infantry division, are operating with infantry, it often

is necessary for the armor and infantry units to exchange FM radio equipment in order to establish the necessary communication.

440. Combat Support in Armor-Infantry Operations

Combat support units organic to infantry differ in organization, equipment, and capabilities from those normally found in support of major armor operations. These differences include lack of armor protection in both the engineers and artillery, less cross-country mobility in combat support elements, and less capability for providing ordnance maintenance support over extended periods.

441. Logistical Support in Armor-Infantry Operations

The logistical support agencies organic to infantry are not organized or equipped to support major armor attachments for extended periods. However, the commander of the infantry unit to which an armor unit is attached is responsible for its logistical support. Logistical personnel of both units must work together to insure that this support is adequate. Plans should be made before the attachment takes place, if possible. The commander of the armor unit must constantly check on his logistical support. He should request additional support or recommend changes in the logistical plan or procedure if necessary. See FM 17–50.

Section II. ARMOR-AIRBORNE LINK-UP

442. General

a. For a detailed discussion of airborne operations, see FM 57–20 and FM 57–30.

b. Airborne operations are classified according to their purpose—independent type, raid type, special type, or early link-up type. Armor is most frequently employed in the early link-up type. The early link-up operation is made after airborne forces are delivered into the rear of, or to the flank of, an enemy position. The success of such an operation depends upon a successful attack by other forces (the link-up force) to make an early link-up with the airborne forces (the airhead force). These operations require careful and detailed planning to insure maximum coordination between the two forces. Armor units are well adapted to perform link-up missions. An armor attack to an airhead area is executed as a normal offensive operation, except for the necessary coordination and support plans.

443. Combined Planning for Armor-Airborne Link-Up Operations

a. General. A combined armor-airborne operation normally is planned and directed at corps level or higher; however, detailed coor-

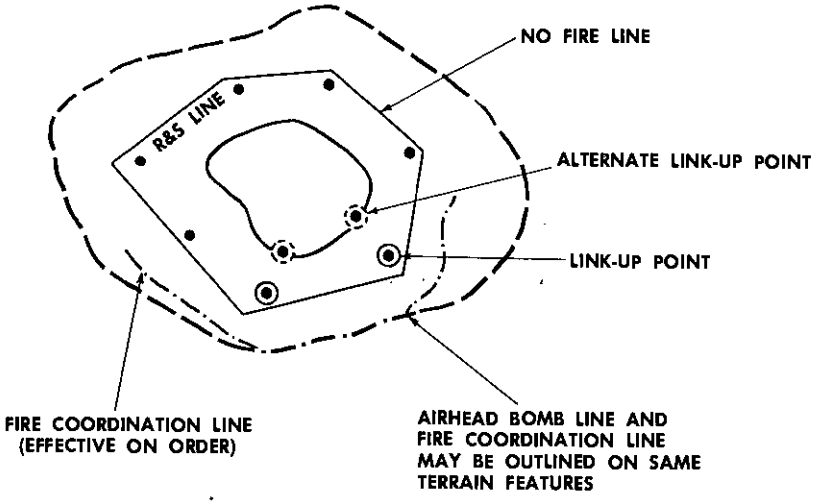
dination and plans are made between the armor and airborne units involved in the operation. Command and staff liaison between units is essential throughout the planning and execution phases. The goal is to make the link-up as quickly as possible and to prevent casualties to our own troops from friendly fires. Small armor unit commanders will be particularly concerned with coordination of the following:

(1) Link-up points.
(2) Fire coordination line.
(3) Communication plan.
(4) Actions following link-up.

b. Link-Up Points. To avoid confusion and possible attack on friendly forces, link-up points are established. These are points at which physical contact is to be made between the airhead force and the link-up force. The number and location of link-up points should be established early in the planning phase. These points should be limited in number, since they must be manned by detachments of the airhead force. Whenever possible, these points should be located at the junction of the airhead reconnaissance and security line and the axis of advance of the link-up force. They should be easily recognizable. Personnel occupying the link-up point, as well as personal of the leading element of the link-up force, must be thoroughly acquainted with measures for identification and plans for rapid movement of the link-up force into the airhead area. Alternate link-up points are designated; these are normally located at the airhead line *within* the axis of advance of the link-up force. These alternate link-up points will be used if the airhead is under attack and the airhead reconnaissance and security line has been forced back (fig. 117).

c. Fire Coordination Line. The fire coordination line is established to coordinate the fires delivered by both the link-up force and the airhead force, to prevent losses from fire by friendly forces. This line is intended to regulate both flat-trajectory and high-angle fire, as well as close tactical air support strikes. It should be established along terrain features that are clearly recognizable from the ground and from the air. It should be as close to the airhead as practical, in order to allow maximum latitude to the fire-support agencies of the link-up force. Plans should permit units in the airhead to fire outside the fire coordination line until a specified time, which is based on the expected progress of the link-up force. After this time, units in the airhead should deliver fire outside of the line only after coordination with the link-up force. The link-up force should not fire on the airhead side of the line at any time without coordinating with units in the airhead.

d. Communication Plan. The communication plan must include the channels for radio communication between the airhead and link-up forces. It must prescribe identification procedures to be used during



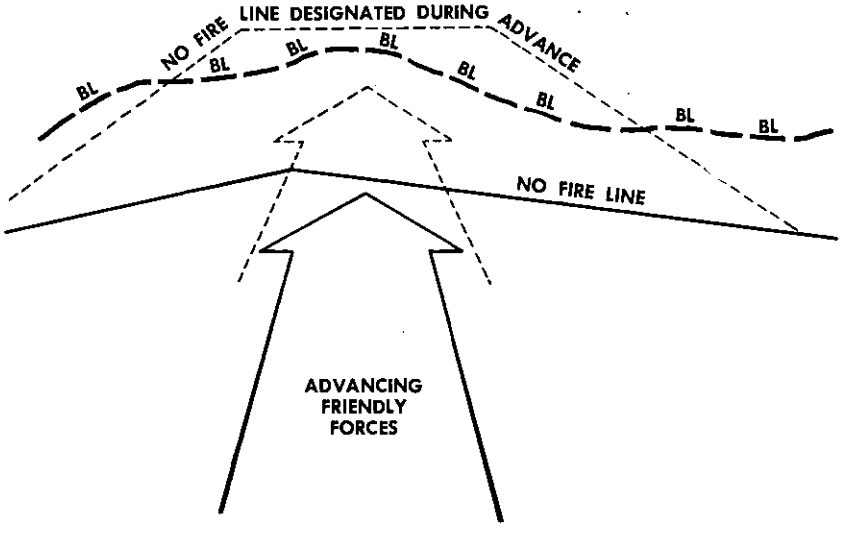


Figure 117. Coordination in armor-airborne link-up.

the day and at night, to include both primary and alternate means. High-performance and Army aircraft can be used to give signals or otherwise to extend communication. Visual signals such as flares or panels may be used during daylight, and flashlights or infrared devices may be employed during darkness.

e. Actions Following Link-Up. When the link-up is effected, the link-up force may remain within the airhead and assist in its defense, or may pass through and continue the attack. If the link-up force is to remain within the airhead, it is important that a single commander be designated for all forces within the airhead. Plans must be made for the link-up force to be coordinated into the defense of the airhead, or for the airhead force to assist the link-up force to pass through the airhead, as quickly as possible. After the link-up is made, the airhead area presents a lucrative target for the employment of enemy tactical atomic weapons. For this reason, objectives for the link-up force should be outside the airhead if possible.

444. Logistical Support Plan for Armor-Airborne Link-Up Operations

The logistical support plan for the armor forces is similar to that employed in any deep penetration or exploitation mission. Because the initial airborne assault includes supplies and equipment for only through the airhead, as quickly as possible. After the link-up is made, 48 to 72 hours of operation, the airborne trains may accompany the armor trains in the overland attack, or the armor trains may include additional vehicles and supplies for the airborne forces.

Section III. JUNGLE OPERATIONS

445. General

Jungle combat involves operations in tropical areas largely overgrown with dense vegetation. Offensive operations in such an area require a high degree of leadership and individual initiative to meet the problems imposed by difficult terrain and hot, humid weather. These difficulties may be overcome by proper acclimatization, thorough training, and careful planning. For details of operation in jungles, see FM 72–20.

446. Effect of Jungle

a. The jungle affects operations by restricting observation, limiting movement, restricting communication, and providing concealment from air and ground observation. Because of these factors, the situation is usually obscure. It is hard to maintain contact and control. Narrower frontages than normal are assigned to attacking forces, and interval and distance between units and individuals are reduced.

The use of supporting fires is restricted. The effects of the limited observation can be partially overcome by an increased use of patrols, liaison parties, communication facilities, and observation posts.

b. Jungle areas seldom have good roads. The road net usually consists of a few roads on the edge of the jungle and narrow, winding trails in the interior. The movement of armor units is generally limited to roads, beaches, and grass- or brush-covered fields. The cross-country movement of armored vehicles in dense jungle is almost impossible unless routes have been previously prepared. Sometimes armored vehicles can operate in an area of tree-covered hills.

c. Radio range is greatly reduced because of the screening effect of dense vegetation and steep slopes. The effectiveness of radio depends upon the radio's location and the atmospheric conditions. In a slow-moving attack, wire is the most satisfactory means of communication. Wire teams move with the assault echelon to provide communication to the rear. Increased reliance is placed on dismounted messengers.

d. The jungle gives ideal concealment for offensive operations. This permits dismounted infantry to advance to assault positions close to the enemy. However, concealing foliage also permits ambush and infiltration attacks, and requires increased security.

e. Certain effects of particular interest to armor should be considered in atomic warfare in jungles: shielding by thick vegetation, severe obstacles created by blowdown, and difficulty in accurately locating suitable atomic targets.

447. Offensive Operations in Jungles

a. The principles of offensive combat apply to offensive operations in jungles. However, the enervating climate, restricted observation, limited mobility, restricted communication, and concealment complicate maneuver and require a specialized application of these principles. Resourceful leadership, proper training, and suitable equipment will convert natural difficulties into relative advantages.

b. Jungle combat is essentially a fight by small dismounted infantry units which operate extremely close to the enemy. Often a tank platoon may be attached to an assault rifle company to reduce enemy automatic weapons by close-range fires. In close terrain, dismounted troops and tanks move together at the same rate of speed. On trails, dismounted troops generally precede the tanks at about 25 to 50 yards, depending on the terrain and enemy resistance. At times the terrain may restrict deployment to the vicinity of the trail and may limit operations to a one-tank front. Tanks must be closely protected by patrols that reconnoiter for routes of advance, antitank guns, and antitank obstacles. Riflemen are designated to protect the flanks and rear of each tank. When the tanks are engaged, riflemen deploy

behind them to cover them from protected positions. Riflemen cannot stay close to tanks which are receiving enemy fire. At times, close terrain makes it necessary for a tank commander to expose himself from the turret in order to locate targets and maintain contact with nearby tanks.

c. Sometimes the terrain makes it impossible for tanks to take part in the assault. In this case the tanks may support the attack with overhead and flanking fire. A tank forward observer may go with the assault company to call for supporting fires.

448. Coordination in Jungle Operations

Close coordination between tank and infantry leaders is essential. In some cases, special radio equipment helps this coordination. The external interphone is also used for communication between the tank crew and accompanying infantry. Information as to objective, routes, and antitank resistance is reported by the infantry. In some instances it may be necessary for tank commanders to move forward on foot to observe targets pointed out by the infantry.

449. Defense in Jungles

a. In light jungles, the principles of defense in woods generally apply. Consideration is given to adjoining areas that may contain dense jungle, and to possible hidden obstacles. Thorough and continuous ground reconnaissance is necessary, because the observation of security elements is restricted and aerial reconnaissance is often ineffective. Long-range fires can seldom be employed.

b. In a dense jungle, troops are disposed along the forward edge of the battle area with minimum intervals between foxholes and no gaps between units. Security elements consist of small groups, dug in for all-round defense, to cover trails and other approaches to the position, delay the enemy, and warn of his approach.

c. In the jungle, as in densely wooded areas and in mountain operations, battalions and smaller units often operate independently. When operating alone, units are prepared to defend against an enemy attack from any direction.

450. Maintenance in Jungle Operations

In jungles, maintenance is a serious problem. Almost all materiel is subject to the action of either rust or fungi, because of the normally hot, humid weather. As a rule, all metal surfaces should be kept coated with oil; radios and other electrical equipment should be fungiproofed. All materiel must be frequently inspected and cleaned. In hot, humid climates, all weapons require light or special preservative lubricating oil. In salt-water atmosphere, medium preservative lubricating oil should be used.

Section IV. GUERILLA WARFARE

451. General

a. For detailed discussion of operations against guerilla forces, see FM 31–15; for guerilla warfare operations, see FM 31–21.

b. Guerillas and irregular forces normally operate as independent or semi-independent groups. They may be political refugees, malcontents, specialists in subversive activity, or bands of former regulars, dispersed in the course of conflict and evading capture. The extent of their activities depends on the quality of leadership, their supplies and communication facilities, and the geography of the area. The principal purposes of their actions are to prevent the movement of supplies and troops, to disrupt communication, and to cause a diversion of forces from the main battle area by persistent harassment and sabotage.

c. Guerilla activity may be in the form of either small nuisance raids or large-scale attacks on key installations, supply dumps, or troop units. It is usually most effective when directed and coordinated by the enemy's high command against targets of strategic importance. Normally, individual members of the group disperse before and immediately after an attack. Every effort is made to achieve surprise and to have superiority in numbers at the time and place of attack. It is essential, from the guerillas' point of view, that the attack be made under circumstances which permit them to break off the engagement at will and to avoid prolonged combat.

452. Effect of Guerilla Activity Against Armor Units

The operations of hostile guerillas can affect armor units by—

a. Forcing the use of armor units in an organized campaign against the guerillas.

b. Causing armor units to be used in passive defense and occasional direct attack against guerillas who may operate behind friendly lines.

c. Forcing dissipation of armor units in a defense of their elements while operating on exploitation or pursuit missions.

453. Antiguerilla Operations

a. Armor units are normally committed against guerilla forces as in any offensive action. However, special emphasis must be placed on rapid movement to the area of contemplated attack and gaining all the surprise possible. Maximum effort is made to surround the guerilla forces. During movement, security is obtained by advance, flank, and rear guards, and by reconnaissance patrols and observers. When intelligence reports indicate that contact is imminent, the security forces are increased. When contact is gained and the main body engaged, security of the flanks and rear becomes imperative. Reconnaissance ele-

ments should be used for reconnaissance and security missions during all phases of operations where the road net is adequate. Dismounted troops are used in areas that are impassable to motorized or armored elements.

b. Armor units must act with speed and aggressiveness in operations against guerillas. The objective is to encircle them and close their escape routes, then destroy them. Cautious movement, or thorough search of the area, gives the guerillas time to react or escape. The guerilla force should be encircled before it is attacked, if possible. This is particularly true of actions begun late in the day; it is usually better to concentrate on completing the encirclement than to launch an attack that cannot be completed before dark. Efforts to encircle the guerillas are continued into the night if necessary; in any event, contact is maintained to keep them from escaping. It is most important to gain surprise in actions against guerillas, since one of their normal characteristics is quick reaction to any development. Once a guerilla force is engaged, contact must be maintained; if it cannot be encircled, it is pursued and destroyed.

454. Operations Against Organized Guerilla Positions

In the event guerillas choose to organize strong defenses of their operational bases, attacks against such bases may be planned and executed in the same manner as attacks against strong enemy positions. However, in such conventionl style attacks, careful consideration should be given to the influence of rugged, broken terrain on the operational capabilities of armor units.

Section V. DESERT OPERATIONS

455. General

a. For detailed discussion of desert operations, see FM 31–25.

b. Special training and conditioning and a high degree of self-discipline are essential for desert operations. All deserts have certain characteristics—lack of water, absence of vegetation, large areas of sand, extreme temperature ranges, and brilliant sunlight. The terrain in deserts is not necessarily flat and level. There are hills, depressions, sand dunes, rocks, shale, and salt marshes, as well as great expanses of sand. However, these terrain features usually present, at most, only local obstacles to movement.

456. Camouflage in Desert Operations

The lack of vegetation in the desert makes concealment of men and equipment difficult. Artificial means of camouflage are extensively employed, including protective painting for all vehicles. Units carry camouflage equipment and material on all movements. Maximum use

is made of shadows in broken ground, dried-out stream beds (wadies), and sand dune areas.

457. Mobility in Desert Operations

As a rule it is easy to move in desert areas; therefore, the force that has the greater mobility is the more effective. Armor units are well suited for desert fighting. Movements are normally made for long distances, and speed of execution is essential. Maintaining direction during movements is difficult because of the absence of roads, trails, and landmarks. Navigational aids and dead reckoning are used to maintain direction.

458. Surprise in Desert Operations

Visibility is often poor in the desert, because of the absence of high ground for observation and the presence of blowing dust. Surprise is facilitated by use of an aggressive counterreconnaissance screen, by speed of movement, and by deception. Dummy positions, decoy movements, and the operation of false radio nets aid in deception. In open areas, a force can conceal its movements by moving at night or during dust storms. The glare of the sun, especially when it is low on the horizon, reduces visibility toward the sun; an attacker may be able to gain surprise by moving with the sun at his back.

459. Security in Desert Operations

Because of the lack of natural obstacles in the desert, all-round protection is necessary at all times. Units must be prepared to fight in any direction. Reconnaissance must extend for greater distances than normal. Once battle is joined, reconnaissance is intensified to prevent surprise envelopments. The lack of natural concealment increases the difficulty of security against enemy air action. Dispersion and camouflage are used as passive means of defense against air attack, and active defensive measures are employed to the fullest extent. Since it is virtually impossible to conceal logistical installations from either ground or air observation, their security is best obtained through dispersion and through deception as to the nature of the installation. Increased emphasis must be placed on active defense of supply columns and logistical installations from ground attack.

460. Tactics in Desert Operations

In desert combat, emphasis is placed on maneuver because flanks are most accessible. Desert terrain favors envelopments and deep turning movements. Wide movements around an enemy flank can often be made without detection. Mobile forces can quickly exploit any weaknesses or mistakes of the enemy.

461. Logistical Support of Desert Operations

a. The nature of the terrain usually requires increased dispersion within trains areas and greater distances between logistical installations. Supply convoys must be carefully controlled, since the lack of established routes and landmarks makes it difficult for them to maintain direction.

b. The increased distances between logistical installations, and the vulnerability of supply convoys, may make it desirable to effect resupply by air.

Section VI. MOUNTAIN OPERATIONS

462. General

a. For a detailed discussion of mountain operations, see FM 70–10.

b. Mountainous terrain generally limits the use of armored vehicles to roads and trails. Small areas may be found where armored vehicles can get off roads and fight across country, but these areas usually are few in number and may be mined. Many times a small amount of engineer work will permit tanks to move to advantageous firing positions in the roughest types of terrain, thereby gaining tactical surprise. The normal mission of tanks in mountain operations is to furnish support either by direct fire, by counterattack, or by antitank defense.

c. Adequate logistical support for armor units engaged in mountain operations is extremely difficult. Roads are usually few in number and require a great deal of maintenance. It is often necessary to use helicopters to effect resupply.

d. Mountainous terrain presents many communication problems. Radio communication, particularly on FM sets, may be affected by high ground between stations. It is difficult to lay field wire. Radio communication must be improved through the use of relay and retransmission stations. Ultra-short-wave equipment, if available, is more effective in mountains than other types.

463. Conduct of the Mountain Attack

a. In mountainous terrain, an armor attack must be planned in minute detail. The nature of the terrain may permit tanks to support attacking infantry with relatively long-range direct fire. This requires excellent radio communication and thorough coordination between the infantry and tank units.

b. Key terrain features are primary objectives. Attacks along low ground are usually costly because the defender has excellent observation. The route of an attacking force normally will be along ridge lines or on other elevated terrain. On such terrain, the attacking force in many cases will gain tactical surprise. A great deal of engineer

work may be required in order to place tanks on high ground where they can closely support the attack. It may be necessary to build a trail from low ground to the attack position. When mountainous terrain contains corridors which are favorable to the attack and which permit employment of armor, armor may attack down the corridors while infantry units attack along the ridge lines.

c. Available roads and trails must be kept in as good repair as possible, to permit the movement of armor. Tank dozers and bridging material must be kept well forward.

d. No more armored vehicles should be taken forward than are required for immediate operation. Having uncommitted armored vehicles in forward areas causes unnecessary damage to roads and may create traffic hazards for resupply vehicles.

e. If decisive armor action becomes possible, the armor forces are committed in mass, closely supported by artillery and engineers. Objectives are usually critical points on the hostile routes of supply and withdrawal, the capture of which would isolate the enemy forward position.

Section VII. OPERATIONS IN DEEP SNOW AND EXTREME COLD

464. General

a. For detailed discussion of operations in extreme cold, see FM 31–71.

b. Troops require special clothing and heated shelters. Equipment and supplies that would be damaged by freezing are protected against the cold. Weapons and vehicles are winterized with special lubricants. Wheeled vehicles may be used on established roads in rear areas. Full-track vehicles with low ground pressures are used for movement over snow-covered or muddy terrain. Movement on icy slopes requires special grousers fitted on the tracks.

c. All movement is slow; this frequently limits the depth of combat missions. Careful reconnaissance by patrols on skis, snowshoes, or light over-snow vehicles precedes movement of units. Reconnaissance reports include information on snow depth and ice thickness. Short-range weather forecasts are important in planning movement.

d. Armor units advancing across country avoid heavy woods and deep drifts, taking advantage of wind-swept ridges where snow cover is thinnest. Thickly frozen lakes and rivers, instead of being obstacles, are good routes for movement.

e. The short periods of daylight, and the difficulty of concealing movement in snow-covered terrain, cause an increase in night movements, which are frequently aided by clear atmosphere and bright

moonlight. Deep snow provides concealment, but increases the difficulty of orientation on the terrain. Long movements require the use of navigational aids.

Section VIII. RAIDS

465. General

A raid is an attack to accomplish a specific purpose within an enemy position, with no intention of holding the territory invaded. Raids may be executed within or beyond supporting distance of the parent unit, either in daylight or in darkness. When the area to be raided is beyond supporting distance, the raiding party operates as a separate force.

a. Purposes. Raids may be made to capture prisoners; to capture or destroy specific enemy materiel; to obtain detailed information of hostile units, dispositions, locations, strength, works, intentions, or methods of defense; or to harass the enemy and disrupt his plans.

b. Characteristics. The raiding force always withdraws after it accomplishes its mission. Unless carefully planned and executed, the withdrawal is the most difficult part of the operation. Security is vital, because normally the raiding force penetrates the enemy position and is vulnerable to attack from all directions. Raids are planned and executed much like other attacks, but surprise and speed of execution are of greater importance.

466. Types of Raids

a. A dismounted raid normally is made at night and does not advance beyond supporting distance of the parent unit. This type of raid is made when units are in close contact with the enemy and it is desired to capture prisoners, to destroy specific enemy installations or materiel, or to secure information. It has a definite nuisance value, and often delays enemy planning.

b. A mounted raid is normally conducted by tanks and armored infantry and frequently advances beyond supporting distance of the parent unit. Mounted raids may be made to destroy specific enemy installations or materiel, to capture specific types of equipment, to free friendly personnel in enemy prisoner-of-war camps, and to disrupt the enemy's supply lines.

467. Selection of Raid Objective

The raid objective may be prescribed by the higher commander, or it may be left to the discretion of the commander of the raiding force. Where possible, the area selected for the raid is one that is lightly defended. The raid objective should be as close as possible to friendly front lines.

468. Time of Raid

Before a raid, time must be allowed for reconnaissance, planning, registration of supporting fires, and rehearsals. Raids are preferably carried out at dawn or twilight, or in fog or other conditions of low visibility, to limit enemy observation and yet give enough light for close combat. Successful raids can be made in broad daylight or in complete darkness. Daylight raids require heavy supporting fire and the use of smoke to blind enemy observation.

469. Route of Advance and Withdrawal for Raid

a. In daylight raids, covered routes of approach are used; the raid is begun from the last covered position. Under conditions of reduced visibility, when surprise through stealth is possible, advance and flank security detachments precede the raiding force. They prevent premature discovery of the raid by destroying outguards with silent weapons.

b. The withdrawal may be made over the same route used for the advance, but it is usually made over another route. Routes of withdrawal should avoid the suspected location of enemy defensive fires. Road intersections and other prominent landmarks are avoided. Security detachments and protective fires are used to keep the routes of withdrawal open.

470. Rallying Points for Raids

Rallying points are locations at which units assemble when they have become separated during a raid or have completed their missions and are ready to withdraw. A rallying point is designated near the objective, and a series of rallying points may be prescribed along the routes of advance and withdrawal. A rallying point within friendly lines is usually prescribed to assemble materiel, prisoners, and information gathered in the raid.

471. Logistical Considerations in Raids

In planning logistical support of a raiding party, special consideration must be given to the fact that the raiding party may be isolated or required to fight its way back to firendly lines. Factors governing the amount of logistical support accompanying a raiding party include the type and number of vehicles, type and number of weapons, movement distance, length of time the raiding party will operate in enemy territory, and expected enemy resistance. Plans should be made to resupply the raiders by air if necessary.

Section IX. AMPHIBIOUS OPERATIONS

472. General

a. An amphibious operation is a landing made from ships or craft to achieve an objective on land.

b. Amphibious doctrine is set forth in FM 100–5, field manuals of the 60-series, FM 17–34, and pertinent Department of the Navy publications. For explanation of Navy and special terms used in amphibious warfare, see SR 320–5–1 and AR 320–1.

473. Scope of Amphibious Operations

An amphibious operation includes isolation and preparation of the objective area for the landing and operations of the forces involved in the overseas movement, assault, support, and consolidation. It is a joint operation when the assigned forces are composed of elements of more than one service.

474. Role of Armor in Amphibious Operations

a. An amphibious assault is normally an infantry division operation. The armored division, because of its heavy vehicles and equipment, is not normally used in an amphibious assault. However, in certain situations the early landing of large armor formations may be desirable in order to effect early link-up with airborne forces or to seize critical terrain dominating the landing area. Once ashore, the tactical employment of armor is as in land warfare.

b. In large-scale amphibious operations, a beachhead may be secured by infantry, then an armored division or a combat command may be landed in order to add its firepower, mobility, and shock action in further operations.

c. An armored infantry battalion, less carriers, may be used in the assault landing. Its employment in such a situation is similar to that of a battalion landing team of an infantry division. Its carriers should be brought ashore as soon as possible so that it can resume operations as armored infantry.

d. Armored cavalry may be employed on reconnaissance and screening missions subsequent to the assault landing. Armored cavalry may be landed between major elements of a widely separated landing force to maintain contact between such elements or to seize lightly defended objectives.

475. Amphibious Training of Armor Units

a. Armor units are trained to land in three ways—directly from landing ships onto the beach, in preloaded landing craft from LSD, and by swimming tanks ashore with the aid of flotation devices. Armor personnel becomes familiar with these methods during the

shore-based training phase. During afloat training the most appropriate method is emphasized.

b. In addition to the amphibious training common to all type units, the following individual training is conducted.

(1) Preparation of armored vehicles for loading.
(2) Preparation of armored vehicles for deep-water fording.
(3) Ship-to-shore movement.
(4) Beach obstacle reduction and passage.
(5) Preparation of vehicles and equipment for preloading in landing craft.
(6) Maintenance of preloaded vehicles and equipment.
(7) Embarking and debarking vehicles.
(8) Operation and service of vehicles after landing.
(9) Emergency repairs to deep-water fording and flotation equipment.
(10) Installing and jettisoning flotation devices.
(11) Firing while vehicles are waterborne.
(12) Rules of the road.
(13) Ship-to-shore movement control means while using flotation devices.
(14) Approach to the beach and surf estimation.
(15) Operation in surf.
(16) Wading vehicles ashore with and without guides.

c. Afloat training consists of two elements, elementary and advanced afloat training.

(1) Each ship and embarked armor unit conducts debarkation drills, followed by elementary ship-to-shore exercises which emphasize formations, control, and communication procedures.
(2) Advanced afloat training normally includes a ship-to-shore exercise and full-scale landing of all elements of the (joint) amphibious task force.

Section X. HELICOPTER-BORNE OPERATIONS

476. General

a. Utility or transport-type helicopters are normally used in helicopter-borne operations performed in conjunction with armor combat actions. The scope of the mission, the number of troops, or the supply tonnages to be airlifted will determine the number and type of helicopters used for the mission. The loading capacities and detailed descriptions of Army utility and transport helicopters are contained in TM 57-210 and Department of the Army Flight Handbooks for the various type helicopter.

b. Light and medium transport helicopter companies are organic to Army transport aviation battalions at field army level. These units may be kept under operational control of the field army, or they may be attached to or put in support of subordinate units. Division is normally the lowest echelon that exercises operational control over Army transport aviation units. However, circumstances may make it desirable to pass operational control down to combat command or, in rare cases, even to battalion level. Army transport aviation is charged with the mission of short-haul air transport to expedite and facilitate tactical and logistical operations in the combat zone. Tactical troop transport in conjunction with armor operations usually involves the air movement of small units on limited-objective type missions closely coordinated with armor ground action.

c. A limited number of utility and light transport helicopters are organic to the armored and infantry divisions. The aviation company of the armored division contains both utility and light transport helicopters within its transport platoon. These helicopters, six light transport and eight utility, provide the armored division with an immediately available means for short-haul transport. The small armor unit can expect to use organic helicopters for normal tactical troop transport missions and limited emergency aerial resupply and medical evacuation. Usually it is only when the scope of the helicopter-borne mission involves a battalion or larger armor element that Army transport aviation from the field army will be employed in support of the division.

477. Typical Armor Helicopter-Borne Operations

a. River and Obstacle Crossings. To a great extent, time delays and combat losses of personnel and equipment can be eliminated by employing helicopters in support of river- or obstacle-crossing operations. Armor infantry elements may be helicopter-lifted to positions beyond an obstacle so as to outflank and seize enemy defensive positions and key terrain features. A coordinated helicopter-borne operation of this type denies the enemy the capability of defending the crossing site or of placing observed fires on that location, thus facilitating the installation of bridging equipment and subsequent movement of armor. Helicopter-borne operations must be supported by fire. In addition, personnel must be left behind to move armored personnel carriers forward in the subsequent link-up.

b. Flanking Operations. Enemy roadblocks and other delaying or defensive positions are usually emplaced so as to canalize an attack onto terrain of the defender's choosing—locations that are covered by intensive fire. By employing helicopter-borne armored infantry or armored cavalry elements, the armor unit can assault enemy blocking positions, or other lightly defended locations, from the rear. This

type of helicopter-borne operation must be closely coordinated with ground action in order to fully exploit the initial successes gained by vertical envelopment.

c. Pursuit. Armor in the pursuit can maintain or rapidly regain contact with the enemy by using helicopter-borne combat elements. Maximum use of key terrain features is mandatory if the enemy force is to be blocked until the pursuing armor can overtake and destroy it.

d. Deployment of Reconnaissance Elements. When armored cavalry units are augmented with transport helicopters, they can operate effectively over larger areas with fewer men. Armored cavalry elements can be moved and landed as desired to reconnoiter specific areas as well as intervals between positions. When providing flank security for armor, the helicopter-lifted security elements make frequent landings at blocking positions and other critical terrain features. Observation aircraft or reconnaissance helicopters may be used to precede the helicopters to assist in selecting landing sites.

e. Logistical Operations. Army transport helicopters provide a lift capability that contributes to greater logistical mobility. The employment of utility and transport-type helicopters in the logistical support role can supplement existing surface lines of communication or, for special operations, replace them entirely. Normally, all means of transportation are used in providing logistical support in order to obtain speed, reliability, and flexibility. A requirement for the employment of organic or attached transport helicopters in the logistical support role may result from—

(1) Inadequate surface routes of communication, particularly between major supply installations and using units.
(2) Enemy interdiction or severance of surface lines of communication.
(3) Terrain obstacles or restrictions which prohibit or seriously limit the use of surface transportation.
(4) The advance of friendly units exceeding the capability of surface transportation to keep them supplied.
(5) Isolation of friendly forces.
(6) The requirement for greater speed and flexibility in the movement of personnel and materiel.

478. Channels Used To Obtain Helicopter Transport Support

a. The G3 exercises general staff supervision and control over the allocation of both organic and attached Army aviation by direct coordination with the Division Aviation Officer.

b. Requests for helicopter transport support should be submitted as far in advance as possible. Emergency requests are processed through the same channels as routine requests. However, emergency requests normally are oral rather than written, and their handling is more expeditious than that of routine requests.

c. Requests for transport helicopter support are processed through the normal chain of command for approval or disapproval.

479. Contents of Requests for Helicopter Support

a. A request for transport helicopter support includes, as a minimum—

(1) Type of mission.
(2) Number of personnel and amount of equipment that are desired to be airlifted, and/or types and quantities of supplies desired with dates and times they will be needed.
(3) Exact location (map coordinates) and brief description of loading and landing areas.
(4) Any requirement for evacuation of casualties, materiel, or personnel from the unit(s) receiving the supplies or participating in the tactical troop transport.

b. When required the following information will also be furnished:

(1) Terrain characteristics which may interfere with the approach or exit flight pattern or the identification of landing strips or landing zones.
(2) Terrain characteristics that may serve as check points.
(3) Size and direction of the long axis of the loading zone, landing zone, or landing strip.
(4) Reference to prearranged signal plan for communication between the aircraft and the ground units, to include mutual recognition and control measures.
(5) Any essential information pertaining to fire-support coordination.

c. The form and means of transmission of requests for transport aviation support, and the information to be included, should be in the SOP of every armor unit.

480. Planning Procedures for Helicopter-Borne Operations

a. The detailed planning for helicopter-borne operations is normally done at division or higher level. However, the combat support flight sections that are attached to the combat commands and the armored cavalry squadron are available to assist the staffs of small units in the detailed planning and execution of various helicopter-borne operations. The following factors are considered in planning for a helicopter-borne mission:

(1) Analysis of the weather and terrain.
(2) Enemy situation and capabilities.
(3) Situation of friendly ground forces.
(4) Status and composition of the available forces.
(5) Logistical support available.

b. Plans for Army transport helicopter employment are developed in the following sequence:

(1) The ground tactical plan, including a determination of the strength and composition of forces required and the development of a logistical plan to support the tactical plan.
(2) The landing plan, which indicates the sequence, time, and place of arrival of troops or materiel.
(3) The air movement plan, based on the landing plan.
(4) The loading plan, based on the air movement plan.

c. Simplicity is the guiding principle in the preparation of air transport operational plans.

d. Staffs of participating or planning commands plan concurrently to insure coordination and to reduce planning time.

481. Effect of Weather on Helicopter-Borne Operations

Helicopter-borne operations may have to be delayed or postponed due to adverse weather conditions. Some of the weather factors that may cause a delay or postponement are—wind velocity, ceiling heights, visibility, and extreme temperature changes. The division aviation officer, as a special staff officer, will evaluate all known factors and advise as to whether acceptable weather conditions exist to insure full scale participation by the transport helicopters for a proposed operation.

482. Terrain Considerations in Helicopter-Borne Operations

a. The terrain in the objective or landing area is analyzed to determine—

(1) Potential landing areas and strips (day or night).
(2) Areas offering cover and concealment.
(3) Obstacles to landing and ground movement.
(4) The location of enemy observation points or potential observation points that overlook objective areas.
(5) Critical terrain features.
(6) The existence of enemy fortifications.
(7) The fields of fire of located enemy weapons.
(8) Routes from potential landing areas or strips to the tactical ground objectives.
(9) Landmarks.

b. After the objective area is analyzed, the terrain lying between the loading and objective areas is analyzed to determine—

(1) Terrain features that can be used for defiladed flight routes.
(2) Road nets, rail nets, and power and telephone lines.
(3) Location of landmarks that would help define the flight route.
(4) Vegetation that might provide concealment during movement and landing.
(5) Location of emergency landing sites.

483. Fire Support of Helicopter-Borne Operations

The armor commander plans fires to be delivered to neutralize enemy forces within the objective or landing area as well as those to be delivered during and after any assault by helicopter-borne air elements. He must coordinate fire support closely while planning, because operations within the objective area may be decentralized and communication difficult to maintain. In addition to fires in support of the operation, the armor commander should develop plans for fires to clear and isolate the approach and return routes of the transport helicopters. Fires planned within and near the flight corridors are carefully coordinated during air movement to avoid casualties to friendly elements.

484. Landing Plan for Helicopter-Borne Operations—General

The landing plan is based upon the plan of maneuver or the logistical support mission. This plan indicates the sequence, time, and place of arrival of troops and/or materiel in the objective area and the control measures to be used. The order in which units are landed, time of landing, and final landing sites selected are specified upon receipt of recommendations from the aviation staff officer and the helicopter transport unit commander. Alternate plans are provided in the event it becomes necessary to alter or abandon the preferred landing plan. Unless conditions dictate otherwise, it is planned to land units within the objective area in as short a time as possible; the same principle applies to logistical support missions.

485. Selection of Helicopter Landing Zones

a. Landing zones directly on the objective may be selected, if the terrain and enemy situation permit. Otherwise, they are as close to the objective as practicable in order to gain surprise and still protect the transported force during unloading.

b. Desirable landing zone characteristics include—

(1) Ease of identification from the air under expected conditions of visibility.

(2) Cover and concealment close to the landing zones.

(3) Relative freedom from obstacles.

(4) Nearness to dominating terrain, covered routes or approaches to the objective, good road nets, and terrain favorable for defense against armored attack.

c. The transported force commander may require initial assault elements to secure landing zones for the subsequent landing of the balance of the helicopter-borne force. The size of the landing zone security element is determined by the size of the zone, its location, and the threat of enemy intervention.

486. Considerations in Selection of Helicopter Landing Zones

a. When possible, landing areas are selected in open, flat terrain, without trees, large bushes, and rocks. The landing zone, the flight approach, and the exit should be hidden from enemy surveillance when practicable. Dusty areas are avoided whenever possible to prevent disclosure of helicopter activities.

b. Each transport helicopter requires an area about 150 feet in diameter in which to land, provided there are no major obstructions to flight. Helicopters must avoid areas which might produce dead air space or high wind turbulence. The ground where the helicopter landing gear touches should be level, and clear of boulders and holes, to facilitate takeoff and landing.

c. Approaches to and exits from the landing area should be large enough to accommodate the flight group. In any case, the sequence or composition of flights and groups will be determined by the capacity of either the landing area or loading area, whichever is smaller. Landing areas should be alined into the prevailing wind with no obstruction at either end which would require the aircraft to swerve while on final approach or initial takeoff.

d. Ground elevation, temperature, humidity, and barometric pressure play an important part in the ability of the helicopter to hover, land, and takeoff. With an increase in elevation, there is a consequent decrease in density of atmosphere. When the atmosphere is denser, more weight can be lifted and better control of the helicopter can be maintained. Therefore, ground elevation, in addition to the other factors mentioned, must be considered in landing area selection.

e. Helicopters are capable of delivering either troops or supplies without touching the ground. This procedure is always used in delivering externally slung cargo. Troops or internal cargo may be delivered from a hovering position by use of ropes or rope ladders, or by lowering the hoist. This procedure may be necessary when no suitable landing area is available.

487. Marking the Helicopter Landing Zone

The markings used to designate a landing zone for helicopters differ from those used to indicate a landing strip for fixed wing aircraft or a drop zone for air-delivered supply. Four panels of Panel Set AP–50 are used to make a hollow square which indicates where the landing gear of the helicopter should touch the ground. One panel is used to point in the direction the aircraft should land. In addition to the touch-down marking, an identification code symbol should be displayed. In an emergency, any material contrasting in color to the ground may be used. The velocity and direction of the wind can be indicated by a smoke grenade or by fastening a long, narrow piece of cloth on a stick and holding it high in the air. This procedure pro-

vides a perspective for the pilot so that he can more accurately judge distances. The marking system for a helicopter landing zone (fig. 118) is identical to that used within the armored division to mark command post helicopter landing and pickup points.

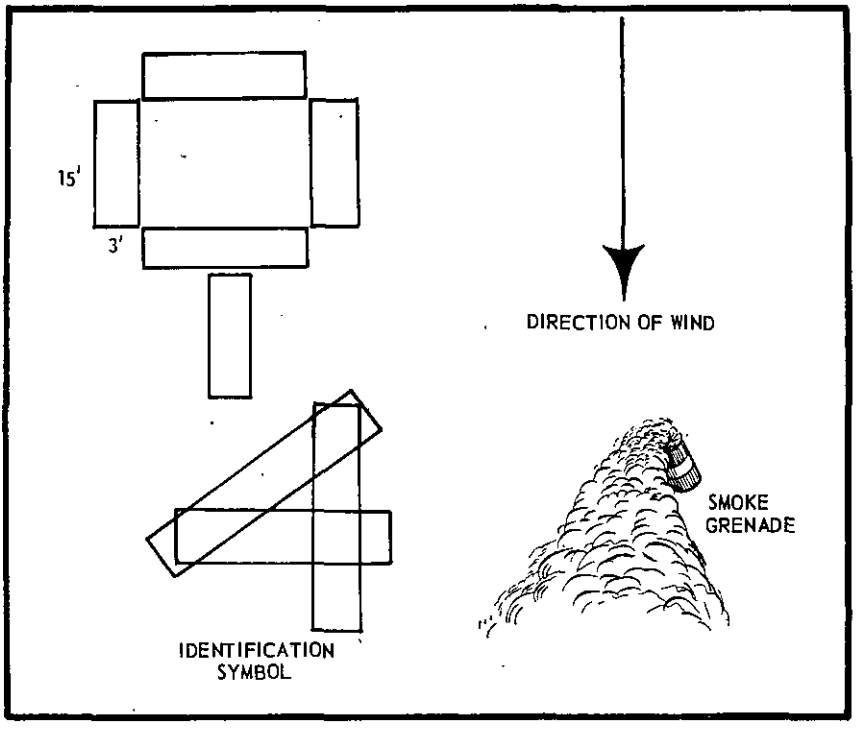


Figure 118. Marking of helicopter landing area.

488. Air Movement Plan for Helicopter-Borne Operation

The air movement plan consists of a flight plan, a flight diagram, and movement control information. Details of the landing plan are incorporated in the air movement plan. The actual preparation of the air movement plan is normally accomplished by the transport aviation unit commander and the division Army aviation staff section.

489. Loading Plan for Helicopter-Borne Operation

The amount of detail required in the loading plan is in direct proportion to the size and composition of the helicopter-transported force, the experience of participating personnel, the availability of suitable loading areas, and the complexity of the air movement plan upon which the loading plan is based. Routine loading instructions should be included in armor unit SOPs.

CHAPTER 12

ARMOR TRAINING

490. Training Responsibility

a. The commander of an armor unit is responsible for all aspects of the training of his unit. This responsibility not only embraces the field of tactics and operations but also includes staff training and the establishment of a responsive chain of command.

b. Training responsibilities must be clearly fixed; subordinates at all echelons are held fully accountable for the conduct of training and the performance of their units. This is the keystone of a successful training program, will produce maximum efficiency, and is required for success in combat. This fundamental policy must be established early in a unit's training cycle and must become habitual.

c. Commanders must identify, early in the training cycle, those individuals who are capable of filling positions of leadership and command in order that maximum advantage can be taken of their potential abilities. It is equally important to identify quickly those individuals who are incapable of assuming enlarged responsibilities.

d. At the appropriate time in the training cycle, small-unit leaders must be permitted to plan and conduct small-unit training problems with a minimum of supervision by higher commanders. This is essential in the development of combat leaders and must be implemented early in the training cycle in an effort to develop an aggressive, self-reliant spirit in the small-unit leader. The probability of isolation of the small unit on the atomic battlefield emphasizes the need for well-trained combat leaders and troops, and requires a highly developed capability to operate under mission-type orders with a minimum of guidance and impetus from above.

491. Training Objectives

Training of armor individuals, units, and combined-arms formations must be oriented toward developing, to the maximum, the characteristics of mobility, firepower, and shock action. To achieve this objective, effective balanced training in the tactical, technical, and logistical aspects of armor operations is essential. Throughout the training cycle, the proper relationship must be maintained between all three categories of training. The overemphasis of one category, to the neglect of another, nullifies the effect of other training toward

developing the overall combat effectiveness of an armor unit. Relative emphasis on the three categories changes, depending on the type unit and the time phase of training under consideration. In purely combat type units, the greater proportion of training effort is devoted to tactical type training, but with sufficient instruction and practice to insure proficiency in technical subjects and logistical procedures. Formalized instruction and practices prescribed in Army training programs should be presented in sequence and should be augmented by concurrent and integrated training to obtain an appropriate balance throughout the training cycle.

492. Training Essential To Achieve Basic Objectives

To achieve the basic training objectives set forth above, the following general subject areas must receive continuing emphasis at all echelons. This emphasis of training may require repetition or retraining when appropriate, or scheduling of integrated and concurrent training.

a. Training Essential to Mobility.

(1) Tactical marches and combat formations to develop and maintain the highest possible degree of proficiency.

(2) Maintenance of materiel of all technical services to insure that all equipment is in combat readiness.

(3) Driver training, emphasizing driver and crew maintenance, techniques of cross-country driving, and the avoidance of overtaxing vehicle capabilities.

(4) Logistic responsibilities of all individuals and commanders to insure that the required supplies are on hand at the right time and in the right quantities, and are not wasted; practice in air and ground resupply techniques.

(5) Map and aerial photo reading and terrain appreciation directed toward map usage, with emphasis on cross-country navigation and the ability of the leader to direct or control the movement of tactical formations across country; keeping continuously oriented with respect to the map, the ground, and the location of friendly and enemy forces. An appreciation of terrain from map inspection and from observation while in movement must be acquired.

(6) Passage and/or reduction of obstacles, to include operations in contaminated areas and pioneering and demolitions training. This phase of training is most important to reconnaissance-type units.

(7) Fundamental understanding of Army aviation and its place in armor operations.

(8) Prearranged deployments and immediate action procedures of small units (for the most common types of combat situa-

tions) to insure maintenance of the initiative through immediate and violent reaction in meeting engagements.

(9) Perfection of communication procedures and techniques through instruction and practice to insure coordination and control.

(10) Training in night operations to insure a capability for movement on the atomic battlefield.

b. Training Essential to Firepower.

(1) Range practice to develop proficiency in the use of individual and vehicular weapons.

(2) Field firing exercises to develop unit combat firing proficiency.

(3) Set-type small-unit deployments to develop maximum fire on the enemy in minimum time.

(4) Gun and turret maintenance.

(5) Ranging, sighting, and tracking exercises performed at every opportunity, especially during field exercises, maneuvers and tests.

c. Training Essential to Shock Action.

(1) Combined-arms exercises which demonstrate and apply techniques of the coordinated action required to develop the maximum combat power of a mobile combined-arms team with close air and atomic fire support.

(2) Indoctrination of personnel in the spirit of the offense and maintaining the initiative.

(3) Logistical training aimed at procedures and techniques necessary to support sustained offensive action. Maximum training in resupply under cover of darkness and over extended areas of operation.

(4) Maintenance training which insures that the maximum of materiel will always be available in a combat-ready condition.

(5) Control and coordination procedures which serve to focus the unit's combat power and supporting fires at the decisive place and time.

493. Training Phases

The training phase within the production cycle for an armor unit is normally 36 weeks in length and subdivided as follows:

a. Basic combat training (8 weeks).

b. Advanced individual training (8 weeks).

c. Basic unit training (10 weeks).

(1) Section training.

(2) Platoon training.

(3) Company training.

d. Advanced unit training (5 weeks).
(1) Battalion tactical training (3 weeks).
(2) Combat command tactical training (1 week).
(3) Division tactical training (1 week).
e. Field exercises and maneuvers (5 weeks).

