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FM 17–10

WAR DEPARTMENT

ARMORED FORCE FIELD MANUAL

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TACTICS AND TECHNIQUE

March 7, 1942

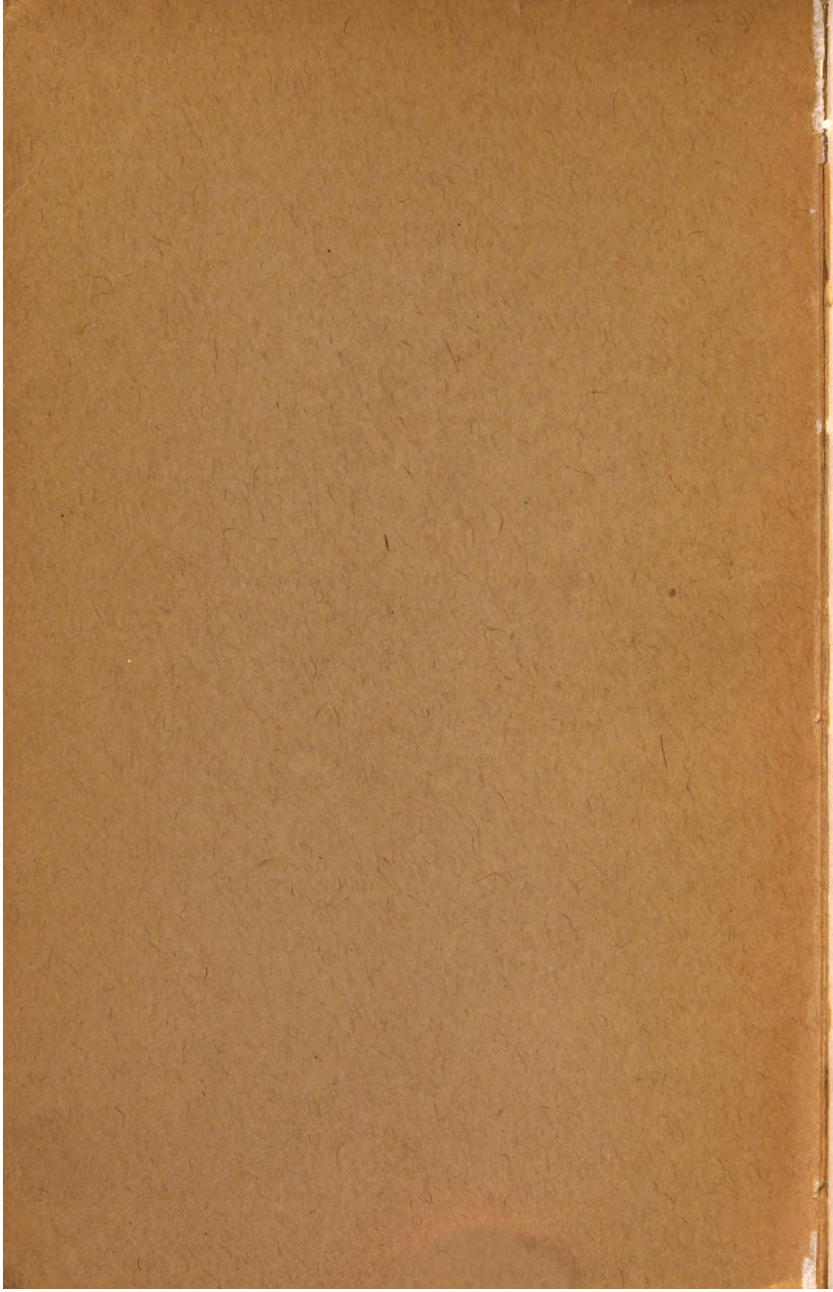
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FM 17–10

ARMORED FORCE FIELD MANUAL

TACTICS AND TECHNIQUE

Prepared under direction of the Chief of the Armored Force

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1942

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WAR DEPARTMENT,
WASHINGTON, March 7, 1942.

FM 17–10, Armored Force Field Manual, Tactics and Technique, is published for the information and guidance of all concerned.

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BY ORDER OF THE SECRETARY OF WAR:

G. C. MARSHALL,
Chief of Staff.

OFFICIAL:

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Major General,
The Adjutant General.

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ARMORED FORCE FIELD MANUAL

TACTICS AND TECHNIQUE

CHAPTER 1

DOCTRINE AND ORGANIZATION

Paragraphs

SECTION I. General 1–12
II. Individual and unit training 13–15
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SECTION I

GENERAL

■ 1. ROLE.—The role of the Armored Force and its components is the conduct of highly mobile ground warfare, primarily offensive in character, by self-sustaining units of great power and mobility, composed of specially equipped troops of the required arms and services. Combat elements of the Armored Force operate in close cooperation with combat aviation and with large units of ground troops in the accomplishment of a mission.

■ 2. TACTICAL ORGANIZATION.—*a.* The Armored Force consists of armored corps, armored divisions, and GHQ reserve tank battalions. It is composed of troops from more than one arm or service, transported in armored or other type motor vehicles.

b. The amored corps consists of a headquarters and headquarters company, two or more armored divisions, and certain organic and auxiliary units termed corps troops.

c. The armored division is a self-contained unit of the several arms and services organized tactically and administratively for independent action. It may be attached for operation with an infantry or a cavalry corps.

d. The GHQ reserve tank group contains a headquarters and headquarters detachment and three GHQ reserve tank battalions of either light or medium tanks or both.

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e. The GHQ reserve battalions are self-contained units, of either light or medium tanks, organized tactically and administratively for employment by battalion or by group to furnish additional striking power to other ground forces including armored divisions and corps. Trained as units, they are immediately adaptable to inclusion in larger groupings of other ground troops.

■ 3. CHARACTERISTICS.—The characteristics of Armored Force units are:

a. Mobility.—All combat units are mounted in armored motor vehicles.

b. Fire power.—Through a multiplicity of weapons mounted on the vehicles.

c. Armor protection.—All combat vehicles are protected by armor of varying thickness, capable of withstanding at least rifle fire.

d. Shock action.—Accomplished by the combination of the other characteristics and by the weight and crushing power of the major vehicles.

■ 4. METHODS OF EMPLOYING ELEMENTS OF ARMORED FORCE.—Operations of components of the Armored Force may, at various times or simultaneously, involve—

a. The attachment of GHQ tank battalions and groups to infantry, cavalry, and armored divisions or corps.

b. The grouping of armored divisions, corps, or GHQ tank groups with other corps or field armies for combined operations.

c. The employment, by the field or theater commander, of armored divisions and corps on independent or semi-independent missions without reinforcing logistical means, or additional supporting troops other than combat and reconnaissance aviation.

d. Operation as *task forces* wherein armored divisions or corps or, at times GHQ reserve tank units, are teamed with motorized divisions, antitank battalions, antiaircraft automatic weapons battalions, and GHQ engineer, maintenance, and supply units, closely supported by combat aviation, parachute, and other troops transported by air.

■ 5. GENERAL CONSIDERATIONS.—Larger units of the Armored Force properly utilized, either separately or in combination

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with other means, can achieve rapid decisive results in the area of employment. They are to be employed on decisive missions. They must not be frittered away on unimportant objectives. A mission far in advance of other main forces is justified when the operation will obtain decisive results, but must be closely supported by other equally mobile troops. Their proper utilization necessitates a definite appreciation and a careful consideration of the several characteristics of the Armored Force units.

a. The conditions which should exist or be created for their successful action are air superiority in the decisive area of employment, surprise, favorable terrain, and absence of or neutralization of massed defensive means.

b. The mobility of armored units permits great latitude in the choice of direction and the method of attack. The decision as to whether the attack will be executed as a turning movement, envelopment, or penetration will be determined largely by the time factor involved, by the terrain, and by the hostile dispositions, including hostile rear installations. The most suitable areas for the employment of Armored Force units are on the open flanks or through existing gaps created by penetrations of the enemy's positions.

c. The assignment of missions or objectives to armored units must be preceded by a careful consideration of the more important factors which affect the operation of the armored and other units associated in the operations. These factors are: weather, terrain throughout the entire area of contemplated operation, nature of the enemy and his methods of combat, availability of other supporting troops, and especially, adequate space and road net for the operation of the units concerned. The axis of advance of the major armored and motorized units will be along roads.

d. The most decisive results will be gained from the grouping of overpowering masses of armored units and launching them against vital objectives deep in the hostile rear. The armored mass must be supported by sufficient means to maintain its momentum until the objective has been attained.

e. The most effective and decisive application of the mobility and power of large armored and motorized combinations will often necessitate the decentralization of control to the appropriate commanders who will be guided only by the broad general plan of the higher headquarters. After the

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initiation of the operation, however, the superior commander must keep the armored unit commanders constantly informed of the situation.

f. The maximum development of the demoralizing power of the larger armored formations will be dependent in a large measure on the continuous support of adequate reconnaissance and observation aviation, and timely assistance of combat aviation in overcoming critical ground resistance beyond the ability of available artillery. This should be assured by direct arrangement between air and armored unit commanders and by adequate air-ground signal communication nets. Higher commanders can enhance the effectiveness of supporting aviation by habitually assigning the same air and ground units to work together as a task force or team.

g. The sustained mobility of armored and motorized units is dependent upon adequate timely replenishment of required supplies, especially fuel, and, to a lesser degree, oil and lubricants. Regular vehicle maintenance must be continued. When operations are to be prolonged for several days, it must be appreciated that armored and motorized units must have opportunity for daily maintenance.

h. Because of their mass employment, armored and motorized units are difficult to conceal during approach and development. Elaborate measures for deception and surprise will be required often and may involve variously: advance stockage and concealment of essential supplies; improvising and concentrating dummy armored vehicles or marked activity of actual units in localities distant from that of contemplated employment; extensive camouflage work; and rapid shifting of armored masses to the area of decisive attack.

■ 6. A TASK FORCE.—A task force is a temporary tactical grouping composed of one or more arms or services formed for a specific mission or operation. The operation of large armored formations will frequently dictate the organization of task forces. The composition of such forces will be decided only after a careful estimate of the associated means which will be required to accomplish the projected mission or operation. This estimate must consider the nature of the expected resistance, the distance to which operations are projected, the terrain to be traversed, and the troops available for the operation. The additional means to be associated with

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armored elements will vary with each situation but may comprise appropriately: infantry divisions, foot or motorized or components thereof; cavalry units; engineers; combat aviation; parachute troops; other troops transported by air; antitank battalions; antiaircraft units; and additional maintenance and supply facilities, especially for GHQ groups.

■ 7. METHODS OF OPERATION.—*a.* Offensive operations of armored units, acting either alone or as part of a combined force, are characterized by rapid thrusts into vital parts of the hostile rear followed by immediate exploitation to complete enemy demoralization. Armored division commanders coordinate and control the movement of subordinate units by appropriate assignment of routes, zones, objectives, or phase lines. Phase lines are prescribed only when required to insure coordinated action or movement of two or more units and must not involve prolonged halts thereon. The attack is massed initially, but is extended promptly in frontage and depth by the armored reconnaissance and combat elements after the hostile position is penetrated. As the operation gains momentum, reconnaissance agencies will precede combat elements at the earliest opportunity to seek out and develop soft spots through which combat elements may pass rapidly. The more time allowed for this reconnaissance, the more effective it will be. Contact once gained must be maintained.

b. Maximum advantage is taken of speed and terrain barriers to prevent or neutralize enemy countermeasures. Reconnaissance agencies provide information on which to base security measures. Other combat detachments provide immediate advance, flank, and rear security. Closely supporting motorized units protect the immediate rear and lines of communication of the armored elements. Other motorized units should relieve the armored unit commanders of concern for extended lines of communication and assure continuous logistical support. When armored units are operating as task forces, the security of the immediate supporting motorized elements will be enhanced by their following the armored combat elements as closely as possible.

c. Following the advance of armored units, other elements of task forces operate to overcome remaining hostile resistance, occupy ground gained, keep gaps open, extend and

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protect the flanks, and relieve armored units temporarily checked in order to permit their employment in a more remunerative direction. Whenever practicable, other less mobile troops will follow motorized task units as closely as possible to wipe out the last vestige of resistance, meet counterattacks, and relieve the more mobile elements for close support of the armored units.

d. In addition to establishing and maintaining local control of the air, supporting combat aviation is directed against hostile antitank dispositions, artillery and reserves, especially armored, in the immediate zone of advance. Concurrently, if available aviation suffices, it may be directed against hostile command and supply installations, targets of opportunity such as more distant reserves, and other formed bodies of troops, especially armored units.

e. In an envelopment, the support units of armored divisions and task forces may, when the situation demands, attack or contain enemy elements on the flank while tank units make the main attack.

f. Troops transported by air may be suitably employed in advance of armored units to seize critical points or to create opportunity for immediate exploitation by armored forces operating alone or as task forces.

g. Highly organized areas should be avoided. Where their attack is necessary, it will usually be advisable for other specially equipped infantry and engineer troops to breach the enemy defenses in advance or concurrently with the advance of the armored units unless heavy tanks are available to lead the attack.

h. Against equal or superior hostile armored forces, friendly armored units will avoid frontal assault and maneuver to cut off or destroy armored units supply facilities, followed by blows against the rear of enemy detachments.

■ 8. EXPLOITATION AND PURSUIT.—*a.* Large armored formations, operating separately or as part of task forces, are especially suited for exploitation and pursuit. They should be launched boldly against vital areas deep in the hostile rear. The exploitation and pursuit phase must be anticipated to insure that appropriate plans are made and timely orders issued in all echelons. There must be no relaxing of pressure on the shaken or beaten enemy. Objectives for armored units should

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be those which will halt hostile rearward movement until less mobile friendly troops can close with the enemy. Concurrently, some armored elements operate to destroy, disrupt, and paralyze enemy communication and supply.

b. Pursuit by large armored units, operating alone or as major elements of task forces, is rapid and continuous, even during hours of darkness.

c. When the operations of armored units are likely to carry them beyond practicable operating radius of organic supply means, special provision must be made by the higher commanders to place necessary supplies within operating radius of the units. Likewise, special arrangements must be made by higher headquarters for rapid communication with the widely dispersed elements of armored formations.

■ 9. DEFENSIVE SITUATIONS.—Large armored units, as part of other major forces on the defensive, are held in readiness for the counteroffensive or major counterattack. The employment of the armored units must be carefully timed and coordinated with the attack objectives of the other forces. Local air superiority during the period of the counteroffensive or major counterattack is a prerequisite to success of the operations. Usually the armored attack should be delivered to disrupt the continuity of the hostile offensive and not merely to restore the defensive position.

■ 10. LOGISTICAL CONSIDERATIONS.—*a.* Where prolonged operations of armored divisions and corps or GHQ tank units are contemplated, adequate arrangements must be made by the higher headquarters to insure timely replenishments of supplies required by the armored units. Where the armored units are required to operate at great distances from their base of supply, when continuity of supply is interrupted by enemy action, and in other emergency situations, delivery of urgent supplies may be made by air.

b. Where several armored divisions or GHQ tank units are under control of one headquarters, consideration should be given to retaining one or more division or GHQ tank units in reserve either for the purpose of extending combat operations or of relieving similar units to permit necessary maintenance and replacement operations. In this manner, continuity of the operation and necessary maintenance, rest, and replacement will be assured.

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■ 11. ORDERS.—*a.* Orders follow the general form prescribed in FM 101–5. Mission type orders will be frequent. Warning and fragmentary orders in the form of messages, overlays, and oral instructions are freely used to give early instructions to subordinates so they will have adequate time to make their reconnaissance and prepare their plans. Orders of this type, together with operation maps, aerial photographs, and standing operating procedure will reduce the scope of orders of execution to a minimum.

b. Save in the beginning of an operation, the use of formal written orders will be exceptional. Orders will normally be dictated or oral, and often fragmentary in units smaller than the corps. All commanders must be trained not only to be able to give brief clear oral orders but also to be able to act intelligently on receipt of any such orders.

c. Orders for combat must be thoroughly understood by all subordinate commanders and their units. They must be timely to permit necessary dissemination and reconnaissance by various affected echelons.

■ 12. COMMUNICATIONS.—*a.* The usual methods of communication used within armored units are visual signals, motorcycle messengers, liaison officers, radio, and command airplanes.

b. Visual signals are used within the battalion and lower units and between air and ground troops.

c. Motorcycle messengers are most efficient over short distances and are used to a maximum to reduce the amount of radio traffic.

d. Liaison officers are the most satisfactory means for transmitting instructions where time is vital or the situation is hazy. For qualifications and duties of liaison officers and their methods, see FM 101–5.

e. Radio communication is available down to include vehicle commander in platoons of armored units. In order to derive the maximum use of this agency, strict radio discipline is essential. Only essential sets are operated and the maximum use is made of a simple system of prearranged code messages.

f. Command and liaison airplanes are utilized to transmit orders, overlays, and staff officers, when the situation warrants.

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SECTION II

INDIVIDUAL AND UNIT TRAINING

■ 13. THE SOLDIER.—*a.* Man is the final and decisive element in war. Victory is gained through the application of technique and employment of matériel by troops with high morale, discipline, and the will to overcome all obstacles to attain their objectives. (See FM 21–50 and 21–100.) The following requirements are essential in developing armored units whose individuals are capable of superior performances and confident of their ability to accomplish any mission assigned.

b. A high standard of individual training attained by painstaking and meticulous attention to the smallest details is necessary to make the soldier mechanically perfect in handling his weapon, vehicle, and equipment, under all circumstances. Proficiency in these details may mean the difference between success and failure of an operation and life and death of the individual.

c. Emphasis on calisthenics and other forms of physical exercises is essential to develop the high degree of physical fitness and stamina necessary for withstanding the prolonged strain of active campaign.

d. Each individual must be kept constantly informed of the purpose of training and of the tactical situation in which he is engaged. Simulation of battle casualties among subordinate leaders in combat training to allow the soldier to carry out the mission of the combat team teaches him to accept similar responsibility in actual warfare. Realism in training, including all field exercises, must be constantly stressed by visualization of battle conditions and impressing upon all the significance of such conditions.

e. Every opportunity during training will be utilized to create enthusiasm and interest, to stimulate alertness, pride in personal appearance, sense of responsibility, and to develop initiative and esprit de corps.

■ 14. THE LEADER.—*a.* The qualities of command leadership must be developed to a high degree in all grades. The ability to analyze situations basically and quickly, to reach sound decisions, and to give expression thereto in concise and clear orders will be developed in all leaders through frequent tactical exercises.

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b. Initiative must be demanded in all grades. Mental alertness and aggressiveness, and ability to think, act, and quickly take advantage of tactical opportunities must be developed to the highest degree. In the absence of orders, each individual must use his judgment and act in accordance with the tactical situation in furtherance of the general mission.

c. A sense of duty which subordinates personal consideration to the welfare of the unit or group and a will to accept personal hazards and prolonged intensive effort in the execution of orders must be demanded.

d. Leaders must always be well forward to receive early information of the situation, make their estimate, announce their decision, and issue orders personally to the subordinate commanders.

e. Leaders must understand and appreciate the thoughts and problems of their troops. They must make every effort to provide timely necessities, insure rest, and protect their troops from unnecessary hazards.

f. Leaders must require strict and complete obedience and demand the maximum measure of sacrifice from their units when necessary to insure victory.

■ 15. THE UNIT.—*a.* The primary training objective of each unit will be the early development of an efficient, hard-striking unit which is prepared to take the field at short notice, at existing strength, and capable of conducting combined operations against an enemy equipped with modern means of warfare.

b. Success in battle depends upon the coordinated employment of all available arms and technique applicable to the situation. This coordination is only obtained through painstaking combined training of highly trained individuals and units. Tactical flexibility is based on the ability to exact definite and rigid standards of performance from individuals and units committed to action.

c. Men are grouped into units with a view to their training for and use in combat. Individuals constantly trained, quartered, and fed together develop a feeling of solidarity, which must be furthered by the greatest degree of permanence being given to squad and platoon assignments. (See FM 100–5.)

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SECTION III

RELATION WITH OTHER ARMS

■ **16. ARTILLERY.**—*a.* The role of the artillery of armored units, its characteristics, and tactical and technical employment are given in FM 100–5 and 6–20.

b. The division artillery composed of a headquarters and headquarters detachment and three artillery battalions of 105-mm howitzers is an organic part of each armored division. Each battalion has three firing batteries of six 105-mm howitzers each, a headquarters battery, and a service and ammunition battery. The battalion normally furnishes general support fires and may be attached to or support the infantry regiment in the execution of particular missions.

c. Armored artillery is organized and equipped to facilitate its employment in support of highly mobile units.

d. Observers in radio-equipped armored vehicles accompany supported units to obtain and adjust artillery fire. Air observers supplement ground observation in the adjustment of fire.

e. Antiaircraft units, equipped with weapons suitable for both air defense and antitank employment may be attached to large armored force units to provide protection of routes, particularly critical points, areas, and installations vital to armored operations.

■ **17. AVIATION.**—*a.* The role of aviation attached to or operating in support of armored force units, its characteristics, and tactical and technical employment are given in FM 1–5, 1–20, and 100–5.

b. Corps headquarters contain an aviation section that acts in an advisory and technical capacity for the corps commander and coordinates operations of attached or supporting observation and combat aviation.

c. (1) An observation squadron is attached to the armored division. It is equipped both with airplanes of high speed and sufficient range to reconnoiter the area essential to armored operations and with airplanes capable of operation from advanced landing fields.

(2) Observation aviation performs distant and battle reconnaissance (including artillery adjustment), liaison, command, and photographic missions.

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d. Combat aviation is made available by GHQ. It is employed against targets which cannot be engaged effectively by available ground weapons within the time required and supplements or extends the range of available artillery. Its chief missions in support of large armored force units are:

(1) Neutralization of hostile aviation.

(2) Neutralization of enemy artillery.

(3) Neutralization of hostile defensive installations, including antitank.

(4) Direct support of the attack.

(5) Neutralization of counterattacks, especially of armored units.

(6) Destruction, harassing, or delaying of hostile concentrations, reinforcing, pursuing, or retreating forces, and rear installations and centers of communication.

e. Transport aviation will be furnished by GHQ for the supply of elements of armored units when operating beyond the sources of normal supply or when no land communications are available.

f. Either parachute troops or air-borne troops may be employed in conjunction with the operations of armored units to secure terrain objectives on the routes of march or to seize vital points in rear of the hostile front. They may establish support groups and supply bases for a break-through.

■ 18. CHEMICAL TROOPS.—*a.* Chemical regiments (motorized), organically a part of GHQ reserve, are attached to armored units for tactical employment as needed. For details of their employment see FM 3–5 and 100–5.

b. The armored corps headquarters includes a section of chemical warfare personnel that acts in an advisory and technical capacity in the planning, execution, and supervision of gas defense measures and with decontamination of equipment.

c. Chemical weapons within the division, intended principally for smoke missions, are the 81-mm and 60-mm mortar subordinate units in the armored and infantry regiments.

d. Smoke is employed to screen troop movements from hostile observation, to reduce the effectiveness of hostile fire, to protect a flank exposed to enfilade fire, and to blind antitank guns and machine gun nests. In defense it is employed to blind hostile observation, cover a withdrawal, and aid in counterattacks.

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■ 19. ENGINEERS.—*a.* The role of the engineers with armored force units, its characteristics, and tactical and technical employment are given in FM 5–5 and 100–5.

b. An armored engineer battalion is an organic part of each armored division. It includes four combat (pioneer) companies and a bridge company. The latter is equipped with assault boats, portable ferries, and ponton and steel bridge equipage.

c. Their duties include: making bridge, water, road, and bivouac reconnaissance; strengthening, repairing, and constructing bridges; providing means for crossing streams in the presence of the enemy; reproduction and issue of maps; establishing and operating water supply points; removal of or assisting in the passage of tank obstacles and mines; and supervising and assisting in the construction of obstacles, and preparation and execution of demolitions.

■ 20. INFANTRY.—*a.* The role of the infantry with armored force units, its characteristics, and tactical and technical employment are given in FM 100–5.

b. An armored infantry regiment is an organic part of each armored division. Its combat element consists of three infantry battalions of three rifle companies each.

c. The infantry regiment may attack to drive in hostile covering forces, to develop a situation, and to seize terrain from which to launch the tank attack. It may follow closely the tank attack to wipe out remaining hostile resistance, cover the flanks of the division against a hostile threat, occupy and hold ground gained, and cover the reorganization of the tank units. It is used to establish bridgeheads and outposts. It is employed in a similar manner to that prescribed for the infantry rifle regiment in FM 7–40.

■ 21. MEDICAL SERVICE.—*a.* The role of medical troops with armored force units and their employment are given in the training regulations for that service. See FM 8–5 and paragraph 47 this manual.

b. A medical battalion is an organic part of each armored division. It includes three medical companies.

c. The medical company makes battlefield collection of casualties and establishes collecting points for the division. It is equipped for emergency surgery and first aid treatment.

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■ 22. ORDNANCE DEPARTMENT.—*a.* The functions of the ordnance with armored force units and their employment are given in FM 9–5.

b. An ordnance battalion, maintenance, is an organic part of each armored division. It includes three maintenance companies.

c. It provides spare parts for the upkeep of ordnance matériel throughout the division. It is capable of accomplishing artillery, automotive, instrument, and small arms repairs as well as ordnance vehicular maintenance. It establishes divisional ammunition distributing or control points as required.

d. Heavy maintenance elements from GHQ reserve units furnish similar services to a GHQ reserve tank group.

■ 23. QUARTERMASTER CORPS.—*a.* The functions of the quartermaster troops with armored force units and their employment are given in FM 10–5 and 100–5.

b. A battalion is an organic part of each armored division. It includes a headquarters company and two truck companies, maintains a labor pool, and is the basis of the transportation pool.

c. It operates the division railhead and gasoline and oil supply point.

d. The truck company supplements the unit trains in transporting and replenishing supplies, including ammunition.

■ 24. SIGNAL CORPS.—*a.* The role of signal troops with armored force units and their employment is set forth in FM 11–17.

b. A signal battalion and signal company are organic parts of an armored corps and division respectively.

c. The signal battalion includes a radio operation company, a wire operation company, and two construction companies.

d. The division signal company consists of a headquarters platoon, an operating platoon, and a radio platoon.

e. Within their respective units, they provide signal equipment and parts and perform radio repair and maintenance. They operate message centers and radios at the forward and rear echelons of corps and division command posts. They install, maintain, and operate telephones, telegraph, and telegraph printers.

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CHAPTER 2

TACTICAL EMPLOYMENT

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SECTION I

GENERAL

■ 25. GENERAL DOCTRINE.—*a.* The tactical employment of armored force units is based upon the doctrine set forth in FM 100–5 and chapter 1 of this manual. Their characteristics favor the striking of quick, hard blows.

b. Armored units should be assigned missions which their characteristics are designed to accomplish and, except in emergencies, should not be assigned missions that other available troops can perform satisfactorily.

c. Since tanks furnish the striking power of armored units it is necessary to understand and keep constantly in mind their capabilities and limitations in the assignment of missions. (See ch. 5.)

d. The capabilities are—

(1) High road speed: 35 to 40 mph.

(2) Ability to move cross country at speeds up to 25 mph in especially favorable terrain.

(3) Ability to cross small obstacles, ditches, and shallow streams.

(4) Ability to pass through thin woods and brush.

(5) Great fire power.

(6) Crushing ability to overrun personnel, matériel, and equipment.

(7) Armor protection for crew.

e. The limitations are—

(1) Cannot cross deep or soft-bottomed streams, marshy ground, or swamps.

(2) Cannot cross wide ditches or other large obstacles.

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(3) Cannot pass through dense woods.

(4) Heavier vehicles must avoid roads having bridges and culverts of light construction.

(5) Operations in mountainous country are generally limited to roads.

(6) Observation and control is difficult when vehicles are operated with all ports and doors closed.

(7) Vulnerable to fire of artillery and antitank weapons.

(8) Noise of engines indicates the presence of tanks which may affect the element of surprise.

(9) Fire from moving vehicles is limited in its casualty effect.

(10) Difficulty of fuel and ammunition supply.

(11) Necessity for periodic maintenance.

■ 26. TERRAIN AND WEATHER.—*a.* The terrain exercises an important and often decisive influence in tactical situations. It may be the determining factor in the decision to employ armored units on a specified mission or not. Generally the terrain will determine the tactical form of an attack and the ground over which the main attack will be launched.

b. A thorough appreciation of terrain and its effect on operations is essential to the proper command and employment of all armored units. Areas most favorable for their employment are determined from: the study of maps, reconnaissance agencies, higher and adjacent units, troops already in contact with the enemy, and personal reconnaissance by the leader or his staff.

c. Gently rolling, open terrain with occasional lightly wooded areas, affording some cover and facilities for observation, is the most favorable for operations of armored units. Desirable terrain is that which provides covered routes of approach, positions for supporting units, and permits the maximum use of the speed and maneuverability of armored vehicles.

d. Terrain broken by natural obstacles, such as unfordable streams, ravines, or streams with steep banks, marshes, cliffs, dense woods, closely spaced boulders or stumps, forces armored units either to make long detours, or follow canalized routes, limiting their maneuverability, choice of direction, and method of attack.

e. Rough, hilly, or mountainous terrain reduces the speed

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of armored troops to almost that of dismounted troops, or else restricts their movements to roads. Armored troops when restricted to roads and defiles, unless frequent "turnarounds" are available, are particularly vulnerable to attack by hostile aircraft and to antitank weapons.

f. Armored units avoid defended towns or cities when possible except when they can be surprised. Such localities are attacked by motorized infantry or other closely following troops.

g. Unfavorable weather may materially affect operations of armored force units. Rain, mud, ice, and snow may impede, limit, or prevent the employment of armored units. Extremes of temperature adversely affect both matériel and personnel. However, inclement weather may prove advantageous to the troops inured to hardships.

■ 27. COVER AND CONCEALMENT.—*a.* The discovery of unusual numbers of tank units in a given area is an indication of a probable major operation in that vicinity. The concealment of vehicles, therefore, is important at all times, particularly from aerial observation and photography. Partial concealment is of little or no value. Every practicable effort must be made to provide complete concealment.

b. Camouflage is work done to provide concealment of matériel, troops, or military works from enemy air or ground observers. To be effective, camouflage must be supervised by personnel thoroughly familiar with its principles and methods. The means employed are nets, paulins, paint, earth, branches, and grass. The fundamental rules of camouflage are covered in detail in FM 5–20 and 21–45.

c. Personnel of armored units must be thoroughly instructed in the use of natural means of camouflage available and be required to apply habitually these means to conceal themselves and vehicles.

d. The following rules governing concealment should be known and understood by all:

(1) Natural concealment should be sought before resorting to camouflage; it is simpler, requires less time, skill, and material, and is more effective. Concealment of bivouacs is much simpler in woods and villages than in the open. Vehicles are best concealed by placing them under heavy natural cover as in dense woods. In partly open country,

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they should be driven into thin woods or clumps of trees or brush.

(2) Camouflage should not be overdone. A small amount of material, judiciously employed, is frequently more effective than a mass of material. Branches of trees, brush, weeds, leaves, grass, or dirt are usually available to cover tents and vehicles that are partially or wholly exposed. Irregular patches of different material are better than solid blankets of any one kind.