494. Specialist Training

a. General. The training of enlisted specialists, particularly in the fields of communication and vehicle maintenance, constitutes one of the armor commander's most important training responsibilities. Specialist training, the foundation of which is laid during the advanced individual phase of the enlisted man's training, must be carefully planned and closely supervised. The three basic methods employed to accomplish specialist training are service schools, unit schools, and on-the-job training. Suggested methods and procedures for training individuals in their military occupational specialties are included in all Army training programs pertinent to armor units.

b. Service School Specialist Training.—Specialists requiring school training should be trained at established service schools if the maximum results are to be obtained within a limited time. Those individuals unable to attend service schools, due to limited allocation of quotas or for other causes, will be unit-trained in allied specialties until such time as attendance at the appropriate service school is feasible. When a portion of certain specialists are to be school trained, commanders will insure that personnel to attend service schools are phased from the unit in such a manner that, upon their return, they may be used to train other personnel of a like MOS within the unit. Guidance for the training of other individuals of this category is contained in Army subject schedules for MOS training.

c. Unit Schools. Guidance for the unit training of specialists can be found in Army subject schedules for MOS training. However, because of limitations of qualified instructors, equipment, and facilities, it may not be possible to conduct this training effectively within the unit. If qualified specialists cannot be obtained, it will be necessary to send selected individuals to local specialist schools or to attach them for training to other installations having the required training capability.

d. MOS Subject Schedules. MOS subject schedules are published as a guide to the instructor in the preparation of lesson plans and in the scheduling of periods of instruction. The subject schedules include recommendations on the subject matter to be presented and the references to be used. The manner of presentation is left to the resourcefulness and judgment of the instructor, since success in training depends largely upon his preparation and presentation. MOS subject schedules have been prepared by all technical services, as well

as the combat arms, covering specialist training in their particular fields of interest. MOS subject schedules written by technical services can and should be used to train specialists within armor units.

495. Tactical Training

a. In all tactical training, commanders must continually stress the offensive action of platoons, companies, and battalions. Tactical and technical proficiency and, in turn, confidence come from good instruction and intelligently directed practice.

b. A sound program for developing combat-effective units can be implemented by first establishing a practical training program for officers and key noncommissioned officers. A logical and orderly program insures a standardization of doctrine and training methods. Sand-table exercise can be used initially to demonstrate tactical principles. These can be followed by small unit tactical demonstrations run by specially trained groups.

c. Theoretical instruction and demonstrations should be followed by exercises which emphasize the tactical principles learned. Army training tests may be used as a basis for these tactical exercises. Use of the Army training test will also tend to standardize training objectives and assist units in preparing for the tests which culminate the various unit training phases. Mistakes and errors in judgment may be expected initially, but commanders at all echelons must be prepared to advise their subordinates in order to make certain that all combat leaders develop a thorough professional background in troop-leading procedures and techniques. The mission-type order, a necessity in armor operations, is effective only when given to a subordinate who is thoroughly familiar with his job and thoroughly trained in the techniques necessary for accomplishing his various duties. Tactical exercises can be prepared by the first or second echelon above the unit expected to execute the problem, and all exercises should be set in the framework of the command two echelons above the unit executing the problem. This procedure should not preclude commanders from allowing their subordinate units, on occasion, to prepare and run their own tactical exercises.

d. At the conclusion of all exercises, a critique must be held to present errors and emphasize positive methods for correcting errors noted. It is not sufficient in the initial training stages for commanders to merely state the errors made by subordinates. To be effective, each statement of error must be backed by a positive method or methods for correction.

e. Throughout the tactical training phases, emphasis should be placed on the integration of effort of all elements of the combined-arms team, to include tanks, armored infantry, artillery, and engineers.

496. Concurrent and Integrated Training Techniques

In order to insure that every available training minute is utilized, commanders must make full use of concurrent and integrated training techniques.

a. Concurrent training may be defined as that training which is conducted simultaneously with other subjects when permitted by the scheduling of the principal subject; for example, personnel not actually firing the main tank gun during a gunnery exercise can be receiving training in other subjects behind the firing line. In this case, the concurrent training need not be related to the subject of tank gunnery; the only requirement is that the principal subject be one in which all trainees cannot participate during the entire scheduled period. Proper use of concurrent training results in the maximum amount of training being given during the available training time. Concurrent training can also be used by major units to reduce training programs to an absolute minimum and still include all essential subjects.

b. Integrated training is that training wherein an individual or unit, while training in a principal subject, is required to train in or react to one or more additional situations which repeat training given previously—for example, a gas attack on an armored column during a road march, the use of communication facilities during a march or tactical exercise, or the injection of an aggressor prisoner with documents into a tactical problem. Integrated training is the commander's main technique for insuring repetition during training. Tactical exercises must integrate basic military techniques presented previously so that, through repetition, military skills become automatic and can be used as tools in the accomplishment of tactical objectives.

497. Guides for Preparing a Battalion Training Program

a. The battalion training phase begins when all the battalion units have completed their basic unit training. During battalion training, all units function in the battalion team. Throughout the earlier phases of training, the efficiency of the battalion staff and headquarters sections are developed by on-the-job training and by actual operations; this training enables them to assume their responsibilities during the battalion phase. Command post exercises are important in this development.

b. Battalion programs are based on a specific training objective which is usually contained in a detailed training directive from higher headquarters.

c. In any battalion training program, sufficient time is allotted to permit each phase of the training to be executed carefully, completely, and in logical sequence. Time is allotted for correction of deficiencies, rehabilitation of personnel, maintenance of equipment and facilities, and inspections. An adequate amount of open time must be allotted

to the commander to be used as his individual situation requires. Constant effort is made to acclimate the troops to living in the field. From the beginning of any training program, the procedures employed should be the same as those which are employed in combat.

d. As soon as training in basic platoon formations has been completed, elements of the battalion should be trained to operate as part of a combined-arms team. During field exercises, the battalion should be reinforced in varying degrees with other armor units, engineers, and supporting artillery. These detachments should be varied from problem to problem to enable each commander in the division to become familiar with the operational methods of other unit commanders.

e. The following are applicable references for the efficient and successful training of an armor unit.

(1) Appropriate unit TOE.
(2) Appropriate Army training programs, Army subject schedules, and Army training tests. See DA Pam 310–3.
(3) The 17-series field manuals, FM 21–5, FM 21–6, FM 21–8, and other appropriate field manuals and training circulars.
(4) Appropriate technical manuals and technical bulletins.
(5) Appropriate tables of allowances, especially TA 23–100 for training ammunition.
(6) DA Pam 108–1.

APPENDIX I

REFERENCES

FM 3–5	Tactics and Technique of Chemical, Biological, and Radiological Warfare.
FM 5–20	Camouflage, Basic Principles.
FM 5–36	Route Reconnaissance and Classification.
FM 5–134	The Armored Engineer Battalion.
FM 6–20	Artillery Tactics and Technique.
FM 6–40	Field Artillery Gunnery.
FM 6–50	4.2-inch Mortar M30.
FM 7–10	Rifle Company, Infantry Division Battle Group.
FM 7–40	Infantry Division Battle Group.
FM 10–63	Handling of Deceased Personnel in Theaters of Operations.
FM 16–5	The Chaplain.
FM 17–12	Tank Gunnery.
FM 17–20	Armored Infantry Units—Platoon, Company, and Battalion.
FM 17–33	Tank Units—Platoon, Company, and Battalion.
FM 17–34	Amphibious Tank and Tractor Battalions.
FM 17–35	Armored Cavalry Units, Armored and Infantry Divisions.
FM 17–50	Armor Logistics.
FM 17–70	Signal Communication in the Armored Division.
FM 17–79	Tank, 90-mm Gun, M48.
FM 17–80	Tanks, 76-mm Gun, M41 and M41A1.
FM 17–100	The Armored Division.
FM 19–25	Military Police Traffic Control.
FM 19–40	Handling Prisoners of War.
FM 19–90	The Provost Marshal.
FM 20–32	Employment of Land Mines.
FM 20–100	Army Aviation.
FM 21–5	Military Training.
FM 21–6	Techniques of Military Instruction.
FM 21–30	Military Symbols.
FM 21–40	Defense Against CBR Attack.
FM 21–41	Soldier's Manual for Defense Against CBR Attack.

FM 22–100	Command and Leadership for the Small Unit Leader.
FM 23–92	4.2-inch Mortar M2.
FM 25–10	Motor Transportation, Operations.
FM 30–5	Combat Intelligence (U).
FM 30–7	Combat Intelligence; Regiment, Combat Command, and Smaller Units.
FM 31–5	Landing Operations on Hostile Shores (U).
FM 31–15	Operations Against Airborne Attack, Guerilla Action, and Infiltration.
FM 31–21	Guerilla Warfare.
FM 31–25	Desert Operations.
FM 31–50	Combat in Fortified Areas and Towns.
FM 31–60	River-Crossing Operations.
FM 31–71	Operations in the Arctic.
FM 57–20	Airborne Techniques for Divisional Units.
FM 57–30	Airborne Operations.
FM 60–5	Amphibious Operations; Battalion in Assault Landings.
FM 60–10	Amphibious Operations; Regiment in Assault Landings (U).
FM 60–30	Amphibious Operations; Embarkation and Ship Loading (Unit Loading Officer).
FM 70–10	Mountain Operations.
FM 72–20	Jungle Operations.
FM 100–5	Field Service Regulations; Operations.
FM 100–10	Field Service Regulations; Administration.
FM 100–31	Tactical Use of Atomic Weapons (U).
FM 101–1	The GI Manual.
FM 101–5	Staff Organization and Procedure.
FM 101–10	Staff Officer's Field Manual: Organization, Technical and Logistical Data.
FM 101–31	Staff Officer's Field Manual: Atomic Weapons Employment (U).
DA Pam 320–1	Dictionary of United States Military Terms for Joint Usage.
AR 643–55	Disposition of Personal Effects; Military Operations.
DA Pam 108–1	Index of Army Motion Pictures, Television Recordings, and Filmstrips.
DA Pam 310-series	Military Publications Index (as applicable).
DA Pam 39–1	The Tactical Use of Atomic Weapons; Unclassified Military Effects.
DA Pam 39–3	The Effects of Nuclear Weapons.

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SR 320–5–1	Dictionary of United States Army Terms.
SR 525–45–1	Command Report.
TM 3–220	Decontamination.
TM 9–718B	90-mm Gun Tank M48.
TM 9–730	76-mm Gun Tanks M41 (T41E1) and T41E2.
TM 9–738	Tank Recovery Vehicles M32 series.
TM 9–775	Tracked Landing Vehicle Mk 4 (LVT(4)), Tracked Landing Vehicles (Armored) Mk 4 (LVT(A)(4)) and Mk 5 (LT(A)(5)).
TM 9–2800–1	Military Vehicles (Ordnance Corps Responsibility).
TM 9–7012	90-mm Gun Tanks M48 and M48A1.
TM 9–7014	Operation and Organizational Maintenance: 120-mm Gun Tank T43E1.
TM 9–7402	Operations and Organizational Maintenance: Medium Tank Recovery Vehicle M74.
TM 9–7426	Tank Mounting Earth Moving Bulldozer M6.
TM 9–8012	¼-ton 4 x 4 Utility Truck M38.
TM 9–8014	¼-ton 4 x 4 Utility Truck M38A1 and ¼-ton 4 x 4 Front Line Ambulance M170.
TM 9–8022	2½-ton 6 x 6 Cargo Trucks M34, etc.
TM 9–8024	2½-ton 6 x 6 Cargo Trucks M135, etc.
TM 9–8028	5-ton 6 x 6 Cargo Trucks M41, etc.
TM 9–8030	¾-ton 4 x 4 Trucks.
TM 57–210	Air Movement of Troops and Equipment.
TC–3–2	Radiological Surveys.

APPENDIX II

COMMANDER'S CHECKLISTS

ESTIMATE OF THE SITUATION

ATTACK

DEFENSE

DELAYING ACTION

COMMANDER'S CHECKLIST FOR ESTIMATE OF THE SITUATION

(The following checklist for the commander's estimate of the situation should be used as a guide only. Portions which do not apply should be disregarded)

1. MISSION.
   a. What is my mission?
   b. Do I need additional information?
2. SITUATION AND COURSES OF ACTION.
   a. Considerations.

(1) Weather.	Does the weather affect my mission? Does the weather affect the enemy? If so, how?
(2) Terrain.	Is there sufficient maneuver room for my tanks and/or other armored vehicles? Are there areas within my planned zone of action that will not support my tanks and/or other armored vehicles? How do the critical terrain features affect my mission? What obstacles are within my planned zone of action that will affect the accomplishment of my mission? (Streams, steep banks, woods, etc.)
(3) Enemy situation.	Where is the enemy? What type troops does he have? (Armor, infantry, antitank weapons, etc.) What is his strength, and what reinforcements are available to him? What are his peculiarities and weaknesses?
(4) My situation.	What troops are available? What supporting fires are available? What is the condition of my vehicles and equipment? What is my supply situation? (Ammunition, gasoline, rations, etc.)

   b. Enemy capabilities.
      (1) What can the enemy do to interfere with or prevent the accomplishment of my mission?

(2) If I were in his position, what would I do?

(3) Can he do any of the following? If so, where, when, how, and in what strength?

Attack	YES	NO
Counterattack	YES	NO
Defend	YES	NO

c. Courses of action open to me.

(1) Will each of these accomplish my mission?

	Organization for Combat	*Plan of Maneuver*
Plan A		
Plan B		
Plan C		

3. CONSIDERATION OF EACH OF THE ABOVE PLANS IN VIEW OF THE ENEMY'S CAPABILITIES.

a. Which plan has the best chance of success against the enemy's foremost capability?

b. Which plan has the best chance of success against the enemy's secondary capability?

c. Which plan has the best chance of success against the enemy's other capabilities?

4. SELECTION OF THE BEST PLAN AFTER CONSIDERATION OF ALL THE FACTORS.

	Most favorable course	Moderately favorable course	Least favorable course
TERRAIN AND WEATHER			
ENEMY SITUATION			
OWN SITUATION			
ENEMY CAPABILITIES			
UTILIZATION OF OWN FORCES			

5. DECISION. My plan is:

Who	?
What	?
When	?
Where	?
How	?
Why	?

COMMANDER'S CHECKLIST FOR THE ATTACK

1. What is my mission?
2. What forces are available to me to accomplish it? What are their characteristics, and how can I use these characteristics to the best advantage?
3. How much time is available to me and my subordinates to accomplish planning, reconnaissance, and the issuance of orders?
4. What supporting units are available to me? What are their characteristics, and how can I exploit these characteristics in the accomplishment of my mission?
5. What of the terrain? The enemy? The weather?
6. What general plan of maneuver do I want to use?
7. How can I best use all of my supporting elements?
8. What control measures will I employ during the attack? Axes of advance? Boundaries? Phase lines? Successive objectives?
9. Are the tasks assigned to subordinate units within their capabilities?
10. Have I assigned clear, concise, understandable missions to subordinate units? Do they facilitate the accomplishment of the overall mission?
11. Have I coordinated the effort of my unit with adjacent or other affected units?
12. Does my plan require unnecessary concentration of forces that may attract severe enemy countermeasures?
13. Does my plan allow for adequate initiative on the part of subordinates?
14. Have I assigned objectives that will result in the accomplishment of the overall mission?
15. Have I assigned unnecessary intermediate objectives?
16. Have I employed forces in the base of fire that could be better employed in the maneuver and assault?
17. Have I unnecessarily depleted my attacking force through the assignment of too many forces for security, reconnaissance, base of fire, or reserves?
18. Have I weighted the main attack?
19. Is my plan based on the most accurate information of the terrain and enemy that is available?
20. Can my plan be logistically supported?
21. Does my plan favor surprise? Employ tanks in mass? Call for speed?
22. Have I considered "time and space" factors from the assembly area to the line of departure?

23. Have I included provisions for the elimination, breaching, or crossing of obstacles that might be encountered?
24. Does my plan include provisions for the next step in the operation? For partial success? For failure?
25. Does my plan cover the consolidation, reorganization, and security of the objective when taken?
26. Have I included provisions for security to the flanks during the attack?
27. Have I made maximum use of my forward air controller, artillery and engineer representatives, tank unit commander, armored infantry unit commander, reconnaissance unit commander, mortar platoon leader, and staff in planning, checking, and completing the details of my plan? Have I requested their recommendations?

COMMANDER'S CHECKLIST FOR THE DEFENSE

1. What is my mission?
2. What forces are available to me to accomplish it? What are their characteristics, and how can I use these characteristics to best advantage?
3. How much time is available to me and my subordinates to accomplish planning, reconnaissance, and the issuance of orders?
4. What supporting units are available to me? What are their characteristics, and how can I exploit these characteristics in the accomplishment of my mission?
5. What of the terrain? The enemy? The weather? What is the best defensive terrain within my assigned sector?
6. Do these positions provide cover, fields of fire, routes of withdrawal, and observation?
7. What use can I make of obstacles—natural or manmade?—Will they impede the striking force?
8. Do these obstacles tend to canalize the enemy into areas of my choosing?
9. What alternate or successive defensive positions are available?
10. Does my plan of defense make maximum use of the mobility and offensive capability of my force?
11. Does my plan make maximum use of supporting fires? Are these plans known to all key subordinates?
12. Is my communication adequate to support my plan?
13. Are my instructions to subordinates clear, concise, and thoroughly understood? Are the missions I have assigned within the capabilities of my subordinate units?

14. Have I coordinated with adjacent units?
15. Have the plans of the forces on the FEBA and the striking force (reserve) been coordinated?
16. Is my logistical plan adequate to support the operation?
17. Have I included withdrawal instructions in my plan?
18. Have I made adequate provisions for reconnaissance and observation?
19. Does my plan include plans to secure my force at all times?
20. Does my plan include provisions for the next step in the operation? For partial success? For failure?
21. Have I made maximum use of my forward air controller, artillery and engineer representatives, tank unit commander, armored infantry unit commander, reconnaissance unit commander, mortar platoon leader, and staff in planning, checking, and completing the details of my plan? Have I requested their recommendations?

COMMANDER'S CHECKLIST FOR DELAYING ACTION

1. What is my mission?
2. What forces are available to me to accomplish it? What are their characteristics, and how can I use these characteristics to best advantage?
3. How much time is available to me and my subordinates to accomplish planning, reconnaissance, and the issuance of orders?
4. What supporting units are available to me? What are their characteristics, and how can I exploit these characteristics in the accomplishment of my mission?
5. What of the terrain? The enemy? The weather?
6. In my assigned sector, what is the best terrain on which to delay?
7. Have I assigned sectors of responsibility to subordinate units?
8. Do I need additional delaying positions between the specified delaying positions?
9. Does my plan provide for firepower well forward and capable of delivering long-range direct fires on the advancing enemy?
10. Does my fire-support plan include arrangements for long-range fires, close-in fires, fires to support the counterattack, and fires to support the withdrawal?
11. Does my plan call for an early and adequate reconnaissance of subsequent delaying positions and routes thereto?
12. Does my plan provide adequate provisions for reconnaissance and security, especially in the areas not otherwise covered or occupied?

13. Does my plan provide for continuous contact with the enemy? For delay between as well as on defensive positions? For liaison and contact with adjacent units?
14. Does my plan call for delay by fire and movement?
15. Have I made adequate plans for the execution of the withdrawal phase?
16. Have I made adequate provision for control of units during the withdrawal?
17. Have I established my command post and logistical installations to the rear so they won't be overrun or impede the withdrawal?
18. Do all members of my command know why this delaying action is necessary?
19. Does my plan call for the withdrawal of the least heavily engaged element first?
20. Have I made adequate provisions for a night withdrawal?
21. Does my fire-support plan include fires to cover the noise of withdrawal?
22. Are my plans adequate for the occupation of subsequent delaying positions?
23. Is my logistical plan adequate and flexible enough to support the operation?
24. Have I made maximum use of my forward air controller, artillery and engineer representatives, tank unit commander, armored infantry unit commander, reconnaissance unit commander, mortar platoon leader, and staff in planning, checking, and completing the details of my plan? Have I requested their recommendations?

APPENDIX III

ORDERS AND REPORTS

Form No. 1. SPOT REPORT

The spot report form is an abbreviated, prearranged message outline for reporting enemy information which is of sufficient importance to warrant immediate transmission. It is especially adapted to use by small unit patrols or observation posts. The spot report form may have an assigned code name if it is to be transmitted by radio. Its items are:

ALFA —Report number.
BRAVO —*What* observed and *how many?*
CHARLIE —*Where* was enemy observed (coordinates)?
DELTA —*When?* Time and date enemy observed.
ECHO —*Doing what?* If moving, give direction and speed.
FOXTROT—By whom observed.
GOLF —By whom reported.

This report is transmitted immediately by the fastest means available, and in abbreviated form. Two examples are given below.

ALFA —No. 2.
BRAVO —2 Tk Plat.
CHARLIE —165295.
DELTA —140800.
ECHO —SW 15 MPH.
FOXTROT—Patrol Bravo.
GOLF —Patrol Bravo.

ALFA —No. 3.
BRAVO —6 men, 2 MG.
CHARLIE —146246.
DELTA —140830.
ECHO —Digging in.
FOXTROT—Patrol Bravo.
GOLF —Petit 2.

Form No. 2. SHELLING REPORT
SHELREP (MORTREP) (BOMREP) (TOXREP) (*State which*)

A. FROM (Unit; use current call sign or code name)
B. POSITION OF OBSERVER (Map reference preferred; encode if this discloses location of a headquarters or important observation post)
C. GRID OR MAGNETIC BEARING/AZIMUTH IN DEGREES OR MILS OF FLASH OR SOUND OR GROOVE OF SHELL (State which) (State which) (State which) — Omit for aircraft
D. TIME FROM
E. TIME TO
F. AREA SHELLED (MORTARED) (BOMBED) (CONTAMINATED) (Map reference in clear)
G. NUMBER AND NATURE OF GUNS, MORTARS, AIRCRAFT, OR OTHER METHODS OF DELIVERY
H. NATURE OF FIRE (REGISTRATION, BOMBARDMENT, HARASSMENT, etc.) — *May be* omitted for aircraft
I. NUMBER AND TYPE OF SHELLS (BOMBS) (TOXIC AGENTS)
J. TIME OF FLASH TO BANG — Omit for aircraft
K. DAMAGE — Optional; may include both effects and casualties in the case of toxic attack

This report is transmitted by whatever means are available and in abbreviated form. An example is given below.

ALFA —OSCAR PAPA 2.
BRAVO —497632.
CHARLIE —GRID AZIMUTH FLASH 1245 MILS.
DELTA —0945.
ECHO —1012.
FOXTROT—482647.
GOLF —1 UNKNOWN.
HOTEL —REGISTRATION.
INDIA —30 UNKNOWN.
JULIETT —4 SECONDS.
KILO —NEGLIGIBLE.

Example No. 1. ORAL ORDER FOR COMPANY ATTACK

NOTE: The oral order is issued to all leaders, including the artillery forward observer. Paragraph numbers and letters are omitted when the order is issued orally.

1. SITUATION.
   a. *Enemy forces.* Elements Aggressor 3d Rifle Div dug in along that ridge. Aggressor 35th Mecz Div located Vic ERFURT could reinforce units now in contact three hours after start of movement.
   b. *Friendly forces.* Task Force 1/32 attacks 0600 tomorrow, seizes high ground at 234433, Co A and B abreast, Co A on the left; continues attack to northeast to seize high ground Vic 294545. Normal artillery and mortar support.
   c. *Attachments and detachments.* 1st Plat, Co D, 1st Armd Rifle Bn, 46th Inf, is attached to this company.
2. MISSION. This company attacks 0600 tomorrow through 1st Bat Gp, 1st Inf, seizes Hill 358 (here); continues attack, seizes Hill 312 (there), Hill 357 (there), and Hill 363 (there) on order.
3. EXECUTION.
   a. *Concept of operation.* This operation will be an attack through 1st Bat Gp, 1st Inf, with 1st and 2d Tk Plat abreast, to seize Hill 358, followed by a rapid advance to the northeast to seize Hill 363.
   b. *1st Tk Plat.* Attack on the right.
   c. *1st Plat, Co D, 1st Armd Rifle Bn, 46th Inf.* Follow 1st Tk Plat.
   d. *2d Tk Plat.* Attack on the left.
   e. *3d Tk Plat.* Follow 2d Tk Plat.
   f. *Coordinating instructions.*
      (1) Route of march to attack position. See battalion strip map.
      (2) Order of march to attack position: 1st Tk Plat, 2d Tk Plat, Hq Tk Sec, Armd Rifle Plat, 3d Tk Plat, Maint Sec.
      (3) IP at 056377; leading element crosses at 0435 hours.
      (4) Rate of march: 15 MPH.
      (5) Attack position: Vic 154333.
      (6) EEI: Report identification of enemy mechanized units.
4. ADMINISTRATION AND LOGISTICS.
   a. *Resupply.* On order.
   b. *Bn Aid Station.* Vic 154232.

5. COMMAND AND SIGNAL.

a. Signal.

(1) Armd Rifle Plat leaders' radios to net with tanks on tank company frequency.

(2) Emergency signal to lift supporting fires: red star cluster.

b. Command. I will be with the 2nd Tk Plat initially.

Are there any questions?

The time is now 1645.

Example No. 2. MARCH ORDER

CLASSIFICATION

(No change from oral orders)

COPY Nr ———
1st Med Tk Bn (Patton), 37th Armor
HALSBACH (607798) GERMANY
001600 Oct 19—
FK 367

OpnO 12

Map: GERMANY, 1:100,000, AUGSBURG.

Task Orgn: No change.

1. SITUATION.

a. Enemy forces. Current ISUM.

b. Friendly forces. CCA moves 20 Oct on multiple routes to Assy area west of AUGSBURG.

c. Attachments and detachments. No change.

2. MISSION. 1st Med Tk Bn (Patton), 37th Armor, moves 100800 Oct from Pres Loc via routes RED, BLUE, and GREEN to Assy area Vic DINKELSCHERBEN (179563).

3. EXECUTION.

a. Concept of operation. Movement will be executed in column of companies. Scout Plat will precede column and mark route. Annex A (March Table).

b. Co A. Lead column. Provide Adv Gd.

CLASSIFICATION

c. Co B. Follow Co A.

d. Co C. Follow Co B.

e. Co D. Follow Co C. Provide rear Gd.

f. Hq Co (–). Follow Co D.

g. Scout Plat. Precede column by 45 min. Mark route and provide traffic control at IP, RP, and each check point.

h. Coordinating instructions.

(1) Annex A (March Table).

(2) Routes.

(*a*) RED. IP (RR at PU630793); PEUTENHAUSEN (PU649769); AICHACH (PU576697); AUTOBAHN (PU532623).

(*b*) GREEN. AUTOBAHN (PU532623); AUTOBAHN TURN-OFF (PU185633).

(*c*) BLUE. AUTOBAHN TURN-OFF (PU185633); DINKELSCHERBEN (PU179563).

(3) Strip maps will be issued by this Hq for each Veh.

(4) Halts, security, reporting: SOP

4. ADMINISTRATION AND LOGISTICS.

a. Co Tn will accompany parent unit.

b. Refueling Veh on march: SOP.

c. Noon meal will be served after closing in new Assy area.

5. COMMAND AND SIGNAL.

a. Signal. SOI. Index 1–10 in effect.

b. Command. CP moves with Hq Co.

Acknowledge.

BRITE
LTCOL

CLASSIFICATION

Annexes: A (March Table)
B (New Psn: Assy Area)
Distribution: A
OFFICIAL:
s/Smart
SMART, S3

CLASSIFICATION

Example Nr 3. MARCH TABLE CLASSIFICATION

Copy Nr 3
1st Med Tk Bn (Patton), 37th Armor
HALSBACH (PU607798) GERMANY
091600 Oct 19____
RT 337

Annex A (March Table) to Opn O 12
Map: GERMANY, T:100,000, AUGSBURG

1	2	3	4	5	6	7	8	9	10	11
		March					Control of Movement			
March Unit Number	Organization	Route	Rate (MPH)	Type Colm	Time Length (Min)	Location of Critical Points	Total Mileage	Earliest Arrival Time	Latest Clearance Time	Remarks
1	Co A	To IP	12	Open	7 Min	IP	------	0800	0807	Notes 1 & 2
		Red	12	Open	7 Min	Check Point 1	8 mi	0840	0847	
		Red	12	Open	7 Min	Check Point 2	13.5 mi	0908	0915	
		Green	15	Open	5 Min	Check Point 3	35.5 mi	1036	1041	
		Blue	12	Open	7 Min	RP	40.5 mi	1101	1108	
2	Co B	To IP	12	Open	7 Min	IP	------	0809	0816	Notes 1 & 2
		Red	12	Open	7 Min	Check Point 1	8 mi	0849	0856	
		Red	12	Open	7 Min	Check Point 2	13.5 mi	0917	0924	
		Green	15	Open	5 Min	Check Point 3	35.5 mi	1043	1048	
		Blue	12	Open	7 Min	RP	40.5 mi	1110	1117	
3	Co C	To IP	12	Open	7 Min	IP	------	0818	0825	Notes 1 & 2
		Red	12	Open	7 Min	Check Point 1	8 mi	0858	0905	
		Red	12	Open	7 Min	Check Point 2	13.5 mi	0926	0933	
		Green	15	Open	5 Min	Check Point 3	35.5 mi	1050	1055	
		Blue	12	Open	7 Min	RP	40.5 mi	1119	1126	
4	Co D	To IP	12	Open	7 Min	IP	------	0827	0834	Notes 1 & 2
		Red	12	Open	7 Min	Check Point 1	8 mi	0907	0914	
		Red	12	Open	7 Min	Check Point 2	13.5 mi	0935	0942	
		Green	15	Open	5 Min	Check Point 3	35.5 mi	1057	1102	
		Blue	12	Open	7 Min	RP	40.5 mi	1128	1135	
5	Hq Co	To IP	12	Open	29 Min	IP	------	0836	0905	Notes 1 & 2
		Red	12	Open	29 Min	Check Point 1	8 mi	0916	0945	
		Red	12	Open	29 Min	Check Point 2	13.5 mi	0944	1028	
		Green	15	Open	23 Min	Check Point 3	35.5 mi	1104	1127	
		Blue	12	Open	29 Min	RP	40.5 mi	1137	1206	Nr 1145 Halt

NOTES: 1. IP—RR Crossing (PU630793)
Check Point 1—AICHACH (PU576697)
Check Point 2—AUTOBAHN (PU532623)
Check Point 3—AUTOBAHN TURN-OFF (PU185633)
RP—DINKELSCHERBEN (PU179563)

2. 15 Min Halts at 0945 and 1145.

ACKNOWLEDGE:

BRITE
LT COL

DISTR: A

OFFICIAL:

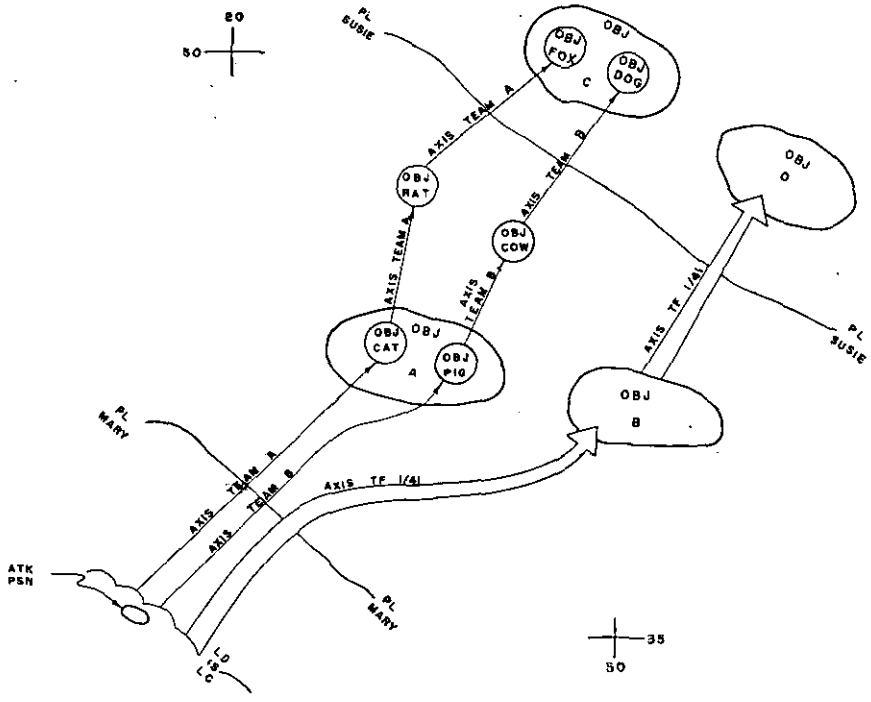
/s/ Smart
SMART
S3

CLASSIFICATION

Example No. 3. March table.

EXAMPLE NR 4 — BATTALION OPERATION ORDER — ATTACK (OVERLAY TYPE)

(CLASSIFICATION)



(CLASSIFICATION)

Example No. 4. Battalion operation order—attack.

(No change from oral orders)

Copy Nr 3
2d Med Tk Bn (Patton), 35th Armor (TF 2/35)
047365, GERMANY
100930 Oct 19 __
SG 0200

OpnO 29

Map: GERMANY, 1:50,000, WALTERSHAUSEN and GOTHA sheets.

Task Organization:

Team A	Team B
(Capt Walker, Cmdg)	(Capt Baker, Cmdg)
Co A (-3d Plat), 2d Med Tk Bn (Patton), 35th Armor Co D (-1st Plat), 1st Armd Rifle Bn, 41st Inf	Co B, 2d Med Tk Bn (Patton), 35th Armor 1st Plat, Co D, 1st Armd Rifle Bn, 41st Inf
Team C	**TF Control**
(Capt Smart, Cmdg)	Scout Plat Mortar Plat
Co C, 1st Armd Rifle Bn, 41st Inf 3d Plat, Co A, 2d Med Tk Bn (Patton), 35th Armor	

1. SITUATION.

   a. Enemy forces.
      (1) Elements Aggressor 3d Rifle Div opposing 1st Bat Gp, 1st Inf.
      (2) Aggressor 35th Mecz Div Vic ERFURI could reinforce 3d Rifle Div three hours after start of movement.
   b. Friendly forces.
      (1) CCB attacks through 1st Bat Gp, 1st Inf, TF 1/41 and TF 2/35 abreast, TF 1/41 on the right, seires Obj A and B, continues attack to seize Obj C and D.
      (2) 1st How Bn (105-mm) (SP), 3d Arty, DS CCB.
      (3) Annex A, Fire Support Plan.
   c. Attachments and detachments.
      (1) Attachments. Task organization.
      (2) Detachments. Co C and D attached to 1st Armd Rifle Bn, 41st Inf.

2. MISSION. This task force attacks 110600 Oct through 1st Bat Gp, 1st Inf; seizes Obj A; continues attack to seize Obj C; prepares to continue attack to northeast.

3. EXECUTION.

   a. Concept of operation. This operation will be a penetration in zone of 1st Inf, Teams A and B abreast, to seize Obj A, Obj C. Annex A, Fire-Support Plan.
   b. Team A. Attack along assigned axis, seize Obj CAT; continue attack, seize Obj RAT and FOX on order.
   c. Team B. Attack along assigned axis, seize Obj PIG; continue attack, seize Obj COW and DOG on order.
   d. Team C. Follow Team A; be prepared to reinforce or take over mission of either leading team.
   e. Scout Plat. Establish and maintain contact between TF 1/41 and Team B.
   f. Mortar Plat. GS; follow Team B.
   g. Coordinating instructions.
      (1) Route of march to Atk Psn: Annex B, Strip Map.
      (2) Order of march Assy area to Atk Psn: Scout Plat, Team A, Team B, Command Gp, Team C, Mortar Plat, C Tn.
      (3) Rate of march: 15 MPH.
      (4) EEI: Report identity of enemy units.

4. ADMINISTRATION AND LOGISTICS.

   a. Tn.
      (1) C Tn remain in Atk Psn, move on order.
      (2) Fld Tn to CCB Tn prior to 110600 Oct.
   b. Bn aid station: Vic 154323.

5. COMMAND AND SIGNAL.

   a. Signal.
      (1) Index 1-5, SOI.
      (2) Listening silence until crossing LD.
      (3) Emergency signal to lift supporting fires: red star cluster.
   b. Command. CP remain present location, move on order.

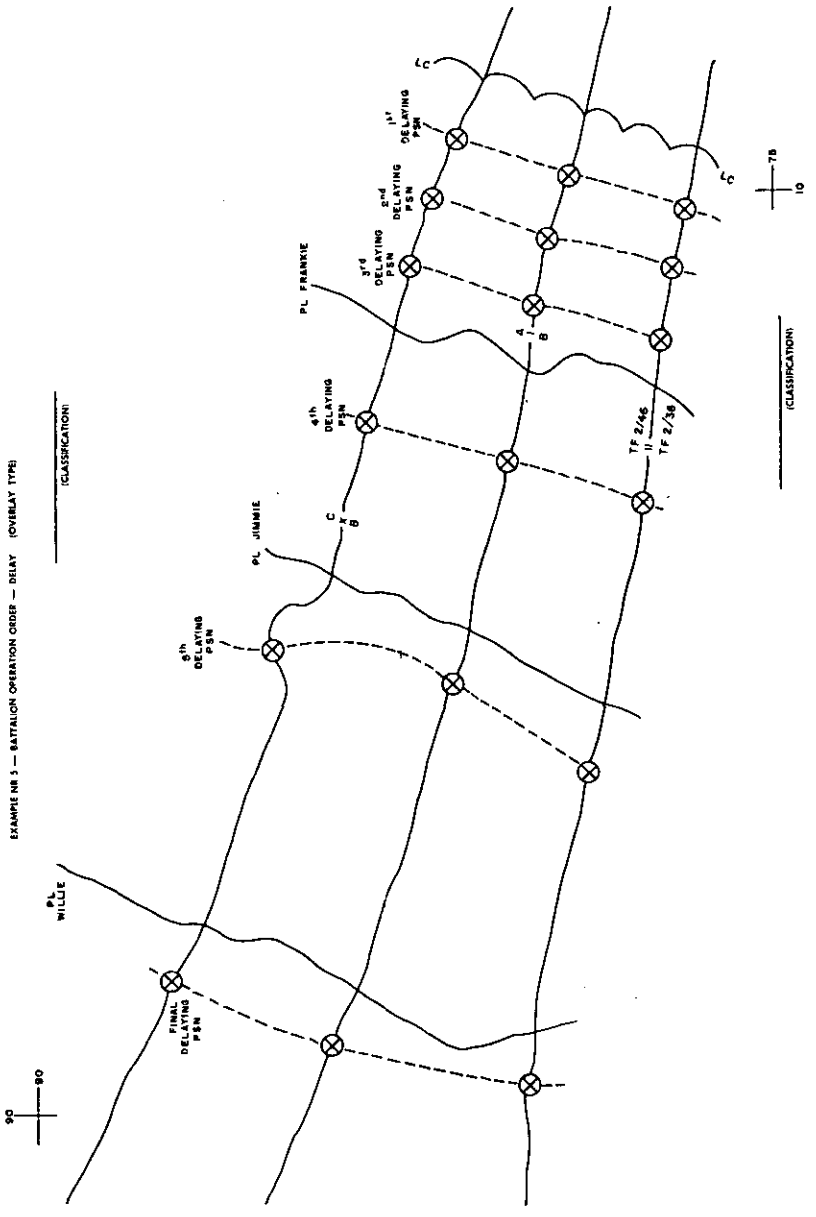
Acknowledge.

Annexes: A--Fire-Support Plan (Omitted).
B--Strip Map (Omitted).

Distribution: K.

OFFICIAL:
/s/ Rung
RUNG
S3

Example No. 4—Continued.



Example No. 5. Battalion operation order—delay.

(No change from oral orders)

COPY Nr 3
2d Armd Rifle Bn, 46th Inf (TF 2/46)
EICHA (188789), GERMANY
021030 Sep 19__
BS 0462

OpnO 20

Map: GERMANY, 1:50,000, KONIGSHOFEN and MELLRICHSTADT sheets.

Task Organization:

Team A	Team B
(Capt Kelly, Cmdg)	(Capt Richards, Cmdg)
Co A, 2d Armd Rifle Bn, 46th Inf 1st Plat, Co D, 1st Med Tk Bn (Patton), 32d Armor	Co B, 2d Armd Rifle Bn, 46th Inf 1st Plat, Co B, 1st Med Tk Bn (Patton), 32d Armor
Team C	**TF Control**
(Capt Mattson, Cmdg)	Scout Plat Mortar Plat
Co C, 2d Armd Rifle Bn, 46th Inf Co D (-1st Plat), 1st Med Tk Bn (Patton), 32d Armor	

1. SITUATION.

   a. Enemy forces. Elements Aggressor 86th Rifle Div opposing 1st Bat Gp, 1st Inf.
   b. Friendly forces.
      (1) 201st and 202d Inf Div withdraw 022100 Sep to new defensive positions west of STREU River.
      (2) CCB covers withdrawal of 201st Inf Div; TF 2/46 and 2/36 abreast. TF 2/36 on the south conducts delaying action holding Aggressor east of Phase Line WILLIE until 052200 Sep.
      (3) CCC covers withdrawal 212th Inf Div; conducts delaying action in zone.
      (4) 2d How Bn (105-mm) (SP), 6th Arty, DS CCB.
      (5) Annex A, Fire-Support Plan.
   c. Attachments and detachments.
      (1) Attachments. Task organization.
      (2) Detachments. Co D attached to 1st Med Tk Bn (Patton), 32d Armor.

2. MISSION. This TF organizes initial delaying position by 022000 Sep; covers withdrawal of 1st Bat Gp, 1st Inf; conducts delaying action in zone holding Aggressor east of Phase Line WILLIE until 052200 Sep.

3. EXECUTION.

   a. Concept of operation. This operation will be in two phases. This TF organizes and occupies initial delaying position by 022000 Sep; covers withdrawal of 1st Bat Gp, 1st Inf. Battalion then conducts delaying action in zone holding Aggressor east of Phase Line WILLIE until 052200 Sep to permit 1st Bat Gp, 1st Inf, to prepare new defensive positions west of STREU River. Annex A, Fire-Support Plan.
   b. Team A.
   c. Team B.
   d. Team C.
      (1) Occupy covering force positions along line held by 1st Bat Gp, 1st Inf.
      (2) Impose maximum delay between infantry line and first delaying position.
      (3) Upon passage of first delaying position, revert to TF Res.
   e. Scout Plat. Establish and maintain contact with TF 2/36.
   f. Mortar Plat. GS.
   g. Bn Res. Team C upon completion of passage through first delaying position.
      (1) Select and occupy position in rear of first delaying position.
      (2) Prepare to counterattack anywhere in battalion zone.
   h. Coordinating instructions.
      (1) Order of march to initial delaying position: Scout Plat, Team C, Team A, Team B, Command Gp, Mortar Plat.
      (2) All units report location hourly on the half hour by check point. Annex B, Check Point overlay.
      (3) Withdrawal to successive delaying positions on order.

4. ADMINISTRATION AND LOGISTICS.

   a. In.
      (1) C In Vic 115774.
      (2) Fld In to CCB In by 021600 Sep.
   b. VCP. 845096.
   c. Axis of evacuation. EICHA, MILZ (093830).

5. COMMAND AND SIGNAL.

   a. Signal.
      (1) Index 1-5, SOI.
      (2) Listening silence until lifted on order.
   b. Command. CP remain in present location, move on order.

Acknowledge.

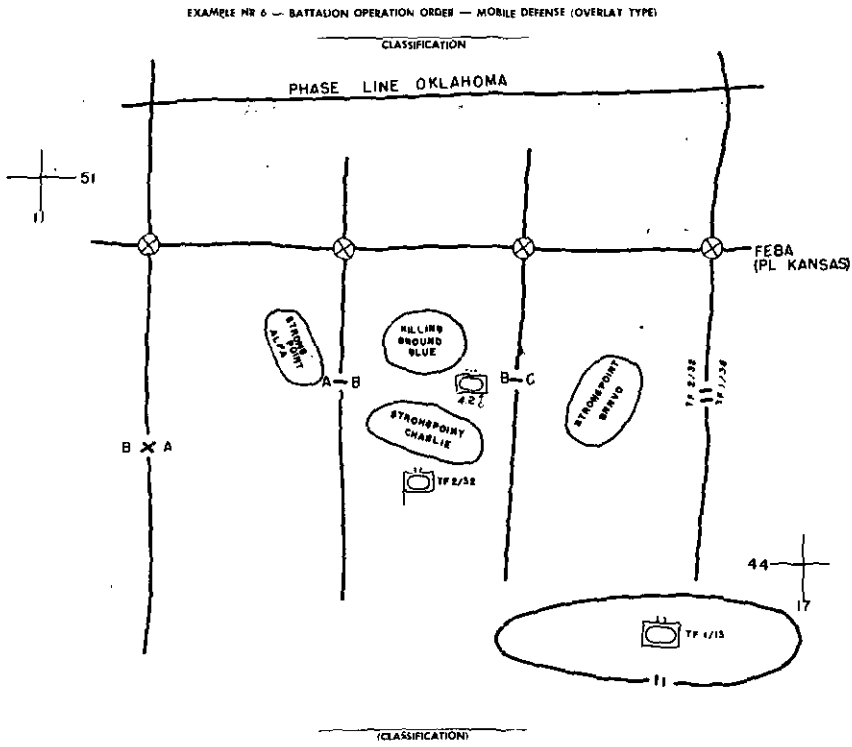
SHOT
Lt Col

Annexes: A--Fire-Support Plan (Omitted).
B--Check Point Overlay (Omitted).

Distribution: F

OFFICIAL:
/s/ Gunn
GUNN
S3

Example No. 5—Continued.



Example No. 6. Battalion operation order—mobile defense.

(No change from oral orders)

Copy Nr 3
2d Med Tk Bn (Patton), 32d Armor (TF 2/32)
EICHA (__ 188789), GERMANY
021030 Nov 19 __
BS 0462

OpnO 24

Maps: GERMANY, 1:50,000, KONIGSHOFEN and MELLRICHSTADT sheets.

Task Organization:

Team A	Team B
(Capt Kelly, Cmdg)	(Capt Richard, Cmdg)
Co A, 2d Med Tk Bn (Patton), 32d Armor 1st Plat, Co A, 1st Armd Rifle Bn, 46th Inf	Co B, 2d Med Tk Bn (Patton), 32d Armor 2d Plat, Co A, 1st Armd Rifle Bn, 46th Inf
Team C	**TF Control**
(Capt Jones, Cmdg)	Mortar Plat Scout Plat
Co C, 2d Med Tk Bn (Patton), 32d Armor Co A (-2 Plat), 1st Armd Rifle Bn, 46th Inf	

1. SITUATION.

   a. Enemy forces. Elements 82d Aggressor Mecr Div opposing CCA.
   b. Friendly forces.
      (1) CCA organizes forward defensive area to deny the enemy use of major avenues of approach to MELLRICHSTADT.
      (2) 1st Recon Sq, 12th Cav, conducts covering force mission forward of defensive area.
      (3) Co A, 16th Engr Bn (Armd Div), supports CCA.
      (4) 1st Bn, 27th Arty, DS CCA.
      (5) Annex A, Fire Support Plan.
   c. Attachments and detachments.
      (1) Attachments. Task Organization.
      (2) Detachments. Co D attached to TF 1/36 effective 021200 Nov.

2. MISSION. TF 2/32 initially denies forward defensive area in assigned sector; thereafter, canalizes enemy into killing ground BLUE; prepares to execute counterattacks of enemy penetrations of Phase Line OKLAHOMA or to support counterattacks by TF 1/13.

3. EXECUTION.

   a. Concept of operations. This operation consists of occupation and organization of assigned sector initially with three teams abreast on FEBA, followed by defense of selected strongpoints to canalize enemy forces into killing ground BLUE; priority of fires initially to Team B. Annex A, Fire Support Plan.
   b. Team A.
      (1) Organize and be prepared to defend assigned sector by 021500 Nov.
      (2) Be prepared to occupy and defend strongpoint ALFA on order.
      (3) Maintain contact with CCB elements on left flank.
   c. Team B.
      (1) Organize and be prepared to defend assigned sector by 021500 Nov.
      (2) Be prepared to occupy and defend strongpoint CHARLIE on order.
   d. Team C.
      (1) Organize and be prepared to defend assigned sector by 021500 Nov
      (2) Be prepared to occupy and defend strongpoint BRAVO on order.
      (3) Maintain contact with TF 1/36.
   e. Mortar Plat. GS, priority of fires initially to Team B.
   f. Scout Plat.
      (1) Screen phase line OKLAHOMA in TF sector.
      (2) Maintain contact with advancing enemy forces; on order withdraw through FEBA; thereafter maintain surveillance between strongpoints ALFA, BRAVO, and CHARLIE.
   g. Coordinating instructions.
      (1) Be prepared to execute counterattack plan GOLD, SILVER, or BRASS on order (Annexes B, C, D).
      (2) Select and report team assembly areas in assigned sectors.