(3) The worst enemies of concealment are straight lines, regularity of pattern, angles, and shadows. Therefore, ingenuity must be exercised to change or break the outline or regularity of the pattern of the object being camouflaged. Shelter tents in bivouacs, and vehicles in parks or assembly areas should always be placed in scattered, irregular formations.

(4) An aerial observer cannot see an object within a shadow; neither will an aerial photograph of the locality reveal it. Even a partial shadow crossing the object makes recognition difficult from the air. Therefore, natural concealment can be obtained by halting vehicles within shadows.

(5) Care should be taken that track imprints do not disclose the location of vehicles. Tracks may be obliterated by covering them with brush, leaves, or dirt, or by dragging over them with branches or some other means. The enemy may be further deceived by running one or more vehicles beyond the true entrance to the area and obliterating the actual entrance. In entering woods, fewer tracks will have to be obliterated if vehicles enter in column and scatter after getting under cover. Also, in dense woods, care should be taken not to knock down any more trees than absolutely necessary and then straighten up those that have been knocked down.

(6) Making paths within bivouac to concealed vehicles should be avoided, unless such paths are concealed from air observation.

(7) When foliage is used to cover vehicles and other equipment, it should be renewed daily. Wilted leaves and branches will appear different in color from natural surroundings when observed or photographed from the air. Care should also be taken in gathering natural camouflage, to avoid denuding the ground in the immediate vicinity of

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the object being camouflaged. Fresh dirt should be covered with brush, leaves, or grass.

(8) No rubbish of any kind should be allowed to accumulate about a bivouac.

(9) Fire or smoke should not be permitted near vehicles.

(10) Ruins provide one of the best means of concealment.

(11) At night necessary lights are concealed.

(12) If natural concealment is not available, vehicles halted in the open should seek very broken ground, folds in the ground, etc. Natural or artificial means available should be used to disguise their characteristic profile.

(13) Bright or shining parts of material should be covered with mud or grease.

e. Concealment in snow is much more difficult than at other times. The following points should be kept in mind: Trails get tracked with mud and melt out early, leaving a black line; snow falls through camouflage material and the holes show dark; the heat of engines and of kitchen ranges cause early melting of snow. This can be remedied by keeping activity at a minimum when snow first falls; and by covering trails, vehicles, etc., with fresh snow, replacing it as often as needed.

f. The noise of running engines, particularly those of tanks, can be heard at a considerable distance and will disclose the presence of concealed tanks to ground observers. Engines, therefore, should always be stopped as soon as vehicles have been placed under cover or concealed. This should likewise be done whenever practicable, as a means of conserving fuel.

g. The following precautions should be observed while moving to attack or in close proximity to the enemy:

(1) Use all available natural cover, whether stationary or moving.

(2) Halt preferably under trees, in thickets, or in the shadow of buildings or trees.

(3) Choose routes of approach which provide the most cover and concealment, such as ravines, draws, gulleys, or folds in the ground; avoid skylines.

(4) Avoid bottoms where vehicles may be bogged down, and clumps of bushes where sink holes, stumps, etc., may be encountered.

(5) Avoid dense woods; travel along the edges.

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(6) Approach the crests of hills and ridges slowly and look over.

(7) Avoid crossing ridge lines; back down and go around if possible.

(8) If forced to cross over open ground or ridges, move speedily.

(9) When under observation, avoid halting and exposing personnel or tops of vehicles.

(10) Avoid massing of vehicles.

(11) Avoid following the tracks of preceding vehicles when passing over soft ground, stream crossings, ditches, or similar obstacles.

(12) If time permits, and if considered essential, obliterate tank tracks by dragging suitable objects over them.

(13) When approaching the enemy, if the presence of tank units has been disclosed, deception as to direction of attack and numbers of vehicles may be obtained by running several tanks back and forth off to a flank.

SECTION II

RECONNAISSANCE

■ 28. GENERAL.—*a.* The *purpose* of reconnaissance is to gain information upon which to base strategical maneuvers or tactical operations.

b. Information desired may be of the enemy or of the terrain. Information concerning the enemy may include his location, disposition, strength, organization, capabilities, movements, attitude, equipment, and morale. Information concerning the terrain may include character of roads, streams, cover and concealment, positions, bivouac areas, and suitable areas for employment of obstacles.

c. Responsibility.—The commander of each unit is responsible for maintaining reconnaissance for information that influences his own operations, or which is required of him by the higher commander. The detailed preparation of plans and orders for reconnaissance is the function of the staff. Plans for the employment of armored force units should be based on the most careful and detailed reconnaissance practicable in the time available. Every effort must be made to obtain the information of greatest importance, i. e., the essential elements of information.

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d. Essential elements of information.—(1) (See FM 30–5.) The essential elements of information are those which the commander deems necessary or highly desirable to:

(*a*) Make a sound decision.

(*b*) Conduct a maneuver.

(*c*) Avoid surprise.

(*d*) Form details of a plan of operation.

(*e*) Permit him to revise or make a new decision.

(*f*) Accomplish his mission.

(2) To obtain this information, reconnaissance missions should be expressed in specific questions stating the information desired such as:

(*a*) *Enemy.*

Does the enemy occupy ——— position? If so, in what strength? What are his approximate dispositions?

Where is the enemy's reserve?

What is the strength and location of the enemy's advanced columns?

What supporting weapons does the enemy have?

(*b*) *Terrain.*

Are certain roads passable for all armored vehicles?

Are certain bridges intact? What is their capacity?

Are certain terrain features capable of defense by hostile or friendly troops?

Are obstacles present which affect the plan of attack or defense?

e. Routine information.—In addition to the essential elements of information prescribed by the commander, ground reconnaissance units obtain and report, at specified times or at most practicable time, as a matter of routine without additional orders and in conjunction with the execution of specific missions, information covering the following items:

(1) *Route and bridges.*—Type, condition, load, and traffic capabilities.

(2) *Landing fields.*—Location and suitability.

(3) *Utilities* (water, sewage, electric power, communication, railroads, docks).—Condition, and repair necessary.

(4) *Supplies.*—Amounts, location, type, and condition, particularly fuel, lubricants, and food.

(5) *Prepared obstacles, demolitions, mines, and contaminated areas.*—Location, extent, means of avoiding.

(6) *A continuing brief estimate of terrain.*—Fordability of

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streams; marshy and wooded areas; clear areas suitable for tank employment; areas unsuited for tank employment; commanding terrain; cover and concealment.

(7) *Hostile aircraft.*—Number of, location, time, type, altitude, direction of flight.

(8) *Hostile ground forces.*—Location and time of all hostile contacts giving strength, composition, and movements, with particular attention to location and movements of hostile mechanized forces.

(9) *Friendly troops and miscellaneous.*—Includes friendly troops within the sphere of action of the reconnaissance unit and other intelligence data not included in other items pertinent to the operation, such as weather, visibility, etc.

f. Sources of information.—The sources of information are varied and include reports from reconnaissance agencies, actual observation of terrain or physical objects, information or intelligence reports procured from other units, examination of inhabitants, prisoners, documents, aerial photographs, maps, spies, or identifications, and summaries from higher and lower echelons.

g. Reconnaissance agencies.—(1) The execution of the commander's plan for reconnaissance is the task of the reconnaissance agencies. The reconnaissance agencies and personnel available to the armored division and its elements are:

(*a*) The attached observation squadron.

(*b*) The division reconnaissance battalion, which includes three armored reconnaissance companies and a light armored (tank) company.

(*c*) An armored reconnaissance company in each armored (tank) regiment.

(*d*) The reconnaissance platoon in the headquarters company, engineer battalion, and reconnaissance and liaison section in each engineer company.

(*e*) The personal reconnaissance by the commander, staff officers, and subordinate commanders.

(*f*) Artillery reconnaissance elements.

(*g*) Scouts and patrols.

(2) The reconnaissance agencies and personnel available to the GHQ reserve tank groups and battalions are:

(*a*) Reconnaissance platoon in the group and battalion headquarters companies.

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(*b*) Personal reconnaissance by the commander, staff officers, and subordinate commanders.

(*c*) Scouts and patrols.

h. Classification.—Reconnaissance is usually classified in accordance with the location of the objective and the phase of operations as distant, close, or battle reconnaissance.

(1) Distant reconnaissance is the function of the aviation and the division reconnaissance battalion. It seeks to locate the advanced elements of the enemy forces, and maintain contact with them. It procures the information upon which the strategical and operative decisions and the plans of the high command are based. Distant reconnaissance is dealt with in FM 100–5.

(2) Close reconnaissance is the function of the regimental reconnaissance companies. It seeks to gain more detailed information for tactical operation, such as the location, strength, composition, and movements of the enemy and a reconnaissance of the terrain.

(3) Battle reconnaissance is a function of all echelons of the command and must be continuous. It includes observation of all enemy forces engaged in the action and those whose contact with our principal forces is imminent. Both air and ground troops should seek the location of hostile flanks, changes in hostile dispositions, location of hostile artillery, movement of hostile reserves, preparation for counterattacks, and indications of a withdrawal.

i. Plans for the employment of tank units require, in addition to the usual classes of reconnaissance, a special type of battle or tank reconnaissance to determine when, where, and how tanks can best be employed. Tank reconnaissance is of particular importance to all commanders of tank units. It is always made prior to an operation and when possible before orders are issued. Information may be obtained by the regular reconnaissance agencies, but will normally be obtained by personal reconnaissance or by scouts or patrols dispatched from the tank units in the area over which tanks are to operate. Information of this type must be obtained by GHQ reserve tank battalions when attached to cavalry or infantry divisions.

j. Reconnaissance in force.—When hostile resistance is encountered which cannot be brushed aside, flanked, or outflanked by the reconnaissance agencies, a reconnaissance in

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force may constitute the best method of clearing up an uncertain situation. Troops assigned to this mission may vary in strength from an armored (tank) company to a reinforced armored regiment, but must be sufficiently strong to accomplish the mission. Their action will usually consist of a local attack on a limited objective. The commander who orders a reconnaissance in force must consider the possibility that his intentions or those of the higher commander may thereby be disclosed. He must also be prepared for the eventuality of the reconnaissance in force bringing on a general engagement.

k. Zones, routes, and localities.—(1) To avoid duplication of effort, reconnaissance agencies must be assigned a zone, an axis or route, or a locality or area for reconnaissance. The boundaries thereof are not to be construed as limiting the movements of the units, but rather as definite guides as to areas of responsibility for reconnaissance. The maximum liberty of movement that the situation warrants should be allowed.

(2) When the enemy is disposed on a broad front, or when his location is in doubt, a zone of reconnaissance may be assigned. Factors to be considered in determining the width of the zone of action are the terrain; the road net; strength of forces to be employed; strength, disposition, and activity of the enemy; facilities for communication; and the time available.

(3) When information indicates the enemy's advance is by a definite route (or routes), a route (or routes) for reconnaissance is generally designated.

(4) When accurate information has disclosed the presence of the enemy in a definite area, then that locality or area is assigned for reconnaissance.

(5) In large forces, such as a division or larger, a reconnaissance line is designated marking the limit of reconnaissance between the higher and lower unit. The subordinate unit reconnoiters outward to this line, the superior unit beyond it. Either may cross the line if necessary. During an advance, the reconnaissance line is advanced from day to day so that prior to the commencement of each march stage, reconnaissance by the division has explored in advance to a distance equal to at least a day's march.

(6) Advance of reconnaissance elements will be regulated by designation of successive phase lines or objectives which

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may be crossed or passed only on orders or in accordance with a time schedule. Lateral communications between reconnaissance elements is maintained by contact, normally on phase lines, or at designated objectives.

(7) Reconnaissance phase lines should include easily identified terrain features such as roads, streams, railroads, or towns.

(8) Observation aviation should know in advance the limits of reconnaissance for the reconnaissance battalion and the route of the battalion command post.

l. Coordination.—The commander coordinates the employment of reconnaissance agencies at his disposal. He regulates their employment in such manner that they will supplement and assist one another. Duplication of effort is avoided by the assignment of reconnaissance missions and objectives and by informing subordinates concerning reconnaissance to be executed by agencies of other commanders.

m. Aggressiveness.—Reconnaissance agencies must be active and aggressive. Such missions generally require secrecy of movement. As a rule combat is avoided which is not necessary for gaining essential information. Essential information can frequently be obtained only through attack. Reconnaissance units do not hesitate to attack when their mission requires it.

n. Reserves.—Commanders initiating reconnaissance should arrange for reserve reconnaissance elements which can be employed to reinforce or extend reconnaissance to the front or flanks.

o. Communications.—(1) To insure the prompt and reliable transmission of the results of reconnaissance, the commander must regulate the establishment and maintenance of signal communication, including the coordination of communication to be used between air and ground reconnaissance agencies. When there is danger of hostile interception he may sharply restrict or prohibit the use of radio in the interest of secrecy.

(2) In the employment of ground reconnaissance agencies, the distance they are sent out, and the front to be covered, consideration must be given to the sending range of radios. Frequently reconnaissance units, particularly divisional reconnaissance, will be out beyond direct radio communication with their commanders. Under such circumstances informa-

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tion will have to be transmitted by airplane through pick-up messages, or relayed by radio through air-ground nets or reconnaissance nets of lower units.

(*a*) A liaison type airplane working with the division reconnaissance, if practicable, will speed up transmission without interfering with missions of other agencies or utilizing their radio sets which are needed for transmitting information that they have obtained.

(*b*) Shuttling of command cars until they are within radio range, or even dispatching motorcycle messengers, may be used as expedients, but have obvious disadvantages. Motorcycle messengers may, however, be utilized expeditiously for short distances between elements of the divisional or regimental reconnaissance units.

(*c*) Provision should be made in the regimental reconnaissance unit for listening in on the divisional reconnaissance net.

p. Instructions.—(1) Instructions for the execution of reconnaissance in large units may be issued in the form of an intelligence annex (see FM 30–5 and 101–5). In small units they may be included in the field order or be issued separately, in complete or fragmentary form, as instructions for reconnaissance.

(2) Instructions to reconnaissance agencies should include, in addition to the mission and essential elements of information, the following:

(*a*) Time of departure.

(*b*) Zone, areas, or route.

(*c*) Objectives and time to be reached.

(*d*) Duration.

(*e*) Reconnaissance phase lines and time to be crossed.

(*f*) Instructions concerning adjacent reconnaissance units.

(*g*) Instruction for the transmission of reports, or time reports are desired.

(*h*) Instructions about communication with observation aviation.

(*i*) Time of departure, route, and objectives of main force.

(3) In the absence of instructions, each unit executes the reconnaissance necessary to its own operations within its own zone of action and toward any exposed flanks.

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■ 29. EXECUTION OF RECONNAISSANCE.—*a. Distant reconnaissance.*—The speed and mobility of armored troops and of a mobile enemy requires air and ground reconnaissance forces to operate at great distances from the main body. (See fig. 1.)

(1) *Air.*—(*a*) Distant reconnaissance by air will be wide and deep and is usually conducted beyond the sphere of action of friendly ground forces. It will never be less than the operating range of hostile armored forces, or the equivalent of a day's march for the division, that is from 100 to 150 miles. It will normally be initiated prior to the establishment of contact between ground forces and is under control of the commander of the armored force unit.

(*b*) Time, the ever increasing depth of zone to be observed, and the fact that available aircraft are seldom adequate to perform all the missions desired, precludes detailed reconnaissance of areas off the main roads. Initially, "search" missions to locate the enemy concentrations and to provide early information of the enemy's dispositions and movements are the most important. Primarily, they should be confined to the main routes or probable localities. The commanders of armored units also need information as to the condition of roads, bridges, defiles, and general terrain features many miles ahead in order to guide their fast moving columns and to direct their reconnaissance elements in the right direction avoiding unnecessary detailed reconnaissance. This is known as route reconnaissance. Other missions, i. e. surveillance, tracking, or photographic, may be assigned. It is important, however, that the priority of missions be specified in the orders or instructions.

(*c*) The tactics and technique of air reconnaissance and observation are contained in FM 1–20.

(2) *Ground.*—(*a*) Since effective reconnaissance cannot be made at the rate of march of the division, reconnaissance elements should be pushed out sufficiently far in advance of the division to insure the timely receipt of information by the division commander. In an initial advance, prior to contact with the enemy, the divisional reconnaissance may precede the division by as much as 100 miles and usually is sent out 1 to 2 days in advance of the main body.

(*b*) When the division is moving under cover of darkness, reconnaissance should be pushed out during daylight hours to a line beyond the expected bivouac location of the division.

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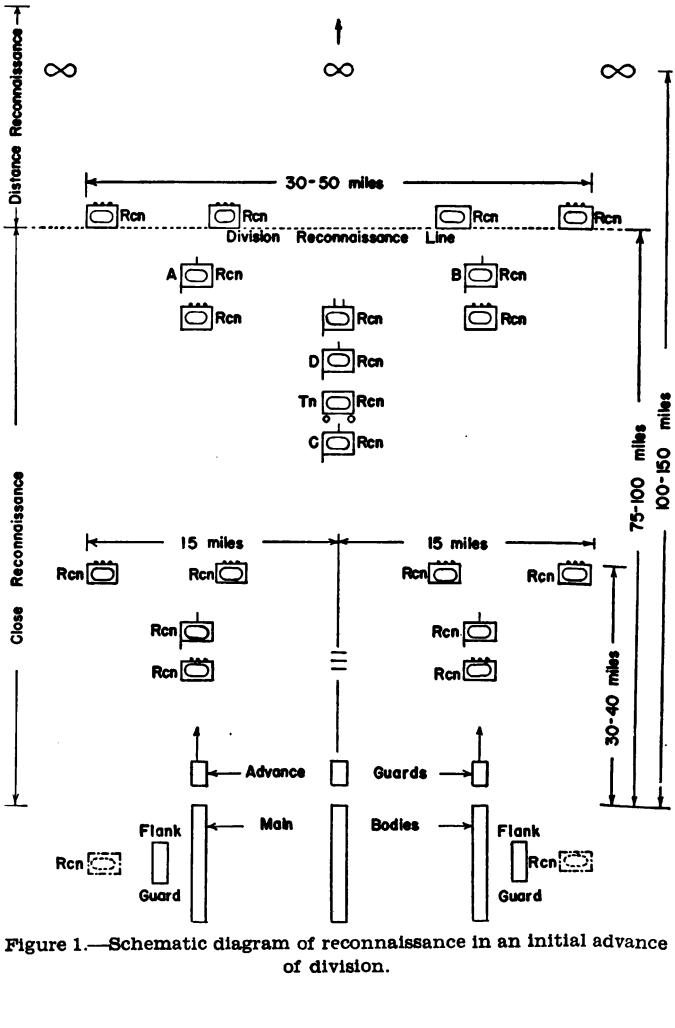


Figure 1.—Schematic diagram of reconnaissance in an initial advance of division.

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A line of observation is established during the hours of darkness to warn of the movement of hostile troops that might interfere with the march or bivouac of the division.

(*c*) In other situations reconnaissance should be sent out sufficiently early to gain their distance in front of the main body and have at their disposal the time necessary for reconnaissance.

(*d*) The divisional reconnaissance battalion may be required to cover a perimeter of as much as 150 miles. Detailed reconnaissance of such a large area is usually impracticable. The usual objectives are principal terrain features, critical points or areas, and hostile main forces previously indicated by observation aviation. The assignment of broad frontages for reconnaissance necessarily will restrict in detail the information that can be expected and may result in gaps between adjacent elements.

(*e*) In general the breadth of zone for the battalion should not exceed from 30 to 50 miles. It is determined by the situation, location, strength, and composition of the enemy, the road net and terrain, and the mission of the main body.

(*f*) Each reconnaissance platoon can reconnoiter in average terrain a front of about 5 to 7½ miles in width while advancing at the rate of approximately 12 to 15 miles per hour. Assigning two platoons to reconnaissance and one to reserve in each reconnaissance company will enable the battalion to reconnoiter on a 30-mile front while the division is moving. Initially one reconnaissance company may be held in reserve. If the rate of advance is decreased the width of reconnaissance can be correspondingly increased.

(*g*) When contact is gained, the divisional reconnaissance battalion seeks to locate enemy dispositions, including his flanks, and favorable ground for an assembly position for the attack. The methods used by the reconnaissance platoon and company are discussed in chapter 4.

(*h*) The ground reconnaissance agencies work in close cooperation with the aviation which will furnish some positive information and a very large amount of negative information. Ground agencies will develop the information that requires verification, and verify and amplify the positive information. When the aviation is prevented from getting information because of weather conditions or hostile air superiority, the ground reconnaissance must be prepared to extend its

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reconnaissance. Each arm supplements and assists the other. Team play is essential.

(*i*) The successful operation of an armored unit will be materially impeded, if not stopped, unless there is a constant flow of information from the reconnaissance agencies to the commander. Communication from air to ground is usually accomplished by radio or dropped messages; from ground to air by radio, pick-up messages, or by a prearranged system of panel signals. Information by radio from the aviation is received by the ground reconnaissance agencies at the same time it is received by the armored unit commander. In this way advantage is taken of important and vital information and reconnaissance directed accordingly. Ground elements use motorcycles to augment or replace radio communication.

(*j*) In order to give power and drive to the reconnaissance battalion and sufficient combat power to overcome minor opposition, an armored (tank) company is provided. This company will normally remain with the battalion headquarters, in a central location if the road net permits. It may be dispatched in detachments or as a unit to furnish support for reconnaissance companies when required. Where the front to be covered is so broad that prompt assistance cannot be rendered; or where critical points must be reached and held temporarily; or where hostile resistance is expected to be encountered, detachments of the armored (tank) company may be attached initially to the reconnaissance company elements. When the necessity for the attachment no longer exists, the tank elements revert to battalion control.

(*k*) Platoons and sections of the armored (tank) company execute reconnaissance over terrain that is unsuitable for wheeled vehicles. They may also be used to reduce resistance that is delaying the advance of the more lightly armored units of the battalion.

(*l*) Normally it will be desirable and necessary to attach engineers to the battalion. Elements from this detachment accompany the reconnaissance units and furnish detailed road information, with particular reference to condition of bridges and fords. The engineer detachment locates and makes initial preparations for stream crossings.

(*m*) The principal function of the battalion is reconnaissance. It should not be assigned security or combat missions that will interfere with the performance of reconnaissance.

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(*n*) Provisions must be made for replenishment of rations, fuel, and ammunition and for maintenance of vehicles.

b. Close reconnaissance.—When contact with the enemy is imminent, reconnaissance is intensified. More detailed information will be required on points of decisive importance near the probable or actual zone of contact of the ground forces. Air and ground reconnaissance agencies by continuous reconnaissance endeavor to determine the contour and identification of the enemy's leading elements, the frontage and depth of the enemy's movement, his assembly position, his measures for antiaircraft defense, the location of his airdromes, detraining stations, principal supply establishments, and any changes when they occur.

(1) *Air.*—The primary mission of the air reconnaissance is to extend in depth the zone under observation by ground reconnaissance and to secure information which will enable ground units to give effective direction to their reconnaissance activities. The principal objectives are roads, communication centers, and exits of woods and villages. These objectives are closely observed both day and night with a view to discovering the location of the enemy's main forces and their direction of movement. Flights made shortly after dawn and before dark offer a favorable opportunity for discovery of night movements. The missions for the observation aviation include: route reconnaissance, march liaison, surveillance, search, tracking, and photographic missions.

(2) *Ground.*—(*a*) Regimental reconnaissance is conducted under the direction of the regimental commander by the methods set forth in chapter 4. The reconnaissance elements precedes the main body of the regiment by 3 to 4 hours and covers the entire width of the regimental zone. The regiment follows on one or more axial roads. The extent of the front or area covered by this reconnaissance depends upon the mission, amount, and kind of resistance expected, the available road net, and front covered by the regiment. A reconnaissance company under normal conditions can reconnoiter a zone about 15 miles in width, containing three or four axial roads and frequent lateral roads, at the rate of from 9 to 12 miles per hour.

(*b*) Reconnaissance operations at night are generally restricted to movements of elements to initial positions from which they may continue or commence operations at dawn.

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Night reconnaissance limits observations and requires slower speeds and more extensive dismounted observation. Movement by armored reconnaissance vehicles at night is limited to roads, except for short periods over favorable terrain or during bright moonlight.

(*c*) Detailed reconnaissance of important areas not covered by elements from reconnaissance units may be executed by patrols from the main body or at times by motorcycle scouts. The details of employment of scouts and patrols are set forth in chapter 3.

(*d*) Frequently, reconnaissance elements will be required to attack to obtain exact information of hostile dispositions, or they may encounter hostile mechanized counterreconnaissance units. When this is anticipated, tank elements may be attached to reinforce the reconnaissance platoons. Normally, tank elements are not used for other than battle reconnaissance.

(*e*) Engineer and artillery reconnaissance personnel accompany the regimental reconnaissance company.

(*f*) The length of missions is dependent upon the ability to supply gasoline and oil, endurance of personnel, and reservicing and maintenance of vehicles.

c. Battle reconnaissance.—Battle reconnaissance begins when units initiate development for combat.

(1) *Air.*—(*a*) In the assignment of missions during battle, consideration must be given to the number of missions that can be effectively executed with the aviation available. Of especial importance are the reconnaissance of movements of hostile troops in rear areas and on the flanks of the battle position and the surveillance of hostile detrucking and detraining points. Air reconnaissance and surveillance of areas beyond the zone of reconnaissance of front line troops and divisional ground reconnaissance will be continuous before, during, and after battle.

(*b*) Battle reconnaissance missions report all dispositions and activities in the immediate battle area with particular emphasis on the following:

1. Gaps in enemy positions, enemy reserves, command posts, railhead, supply and distributing points, and tank and troop concentrations.
2. Mechanized forces, artillery and antitank guns, mines and demolitions, road and area blocks.

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3. Conditions of routes, bridges, and terrain on the projected route of the armored units and between them and hostile armored forces.
4. Artillery missions, which include the location of artillery targets, adjustment of artillery fire, report of effect of fire, and general surveillance of scheduled artillery fires and enemy activity. Airplanes assigned to artillery missions operate under direction of the artillery commander.

(*c*) Priority is given to radio in communicating information to command posts, ground reconnaissance elements, and to the artillery. This method as compared to using dropped messages expedites the action and quickens the battle reconnaissance by obviating the necessity for the airplane returning many miles with each important item of information. Moreover, it permits the command post and interested subordinate elements in the divisions to keep abreast of the situation. In case of radio failure or silence, drop messages may be resorted to. This method may cause delay in locating the various command posts.

(*d*) A certain amount of battle liaison can be performed simultaneously by airplanes on battle reconnaissance missions. However, when enemy aerial and antiaircraft activity permits, battle liaison may be performed satisfactorily by the slower, liaison type of airplane. Battle liaison is concerned with:

1. Visual location of front lines and tactical disposition of advanced elements.
2. General locations and unusual conditions affecting adjacent units.
3. Command and liaison missions, including the transmission of information and instructions between the superior commander and his artillery, infantry and other subordinate commanders; also all observation missions executed for special information for the superior commander. These missions may be ordered for the purpose of obtaining or verifying information as to the tactical situation of the units engaged, or to obtain other urgent information.

(*e*) Radio provides the quickest means of communication both from air to ground and ground to air. Where other

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means are available, they should be utilized, keeping the net free and available for emergency messages. Such additional means are; from air to ground: dropped messages, rocket signals, and simple airplane maneuvers; from ground to air: pick-up messages, or by prearranged system of panel or other signals.

(2) *Ground.*—(*a*) Immediately preceding combat, as the enemy main force is approached, detailed reconnaissance of hostile dispositions and of terrain is intensified by all reconnaissance agencies.

1. As the regimental reconnaissance companies and security detachments of the various columns make contact with the enemy, the reconnaissance battalion may be relieved by them and move to the flanks and continue reconnaissance against the hostile flanks and rear.

2. Elements of the reconnaissance battalion in contact with the enemy maintain contact during combat. In this case regimental reconnaissance companies may be attached to the reconnaissance battalion to continue reconnaissance to the flanks and rear.

(*b*) During combat the division reconnaissance elements gain contact with the enemy by working through gaps and around the flanks and rear and ascertain the strength, composition, and dispositions of the enemy main force and the approach of enemy reinforcements. When ordered, the reconnaissance elements avail themselves of every opportunity to harass enemy command and supply installations, reserves, or reinforcements without becoming engaged in combat at the expense of adequate reconnaissance.

1. Where the terrain or the situation prohibits further reconnaissance to the front during battle, the divisional reconnaissance battalion may be ordered to protect an exposed flank or the rear of the division and give timely warning of approaching air and tank attacks. It may be withdrawn into division reserve to reservice and recuperate pending further missions.

2. Regimental reconnaissance units when no longer able to perform reconnaissance to the front proceed to the flanks of their unit to secure them

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during combat and give warning of air and tank attacks.

(*c*) After combat, the reconnaissance battalion moves either around the flanks or through a gap in the hostile front to determine the routes of withdrawal of the hostile main column; whether his withdrawal is well organized or in disorder; the covering positions with reference to his columns; and whether or not critical points on his routes are held in strength. Contact must be maintained.

(*d*) When the battle results in the withdrawal of our own forces, contact with the enemy must be maintained. The delaying force must be constantly informed of the progress of the hostile troops.

1. Divisional reconnaissance towards the enemy will be extended to the flanks to obtain information of the direction of the main threat of the enemy's pursuit or exploitation.
2. The reconnaissance battalion may be ordered to delay and harass the enemy by action against his head and flanks while continuing reconnaissance.
3. Reconnaissance in the direction of withdrawal must be instituted to insure that the routes of withdrawal are free of enemy and clear of obstacles.

(*e*) After combat, the regimental reconnaissance companies prepare to assist in the exploitation, pursuit, or withdrawal of their regiment in the same manner as the divisional reconnaissance units function with the division. A portion of the regimental reconnaissance may be attached to rear or flank guards when necessary to further the mission of these security detachments. (See sec. III.)

d. Tank reconnaissance.—This type of reconnaissance is conducted prior to an operation when the use of tanks is contemplated. It is made to determine: the location, capacity, concealment, and suitability of positions; the routes to selected positions; the terrain over which tanks may operate; and the allotment of tanks.

(1) The items to be considered regarding positions include in general:

(*a*) Routes into and within the assembly or intermediate position.

(*b*) Available routes to point of probable subsequent activities.

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(*c*) Available routes to alternate positions.
(*d*) Water (quantity, quality, and reliability).
(*e*) Cover and concealment.
(*f*) Capacity and suitability.
(*g*) Standings for vehicles under all weather conditions.
(*h*) Protection from hostile fire.
(*i*) Suitability for local defense.
(*j*) Shelter for maintenance activities.
(*k*) Assignment of areas to subordinate units.
(*l*) Tactical soundness of location.

(2) Prior to any movement of tank units, principle routes and alternate routes should be thoroughly reconnoitered and a suitable system established for marking the routes and furnishing guides. In reconnoitering routes, consideration must be given to the following:

(*a*) Means of identification day or night; i. e., by landmarks, sketches, description, map reference, or aerial photographs.

(*b*) Critical points and areas for location of guides and route markers.

(*c*) Distance over entire route and important parts thereof and time required to traverse them.

(d) Detailed data on routes, such as kind (road, trail, or cross country); width (one-way or two-way); grades; surface (firmness, smoothness); defiles; availability; probable effect of changes in the weather; and practical speeds day or night, wet or dry.