4. ADMINISTRATION AND LOGISTICS.

   a. C Ins. Vic 122491.
   b. Fld Tns. To CCA Ins by 021500 Nov.
   c. TF Aid Sta. Vic 143488.
   d. TF VCP. Vic 146472.
   e. Axis of Evac. EICHA-MILZ (__ 093830).

5. COMMAND AND SIGNAL

   a. Signal.
      (1) Index 1-5, SOI.
      (2) Listening silence until lifted on order.
      (3) Emergency signal to lift supporting fires: red star cluster
   b. Command.
      (1) TF. Vic 119476.
      (2) Others. Select and report.

Acknowledge.

WILSON
LtCol

Annexes: A--Fire Support Plan (omitted)
B--Counterattack Plan GOLD (omitted)
C--Counterattack Plan SILVER (omitted)
D--Counterattack Plan BRASS (omitted)

DISTRIBUTION: A
CCA
CCB
TF 1/36
TF 1/13

OFFICIAL:
/s/ Thomas
THOMAS
S3

Example No. 6—Continued.

Example No. 7. UNIT STANDING OPERATING PROCEDURE

———— Battalion
301st Armored Division
(Place of Issue)
(Date of Preparation)

STANDING OPERATING PROCEDURE

1. GENERAL.

a. Purpose and scope. This standing operating procedure (SOP) standardizes normal operational procedures within the—
Battalion.

b. Revision. Recommendations for changes or revision will be submitted to the battalion S3 when appropriate.

c. Unit procedure. Unit commanders are responsible that all officers and key NCOs of their units become familiar with the contents of this SOP.

2. INTELLIGENCE.

a. Patrols.

(1) All patrols will be coordinated through the battalion staff.

(2) Night patrol routes will be reported to S2 by 1700 daily.

(3) Whenever possible, patrols will be briefed by S2 prior to departure.

(4) Patrols will report to battalion S2 for interrogation immediately upon their return.

(5) No individual who has received specialized training in atomic warfare or who possesses detailed knowledge of preparation for such operations will be utilized on patrols behind the enemy lines.

b. Reconaissance and observation.

(1) OPs. Location and sector of responsibility of all OPs will be reported to S2 as established.

(2) Atomic target information. All combat information collecting agencies will emphasize the importance of reporting information concerning possible atomic targets by the fastest available means.

(3) Enemy atomic attack. All indications of possible enemy atomic attack will be reported immediately. These may include (but are not limited to):

(*a*) Appearance of special types of aircraft, weapons, or instruments.

(*b*) Use of special types of protective clothing or equipment.

(*c*) Adoption of special precautions, including restrictions enforced on troops or civilians in enemy zone (e. g., heavily guarded areas or strict civilian control).

(*d*) Unusual and heavily guarded movements in rear areas.

(*e*) Creation of wide gaps in formations, or withdrawals of front-line units.

(*f*) Sudden cessation of enemy activity in front-line areas.

(*g*) Entire front-line unit seeking cover (personnel in tanks buttoning up or personnel covering foxholes with ponchos or other opaque material).

(*h*) Special training or instructions given to enemy troops revealed by PW interrogation or other means.

(*i*) Possible registrations of very heavy artillery with air bursts.

(*j*) Enemy use of smoke on his own front-line units.

(4) Results of friendly atomic attack. Results of friendly atomic attack will be reported immediately (or as soon as the information becomes available), including:

(*a*) Enemy effectiveness in the area after detonation.

(*b*) Obstacles to own movement, including residual radioactivity and intensities.

c. Measures for handling enemy prisoners of war and captured documents and materiel.

(1) Enemy prisoners of war.

(*a*) Commanders will stress the intelligence value of POW.

(*b*) All POW will be disarmed, searched, segregated, silenced, and evacuated as soon as possible to the POW collecting point (or aid station in case of wounded). *Special security measures will be taken with regard to enemy political personnel.*

(*c*) All enemy prisoners of war will be treated according to the provisions of FM 19–40 and FM 27–10.

(2) Documents.

(*a*) All captured documents, except those indicated in (*b*) below, will be forwarded to battalion S2 without delay. Documents will be tagged to show:

1. Who found it (name, grade, and organization).

2. Where it was found (exact location).

3. When it was found (time and date).

4. The conditions under which it was found (e. g., loose on the ground, on a body, or on a POW).

(*b*) Units capturing installations containing quantities of documents will place such installations under guard and report their location and the circumstances to S2.

(*c*) Documents found on POW will be carried by prisoner's escort to designated collecting point. See paragraph 5*d*(1).

(*d*) Technical documents found with captured equipment will be kept under guard with equipment.

(3) Enemy dead. Enemy dead will be searched only by recovery and disposition and S2 personnel, and such other individuals as are

designated by company commanders. Documents found on enemy dead will be forwarded to S2 by the fastest available means.

(4) Materiel. All unit commanders are responsible that captured enemy materiel in their areas of responsibility is:

(*a*) Properly safeguarded. Name plates, serial numbers, or other identification marks will be left on captured materiel and will not be appropriated by individuals as souvenirs.

(*b*) Reported to S2 immediately.

d. Escapees and evadees.

(1) Allied escapees and evadees will be evacuated to battalion S2 as rapidly as possible.

(2) Subordinate units will limit questioning to an absolute minimum on matters of immediate tactical importance. Under no circumstances will an attempt be made to determine what covert assistance was received.

e. Clandestine agents, guerillas, partisan forces, and underground organizations. Personnel of these activities coming under battalion control will be kept under guard, segregated from all other prisoners, and immediately reported to S2 for disposition. Interrogation by subordinate commanders will be limited to matters of immediate tactical importance.

f. Counterintelligence.

(1) Security information.

(*a*) Written combat orders, marked overlays, and maps showing division and combat command dispositions will not go below battalion. Those showing battalion dispositions will not go below company.

(*b*) Patrols moving into enemy territory will be inspected by an officer prior to departure for any material that would give information to the enemy in the event of capture.

(*c*) Provisions will be made for the destruction of classified material in event of its imminent capture.

(*d*) Unit commanders and their designated representatives are authorized to grant permission to send information in the clear; they will ensure that this information cannot be acted upon by the enemy in time to affect the mission.

(*e*) The compromise of countersigns, codes, or other classified matter will be reported to S2 by the fastest available means.

(2) Countersign. Countersigns will be changed and distributed daily at 1200.

(3) Camouflage, dispersion, and light discipline. Unit commanders will ensure that camouflage, dispersion, and light discipline are properly maintained at all times. Camouflage of medical installations and vehicles will be handled according to special directive issued by division G4.

g. Reports and distribution.

(1) Report all enemy information to battalion S2 by the fastest means available, including the essentials: *what*, *where*, and *when*.

(2) Report of enemy atomic attack will be by prearranged FLASH message. (See SOI.)

(3) Enemy action to exploit the effects of atomic attack will be reported by the fastest means available. See paragraph 3*e*(1)(*g*) *1–2*.

(4) Information pertaining to capture and disposition being made of enemy prisoners of war, enemy civilians, documents, and material, relating to atomic warfare, will be forwarded as an emergency message to battalion S2. (See SOI.)

(5) ShelReps, MortReps, and BomReps will be submitted to battalion S2 by fastest means available.

3. OPERATIONS.

a. Flank contact. Responsibility is from left to right; however, this does not relieve commanders of the responsibility of ensuring that contact is maintained to both flanks.

b. Antiaircraft defense. No fire will be directed against enemy aircraft by elements of this battalion, unless under actual attack.

c. Defense against atomic attack. Unless specifically directed otherwise, it will be habitually assumed that the enemy has the capability of employing atomic weapons tactically. The following defensive measures will apply:

(1) Conduct feeding and other administrative functions so that a minimum number of personnel are out of protective cover.

(2) Insure that personnel, vehicles, and equipment not otherwise protected are camouflaged, dug in, and/or sandbagged as rapidly as the tactical situation permits. The following criteria for protection are established.

(*a*) Two-man foxhole. The two-man foxhole will be 3 feet wide by 6 feet long. The depth will depend on the height of the occupants, providing a two-foot clearance between the back of a crouched man and ground level.

(*b*) Prone shelter. The prone shelter will be 2 feet wide by 2 feet deep and as long as required for the occupant.

(*c*) When terrain and soil conditions permit, vehicles may be parked over the top of foxholes or prone shelters for additional protection.

(*d*) Additional details for construction of protective shelters are given in FM 5–15.

(3) In areas likely to be contaminated with nuclear radiation (e. g., after an atomic explosion), operate unit radiac instruments. If situation permits, areas of residual radiation will be posted with markers.

(4) Maintain maximum dispersion at all times: minimum of 75–100 yards between vehicles.

(5) Firmly secure equipment inside and outside of vehicles at all times.

(6) Keep radio antennas tied down whenever possible.

(7) Require wearing of tank helmets by all crew members whenever in tanks; steel helmets will be worn when riding in other vehicles.

(8) Require that brooms be carried by all vehicles for use in hasty field decontamination.

(9) Actions immediately following enemy atomic attack.

(*a*) Individual. Establish contact with superior.

(*b*) Units.

1. Take positive measures to reestablish the chain of command.

2. Report any elements out of contact.

3. Reestablish communication with subordinate elements.

4. After a surface burst:

(a) Employ maximum shielding immediately.

(b) Prepare for early move.

(c) Displace only on order of this headquarters.

(d) Field decontaminate, if necessary.

5. Avoid entry into areas 50 r/hr or greater. Prevent cumulative dose over 50 r/day or 150 r/week.

6. Make flash reports (par. 3*e*(1)(*g*)).

(10) The following protective measures may be utilized as circumstances allow, during movement out of radioactive fallout or out of an area of residual radioactivity.

(*a*) All armored vehicles will button up. Other vehicles will raise windows and windshields and install side curtains and tail covers. No action should be taken which might delay the movement of the unit out of the danger area.

(*b*) All troops will brush themselves off and will sweep away all dust on the vehicles at periodic intervals.

(*c*) All vehicles will be washed either by running them through streams or with buckets and brooms.

(*d*) Personnel will cover all exposed parts of the body and will wash themselves off as soon as possible.

(*e*) Individual items of equipment such as rifles, sidearms, etc., will be covered to prevent contamination by fallout.

(*f*) Unless otherwise directed, individuals will eat only operational type packaged rations and drink only canteen water.

(*g*) Troops will wear gas masks to avoid inhalation of radioactive dust.

(11) When a unit is not on the move and a surface or subsurface burst is detonated upwind from its position, the burst will be reported,

giving azimuth to burst. No movement will be undertaken without explicit orders from this headquarters. When movement is ordered, direction of movement will be specified by this headquarters.

(12) After warning of an impending atomic attack, or of friendly use of atomic weapons near the unit's position, the following measures will be taken as the situation will permit:

(*a*) Require personnel to remain in their tanks or armored personnel carriers.

(*b*) Require all hatches to be closed and locked.

(*c*) Require individuals to put on gas masks if the burst is to be surface or subsurface.

(*d*) Position tanks in defilade.

(*e*) Face tanks toward ground zero, turrets traversed away from ground zero.

(*f*) Prohibit personnel from looking out of vision devices toward the burst.

d. March data.

(1) The battalion will normally march as a march serial, and companies as march units.

(2) Daylight marches.

(*a*) Distance: 100 yards road space per vehicle, or as prescribed (in no instance will vehicles close to less than 50 yards).

(*b*) Maximum speed: tracked vehicles 20 MPH, others 25 MPH.

(*c*) Time intervals: one minute between companies.

(*d*) Vehicles will not double the column, except that vehicles rejoining the column may move to their proper place during a halt.

(3) Night marches.

(*a*) With lights, same as daylight marches.

(*b*) With blackout lights.

1. Distance: visual contact, not to exceed 50 yards.

2. Maximum speed: *all* vehicles, 15 MPH.

(4) Halts.

(*a*) Scheduled halts.

1. A 15-minute halt will be scheduled one hour and 45 minutes after the head of the leading unit crosses the IP, and a 15-minute halt every hour and 45 minutes thereafter.

2. All march units halt at the designated time and vehicles maintain proper distance; they do not close on the preceding march unit.

3. See paragraph 4*a*(5) for information on halts for refueling and meals.

4. Vehicles rejoining the column may move to their proper place in the column during the halt.

5. Vehicles will pull off the road, on shoulders if practicable; traffic guards will be posted to keep personnel off the road and to assist in keeping through traffic moving.

(*b*) Unscheduled halts. At unscheduled halts, commanders will determine the cause of the halt, and take action to resume the march.

(5) Liaison. Each unit will maintain liaison with the preceding unit throughout the march.

e. Reports.

(1) The following information will be reported at once:

(*a*) Time of crossing LD.

(*b*) Time of crossing IP or phase line.

(*c*) Change of plan of operations.

(*d*) Contact or loss of contact with friendly or enemy troops.

(*e*) Time objective seized.

(*f*) New location of CP and time of opening.

(*g*) Enemy atomic attack, to include:

1. Method of delivery and type of weapon.

2. Location of ground zero, and direction and distance from reporting unit.

3. Effect on personnel, materiel, and combat effectiveness of reporting unit.

(*h*) Enemy CBR attack, to include type and location.

(*i*) Initiation and completion of installation of minefields.

(2) When operating in an area of known or suspected residual nuclear radiation contamination, each company will operate its radiac instruments. A report of intensity and location will be submitted along with unit SitReps or whenever there is an appreciable change in intensity, whichever is sooner. Negative reports will be made unless specific instructions to the contrary are issued.

(3) Subordinate units will submit situation reports every hour on the hour. Negative reports will be submitted.

4. LOGISTICS.

a. Supply.

(1) Class I.

(*a*) The ration cycle begins with supper.

(*b*) Ration requests will be submitted 72 hours in advance of the day that rations will be drawn. Each organic and attached unit will submit a request to the battalion S4 at the time daily rations are drawn.

(*c*) Reserves of rations to be maintained by each unit are prescribed as follows:

1. Each vehicle: a minimum of three operational rations (small-detachment or individual combat-type) for each vehicle member.

2. Each unit kitchen: a minimum of two-thirds of an operational B ration per man.

(*d*) Water and food items not in hermetically sealed containers will not be used after a contaminating atomic explosion until cleared by unit CBR personnel. Water in canteens, five-gallon cans, and trailers, if these containers are sealed, is considered safe. Only unopened canned rations will be considered safe.

(2) Class II and IV.

(*a*) Companies will submit requisitions, and items to be exchanged, to the battalion S4.

(*b*) Chemical, Engineer, and Quartermaster class II and IV will be issued only in emergency during actual combat.

(3) Class III. Provided on call to companies by battalion.

(4) Class V. Companies maintain basic loads. Reference, memorandum, this headquarters, subject: "Basic loads" (omitted).

(5) Supply on the march.

(*a*) Resupply of fuel and lubricants will be effected during prescribed fuel halts.

(*b*) Two fuel and lubricant trucks will be habitually attached to each tank company, and one or more trucks as required to each reconnaissance troop or armored rifle company.

(*c*) Empty fuel and lubricant trucks will replenish their loads at designated resupply points.

(*d*) Feeding during the march.

1. Feeding halts will coincide with refueling halts whenever possible.

2. The noon meal will be a sandwich-type meal or a combat-type ration meal issued at breakfast. Breakfast and supper will be hot meals served in bivouac areas.

b. Evacuation of disabled vehicles.

(1) Upon receipt of a warning order for a march, unit vehicles which cannot be repaired prior to movement will be evacuated to the battalion maintenance platoon. If time does not permit evacuation, or if vehicles cannot be moved, their location and condition will be reported to the battalion maintenance officer.

(2) Vehicles disabled on a march will be moved to the side of the road to prevent interference with the remainder of the column. Company maintenance and battalion maintenance will in turn attempt repair. If repair cannot be effected, battalion will prescribe the manner of further evacuation.

(3) Vehicle evacuation during combat operations.

(*a*) In fast-moving offensive operations, units will evacuate disabled vehicles to the axis of advance.

(*b*) In slow-moving offensive operations or during defensive operations, units will evacuate disabled vehicles to vehicle collecting points.

(4) At least two men will remain with each damaged but repairable tracked vehicle, and one man with each damaged but repairable wheeled vehicle, until relieved by competent authority (i. e., battalion commander, battalion maintenance officer).

(5) Vehicles damaged or destroyed by atomic attack will be evacuated under the control of the battalion maintenance officer. Units will report without delay to the battalion maintenance officer the following:

(*a*) Location of damaged or destroyed vehicles.
(*b*) Number and type of vehicles.
(*c*) Extent of physical damage.
(*d*) Level of contamination.

c. Medical support.

(1) Each tank company will be supported by a medical aid-evacuation team consisting of the following:

(*a*) One ¼-ton truck equipped with litter racks.
(*b*) One litter bearer-driver.
(*c*) One company aidman.

(2) Each reconnaissance troop will be supported by a medical aid-evacuation team consisting of the following:

(*a*) One ¼-ton truck equipped with litter racks.
(*b*) One litter bearer-driver.
(*c*) One company aidman for each rifle and scout platoon.

(3) Each armored rifle company will be supported by a medical aid-evacuation team consisting of the following:

(*a*) One ¼-ton truck equipped with litter racks.
(*b*) One company aidman-driver.
(*c*) One company aidman for each rifle platoon.

(4) Combat troops will not accompany casualties to aid stations, unless so ordered.

(5) Evacuation of casualties while the unit is on the march will be to the medical facility prescribed by the battalion surgeon.

(6) Records of the amount of nuclear radiation received by individuals will be kept on an individual basis. Unit personnel sections will maintain a record, by individual, of the total dose received and the date received. Personnel will be evacuated when the tolerance dose has been reached or exceeded, as directed by this headquarters.

d. Transportation.

(1) Company baggage trucks will be habitually kept in battalion field trains.

(2) Each detached company will take with it, in addition to TOE authorized allowances, four resupply trucks from the battalion support platoon. These trucks will be loaded with ammunition, fuel, and lubricants; loads will be tailored to fit the tactical situation.

(3) Empty supply vehicles returning to the rear will be utilized for evacuation of salvage and captured enemy materiel.

e. Reports. Each unit attached to this battalion, and organic units of the battalion returning to battalion control from detached status, will submit, within two hours after attachment or return to battalion control, a vehicle status report. The report will reflect organic and attached vehicles but not detached vehicles.

5. PERSONNEL.

a. Strength records and reports.

(1) Strength information for the unit personnel daily summary will be submitted to S1 daily, as of 1800, by 1830. When a unit is detached, an information copy of the unit personnel daily summary will be submitted to the unit to which attached, in addition to the normal report required by this headquarters.

(2) Company and detachment commanders will submit necessary morning report data to the battalion S1 as soon as possible after close of the morning report day.

(3) Reports of casualties and nonbattle losses will be submitted to this headquarters as soon as they occur, with the following individual casualty information submitted whenever the tactical situation will permit:

(*a*) Name, grade, service number, and organization.

(*b*) MOS.

(*c*) Date and place where casualty occurred.

(*d*) Circumstances.

(*e*) If KIA, cause of death.

(*f*) Name, grade, and service number of witness and known friends.

(4) In event of an atomic attack, submit a unit report of casualties, indicating number and type sustained, to this headquarters by the fastest means available.

b. Replacements.

(1) Companies will report replacement requirements by MOS and grade to the battalion S1 by 1830 daily.

(2) Upon receipt of replacement personnel, unit commanders ensure that a tactical orientation is given to all new or returnee replacements; an inspection of all individual clothing and equipment will be conducted to ensure combat serviceability and completeness. New replacements will be indoctrinated in company policy and will be made personally acquainted with unit members and leaders.

c. Law and order.

(1) Report serious incidents without delay, including a brief resume with principals involved, description of incident, personnel

casualties, material damage, and action being taken to restore law and order.

(2) Personnel delivered for confinement will be under guard, with personal effects, and with a written confinement request signed by a commissioned officer.

d. Enemy prisoners of war.

(1) POW will be delivered under armed guard to the designated collecting point with all personal effects; objects of potential intelligence value will be taken from prisoners and placed in custody of the armed guard for immediate turn-in upon arrival at the collecting point. See paragraph 2*c*(1)(*b*).

(2) Enemy prisoners will not be fed or allowed to smoke or drink prior to their first interrogation unless the interrogation is delayed beyond a reasonable period. Wounded, sick, or injured POW will be cleared through the battalion aid station for possible medical evacuation as determined by the battalion surgeon.

e. Morale.

(1) Mail will be delivered with class I supplies. Outgoing mail will be censored and forwarded through APO channels without delay.

(2) Commanders will give wide publicity to the time and place of religious activities, and will encourage attendance at services.

(3) Recommendations for awards and decorations will be submitted as soon after the incident as possible, giving a description of the incident, witnesses to the action, time and place where the action occurred, and award or decoration recommended. The battalion personnel section will prepare the recommendation for the unit commander's signature.

f. Recovery and disposition.

(1) The battalion S1 is designated the unit recovery and disposition officer.

(2) Friendly and enemy dead, together with their personal effects, will be evacuated to the battalion collecting point, generally in the vicinity of the battalion aid station.

(3) Emergency burials will be made only with the approval of this headquarters. When such emergency burials are authorized, the coordinates of the temporary grave sites, and the name, grade, service number, and organization of deceased (if known), will be submitted to the battalion S1 without delay.

(4) In the event of atomic warfare, where residual radiation is detected upon the remains, units will report such cases and await special instructions from the Unit S1 for handling contaminated remains prior to evacuation.

g. Personnel procedures.

(1) Recommendations for promotion or battlefield appointment will be submitted informally to the S1.

(2) Recommendations for enlisted promotions to grades E5 through E7 (inclusive) will be informally submitted to this headquarters for final preparation and appropriate action.

h. Quartering. When a unit is required to furnish a quartering party, the unit commander will select an officer or noncommissioned officer familiar with the security, billeting, and vehicular facility requirements. This officer or NCO will report to the S1 for instructions. Composition of company quartering parties will not exceed four persons and one ¼-ton truck.

6. COMMAND AND SIGNAL.

a. Orders.

(1) Warning orders will be issued for all movements and operations.

(2) The use of oral and fragmentary orders within the battalion will be normal.

b. Communication.

(1) Instructions contained in the Signal Annex to the Division Standing Operating Procedure and the Standing Signal Instructions will be adhered to by this headquarters.

(2) The battalion communication officer will prepare and distribute SOI extracts to all commanders and staff officers, including platoon leaders, within the battalion and attached units.

(3) Battalion axis of communication will be directed in the battalion operation order.

(4) Report loss or compromise of SSI, SOI, and SOI extracts to battalion headquarters by the fastest means available.

(5) When a centralized message center is not operated, messages sent and received by staff sections will normally be handled directly with the facility. A centralized message center will be established when the situation permits, in order to centralize encrypting, decrypting, message accounting, and message delivery. All mesages sent and received by staff sections will be recorded in unit journals.

(6) Two messenger runs will be scheduled daily to companies and attached units.

(7) The communication officer will be responsible for panel displays for air-ground communication and for air message drop and pickup areas.

LADDER
Lt Colonel

APPENDIX IV

THE 4.2-INCH MORTAR PLATOON OF THE ARMORED DIVISION ARMOR BATTALION AND ARMORED INFANTRY BATTALION

Section I. GENERAL

1. Introduction

This appendix discusses the general composition, missions, capabilities, and tactical employment of the 4.2-inch mortar platoon which is organic to the headquarters company of the armored division armor battalion and the armored infantry battalion.

2. Mission and Capabilities

a. Mission. The mortar platoon has the mission of furnishing close and continuous indirect fire in support of its parent battalion.

b. Capabilities.

(1) Delivery of high explosive ammunition on area or point targets.

(2) Delivery of smoke on area targets.

(3) Battlefield illumination.

(4) Delivery of chemical munitions on area targets.

(5) Target marking for other weapons.

3. Organization

a. The 4.2-inch mortar platoon in general is operationally self-sufficient, but is dependent on its parent company and battalion for logistical and administrative support and, partially, for security.

b. The platoon headquarters consists of a platoon leader mounted in a ¼-ton truck, three forward observer teams mounted in ¼-ton trucks, and a fire direction center (FDC) mounted in an armored personnel carrier. Each vehicle has communication facilities.

c. Each of the four mortars is mounted in an armored full-track mortar carrier which has communication facilities.

4. Characteristics

a. Mobility. The platoon is 100 percent mobile.

b. Armor Protection. The FDC and the four mortar squads are mounted in carriers which provide all-round armor protection against small-arms fire and shell fragments, and limited protection against the effects of atomic and CBR weapons when all hatches are closed.

When the main top hatch of the mortar carrier is open to permit on-vehicle firing of the mortar, the gun crew is exposed overhead. The main top hatch and ramp should be kept closed except when firing.

c. Firepower. The 4.2-inch mortar is a high-angle indirect-fire weapon capable of delivering high explosive and chemical ammunition at a high rate of fire at ranges from 950 to 6,000 yards (maximum range for WP is 5,050 yards). In addition, each carrier mounts a caliber .50 machinegun, and the platoon headquarters is equipped with two 3.5-inch rocket launchers for close-in protection of the platoon.

d. Flexibility. The platoon possesses adequate tactical flexibility through its complete mobility and its capability of firing the weapon from a vehicular mount with minimum delay. The platoon is primarily intended to be used as a single firing unit; however, squads may be detached for independent missions for limited periods of time. The capabilities of a detached squad are somewhat limited.

e. Communication. The platoon is assigned a command net FM. All vehicles of the platoon are equipped with radios which are included as stations in this net. The platoon also has wire communication equipment for control of the firing battery when in position. See figure 119 for details. These multiple means of communication, coupled with its mobility and flexibility, make the platoon highly responsive to command.

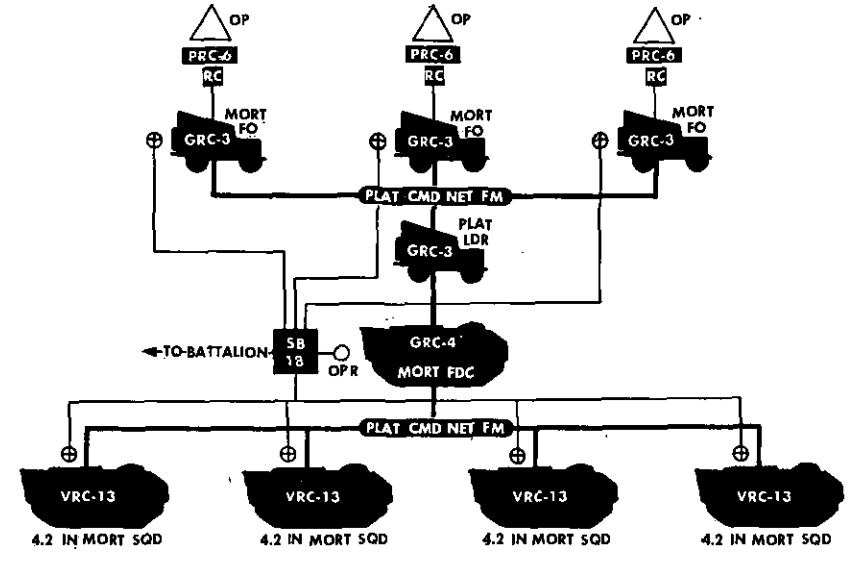


Figure 119. 4.2-inch mortar platoon communication.

f. Logistical Support. Administrative and logistical support must be provided by the parent organization. Continued operation of the platoon depends on timely resupply of ammunition, fuel, and lubricants.

5. Fundamentals of Employment

a. General. The employment of the mortar platoon is based on its speed of operation and movement and its constant readiness to provide fire support. Firing normally is conducted from the on-carrier position. The platoon leader places himself where he can best control his platoon. He is often with the battalion commander or command group. In addition, he may control leading elements of the platoon during displacement, conduct reconnaissance, or visit the supported company teams for purposes of coordination.

b. Control. The platoon normally operates under battalion control and furnishes general support to the line companies or company teams. It is usually kept together under the control of the platoon leader and not attached to a team; however, a priority of fires may be assigned to a specific team in order to weight that team's effort.

c. Concentration of Effort. The entire platoon normally fires one mission at a time. However, the platoon has a capability of firing two missions concurrently.

d. Movement. The platoon displaces "by section" (half at a time) or as a unit. It may displace one squad at a time if maximum fire support is of great importance.

e. Security. The platoon position is normally included within, or placed in proximity to, the position of a larger combat unit, to provide security. It has limited capacity for providing its own security, and can only picket its vehicles if it is to maintain maximum effectiveness in the conduct of fire.

6. Fire Requests

The platoon's forward observer (FO) teams operate with the line companies. These teams formulate and forward fire requests, and adjust fires. Mortar fires may also be adjusted by artillery FOs. In addition, all officers and key NCOs of the battalion must be able to call for and adjust fires in case FO teams are not available. The procedures for requesting, coordinating, and adjusting fires are the same as for artillery fires (FM 6–40 and FM 6–50).

7. Liaison

a. The platoon leader maintains liaison with the battalion commander by personal contact or by radio, using the battalion command net.

b. Liaison with the line companies or company teams is provided by the forward observers, who use the mortar platoon command net for contact with the platoon position.

8. Conduct of Fire

Fire is conducted in accordance with the principles outlined in FM 23–92.

9. Position Characteristics

The platoon position includes the four squad firing positions and the platoon command post, as shown in figure 120. The primary requirement of the platoon position is that it be situated so the mortars can execute their fire mission. In the selection of platoon positions, consideration should always be given to the availability of other types of supporting fires, and to the mobility of the platoon. The position should have as many of the following characteristics as possible:

a. Permit maximum coverage of the area of operation of the supported unit.

b. Provide concealment, defilade, and relatively level vehicle positions.

c. Permit vehicles to enter through concealed and covered approaches; this facilitates occupation of the position and ammunition resupply.

d. Facilitate communication with the supported unit and the battalion command post.

e. Provide firm soil to support the mortar carriers.

f. Take advantage of security provided by other units.

g. Avoid interference with other units.

h. Take advantage of routes for displacement.

i. Provide adequate area for dispersion.

j. Provide adequate area for, and routes to, alternate and supplementary positions.

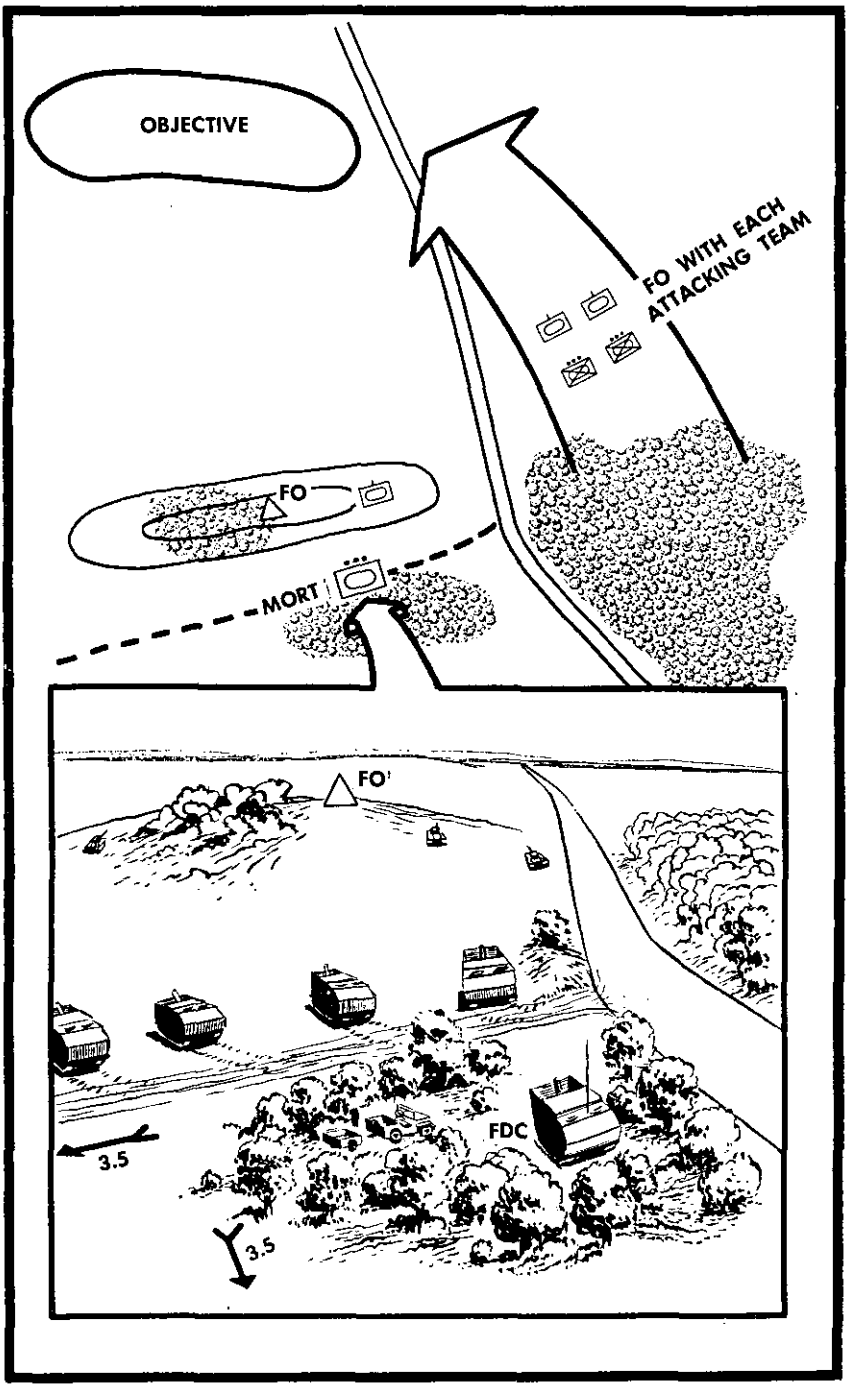


Figure 120. Platoon firing position.

Section II. TACTICAL EMPLOYMENT

10. Tactical Marches

a. Platoon Position. The platoon position in a tactical march is prescribed in the battalion march order. The position of the platoon is decided upon after an analysis of its mission. When the march is toward the enemy and when contact is probable, the platoon usually is assigned a position to the rear of the leading company team. When the battalion is marching on more than one route, the platoon is assigned a position behind the leading team on the route along which the bulk of mortar support is desired. When the battalion is marching in a direction other than toward the enemy, the platoon is assigned a position from which it can best furnish supporting fires to the bulk of the battalion should enemy action occur. When a requirement for supporting fires arises, the platoon doubles the column if necessary to reach a position from which the desired fires can be delivered.

b. Forward Observer Teams. FO teams accompany line companies or company teams as specified in the battalion march order. The FO should normally accompany the company team commander. Commanders of supported company teams are responsible for providing armored vehicle transportation, as required, for mortar platoon FOs.

11. Assembly Areas

In an assembly area, the mortar platoon should occupy a position that can be used without change for a firing position. The position should permit firing in all directions. The mortars are laid in the most likely direction of enemy attack. Wire communication normally is installed between the FDC and the mortars.

12. Attack

a. Position. The platoon position is indicated in the battalion operation order. The platoon leader recommends a position after making a personal reconnaissance and coordinating with the battalion S3 and the artillery liaison officer. The position should afford cover and concealment and should be located convenient to a route over which resupply vehicles can travel. The position must permit the furnishing of maximum fire support to the unit or units to be supported; if possible, it should permit firing in support of all attacking elements of the battalion. The position is located well forward to permit maximum utilization of the range of the mortar.

b. Forward Observers. FO teams accompany supported companies and company teams.

c. Plan of Supporting Fires. Prior to the operation, the platoon leader makes recommendations to the S3 with regard to preparatory

and supporting fires. These should be coordinated with team commanders and the artillery liaison officer. Suitable targets are crew-served weapons, point or small-area targets protected from effective flat-trajectory fire, reverse slopes and defiladed areas, and areas to be smoked.

d. Fires During the Attack. Fires may be prearranged or delivered on targets of opportunity. Prearranged fires are delivered as scheduled or on call. Forward observers should be alert to engage targets of opportunity. Priority of fires normally is specified prior to the attack.

e. Movement. Plans for displacement are made prior to the attack. The platoon leader keeps the platoon well forward and notifies the S3 when movement is necessary. If the platoon cannot displace as a whole, two squads are displaced, accompanied by necessary FDC personnel. When these squads are ready to fire, they take over the firing mission while the rest of the platoon moves forward to the new position. If maximum continuous fire support must be provided during the time that movement is necessary, the platoon may displace one squad at a time. Displacements should be completed quickly so that maximum fire can be resumed as soon as possible.

f. Action Upon Capture of the Objective. Additional supporting fires are planned and coordinated for defense of the objective and for continuation of the attack. Necessary resupply is accomplished at this time.

13. Mobile Defense

a. Position. The platoon position is selected in accordance with the considerations listed in paragraph 9.

b. Plan of Supporting Fires. Concentrations for long-range fires, close defensive fires, and fires within the defensive area, and barrages for final-protective fires, are preplanned and are included in the fire-support plan. Fires must be planned to support friendly counter-attacks.

c. Division of the Platoon. The platoon normally is not divided physically except for the purpose of providing continuous fire support during displacement (par. 12*e*).

d. Employment. Employment of the mortar platoon in the mobile defense is similar to that in the offense. The platoon should be kept intact, positioned so that it is capable of supporting any element of the battalion. If the width of the battalion area makes it impossible for the platoon to effectively support all battalion elements, it may be initially positioned to support elements in the most critical area. The platoon must be prepared to move to preselected positions anywhere within the battalion area. Preplanned fires should include

interdiction and close-in protective fires, and fires in support of the striking force.

14. Retrograde

a. Positions. Positions are reconnoitered prior to the operation. They are echeloned in depth.

b. Plan of Supporting Fires. Barrages and concentrations are preplanned in depth.

c. Movement. Routes for displacement are preplanned. Displacement is conducted as outlined in paragraph 12*e*.

d. Employment. The platoon is normally positioned immediately behind the initial delaying position. The fires of the platoon should engage advancing enemy columns at maximum ranges. Close-in fires, fires in support of the reserve, and fires in support of the withdrawal should be preplanned and integrated into the fire-support plan. When a withdrawal is made, the bulk of the platoon should be in position behind the new delaying position prior to the withdrawal of the delaying force. The remainder of the platoon withdraws with or immediately ahead of the delaying force.

Section III. ADDITIONAL CONSIDERATIONS AND SPECIAL OPERATIONS

15. General

In such operations as attack in towns, attack of a fortified area, defense against airborne attack, or other somewhat specialized combat actions, the factors peculiar to the operation must be considered in the assignment of mission, decentralization of control, and positioning of the platoon.

16. River-Crossing Operations

The mortar carrier can "swim" fairly gentle streams with velocities of not more than four miles per hour. Because of the weight of the loaded carrier, laborious preparations are necessary before it can cross a stream in this manner. However, an urgent need for fire support from positions on the far bank may make it necessary to swim carriers across a stream. Such an operation may be accomplished as follows—

a. Preparation of Carriers. The loaded weight of each carrier must be reduced to approximately 21 tons (approximate weight combat-loaded is 23¼ tons). This is done by removing nonessential equipment and reducing the number of personnel. At least half the crew, the mortar and the equipment necessary for its operation, essential communication equipment, and half the basic load should be left on the carrier. The remaining squad personnel cross in the FDC carrier.

If possible, one or more carriers off-load on the far bank to ferry across additional ammunition. Mortars may be fired from ground mounts during this ferrying operation.

b. Control Personnel. The platoon leader crosses in the FDC carrier. The platoon sergeant remains on the near bank with the wheeled vehicles and any equipment left behind.

c. Forward Observers. Forward observers cross in armored personnel carriers of supported armored infantry. The wheeled vehicles of the FO teams should be moved across by bridge, ferry, or deep-water fording kits as soon as possible.

d. Planning of Supporting Fires. Supporting fires are planned as for other attacks.

e. Movement. The movement must be carefuly planned and should be executed with a minimum of delay. The platoon may move as a unit, by "sections," or by squads. Arrangements must be made to get the platoon's trailers across as soon as possible. Usually, general-purpose vehicles of battalion will be designated to tow the trailers across when a bridge or ferry is available. See appendix V; most of the information contained therein applies equally to stream crossings by armored mortar carriers.

f. Resupply. If the platoon requires resupply of ammunition before supply routes are established across the stream, it may be necessary to employ helicopters or armored personnel carriers to deliver the ammunition.

17. Night Operations

Night operations require careful coordination of prearranged fires. Increased importance is given to supporting fires which can be laid on predesignated targets at night. The illuminating capability of the 4.2-inch mortar round is roughly the same as that of the light artillery round.

APPENDIX V

EMPLOYMENT OF ARMORED PERSONNEL CARRIERS IN HASTY RIVER-CROSSING OPERATIONS

Section I. GENERAL

1. Purpose

This appendix is a guide for armor commanders in the use of the armored personnel carrier in a hasty river-crossing operation. It includes the technical information necessary for the vehicle's safe employment in such crossings. To ensure clarity and understanding, the following definitions are provided for certain terms which are peculiar to water operation and are used within this appendix.

a. Stream Velocity. Rate of flow of the current of the stream, in miles per hour.

b. Bow. The forward part of the armored personnel carrier.

c. Port. The left side of the armored personnel carrier.

d. Starboard. The right side of the armored personnel carrier.

e. Freeboard. The distance from the waterline to the deck when the vehicle is in the water.

2. Precrossing Considerations

Upon reaching a water obstacle, the armor unit commander, in order to minimize delay, follows a definite sequence or check list prior to employing his armored personnel carriers. This sequence is—

a. Determine the velocity of the stream and its characteristics.

b. Determine bank conditions at the entrance to the stream.

c. Select landing points on the far shore and determine bank conditions at these points.

d. Insure that the carriers are properly checked prior to entering the water and upon leaving the water.

3. Stream Velocity

The maximum stream velocity in which the carrier can be safely operated depends on such factors as the choppiness of the water, the amount of debris or ice in the water, and the maximum acceptable downstream drift distance. When the rate of flow is greater than six miles per hour, particular attention must be given to drift distance, balance of load, entry into the water, and ability of drivers. A simple

way to determine the stream velocity is to use a floating device over a measured distance. Measure a distance of at least 100 feet along the near river bank. Designate the upstream end as point A and the downstream end as point B. At point A, throw into the stream any object that will float, such as a piece of wood or cork. Using a stopwatch or the second hand of a regular watch, determine the time it takes the floating object to move from point A to point B (fig. 121). For example, if it takes 20 seconds for the object to float 100 feet, the rate of flow of the stream is five feet per second. This figure in feet per second must then be converted to miles per hour. This is accomplished by using the conversion chart shown in figure 122. From the proper number under the *feet per second* column, read horizontally left to the *miles per hour* column. This is the stream velocity. At

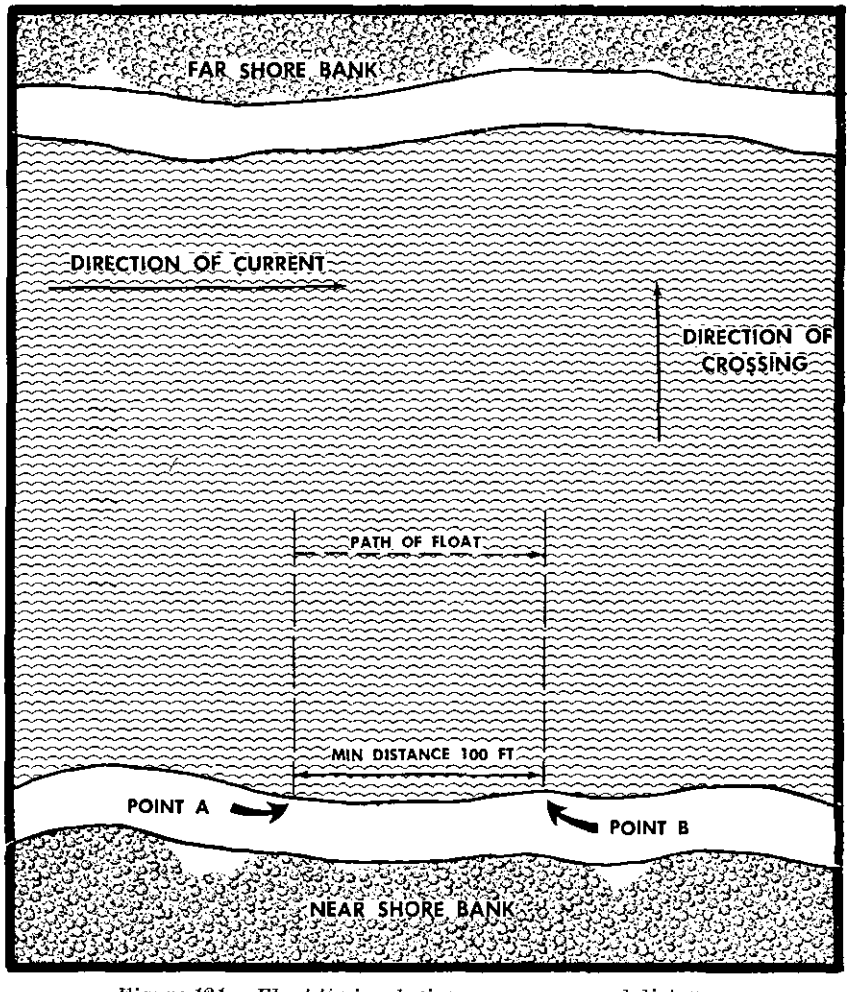


Figure 121. Float timing device over a measured distance.

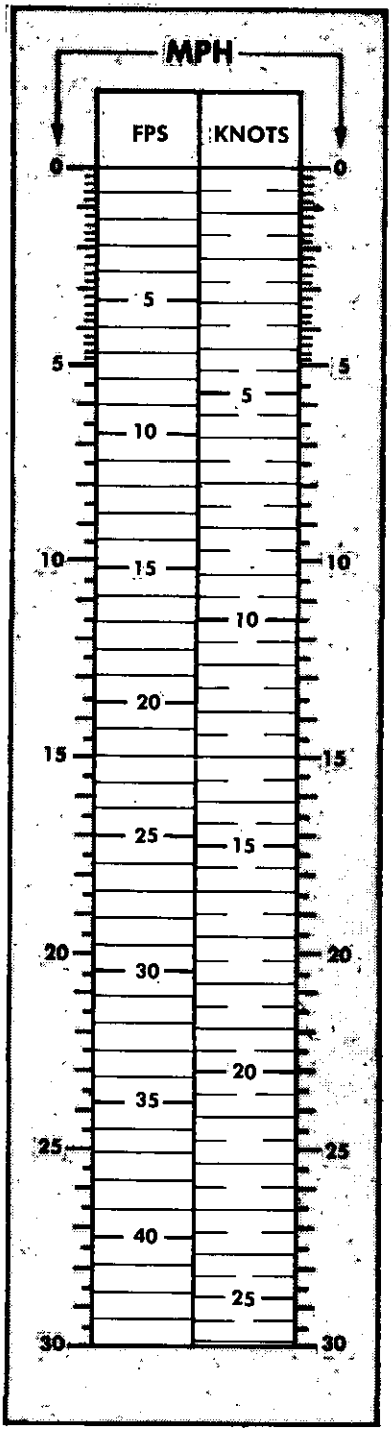


Figure 122. Chart for converting feet per second to miles per hour.

least two tests should be made with floating objects, the average time being used to determine the rate of flow in feet per second. The tests should be made in the fastest water that may be crossed by the carriers.

4. Stream Characteristics

a. Changes in Velocity. A sluggish stream or river may become a torrent in a few hours or even minutes as a result of sudden heavy rainfall. This is more likely to happen in tropical and arid regions, but can occur anywhere. Stream velocities must be checked at frequent intervals to provide warning of such changes.

b. Channels. Velocities may vary in different parts of a stream. The rate of flow is usually slowest near the shore and fastest in the main channel. Drivers and commanders of armored personnel carriers must be alert when moving into a channel from quiet water, to keep the carriers from going out of control and being swept downstream.

c. Debris. Fast-moving streams often carry large quantities of logs, brush, and other debris. In cold climates, chunks of ice may be floating in a stream. Debris is a serious hazard to the armored personnel carrier; a single piece can foul a track and put the carrier out of control.