(*e*) Cover and concealment, including defilade.

(*f*) Fords; whether depth and conditions of bottom and approaches permit crossing, and whether water level is rising or falling.

(*g*) Bridges, including location, size, kind, capacity, condition, and material required for reinforcement. Also possibility of detouring around them.

(*h*) Tank obstacles including mines and contaminated areas; their location, nature, and possibility of removing, neutralizing, or avoiding them.

(*i*) Friendly installations, including steps necessary to prevent destruction of telephone wire, point of crossing field works, or work and material necessary to insure expeditious crossing.

(*j*) Routes for passage through friendly lines.

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(*k*) Routes for wheeled transportation forward to the line of departure.

(*l*) Comparative desirability of all routes.

e. Personal reconnaissance.—In preparing for combat, personal reconnaissance of the terrain by the commander, staff officers, and subordinate commanders, under protection of leading elements, is conducted whenever possible to supplement and verify reports of reconnaissance agencies.

■ 30. TRANSMISSION OF INFORMATION.—*a.* All commanders are responsible that their immediate and lower unit commanders are promptly and fully informed of the situation.

b. Neighboring units and reconnaissance agencies when meeting habitually exchange pertinent information. Reconnaissance elements in contact with the enemy cooperate with reconnaissance elements and security detachments that may be employed in the interval between the main force and the reconnaissance elements in contact. Information of vital interest to these reconnaissance elements and security detachments is transmitted through "listening in" radio sets, dropped messages from airplanes, or by messengers.

c. First contact with the enemy and new identifications are always reported by the most rapid means available. Negative reports must be submitted with the same promptness as positive information.

d. Prisoners, inhabitants, messages from patrols, and documents are examined by the reconnaissance unit or detachment commander and forwarded to the main body by the quickest and most reliable means available. Radio, airplanes, scout cars, motorcycles, or impressed motor transportation may be used. In friendly or occupied territory commercial wires should be used whenever practicable.

e. Captured prisoners are evacuated by any available means, together with a digest of their individual statements.

f. Units in contact, although closely engaged in combat, are not relieved of the responsibility of making reports as often as desired by the higher commander. In order to offset the failure to receive a report, commanders must make provision for obtaining prompt information by special reconnaissance and by sending liaison agents to higher, subordinate, or adjacent units.

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g. Artillery observers and liaison officers transmit to the higher commander, over their own communication systems, important information which might otherwise be delayed in transmission.

■ 31. SUMMARY.—*a.* The prompt employment of armored force units necessitates early information of the enemy and of the terrain in order for the commander to formulate sound plans and make prompt decisions.

b. All available reconnaissance agencies must be used boldly to gain and maintain contact and obtain information.

c. Reconnaissance agencies must be dispatched in advance of the main force in time to allow for proper reconnaissance of the designated zones, routes, or localities and to get information back to the commander in time to be of value.

d. Information must be transmitted by the quickest and most reliable means available.

e. Prior to combat, personal reconnaissance by the commander, staff officers, and subordinate commanders must supplement and verify reports of reconnaissance agencies.

f. All reconnaissance personnel must be trained to note and report on, suitable terrain for the employment of tanks; possible emergency landing fields; water and gasoline supply sources; and similar items of vital importance to armored force units.

g. The successful operation of an armored force is dependent upon a constant flow of information to the commander.

SECTION III

SECURITY

■ 32. GENERAL.—*a. Security.*—Security embraces all measures taken by a command to protect itself against annoyance, surprise, attack, observation, and interference by the enemy. It includes the special measures taken for protection against hostile aviation and ground forces, including mechanized and chemical attacks. Security is always necessary, whether in movement, at the halt, or in combat. In bivouac and in movement, security is provided in all directions. Adequate and timely information is the basis of all security measures. Continuous reconnaissance is therefore an essential part of security. Security retains freedom of maneuver for the commander.

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b. Responsibility.—The commander of each unit is responsible for the security of his command. This includes the protection of his lines of communication, unless such protection is furnished by the higher commander. The superior commander prescribes security measures for the protection of the command as a whole or coordinates those adopted by subordinate commanders. He insures that measures adopted are appropriate to the hostile threat. Subordinate commanders provide additional security required for their own local protection. When contact is imminent, security measures are increased.

c. Warning.—All security measures include an adequate warning service consisting of observers and the means of signal communication. In this manner changes in hostile dispositions and other operations on the ground and in the air are known early. Special measures are taken to warn of the approach of hostile mechanized or air forces.

■ 33. SECURITY AGAINST GROUND FORCES.—The principal security measures against ground forces include reconnaissance, the employment of security detachments, the distribution, formation, and mobility of units, and utilization of terrain.

a. Reconnaissance.—While reconnaissance is closely allied with security, reconnaissance and security forces operate in accordance with different considerations. Reconnaissance influences security by indicating to the commander the measures to be taken to protect his forces. Under certain conditions it may be the only measure employed for security. Information furnished through reconnaissance is a guide to the commander for determining the strength, composition, and disposition of his security detachments.

b. Security detachments.—(1) *General.*—Security detachments are elements of a command assigned to protect the main body. Such detachments are always necessary whether in movement, at the halt, or in combat. On the march, security detachments are called advance guards, rear guards, flank guards, and march outposts; in camp, in bivouac, or in a defensive position, they are called outposts; during development for combat, covering detachments; and in combat, combat patrols. (See FM 100–5.)

(2) *Missions.*—In general, the mission of a security detachment is to furnish the command with information rela-

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tive to the enemy, to protect the command against surprise, observation, and interference by hostile ground forces, and to maintain the freedom of maneuver for the command by gaining the time and space it requires to make the necessary dispositions. The priority given to these missions embodying reconnaissance, counterreconnaissance, and resistance varies with the situation and the expressed intentions of the commander.

(*a*) Information of the enemy in proximity is obtained by the reconnaissance elements or combat patrols from the security detachment.

(*b*) Protection of the main body from surprise, observation, and interference is accomplished by preventing the enemy firing into the main body and from observing the size, dispositions, and composition of the main body; and by holding the enemy and gaining time for the main body to deploy before coming under effective fire.

(*c*) Freedom of maneuver of the main body is insured by the security detachment which, according to circumstances, attacks, resists, or delays the hostile forces.

(3) *Strength.*—The strength of a security detachment depends upon the mission assigned it, the terrain, proximity of the enemy, and the size, composition, and physical condition of the command. In certain situations security detachments constitute a partial commitment of the strength of a command to action. They are given sufficient strength to preserve freedom of action for the main body and no more. As far as practicable, tactical unity is preserved in the detail of security detachments.

(4) *Formations of security detachments.*—There is a similarity in the *formation* of advance, flank, and rear guards and outposts. Each comprise groups which send out patrols or post sentinels for observation. These reconnaissance groups are reinforced by a support, the principal element of resistance. In large security detachments, a reserve is provided. The reserve constitutes the principal maneuvering and reinforcing element for offensive or defensive action as determined by the mission of the security detachment. These missions in turn depend upon the plan for the subsequent employment of the command as a whole.

(5) *Distances or time interval.*—(*a*) The distances or time interval between the main body and the security de-

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tachments and between subdivisions of the security detachments will vary with the size and mission of the security detachment, visibility and terrain, and strength, composition, and proximity of the enemy. It should be sufficient to allow the security detachments time to cope with small hostile forces, to allow successive elements of the detachment space to maneuver, and to secure the uninterrupted movement of the main body.

(*b*) The normal distances between vehicles and units comprising elements of security detachments on the march will be those prescribed for tactical marches. (See sec. VII.) Fixed or routine distances cannot be prescribed for all movements of detachments as terrain, composition, mission, hostile air activity, and many other factors will influence the conduct of the movement.

(*c*) When operating in darkness, fog, or in close country, distances maintained will be less than when operating in daylight, clear weather, or in open country. Distances between the main body and security detachments and between subdivisions of the security detachments should be reduced to that consistent with control; between vehicles it should be reduced to that consistent with visual communication with the vehicle immediately preceding and following.

(6) *Rate of march.*—The march order prescribes the rate of march for the command and the distance between the security detachments and the main body. The main body regulates the rate of march whenever the command must maintain a certain rate of march to reach a designated place at a prescribed time. When contact is imminent, the advance guard regulates the march.

(7) *Communication.*—(*a*) Communication between the elements of the security detachment and between the security detachments and the main body is maintained by the quickest means available. Radio, except when radio silence is necessary, or motorcycle messengers are the principal means employed. The commander and leader of each element of the security detachment have radio equipped vehicles. In addition, one or more motorcyclist should accompany the security detachment commander for messenger service.

(*b*) Leaders of security detachments send information

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promptly. Promptness is vital because of the mobility of all units.

(8) *Control.*—(*a*) Control is obtained by means of radio, visual signals, connecting files, or, the main body commander may designate phase lines, control points, assembly positions, or message relay points, when such are necessary to insure control and facilitate communications.

(*b*) The normal drill signals for "halt," "forward," and "assembly," and simple improvised signals to indicate "enemy in sight" or "all clear" are used.

(*c*) Contact between elements of security detachments and between the main body and security detachments is maintained by connecting groups or files. (See par. 34.)

(9) *Movement.*—Security detachments on the march regulate their movements so as to give the main body the protection required by the tactical situation and offered by the terrain. When contact is imminent, they move by bounds as outlined in the following subparagraphs. When darkness, fog, or rapid rate of march of the main body makes the movement by bounds impracticable or inadvisable, movement is continuous and at a prescribed rate.

(*a*) An advance by bounds is accomplished by a forward element gaining distance over the one in rear to reach some important point which possesses tactical advantage either for observation or combat. The smaller the element, the more easily its speed can be changed, and the shorter and more frequent are its bounds.

(*b*) A bound of a forward element should not be so great as to place it beyond supporting distance of the next succeeding element.

(*c*) A bound of a rear element should be under the protection of the element next in front.

(*d*) An advance by bounds has several important advantages. It—

Enables an element to reconnoiter the terrain before the following element has closed up.

Permits the crossing of terrain that may be under hostile observation or fire in the shortest time.

Offers opportunities for the interrogation of inhabitants, and for servicing of vehicles.

Offers opportunities to coordinate the advance.

c. Distribution of units.—The distribution of units in the

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main body is made in accordance with their probable tactical employment. Each unit makes provision for prompt formation and movement to facilitate the command's readiness for action.

d. Utilization of terrain.—Terrain and the road net influence the commander in his selection of positions or routes for the main body and for the security detachments. A map study, supplemented by air and ground reconnaissance, will disclose terrain which may afford protection to the command while in movement or at the halt. A consideration of the road net and terrain will also be a determining factor in the location of the security detachments with respect to the main body.

■ 34. CONNECTING GROUPS (FILES).—*a.* A connecting group is a detachment detailed by a force to maintain contact (liaison) with a neighboring force or between units (elements) of a force on the march. Elements of a connecting group used within a march column are called connecting files.

(1) Connecting groups are used to maintain contact with adjacent forces prior to and during combat.

(2) They are used between units within march columns where distance limits visual communication.

(3) They are always used during night marches within a march column.

(4) Within the main body, connecting groups are furnished from the unit in rear to maintain contact with the preceding unit.

(5) Within a security detachment, connecting groups are furnished by the larger element to maintain contact with the next smaller element. For example, from the main body to the advance guard (flank or rear guard), within the advance guard from the support to the advance party.

(6) Connecting groups are especially useful when:

(*a*) Observation is limited because of terrain features or weather.

(*b*) A march column passes through a city or large town.

(*c*) The route of march has many changes of direction.

(*d*) The route of the preceding element is difficult to follow.

(7) Connecting groups are not to be confused with reconnaissance or combat patrols, although their missions in certain situations are similar.

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b. Mission.—The primary mission of a connecting group is liaison. Specifically its duties are to—

(1) Keep the commander of the force from which detailed informed of the location and progress of neighboring units.

(2) Observe and report any penetrating hostile force and oppose such force until arrival of reinforcements or until the threat has ceased.

(3) Maintain connections and liaison within a march column.

c. Strength and composition.—(1) The strength of a connecting group depends upon its mission. When its mission is one of liaison, it may be small; when the distance between adjacent forces is great and hostile threat exists, it is larger. It varies from two motorcyclists to a platoon.

(2) For liaison with adjacent units, scout car, half-track, ¼-ton truck, or tank elements may be used.

(3) For liaison on the march between armored units, such groups consist of two or more motorcyclists or ¼-ton trucks. The number of motorcyclists detailed for this purpose will depend upon the distance between units, the terrain, visibility, and the number of motorcyclists available.

d. Formations and methods of operation.—(1) Formations for connecting groups vary with their mission, terrain, and hostile situation.

(2) For contact and liaison with an adjacent force, a patrol formation is used.

(3) For contact and liaison within a march column, a connecting group usually marches in the interval between the units to which its mission applies.

(*a*) Whenever visual contact is broken, connecting files, preferably in pairs, are detached from the group to maintain visual contact. When visual contact is regained they close on the connecting group leader at increased speed, if in rear of the leader; or halt and await his arrival, if in front of the leader.

(*b*) When the number of connecting files is limited and visual contact cannot be maintained because of distance or terrain, connecting files move by bounds.

■ 35. COMBAT PATROLS.—*a. Purpose.*—(1) Combat patrols are security detachments sent out to the front, flanks, and rear to protect the main body or the detachment from which sent out.

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(2) Units engaged in combat employ combat patrols for their protection.

b. Mission.—The primary mission of combat patrols is security. Specifically, their duties are to—

(1) Observe the terrain for hostile dispositions and movement.

(2) Gain contact with the enemy in a close situation and furnish timely information of enemy movements towards or around the flanks.

(3) Drive off small enemy forces which threaten the front, flanks, and rear, and contain larger forces until suitable preparations can be made to oppose them.

c. Strength and composition.—The strength of a combat patrol depends upon the force from which detailed, the enemy, and the terrain. It may consist of a pair of motorcyclists, one or more ¼-ton trucks, a section of half-tracks, or a section or platoon of tanks.

d. Formation and methods of operation.—Combat patrols operate under orders from the commander of the force from which they are detailed. The formation in which they move is similar to that prescribed for reconnaissance patrols. Their conduct is different in that combat is usually required for the accomplishment of their missions. They regulate their movements upon the body from which detached.

■ 36. ADVANCE GUARDS.—*a. General.*—An advance guard is a security detachment which precedes the main body on the march.

b. Mission and duties.—The mission of an advance guard is to insure the uninterrupted advance of the main body and to protect it against surprise and observation by hostile ground forces. Specifically, its duties are to—

(1) Guard against surprise and to obtain information by reconnoitering to the front and flanks.

(2) Push back small parties of the enemy and to prevent their observing, firing upon, or delaying the main body.

(3) Check the enemy's advance in force long enough to permit the main body to prepare for action.

(4) Determine the strength and location of the hostile lines and flanks when the enemy is encountered on the defensive, but to avoid bringing on a general engagement unless empowered to do so.