5. Bank Conditions

Poor banks can often be improved by use of pioneer tools or dozers. Corduroying (laying logs) can be employed to improve entrances into the water. Steel tracks provide better traction than do rubber track pads. Since armored infantry units have no organic boats, it is seldom possible to do anything about banks on the far side of the stream except to use binoculars to select the best available exits.

6. Slope of Entrances and Exits

a. Gently sloping entrances and exits are desirable. However, even on the most gradual slopes, the armored personnel carrier must enter the water slowly (approximately two miles per hour) in order to avoid a large bow wave. When descending steep banks, the vehicle will tend to dive unless the approach is slow enough to allow the bow to float.

b. The most common way to express slope is in percent (fig. 123). Thus, a 1 percent slope rises or descends 1 unit in a horizontal distance of 100 units; a 10 percent slope rises or descends 10 feet in 100 feet, or 10 yards in 100 yards, etc. The formula for percent slope is:

$$\frac{\text{VERTICAL DISTANCE}}{\text{HORIZONTAL DISTANCE}} \times 100 = \text{SLOPE IN PERCENT}$$

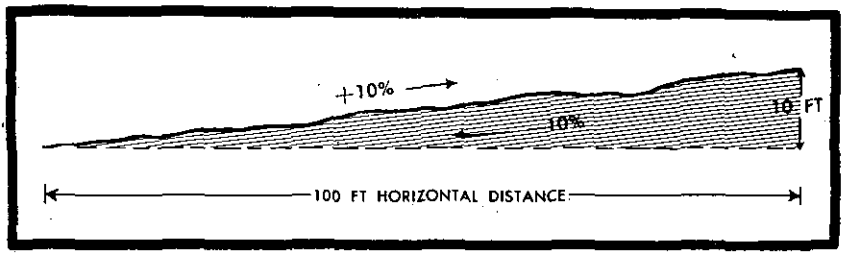


Figure 123. Expression of percent slope.

7. Bank and Soil Table

Type soil	Entrance percent slope	Exit percent slope	Remarks
MUD	10–20% (slick mud, rubber track pads). 20–40% (dry mud, steel track).	10–20% (maximum)	On exit the carrier deposits water on bank; therefore, all mud is slick.
DRY LOOSE DIRT	40–60%	40% (maximum)	
DRY LOOSE SAND	40–60%	40% (maximum)	
DRY SOFT LOAM WITH VEGETATION	40–60%	40% (maximum)	
SHALE ROCK OVER SAND	40%	40% (maximum)	
GRAVEL	DRY—40–60% WET—40%	40% (maximum)	

(WET WEATHER REDUCES THE PERCENT FIGURES SHOWN IN THE TABLE)

8. Determining Landing Point on Far Shore

a. The bow of the armored personnel carrier is always pointed directly across the stream, perpendicular to the river current. The driver must not buck the current. The only time this rule does not hold true is when the speed of the carrier, in water, is *twice* the speed of the current. Then, the bow of the carrier may be pointed into the current; an angle of not more than 30° in the direction of the flow is acceptable. When the speed of the current and the speed of the carrier are the same, the carrier drifts one foot downstream for each foot it moves forward. When the speed of the current is twice that

of the carrier, the carrier moves two feet downstream for each foot it moves forward.

b. A simple formula for determining the point of landing on the far shore is:

$$\frac{\text{STREAM VELOCITY}}{\text{SPEED OF CARRIER (MPH)}} \times \text{DISTANCE ACROSS THE STREAM IN FEET} = \text{DISTANCE OF DOWNSTREAM DRIFT IN FEET}$$

For example, a carrier traveling at 4 miles per hour in a stream that has a velocity of 4 miles per hour and is 100 feet across will land 100 feet downstream from the point where it entered the water (fig. 124).

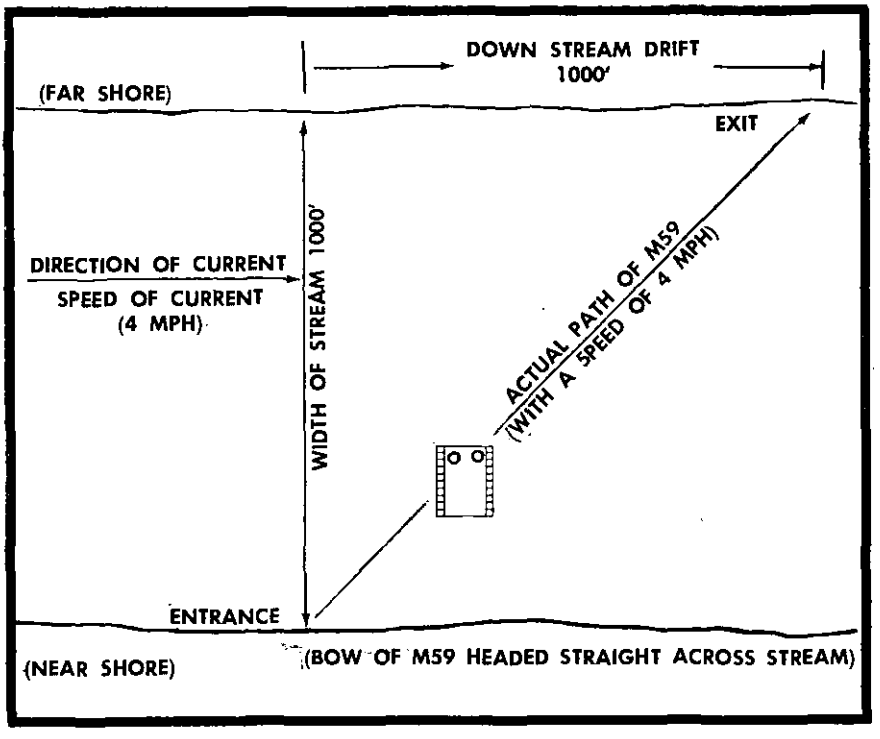


Figure 124. Downstream drift in a stream crossing.

c. The maximum water speed of the armored personnel carrier is considered to be 4.3 miles per hour. When it is traveling at 4.3 miles per hour in water, the speedometer reading will be 12 miles per hour.

9. Determining Formation and Priority of Crossing

a. The most important factors in determining the formation and priority for stream crossings are the mission, the number of entrances and exits, and the number of armored personnel carriers to cross. For example, if the mission requires an armored infantry unit to cross

in one move, and there are sufficient entrances and exits, the best formation is an echelon—echelon left if the stream flows left to right, echelon right if the stream flows right to left. The carrier farthest downstream moves out first, followed by the one next farthest downstream, and so on; the carrier farthest upstream moves out last. Use of this formation insures that upstream vehicles do not drift into vehicles downstream.

b. If the mission is one of ferrying, the greatest danger is that of collision. A collision may occur in one of three situations—the meeting situation, the passing situation, and the overtaking situation.

c. When two carriers approach each other head on, each should turn to the starboard (right) and pass the other vehicle on its port (left) side. The turn should be started soon enough for each driver to be sure of what the other intends to do.

d. When one carrier overtakes another (this is not normal, but may happen when one vehicle is having trouble), it may pass the slower vehicle on either side, provided there is ample space. However, the vehicle being overtaken has the right-of-way. The passing vehicle should cross the wake of the overtaken vehicle at an angle of at least 45° and should be sure to provide ample passing space.

Section II. ARMORED PERSONNEL CARRIER CHECKLISTS

10. General

Each armored infantry commander must insure that his unit has an SOP for utilization of its armored personnel carriers in water operations. This SOP should include checklists covering actions to be taken at various stages of such operations.

11. Check Prior to Entering the Water

a. Check the drain plugs (under the front hull).

b. Raise and lock the end ramp.

c. Start and operate the bilge pump. If necessary, take on water (about 100 gallons) to permit a check of the operation of the pump.

d. Extend the trim vane, which is located on the top front of the carrier. This trim vane serves only to trim the vehicle; it has no appreciable effect upon handling of the vehicle in the water.

e. Close and secure all hatches and doors.

f. Check for proper load distribution. Maximum total load is 3,100 pounds (M59). All cargo must be secure so it will not shift.

g. The commander's cupola may be kept open except in rough water (depending on the tactical situation).

12. Check While Afloat

a. The hand throttle should be set at approximately 2,500 RPM. The hand throttle is used in order to prevent the possibility of sudden

deceleration if the driver's foot should slip from the accelerator. Sudden deceleration may cause the vehicle to pitch forward, submerging the bow.

b. All turns in the water are made the same as on land.

c. Freeboard is checked continually (a freeboard of less than 13 inches is dangerous).

d. Maximum water speed is 4.3 miles per hour (at this speed, the speedometer reading will be 12 miles per hour).

e. Normally, the shift lever should be positioned in LOW RANGE-DRIVE.

13. Check Upon Leaving the Water

a. Approach the land squarely.

b. Move the shift lever to LOW RANGE-HILLY.

c. Approach the land at a reduced speed (approximately two miles per hour.

d. When out of the water, retract the trim vane.

e. Continue to operate the bilge pump after leaving the water until all the water is pumped out.

Section III. PERSONNEL SAFETY

14. Life Preservers

It is difficult to evacuate the armored personnel carrier while wearing a kapok vest-type life preserver. Whenever available, the inflatable belt-type life preserver should be worn. This is especially true for the driver and vehicle commander, since it is especially difficult to exit through the cupola when wearing a kapok preserver. When only the kapok vest-type preserver is available, it should be slung over one shoulder until the hatch is cleared.

15. Discharging Passengers

If the armored personnel carrier cannot climb out of the stream on the far bank, it should be backed up to the bank, the ramp lowered, and personnel discharged.

INDEX

[AG 470.8 (5 Aug. 57)]

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

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

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

Distribution:
Active Army:

DCSPER	MP Bn
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DCSOPS	Cml Co
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ACSRC	Inf Co
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MDW	US Army Tng Cen
Armies	USMA
Corps	CGSC
Div	Armor Sch
Brig	US Army A & MS
Engr Gp	AG Sch
Inf Regt	QM Sch
Armor Gp	Engr Sch
Cml Bn	Inf Sch
Engr Bn	Trans Sch
FA Bn	Ord Sch
Inf Bn	PMST Sr Div Units
Ord Bn	PMST Jr Div Units
QM Bn	PMST Mil Sch Div Units
Sig Bn	MAAG
Armor Bn	Mil Mis

NG: State AG; units—same as Active Army.
USAR: Same as Active Army.
For explanation of abbreviations used, see AR 320-50.

U. S. GOVERNMENT PRINTING OFFICE: 1957

FIELD MANUAL

ARMOR OPERATIONS, SMALL UNITS

FM 17–1
CHANGES No. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON 25, D. C., *10 December 1959*

FM 17–1, 23 August 1957, is changed as follows:

Substitute the term **nuclear** for the term "atomic" throughout this manual.

Substitute the term **nonnuclear** for the term "nonatomic" throughout this manual.

Substitute the term **plan** for the term "scheme" throughout this manual.

Substitute the term **road movement graph** for the term "march graph" throughout this manual.

Substitute the term **road movement table** for the term "march table" throughout this manual.

2. Scope

* * * * * * *

b. Small armor units *** as armor units. **The following are current titles and designations of Armor units.**

TOE No.	*Titles**	*Designation**
7–25D	ARMORED DIVISION INFANTRY BATTALION	___Armored Rifle Battalions, ___Infantry
7–27D	RIFLE COMPANY, ARMORED DIVISION INFANTRY BATTALION	Company___, ___Armored Rifle Battalion, ___Infantry
17–25D	ARMORED DIVISION ARMOR BATTALION, 90MM	___Medium Tank Battalion (Patton), ___Armor
17–65D	INFANTRY DIVISION ARMOR BATTALION, 90MM	___Medium Tank Battalion (Patton), ___Armor
17–45D	ARMORED DIVISION CAVALRY SQUADRON	___Reconnaissance Squadron, ___Cavalry
17–85D	INFANTRY DIVISION CAVALRY SQUADRON	___Reconnaissance Squadron, ___Cavalry
17–51D	ARMORED CAVALRY REGIMENT	___Armored Cavalry
17–55D	ARMORED CAVALRY SQUADRON, ARMORED CAVALRY REGIMENT	___Reconnaissance Squadron, ___Armored Cavalry

***These changes supersede DA Training Circular 17–2, 14 May 1958.**

***The title is used when making a general reference to the type unit; the designation is used in referring to a specific unit.**

TOE No.	*Titles**	*Designation**
17–27D	MEDIUM TANK COMPANY, ARMORED DIVISION ARMOR BATTALION, 90MM OR TANK TROOP, ARMORED CAVALRY SQUADRON OR MEDIUM TANK COMPANY, INFANTRY DIVISION ARMOR BATTALION, 90 MM OR MEDIUM TANK COMPANY, ARMOR BATTALION, 90MM	Company___, ___Medium Tank Battalion (Patton), ___ Armor Troop___, ___Reconnaissance Squadron, ___Armored Cavalry
17–57D	ARMORED CAVALRY TROOP, ARMORED DIVISION CAVALRY SQUADRON OR ARMORED CAVALRY TROOP, ARMORED CAVALRY SQUADRON OR ARMORED CAVALRY TROOP, INFANTRY DIVISION CAVALRY SQUADRON	Troop___, ___Reconnaissance Squadron, ___Cavalry Troop___, ___Reconnaissance Squadron, ___Armored Cavalry
17–77D	AIRBORNE DIVISION CAVALRY TROOP	Troop ___ (Reconnaissance) (Airborne), ___Cavalry

c. (Added) Throughout this manual, where the word battalion appears in a general sense (battalion commander, battalion staff, battalion trains), it is to be considered as applying equally to the armored cavalry squadron. Likewise, a general reference to company applies equally to the armored cavalry troop.

4. Definition of Armor
(Superseded)

Armor is a fighting combined arms team consisting of tanks, armored infantry, armored artillery, armored engineers, and armored reconnaissance/security units, supported on the battlefield by Army aviation, a flexible and rapid communication network, and a mobile logistics system, all trained and equipped for mounted ground combat. Armor is in fact the full expression of the philosophy of flexible organization, armor-protected firepower, mobility, shock action, and teamwork.

5. The General Role of Armor
(Superseded)

The role of armor is the conduct of highly mobile ground warfare, primarily offensive in nature, and characterized by a predominance of mounted combat. This role is performed by the

*The title is used when making a general reference to the type unit; the designation is used in referring to a specific unit.

armored division, armored cavalry regiment, separate armor groups and battalions, and the armor elements of infantry and airborne divisions.

6. Role of the Armor Battalion

a. **The medium-gun battalion of the armored division, armored group, and the separate armor battalion can be effectively used against both dismounted forces and armor formations.** The battalion is * * * timely logistical support.

* * * * * * *

c. (Added) The missions and the doctrine for employment of the heavy-gun battalion are similar to those of the medium-gun armor battalion. Although the heavy-gun tank, by reason of greater armor protection and gun-ammunition capabilities, is better suited to fight enemy armor than is the medium-gun tank, it should not be considered primarily as an antitank or defensive weapon. In addition to the missions normally assigned to any armor battalion, the heavy gun battalion may be assigned missions which make maximum use of the capabilities of its tanks, such as long-range fires delivered in the defense or retrograde operations, tank-gun fire in support of a river-crossing operation, or tank-gun fire employed in an attack of a fortified area.

7. Role of the Armor Battalion, 120-MM (Rescinded)

11. Basic Missions of Armor

* * * * * * *

b. (Superseded) Armor may be employed in all types of ground combat, either independently or as part of a larger force. Armor is especially suited to a nuclear environment because its armor protection shields personnel completely from thermal effects and attenuates significantly the effects of blast and radiation. Armor can maneuver and fight when other troops are dug in or must avoid contaminated areas. Armor's inherent characteristics of mobility, armor protection, flexibility, shock action, and responsiveness to command endow armor with the optimum capability for successfully accomplishing the following missions:

(1) *Deep penetration and wide envelopment.* Large armor formations, having battlefield mobility and the ability to maneuver in whole or by element and controlling tremendous nuclear and nonnuclear fire support, provide forces with power and momentum for deep penetrations and wide envelopment. In the enemy's rear areas these

forces attain great freedom of action as they maneuver to seize decision objectives, disrupt communication, destroy command posts, missile sites, artillery, and troop reserves, and capture or destroy supplies.

(2) *Exploitation.* Armor has the fighting power to create its own opportunities for exploitation as well as provide the higher commander with a destructive force he can use to exploit rapidly the successes of other formations. For example, the armored division, as part of the corps fighting team, may be used by the corps commander to expand the successes of infantry or the effects of nuclear preparations. Objectives appropriate for the armored division are those decisive ones beyond the reach of foot troops which will ensure successful accomplishment of the corps or field army mission. Armor/airborne link-up operations may best utilize the abilities of each force in certain of these situations.

(3) *Mobile defense.* Armor is ideally suited to conduct a mobile defense over extended frontages. Since it is designed primarily for offensive action, however, it is best employed in defensive operations as the highly mobile counterattack or striking force of a higher command. The armored division, alone or in conjunction with nuclear weapons, provides the corps and army commander with a powerful reserve to be employed in destroying enemy attacking forces. The armor unit's capability to move, live, and fight on the nuclear battlefield permits its employment in compressing or canalizing enemy forces into suitable dispositions for destruction by attack with nuclear weapons.

(4) *Destruction of enemy armored formations.* Destruction of enemy armor is essential to successful ground combat and is a continuing requirement in all offensive and defensive operations. The tank is our primary armor-defeating weapon.

(5) *Reconnaissance/security.* As the range of weapons is extended, as the battlefield becomes less populated, and as units are more widely dispersed, the need for reconnaissance and counterreconnaissance becomes more acute. Armored cavalry units provide reconnaissance for the higher commander by ground and aerial means, or a combination of both. Reconnaissance, counterreconnaissance, and security missions demand highly mobile forces with a ground combat capability. In addi-

tion to detecting enemy forces and providing warning, these forces must destroy enemy elements within their capabilities. In characteristics of armor units provide the higher commander with forces well suited to conduct covering, probing, screening, and rear area security operations and to act as advance, flank, or rear guards. Armor units are uniquely suited for antiairborne and antiguerilla operations.

(6) *Close support of infantry.* This mission is most frequently fulfilled by the armor battalions of the infantry division and the armor group. Whether employed as units or as tank elements detached to infantry battle groups, armor battalions greatly increase the firepower and mobility of the infantry attack and defense and provide a powerful armor-defeating capability.

(7) *Economy of force.* Armored cavalry and armor groups are excellently organized and equipped to perform economy of force missions, thus permitting a commander to maneuver the preponderance of his forces to another area for a decisive blow. Armored cavalry is eminently suited for employment in areas not requiring the fighting power of the armored division.

c. (Rescinded.)

13. Capobilities of Armor
(Rescinded)

16. Organizotion for Combat In Nuclear Warfare

* * * * * * *

a. (Superseded) A residual radiation hazard exists in the vicinity of ground zero for most nuclear bursts. Armored vehicles provide a degree of protection from residual radiation effects and permit considerable flexibility in executing tactical operations.

* * * * * * *

17. Planning and Control in Nuclear Warfare

Commanders and staff officers of small armor units **may often** be directly associated with the planning for and control of the employment of tactical nuclear weapons. The direct effect * * * includes the following:

* * * * * * *

18. Conduct of the Attack in Nuclear Warfore

a. During the conduct * * * by battalion-size units.

* * * * * * *

(2) Whenever possible, these battalion objectives will be located to maintain the desirable dispersion distance of 6,000 yards between centers or 4,000 yards between perimeters.

* * * * * * *

43. Terrain and Weather

a. Terrain and weather * * * operations of armor. **This diminishing of effectiveness may be largely negated, however, by the element of surprise that is achieved by employment of armor in an area not considered by the enemy to be a logical avenue of armor approach.** An armor unit * * * mobile armor operations.

* * * * * * *

45. General

Armor battalions and * * * armored cavalry regiment. **Conditions affecting task organization are related to the following:**

a. (Added) *Tank or Tank-heavy Task Organization.*

(1) Good tank terrain—open, few obstacles.

(2) Few or no built-up areas.

(3) Strong enemy armor opposition.

(4) Desert operations.

(5) Speed and shock action desired.

(6) Pursuit operations.

b. (Added) *Armored Infantry or Armored-Infantry-heavy Task Organization.*

(1) Restricted visibility.

(2) Many built-up areas and natural obstacles.

(3) Strong enemy antitank defense.

(4) Zones to clear.

(5) Built-up areas to clear.

(6) Mountain operations.

c. (Added) *Balanced Task Organization.*

(1) Enemy situation vague—movement to contact.

(2) Equal requirement for tanks and armored infantry.

(3) Wide front.

48. Command of Battalion Task Forces and Company Teams

a. General. Normally, a tank-heavy * * * the team commander. **A commander may, if the situation dictates,** designate a qualified battalion staff officer to command the team.

* * * * * * *

49. Use of Reserves or Unengaged Forces

* * * * * * *

d. (Added) Some of the nuclear weapons allocated to an armor unit may be held in reserve, thereby freeing the commander of the need to maintain units in reserve.

53. Selection of Command Post Locations

* * * * * * *

f. (Added) *Dispersion.* As a guide, battalion-level command posts should be at least 4,000 to 6,000 yards apart.

65. Army Aviation Support
(Superseded)

a. The armored division and the armored cavalry regiment have an organic aviation company. This company will habitually provide aviation support at battalion task force and armored cavalry troop level. The present armor group headquarters does not have organic aircraft; however, each of the separate battalions allocated to the group has one light observation aircraft. Additional aviation support for the armor group may be provided by the corps aviation company. (See FM 1–100.)

b. When aircraft are operating from dispersed locations, maintenance personnel from the aviation company will accompany the aircraft to maintain and service them and, depending on the number of aircraft, provide refueling facilities at a landing site near the combat command command post.

c. Organic aviation of armor is employed to—

(1) Extend the range of reconnaissance.
(2) Verify information.
(3) Provide security by furnishing timely information to commanders.
(4) Assist in control and communication of supported units.
(5) Establish and maintain radio contact with both ground and air tactical units. Aircraft are equipped with FM and UHF radios.
(6) Provide courier and messenger service.
(7) Provide flights for command liaison and reconnaissance.
(8) Provide limited aerial supply and emergency evacuation of personnel casualties. (See FM 17–50.)
(9) Provide transport for small combat forces and their equipment.
(10) Provide aerial surveillance utilizing photographic and electronic devices.

d. The inherent flexibility of Army aviation units permits a system of allocations in support of armor units in combat. A combat support section, with fixed and/or rotary wing aircraft attached, supports major combat elements of the division for specific missions or periods of time. Changes to the aviation support mission may be made quickly and smoothly as the need arises.

e. All requests for support by organic and nonorganic Army aircraft are processed through command channels.

66. Employment of Tactical Nuclear Weapons (Superseded)

Armor units may employ tactical nuclear weapons. The decision to employ nuclear weapons is normally delegated to the commander to whom the weapons have been allocated. Plans for employing nuclear weapons are integrated into the plan of maneuver to insure the most efficient utilization of available combat power. Troop safety measures and other limiting requirements will be in unit SOP's or as indicated by the guidance of the commander employing the weapons. For a discussion of nuclear weapons employment, see FM 101–31.

67. Employment of Chemical Agents (Superseded)

a. Armor is capable of employing toxic chemical agents under conditions of nuclear or nonnuclear warfare to—

(1) Create casualties among enemy personnel without creating undesirable obstacles.

(2) Attack targets when troop safety requirements prevent use of nuclear weapons.

(3) Cause casualties to personnel in a target complex without causing significant damage to materiel and facilities that friendly forces wish to capture intact.

(4) Cause casualties among personnel who are in fortifications and well dug-in positions.

(5) Increase casualties on the "fringe," or periphery, of nuclear strike areas.

b. Flame is primarily used against enemy strongpoints, while smoke is used to blind, conceal, or signal.

c. Requests for employment of chemical agents are made through artillery request channels consistent with current guidance. See FM 3–5, FM 100–5, and TM 3–200 for further discussion of the employment of chemical agents to support combat operations.

78. Battalion Adjutant (S1)

* * * * * * *

s. (Rescinded)

* * * * * * *

79. Battalion Intelligence Officer (S2)

* * * * * * *

c. (Superseded) Produces and presents intelligence to the commander, staff, and subordinate, higher, and adjacent headquarters.

d. (Superseded) Plans, recommends, and supervises troop counterintelligence measures for the command.

e. (Superseded) Prepares the intelligence collection plan of the battalion.

f. (Superseded) Maintains the enemy situation map and insures that items of intelligence information are recorded in the unit journal.

g. (Superseded) Prepares intelligence portion of operational situation report, SOP's, and operation orders.

h. (Superseded) Coordinates and supervises the establishment and operations of observation posts within the battalion area.

i. (Superseded) In conjunction with S3, plans, supervises, and briefs all reconnaissance patrols; debriefs all reconnaissance and combat patrols; and prepares and disseminates patrol reports.

j. (Superseded) Examines captured enemy personnel, including civilians (hostile and friendly), documents, and materiel for immediate tactical value, and expedites the sending of captured personnel, documents, and materiel to higher headquarters.

k. (Added) Prepares and presents the intelligence estimate.

l. (Added) Prepares aerial reconnaissance and surveillance plans.

m. (Added) Procures and distributes maps and aerial photographs for the battalion.

n. (Added) Coordinates radiological survey operations, maintains radiological fallout situation map, and interprets and disseminates radiological survey data.

o. (Added) Records and disseminates enemy chemical and biological warfare information.

p. (Added) Obtains and disseminates weather information.

87. Commander Headquarters Company

The headquarters company * * * the command post. **In this**

capacity he is responsible for the organization, security, and movement of the command post **under the direct staff supervision of the battalion S1.**

97. Reports

* * * * * * *

*a.*1 (Added) *Flash Report.* A flash report is an immediate report of the utmost urgency. It is usually concerned with enemy activity, such as an enemy air, armor, CBR, or nuclear attack which poses an immediate threat to the command or a part of it. Flash reports receive the highest priority of all transmissions, and usually will be disseminated immediately and evaluated and interpreted later.

b. (Superseded) *Spot Report.* A spot report is an abbreviated intelligence report used to transmit information or intelligence data which are of sufficient importance to warrant immediate dissemination. They are used when any delay in dissemination could be detrimental to friendly forces.

* * * * * * *

k. (Added) *Casualty and Nonbattle Loss Reports.* All personnel in a combat theater of operations whose services are lost to their organization, permanently or temporarily, because of death, wound or injury, or because they are missing or have been captured, are reported to the next higher administrative headquarters in accordance with the provisions of AR 600–66. In the armor battalion these reports are submitted to the battalion S1 in accordance with the battalion SOP.

l. (Added) *Nuclear Burst Report.* To react effectively to nuclear weapon attacks commanders must have sufficient data upon which to base decisions. Unit SOP's will prescribe a nuclear burst report requiring the following minimum data: reporting unit, time of burst, type of burst (air, surface or subsurface), location of observer, azimuth and distance from observer to ground zero, and observed effects. The unit SOP will prescribe what size unit will render the report.

118. Tank Weapons

* * * * * * *

c. Tank Machineguns. Each tank is * * * of an objective.

122. Crew-Served Weapons

* * * * * * *

d. Individual Weapons. Personnel of armor * * * of individual weapons. These include pistols, submachine guns, automatic rifles, and rifles. In addition grenades * * * primary combat role.

142. General

a. Reconnaissance is a * * * the enemy's resources. There are three classifications of reconnaissance—**close, extended, and deep.**

* * * * * * *

143. Close Reconnaissance
(Superseded)

Close reconnaissance is the directed effort to gather information in the area of current tactical operations up to the depth of the division area of influence. It is made immediately before and during battle by units in contact with the enemy. Close reconnaissance is normally directed toward determining the location, composition, and disposition of enemy troops in contact, including local reserves immediately in rear of the line of contact.

144. Extended Reconnaissance
(Superseded)

Extended reconnaissance is the directed effort to gather information in the area of current tactical operations from the far limit of close reconnaissance to the depth of the corps area of influence. It is normally performed within supporting distance of the weapons system and other combat units. Extended reconnaissance is normally directed toward determining the location, composition, and disposition of enemy reserve forces and supporting troops that can influence the local action.

145. Deep Reconnaissance
(Superseded)

Deep reconnaissance is the directed effort to gather information in the area of current and projected operations beyond the limit of extended reconnaissance. It may extend to the depth of the army area of influence, depending on the nature of projected operations and enemy activities.

146. Reconnaissance Agencies

* * * * * * *

c. (Superseded) Army aviation units are equipped for aerial observation, photographic, and electronic surveillance missions. When employed in support of armor units, Army aviation can supplement ground reconnaissance and surveillance operations.

* * * * * * *

176. Rear Area Security

* * * * * * *

d. **Army aviation should be utilized to the maximum.** Plans should be * * * units in contact.

CHAPTER 6

INDIVIDUAL AND UNIT PROTECTIVE MEASURES
(Superseded)

Section I. GENERAL

180. Purpose

This chapter is concerned with individual and unit protective measures and damage control operations common to all armor units. Included are measures employed to reduce the probability of detection; meásures to minimize the effects of enemy nuclear, chemical, artillery, mortar, and air-delivered weapons; and procedures for conducting damage control operations in the event the enemy uses mass destruction weapons. In addition, many of these measures apply when nuclear weapons are employed in close support of friendly armor units.

181. Definitions

a. Active Protective Measures. Active protective measures include all positive means taken to engage, destroy, or neutralize the enemy forces, his weapons, and his intelligence efforts.

b. Passive Protective Measures. Passive protective measures are those taken before, during, and after an action to prevent detection or to minimize the effect of enemy attack.

c. Chemical Weapons. The term *chemical weapons*, as used in this chapter, refers to toxic chemical agents and does not include nontoxic agents such as flame and smoke.

d. Nuclear Weapons. The term nuclear weapons, as used in this chapter, refers to all weapons that result in a nuclear explosion, regardless of delivery means.

e. CBR Monitoring and Survey. See paragraph 194.

f. Damage Control. Measures taken prior to, during, and after a mass destruction attack or natural disaster to minimize the effects thereof.

Section II. PROTECTIVE MEASURES IN NUCLEAR WARFARE

182. General

Nuclear detonations have three primary effects: blast, thermal radiation, (heat), and nuclear radiation. Blast injuries are caused by collapsing buildings and flying debris. Blast damage to materiel is primarily due to the violent displacement of the materiel by the shock wave. Thermal radiation casualties are caused by

burns resulting from flash heat. Nuclear radiation casualties result from damage to or destruction of living body tissue. For additional unclassified information on the effects of nuclear explosions, see DA Pam 39–1. For classified information on troop safety, refer to FM 101–31. For additional information on residual radiation, refer to DATC 101–1.

183. General Protective Measures

a. Training. The nuclear weapon, although a tremendously destructive military device, is not a weapon against which there is no defense. This fact must be firmly established early in the training of any unit. The more each soldier knows about what the weapon can and cannot do, the more effective he will be on the nuclear battlefield and the greater will be his chances for survival. Training must stress the interrelated importance of discipline, camouflage, cover, concealment, dispersion, and immediate reaction for battlefield survival. Consult FM 21–40 for details of small unit procedures and FM 21–41 for details on individual protective measures under nuclear warfare conditions. Field exercises should always include application of unit and individual protective measures. The fact must be emphasized that armor units because of their equipment and method of operation are much better suited for the nuclear battlefield than any other combat unit. All personnel must be fully aware that the immediate effects of a nuclear explosion may last for as long as 90 seconds, while the residual or delayed effects may last for days.

b. Unit Standing Operating Procedure. Conditions prevailing on the nuclear battlefield will require that many individual protective measures be performed without detailed direction. The SOP of each armor unit must include procedures to be followed in connection with friendly and enemy employment of nuclear weapons. The SOP should include provisions for a warning system to be used in the event of friendly or enemy weapons employment, routine procedures for protection of equipment and personnel, use of radios, and certain specified reports. The measures prescribed by the unit SOP should be rehearsed at every opportunity.

184. Concealment As a Protective Measure

a. General. Concealment consists of anything that prevents personnel or equipment from being seen by the enemy, but which provides little or no protection.

b. Camouflage. Camouflage includes all meaures taken to mislead the enemy by concealment and deception. Successful camou-

flage depends on the proper selection of position, the discipline of the personnel involved, and the proper use of natural material and artificial construction. FM 5–20 contains specific procedures and techniques of camouflage.

c. Night Operations. An effective way to obtain concealment is to conduct movements and tactical operations during hours of darkness or very limited visibility. Difficulties encountered in night operations can be minimized through adequate training, planning, and supervision.

185. Mobility As a Protective Measure

The mobility of armor units provides an extremely effective means of passive protection. This mobility makes the armor unit a fleeting target which is capable of rapid movement from widely dispersed areas, brief concentration, and subsequent rapid dispersal. Their mobility permits armor units to move quickly through or out of an area of radioactive or chemical contamination. Retention of mobility is essential to successful armor operations, and no other protective measures should be employed that would seriously restrict the movement of armor units.

186. Protection Afforded by Armored Vehicles

a. General. Armored vehicles provide a significant degree of protection to personnel against the effects of a nuclear explosion.

b. Tanks. A tank provides excellent protection for personnel within it. The protection provided is roughly equivalent to that provided by a four-foot-deep foxhole with overhead cover. When located close to ground zero, the tank may be thrown or rolled along the ground by the tremendous blast effect of the explosion. The SOP must require that all unnecessary items, such as empty shell casings or ration boxes, be removed from the vehicle and that all necessary items be well secured within the vehicle. Tank crewmembers under threat of nuclear attack remain within their tank, habitually wear helmets, and keep all hatches securely locked. When its hatches are locked, the tank gives complete protection against the thermal (heat) effect of the explosion. To prevent external fires, all combustible material should be removed from the outside of the tank and from its vicinity. The tank provides excellent protection against nuclear radiation. The degree of this protection depends on the yield of the weapon, the height of burst, and the distance from the vehicle to the point of detonation. Precise determination of the degree of this protection in any given case may be made by a specially trained nuclear weapons employment officer or by reference to FM 101–31.

c. Armored Personnel Carriers. Armored personnel carriers provide some protection against the effects of nuclear explosions for personnel within the vehicle, though not as much as a tank. There should be no loose material or equipment in the vehicle which might fly around and cause injuries, and all personnel in the vehicle should wear helmets. The protection against thermal effects is generally the same as that afforded by the tank (*b* above), and the same considerations apply. Personnel within an armored personnel carrier and under threat of nuclear attack should remain in the vehicle, leaving it only when necessary or when better protection, at least the equivalent of a four-foot revetted foxhole with overhead cover, is **immediately** available.

187. Protective Measures for Dismounted Personnel

It cannot be assumed that all personnel of an armor unit will at all times have the protection of an armored vehicle. For this reason, it is essential that all members of an armor unit be well trained in protective measures that can be used if they are dismounted.

a. Protection Against Blast. The immediate reflex reaction of a person caught in the open at the time of a nuclear explosion should be to hit the ground. Shallow ditches or even slight folds in the ground provide some protection against flying debris (figs. 30 and 31). Individual emplacements, such as foxholes or prone shelters, offer better protection. If time and the tactical situation permit, the most effective individual shelter, with the exception of a tank, is a well constructed 2-man foxhole with overhead cover. This shelter should be dug in firm ground, revetted, and kept free of loose objects. The overhead cover should be as substantial as possible, should be flush with the surface of the earth to prevent its being blown off, and should include about four inches of earth.

b. Protection Against Thermal Radiation (Heat). The thermal effects of a nuclear explosion are emitted instantaneously in all directions at the speed of light. Thermal casualties result from burns on bare skin and to a lesser extent through clothing. Personnel caught in the open at the time of the explosion will be immediately exposed to this effect and will be unable to react rapidly enough to avoid it; however, any shadow-producing object or terrain feature provides protection against thermal radiation. Unit SOP's must require that personnel reduce to the minimum the amount of bare skin exposed when in the open. Shirts and jackets should be worn with sleeves rolled down, and gloves should be worn whenever practical. Personnel must be trained never to

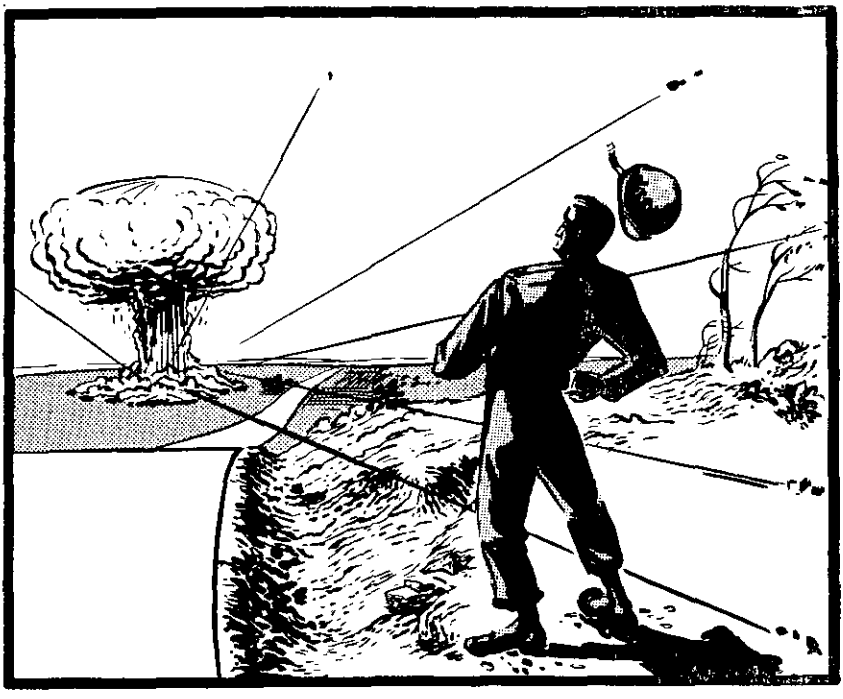

Figure 30. (Superseded) *A person caught in the open at the time of a nuclear explosion should immediately hit the ground.*

look intentionally at the fireball of an explosion, since their eyes may be injured.

Armored vehicles and shelters having overhead cover afford excellent protection from thermal effects. Placing a shelter half over an otherwise open trench or foxhole gives effective protection. No highly combustible item should be used for overhead cover.

c. Protection Against Nuclear Radiation. Nuclear radiation is the effect about which the average soldier is least informed and therefore fears the most. Protection from nuclear radiation may be obtained by placing dense material between the radiation source and the individual. It has been determined that 1½ inches of steel or 7½ inches of earth will reduce initial nuclear radiation by 50 percent. To be effective, shielding must be on all sides. Thus, 3 inches of steel in the hull and turret of a tank, or 15 inches of earth, will reduce the initial nuclear radiation to one-fourth of the unprotected intensity. Initial nuclear radiation is emitted at the same time and velocity as thermal radiation, but to a shorter range. Initial nuclear radiation is that which is emitted from the fireball at the time of the explosion, and from the cloud for about 90 seconds after the burst, until the cloud is too high

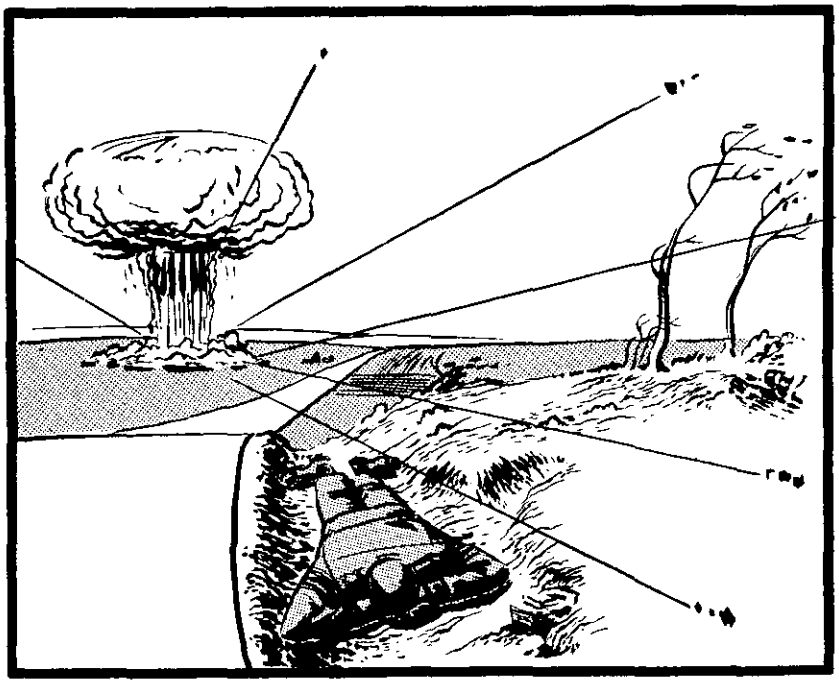

Figure 31. (Superseded) *Slight folds in the ground provide significant protection to prone personnel.*

Figure 32. Rescinded.

for the radiation to reach the ground. Initial nuclear radiation must not be confused with residual radiation, which occurs in the form of fallout in areas downwind from the target area or as neutron induced radiation in the immediate vicinity of ground zero.) Personnel in the open within range of this effect at the time of explosion cannot act quickly enough to avoid all of the initial nuclear radiation. A tank or a 4-foot-deep foxhole with adequate overhead cover provides the best available protection against this effect. The armored personnel carrier and other shelters discussed above also provide a degree of protection against this hazard.

d. Protection Against Fallout. A surface or subsurface nuclear explosion causes the additional radioactive hazard of fallout. Such explosions lift tremendous quantities of earth particles into the nuclear cloud formed at the time of detonation. This material is highly radioactive and particles are carried downwind and eventually fall back to earth. Such particles are known as fallout, and

the lingering hazards from fallout may cover many square miles. The presence and intensity of residual radiation is determined by radiological monitoring and survey, procedures for which must be specified in unit SOP's based on DATC 101–1. If the tactical situation permits, an effective protective measure is prompt movement out of the area before fallout begins or as soon as possible after it has been detected. In some situations it is better to remain in the area and take maximum individual and unit protective measures. Once residual radiation has been detected, the unit remains in its *present* location and reports the presence of radioactivity to the next higher headquarters, which may direct movement out of the area. If it is necessary to remain in the fallout area, the protective measures against the other effects previously discussed will be effective against fallout. Armored vehicles must be completely buttoned up with the crews remaining inside. Shelters should have overhead cover. The period of time a unit may remain in the contaminated area depends on the degree of risk acceptable to the commander, the intensity of the radiation, and the protection available to the personnel. In any event, the amount of time spent away from cover should be kept to the minimum. The radioactive dust that collects on top of shelters and vehicles should be brushed away at intervals, and complete decontamination should be accomplished at the first opportunity. The protective mask prevents breathing and swallowing of radioactive particles, and is utilized when dust is so concentrated as to make breathing difficult.

188. Unit Protection Against Nuclear Weapons

a. General. A unit's protection is no more effective than the collective protective measures taken by its individuals. The fundamental purpose of both individual and unit protective measures is to maintain the combat efficiency of the unit. The number of protective measures an armor unit can take depends on the tactical situation. There are, however, certain measures that can be taken in almost any situation.

b. Smoke. The use of smoke materially decreases the thermal effects of either a friendly close-support weapon or a possible enemy nuclear attack. This protective use of smoke would be appropriate during a period of unavoidable concentration of troops, such as a deliberate river crossing or passage through a defile. A dense fog, heavy snow, or rain provide similar protection.

c. Dispersion. Dispersion is an excellent protective measure, primarily because it makes target acquisition more difficult and the target less attractive. If the tactical situation and the size

and characeristics of the available area permit, approximately 4,000 yards should be maintained between perimeters of adjacent battalions, or 6,000 yards between their centers of mass (fig. 33). These distances will permit dispersion of up to 1,500 yards between companies within the battalion and ensure that one nuclear weapon with an effects radius of 1,500 yards (100–KT yield weapon based on data taken from DA Pam 39–1) will not destroy a major part of a battalion. These desirable dispersal distances should be considered in the assignment of assembly areas, axes of attack, objectives, and defensive positions. Armor units cannot disperse so much that they will be tactically ineffective. The terrain, or the enemy capability or willingness to mass and maintain a certain force in a given area, may require more concentrated dispositions in order to accomplish the mission.

d. Position Selection. Within the restrictions imposed by the tactical situation, unit positions should be selected on terrain that provides natural shielding from nuclear weapons effects. Personnel casualties resulting from secondary blast effects are more likely in built-up areas than in open country.

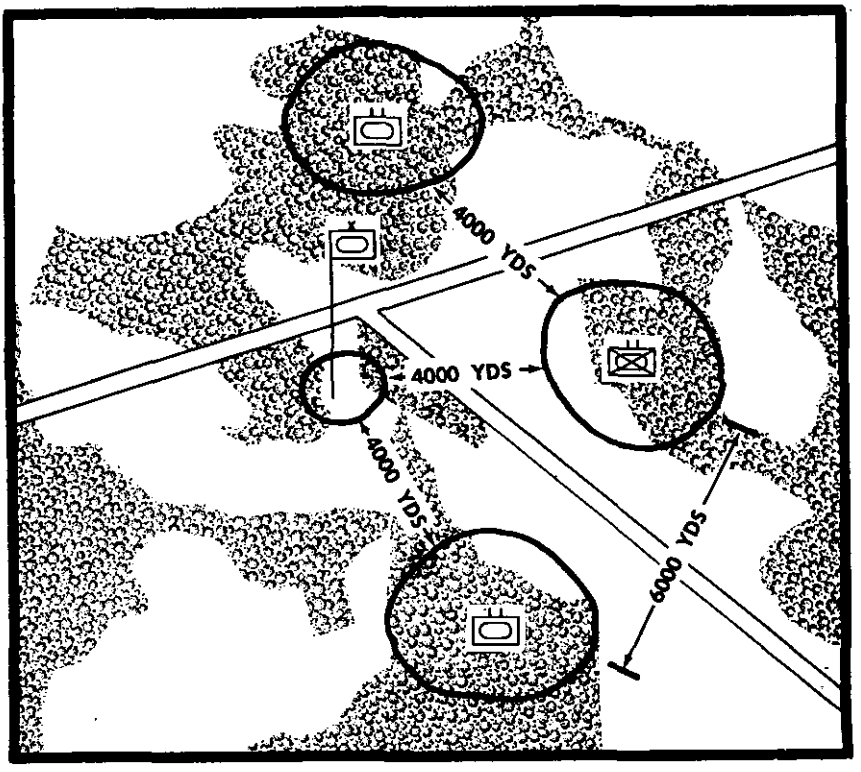

Figure 33. (Superseded) *Desirable dispersal distances.*

189. Unit Protective Procedures Against Nuclear Weapons

The unit protective procedures described below should be routine within armor units. When these procedures are employed to protect against possible effects of a friendly nuclear attack, care must be taken not to make them so obvious that the enemy will be warned.

a. Whenever it is possible to determine the direction from the unit's position to the point where nuclear explosion will occur, as would be possible when friendly weapons are to be used, vehicles should be placed to take advantage of cover offered by the terrain.

b. Whenever possible, just prior to the friendly employment of nuclear weapons, tank turrets are rotated so that the main gun is facing away from the blast (fig. 34). This will prevent damage to the fire control equipment.

c. Tools and light equipment, such as those used by kitchen and maintenance personnel, should be secured to reduce the missile hazard within the area.

d. Special instruments for determining the intensity of residual radiation should be maintained in an operative condition, and

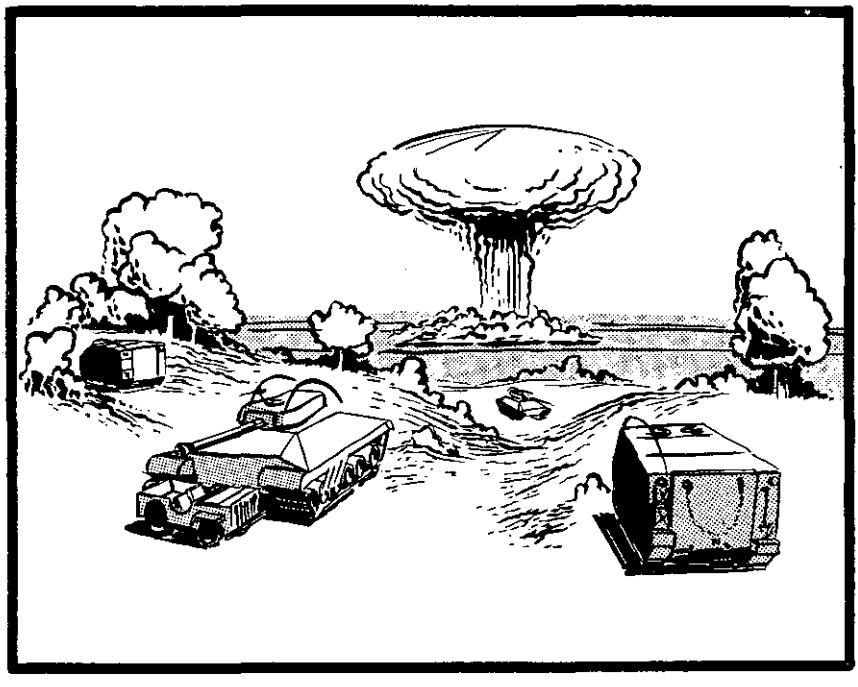

Figure 34. (Superseded) *Vehicles utilize protection offered by the terrain or heavier vehicles.*

sufficient personnel should be trained in their use. During periods when the unit is subject to fallout or radiological agent attack, the dose-rate meters should be used to take readings of intensities and determine the presence of radioactivity. Unit SOP's must establish frequency and reporting procedures.

e. Such activities as feeding, resupply, maintenance, training, and recreation should be staggered so that a minimum number of personnel are out of cover at any given time.