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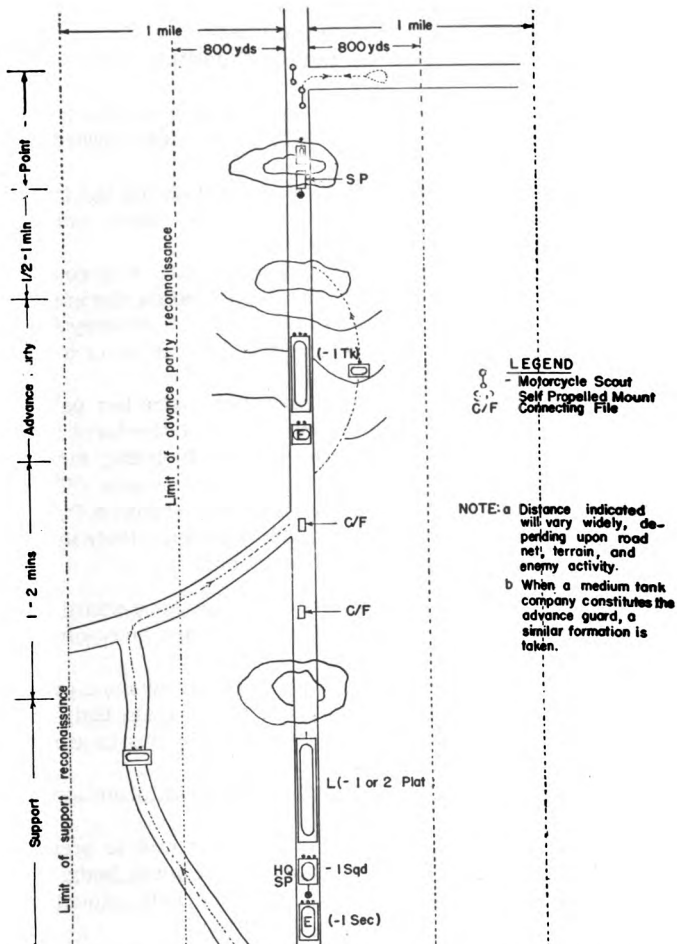


FIGURE 2.—Schematic diagram of advance guard for regiment.

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(5) Remove obstacles, repair roads, and facilitate in every practicable way the uninterrupted march of the column.

(6) Seize or hold such terrain features as will facilitate the successful execution of the commander's plan for his command as a whole.

c. Strength and composition.—(1) The strength of an advance guard for armored force units varies from a small fraction to about one-fourth of the command. From front to rear it consists of a point, advance party, support, and reserve. In an advance guard consisting of less than a battalion, the reserve is generally omitted. Figure 2 may be used as a guide but distances indicated will vary widely, depending upon road net, terrain, and similar items. The following are suggested as appropriate advance guards for the forces indicated:

For a platoon—Point	One or two solo motorcycles and ¼-ton truck, command; one car, half-track, or tank.
For a company—Point	Two solo motorcycles.
	One ¼-ton truck.
Advance party.	One section, armored cars (half-tracks, or tanks).
For a battalion—Point	Same as for company and one self-propelled mount.
Advance party.	One mortar squad.
	One tank platoon.
	One section engineer platoon.
For a regiment—Point	Same as for company.
Advance party.	Same as for battalion.
Support	One tank company (less 1 or 2 platoons).
	One mortar platoon.
	One engineer platoon (less section with advance party).
	One field artillery battery.
For a combat command group—Point	Same as for company.
Advance party	Same as for battalion.
Support	Same as for regiment.

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	Reserve	One tank battalion (less 1 or 2 companies).
		One engineer company (less 1 platoon).
		One field artillery battery.
For a division—	Point	Same as for company.
	Advance party.	Same as for battalion.
	Support	Same as for regiment.
	Reserve	Same as for combat command group.

(2) At night the advance guard for battalions and larger units may be composed of infantry and engineer elements.

(3) If any portions of the advance guard are unnecessary, the rear elements are the first omitted. The point is always present.

d. Distances.—Within the advance guard the following are considered satisfactory limits during daylight: (See fig. 2.)

Main body to reserve—5 to 10 minutes.
Reserve to support—3 to 5 minutes.
Support to advance party—1 to 2 minutes.
Advance party to point—½ to 1 minute.

e. Rate of march.—When the movement of the main body is dependent upon information which the advance guard obtains or upon the actions of the latter, the advance guard regulates the rate of march. At night it is usual for the advance guard to regulate the rate of march.

f. Main body commander.—(1) The main body commander issues the order for the movement of his troops, and prescribes the size and composition of the advance guard or guards to be employed.

(2) He issues the necessary instructions to insure the operation of the advance guard in furtherance of his general plans, and to control its progress and movement.

(3) If the command is marching in two or more columns, orders to the advance guards may prescribe phase lines, selected with regard to the road net and terrain on which periodic control is established and necessary instructions for the coordination of the advance guards.

(4) During the march he may join the advance guard commander, thus keeping himself informed of the situation

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in his front, and keeping the latter advised of any changes in his plans he may deem necessary to make.

g. Advance guard commander.—(1) Upon receipt of a march order the advance guard commander issues the necessary orders for the disposition and movement of the advance guard.

(2) During the advance he may control the advance guard from any position. His usual position is in rear of the advance party.

(3) When the enemy is encountered he makes a rapid personal reconnaissance and decision for the employment of the advance guard as follows:

(*a*) To employ any part of the advance guard as necessary to dislodge the enemy in time to prevent delay of the march of the main body.

(*b*) To establish a defensive position to cover the approach march and offensive action of the main body.

(*c*) To contain or delay a hostile force, permitting the main body to continue its advance.

(4) When the leading elements of the advance guard engage the enemy, the advance guard commander moves forward close to the axis of movement of the advance guard to observe the action and to keep the commander of the main body informed of the situation. When the enemy has been disposed of he reorganizes the advance guard elements rapidly and continues the advance.

h. Point commander.—(1) The point commander is responsible for the conduct of the point. In large advance guards, the point commander may be mounted on a ¼-ton truck and ride wherever he deems his presence necessary. His usual position is with the self-propelled mount.

(2) He instructs the point en route, and makes sure that the designated route is followed.

(3) In case the designated route becomes impracticable, or obstacles are encountered over which the main body *cannot* readily move, he notifies the next higher commander and executes reconnaissance promptly to determine routes around the obstacle.

(4) In case the enemy is encountered, he will:

(*a*) Report contact.

(*b*) Employ the self-propelled mount to drive off hostile resistance. Send dismounted members of the point to re-

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connoiter the enemy position, fire on, and mark the hostile flanks with tracer ammunition, and to signal if the enemy withdraws.

(*c*) Send prompt information to the next higher commander of the hostile strength, composition, and disposition.

(*d*) Reorganize the point following combat, prepared to continue the advance.

(5) If the scouts sent out from the point remain out of view for an unreasonable period, the point commander will assume that these scouts have been shot or captured and will send dismounted scouts to reconnoiter the place where they disappeared before permitting the point to proceed.

i. Point.—(1) The point is both a reconnaissance and security element. (See fig. 2.) Its observation is limited to the line of march. It pushes forward boldly, by bounds, employing the self-propelled mount, if attached, closely supported by the advance party. On winding roads or where terrain features between definite bounds prevent visual contact, elements within the point maintain visual contact until the next bound is reached, thus avoiding stopping at intermediate points of no tactical value.

(2) Its principal duties in the advance are to—

(*a*) Reconnoiter the road on which the column is marching and observe to the immediate flanks.

(*b*) Gain rapidly elevations, edges of woods, and other points of vantage from which a good view to the front can be obtained or which the enemy might try to occupy.

(*c*) Give timely warning, to the element next in rear, of the enemy's presence or of road blocks, mines, traps, or similar methods for delaying a marching column.

(*d*) Drive back or disperse promptly small hostile patrols. When the enemy encountered is too strong to be defeated by the point, the point protects the next element in rear.

(*e*) Remove small obstacles blocking the route. When these obstacles require more manpower and technical equipment than that contained in the point, it proceeds beyond the obstacle and protects the next element in rear while engaged in removing the obstacle. When the obstacle is defended, the point first assists in driving off the enemy.

(*f*) Push boldly into villages along the line of march and determine promptly whether or not they are occupied by the enemy.

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(*g*) Remain on or near the route of advance in order to protect the head of the column from surprise.

(3) In the execution of its duties the elements of the point proceed as follows:

(*a*) Motorcycle scouts, if available, work as a pair preceding the rear vehicle (¼-ton truck, self-propelled mount, armored car, half-track, or tank) keeping always a bound ahead. They move in single column, staggered on either side of the road at a distance of 35 to 50 yards between scouts. Successive bounds are made at the maximum speed road conditions permit.

(*b*) At the end of each succeeding bound they slow down, halt short of the crest, bend, etc., and the leading scout dismounted, moves to reconnoiter the terrain to the front, and check the route. The remaining scout observes to the flanks. He also is employed to reconnoiter lateral roads, if necessary riding out to a position where he can observe for at least 600 yards (effective rifle range). Motorcyclists maintain contact within the point.

(*c*) When an obstacle or enemy is discovered, one scout reports this information to the point commander, the other scout remaining in observation.

(*d*) Scouts do not move forward to the next bound until they have signalled "all clear" to the remainder of the point. Control is maintained by visual signals.

(*e*) When fired upon, scouts seek cover, report contact, and then reconnoiter to determine the direction and nature of the hostile action. They fire their weapons in self-defense and to warn elements in rear.

(*f*) In case a hostile position has been passed without being observed by the scouts, they will return, dismount, and attack the enemy. They will especially seek and bring under fire antitank guns or machine guns. If the enemy withdraws, they endeavor to ambush him. The scouts avoid getting in the line of fire from other elements of the advance guard.

(*g*) Upon reaching a terrain feature in rear of the motorcyclists, crew members from the rear vehicle of the point observe to the immediate flanks. When the terrain, time element, and situation warrant, a dismounted reconnaissance will be made for a short distance to either side of the route of march.

(*h*) This vehicle closes on the motorcyclists on receipt of

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signals from the motorcyclists. It coordinates, by bounds, its movement with that of the advance party.

(*i*) If the enemy is encountered, the rear vehicle and the self-propelled mount, if present, will move forward, depending upon the location of the enemy and place fire on the enemy. The crew, when necessary, will continue its reconnaissance dismounted.

j. Advance party.—(1) The advance party is both a reconnaissance (maneuvering) and holding (pivot) element. (See fig. 2.) Its principle duties are to—

(*a*) Maintain connection with the point and assist it in overcoming resistance encountered on the line of march.

(*b*) Extend flank reconnaissance to a distance of about 800 yards.

(*c*) Check the enemy's advance until the element next in rear has time to prepare for action. In case the enemy encountered is too strong for the advance party to defeat, the latter reports the fact to the next element in rear and reconnoiters the enemy's strength and dispositions.

(2) In the execution of its duties the elements of the advance party proceed as follows:

(*a*) Each vehicle commander receives, acknowledges, and passes signals both from the front and rear and moves by bounds, coordinating its advance with the rear vehicle of the point.

(*b*) When contact is gained, the leading vehicle remains on or near the axis of march and engages the enemy by fire, to support the action of the remainder of the advance party.

(*c*) If subjected to surprise fire the leading vehicle will seek a defiladed firing position if immediately available; otherwise, unless a tank, the vehicle will be abandoned for a dismounted position.

(*d*) Whenever fire is opened on the leading vehicle, the advance party commander in the next vehicle in column makes a hasty reconnaissance, mounted or dismounted, depending upon the available cover, and disposes the advance party initially to protect the next element in rear.

(*e*) In larger advance guards, a platoon of tanks, an engineer section, and one or more mortar squads, constitutes the advance party. They perform reconnaissance to the flanks, either by having a patrol march parallel to the axis of movement, where the terrain permits, or by having the

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patrol move direct to reconnoiter features of terrain and return to the axis. Only those terrain features that may afford possible positions for the enemy should be reconnoitered. This reconnaissance is continuous when dictated by the situation and terrain.

(*f*) When enemy resistance stops the advance the tank platoon extends reconnaissance to locate the flanks, drive out the enemy, and develop the situation, reporting results to the advance party commander.

(*g*) If the enemy resistance is too strong to be overcome by the advance party, each element will hold its most advanced position and cover the approach of rear elements of the advance guard or of the main body.

(*h*) In advance guards, where there is no support, the tank platoon may be left as a containing force while the main body bypasses the enemy position.

k. Support.—(1) The support bears the same relation to the elements in its front and rear as the advance party does to the point and support. It extends the reconnaissance (maneuvering) or acts as the holding (pivot) element. (See fig. 2.) In the absence of a reserve, it is also the principal striking element. Its principal duties are to—

(*a*) Maintain connection with the advance party and assist it in overcoming enemy resistance.

(*b*) Extend the flank reconnaissance to a distance of about 1 mile.

(*c*) Check the enemy's advance until the element next in rear, or the main body has time to prepare for action. In case the enemy encountered is too strong to be defeated, the support reports the fact to the next element in rear, protects it, and extends reconnaissance.

(2) In the execution of its duties the elements of the support proceed as follows:

(*a*) March at the prescribed rate of march maintaining the time distance in front of the reserve, if present, or the main body. It should not move on the next bound until the preceding element has cleared.

(*b*) Extends the reconnaissance to the flanks in a similar manner to that of the tank platoon in the advance party.

(*c*) When the enemy is encountered, it reenforces the action of the advance party, whether it is combat, reconnaissance, or both.

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l. The reserve.—The reserve is the striking (main blow) element of the advance guard. Its employment is based on the information obtained from the lesser forward elements and other sources by the advance guard commander.

m. Artillery.—In an advance guard for a regiment or larger unit it will often be desirable to attach a battery of field artillery. When attached it will normally march as the rear unit of the advance guard, with a reconnaissance officer well forward. If no artillery is attached to the advance guard, the necessary artillery support for its action is furnished by the artillery with the main body. When the need for their employment can be foreseen, supporting antiaircraft artillery may accompany the advance guard. It occupies critical points en route.

n. Aviation.—While not normally attached to the advance guard, available airplanes should be directed to cooperate. They render valuable assistance by reporting direct to the advance guard commander the approach of enemy forces, the location of hostile positions along the axis of advance, pertinent information of roads and bridges, and other similar information.

o. Engineers.—Engineers march at the rear of the support, or near the head of the reserve. Their principal functions are to repair or strengthen bridges, remove obstacles, prepare stream crossings, and repair roads. An engineer detachment marches at the rear of the advance party; its function is to furnish early engineer information. Where need for their use can be foreseen, engineers with bridge building equipment may be attached to the rear element of an advance guard.

p. Medium tanks.—In the absence of artillery with the advance guard, or where their use can be foreseen, medium tanks may be attached to the advance guard composed of a light tank unit or a regiment or larger unit.

q. Mortars.—In an advance guard for a battalion or larger unit, the attachment of at least a squad of mortars is desirable. It is used to neutralize enemy observation posts and screen the movement of advance guard units and later, if necessary, the development of the main body.

r. Trains.—The unit trains of an advance guard generally remain with the trains of the main body. A truck to transport gasoline for refueling motorcycles should march at the rear of the last element in the advance guard. The light

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maintenance elements of units performing advance guard duty march in rear of their units.

s. Advance guard in retrograde movement.—In retrograde movements an advance guard should be detailed. It will vary from a point to a larger element, depending on whether or not there is a possibility of an enemy attack against the head of the column. If there is no enemy threat, the principal missions of the advance guard will be to clear the route of march, insure the uninterrupted movement of the main body, and regulate civilian and refugee traffic. For the latter purpose, military police may be attached.

t. March outposts.—Advance guards are used in forming march outposts for temporary or prolonged halts. (See par. 40.)

■ **37. COVERING DETACHMENTS.**—*a. General.*—(1) A covering detachment is a security detachment used to protect troops moving in the presence of the enemy.

(2) It is used when early contact with the enemy is expected and when because of this expectation the main body is deployed in an approach formation.

(3) A covering detachment is always used in an approach to a line of departure.

b. Missions.—The missions assigned to covering detachments are similar to those given an advance guard, except in situations requiring combat strength. The primary mission is that of security; the secondary mission is reconnaissance. Specifically its duties are to—

(1) Guard against surprise and obtain information by observing to the front and flanks.

(2) Cover a larger force in the approach to a line of departure.

(3) Guide a larger force over the best terrain available.

(4) Push aside small enemy patrols and offer resistance to larger hostile forces until the main body attacks.

(5) Support the main body in an attack.

c. Strength and composition.—A covering detachment for a tank company usually consists of a platoon; for a battalion a platoon reinforced by detachments of the battalion headquarters company; for an armored regiment a light tank company reinforced.

d. Formations.—(1) Formations for covering detachments

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vary depending upon the terrain. They are generally deployed over a broad front with very little depth.

(2) The interval between vehicles (squads) varies between 150 to 300 yards, depending on terrain and visibility.

e. Communication and control.—(1) Communication and control are maintained normally by radio or prearranged visual signals. Exceptionally, motorcycle or other vehicle messengers may be employed.

(2) Movement of the covering detachment is controlled by the main force commander from his position in the interval between the covering detachment and the main force.

f. Methods of operation.—(1) The covering detachment precedes the unit from which it is detailed.

(2) It moves by successive bounds, the limitations of each bound being indicated by the force commander and not by the covering detachment commander.

(3) Upon arriving at each terrain objective, the covering detachment halts and observes to the front and flanks until ordered to make another indicated bound. Full advantage is taken of available cover.

(4) Covering detachments attack small patrols and offer resistance to larger forces.

(5) Upon reaching the line of departure the covering detachment may constitute the leading assault wave; may halt and support the attack by fire; may afford flank and rear protection; or follow in support or reserve.

g. Reconnaissance.—Reconnaissance elements may be attached to a covering detachment the size of a company, or ordered to cooperate with a smaller covering detachment. When the terrain and road net are favorable, early information of hostile dispositions can be obtained by the reconnaissance elements which enables a covering detachment to better carry out its mission.

■ 38. REAR GUARDS.—*a. General.*—A rear guard is a security detachment which follows and covers the main body on the march. The fundamentals covering rear guards and rear guard action are contained in FM 100–5.

b. Who may perform.—Armored units are suitable to perform rear guard duty because of their mobility and fire power, which enable them to withdraw quickly after delaying the pursuing enemy to the last possible moment. However, this

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use is exceptional and sacrifices their offensive power. This mission should not be assigned armored units when other suitable units are available. However, the rear guard covering the retirement of a combined force often contains armored units.

c. Mission and duties.—The mission of a rear guard is to assure an uninterrupted movement of the main body and to protect it from attack, observation, or interference by hostile ground forces. Specifically its duties are to—

(1) Guard against surprise and furnish information by observing to the rear.

(2) Hold back small forces of the enemy and prevent their observing, firing upon or delaying the main body.

(3) Check an enemy in force until the main body has time to prepare for action, march beyond the range of hostile fire, or occupy a position.

(4) Provide suitable passive measures of opposition, such as interposing obstacles and destroying or damaging bridges and roads.

(5) Collect stragglers and lost vehicles and destroy abandoned property.

d. Strength and composition.—The strength and composition of a rear guard for armored units depends upon the mission, direction of a march, nature of the terrain, and upon the mobility and strength of hostile forces likely to be encountered. Its strength and composition should be such as to permit the execution of its mission without the intervention of the main body.

(1) *Strength.*—Its strength varies from a small fraction to about one fourth of the command.

(2) *Composition.*—It normally is composed of machine gun and tank elements. It may be augmented by artillery and mortar elements to provide greater combat power for reconnaissance units; and by engineers, chemical, and medical troops. At night it may be composed of infantry and engineer elements, and when the situation is obscure it should consist primarily of armored or motorized infantry.

e. Formation.—The rear guard formation resembles that of an advance guard reversed. Next behind the main body marches the reserve, followed in turn by the support, rear party, and rear point. In general the size of the rear guard is smaller than an advance guard, except in retrograde move-

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ments. When the size makes it impracticable to have all the elements, they are omitted in order of size beginning with the reserve. A rear point is always present.

f. Distances or time interval.—On the march, distances or time intervals between the rear guard and the main body and between subdivisions of the rear guard vary. In general they are governed by the size and mission of the rear guard, by visibility and terrain; and by the strength, composition, mobility, and proximity of the enemy. The distances and time intervals previously outlined for advance guards may be taken as a guide subject to the following:

(1) *Support to reserve.*—The minimum distance between the support and reserve is determined by the consideration that the support must delay the enemy until the reserve can prepare for action. The maximum distance is that which the reserve can take without exposing the support to the liability of being cut off. These distances may be greater in open country or during daylight than under the opposite conditions.

(2) *Reserve to main body.*—The minimum distance between the reserve and the main body is determined by the consideration that the rear guard must protect, and not be driven back upon, the main body. The maximum distance is that which can separate the reserve and the main body without subjecting the rear guard to the danger of being cut off by the enemy. It must not be such as will permit intervention of hostile forces in strength between the reserve and the main body.

g. Rate of march.—(1) The march order prescribes the rate of march for the command and the time or distance between the rear guard and the main body.

(2) The elements of the rear guard usually retire by bounds, based on the progress of the main body and the time limit set by the main body commander for holding designated lines. They may follow the main body at a steady rate of march when conditions render the movement by bounds impractical or unnecessary.

h. Communication and control.—Communication and control are maintained between the rear guard and the main body and between subdivisions of the rear guard in the same general manner as has been previously outlined for advance guards.

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i. Conduct of rear guard.—(1) When the distance from the enemy permits, the rear guard retires in march formation.

(2) When in contact with the enemy, the rear guard moves on a broad front and opens fire at long range to force the enemy to deploy and thus delay his advance. Unless the security of the main body requires a stubborn resistance, the rear guard, as far as practicable, avoids close range combat and withdraws successively from position to position as the enemy approaches.

(3) The rear guard fights in successive positions.

(4) The rear guard commander makes timely provision for preliminary reconnaissance of new positions and routes thereto.

(5) The successive positions of the rear guard are chosen at such distance from each other that the enemy is forced to renew his preparations for attack, including forward displacement of his artillery, in each instance.

(6) A rear guard position should favor withdrawal by affording covered routes of withdrawal.

(7) When the enemy presses his pursuit closely, greater resistance is offered. Full use is made of surprise attacks and ambushes to slow down or halt the hostile advance.

(8) In general, the main efforts of the rear guard, like those of any delaying force, must be constantly directed toward barring roads or other avenues of approach, and denying, or disputing to the limit of available means, their use by the enemy forces.

(9) Hostile mechanized elements usually attempt to attack from the flank. Against such forces, care must be taken to prevent dispersion of the rear guard in order that it may be able to repel flank attacks and avoid being cut off from the main body.

(10) Advantage is taken of favorable opportunities to punish over-hasty pursuit by counterattacks against the heads of pursuing columns, or against hostile forces attacking from the flank. Ambush of leading hostile elements will be effective in slowing down and punishing a hasty enemy. Such tactics will cause the enemy to be more cautious and, consequently, slower in action.

(11) A rear guard resorts to such defensive measures for halting or delaying the enemy as obstructing fords, executing

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demolitions within the capabilities of the rear guard, felling trees across the road, burning stretches of grass or shrubs, or by the use of persistent chemicals.

j. Duties of rear guard elements.—(1) (*a*) In general, each rear guard element maintains connection with the next lower element and, by fire action or otherwise, assists it in effecting withdrawal.

(*b*) Each element observes or reconnoiters to its own rear and flanks and furnishes timely information of the enemy situation to the next higher commander.

(*c*) Each element covers the retirement and cooperates in the fulfillment of the mission of its next higher element.

(*d*) Each element in falling back avoids masking the fire or interfering with the action of the elements covering its withdrawal.

(*e*) Limited flank reconnaissance for their own protection is performed by elements of the rear guard. When special flank reconnaissance is necessary, it is performed by reconnaissance units attached to the rear guard or by patrols detailed for this purpose from the reserve or main body.

(2) The principal duties of the rear guard elements are as follows:

(*a*) *Rear point.*—The rear point is a patrol from the rear party and follows the rear party en route. It adheres closely to the route of retirement, observing constantly to the flanks and rear to detect hostile moves. It discourages pursuit by firing upon hostile elements.

(*b*) *Rear party.*—The rear party, a subdivision of the support, follows and protects the support. It endeavors to delay a closely pursuing enemy by long-range fire. It covers the withdrawal of the rear point by engaging the enemy by fire alone or by fire and movement. When necessary it maneuvers at distances up to about 800 yards on either side of the axis of movement.

(*c*) *Support.*—The support is the smallest element of the rear guard capable of offering the enemy serious resistance. It follows the reserve en route or the main body when no reserve is present. When no reserve is present, it performs the duties that normally devolve upon the reserve. It delays the enemy, usually by means of long-range fire in successive positions; it covers the occupation of delaying positions by the reserve; it covers the withdrawal of the rear party by

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fire alone or by fire and movement. It may operate as much as 1 mile to either side of the route.

(*d*) *Reserve.*—The reserve, normally the strongest element of the rear guard, constitutes its chief maneuvering force. It is a duty of the reserve in particular to detect the presence of any hostile forces attempting an encircling maneuver. It delays the enemy by means of all available fire power and, when occasion demands, by offensive action in cooperation with the support. In case the situation requires the rear guard to effect a long delay of the enemy force, the reserve, under protection of the support, occupies strong delaying positions. It maneuvers as necessary to either side of the route.

k. Artillery.—Field artillery may be attached to the rear guard for a regiment or larger unit. When attached, it generally marches near the head of the largest element of the rear guard. Because of its great range, artillery can force the enemy off roads before he is within range of small arms fire and can compel him to march across country in deployed formation, or to use circuitous routes in order to obtain cover.

l. Aviation.—While not normally attached to the rear guard, observation airplanes operate in close liaison with its commander. They keep him informed of the strength, composition, location, and movements of enemy forces. They assist, whenever necessary, in maintaining liaison between the main body and the rear guard. Some airplanes usually are placed at the disposal of the artillery with rear guards to observe their long-range fires.

m. Chemical troops.—Detachments of chemical troops may be attached to a rear guard for the purpose of delaying the enemy by the use of persistent chemicals or other chemical ammunition. Smoke may also be used to assist the elements of the rear guard in concealing their movements during successive withdrawals. When attached, chemical troops should march with the reserve.

n. Engineers.—When available, engineers should be attached to the rear guard to complete demolitions or the installation of obstacles which may have been prepared by preceding engineer troops.

o. Medical troops.—Sufficient medical troops are attached

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to the forward elements of the rear guard to care for probable casualties.

p. Medium tanks.—Medium tank units may be attached to the rear guard for an armored regiment or larger unit when there is no artillery attached, or when a mechanized threat exists.

q. Mortars.—In the absence of chemical troops, the attachment of at least a platoon of mortars to the support of a rear guard for a regiment or larger unit to furnish smoke is desirable.

r. Reconnaissance units.—(1) Divisional reconnaissance units are seldom attached to rear guards. In a withdrawal, divisional reconnaissance units between the enemy and the rear guard keep the rear guard commander informed of the strength, composition, location, and movement of enemy forces.

(2) A portion of the regimental reconnaissance company may frequently be attached. When attached to rear guards, these units are of great assistance in performing flank reconnaissance and in obtaining early information of encircling maneuvers. They generally move abreast of the rear guard, on parallel roads or cross country.

s. Trains.—The unit trains of the rear guard should march at the rear of main body. In general, maintenance elements of the rear guard march as far to the rear as is consistent with the tactical situation. Usually maintenance vehicles with the reserve will march at the rear of the reserve while maintenance vehicles of other elements march at the head of their respective units.

t. March outposts.—Rear guards are used in forming march outposts. (See par. 40.)

■ 39. FLANK GUARDS.—*a. General.*—(1) A flank guard is a security detachment detailed to protect the flank of a marching force. The fundamentals covering flank guards and flank guard action are contained in FM 100–5.

(2) Because of their high degree of mobility, armored units are especially suitable to perform flank guard duty. However, tank units must not be used for that duty when such employment will materially reduce their offensive power or when other suitable troops are available for such duty.

(3) When the protection usually afforded by adjacent units

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or obstacles is absent, a flank guard may be necessary.

b. Mission.—The mission of a flank guard is to insure the uninterrupted advance or retirement of a force and to protect it from attack, observation, or harassment by hostile ground forces from the flank. Its duties are similar to those of advance and rear guards.

c. Strength and composition.—The strength and composition of a flank guard varies according to the situation, from a patrol to a force of all arms. When the main body executes a flank march in proximity of the enemy, flank protection assumes great importance; a strong flank guard is detailed.

d. Distance.—(1) Since the mission of a flank guard is to protect the flank of a marching column, it is interposed between this column and the located or anticipated hostile threats. The distance of operation to the flank will vary depending upon the enemy composition, terrain, such as defiles and obstacles, and particularly upon adjacent roads parallel to the route of the main force.

(2) Large flank guards should be far enough out to the flank to prevent hostile artillery or antitank weapons from placing effective fire on the main body. Small flank guard patrols should be far enough out to protect the command from enemy machine gun and antitank gun fire.

(3) Distance between elements of the flank guard on the march may conform to those between elements of an advance or rear guard. When continuous flank protection is required, the flank guard is distributed in detachments to give protection throughout the length of the main body. Critical areas (key positions) controlling avenues of approach may be occupied and held until the main body has passed. (See *g* below.)

e. Rate of march.—(1) The rate of march of the flank guard conforms generally to that of the main body.

(2) When movement of the flank guard is by bounds, the rate of march will be based on the progress of the main body or the time limit set by the main body commander for holding specific localities or points.

f. Communication and control.—(1) The communication facilities afforded by the use of radio, aviation, motor, and motorcycle messengers enable the flank guard commander to maintain contact with the main body.

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(2) Where the terrain permits, contact with the main body may be maintained through connecting groups.

(3) Contact is frequently gained with flank guards and their movement controlled by the main body commander on designated phase lines or objectives.

(4) Communication and control are maintained between subdivisions of the flank guard in the same manner as has previously been outlined for advance guards.

g. Conduct of flank guard.—(1) Flank guards are conducted with especial reference to routes or localities which favor attack against the flanks of a command.

(2) When a route generally parallel to the line of march of the main body exists and more or less continuous flank protection is required throughout the depth of the column during the march, the flank guard marches parallel to the main body to cover possible routes of hostile attack. Except as indicated below, it is distributed in echelons over sufficient depth to offer resistance to attack at various points on the flank of the main body and to prevent inroads of small hostile detachments.

(3) When the locality from which an attack is to be expected is well defined, a flank guard occupies a key position covering the routes of approach to the main body until the command has passed.

(4) When several such locations must be passed during the progress of a march, echelons of the flank guard move by bounds from one position to another.

(5) Upon arrival at a locality, dispositions are made to hold that position as long as may be necessary to allow the main body to march out of danger. The flank guard, or echelon thereof, then moves to the next locality.

(6) When the enemy is encountered, the flank guard may act offensively, delay in successive positions, or defend a position, as the situation may require.

(7) In addition to the normal methods of performing flank guard duties, where considerable doubt exists as to the most likely avenue of hostile approach, a flank guard may resort to a position of readiness at some conveniently located point. If sufficiently strong, it may occupy two or more key positions covering the most probable routes of approach. In the latter case, a highly mobile reserve should be held at a convenient

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location to move rapidly to oppose the enemy when his line of approach is known.

h. Artillery.—Artillery is usually attached to flank guards required to operate beyond effective supporting distance of the artillery in the main column, or to combat hostile forces likely to be accompanied by mechanized elements.

i. Medium tanks.—Medium tank units may be attached to large flank guards for a combat command or division when there is danger of attack by hostile mechanized elements.

j. Aviation.—Although observation airplanes are not normally attached to flank guards, they cooperate with them in the same manner as with advance guards and rear guards. In some situations, flank guards may be supported by combat aviation.

k. Other auxiliary troops.—Other auxiliary troops, such as engineer, chemical warfare, and medical units, are attached in accordance with their need as the situation in each instance may demand.

l. Reconnaissance units.—(1) Divisional reconnaissance units are seldom attached to flank guards. In a withdrawal these units cooperate with or may even supplant flank guards.