Section III. PROTECTION AGAINST CHEMICAL AND BIOLOGICAL ATTACK

190. General

Armor units must train their personnel to apply protective measures against toxic chemical and biological attack. Unit SOP's should include actions to be taken in the event of such attacks. Protective measures include provisions for an adequate warning system; use of individual and unit protective equipment; provision of facilities for prompt decontamination of individuals, equipment, and supplies; and prompt treatment of casualties. For additional information pertaining to defense against toxic chemical or biological agents, see FM 3–5, FM 21–40, and FM 21–41.

191. Protective Equipment and Shelters Against Chemical Attack

a. The individual's primary protection against toxic chemical attack is his protective mask. The mask provides protection against concentrations of toxic gas, biological agents, aerosols, and inhalation of radioactive material.

b. The tank crew is provided with a three-man gas particulate filter unit (fig. 35). This filter unit consists of an air purifier which supplies a generous amount of purified air to three hose connections to which three individual tank protective masks with canisters are attached. See TM 3–430. These individual masks, which may be detached from the air purifier when crew members leave the tank, give the same protection as the individual protective mask. Two filter units may be installed in each tank, one in the turret and one in the driver's compartment. Each individual mask is equipped with a built-in microphone which connects to the vehicle intercom system.

c. Only in rare instances do armor units construct or use protective gasproof shelters. Instead, they take advantage of their mobility to avoid or rapidly pass through areas of contamination. Personnel decontamination stations may be established if the

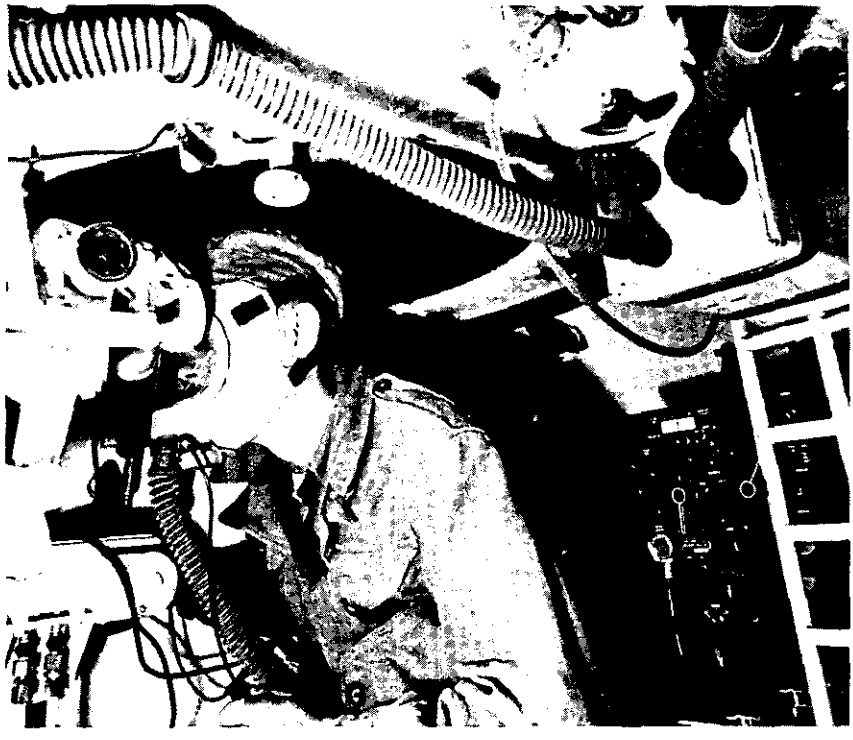

Figure 35. (Superseded) *Filter unit, gas particulate, tank, three-man.*

situation permits. In these stations, provisions are made for showers, an exchange of personnel equipment, and the issue of new or laundered clothing.

192. Biological Attack

Definite information on the employment of biological agents by the enemy is disseminated from higher headquarters, but each armor unit must be alert to the danger and promptly report the unusual occurrence of diseases. The best local defense against biological warfare is strict enforcement of all preventive medical and sanitation measures and high standards of personal hygiene.

Section IV. CHEMICAL, BIOLOGICAL, AND RADIOLOGICAL MONITORING AND SURVEY OPERATIONS

193. General

a. Armor units will frequently be required to perform CBR monitoring or be given the mission of conducting CBR survey operations.

b. For additional information on CBR monitoring and survey operations, see DATC 101–1, December 1958, and FM 21–40.

c. Each unit SOP will contain specific guidance in the conduct of CBR monitoring and survey operations.

194. Definitions

a. CBR Monitoring. The process of determining the presence of and, when possible, the amount of chemical, biological, or radiological contamination in an area. It may include any combination of the following:

(1) *Chemical monitoring.* The detection of toxic chemical agents, generally by the use of a chemical agent detector kit.

(2) *Biological monitoring.* The sampling of biological agents using sampling kits when available.

(3) *Radiological monitoring.* The use by a person (monitor) of radiac instruments to detect and measure radiation.

b. CBR Survey. A systematic organized use of survey parties to determine the location, extent, and, as applicable, dose rate or CBR contamination in specific locations or throughout an area.

(1) *Chemical survey.* A systematic organized use of survey parties to determine the location and limits of an area known or suspected to be contaminated by chemical agents.

(2) *Biological survey.* Same as chemical survey except search is for biological agents.

(3) *Radiological survey.* A systematic organized use of survey parties to determine the location and dose rate of radiation in specific locations or throughout an area.

c. Survey Party. A survey party normally consists of a monitor and an assistant. A survey may be made by personnel mounted in a vehicle or aircraft or dismounted as required by the type of contamination. The assistant may drive or operate the radio.

d. Control Party. A control party is a group of individuals which coordinates the efforts of two or more survey parties under its control and reports CBR data to the appropriate higher echelon, RADC (radiological center), or CBRS (chemical, biological, radiological section).

e. Survey Team. A survey team consists of a control party and two or more survey parties.

195. Employment of Armor Unit Survey Operations

When the armor unit is assigned a survey mission, the size and composition of a survey team is based on a consideration of the number of personnel from the unit that can be diverted from

the primary mission; the applicable equipment on hand; the area to be surveyed; and the information desired. CBR protection must be afforded the survey personnel. The cumulative dose of radiation acquired by individuals must also be considered. Personnel must not be permitted to exceed dosages specified by current command guidance.

196. Reporting CBR Data

a. Information gathered while conducting CBR monitoring operations should be forwarded through command channels.

b. Survey information may be reported directly to the division RADC or CBRS, or through command channels depending on the type of survey being conducted.

Section V. DAMAGE CONTROL OPERATIONS

196.1 General

a. Damage control consists of measures taken prior to, during, and after a mass destruction attack or natural disaster to minimize the effects thereof.

b. In forward areas these measures are directed primarily toward minimizing interference with tactical operations and the loss of combat power.

c. Damage control activities are a command responsibility, and the commander at each echelon is responsible for damage control training and effective implementation of damage control plans. In the discharge of this responsibility, all measures and means at a commander's disposal must be directed toward accomplishment of the tactical mission, and at the same time must minimize the possibility of losses of personnel and materiel of the command to an enemy mass destruction attack.

196.2 Damage Control Measures

a. Damage Control Measures Prior to an Operation.

(1) Damage control organizations and procedures must be established in workable damage control SOP's.

(2) Units and individuals must be thoroughly trained in the use of passive protective measures against an enemy nuclear attack. These measures are discussed in paragraphs 182 through 192.

(3) Damage control training in conformance with established SOP's must be integrated with all phases of tactical training.

(4) During the planning of an operation, commanders should visualize all foreseeable aspects of the impending operation. This visualization should include anticipatory planning of what tactical and damage control actions can be taken in the event his unit or element thereof is subjected to an enemy mass destruction attack.

b. Damage Control Measures During an Operation. Protective measures discussed in paragraphs 182 through 192 are implemented by all individuals and units, as appropriate to the tactical situation.

c. Damage Control Measures After an Enemy Mass Destruction Attack.

(1) *By the affected unit.*

(*a*) Individuals and units must immediately take protective measures, such as taking the best available cover and donning protective clothing and equipment, so as to minimize the delayed effects of the weapon.

(*b*) All operative communication facilities must be used to report expeditiously the situation and condition of the affected unit to the next higher effective headquarters.

(2) *By all units observing the mass destruction attack.*

(*a*) Every effort must be directed toward continuance of the assigned tactical mission. A report of the observation of the attack should be made to the next higher effective headquarters using procedures established by the unit SOP. Necessary communication security measures must be exercised when making this report.

(*b*) Commanders of units unaffected by the mass destruction attack should anticipate a possible change in the tactical mission to reduce reaction time when a change of mission is received.

(3) *By the next higher headquarters of unit subjected to a mass destruction attack.*

(*a*) Receives reports from subordinate units concerning the enemy mass destruction attack, determines the extent of damage and the effect on the command with regard to the units' ability to continue assigned missions.

(*b*) Issues necessary orders for continuing assigned tactical mission. This may require altering the disposition and missions of the remaining combat effective subordinate units.

(*c*) Takes necessary action to restore the combat effectiveness of units subjected to the enemy mass destruction attack by employing a damage control organization in the affected areas. Appropriate missions for this damage control organization are to—

1. Determine and report the effectiveness of elements of the unit subjected to the mass destruction attack.
2. Assume control of disorganized personnel and elements of the affected unit.
3. Restore communication within affected unit and from affected unit to next higher headquarters.
4. Release combat effective elements to control of next higher headquarters.
5. Evacuate personnel casualties to appropriate medical installations.
6. Evacuate vehicles and major items of equipment to appropriate vehicle and equipment collecting points.
7. Perform decontamination, using the means available.

196.3 Decontamination Measures

a. Radiological Decontamination. Radiological decontamination measures are unit and individual measures that are taken to reduce the dose rate resulting from fallout. They may include—

(1) Brushing or sweeping off clothing and equipment. If possible, a complete change of clothing should be issued and the old laundered.

(2) Bathing as soon as possible.

(3) Turning over the soil in the immediate area of foxholes, vehicles, and occupied installations. This buries the fine fallout particles and reduces intensity to a lower level.

(4) Hosing or washing equipment and vehicles with soap or detergents at the earliest opportunity.

b. Decontamination of Vehicles after Toxic Chemical Attack. A contaminated armored vehicle will continue its mission until the tactical situation permits first-echelon decontamination by the crew. For very light contamination, exposure to the weather may be sufficient for decontamination if time permits. Decontamination of the interior of the vehicle may be accomplished by the use of forced hot air or wiping with rags. Other expedients are protective ointment (on small critical areas) and solvents with high flash points, such as kerosene, fuel oil, and diesel oil; when such expedients are used, they must be washed off or otherwise removed before damage occurs to sensitive materiel. To decontaminate the outside of a vehicle, vehicle crews or specially trained

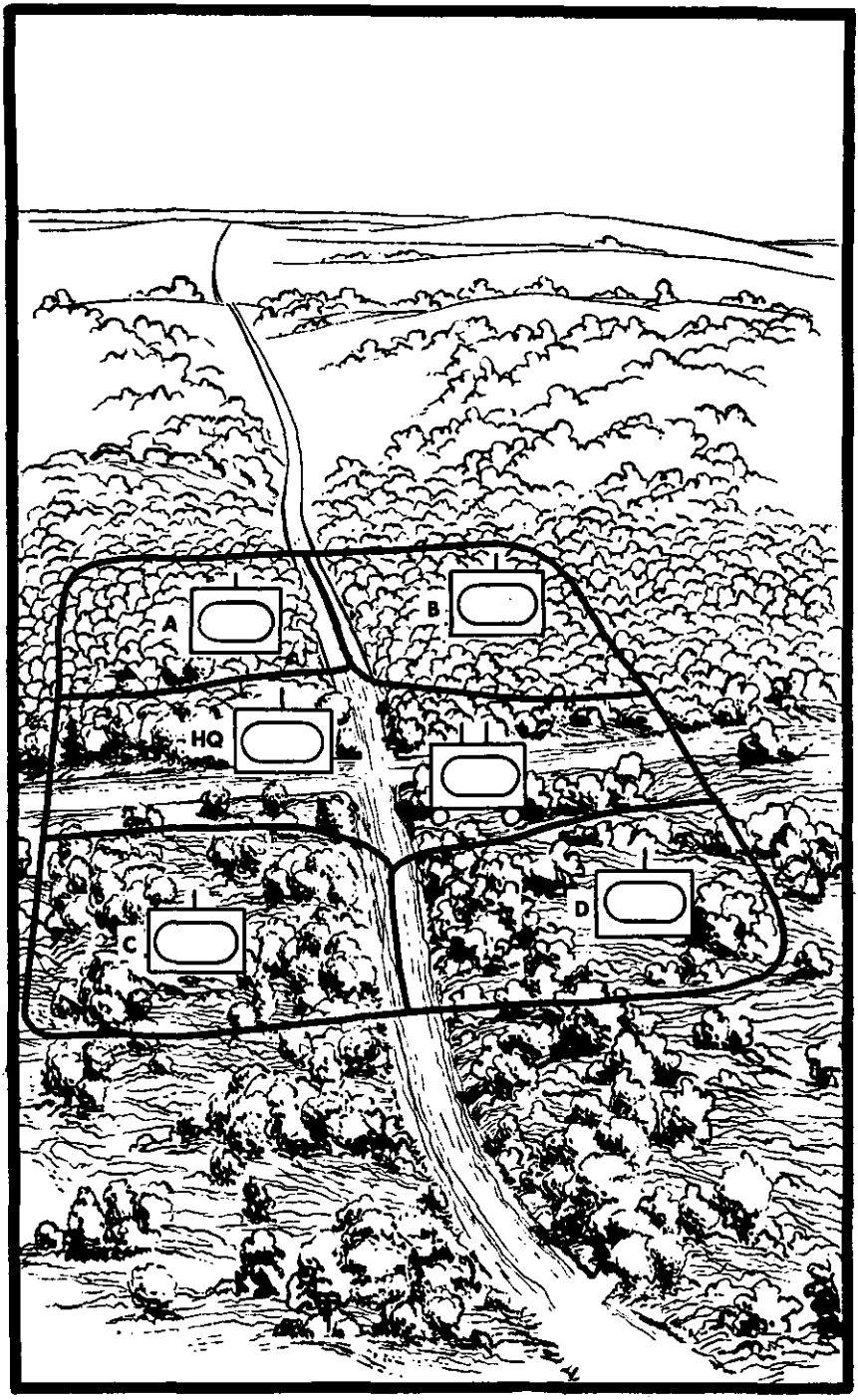

Figure 46. (Superseded) *Assembly area plan for a battalion-size armor unit.*

personnel may scrub the entire vehicle with hot soapy water or apply the bleach slurry or DANC method. Fast emergency decontamination of the tracks and undercarriage of vehicles may be accomplished by preparing a "wallow" some 100 yards in length, wide enough to accommodate the vehicle, and deep enough to contain approximately 8 inches of water to which no less than 1,000 pounds of super tropical bleach has been added. To prevent excessive corrosion after a vehicle has been driven through such a "wallow," the undercarriage and tracks should be thoroughly flushed with water. Third-echelon decontamination is performed at decontamination points in maintenance areas by vehicle crews and power-driven decontaminating apparatus. For additional information pertaining to decontamination and further explanation of the above methods, see TM 3–220 and FM 21–40.

196.4 Damage Control Reference

For detailed information concerning a provisional damage control organization and damage control planning and operations, see FM 17–50.

245. Assembly Area for Attack

An assembly area * * * for the attack. **It is desirable to locate the assembly area out of range of enemy light artillery fire.** Armor units must * * * the assembly area. Such movements are usually made in multiple columns. **The attack order may be issued in the assembly area** and cross-reinforcing of subordinate units completed. Attached units are * * * of the following:

* * * * * * *

250. Axis of Advance

* * * * * * *

b. When an armor * * * of the axis. **This method is preferable to either the route of advance or direction of attack since it provides more freedom of maneuver. The axis of advance is also less restrictive than boundaries unless the boundaries define a very wide zone.**

* * * * * * *

253. Boundary Line

A boundary line * * * capable of controlling. Boundaries should be easily identified. **Boundaries may also be used in conjunction with axes to define control and responsibility clearly in areas where confusion may occur, such as in a passage of lines, in defiles, on restricted terrain, or in an objective area. Boundaries should be employed only when the extent of control implied by their use is required.**

256. Contact Point

* * * * * * *

c. Contact points are * * * operation order overlay. Each is shown as a circle with a line drawn through it **and a number placed outside the circle as follows:** ①[3].

265. Air Support During the Attack
(Superseded)

a. Army Aviation. See paragraph 65.

b. Tactical Air. See paragraph 59.

267. Use of Chemical Agents in the Attack
(Superseded)

a. Toxic Chemical Agents. The probable effects of toxic chemical agents must be carefully estimated. Toxic agents must not be permitted to interfere with the operations of the attacking force and adjacent units. Careful consideration must be given to the plan of maneuver, the direction and velocity of the wind, atmospheric conditions, and the types and amount of agents and munitions available (par. 67).

b. Smoke. Skillfully used, smoke can be of great assistance to attacking armor; poorly planned or careless use of smoke may be a hindrance. Artillery and mortars are the principal source of smoke. Smoke may be used to—

(1) Blind crews of enemy tanks and antitank guns (fig. 65).
(2) Blind crews and observers of antitank guided missiles.
(3) Disorganize enemy attacks.
(4) Indicate targets and mark front lines for supporting aircraft.
(5) Blind hostile observation (fig. 66).
(6) Screen mine clearing operations.
(7) Screen movement of tanks and infantry (fig. 67).
(8) Screen reorganization.
(9) Screen the escape of crews from disabled vehicles.
(10) Isolate enemy areas.
(11) Separate attacking enemy elements from their supporting fires.

271. Types of Formations for Attack
(Superseded)

An armor unit may attack in column or line or some variation

of these two formations. A unit is in column formation when one major subordinate unit is followed by all major subordinate units regardless of the formation adopted by each major subordinate unit. A unit is in line when all major subordinate units are on line regardless of the formation adopted by each major subordinate unit. A common variation of the line formation is any formation with two or more major subordinate units attacking abreast followed by one or more remaining units. Other variations of line and column formations are the echelon right or left and wedge, which are adopted only at company team level and below.

a. A formation with all subordinate units in column (figs. 68 and 69) provides maximum control, adds depth to the attack and permits the unit to be deployed quickly to either flank. This formation facilitates retention of the initiative, since the following units can move quickly through or around the leading unit to maintain the momentum of the attack.

b. A formation with all subordinate units on line (figs. 70 and 71) permits employment of maximum firepower forward.

c. In a formation with two or more units abreast and the remaining units following, firepower forward is reduced in comparison to the line formation, but depth, flexibility, flank security, and control are improved. For example, a battalion task force advancing with two company teams abreast and two teams following is easier to control and has more maneuverability than when all four of its teams are advancing abreast.

d. An echelon formation permits rapid application of firepower to both the front and the echeloned flanks.

e. A wedge formation permits application of fire to the front and both flanks, and provides a good degree of flank security.

273. Issuance of Operation Order for Attack

* * * * * * *

d. (Superseded) It is highly desirable for the platoon leader to issue his order at a vantage point on the battlefield so that he can orient his subordinates by pointing out important terrain features. Frequently, however, time will permit only a map reconnaissance, and the order must then be issued in the assembly area or other preselected location, or en route to the attack position.

287. Tanks and Armored Infantry Attack on One Axis

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c. Tanks With Mounted Armored Infantry.

(1) The attack of * * * enemy antitank fire. While the

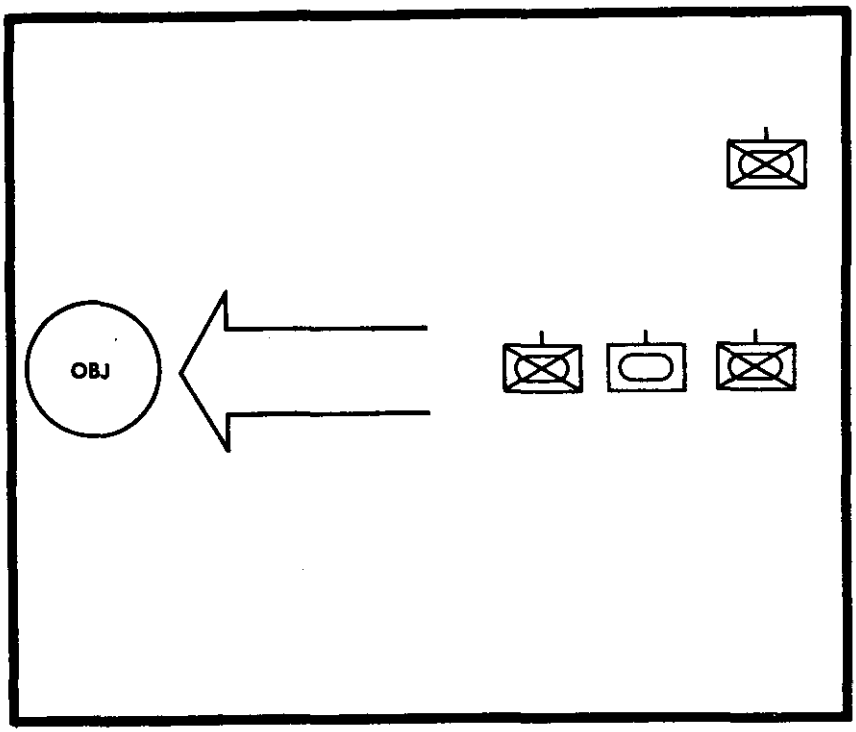

Figure 69. (Superseded) *Typical variation of the column formation, battalion.*

armored personnel carrier provides protection from small arms fire and shell fragments, it is not a tank and must not be used as such.

* * * * * * *

297. Organization of the Exploiting Force

* * * * * * *

f. Command Post. The command post * * * conduct of operations. In order to insure radio communication under unfavorable conditions, it may be necessary to **place** radio relay elements near the tail of the column.

299. Factors Affecting Speed of Exploitation

* * * * * * *

i. (Added) *Logistics.* Consideration must be given to the ability of the exploiting force to resupply and maintain its equipment.

300. Security in the Exploitation

* * * * * * *

c. (Superseded) *Security at the Halt.* When the column is

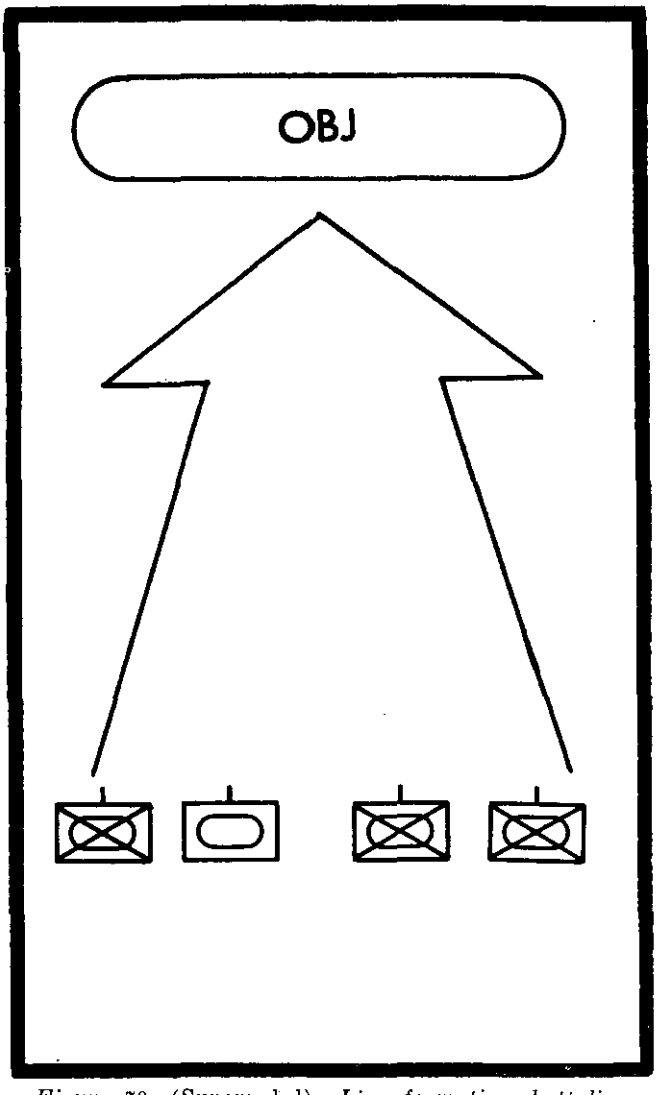

Figure 70. (Superseded) *Line formation, battalion.*

halted, local security measures must be taken. Elements should dispose themselves ready for instant action in any direction. Commands must immediately move to the head of their units to determine the reason for unexplained halts.

315. Plan of Maneuver for Night Attack

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d Formations. **A company** usually crosses the line of departure **in a line formation with the platoons in column.** Intervals between companies * * * the leading units.

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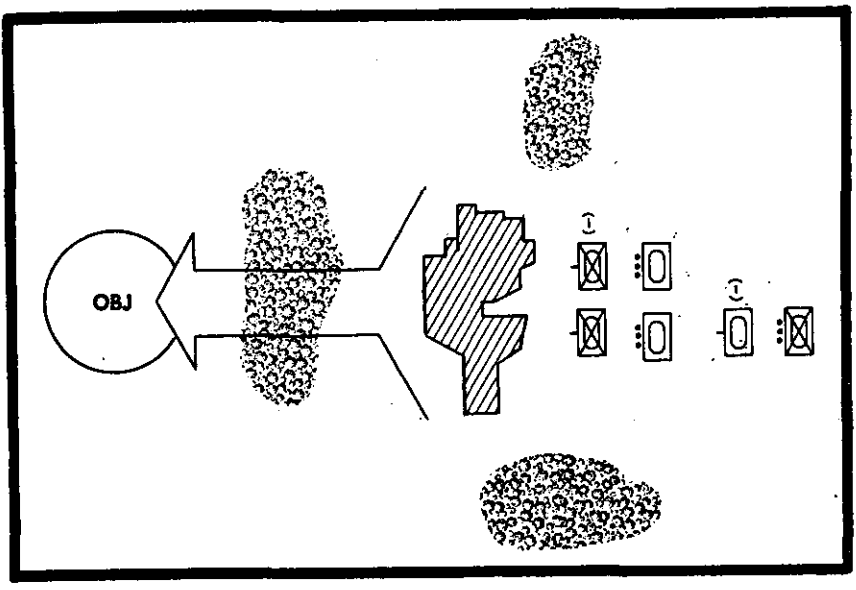

Figure 71. (Superseded) *Typical variation of the line formation, battalion.*

g. (Superseded) *Phase Lines.* To retain control and to prevent the assault echelon from being endangered by friendly fire, the commander establishes a phase line, both beyond and to the flanks of the objective, beyond which troops do not go. This phase line should follow terrain features that are recognizable at night. Protective fires delivered just beyond this phase line will isolate the objective.

318. Actions on the Objective in a Night Attack

Security elements are * * * the captured position. If they must go beyond the established **phase line** their movements are carefully coordinated with the protective fires of artillery and mortars. Prior to daylight * * * defend the position.

Figure 89. Rescinded.

323. Attack of a Built-Up Area—General (Superseded)

Armor units bypass built-up areas if practicable; however, it is impossible to avoid all villages and towns. Combat in built-up areas is characterized by close fighting, restricted maneuver, restricted observation and fields of fire, and difficult control and coordination. As a result, combat in such areas consists of a series of small-unit actions. For details of combat in towns, see FM 31–50.

a. When it is known that a built-up area is defended, a coordinated attack is launched. The attacking force may be composed of an armored-infantry-heavy direct-assault force and a tank-heavy enveloping force (fig. 88). Both forces are supported by coordinated fires.

b. The enveloping force has the following mission:

(1) Prevent the escape of the enemy.

(2) Prevent reinforcements from entering the town.

(3) Provide direct-fire support for the direct-assault force.

(4) Protect the direct-assault force from counterattack.

324. Characteristics of City Fighting Favorable to the Defender (Superseded)

a. A well organized and determined enemy force located within the confines of a built-up area can hold off a superior attacking force for long periods of time. Strongly constructed cities give the defender a decided advantage over the attacker in that each building or group of buildings is a potential fort. By additional construction, use of barricades, boobytrapping of areas within the buildings, and other means available to the defender, the buildings selected for defense become veritable fortresses.

b. The defender can select positions that maintain observation and fires on the approaches into the city. The attacker must then eliminate these positions so that the observation and direct fires on the approaches to be used by the attacker are eliminated.

c. The defender has a choice of buildings to defend. These buildings also provide cover and concealment. The attacker must then determine which buildings are being defended and which are not. Adequate underground cover is usually available to the defender so that he has some protection against aerial and artillery bombardment.

d. Streets and alleys allow movement and constitute ready-made fire lanes and killing zones. Streets and alleys can easily be blocked by the use of mines, boobytraps, barricades, and other obstacles. The attacking troops, by the very nature of the area through which the attack must be conducted, will find their movement restricted and canalized.

e. The attacker will be limited in the employment of indirect-fire support weapons because of restricted observation in the area, and the nearness of his own troops to enemy targets. Employment of direct-fire weapons is subject to limited fields of fire.

325. Characteristics of City Fighting Favorable to the Attacker (Superseded)

a. The attacker has the advantage of maneuver in isolating the city to be seized. Once the isolation of the city has been completed, the attacker is in a position either to press the attack on the city itself or to contain it and force the defender eventually to capitulate.

b. Once the city has been isolated, the attacker may select his point of entry into the city itself. The attack may be conducted against the city from any direction or directions.

c. The attacker may be able to obtain a detailed plan of the city (fig. 94) to use in planning the attack. Defectors or civilians who have lived in the city will be able to provide additional information to the attacker.

d. The attacker may be able to bypass strongly defended buildings within the city by going under them, utilizing cellars, sewers, subways, or other underground passages. Other strongly held defensive positions may be bypassed by attacking over the roofs of the buildings.

326. Building Arrangement in Built-Up Areas (Superseded)

The construction pattern or building arrangement of a typical city is one of the considerations in establishing the tactical procedures and techniques for this type of operation. Building arrangements are usually classified into three different categories.

a. On the outskirts or suburbs are normally found isolated houses or small groups of houses surrounded by small plots of land, gardens, farms, fields, or vacant lots. When this part of the city is attacked, the houses will be treated as inferior pillboxes or individual emplacements, and the plan of attack will be no different from that utilized in an attack over normal terrain where an occasional fortification is encountered.

b. The second type of building arrangement usually found is in the residential district, an intermediate area, where there are more closely spaced detached or semidetached houses, flanked by streets on one side and by gardens or grassy plots on the other. The general layout of such an area may or may not follow some geometrical pattern. The type of attack to be used in this intermediate area may vary and will depend upon the density of the buildings. A modified form of street fighting will probably be used, but basic techniques will remain the same.

c. The center of the built-up area is usually the business section and will almost always consist of buildings of block-type construction, with little or no space between buildings except for an occasional park, street, or alley. This type of construction will require fighting from building to building and block to block. This is the portion of the built-up area where basic differences in techniques are required.

327. Plan of Attack
(Superseded)

Plans for the attack and seizure of a well defended city must be based on a detailed study of the city as well as the enemy dispositions within and around the city. The attack plan contains three phases: in the first phase the city is isolated; in the second phase a foothold is gained on the near edge of the city; and in the third phase the area is systematically reduced.

328. Conduct of the Attack
(Superseded)

a. Phase I. Phase I is the isolation of the city and the seizure of terrain features that dominate the approaches into the city. The attacker secures positions outside the built-up area from which to support the entrance into the city itself. The tactics and techniques for this phase of the operation do not differ from those employed in an attack against other well organized enemy positions.

b. Phase II. Phase II is the advance of the attacking forces to the edge of the built-up area and seizure of a foothold. It should insure the elimination of the defender's ground observation and direct fires on the approaches into the built-up area. The attacker uses the foothold area to reorganize, decentralize control, and displace weapons to firing positions from which the continuation of the attack can be supported. The initial penetration is made on a narrow front with tanks leading. All available supporting fires are concentrated at the point selected for entry. Assaulting forces can expect to encounter barricades, antitank mines and obstacles, and effective antitank fire. These obstacles can be minimized if the initial assault is conducted with maximum speed, capitalizing on the concentrated organic and supporting fires and the psychological effect of massed armor. The probabilities of success are increased if the assault is launched from an unexpected direction and preferably in the early morning just before first light, during other periods of limited visibility, or under the cover of smoke. In order to effect the penetration on a narrow front, a column

formation is normally employed in the initial assault. The use of a column formation does not imply that all elements of the assaulting force should be in column. A variety of column formations may be employed by a commander conducting the assault. For example, a battalion task force may employ a task force column with each of its company teams in line, wedge, or echelon. These formations tend to shorten the length of the task force column, thus reducing the time necessary to move the column into the built-up area. Regardless of the formation employed, the leading elements of the assaulting force should use a formation which facilitates the delivery of maximum fire on the point of penetration. Engineers, mechanized flamethrowers, and mine-detection or mine-detonating tanks or vehicles (if available) should be included in the assaulting force. Artillery air bursts are placed over the point selected for entry to prevent the enemy from manning crew-served or individual antitank weapons. The armored infantry remain mounted and are carried as close to the objective as possible. In the attack of a strongly defended area, the armored infantry will usually have to dismount to assist in the assault of the outer defense and to provide close-in protection for the tanks. Designated fire teams or squads may be assigned to work with a particular tank. Direct communication between the rifle squad or fire team leader and the tank commander is maintained by visual signals and external interphone. When operating dismounted, the armored infantry should remain to the rear of their assigned tanks to avoid masking their fires and to protect themselves from fires directed at the tanks. The armored infantrymen working with each tank point out targets to the tank commander that he cannot observe. The armored infantry are prepared to deliver fire on targets the tanks cannot engage and to protect the tanks from short-range individual antitank weapons. When it is necessary for the dismounted armored infantry to maneuver to engage or destroy resistance holding up the advance, the tanks support the armored infantry by fire, moving forward as soon as possible. The armored personnel carriers follow as closely as possible the advance of the tanks and dismounted armored infantry. When possible, the fires of vehicular machineguns augment the other fires of the assault or are used to cover critical areas on the flanks of the assaulting force. When the buildings on the periphery of a town are heavily fortified, the techniques for the attack of a fortified area may have to be employed (pars. 320–322).

c. Phase III. Phase III varies from a systematic block by block, house by house reduction of the built-up area to a rapid advance

through the town with clearance of specific critical areas and strategic buildings. Phase III begins without pause after the completion of phase II. Clearance and seizure techniques are dependent upon the mission, size of the town, construction and building arrangement, and enemy dispositions and strength. Factors governing the selection and execution of the techniques are—

(1) When the built-up area is exceedingly large and heavily fortified, or when the mission requires a complete clearance of enemy forces, a methodical house by house, block by block clearance operation is performed. The area is divided into company team zones of responsibility. Each subordinate unit must clear its zone completely so as to leave no enemy in rear of the attacking troops. The procedures of street fighting in Phase III are conducted in the same manner as described in FM 31–50.

(2) When the built-up area is small or lightly defended, the attacking force should attempt to drive through or into the town as rapidly as possible. Tanks lead the column, closely followed and supported by armored infantry. Except when an advance is made on a wide street, it will rarely be possible to effectively employ more than three tanks at the head of the column. The leading tanks are followed by a mounted armored rifle platoon, followed by the other section of the tank platoon. The automatic weapons of the tanks and the vehicular machineguns of the carriers are fired continuously and are concentrated on the windows and rooftops of buildings. The armored infantry remain mounted in their carriers until forced to dismount to protect the tanks from individual or longer-range antitank weapons. The armored infantry may dismount to assist in the removal of obstacles or barricades which have halted the advance of the tanks. When required to dismount to secure the tanks from fire being received from buildings, a rifle squad moves along each side of the street, keeping approximately abreast of the lead tanks. Depending upon the resistance being encountered, the squad may challenge every doorway or ground floor window by throwing in hand grenades and spraying the interior with small arms fire. Selected men in each squad should be assigned the mission of locating and engaging targets in the upper floor windows and rooftops of the building on the *opposite* side of the street. The leading tanks meanwhile continue to fire at suspected enemy locations farther down the street. When resistance is heavy, each

alley or side street presents an ideal fire lane for enemy high-velocity tank or antitank fire, and should be crossed with caution. The armored infantry observe down alleys and side streets prior to the tanks crossing and emplace light machineguns on each corner, covering or firing in both directions. When a serious antitank threat to the column's flank exists, a tank section and a rifle squad with its carrier from the lead company team may be dropped off at each intersection along the route. If these forces are to remain in position until the entire force has passed, the following company team assumes the lead in the advance when the original lead company team has been depleted (fig. 95); otherwise the following company teams may relieve these forces, permitting them to continue the advance with their company team.

329. Control Measures
(Superseded)

The conduct of combat in built-up areas requires the adoption of specific control measures, with which all personnel must be familiar. Such measures include—

a. Boundaries. In the built-up area in which the clearing operations are being conducted, boundaries are habitually located in the center of the block, both sides of the street being assigned to one unit.

b. Objectives. Objectives are specific and limited. The assignment as objectives of major road intersections, principal buildings, or other readily identifiable physical features facilitates control. The numbering of the buildings along the route of attack simplifies the assignment of objectives and reporting. When assigning a street as an objective, always designate the near side as the objective. If the far side of the street is assigned, it will be necessary to hold buildings on both sides of the street to secure the objective. Units promptly report their seizure of objectives and continue the attack on order of the next higher commander.

c. Frontages, Formations, and Zones of Action.

(1) Attacking battalions will normally be assigned relatively narrow zones of action. The frontages assigned will be dependent on enemy strength, the size of the buildings, and the resistance anticipated. Normally, a battalion or task force will be assigned a frontage of from three to six blocks, which in turn will permit the assignment of a frontage to the attacking companies or company teams of one to two blocks. Frontages assigned subordinate units must be commensurate with their capabilities.

(2) Formations, although influenced by frontages and zones of action, must provide for reserves or an unengaged force. These forces should be well forward so that they can be employed to add momentum to the attack, exploit success, repel counterattacks, and protect the flanks and rear against enemy action.

d. Phase Lines. Phase lines may be employed to further control by regulating the advance of attacking forces and delineating where, in the visualization of the commander, the command is expected to pass from one phase of the assault to another. Since phase lines are less restrictive than objectives, they provide for the rapid exploitation of success without halting. Principal streets, rivers, trolley lines, and railroad lines are appropriate for use as phase lines.

e. Check Points. Street corners, buildings, railway crossings, bridges, or any easily identifiable feature may be designated as check or contact points.

329.1 Missions of Armored Infantry in Street Fighting (Added)

The missions of the armored infantry element of a combined-arms force engaged in the attack of a built-up area include:

a. Location of targets for engagement by tank weapons.

b. Neutralization and destruction of enemy antitank weapons.

c. Assault and reduction of positions, and clearance of buildings under the covering fire of tanks.

d. Protection of tanks against individual antitank measures.

e. Security and defense of the area once cleared.

329.2 Mission of Tanks in Street Fighting (Added)

Typical tank missions in the attack of a built-up area include:

a. Neutralization of enemy positions by machinegun fire to allow the armored infantry to rush them and close with the enemy.

b. Destruction of enemy strongpoints by tank fire. The tank commander employs appropriate ammunition to breach walls and kill or drive out the enemy. The tanks first fire into the ground floor of a defended building, forcing defenders either into basements, where armored infantry can attack them, or into upper stories, where tank fire can destroy them.

c. Destruction of barricades across streets.

d. Forcing of entry for infantry into buildings when doorways are blocked by debris, obstacles, or enemy fire.

e. Taking under fire any other targets indicated by the armored infantry (fig. 90).

f. Establishment of roadblocks and barricades.

329.3 Employment of Attached and Supporting Units (Added)

a. Tanks.

(1) Streets and alleys constitute ready-made fire lanes and killing zones. Vehicular traffic is greatly restricted and canalized and is subject to ambush and close-range fire. Tanks are at a further disadvantage because their main guns cannot be depressed or elevated sufficiently to fire into the basements or upper floors of buildings at close range.

(2) When a platoon of tanks forms part of a company team, one section advances with the leading armored infantry. The other section supports by overhead and flank main gun and machinegun fire (fig. 91). At least a squad of armored infantry should remain with the tanks to furnish local security.

(3) Tanks employ high explosive ammunition against street barricades. Steeples, tall chimneys, and other structures likely to contain enemy artillery observers are promptly destroyed. Crew members must be alert to detect pillboxes built into houses along the street. Tanks should not halt or move slowly close beside buildings not held by friendly troops, because enemy troops might drop explosives or inflammables upon them. All bridges and overpasses should be checked for mines and for weight-carrying capacity. Boobytraps of all varieties are to be expected. Tanks should not move singly, and specific riflemen should be charged with protection of specific tanks.

(4) Moving tanks keep fairly close to buildings on either side of the street held by friendly troops, covering the opposite side and firing at anything suspicious (fig. 92). If the street is narrow and resistance is determined, tank commanders may button up, but this is avoided whenever possible. All tank crew members are alert to detect signals from the infantry details in the houses to each flank. Tank commanders keep their personal weapons and hand grenades ready for close-in defense.

The platoon leader is on the alert for ambushes or attacks from the rear (fig. 93).

b. Artillery. The artillery is employed under centralized control in its normal role of close support. During Phase III, the effectiveness of artillery fires will be reduced because of restricted observation and proximity of friendly and enemy troops. The artillery employed during this phase should be capable of firing high-angle fire so that it will clear the taller buildings. Time fire and proximity fuze fire are effective aaginst enemy on rooftops and exposed enemy personnel behind barricades. The 105-mm and 155-mm self-propelled howitzers are effective as direct-fire weapons in support of the attacking troops, but are vulnerable to enemy antitank fire.

c. Mortars. 4.2-inch mortars and 81-mm mortars are usually employed in general support of their parent unit. Mortars firing high explosive shells with point detonating fuzes are useful against rooftop targets. Use of delay fuze settings will permit projectiles to penetrate roofs and destroy the enemy inside buildings. These weapons may be used to provide smoke screens to cover the advance of assault elements across streets, parks, yards, and other open areas as well as being used in their normal role.

d. Engineers. Attached or supporting engineers should be well forward and will frequently operate under the control of the attacking battalion or task force. When used as part of an assault team, they are attached to the team. The normal mission of the engineers is to remove mines, clear barricades and debris, and execute demolitions.

e. Nuclear Weapons. Nuclear weapons are not likely to be used in conjunction with a ground attack on a built-up area, except possibly on a large city. The progress of the ground attack would be seriously hampered by the effects of a nuclear explosion.

329.4 Communication
(Added)

Radio communication during Phase III may be adversely affected by steel girders and other obstructions within the built-up area. Wire communication will assume greater importance than in other types of offensive operations. Foot messengers will frequently be the most reliable means of communication. Visual and pyrotechnic signals may be used by smaller units to indicate the need for fire, the shifting and lifting of fires, and to announce the seizure of a building or group of buildings. Armored personnel carriers may be used to provide mobile, protected communication centers.

329.5 Logistics
(Added)

a. Evacuation of Wounded. Evacuation of wounded from rooftops and upper stories of buildings may require additional litter bearers and the use of special evacuation equipment. Plans should include plans for marking buildings that contain wounded personnel.

b. Resupply of Ammunition. Large quantities of ammunition are consumed in this type of operation. Therefore, ammunition supply points should be well forward, and mobile supply points may be required down to team level. Consideration should be given to the use of armored personnel carriers to resupply the assault echelons.

340. Employment of Armored Infantry in River Crossing

Armored infantry is ideally suited for hasty river crossings due to the amphibious **characteristics** of the armored personnel carrier (fig. 100) **and the ability of dismounted armored infantry to be air-lifted. Armored infantry helicopterborne operations are discussed in chapter 11.** For a detailed* * * is discussed below.

* * * * * * *

341. Employment of Tanks in the Attack of a River Line

a. General. (Superseded) Tanks usually participate in an attack of a river line as part of a combined arms team. The tanks are used to support the crossing of the armored infantry by direct fire until a satisfactory bridgehead has been established on the far bank.

* * * * * * *

c. Movement into Bridgehead. As soon as the armored infantry have gained a foothold on the far bank tank **elements should be** ferried across by the engineers to aid in enlarging the bridgehead and defending it against hostile armor.

360. Strengthening the Defensive Position

Strengthening of the * * * in the strong points. **Protective, defensive and phony minefields may be installed. Protective minefields may be installed, upon authority of the company commander, to the front and flanks of the strongpoints to provide security. Phony minefields may be used as gaps by the striking force. Time permitting, and upon authority of the combat command commander, defensive minefields may be installed to add strength to each strongpoint. Each minefield must be properly marked and recorded.**

364. Fire Planning in Defense

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e. Final Protective Fires. Final protective fires * * * forward defensive area. Such fires normally consist of individual weapons firing a heavy volume of fire along their principal direction of fire or into their sectors of fire, depending upon type of weapon. Machineguns fire along their final protective lines, and mortar and artillery barrages are delivered on areas as planned. Tanks within the strongpoint engage targets of opportunity.

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367. General

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d. (Added) Normally, the division is the smallest element to execute the mobile defense, because of the requirement for retaining a powerful striking force capable of delivering a decisive blow against the enemy; however, units smaller than the division, usually on independent or semiindependent missions, may frequently employ the techniques of mobile defense.

368. Distribution of Forces in the Mobile Defense

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e. Small Armor Units. (Rescinded)

369. Organization and Functions of the Security Force, Mobile Defense

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b. Covering Force.

(1) When the armored division is executing a mobile defense as a part of the corps, the division covering force will normally be located on a line occupied by the general outpost of the adjacent infantry divisions. This will be from 6,000 to 12,000 yards forward of the forward edge of the battle area. When the division is executing a mobile defense independently, the division covering force may be located from 5 to 15 miles forward of the forward edge of the battle area. The mission of * * * other supporting elements.

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370. Battalion Task Force As Part of a Fixing Force—General

The battalion task force commander bases his plan of defense upon the counterattack plans developed by higher headquarters and the employment of his troops to stop, slow, destroy, and repel and disorganize enemy attacks, and to canalize the enemy into an

area suitable for attack by the striking force. This may be * * * combination of both. The plan of defense must take into consideration the use of the battalion task force as part of a striking force for higher headquarters; this may require an attack in another sector. The plan of defense should also take into consideration the plan employed by the battalion task force commander to deny critical terrain within his defense area. The battalion task * * * can be launched.

371. Organization of the Battalion Task Force Sector As Part of Fixing Force

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f. To preserve security * * * forward defensive area. The assembly areas are located well forward taking maximum advantage of the terrain as a protection against nuclear weapons. The assembly areas * * * to assigned positions.

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373. Battalion Task Force As a Striking Force or As Part of a Larger Striking Force

a. General. When the armored division is conducting the mobile defense, a battalion task force given a striking force mission will normally be employed as part of a combat command. When the combat command on an independent mission is utilizing the techniques of the mobile defense, a battalion task force may comprise the entire striking force. The striking force * * * the defensive area.

b. Battalion Task Force as Part of the Division's Striking Force. Based upon the division commander's guidance on the division plan of defense, the combat command commander will develop the striking force's counterattack plans, and develop task organizations for each battalion task force within the striking force. In this connection * * * should be considered.

375. Actions by the Covering Force in Mobile Defense

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e. (Superseded) The covering force continues to delay and inflict casualties upon the enemy until it withdraws through the FEBA. Prior to the withdrawal through friendly forces, liaison is established to expedite the movement. Upon withdrawal through friendly forces, the covering force moves to conduct another mission or to a preselected position (fig. 108).

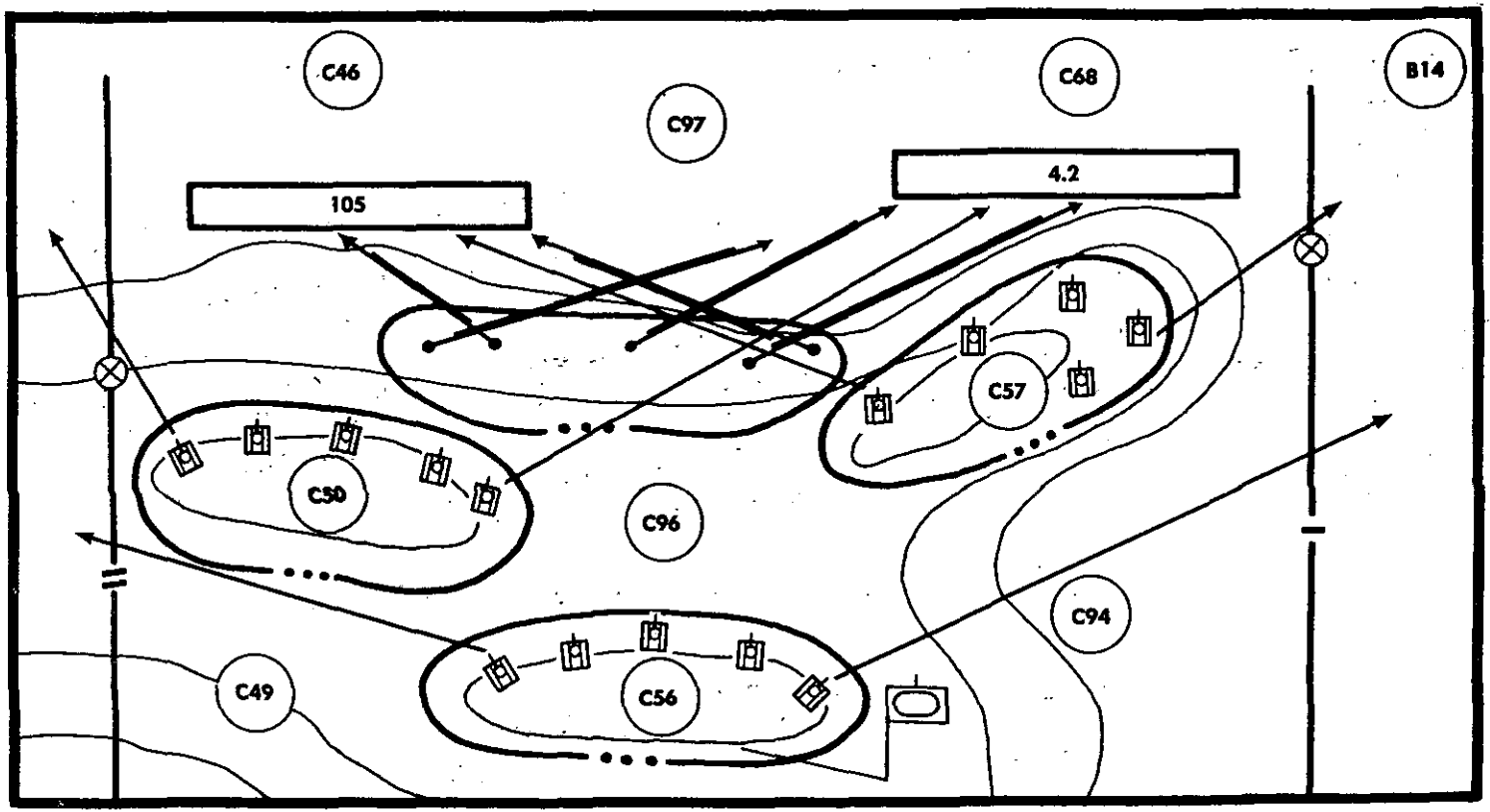

Figure 110. (Superseded) *Organization of defense, company team.*

382. Organization and Function of the Security Force, Position Defense

a. Covering Force. The covering force normally operates from 5 to 15 miles in front of the FEBA. The size and * * * in paragraph 375.

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424. Control Measures in Delaying Action

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b. (Superseded) Phase lines and check points may be employed to control and coordinate rate of movement. The designation of phase lines and check points facilitates reporting by subordinate units and the issuance of orders by higher headquarters. In the absence of good natural obstacles, the commander may designate phase lines rather than actual delaying positions.

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429. Withdrawal in Delaying Action

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b. Withdrawal of the Delaying Force. The delaying force * * * of the enemy. **The decision as to whether to withdraw the most heavily or least heavily engaged units first is a difficult one. To withdraw the most heavily engaged units first from the area of greatest enemy pressure may subject the entire command to encirclement and destruction. To withdraw the least heavily engaged unit first may result in loss of all or a major part of the most heavily engaged units. The decision must be based on determining which plan best preserves the integrity of the force and which best contributes to the overall accomplishment of the mission.** Contact with the * * * their best judgment. A subordinate commander * * * fastest means available.

* * * * * * *

444. Logistical Support Plan for Armor-Airborne Link-Up Operations

(Superseded)

The logistical support plan for the armor forces is similar to that employed in any deep penetration or exploitation mission. Because the initial airborne assault includes supplies and equipment for only 48 to 72 hours of operation, the airborne support elements may accompany the armor trains in the overland attack, or the armor trains may include additional vehicles and supplies for the airborne forces.

476. General

a. Utility or transport-type * * * for the mission. The loading capacities and detailed descriptions of Army utility and transport helicopters are contained in Department of the Army Flight Handbooks for the various **types of helicopters.**

b. Light and medium transport helicopter companies are organic to **the field army.** These units may * * * armor ground action.

c. A limited number * * * and infantry divisions. The aviation company of the armored division contains both utility and light transport helicopters within its **general support** platoon. These helicopters provide the armored division with an immediately available means for short-haul transport. The small armor * * * and medical evacuation. **When the scope of a helicopterborne mission exceeds the capability of the division aviation company additional Army air transport must be obtained from higher headquarters.**

APPENDIX IV

THE 4.2-INCH MORTAR PLATOON OF THE ARMORED DIVISION ARMOR BATTALION AND ARMORED INFANTRY BATTALION

4. Characteristics

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c. Firepower. The 4.2-inch mortar is a high-angle indirect-fire weapon capable of delivering high explosive and chemical ammunition at a high rate of fire at ranges from 1,270 to 6,000 yards (maximum range for WP is 5,050 yards). In addition, each * * * of the platoon.

* * * * * * *

APPENDIX V

EMPLOYMENT OF ARMORED PERSONNEL CARRIERS IN HASTY RIVER-CROSSING OPERATIONS

9. Determining Formation and Priority of Crossing

a. The most important * * * carriers to cross. For example, if the mission requires an armored infantry unit to cross in one move, and there are sufficient entrances and exits, the best formation is a **line.**

* * * * * * *

11. Check Prior To Entering Water

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c. (Superseded) Start and operate the bilge pump. If necessary, take on water (about 5 gallons) to permit a check of the operation of the pump.

* * * * * * *

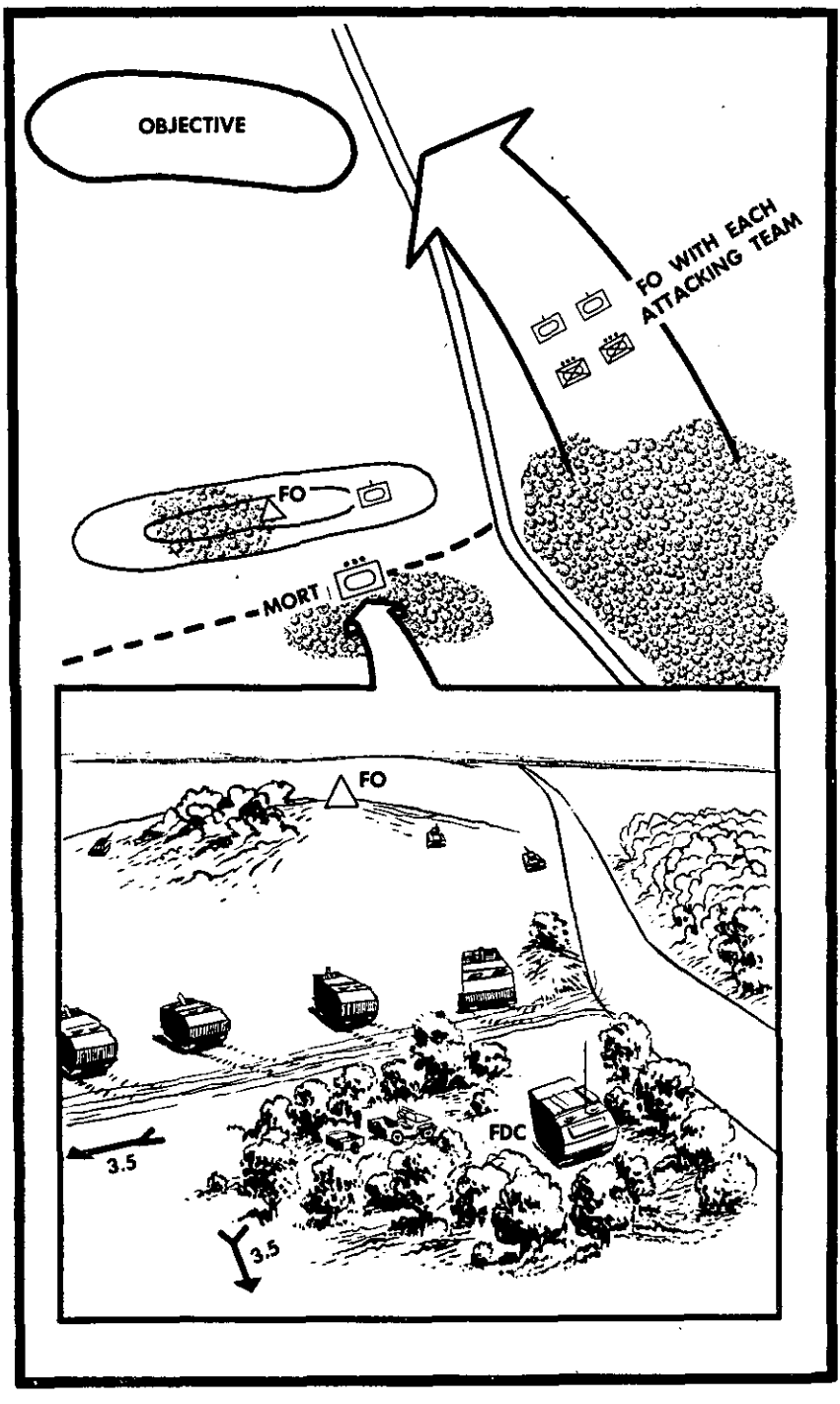


Figure 120. (Superseded) *Platoon firing position.*

APPENDIX VI (Added)

EMPLOYMENT OF THE 18-INCH, TANK-MOUNTED SEARCHLIGHT IN BATTLEFIELD ILLUMINATION

Section I. GENERAL

1. Purpose

This appendix is a guide for commanders and staffs of all echelons for the employment of the 18-inch tank-mounted searchlight in battlefield illumination.

2. Description

The searchlight, 18-inch, shuttered, incandescent-light type, 2,500 watt, with brackets for tank mounting, is a commercial 18-inch searchlight modified to include a shutter and shutter housing and shock absorbent mounts. The mounting bracket is a universal type, adaptable for use on the gun mantlet of any current tank. Electrical power is obtained from the tank electrical system through a turret outlet circuit employing one switch for the light bulb and the shutter simultaneously. The power requirement for the light is such that the main enegine or auxiliary generator must be operated continuously when the searchlight is in use. The light has adjustments for boresighting with the main gun. The mounted searchlight does not interfere with the mechanical functioning of the armament of the tank, although the use of the light will limit the direction of fire of the tank weapons when a light mission is being executed.

3. Mission

To provide fighting light for the conduct of ground operations at night.

4. Characteristics

a. Direct Illumination. Direct illumination gives maximum illumination (fig. 125). The intensity of illumination on the ground decreases gradually as the range from the searchlight increases. Minute atmospheric particles reflect the beam and reduce the ability of the observer to see the target area. This effect may be reduced by positioning the observer to the flank of the light. When an observer is close to the searchlight, direct observation into the light source may dazzle him and cause temporary night blindness. An enemy observer so located will find it difficult to estimate the range to the searchlight; however, if he is equipped with optical rangefinders the range may be determined with

reasonable accuracy. When the light is extinguished, the shutter closes, thereby eliminating afterglow and any opportunity for an enemy observer to locate the light as the intensity of the beam decreases. Objects silhouetted between an observer and the light beam are clearly visible to a range of several hundred yards.

b. Indirect Illumination (Artificial Moonlight). Indirect illumination gives diffused, low-intensity illumination in the target area.

c. Beam Brightness. The searchlight delivers 3,500,000 candlepower in the center of the beam at zero range. Maximum beam width is approximately 150 mils.

5. Capabilities

Note. Distances given in this paragraph are approximate.

a. Direct Illumination. With direct illumination, the 18-inch searchlight is capable of giving sufficient light to allow unaided visual detection of truck- and tank-sized targets at 1,000 yards, and their identification at 800 yards. Use of the six-power vision devices organic to the tank allows detection of large targets to a range of 1,200 yards. Infantry and dug-in positions can be detected with the naked eye at 300 to 500 yards. Binoculars and vision devices extend the range at which these objects may be detected to 800 yards. Since targets in the directly illuminated area approach daytime visibility, the ability to deliver aimed fire is greatly increased.

b. Indirect Illumination. Within effective range of the searchlight, indirect illumination is capable of producing sufficient light to facilitate the movement of troops and construction work.

6. Limitations

The use of tank-mounted searchlight illumination will be affected by atmospheric conditions, amount of natural light, other artificial illumination, terrain, vegetation, and capability of the power supply to operate for sustained periods of time.

a. Atmospheric Conditions. On clear, moonless nights, tank-mounted searchlights will be effective to their maximum range. Rain, haze, mist, smoke, and fog decrease effective observation. The glow created by these elements around the source of light reveals the tank position. Snow- or frost-covered ground increases the effectiveness of the light and augments the blinding effect on the enemy; however, it also tends to increase night blindness among friendly troops if light is used indiscriminately.

b. Full Moon. On a clear night with a full moon, the contrast between targets and their background is increased, and the rela-

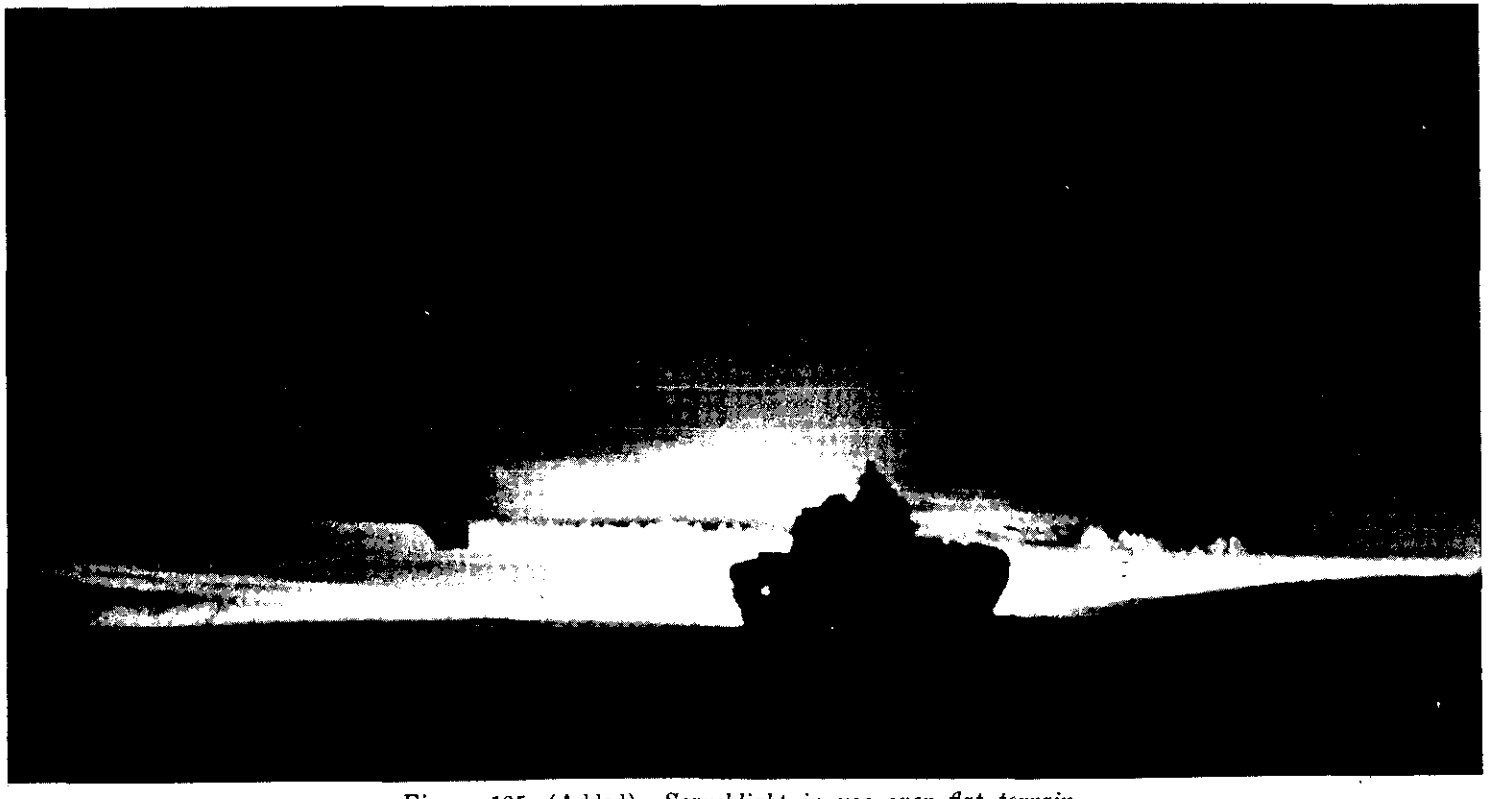


Figure 125. (Added) *Searchlight in use over flat terrain.*

tive effectiveness of the searchlight is reduced. Any blinding effect of the light is also reduced.

c. Terrain. The effectiveness of illumination in the target area is affected by the reflectivity of the illuminated surfaces. In terrain having a relatively great amount of light absorption, such as rough ground and wooded areas, the amount of reflected light is small; however, the ability to detect targets is greater because of the attendant reduction in reflected light and glare. In terrain having great reflectivity, such as grassy fields, wet ground, or snow, the area that can be illuminated effectively is larger owing to the greater amount of reflected light; however, because of the resultant glare, the ability to detect targets is less.

d. Shadows. Under intense searchlight illumination, shadows cast by heavy vegetation or other dense objects provide concealment for the enemy. This effect may be reduced by use of multiple lights beamed into the target area from different angles.

e. Effects of Other Forms of Illumination. Artificial moonlight of one-quarter moon intensity does not reduce the value of the tank-mounted searchlight; however, intense artificial light, such as that produced by pyrotechnics, burning gasoline, and direct illumination by 60-inch searchlights, does reduce the effectiveness of the 18-inch searchlight.

f. Vulnerability. The searchlight and its external wiring are vulnerable to high explosive shells.

g. Effect on Vision. Searchlights may impair night vision of friendly troops in the area of operation.

h. Enemy Fire. The use of the searchlight exposes the carrier tank to enemy fire unless evasive action is taken. At ranges up to 1,500 yards, the risk of destruction of the carrier tank is considerable if the searchlight remains on long enough to enable enemy tanks and antitank weapons to fire.

Section II. METHODS OF EMPLOYMENT

7. Tactical Considerations

The following apply to the employment of tank-mounted searchlights during all operations.

a. Advance Planning. In addition to normal planning for night operations, commanders must:

(1) Reconnoiter for primary and alternate light positions, and for primary and alternate routes for ingress and egress.

(2) Make an illumination plan and ensure its integration into the fire support plan of the organization.

(3) Assure the provision of an adequate communication network.

b. Control. Control of the tank-mounted searchlights will be vested in the commander having direct control of the operation.

c. Support. Other methods of artificial illumination should be used in coordinated support of tank-mounted searchlights in order to provide maximum flexibility and effectiveness of operations.

8. Direct Illumination

a. Advantages.

(1) Enables illumination of an objective during the assault phase of a night attack.

(2) Permits adjustment and observation of direct and indirect fire within the effective range of the searchlight.

(3) Reduces expenditure of ammunition because of ability to observe fire missions.

(4) Provides direction-of-movement indicators for friendly troops.

(5) Facilitates evacuation, resupply, construction, and installation of minefields.

(6) Assists in marking targets for air support missions.

(7) Increases morale and confidence of friendly troops.

(8) Increases ability to detect enemy infiltration.

(9) Canalizes infiltrating enemy or attacking forces into less desirable avenues of approach.

(10) Harasses enemy troops.

(11) Provides a cloak of darkness behind the light beam in which movement of troops and vehicles is concealed (fig. 126).

b. Disadvantages. In addition to the limitations listed in paragraph 6, use of direct illumination has the following specific disadvantages:

(1) Requires extreme care in positioning of carrier tanks to avoid silhouetting friendly troops and to obtain illumination in the desired area without creating deep shadows that will benefit enemy concealment.

(2) Requires an uninterrupted line of sight from the light source to the target area.

(3) Reveals the general location of the light source from all directions.

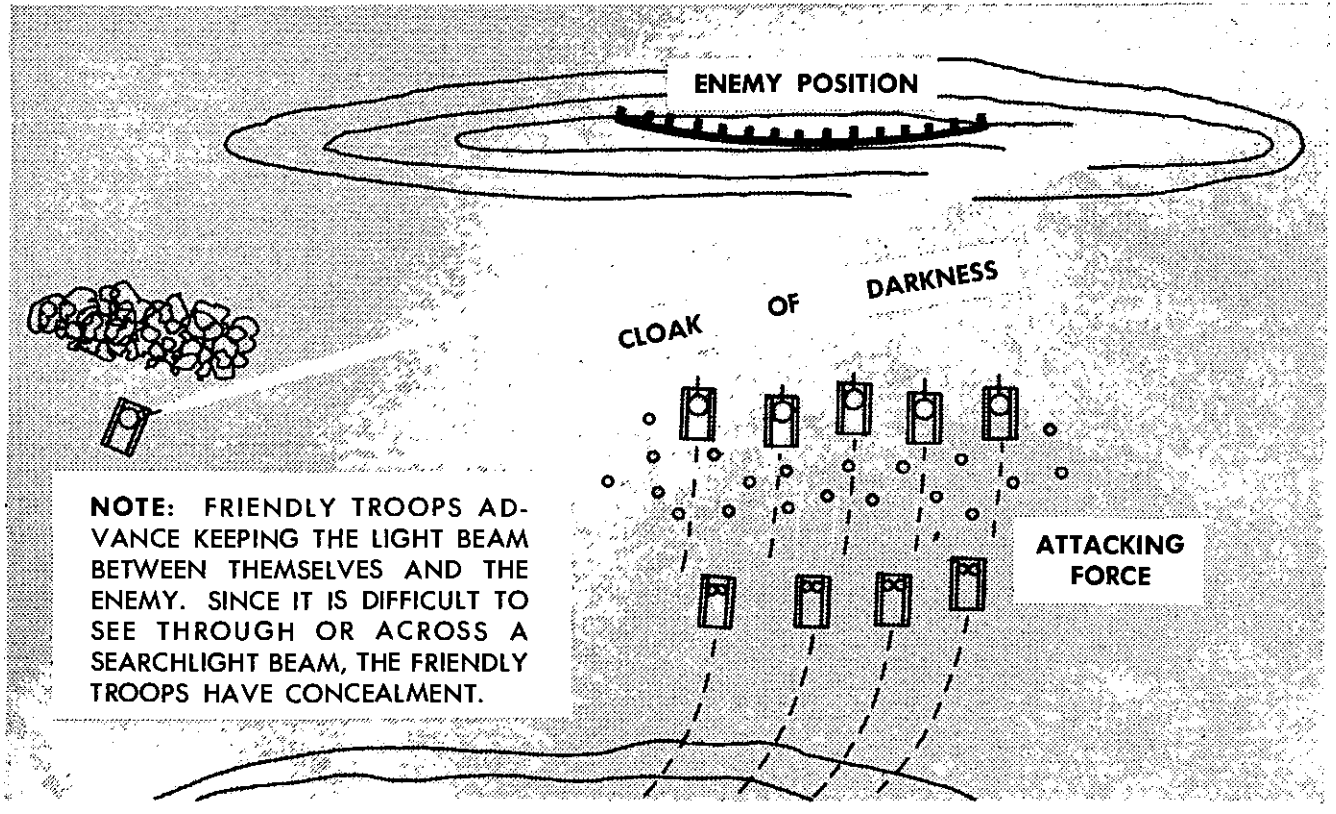


Figure 126. (Added) *The cloak of darkness behind the light beam.*

(4) Requires strict control to prevent loss of surprise by indiscriminate or accidental exposure of light.

9. Indirect Illumination

a. Advantages. Facilitates movement of troops and vehicles, construction work, minefield operations, evacuation, resupply, patrolling, and maintenance of wire communication.

b. Disadvantages.

(1) Under some conditions, limits use of carrier tank weapons.

(2) Limits effective range of the light because of low intensity.

(3) Fails to provide sufficient light for aiming weapons with conventional sights.

(4) Facilitates enemy movement.

10. Use of Single or Interconnecting Beams

A single beam or an intersection of two or more such beams may be used to—

a. Assist in marking targets or objectives (fig. 127).

b. Aid in deception.

c. Orient aircraft and illuminate landing areas.

11. Rear Areas

Tank-mounted searchlights may be used for general illumination of rear areas to facilitate movement and work; however, to relegate the carrier tank to such a role will deprive tactical units of the firepower and armor protection of a combat vehicle (fig. 128).

12. Carrier Tank Positions

a. General. The tactical employment of tank-mounted searchlights is facilitated by daylight reconnaissance and selection of carrier tank positions. The reconnaissance should include azimuths and elevations to prominent points and target areas. Carrier tank positions should be located as accurately as time and facilities permit. Final selection of positions should take into account the location of vital friendly installations that could be damaged by enemy action directed at the searchlight.

b. Direct Illumination. In addition to the foregoing, the following conditions are desirable:

(1) Maximum of 1,500 yards between the searchlight tank and the area to be illuminated.

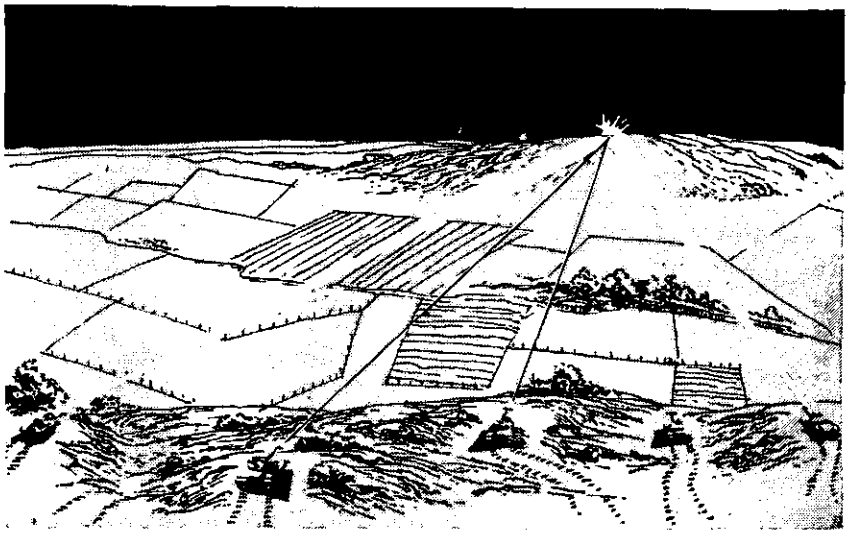


Figure 127. (Added) *Intersecting beams marking a target.*

Figure 128. (Added) *The use of 18-inch searchlights in the general illumination role to facilitate bridge construction work.*

(2) Maximum defilade compatible with the direct-illumination mission.

(3) A position on high ground to afford maximum range and flexibility and to avoid silhouetting friendly troops located along or near the axis of the beam.

c. Indirect Illumination. In addition to the general remarks in *a* above, the position should be in defilade. Maximum distance

should be taken between searchlight and mask that will still permit accomplishment of the primary mission.

13. Command

The commander of tanks mounting searchlights will receive and transmit orders through normal channels. When committed to supporting or reinforcing roles, this commander will act as a technical advisor to the commander of the supported unit. The operation of the tank-mounted searchlights, number to be employed, and siting of carrier tanks are the responsibility of this commander.

14. Tank-Mounted Searchlights in the Offense

a. General. Tank-mounted searchlights are best employed in the following offensive roles:

(1) In the initiation and continuation of an exploitation.

(2) In a night attack against a hastily organized position.

(3) In a night penetration, as part of the assault wave, to conceal the movement of accompanying tanks and infantry in the cloak of darkness between the light beam and the objective.

(4) In a night envelopment, as part of the base of fire, to illuminate the objective.

(5) In orientation of friendly troops. This can be accomplished by illuminating a portion of the objective, terrain features leading to the objective, or terrain features between the line of departure and the objective. The light beam itself may be used as a guide line, boundary, or line of departure. (Friendly troops should avoid moving within the brightest portion of the beam, but should skirt the edge of the beam in order to obtain maximum concealment.)

b. Methods of Employment. Tank-mounted searchlights can be employed in any of the three following methods of attack:

(1) *Tanks supporting by fire only.* When the terrain dictates the use of tanks in the "support by fire only" method, the carrier tanks will, whenever possible, be dispersed throughout the supporting position (fig. 129). This permits the best means of illuminating the target. The commander's tank should be located so as to provide maximum control of the lights. Illumination should not take place until called for by the commander of the maneuvering forces, and it should be employed for suffi-

cient time to allow friendly fires to neutralize enemy fires and obtain fire superiority prior to the final assault on the objective. As the assault force moves onto the objective, great care must be taken by the operators of the lights to avoid silhouetting friendly assaulting elements. Close coordination between the maneuvering force commander and the commander of the tank-mounted searchlights will be necessary to ensure proper use of searchlights. Each searchlight should be laid as accurately as possible on its target area prior to illumination, so that when lighted it will achieve immediate maximum illumination and psychological effect without loss of surprise. Plans for reorganization on the objective must include plans for alternate means of illumination, shifting of lights, and illumination in event of counterattack. Plans also should be made to iluminate the flanks of the new position to aid in covering avenues of approach and areas used by enemy counterattacking forces attempting to outflank the new positions. Care must be taken to avoid creating shadow areas favorable to enemy counterattacking forces.

(2) *Tanks and infantry on the same axis* (fig. 130). When employed in a night attack with infantry and armor on the same axis, the tank-mounted searchlights will be located in the attack formation in much the same posi-

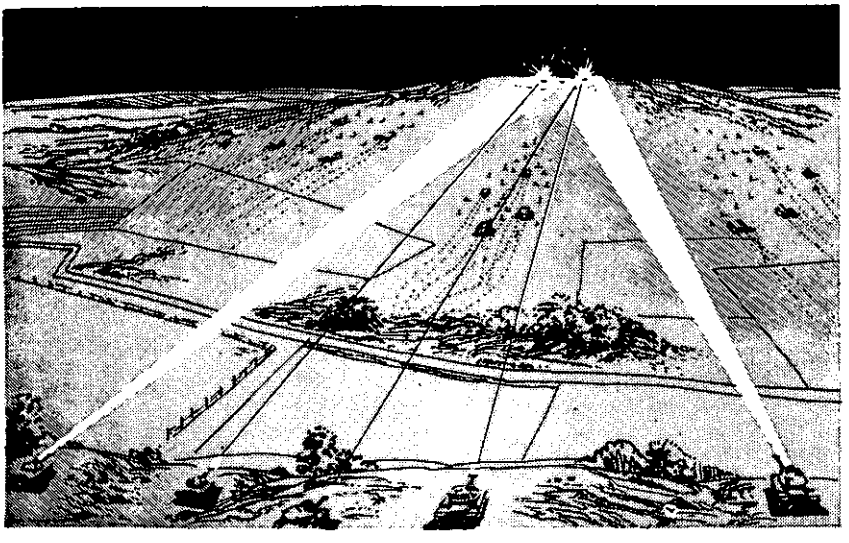


Figure 129. (Added) *Use of tanks with searchlights in the "supporting by fire only" role.*

tions that would be assigned in a nonilluminated attack. Whenever possible, the line formation should be used with the tank-mounted searchlights spaced equidistant throughout the formation, with the searchlight commander's tank in the center of the line. The lighting-up line should be selected to allow for continuous illumination of the objective during the progress of the attack. When the attack calls for heavy fire from tanks, the lighting-up line may be located at the maximum range of light. The lighting-up line may be closer to the objective (at a range of 800 yards or less) when the attack plan is principally based on using machinegun fire from the tanks. A shorter range will also add to the surprise and phychological effects. The success of the operation will depend to a great extent on the ability of the commander to employ his lights to the greatest advantage possible. Larger-sized searchlights providing artificial moonlight may be used to permit the attacking force to approach the objective with minimum revelation of the size of the attacking force. Carrier tanks should accompany the infantry assault element onto the objective. Carrier tanks may then provide continuous illumination, at the same time using to advantage the shock action characteristic of armor and minimizing the possibility of silhouetting friendly infantry elements. In actions where the carrier tanks are forced to halt at the edge of an objective, the flank tanks normally will be the only ones to continue illumination, and their beams will be directed parallel to and only high enough above the ground to prevent silhouetting the friendly infantry elements. This will provide enough diffused light to enable the infantry to clean out the enemy remaining on the objective. An emergency target for the tank main gun, such as a machinegun or antitank gun, will receive immediate priority over the illuminating mission. Normally, tank-mounted searchlights will maintain illumination until the objective is taken. Extinguishing of searchlights will cause night blindness unless an alternate light source is provided. Plans for reorganization of the position will include the order to extinguish or shift lights, as well as provision for illumination in event of counterattack by the enemy. Positions on the objective must be reconnoitered and occupied rapidly. Alternate and supplementary positions must be selected as soon as possible.

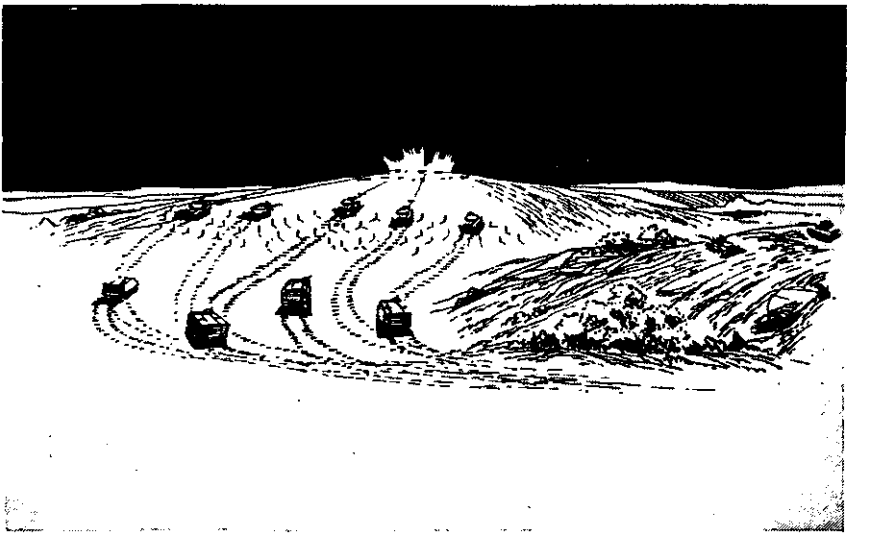


Figure 130. (Added) *Use of the searchlight when tanks and infantry are employed on the same axis.*

(3) *Tanks and infantry on two converging axes.* Whenever possible, carrier tanks will approach to within 800 yards or less of the objective before illuminating. At this range enemy troops, in addition to being revealed by the illumination of the lights, are silhouetted with respect to friendly infantry troops. This provides friendly infantry with excellent targets for aimed fire. Even though the enemy may expect an infantry attack from some other direction than that of the attacking tanks, the blinding effect of the lights may be sufficiently effective to prevent enemy observation. Friendly infantry may attack from any direction outside the searchlight beam and still benefit from the cloak of darkness. The infantry must close rapidly with the enemy, securing the position as quickly as possible, in order to reduce the illumination time. Tanks and infantry should coordinate their advance in order to arrive on the objective at the proper time. Plans for reorganization will be the same as those required for other methods of illuminated night attacks.

c. Special Offensive Considerations. The following factors should be considered in planning searchlight-illuminated attacks:

(1) Advancing troops should remain on the edge of the beam or just outside it so that they may take advantage of stray light and still remain undetected.

(2) At ranges of less than 1,000 yards, the light beam

should be so positioned that an enemy observer must look across or through it. Friendly troops, when advancing, should remain on the side of the beam away from the enemy.

(3) It will often be advantageous to flicker the light to impair enemy vision and confuse the enemy as to its exact location. In order to make illumination of the target area effective, constant light must be available long enough to permit adjacent tanks to fire. The use of two or more searchlights alternately illuminating the area will reduce vulnerability to enemy fire and at the same time provide constant illumination of the target area.

(4) It is difficult to maintain searchlights on targets while carrier tanks are moving over rough terrain. At the same time, tank-mounted searchlights accompanying a maneuvering force may disclose the route of advance if searchlights are continuously left on. Therefore, whenever the terrain and enemy situation permit, tanks with searchlights should advance by bounds. Illumination should be accomplished while tanks are stationary; searchlights should be extinguished when tanks are moving.

15. *Tank-Mounted Searchlights in the Defense*

a. General. The searchlight is used to cover likely avenues of approach and provide illumination for night counterattacks. Proper use of searchlights in coordination with listening posts provides an additional aid to surveillance and assists in gaining tactical surprise over approaching enemy troops.

b. Planning. Preparation for the defense employing 18-inch searchlights requires the same planning and coordination that precede any other defensive action. Planning will include these additional considerations:

(1) Coordination of the 18-inch searchlights with other illumination means.

(2) Position areas for tank-mounted searchlights.

(3) Control measures to prevent premature illumination and disclosure of friendly positions.

(4) Alternate means of communication for coordinating lights with infantry fires.

c. Employment.

(1) Normally, a tank-mounted searchlight unit will employ the same tactics as a standard tank unit of the same size

defending the same area. Requirements for clear fields for illumination are similar to requirements of direct-fire weapons for clear lines of sight to the target area. The commander will select areas and assign priorities for illumination. Searchlights will be laid on selected areas to provide instantaneous illumination on order. Selected areas will be given code designations. Requests for illumination will be made by code designation, thus reducing the time required to put the lights in action. Illumination data will be incorporated into the range card for each tank in the defense area positions.

(2) Lights will be turned on only:

(*a*) When searchlights will influence the action by providing illumination for aimed fire.

(*b*) When the enemy has accurately located the position, and darkness no longer provides security.

(3) Searchlights may be extinguished when in imminent danger of being destroyed or extinguished by close-in small arms fire or when the final protective line has been penetrated by the enemy. In either case, the decision to extinguish lights will normally remain with the commander of the defending unit.

(4) Efforts will be made, by using deception and by firing, to direct the enemy into areas where searchlights can be used to illuminate him and thus facilitate his destruction by aimed fire of infantry and tanks. By being engaged at maximum effective range, the enemy's attack may be retarded. Special attention should be given to fringe areas of the beam since the enemy, while avoiding direct illumination, may attempt to use the low-level illumination on the edge of the beam to facilitate his advance. The enemy, as a result of his desire to avoid illumination, may be canalized into selected areas best suited to defense by our forces or into ambushes or minefields.

(5) No attempt should be made to illuminate areas more than 1,500 yards from the carrier position.

(6) Effective fire is best obtained by having one tank engage the target with its searchlight while another tank engages the target with the main armament or coaxial gun. The firing and illuminating roles will frequently be exchanged to decrease exposure of the illuminating tanks to counterfire.

(7) Tank-mounted searchlights are integrated into the coordinated fire plan so as to obtain maximum effectiveness of fires.

(8) Steady illumination is to be avoided since it permits the enemy to adjust fires against the carrier tank positions. The alternating periods of light and darkness obtained by flicker illumination serve to confuse the enemy.

(9) Tank-mounted searchlights in the mobile defense will be used primarily to reveal the enemy at maximum effective light range. Accordingly, areas or points of illumination will be picked at the maximum range of the light, approximately 1,000 yards, and guns and lights will be prelaid on these target areas. When strongpoints are within 2,500 to 3,000 yards of each other, coordination will be established so that tank-mounted searchlights of one position can assist adjacent strongpoints in illuminating areas between positions (fig. 131).

(10) Until the entire defensive position is committed to action, the minimum number of lights necessary to accomplish the defense mission will be used to prevent revealing the size of the defensive force.

(11) Flexibility in the defense is assisted by placing tank-mounted searchlights in position to support friendly counterattacking forces (fig. 132).

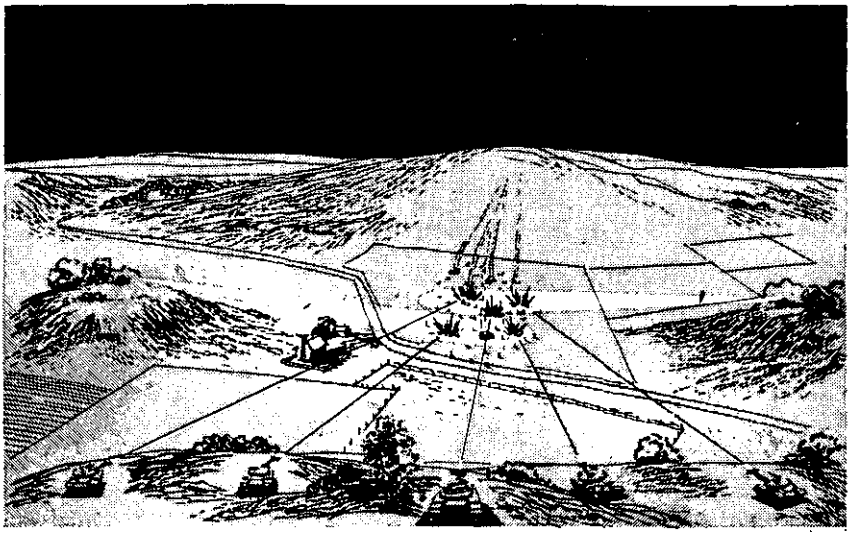


Figure 131. (Added) *18-inch searchlights illuminating area between strongpoints.*

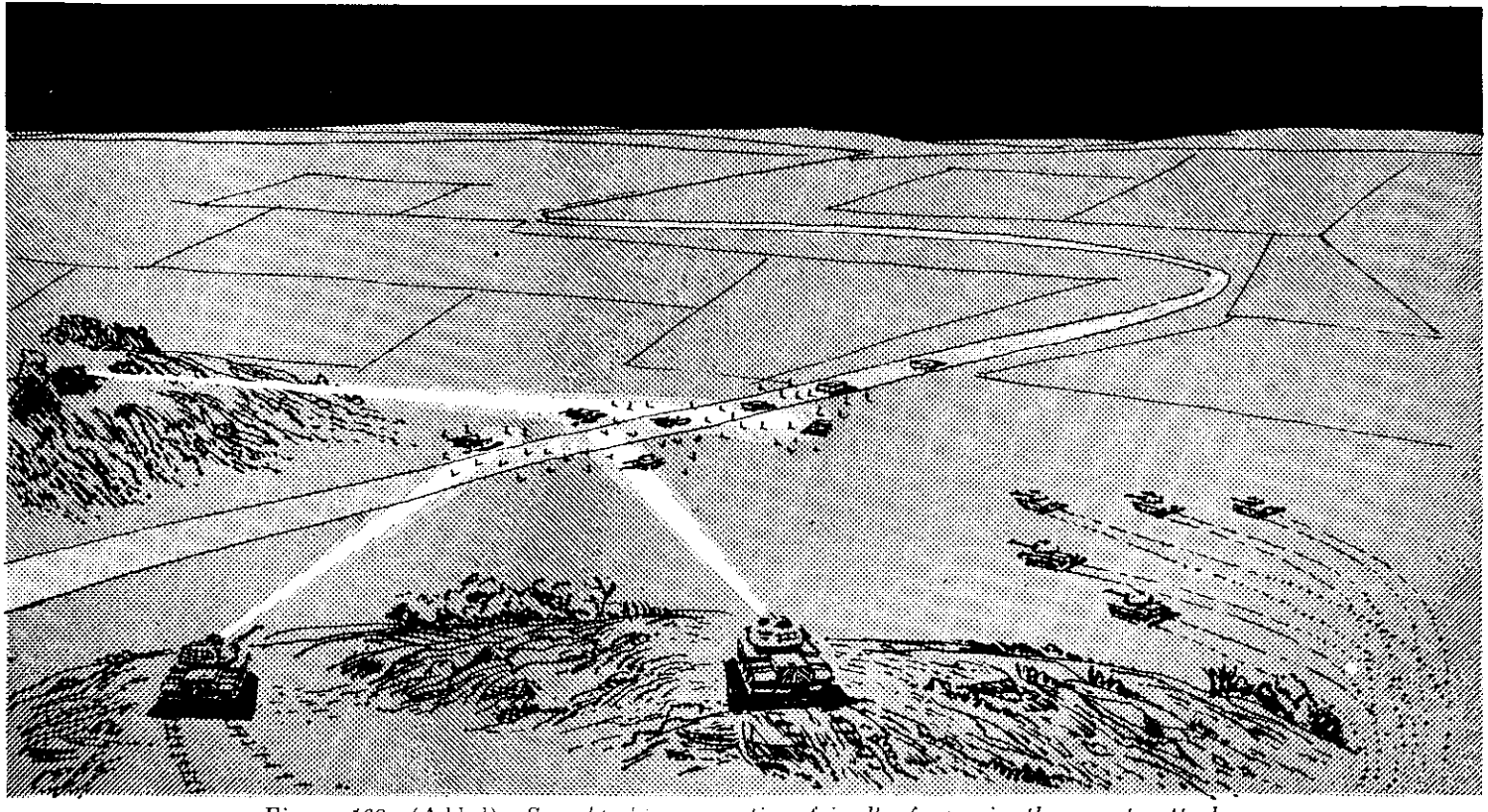


Figure 132. (Added) *Searchlights supporting friendly forces in the counterattack.*

Section III. COUNTERMEASURES

16. Enemy Smokescreens

If maintained around the carrier tank position or directly in front of enemy positions, enemy smokescreens will nullify the effects of searchlights. Well selected alternate positions will permit carrier tanks to move from primary positions and continue their illumination mission with little interruption. Wide lateral spacing of carrier tank positions will necessitate the expenditure by the enemy of a great amount of smoke on tank-mounted searchlights.

17. Enemy Searchlights

The use of searchlights or pyrotechnics by the enemy will increase the area of illumination but will minimize our advantage of one-sided illumination.

18. Enemy Counterlights

Enemy counterlights turned directly on friendly lights will nullify observation of observers in the vicinity of friendly lights.

19. Attack by Artillery and Other Ground Weapons

Direct or indirect fire can be adjusted on searchlights by enemy troops not blinded by the beams. Initial range estimation with observation from two points is sufficiently accurate to warrant an artillery mission without prior adjustment. Without such observation, initial range estimation is difficult. Tank guns and other flat-trajectory weapons positioned to fire directly at the carrier tank position can achieve more rapid adjustment than indirect fire by artillery.

20. Infiltration

Enemy infiltrators may extinguish lights by assaulting the carrier tank. Daring infiltrators can damage the light by use of grenades at very close range. Friendly infantry should provide close-in protection against infiltration.

APPENDIX VII (Added)

EMPLOYMENT OF THE SHORT RANGE AND MEDIUM RANGE GROUND RADARS

Section I. SHORT RANGE GROUND RADAR

1. General

The short range ground radar organic to small armor units

provides ground-to-ground electronic surveillance and increases the parent unit's capability to perform combat surveillance.

2. Employment

The ground radar team may be employed in all types of tactical operations. Whenever employed, the following general characteristics of ground radar must be considered:

a. The radar is a line-of-sight device and as such will not detect targets that are masked by hills, buildings, and thick foliage.

b. The radar must be located in areas relatively free of close ground clutter, such as trees, bushes, or buildings. This clutter tends to distort the radar beam pattern and will result in inaccurate range, azimuth, and elevation data.

c. The ability of the operator to detect, locate, and identify targets increases as the operator gains experience.

d. The radar should be operated at irregular intervals to provide some security from detection and subsequent jamming by the enemy.

e. The radar set must be oriented in azimuth and located on the map before the operator is capable of pin-pointing targets geographically.

3. Missions

Surveillance and reconnaissance missions assigned to armor units do not normally indicate to unit commanders how to accomplish the task. The short range radar is one means which the commander can employ as part of his overall security and surveillance effort. Missions assigned the ground radar team will include the type of radar surveillance to be conducted (scan, search, or monitor), time that each type will be employed, area to be covered, and how and when information is to be reported.

4. Control

In the tank company, the ground radar team will usually operate under company control as part of the security section. In the armored rifle company and armored cavalry troop the ground radar will usually be placed under control of the platoon best suited to perform the particular surveillance mission requiring the device.

5. Rodor Site

The radar site is decided upon after an analysis of the mission and consideration of the capabilities of the set. The tactical considerations in selecting a site for the radar are identical with

those considered in choosing a position for a crew-served weapon or other fire support means. The radar site should—

(1) Permit maximum radar coverage of the area to be scanned, searched, or monitored.

(2) Provide concealment for the team vehicle.

(3) Facilitate communication with the company command post.

(4) Take advantage of security provided by other units. (If possible, a position should be selected within a well established defense perimeter.)

(5) Avoid interference with other units.

(6) Take advantage of routes for displacement.

6. Defense

In defensive situations, the radar may be used to monitor enemy avenues of approach into the company position, to scan critical terrain features, or to provide surveillance coverage of the gaps between friendly units. It should be employed as far forward as possible in order to utilize the maximum range of the set. During daylight and periods of good visibility the radar may be employed to supplement visual observation or maximum range search missions or may be assigned to monitor a particularly dangerous enemy avenue of approach. During periods of reduced visibility the radar may be used to supplement the company security effort. Patrol plans must be closely coordinated with plans for employment of the radar to enable the radar operators to distinguish between movement of friendly elements and enemy infiltration of personnel or vehicles. The employment of the short range radar is also integrated into the surveillance plan of the parent battalion in order that it may complement the use of the battalion medium range radar.

7. Retrograde

The radar may be used in retrograde operations to assist in providing security for withdrawing elements of the company. In this connection, a series of radar positions must be reconnoitered and designated, as well as the method of displacement, prior to the operation.

8. Offense

The radar may be used in offensive operations to assist in providing flank security and to scan beyond the line of contact or the limits of advance of leading elements. During the reorganiza-

tion and consolidation of the objective, the radar may be used to assist in preventing a surprise counterattack by scanning enemy avenues of approach.

9. Reporting Information

Ground radar surveillance reporting procedures should be incorporated in unit SOP's. Depending on specific requirements, positive and negative information obtained by the radar may be reported by the operator at prescribed intervals or upon completion of the mission. The operator will transmit the information by using coordinates of the activity located and will state what he determines the target to be, i.e., dismounted personnel, wheeled vehicles, or tracked vehicles. Regardless of the reporting technique employed, the operator submits reports directly to the company CP when the team is operating under company control or to the platoon leader of the platoon to which the team is attached.

Section II. MEDIUM RANGE GROUND RADAR

10. General

The medium range ground radar organic to the armor battalion, armored infantry battalion, and armored cavalry squadron provides medium range ground-to-ground battle area surveillance coverage for its parent unit.

11. Tactical Employment

a. Control. The ground radar section of the tank and armored infantry battalions will usually operate under battalion control in a general support role. However, in certain situations, the section may be attached to combat elements of the battalions. When the section remains in the scout platoon, it will be employed under the platoon leader.

b. Security. For purposes of security, the radar position is normally included within or is placed in proximity to the position of a combat unit. In the event that terrain conditions demand a location for the radar which is isolated or not in proximity to a combat unit, it will be necessary to assign personnel to provide security for the radar section.

c. Radar Position. The primary requirement for effective employment of the medium range radar is that it be situated for line-of-sight operation. This characteristic of the radar set dictates that it be located to permit scan or search of an area relatively free of potential ground clutter (terrain obstacles, wooded areas, etc.). The radar position is decided upon after an analysis

of the mission and consideration of the capabilities of the set. The location and employment of the medium range radar will be coordinated with the employment of the short range ground radar. The position should—

(1) Permit maximum radar coverage of the area to be scanned, searched, or monitored.

(2) Provide concealment of the section vehicle.

(3) Facilitate communication with the battalion command post.

(4) Take advantage of security provided by other units.

(5) Avoid interference with other units.

(6) Take advantage of routes for displacement.

d. Movement to Position. The battalion S2, after coordinating with the battalion S3, will designate the general location for the radar position and will prescribe the area of coverage. The section leader will select a specific position after making a personal reconnaissance. The radar set can be vehicular transported, airlifted, or man packed into the desired location.

e. Missions. When operating directly under battalion control, missions will, to a large extent, stem from requirements in the battalion surveillance plan. The mission will include the type of radar surveillance to be conducted (scan, search, or monitor), time that each type will be employed, area to be covered, and how and when information is to be reported.

f. Employment in Defense. In defensive situations, the radar may be used to monitor the main enemy avenues of approach, to scan critical terrain features, or to provide surveillance coverage of the gaps between strongpoints. It may be used at night or in periods of reduced visibility to supplement the battalion security effort by detecting infiltration movement of enemy personnel or vehicles. Employment may be at combat output locations or within the battle position.

g. Employment in Retrograde Operations. The radar may be used in retrograde operations to assist in providing security for withdrawing elements of the battalion. In this connection, a series of radar positions must be reconnoitered and designated, as well as the method for displacement, prior to the operation. Subject to the availability of adequate positions, the radar is normally positioned immediately behind the initial delaying position to permit as early detection of the advancing enemy as possible.

h. Employment in the Offense. The radar may be used in offensive operations to assist in providing flank security and to scan beyond the line of contact or the limits of advance of leading

elements. Terrain permitting, the radar is positioned well forward to allow scanning the objective prior to and during an attack to detect any movement by the enemy which might indicate reinforcement or a change in disposition. During the reorganization and consolidation of the objective, the radar may be used to assist in preventing a surprise counterattack by scanning enemy avenues of approach.

i. Reporting Information. In the advance planning for the use of ground radar surveillance, reporting procedures are established. Depending on specific requirements, positive and negative information obtained by the radar may be reported by the operators at prescribed intervals or upon completion of the mission. Regardless of the reporting technique employed, the operators submit reports to the battalion S2 when the section is operating under battalion control or to the unit commander of the unit to which the section is attached.

APPENDIX VIII
BATTLE DRILL
(Added)

Section I. GENERAL

1. Purpose

The purpose of battle drill is to provide a series of preplanned maneuvers by which small tank, armored infantry, and armored cavalry units can be thoroughly trained, and which serve to accelerate combat action, optimize teamwork, and reduce to a minimum the orders necessary to employ small units effectively under fire. This appendix should be used in conjunction with FM 17–35, FM 17–33, FM 17–20, and FM 21–60.

2. Training, General

a. Battle drill includes single-situation tactical exercises for squads, sections, and platoons. The purpose of battle drill training is to practice movements in combat formations, changes in formations and actions in specific combat situations. Battle drill includes the movement toward and assault of specific objectives, and necessary defensive movements. The objective may be a terrain feature, a dummy position, or a position manned by Aggressor troops. Blank ammunition may be used as the unit progresses through training. Live ammunition may be used when the unit has become proficient in its training. Prescribed safety precautions must be observed when ammunition is used.

b. Stress should be placed on tank-infantry coordination and cooperation during battle drill training. All armor personnel should realize that ultimately their participation in combat will be as part of a team of combined arms, with tanks and armored infantry as the nucleus. Stress should also be placed on the protection that tanks receive from the armored infantry.

3. Scope of Training

Battle drill training requires instruction and continuing practice in the following areas:

a. Tank Platoon.

(1) Crew drill.
(2) Mounted combat formations.
(3) Arm and hand signals, flag signals, and other visual signals as may be prescribed by unit SOP's.
(4) Armored infantry dismounted formations.
(5) Armored infantry mounted formations.
(6) Tank and armored infantry integrated formations.

b. Armored Infantry Platoon.

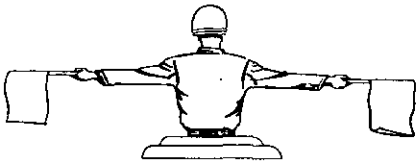
(1) Crew drill.
(2) Dismounted combat formations.
(3) Mounted combat formations.
(4) Arm and hand signals, flag signals, and other visual signals as may be prescribed by unit SOP's.
(5) Tank unit mounted combat formations.
(6) Tank and armored infantry integrated formations.

c. Armored Cavalry Platoon.

(1) Crew drill.
(2) Dismounted combat formations.
(3) Mounted combat formations.
(4) Arm and hand signals, flag signals, and other visual signals as may be prescribed by unit SOP's.
(5) Tank platoon mounted formations.
(6) Armored infantry dismounted formations.
(7) Armored infantry mounted formations.
(8) Tank and armored infantry integrated formations.

4. Training Techniques

a. Preliminary to training in mounted drills, it is desirable to instruct unit and vehicle commanders by the use of models such as numbered match boxes or similar devices. Extensive lectures



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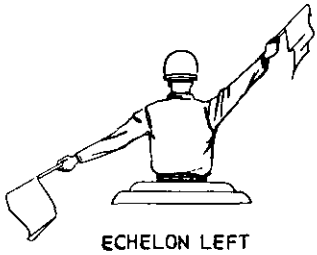
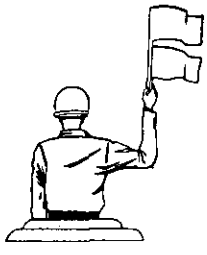
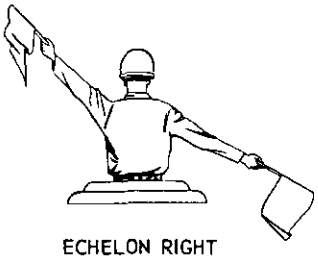


ECHELON LEFT



COLUMN



ECHELON RIGHT

WEDGE

Note. The direction in which the signaler faces, front or rear, does not alter the signal.

Figure 133. (Added) *Flag signals for mounted formations.*

on battle drill are to be avoided. Reducing the time to be spent in explanation does not eliminate the necessity for adequate instructor preparation.

b. Battle drill does not solve all battle problems, and it should be emphasized in instruction that rigid adherence to set maneuver patterns is to be avoided. Battle drill should serve as a guide to provide a nearly automatic initial maneuver reaction to a given combat stimulus, which subsequently is modified to conform to the tactical situation. The rapid, forceful, and automatic reaction which is the object of battle drill will often provide the measure of tactical advantage and initiative necessary to success in combat.

c. All training in battle drill should be conducted at a fairly fast tempo. Interest is sustained by sustained activity and changes in formation and pace.

d. Training should provide for platoon-size units to become proficient in battle drill. Proficiency can be maintained only by continuous practice. Practice in battle drill should be habitually integrated into other training as appropriate.

5. Visual Signals

a. Flag Signals. Flag kits containing red, green, and yellow flags, are standard on equipment material. Certain signals have been standardized in FM 21–60. Additional signals may be devised in which the flags are used singly or in combination. Flag signals to control mounted formations are shown in figure 133. In these signals, colors of the flags have no significance. The preparatory command consists of the display of the flags; the command of execution is the withdrawal of the flags from display.

b. Arm and Hand Signals. Arm and hand signals used in battle drill are as prescribed in FM 21–60.

c. Other Signals. Other visual signals and sound signals may be used.

Section II. BATTLE DRILL—TANK UNITS

6. General

Battle drill for tank units is based on training in the adoption of combat formations as described in FM 17–33. Combat formations consist of two basic types: line and column. The echelon and wedge formations are variations of the two basic types. Application of a given formation is predicated on the factors of METT (mission, enemy situation, terrain and weather, troops available). Selection of a formation must be guided by the facts

that the objective should be assaulted by as large a force as possible and that the formation must have sufficient depth to maintain the momentum of the attack. It must be borne in mind that a combat formation is not rigid. Ground, cover, and concealment govern the position of each tank. Unit commanders position themselves in the formation where they can best control the operation.

7. Combat Formations

For characteristics, use, and illustrations of tank unit combat formations, see FM 17–33.

8. Conduct of Battle Drill

a. The conduct of battle drill is based upon a tank unit's having been thoroughly trained in such matters as vehicle driving, gunnery, crew drill, march techniques, and combat formations.

b. Training in combat formations and battle drill requires adherence to the following principles:

(1) Use proper combat distances and intervals between vehicles as prescribed in unit SOP's.

(2) Do not form perfect lines or columns; apply some irregularity in all formations.

(3) Movements should be executed with speed and precision consistent with safe driving.

(4) Rapid action is desirable with frequent changes of formation.

(5) All means of communicating commands should be practiced, including radio, flags, and arm and hand signals.

(6) The order of tanks within formations may be varied. This should be done to reduce a tendency toward rigidity that is inherent in this type of training. Training should emphasize the flexibility of armor employment.

(7) Tanks should, in the final phases of battle drill training, practice buttoned-up operations.

9. Tactical Situation Training

Having attained proficiency in the execution of the combat formations described in FM 17–33, tank unit battle drill should be conducted in single-situation tactical exercises (par. 2, this app.). The tank unit should be given a variety of situations and required, by using formations and signals learned in combat formations, to accomplish a specific mission. The tank unit should be battle drilled in the following tactical situations:

a. Approach March. The platoon moves along a selected cross country route in a formation best suited to cope with any situation encountered. Speed and tactical integrity are emphasized.

b. Covering Force. The platoon, acting as a covering force for the company, applies the techniques used in an advance to contact. Movement must be as fast as the situation will permit. Company and platoon bounds can be used (par. 169).

c. Attack Without Delay. The platoon moving in any extended formation launches an attack in a direction towards an objective likely to be defended by hostile elements. An attack order might be approximately this: PLATOON ATTACK (2D SECTION COVER). OBJECTIVE, THOSE WOODS 500 YARDS, RIGHT FRONT. The platoon should react promptly by moving in an aggressive manner toward the objective. When situation and terrain dictate, one section may be assigned overwatching fire and should take suitable positions and bring its guns to bear on the objective.

d. Hasty Defense. The command should be DEFEND IN PLACE or MOVE TO EDGE OF TREE LINE, DEFEND, or other variations depending on terrain. Moving as necessary and keeping, if possible, their frontal armor toward the enemy, tanks bring armament to bear on the enemy as quickly as possible.

e. Delay. This is an open formation, the sections of the platoon being withdrawn alternately, each section overwatching from a suitable position the withdrawal of the other.

f. Air Defense. Tanks with no cover should, under air attack, make sure that adequate distances and intervals are taken and defend themselves by machinegun fire. If cover or concealment is available nearby and hostile aircraft are sighted and have not yet moved to attack, the platoon should move to cover or concealment using open formation.

g. Lager. The platoon leader places his own tank and commands LAGER; tanks arrange themselves in a perimeter defense formation, taking normal interval, which can be adjusted later according to terrain and visibility. This formation is not suitable when it is part of a company lager, for then the platoon only occupies a part of the company perimeter.

h. Block and Withdraw. The tank platoon needs a drill which will permit it to withdraw in good order when it is placed under sudden antitank fire coming from a point which it cannot overrun immediately. A suitable command under this circumstance is BLOCK AND WITHDRAW: SECOND SECTION BLOCK, FIRST SECTION WITHDRAW. On this command the second section takes up a firing position and places fire on the enemy.

The first section withdraws under cover of the overwatching fire of the second section. The first section upon reaching a suitable firing position covers the withdrawal of the second section.

10. Combined Arms Training

a. Normal combat operations will require the tank unit to be employed in a team with infantry elements. To that end, personnel of a tank unit are required to be thoroughly conversant with battle drill, mounted and dismounted, for armored infantry units (pars. 11–23). When the tank unit is proficient in the training prescribed in paragraph 9, this appendix, combined arms battle drill training for the tank-armored infantry team should be initiated.

b. Typical mounted formations for the tank-armored infantry team are discussed in FM 17–33.

Section III. BATTLE DRILL—ARMORED INFANTRY UNITS, MOUNTED

11. General

Like the tank unit battle drill, battle drill for mounted armored infantry units consists of training in the adoption of appropriate combat formations as discussed in FM 17–20. Mounted formations are obviously preferred to dismounted formations and are used whenever possible. They are used during the movement from the assembly area (or attack position) to the line of departure and as far beyond as the tactical situation permits. Formations are flexible and may correspond to those used by a supported tank unit.

12. Combat Formations

For the characteristics, use and graphic illustrations of infantry unit combat formations, see FM 17–20.

13. Conduct of Battle Drill

a. The conduct of mounted battle drill is based upon an armored infantry unit having been thoroughly trained in armored personnel carrier crew drill and combat formations. Armored personnel carrier drivers must be fully qualified in the handling of their vehicles in cross country operations.

b. Training in combat formations requires adherence to the following principles:

(1) Use proper combat distances and intervals between vehicles as prescribed in unit SOP's.

(2) Do not form perfect lines or columns; apply some irregularity in all formations.
(3) Movement should be executed with speed and precision consistent with safe driving.
(4) Rapid action is desirable with frequent changes of formation.
(5) All means of communicating commands should be practiced, including radio, flags, and arm and hand signals.
(6) The order of personnel carriers within formations may be varied.

14. Tactical Situation Training

For infantry battle drill training in tactical situations, see paragraphs 16 through 19, this appendix.

15. Combined Arms Training

a. Employment of armored infantry elements with tanks as a team will be normal in combat. Infantry personnel must be familiar with the tank unit drill as discussed in paragraphs 6 through 10, this appendix. When the armored infantry unit is proficient in both mounted and dismounted battle drill, it should conduct the battle drill as part of the tank-infantry team.

b. Typical mounted formations for the tank-armored infantry team are discussed in FM 17–33.

Section IV. BATTLE DRILL—ARMORED INFANTRY, DISMOUNTED

16. General

a. Battle drill for dismounted armored infantry units is designed to train the armored infantry in efficient tactical employment when they are required to dismount from their carriers and fight on foot. Battle drill for dismounted armored infantry calls for training in dismounted combat formations and the adoption of appropriate formations in tactical situations. Normally dismounted combat formations are required in the vicinity of the objective. Up until the time the enemy situation demands it, however, armored infantry will ride their carriers. Dismounted armored infantry formations are similar to mounted formations. In going from a mounted formation to a dismounted formation, the mounted formation, should correspond to the anticipated dismounted formation.

b. As soon as armored infantry are dismounted, carriers are moved to the nearest covered position and prepare to move forward on signal when the infantry are ready to continue the mounted advance.

17. Combat Formations

For discussion and illustrations of dismounted infantry (armored infantry) formations, see FM 17–20. FM 7–20 may be used as a supplemental reference; however, where discrepancies between the two manuals exist, FM 17–20 will govern for armored infantry units.

18. Conduct of Battle Drill

a. The conduct of battle drill for dismounted armored infantry requires adequate training in weaponry, crew drill, and basic tactical principles of fire and maneuver.

b. Training in battle drill for dismounted armored infantry adheres to the following principles:

(1) Distances between personnel laterally and in depth will vary according to the situation (see FM 17–20 and FM 7–10).

(2) Execution of commands is rapid, and changes in formation are frequent and executed on the double.

(3) Except in the simulated assault of an objective, rifles are carried at port arms. In the assault, weapons are carried to deliver assault fire.

(4) Formations should not be perfectly alined but should contain some irregularity.

(5) All means of communication are practiced. In dismounted battle drill, in addition to other means, whistle signals may be used.

(6) Having attained proficiency in dismounted combat formations, armored infantry conduct battle drill training in single-situation tactical exercises as follows:

(*a*) *Approach march.* Practice should be conducted in the use of a squad as a covering force for the remainder of the platoon, the squad moving as directed by the platoon leader.

(*b*) *Covering force.* In this drill, the platoon acts as a covering force for the company. The platoon operates dismounted, probably on a 2-squad front, in mass or by bounds speedily.

(*c*) *Attack without delay.* This drill should be practiced continuously by the platoon. The proper command is FIGHT ON FOOT ACTION RIGHT FRONT (or LEFT, etc.). The subsequent movements of the platoon should be controlled by the use of hand signals; squads should be moved rapidly into action, simulated firing commenced, and the attack pressed with vigor.

(*d*) *Hasty defense.* In many cases, an adequate emergency defense may be effected by a simple command of FIGHT ON FOOT, followed by signal to deploy and commence firing.

(*e*) *Delaying action.* Squads should be brought back one or two at a time, and a new line built up behind the initial one. Squads on the new line cover the withdrawal of elements on the forward line. If the terrain and the enemy situation dictate, the most heavily engaged units may be withdrawn last from each successive position.

(*f*) *Air defense.*

1. When the platoon is dismounted, and an air threat has been reported, cover being available close by, the platoon leader may command AIR DEFENSE, COVER, RIGHT (LEFT). At this command, personnel take advantage of any available cover and concealment.

2. When the platoon is moving dismounted and is subjected to air attack, individuals take the best available cover and concealment.

(*g*) *Artillery fire.* Armored infantrymen must be thoroughly trained to continue movement when subjected to artillery fire. The best dismounted action against artillery fire is to continue in the original direction of movement.

19. Combined Arms Training

See paragraphs 20 through 23, this appendix.

Section V. BATTLE DRILL—TANK-INFANTRY TEAM

20. General

Normal combat employment of armor units calls for the formation of tank-armored infantry teams. According to the tactical requirement, the team may be either tank heavy or armored infantry heavy or balanced. In any case, proficiency in battle drill will also assist in developing teamwork, mutual respect, and efficiency.

21. Conduct of Battle Drill

Battle drill for the tank-infantry team uses the combat formations discussed in the preceding sections and is based on the principles stated in paragraphs 8, 13, 15, and 18, this appendix. For

the combined arms battle drill, the additional following principles also govern—

a. Armored infantry ride their carriers as far as the tactical situation permits.

b. Speed of advance is regulated on dismounted armored infantry.

c. Radio communication between tanks and armored infantry assumes greater importance, especially when the tanks are buttoned up.

22. Combat Formations

a. General. For employment of tanks and armored infantry in the attack (pars. 286–289).

b. Infantry Mounted. In open terrain, it will most often be desirable to have the infantry attack mounted in armored personnel carriers following the tanks. The command is ATTACK FORMATION (DIRECTION), TANKS UP, INFANTRY MOUNTED.

(1) The commander may prescribe the formation to be taken by the tanks and by the infantry, or he may leave the formation of the attached element to be prescribed by its commander. He may also prescribe the distance by which the infantry will follow the tanks or direct them to follow by bounds. He will locate himself in a position where he can best influence the action.

(2) The infantry will, at a predesignated line (probably just short of or on the objective), rapidly dismount and fight on foot to mop up enemy resistance.

c. Infantry Dismounted. In close terrain it will most often be desirable to have the infantry attack dismounted.

(1) To have the tanks lead, the commander of the team commands, ATTACK FORMATION (DIRECTION), TANKS UP, INFANTRY FIGHT ON FOOT. This formation is usually taken when moving on broken terrain which precludes rapid movement by the tanks. The tanks attempt to destroy all enemy encountered, but the infantry is available to the tank commander to be sent through small patches of very close terrain or into terrain which tanks cannot penetrate. On arrival on the objective, infantry mop up enemy resistance, establish outposts, and assist in organization of the ground. The armored infantry should be taught to use the fastest and most convenient means available to designate targets

for tanks. They may designate targets by pointing; by firing smoke grenades, streamers, flares, or tracers; or by using the radio or external tank interphone.

(2) To have infantry lead, command ATTACK FORMATION (DIRECTION), INFANTRY UP, INFANTRY FIGHT ON FOOT. This formation is usually taken in close terrain severely limiting tank visibility or when visibility is otherwise limited. Each infantry squad proceeds generally in a line formation, and, whenever opposed by enemy fire, instantly signals up a tank to reduce the source.

(3) To have the tanks and infantry move abreast, command ATTACK FORMATION (DIRECTION), LINE, INFANTRY ON RIGHT (LEFT), INFANTRY FIGHT ON FOOT. This formation is useful in moving across terrain part of which is good open tank country, and part is not (e.g., woods). Tanks will not limit their rate of advance to that of the infantry, unless close mutual support is imperative because of nature of enemy resistance—e.g., because of enemy mines and infantry antitank weapons. As an alternative, it may prove desirable to have an infantry squad attached to each tank, or a tank attached to each infantry squad, so that those elements may operate very closely together. This formation is one normally to be taken only when a limited objective is to be assaulted, the terrain is very close, and enemy resistance is persistent.

(4) Sometimes it is necessary to divide the infantry and tank elements and attack an objective from more than one direction. Sample commands are, INFANTRY ENVELOP RIGHT (LEFT), (TANKS COVER), and TANKS ENVELOP LEFT (RIGHT), (INFANTRY COVER).

23. Tactical Situation Training

Situations are developed according to availability of local training areas. Terrain board exercises should be devised where maneuver areas are not available.

Section VI. BATTLE DRILL—ARMORED CAVALRY UNITS

24. General

Armored cavalry units do not adapt to stylized combat formations as readily as do tank and armored infantry units; however,

battle drill for armored cavalry units is desirable for obtaining the objectives stated in paragraph 1, this appendix.

25. Conduct of Battle Drill

a. Battle drill for armored cavalry units requires training in crew drill, weaponry, march techniques, and driving. The scout section should be well-grounded in scouting, patrolling, and techniques of observation. The rifle squad should be well schooled in dismounted battle drill (pars. 16–19).

b. Battle drill training for the armored cavalry platoon adheres to the same principles as those of the tank and armored infantry units (pars. 6–15).

26. Combat Formations

Suitable combat formations for the armored cavalry platoon are shown in figures 134 through 143. Armored cavalry troops may also use combat formations corresponding to those of tank units as described in FM 17–33.

27. Tactical Situation Training

Battle drill for armored cavalry units is based on the following missions: route reconnaissance, attack without delay, hasty defense, delay, air defense, and securing a critical terrain feature.

28. Route Reconnaissance

In the accomplishment of route reconnaissance missions, the Y formation and its variants are applicable (figs. 138–140).

29. Attack Without Delay

The platoon leader may launch an attack from any formation, four examples of which are described below. (In each example, the support squad goes into fire position, and the squad leader reports at once to the platoon leader for fire instructions.

a. Command: (PLATOON) ATTACK, TANKS AND RIFLES ENVELOP RIGHT (LEFT), SCOUTS COVER (fig. 141).

b. Command: (PLATOON) ATTACK, TANKS ENVELOP RIGHT (LEFT), RIFLES COVER.

c. Command: (PLATOON) ATTACK, RIFLES ENVELOP LEFT (RIGHT), TANKS COVER. In both *b* and *c* above, the two scout squads halt and observe, and each scout squad leader requests instructions. The platoon leader may order these squads, together or individually, to either:

(1) Act as reconnaissance and guide for the maneuvering force.

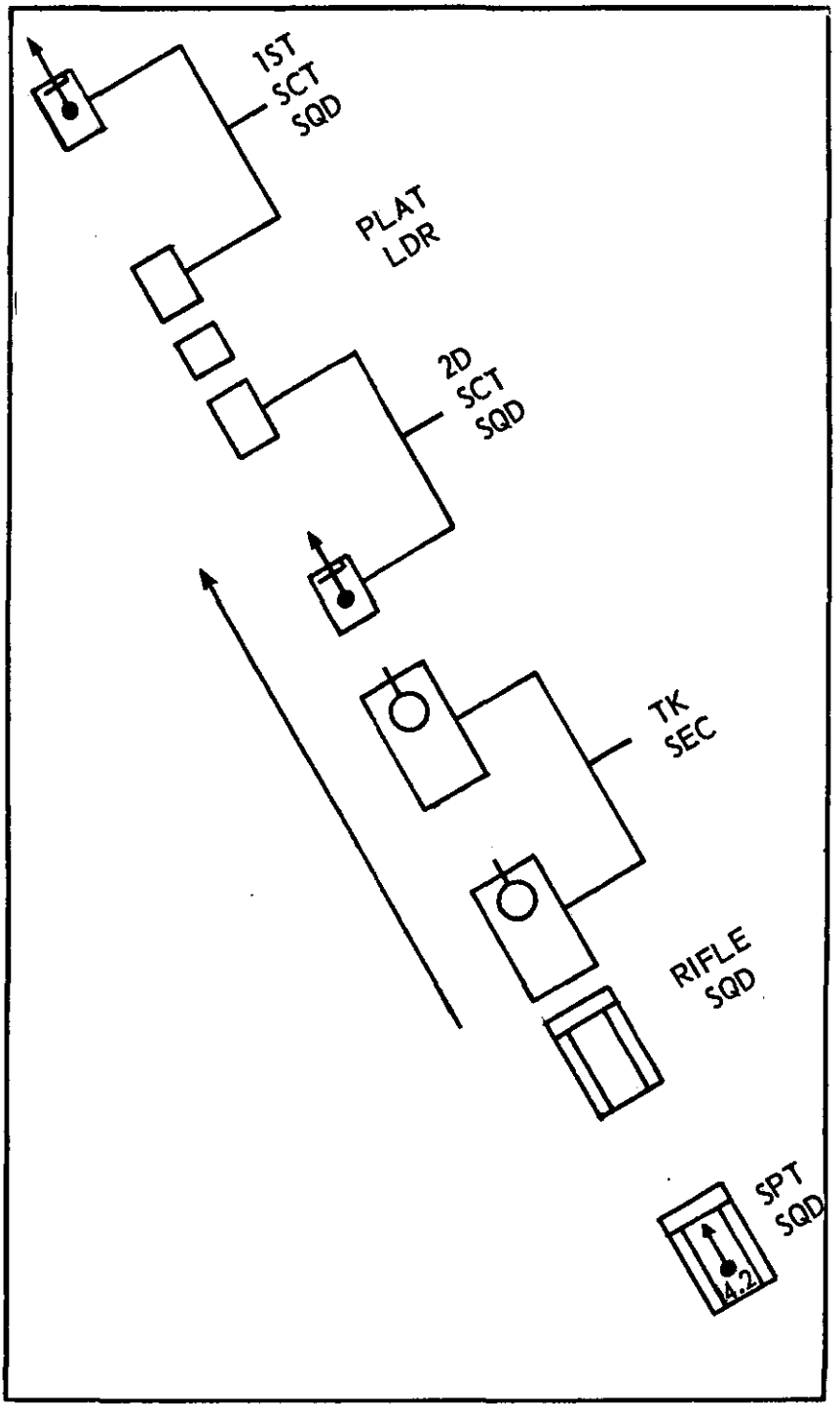


Figure 134. (Added) *Armored cavalry platoon, normal column formation.*

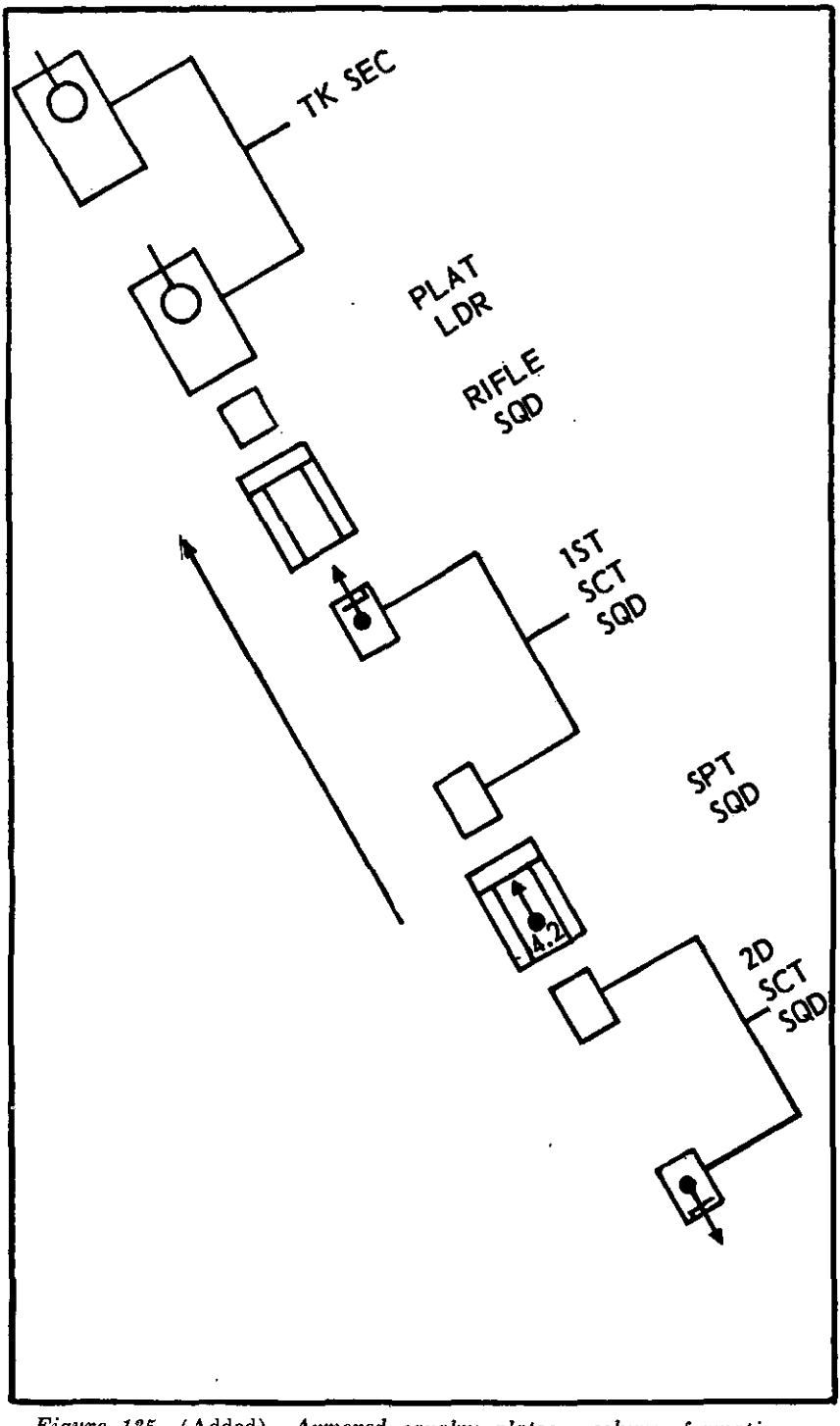


Figure 135. (Added) *Armored cavalry platoon, column formation, TANKS UP.*

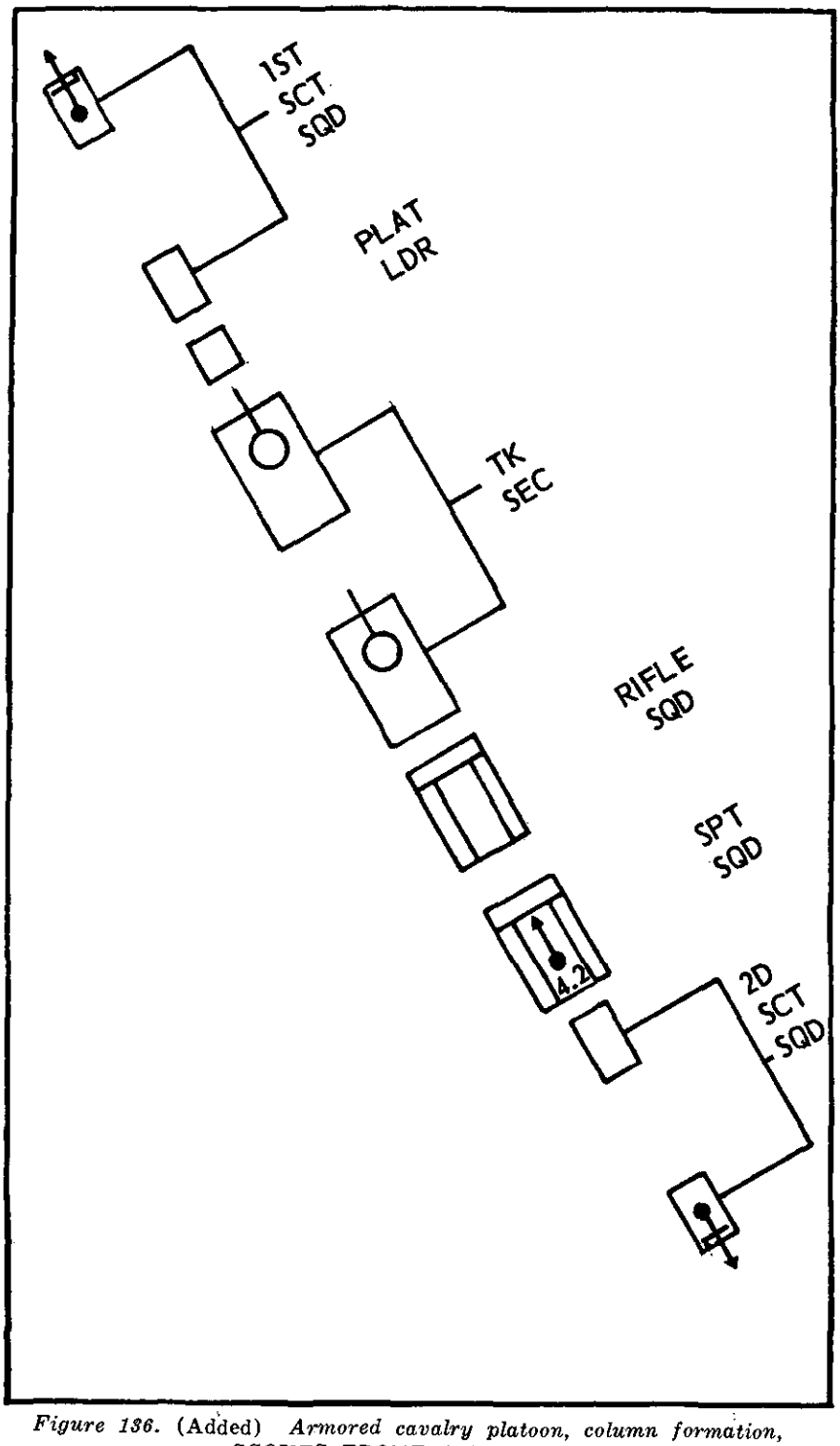


Figure 136. (Added) *Armored cavalry platoon, column formation, SCOUTS FRONT AND REAR.*

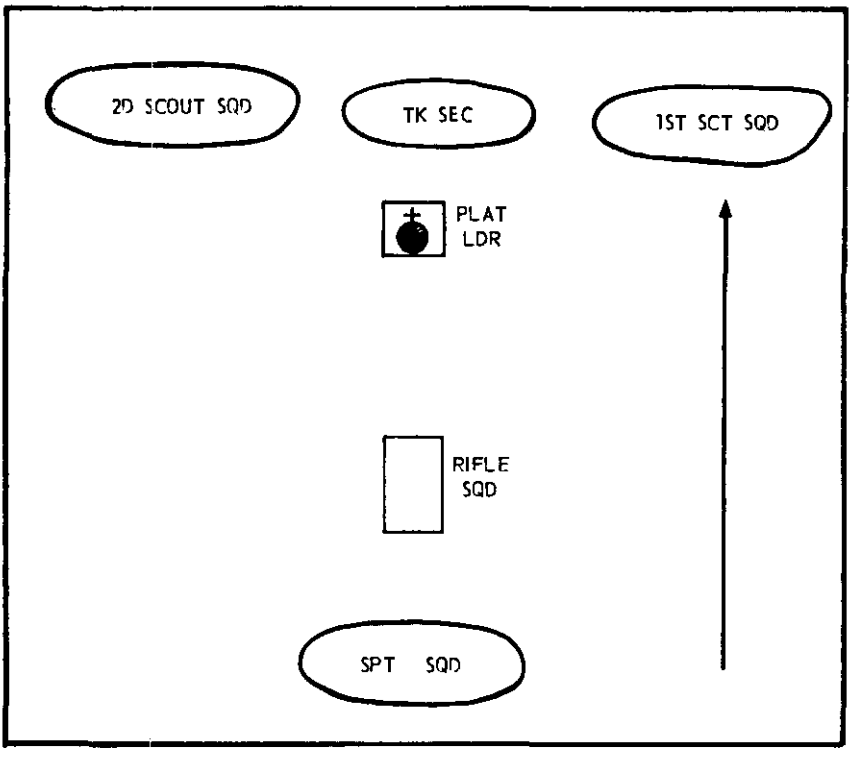


Figure 137. (Added) *Armored cavalry platoon,* T *formation.*

(2) Join the base of fire.

(3) Protect an exposed flank by observation and fire.

d. Command: (PLATOON) FRONTAL ATTACK, RIFLES (TANKS) UP, (RIFLES AND TANKS ABREAST). The T formation is taken and modified as required (fig. 142).

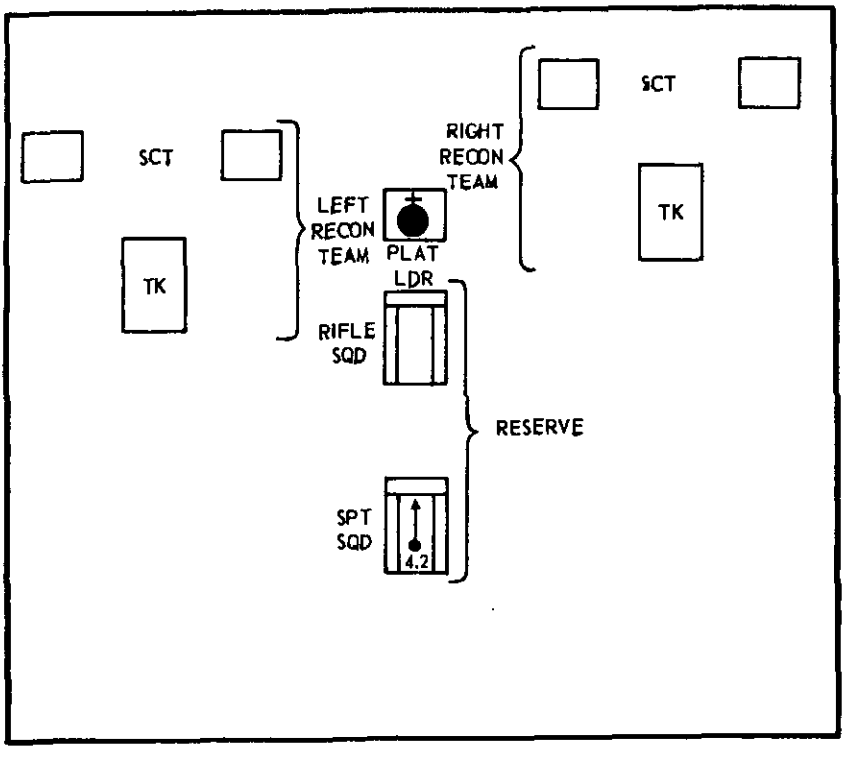


Figure 138. (Added) *Armored cavalry platoon, Y formation.*

30. Hasty Defense

a. The command should be TEE FORMATION, DEFEND IN PLACE or TEE FORMATION, ON THAT HILL, DEFEND. After the initial formation is taken, the platoon leader makes adjustments as required. The support squad goes into position quickly.

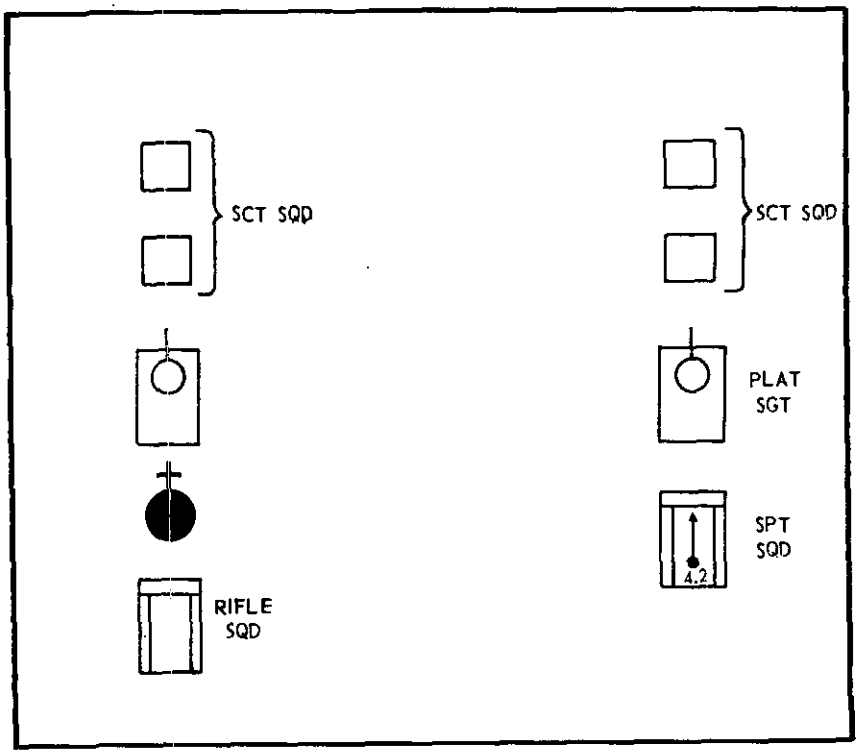


Figure 139. (Added) *Armored cavalry platoon, variation of the* Y *formation for reconnaissance on two routes.*

b. From column formation, the command is DEFEND IN PLACE, ACTION LEFT (RIGHT). On this command:

(1) Tanks place immediate fire in the enemy direction.

(2) The rifle squad fights on foot, action left (right), and goes into fire position. Armored personnel carrier cali-

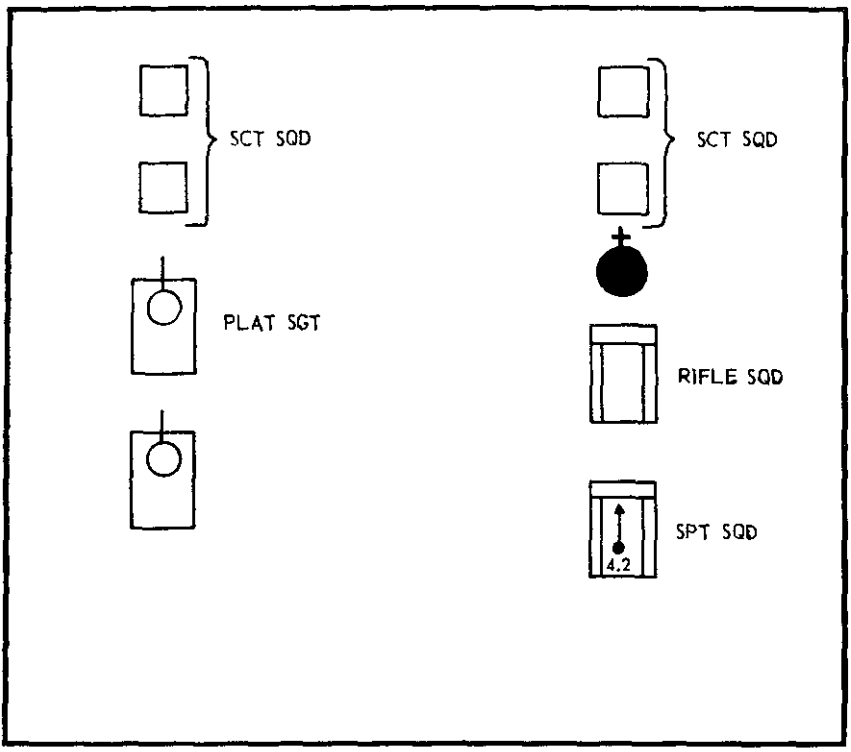


Figure 140. (Added) *Armored cavalry platoon, variation of the* Y *formation for reconnaissance on two routes.*

ber .50 machinegun is manned by the driver after positioning the carrier in defilade.

(3) The support squad and scout squads go into fire position and immediately engage enemy targets.

31. Lager

See figure 143.

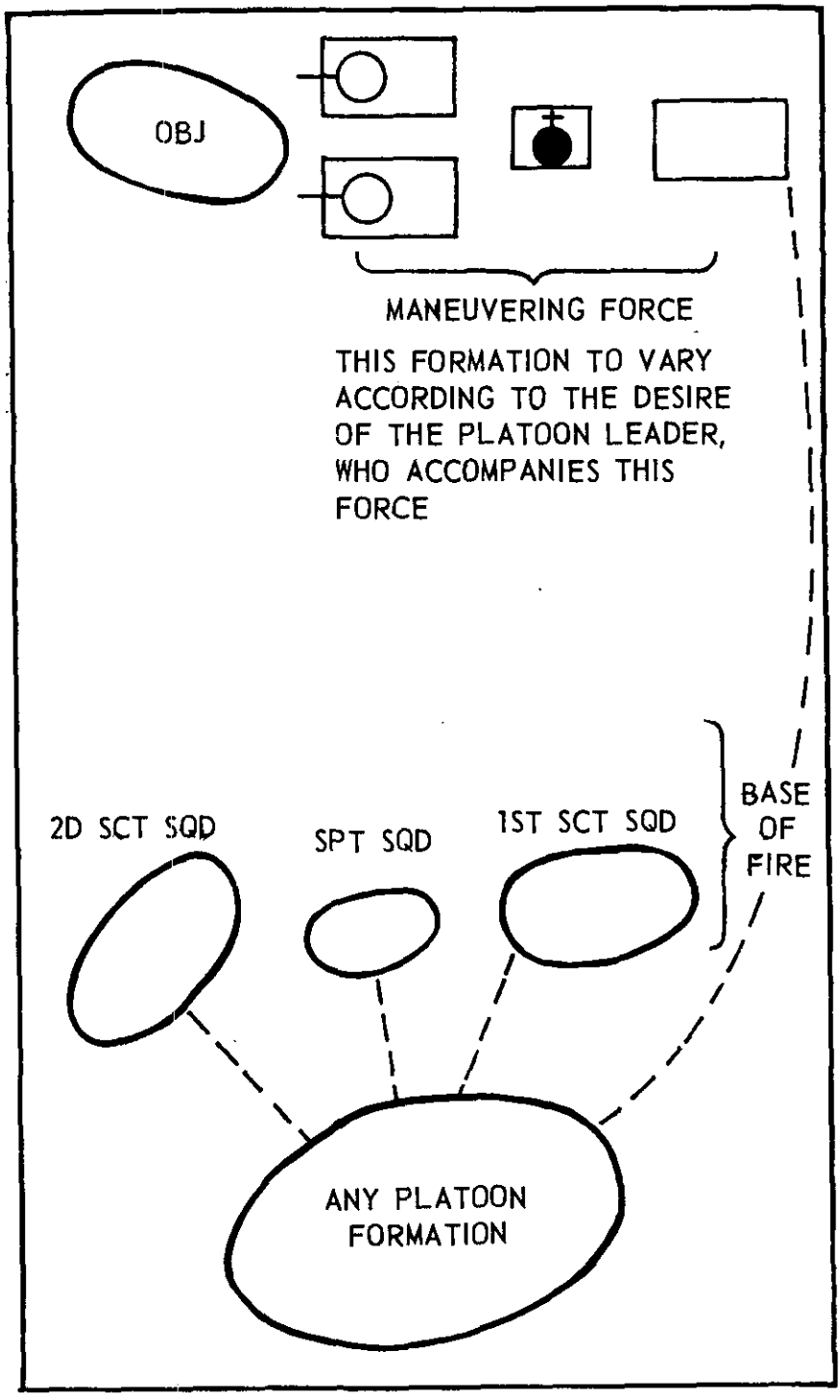


Figure 141. (Added) *Armored cavalry platoon attack, TANKS AND RIFLES ENVELOP RIGHT, SCOUTS COVER.*

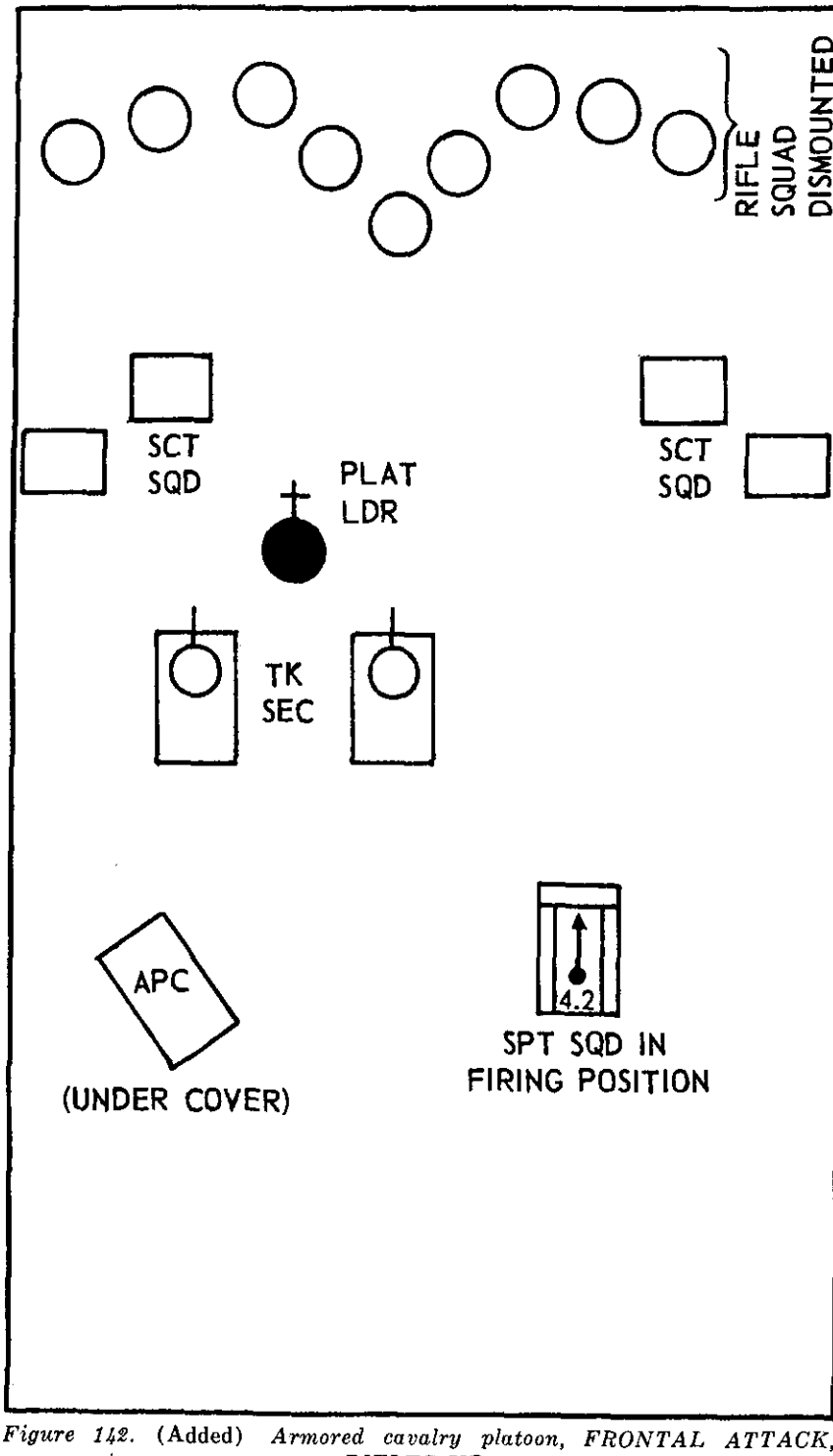


Figure 142. (Added) *Armored cavalry platoon, FRONTAL ATTACK, RIFLES UP.*

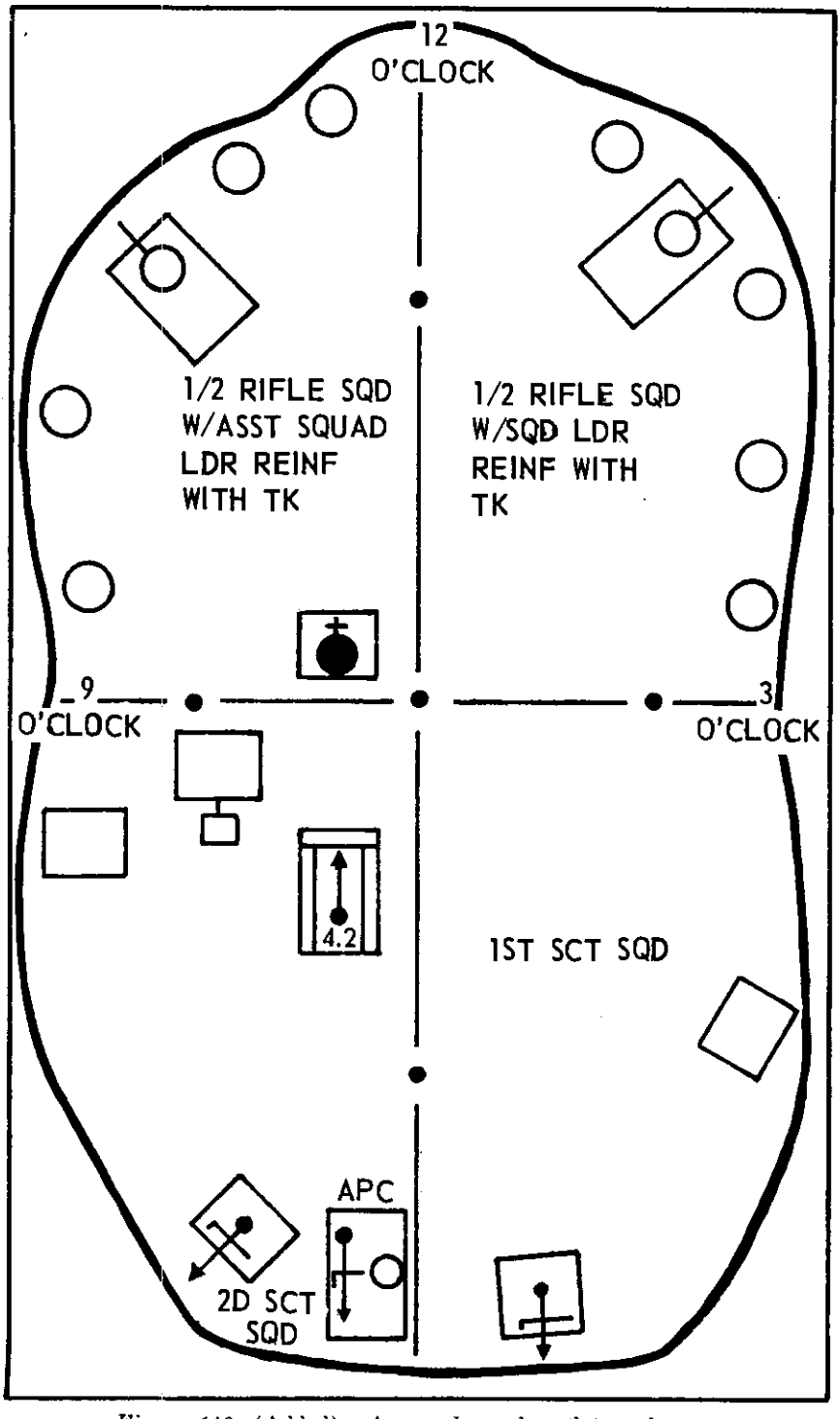


Figure 143. (Added) *Armored cavalry platoon lager.*

[AG 470.8 (12 Nov 59)]

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USASCS (10)
PMST Sr Div Units (2)
PMST Jr Div Units (2)
PMST Mil Sch Div Units
(2)

NG: State AG (3); units—same as Active Army except not to exceed 2 copies per unit.

USAR: Same as Active Army.

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

☆ U. S. GOVERNMENT PRINTING OFFICE: 1959—520518

FIELD MANUAL

ARMOR OPERATIONS, SMALL UNITS

FM 17–1
CHANGES NO. 2

HEADQUARTERS,
DEPARTMENT OF THE ARMY
WASHINGTON 25, D. C., *2 September 1960*

FM 17–1, 23 August 1957, is changed as follows:

CHAPTER 6

INDIVIDUAL AND UNIT PROTECTIVE MEASURES

* * * * * * *

Section V. DAMAGE CONTROL OPERATIONS (C 1)

(RESCINDED)

CHAPTER 6.1
AREA DAMAGE CONTROL
(ADDED)

Section I. GENERAL

196.1. Purpose

This chapter sets forth the measures and means taken to minimize the effects of a mass destruction attack or natural disaster. The measures discussed herein, when appropriately modified, are applicable to the squadrons of the armored cavalry regiment and battalions of the armor group, as well as battalions of the armored division.

196.2. General

a. In the division, rear area damage control is directed primarily toward minimizing the impairment of division administrative support and toward aiding in reestablishing administrative support. See FM 17–100.

b. In forward areas, damage control is directed toward minimizing interference with tactical operations and minimizing the loss of personnel and materiel.

c. Area damage control is a command responsibility and the commander at each echelon is responsible for planning, training, and implementing area damage control measures.

Section II. AREA DAMAGE CONTROL MEASURES

196.3. Area Damage Control Measures Taken Before an Operation

a. Area damage control organizations and procedures must be established in area damage control SOP's.

b. Units and individuals must be thoroughly trained in the use of protective measures designed to minimize the effects of an enemy nuclear attack. These measures are discussed in chapter 6.

c. Area damage control training in conformance with established SOP's must be integrated with all phases of tactical training.

d. During the planning of an operation, commanders should mentally estimate all foreseeable aspects of the impending operation. This visualization should include planning of what area damage control measures can be taken in the event the unit or its elements are subjected to an enemy mass destruction attack, or natural disaster.

196.4. Area Damage Control Measures Taken During an Operation

a. The massing of troops and units should be avoided except when essential to accomplishing the mission and then only for a minimum period of time.

b. Adequate dispersion between units and within units is maintained.

c. When units are on the move, every effort is exerted to keep them moving. Fleeting targets are relatively poor nuclear targets.

d. When units are not on the move, individual vehicle movement is minimized. Essential movement is restricted to periods of poor visibility, preferably during hours of darkness.

e. Units do not remain stationary for prolonged periods.

f. Effective use of aerial and ground reconnaissance means is practiced.

g. Maximum use is made of cover and concealment.

h. The commander and his staff continually review their dispositions and actions to be taken if the unit is subjected to a mass destruction attack.

196.5. Area Damage Control Measures Taken After an Enemy Mass Destruction Attack

a. The Affected Unit.

(1) Individuals and units immediately adopt protective measures, such as taking the best available cover, and don protective clothing and equipment to minimize the residual effects of the weapon.

(2) All operative communication facilities expeditiously report the situation and condition of the affected unit to the next higher effective headquarters.

b. All Units Observing the Mass Destruction Attack.

(1) Every effort is directed toward continuance of the assigned mission. A report of the observation of the attack should be submitted to the next higher effective headquarters using procedures as established by the unit SOP.

(2) In addition, the commanders of units unaffected by the attack should anticipate a possible change in mission to counter the attack's effects on the plan of the next higher headquarters. This reduces reaction time when a change of mission is received.

c. Next Higher Headquarters of Unit Subjected to a Mass Destruction Attack.

(1) Receives reports from subordinate units concerning the enemy attack, determines the extent of damage as early as possible, and assesses the effect on the command of the unit's ability to continue its assigned mission.

(2) Issues necessary orders to continue the assigned mission. This may require altering the disposition and missions of the remaining effective subordinate units.

(3) As early as feasible, acts to restore the effectiveness of the unit subjected to the attack. If necessary, an area damage control organization will be employed in the affected area. Appropriate functions for the organization performing area damage control operations are:

(*a*) Determine and report the effectiveness of elements of the unit subjected to the attack.

(*b*) Assume control of disorganized personnel and elements of the affected unit.

(*c*) Restore communication within the affected unit and from the affected unit to its next higher headquarters.

(*d*) Release effective elements to the control of the next higher headquarters.

(*e*) Evacuate personnel casualties to appropriate medical installations.

(*f*) Evacuate vehicles and major items of equipment to appropriate vehicle and equipment collecting points.

(*g*) Perform decontamination.

196.6. Decontamination Measures

a. Radiological Decontamination. Radiological decontamination measures are unit and individual measures taken to reduce the dose rate resulting from fallout. They include:

(1) Brushing or sweeping off clothing and equipment. If possible, a complete change of clothing should be issued and the old laundered.

(2) Bathing as soon as possible.

(3) Turning over the soil in the immediate area of foxholes, vehicles, and occupied installations. This buries the fine fallout particles and reduces intensity.

(4) Hosing or washing equipment and vehicles with soap or other detergents at the earliest opportunity.

b. Decontamination of Vehicles After Toxic Chemical Attack. A contaminated armored vehicle will continue its mission until the tactical situation permits first-echelon decontamination. For very light contamination, exposure to the weather may be enough for decontamination if time permits. Decontamination of the interior of the vehicle may be accomplished by the use of forced hot air or wiping with rags. For detailed information pertaining to decontamination of vehicles and equipment, see TM 3–220 and FM 21–40.

Section III. ORGANIZATION OF PROVISIONAL AREA DAMAGE CONTROL UNITS

196.7. General

Units subjected to a mass destruction attack or natural disaster use all means necessary to reestablish unit effectiveness as rapidly as possible. In circumstances where assistance is required from sources outside the unit, other units may be required to assist when the situation permits. Armored cavalry units are suitable for the conduct of area damage control operations. In situations where it is not feasible to employ TOE units in area damage control operations, provisional area damage control units can be organized and employed.

196.8. Provisional Area Damage Control Teams

a. General. Area damage control teams are usually established by unit SOP. These teams must be capable of taking decisive and coordinated action in area damage control operations when TOE units cannot be employed.

b. Control and Assessment Team (CAT). In the armored division, each combat battalion headquarters establishes a control and assessment team. A type combat battalion control and assessment team with personnel, major items of equipment, and a statement of functions is shown in figure 35.1.

c. Battalion Rescue Squad. Each combat battalion headquarters establishes a battalion rescue squad. This squad will be assembled on order and attached to a control and assessment team for area damage control operations. A type combat battalion rescue squad

1 BN EXEC OFF
1 DRIVER

1 COMMUNICATION DETACHMENT CHIEF
2 RADIO MECHANICS

1 RADIOLOGICAL MONITORING AND SURVEY OFFICER
1 DRIVER

1 GENERAL MEDICAL OFFICER
1 AMBULANCE DRIVER

1 LOGISTICS STAFF OFFICER
1 NCO SUPPLY (DRIVER)
1 ADMINISTRATIVE CLERK

FUNCTIONS

MOVES TO DAMAGE AREA ON ORDER, WITHOUT DELAY

ESTABLISHES A CONTROL AND ASSESSMENT TEAM COMMAND POST

DETERMINES AND REPORTS EFFECTIVENESS OF UNITS

ASSUMES CONTROL OF UNITS IN AFFECTED AREA

RESTORES COMMAND AND COMMUNICATION TO AFFECTED UNITS

RELEASES COMBAT EFFECTIVE UNITS TO TACTICAL COMMANDER

REQUESTS REQUIRED TECHNICAL SERVICE SUPPORT

DIRECTS AND CONTROLS THE OPERATION OF RESCUE SQUADS

Figure 35.1. Type combat battalion control and assessment team.

with personnel, major items of equipment, and statement of functions is shown in figure 35.2.

d. Company Rescue Squad. Each combat company-size unit establishes a company rescue squad. This squad will be assembled on order and attached to a control and assessment team for area damage control operations. A type company rescue squad with personnel, major items of equipment, and statement of functions is shown in figure 35.3. The organizations shown in figures 35.1, 35.2, and 35.3 are merely examples to illustrate how these units

1 NCO SENIOR RECOVERY MECHANIC
2 RECOVERY MECHANICS
1 TRACKED VEHICLE MECHANIC

1 AID STATION ATTENDANT
1 AMBULANCE DRIVER
1 AMBULANCE ATTENDANT

1 OPERATOR
1 ASSISTANT

2 DRIVERS
2 ASSISTANT DRIVERS

1 OFFICER
1 DRIVER

FUNCTIONS

OPERATES CASUALTY AND VEHICLE COLLECTING POINTS

PROVIDES LIMITED EMERGENCY MEDICAL TREATMENT

CONDUCTS RADIOLOGICAL MONITORING

PROVIDES ASSISTANCE TO COMPANY RESCUE SQUADS

PROCURES TECHNICAL SERVICE SUPPORT

Figure 35.2. Type combat battalion rescue squad.

SECY SEC/CO MAINT

1 ASSISTANT SQUAD LEADER

8 EM

CO HQ

1 NCO

1 MECHANIC-DRIVER

FUNCTIONS

ADMINISTERS FIRST AID

RESCUES AND REMOVES CASUALTIES

EVACUATES VEHICLES AND MAJOR ITEMS OF EQUIPMENT

CONDUCTS RADIOLOGICAL MONITORING

PERFORMS LIMITED HASTY DECONTAMINATION

Figure 35.3. Type company rescue squad.

can be established by SOP. Other organizations as desired by the commander can be established by SOP in conformance with his organizational structure and concept of performing area damage control operations.

Section IV. OPERATIONS OF PROVISIONAL AREA DAMAGE CONTROL UNITS

196.9. General

a. Provisional area damage control units, established by SOP, are employed to accomplish a particular area damage control mission when it is not practical to employ TOE units. When it is necessary to employ provisional area damage control units the next higher headquarters of the affected unit will designate the provisional area damage control units within the command to perform the area damage control mission. For example, if a company-size unit has been subjected to a mass destruction attack, and requires assistance, the battalion will determine what provisional area damage control teams will be employed for the

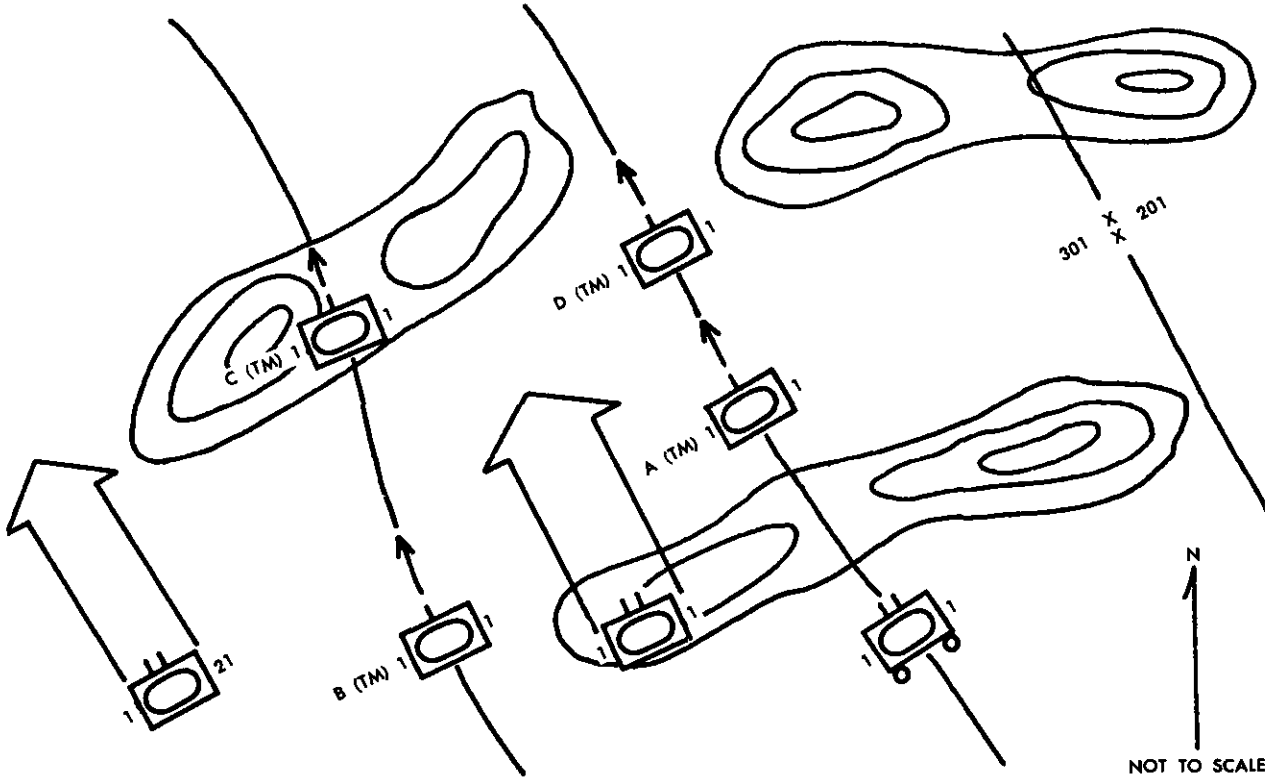

Figure 35.4. Task force situation before enemy nuclear attack.

area damage control mission. If the area damage control operation requires means in excess of those at the disposal of the parent organization, additional means may be requested from the next higher headquarters.

b. The next higher headquarters of the affected unit may initiate area damage control operations in the affected area using its SOP-established control and assessment team to direct the operation. In battalion-level area damage control operations, the battalion rescue squad and the unaffected company rescue squads can be employed under the direction of the battalion control and assessment team.

196.10. A Method of Operation

a. General. A method of conducting battalion level area damage control operations after an enemy nuclear attack, using a provisional area damage control organization, is described in the following illustrative example:

Task Force 1/1 Armor has been advancing on two axes (fig. 35.4). Team D was struck by an enemy nuclear airburst weapon. In the absence of assistance from sources outside the task force, the task force commander ordered Team A to bypass the affected area and to assume the mission of Team D. Other units continued their assigned missions. Concurrently, the task force commander committed the task force control and assessment team (CAT), battalion rescue squad, and company rescue squads of the unaffected teams to conduct area damage control operations in the affected area(fig. 35.5). The initial estimate of effects indicated that the weapon was a 50-KT low airburst. The area within the damage radius of concern was assigned to the task force CAT, which in turn assigned sectors of responsibility to the company rescue squads (fig. 35.6). The radius of the area of concern should be determined by direct damage assessment. However, a hasty radius to be used in initial planning can be determined by using the negligible risk, unwarned, exposed safety radius for the estimated yield contained in FM 101–31. This radius can be adjusted when area damage control elements arrive in the area and the actual extent of damage is determined.

b. Control and Assessment Team. The control and assessment team (CAT) commander or his representative should make an aerial survey of the area assigned to the CAT to estimate the extent and nature of damage within the area. CAT communication nets are opened and attempts are made to establish communication with the affected unit. The CAT establishes a command post

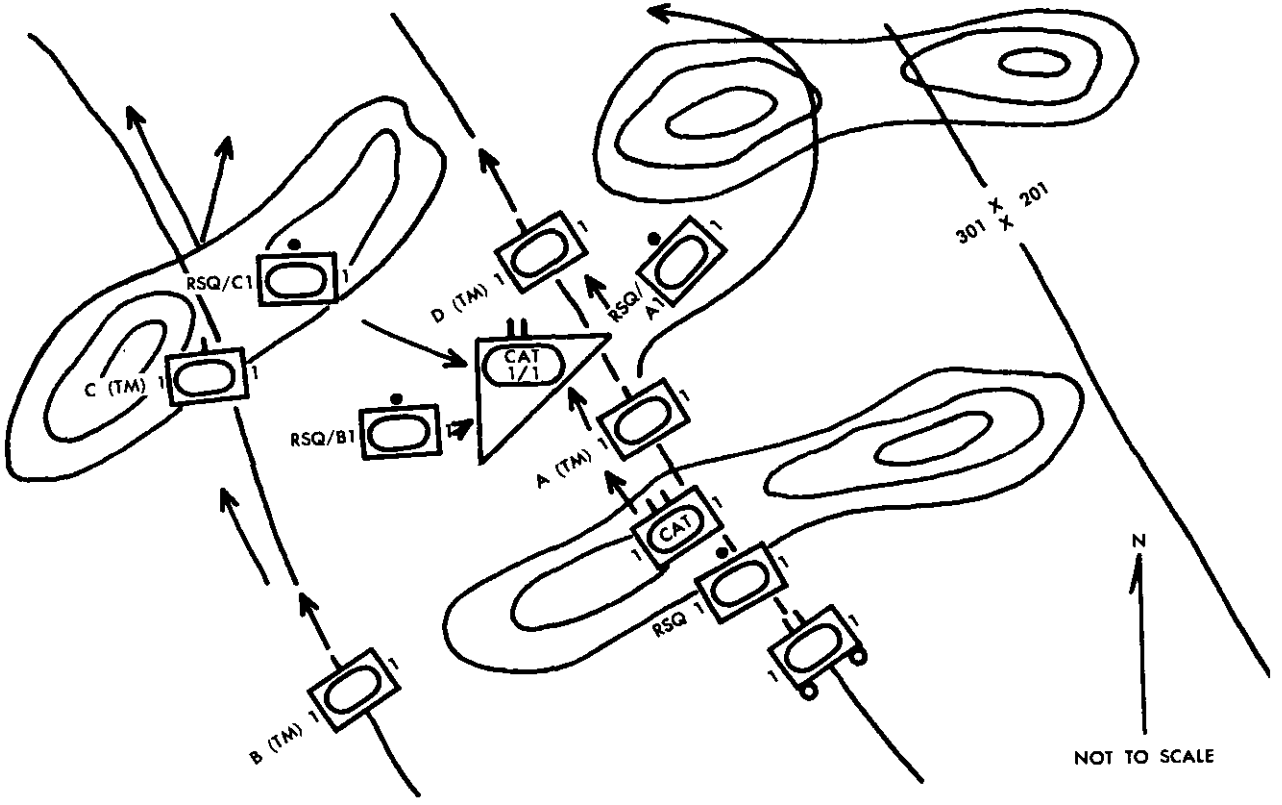

Figure 35.5. Provisional area damage control elements committed to render assistance to Team D.

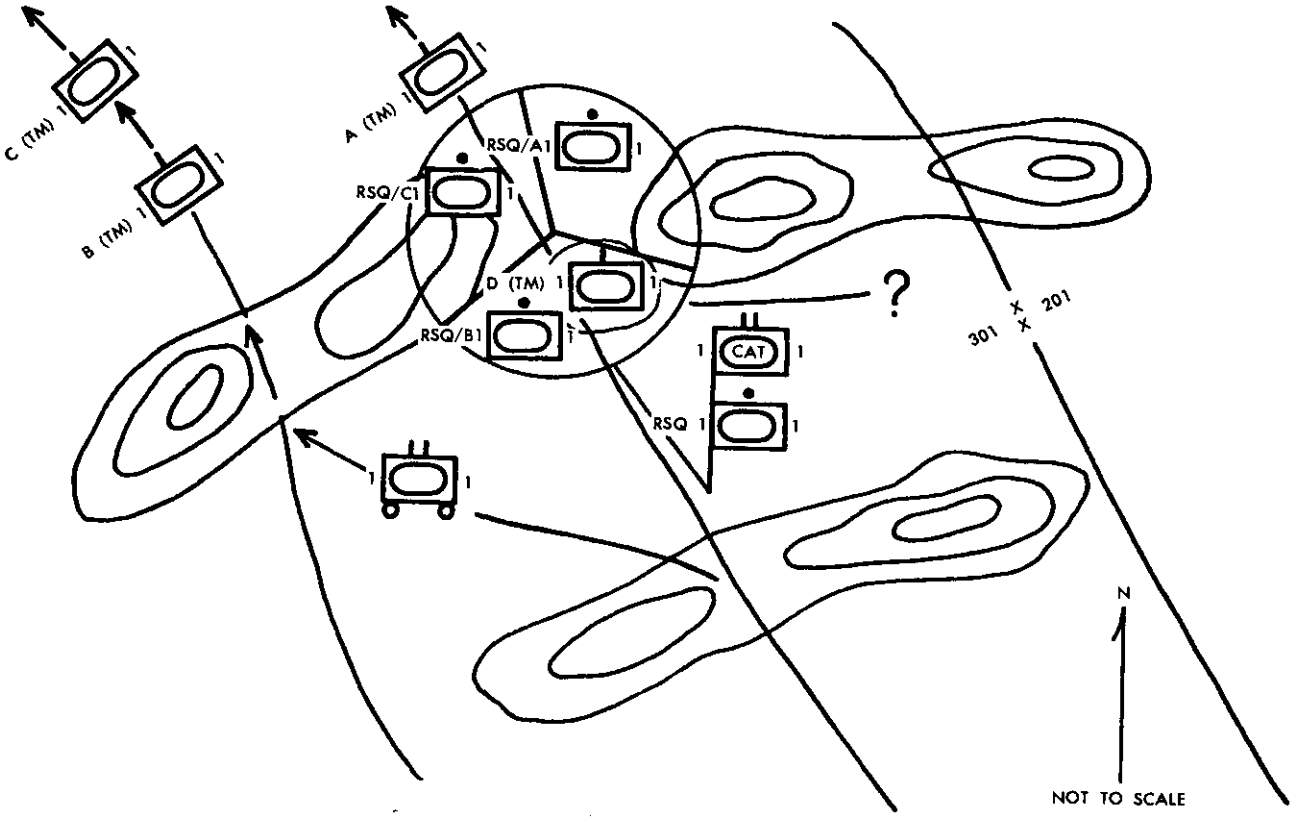

Figure 35.6. Task force continuation of tactical mission and damage control areas of responsibility.

where area damage control operations in the affected area are directed, controlled, and supervised.

c. Battalion Rescue Squad. The battalion rescue squad operating in the vicinity of the CAT command post establishes and operates a personnel casualty collecting point and a vehicle collecting point and provides general support to the company rescue squads.

d. Company Rescue Squads. Company rescue squads proceed to their assigned sectors of responsibility, conducting radiological monitoring while proceeding to and through the affected area. Once in the immediate area of the affected units, the company rescue squads perform the following tasks, in order:

(1) Establish control over the survivors and direct survivors to perform tasks within their capabilities.

(2) Administer essential first aid, sorting of casualties based on urgency and condition, and evacuation of certain personnel casualties to the battalion rescue squad personnel casualty collecting point.

(3) Evacuate operable vehicles and vehicles requiring minor repairs to the battalion rescue squad vehicle collecting point.

(4) Evacuate other materiel in priority of criticality.

(5) Perform necessary hasty decontamination of equipment at the earliest opportunity after clearing the affected area.

(6) Report contamination readings as specified in the SOP.

e. Reorganization. At designated rallying points and collecting points of the battalion rescue squad, personnel and materiel are reorganized as necessary to constitute elements capable of further combat. When possible, maximum use is made of surviving commanders of affected units to effect reorganization. In the absence of surviving commanders capable of reorganizing the units, the CAT commander will take charge of the reorganization.

196.11. Combat Command Level Operations

In cases where a battalion of a combat command is subjected to a mass destruction attack, the combat command may perform area damage control operations in the affected area by employing the combat command CAT and the provisional area damage control team of the unaffected attached units. The method of conducting a combat command level operation, with provisional area damage control units generally parallels the method described for battalion level operations.

196.12. Natural Disasters

Although not specifically described herein, measures taken and procedures and employment of area damage control provisional organizations are the same for natural disasters (e.g., floods, typhoons, etc.) as for nuclear attack.

196.13. References

a. An SOP containing actions to minimize the effects of an enemy nuclear attack is contained in appendix IX.

b. Individual and unit CBR protective measures are discussed in chapter 6 and in FM 21–40.

APPENDIX IX

SOP ACTIONS TO MINIMIZE EFFECTS OF ENEMY NUCLEAR ATTACK

(ADDED)

CLASSIFICATION

(Battalion)
FORT KNOX, KENTUCKY
1 January 19. . . .

Annex . . . . (Actions to Minimize Effects of an Enemy Nuclear Attack) to SOP

1. PURPOSE

This annex prescribes normal procedures for defense against, and actions following, enemy nuclear attack.

2. PLANNING

a. Headquarters and headquarters company organizes and designates personnel for battalion control and assessment team and battalion rescue squad (app. 1).

b. Lettered companies organize and designate personnel for company rescue squads (app. 2).

c. Commander's concept habitually must be issued in sufficient detail to permit continued and, when necessary, indepenedent action by subordinate units.

d. In the offense, commanders will:

(1) Anticipate own dispositions at critical stages of offense.

(2) Assume enemy nuclear attack against predicted dispositions at points of maximum vulnerability.

(3) Evaluate effects on own troops.

(4) Plan actions necessary to continue mission in the event of enemy nuclear attack.

e. In the defense, commanders will:

(1) Determine maximum vulnerability of own dispositions.

(2) Assume enemy nuclear attack in areas of maximum vulnerability.

(3) Estimate damage to own troops and effects on defense plan.

(4) Plan actions necessary to accomplish mission in the event of an enemy nuclear attack.

3. OPERATIONS

a. Command. Battalion executive is designated area damage control coordinator and battalion control and assessment team commander.

b. Priorities. Priority of tasks subsequent to enemy nuclear attack.

(1) Continue mission.

(2) Reestablish command and control and implement radiological survey.

(3) Determine and report combat effectiveness of damaged units.

(4) Reorganize damaged units; initiate area damage control operations.

c. Protective Measures.

(1) *Dispersion.* Maintain maximum dispersion consistent with accomplishment of mission.

(2) *Movement.* Units make maximum use of periods of poor visibility for their moves and move on multiple routes of march when possible.

(3) *Cover.* Maximum personnel remain in or near armored vehicles or dug-in positions, consistent with essential operations. Following a nuclear burst, troops seek immediate maximum protection available.

(4) *Camouflage and deception measures.* Enforce camouflage discipline and use of natural concealment at all echelons.

d. Actions Immediately Following Enemy Nuclear Attack.

(1) *Individuals and combat vehicle crews.* Establish contact with higher headquarters.

(2) *Units.*

(*a*) Report to next higher headquarters the subordinate elements out of contact.

(*b*) Reestablish communication with subordinate elements.

(*c*) Take following protective measures:

1. Take immediate maximum protection available.

2. Prepare for early movement.

3. Be prepared to displace to avoid residual fallout radiation hazard, and continue mission.

(*d*) Avoid entering or remaining in area when predicted dose rate to personnel equals or is greater than . . . . r

per hour at time of entry. Prevent cumulative dose over ....r per day or ....r per week.

Note. Actual figures are to be developed from guidance provided by higher headquarters during operations.

(*e*) Include in nuclear blast flash report:

1. ALFA (date and time of burst).
2. BRAVO (location of ground zero UMT coordinates, if known).
3. CHARLIE ..... mils (Azimuth from observer to fireball).
4. DELTA (UMT Grid coordinates of observer).
5. ECHO ..... seconds (flash-to-bang time).
6. FOXTROT ..... mils (fireball width).
7. GOLF ..... mils (cloud top angle at H + 10 minutes).
8. HOTEL ..... mils (cloud bottom angle at H + 10 minutes).
9. INDIA ..... mils (cloud width at H + 10 minutes).
10. JULIET (height of burst) (1 = surface, 2 = air, 3 = unknown).

(*f*) Follow with OPERATIONAL IMMEDIATE message, giving all available details.

(*g*) Initiate radiological monitoring.

(*h*) Report initial time of arrival and dose rate if fallout arrives in area.

e. Release of Control Elements. Companies release area damage control elements to control of control and assessment team commander on order of this headquarters.

f. Scout Platoon. Scout platoon be prepared to support area damage control operation on order of this headquarters.

4. LOGISTICS

a. Support. Area damage control elements operating in damage area will obtain required support from nearest available source.

b. Evacuation and Hospitalization.

(1) Affected units accomplish maximum self-aid.

(2) Personnel casualties will be evacuated to battalion rescue squad personnel collecting point with priority so as to provide best chance for recovery to largest number.

c. Transportation.

(1) Only vehicles engaged in, or supporting, damage control operations or engaged in tactical operations enter damaged area.

(2) Control and assessment team commander is responsible for traffic control in area of operations.

d. Services.

(1) *Decontamination.* Decontamination will be limited to that essential for evacuation of equipment from damaged area.

(2) *Priority of evacuation.*

(*a*) Communication equipment.

(*b*) Operable vehicles.

(*c*) Vehicles requiring only minor repairs.

(*d*) Other material in priority of criticality.

5. PERSONNEL

a. Strengths. Unit or control and assessment team commander reports following as soon as possible:

(1) Number and type of casualties.

(2) Effective strength of affected unit.

(3) Loss of commander if applicable.

b. Replacements. Unit commanders will insure that all incoming personnel are familiar with current procedures for survival under conditions of nuclear warfare.

c. Graves Registration Service.

(1) Evacuate deceased to battalion rescue personnel collecting point.

(2) Mass burials are permitted only on order of this headquarters.

6. CIVIL AFFAIRS

Commanders be prepared to control civilians in area of operation.

7. COMMAND

Control and assessment team command post will be as announced in implementing order.

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Appendixes:

1—Headquarters and Headquarters Company Area Damage Control Elements

2—Lettered Company Area Damage Control Elements

3—Employment of Area Damage Control Elements

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Appendix 1 (Headquarters and Headquarters Company Area Damage Control Elements) to Annex ....

1. CONTROL AND ASSESSMENT TEAM

a. Personnel.

(1) Bn Exec.
(2) S4.
(3) Radiological monitoring and survey officer.
(4) General medical officer.
(5) Communication chief.
(6) Two radio mechanics.
(7) NCO, supply (driver).
(8) Administrative clerk.
(9) Ambulance driver.
(10) Two drivers.

b. Vehicles.

(1) ¼-ton truck with AN/GRC–3 radio.
(2) ¼-ton truck with AN/VRQ–1 radio.
(3) Ambulance.
(4) ¼-ton truck with 2 AN/VRC–8's.

2. BATTALION RESCUE SQUAD

a. Personnel.

(1) Officer, battalion rescue squad leader.
(2) NCO, senior recovery mechanic.
(3) Two recovery mechanics.
(4) Tracked vehicle mechanic.
(5) NCO, aid station attendant.
(6) Ambulance driver.
(7) Ambulance attendant.
(8) Wrecker operator and assistant.
(9) Two drivers.
(10) Two assistant drivers.
(11) Driver.

b. Vehicles.

(1) Recovery vehicle, tracked, with AN/GRC–4 radio.
(2) Armored ambulance with AN/GRC–4 radio.

(3) 5-ton wrecker.
(4) Two 5-ton cargo trucks.
(5) ¼-ton with AN/VRC–16 radio.

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Appendix 2 (Lettered Company Area Damage Control Elements) to Annex ....

COMPANY RESCUE SQUAD

a. Personnel.
(1) NCO, company rescue squad leader.
(2) NCO, assistant squad leader.
(3) Mechanic-driver.
(4) Eight enlisted men.

b. Vehicles.
(1) Armored personnel carrier with AN/GRC–3 radio.
(2) ¼-ton truck with AN/VRC–8 radio.

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Appendix 3 (Employment of Area Damage Control Elements) to Annex....

1. CONTROL AND ASSESSMENT TEAM COMMAND POST

a. Upon receipt of implementing order, the control and assessment team commander dispatches a quartering party to organize the control and assessment team command post and to establish communication.

b. Command post functions as the controlling agency for all attached area damage control elements, affected units, and supporting area damage control elements. It is normally located to the immediate rear of the affected area to take advantage of the best and shortest route to the MSR or axis of supply and evacuation.

c. Simultaneously with the establishment of the control and assessment team command post, the control and assessment team commander or his liaison representative establishes contact with surviving elements, estimates damage, conducts aerial survey, and coordinates area damage control operations.

2. AUTHORIZATION OF CONTROL AND ASSESSMENT TEAM COMMANDER

a. Operational Control. The control and assessment team commander exercises operational control over all units located in his assigned area of responsibility, except units specifically exempted from his control by this headquarters.

b. Traffic Control. The control and assessment team commander is responsible for regulation and control of all traffic within and through the affected area.

c. Staff Officers. The other members of the control and assessment team and the commanders of attached and supporting technical service elements act as staff officers for the control and assessment team commander.

3. CONTROL OF AREA DAMAGE CONTROL UNITS

a. Communication. As soon as company and battalion rescue squads become operational they enter the control and assessment team command net.

b. Movement. All area damage control elements should be able to assemble, begin movement, and establish communication within 30 minutes after receipt of a fragmentary implementing order.

4. CONTROL OF AFFECTED UNIT

a. So far as possible, the control and assessment team commander uses the surviving personnel of the affected units to reestablish the chain of command. Affected units will reconstitute this chain to whatever extent they are capable by employing standard operating procedures for self-recovery and by establishing internal command and control through use of alternate facilities.

b. If communication with the affected unit has been reestablished before initiation of area damage control operations, the control

and assessment team commander immediately establishes contact with the affected unit. If there is no communication with the affected unit, the communication detachment attempts to establish contact by searching all frequencies assigned to units in the affected area. If unable to establish contact by this means, the communication detachment will establish a station as near as possible to the last known location of the senior command echelon. Radiac equipment will accompany this station to monitor residual contamination for the safety of these communication personnel. These personnel will also carry signal repair parts for communication equipment in the affected area, and a radio for the senior command echelon in the affected area. As soon as any affected unit is contacted it is notified that it is under the operational control of the control and assessment team commander and that it is to maintain communication with the control and assessment team command post.

5. CONTROL AND ASSESSMENT ACTIVITIES

On opening the control and assessment team command post, the control and assessment team commander will begin area damage control activities by:

a. Assigning sectors to subordinate area damage control elements.

b. Conducting radiological monitoring of the affected area.

(1) In no instance should area damage control operation be conducted by a control and assessment team commander inside the .... roentgen-per-hour area without the specific approval of this headquarters. Area damage control operations conducted inside the .... roentgen-per-hour area should be approved by the control and assessment team commander. Limits of areas into which subordinate control and assessment team elements will be permitted to conduct area damage control operations will be announced by control and assessment team on a continuing basis.

(2) All area damage control elements use a dosimeter to determine unit total dosages. When possible, all personnel on area damage control missions should carry a dosimeter to provide accurate individual total dose readings.

(3) Battalion rescue squads employ the radiac equipment to monitor residual radiation in areas where subordinate and supporting elements are operating. Observed intensities are reported to the control and assessment team command post every 30 minutes or immediately when a marked change occurs.

(4) It is essential that sufficient personnel in all units receive area damage control training in order to permit rotation of personnel as individual doses become excessive. Rotation of personnel is accomplished by this headquarters, based on recommendation of the control and assessment team commander.

c. Reporting combat effective units in the affected area to this headquarters.

6. ACTIVITIES OF ELEMENTS SUBORDINATE TO CONTROL AND ASSESSMENT TEAM

a. Sector commanders establish a centrally located collecting point along the outer perimeter of their assigned areas for coordination of area damage control activities in sector.

b. Battalion rescue squad and other technical service support teams normally operate in general support of units in all sectors. Their operations are controlled by the control and assessment team commander. Requests for support of these elements are submitted to the control and assessment team commander by the sector commanders.

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NG: State AG (3); units—same as Active Army except not to exceed 2 copies per unit.

USAR: Same as Active Army.

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

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