(2) A portion of the regimental reconnaissance unit may frequently be attached. When attached to flank guards, these units are used to conduct reconnaissance to locate hostile threats, or to seize and hold critical points prior to their occupation by the flank guard proper. Exceptionally they may be employed to delay the enemy from localities too distant for the flank guard to occupy.

m. Trains.—Unit trains of the flank guard march with the trains of the main body. The maintenance elements of units performing flank guard duty accompany their units.

■ 40. OUTPOSTS.—*a. General.*—(1) An outpost is a security detachment to protect a resting command or a defensive position against annoyance, surprise, and observation by ground forces.

(2) The presence of hostile mechanized units necessitates all-around security.

(3) In order to obtain cover and concealment against air attack, units may have to disperse over a large area.

(4) When armored force units are attached to other ground forces, they may depend upon the general security furnished

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by the force to which they are attached. However, they provide their own local security, including security against hostile mechanized elements and aviation.

(5) When operating alone, or at too great a distance from the force to which they are attached to be furnished adequate security by them, armored force units provide their own all-around security. This paragraph covers the security of armored force units when they furnish their own security.

b. Types.—(1) *Outposts at halt and in bivouac.*—At a halt during the course of a march the advance guard, or rear guard, or both, establish a march outpost consisting of observation posts at commanding points and combat patrols at critical terrain features. The support usually furnishes this outpost. In bivouac, while the outpost is being established, advance, flank, and rear guards provide security.

(2) *Combat outposts.*—When operations are interrupted by a halt for reorganization or by nightfall and troops are required to bivouac in battle formation, companies or battalions cover their sectors by means of a security detachment termed a combat outpost. Provision is made for patrolling the foreground and intervals between tactical localities. Contact with the enemy must be maintained. The action of the several combat outposts is coordinated by the commander of the whole force. The flanks and rear must also be covered with security detachments.

c. Strength and composition.—(1) The strength and composition, as well as the disposition, organization, and conduct of an outpost depend upon the following considerations:

(*a*) Special mission assigned the outpost, i. e., march, combat, or outpost for a prolonged halt.

(*b*) Proximity, strength, composition, mobility, and attitude of the enemy.

(*c*) Size and composition of the whole command.

(*d*) Tactical dispositions of the main body.

(*e*) Front to be covered and the distance of the outpost from the main body.

(*f*) Nature of the terrain, especially the road net and natural obstacles.

(2) *Strength.*—An outpost is given sufficient strength to enable it to accomplish its mission, but is made no stronger than is consistent with reasonable security.

(3) *Composition.*—Outposts for large armored force units

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are composed principally of infantry and machine gun elements augmented by reconnaissance, artillery, and engineer elements. In smaller units, such as an armored regiment, they are normally composed of machine gun elements. For armored units smaller than a regiment, see chapter 5.

d. Outpost dispositions.—The degree of organization of the outpost depends upon whether or not contact with the enemy is remote or imminent, or whether forces are in actual contact. *The basic consideration is that a command must not allow itself to be surprised.*

(1) *When contact is remote.*—The time distance from the enemy varies with the rate of march of the enemy troops that may move against the command. When contact is remote, security is provided by far reaching reconnaissance; by depth of depositions and location of units in the bivouac; and by sending out detached posts to hold critical points on routes of approach from the front, flanks, and rear. These detached posts, preferably, are along some protective terrain line that the enemy will be forced to pass in his advance (defiles, stream crossings). They provide local security by posting outguards and sending out patrols. Additional outguards are posted near the bivouac area.

(2) *When contact is imminent.*—When the enemy is so close that contact can be expected at any moment, a more highly organized outpost system is prescribed. Combat units may be assigned sectors for which to furnish security. These sectors are assigned by the senior commander and include the bivouac area of the combat unit. When sectors are so assigned, the dispositions of troops in the bivouac area must be such that combat units encircle the noncombatant elements present; and sectors must be contiguous. When necessary, portions of the main body are held in readiness for immediate action.

(3) *In close contact with enemy.*—When in close contact with the enemy, a complete outpost is organized as described in subsequent subparagraphs. Such circumstances will be exceptional since armored force units, when they pass to the defensive, should be replaced by other ground forces and withdrawn to conserve their strength for a resumption of the offensive. (See ch. 1.) However, when armored force units in contact with the enemy have outdistanced the ground forces to which they are attached, it may be necessary to

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bivouac, to assemble, and to reorganize and service the vehicles, pending relief by other ground forces. Either an organized outpost or combat outposts will then have to be established, depending upon the hostile situation. The provisions outlined in FM 100–5, pertaining to supports, outguards, sentinels, detached posts, and patrols, applicable to outpost dispositions, are made.

e. Organization of outposts.—An outpost position should be selected because of its facilities for observation and its suitability for defense. Two lines are usually established, i. e., a line of observation and a line of resistance. The position is organized in depth in such manner as to place between the main body and the enemy a series of groups which the enemy must attack successively as he advances. The closer to the main body, the stronger the group.

(1) *Line of observation.*—The line of observation consists of small groups (outguards) charged with observing and reporting any hostile advance. This line is extended well to the front on terrain commanding an unobstructed view of the front, particularly avenues of approach and of the intervening terrain.

(2) *Line of resistance.*—The outpost line of resistance consists of larger groups (supports) posted on the best defensive ground, encircling the bivouac areas. During the hours of daylight, the outpost line of resistance for armored force units of a regiment or larger are usually at some distance from the main body. Full advantage is taken of all obstacles. At night, since it is not practical to build up a line of resistance in advance of the bivouac by attempting to maneuver heavier elements of the command forward to that line during the hours of darkness, the line of resistance may be increased in strength; or the line of resistance may be established by the disposition of combat units in bivouac. This may be obtained by providing close-in protection with the guns of the vehicles sighted for all-around defense, with personnel bivouacked at their vehicles.

(3) *Subdivisions of outposts.*—The usual subdivisions of an outpost from rear to front are reserve, supports, and outguards. In case of attack, the primary duty of each subdivision in front is to gain time for the element next in rear to prepare for action. Elements in rear reinforce elements in front. In occupying their positions and during relief, the

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various subdivisions of the outpost conceal their movements against both air and ground observation. The outpost troops ordinarily stand relieved when the support of the advance guard passes the outpost line of resistance.

(*a*) *Reserve.*—The reserve, which constitutes the main force of the outpost, is held at some central point from which it can support the troops on the main line of resistance. It renders support by reinforcement or by counterattack. In case the outpost is assigned a delaying mission it holds a rallying position upon which the more advanced elements may retire in the event of a hostile attack in force. Its strength varies from one-fourth to two-thirds of the outpost strength. The reserve is marched to its post by its commander, who then sends out such detachments as have been ordered and places the remainder at rest. He stations sentinels at the post of the reserve. He establishes connection with the supports and nearby detached posts. Each unit of the reserve is informed of its place of formation and action in case of hostile attack and the general action expected of the reserve.

(*b*) *Supports.*—The supports constitute a line of supporting and resisting elements. They are usually located on or near the line of resistance along prominent terrain features or clearly defined points, such as buildings, bridges, or road junctions so as to cover likely avenues of approach. Strength is concentrated at the most important points, the remainder being covered by small detachments, patrols, and weapons previously sighted in positions. Supports vary in strength from a platoon to a company. The strength, armament, terrain, and extent of the outpost sector control the distance between adjacent supports. Each support is organized as a defense area. It commands an adequate field of fire to the front and the intervals between adjacent supports. Each support is assigned a sector clearly defined by means of readily distinguishable terrain features. Sector boundaries are so arranged and so designated that responsibility for covering roads, sensitive points, and likely avenues of hostile approach is never divided. Supports are numbered consecutively from right to left in the outpost. Each support commander stations at least one sentinel at the post of the support, details outguards to cover the front of the sup-

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port, and makes provision for patrolling including visiting lateral patrols.

(c) *Outguards.*—Outguards are detailed from supports to occupy vantage points on the line of observation. They vary in strength from four men to a platoon, depending on their location, distance from the support, and the number of sentries they are to furnish. An outguard of four men includes a leader and maintains three reliefs of single sentinels. A squad posted in observation maintains single or double sentinels. Larger outguards protect themselves by sentinel posts of half squad or squad groups, and patrols, depending on the situation. At night it is frequently advisable to place outguards in positions different from those occupied during the day. Outguards are numbered consecutively from right to left in each support. The number and size of outguards employed will depend upon the strength of the support, terrain, and actions of the enemy. Outguards must be ready for action at all times. In every case the outguard commander must understand what he is to do in an emergency. Vehicles of the outguard may be with the support or kept under cover near the outguard.

(d) *Sentinels.*—Sentinels are posted from outguards either singly or in pairs. On sentinel posts from the larger outguards it is customary to use one sentinel in the daytime and two at night. Sentinels are located in concealed positions which afford an unobstructed view. They must be near enough to their leader to attract his attention without leaving their post. They are charged with the observation of a portion of the foreground of the outpost position, with the discovery of hostile activity, and with giving the alarm in case of attack. Sentinels are given the following information:

1. Number of their relief, outguard, and support.
2. Direction and probable route of approach of the enemy.
3. Names of features of military importance, such as roads, villages, or streams.
4. Location of the support or other units of which the outguard is an outpost element and the location of adjacent outguards.
5. What friendly patrols are in advance of the line of observation.

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6. Special signals.
7. Means of identification of friendly vehicles at night.
8. Where prisoners are to be sent.
9. Where messages may be sent.
10. When he is to be relieved.

(4) *Detached posts.*—Detached posts are observation and combat groups detailed for the purpose of occupying points which possess special importance to the security of the command but which are too remote to be included in the normal outpost organization. Detached posts are given sufficient strength to maintain themselves and to furnish the necessary observation.

f. Distances.—Because of the mobility, organic fire power, and facilities for rapid communication of armored force units, the distance between subdivisions of the outpost may be considerably greater than in less mobile troops. Armored force units can quickly support an outpost line of resistance at a distance from the bivouac of a command. The line of observation, when practicable, should be at sufficient distance to keep hostile light artillery beyond the range of the bivouac area.

g. Communication and contact.—(1) Communication between the main body and the outpost and between subdivisions of the outpost are maintained in the same general manner as has been previously described for all security detachments.

(2) Within the outpost position, contact with advance elements and with adjacent supports and outguards is maintained by patrols.

(3) Visual signals, such as ground projector signals or improvised alarms, may be utilized in accordance with a prearranged code to warn of the approach of hostile ground or air forces.

h. Conduct.—The conduct of an outpost depends primarily on the contemplated employment of the main body. The plan of action of the main body may require the line of resistance to be held at all costs, or the outpost and security detachments may be required to delay in order to afford the main body time to prepare for action or withdrawal. The course of action to be followed is prescribed by the commander of the force.

i. Obstacles.—Obstacles (road blocks) constructed from

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material found on the ground are placed on roads in front of outguards and supports, where they may effectively delay the enemy advance. Such obstacles must be covered by fire. Obstacles are placed by the outpost troops with the assistance of engineers. They are located to take full advantage of defiles. Mines are used freely. (See FM 5–30.)

j. Terrain.—Terrain feature are utilized to the maximum extent in providing protection and in making dispositions. Terrain should be selected for positions that will cover avenues of approach, provide an adequate field of fire to the front, and cover the interval between adjacent elements. Covered routes of withdrawals from positions should be selected and reconnoitered in advance.

k. Vehicles.—The minimum number of vehicles necessary for patrolling, communication, and transportation of personnel remain with the subdivisions of the outpost. When not employed they are concealed. Remaining vehicles are left with the vehicles of their unit.

l. Identification of friendly vehicles.—Some means of identifying friendly vehicles approaching outguards from the direction of the enemy must be improvised and understood by all sentinels and the crews of vehicles. A simple prearranged code that can be flashed by a light and seen at a distance will serve to warn of the approach of friendly vehicles at night. Along routes that are likely to be used by vehicles it may often be preferable to post an additional sentinel a hundred yards or so in advance of the outguard to flash a light on all vehicles to insure identification. If an enemy vehicle is identified, the outguard is warned by the sentinel giving a prearranged signal.

m. Artillery.—Support of the outpost troops is usually provided by the artillery with the main body, or that assigned to the defense of the main position. Batteries are specially designated for this purpose in case such action is contemplated. If such support is impractical, artillery may be attached to the outpost.

n. Aviation.—Observation aviation provides additional surveillance and cooperates with outpost troops in the same manner as with advance, flank, and rear guards.

o. Engineers.—Engineers are attached to the outpost as required for the repair or destruction of bridges and roads, and for the construction of obstacles, mine fields, and other barriers.

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p. Other auxiliary troops.—Other auxiliary troops, such as chemical warfare and medical units, are attached to large outposts in accordance with their needs as the situation in each case demands.

q. Reconnaissance units.—(1) Divisional reconnaissance units are seldom attached to outposts. They execute distant reconnaissance regulated by the higher commander. (See sec. II.)

(2) A portion of the regimental reconnaissance unit may be attached to extend the zone of reconnaissance of an outpost to the front and flanks.

(3) All reconnaissance elements maintain close contact with the enemy when combat outposts or outposts for the night are established. During the hours of darkness, unless an emergency calls for other action, reconnaissance elements not in contact are habitually withdrawn to the bivouac area of the main body. Elements in contact with the enemy maintain observation of the enemy with the minimum personnel required while the remainder of the element rests in concealed bivouac in the vicinity.

r. Trains.—Trains of outpost elements remain at the service park of their unit bivouac.

s. Supply and maintenance.—The feeding of personnel and maintenance of vehicles on outpost duty in armored force units, at a distance from their bivouac areas and service parks, may offer a difficult problem. The following methods may be taken as a guide:

(1) Rations, fuel, and lubricants may be transported in containers to the various elements. Necessary servicing is performed by the crews with vehicles concealed at the outpost position.

(2) In proximity to, or in close contact with the enemy, feeding and servicing may have to be accomplished prior to the element being posted, if sufficient warning is given, or after the element has been relieved from outpost duty and has been withdrawn. Elements may have to exist on their reserve rations and carry the necessary fuel and lubricants in containers with them in the combat vehicles.

(3) When practical and at not too great a distance from the element in rear, personnel and vehicles may return to the rear element in relays for feeding and servicing.

(4) Maintenance, other than first echelon maintenance,

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normally is not performed at outpost positions. If such maintenance is essential, vehicles requiring it should be replaced by other vehicles prior to going on outpost duty.

■ 41. COUNTERRECONNAISSANCE.—*a. General.*—(1) Counterreconnaissance includes the measures to screen a command from hostile observation. Armored force units when operating alone provide, when necessary, their own counterreconnaissance screen. The screening of other troops by armored units is usually incidental to other missions.

(2) Counterreconnaissance missions may be assigned whether the force to be screened is advancing, withdrawing, moving laterally, or is at a halt.

(3) Air superiority is essential to prevent observation by hostile aviation.

b. Missions and duties.—Counterreconnaissance missions may be to screen a force in movement (moving screen); or to screen the disposition or concentration of troops (stationary screen). Specifically the duties of counterreconnaissance elements are:

(1) To prevent hostile patrols from working through the screen.

(2) To prevent a hostile penetration in force.

(3) To engage the enemy in such a manner as to prevent or limit his observation of a certain area or beyond a certain line.

c. Strength.—The strength of a screening force, as well as the number of security detachments employed and the frontage and depth to be covered, depends upon the following principal factors:

(1) Strength, composition, dispositions, and mobility of the enemy.

(2) Kind of screen to be established, i. e., moving or stationary.

(3) Size and tactical dispositions of the force being screened.

(4) Nature of the terrain, particularly the road net.

d. Composition.—Counterreconnaissance in an armored division is executed principally by reconnaissance, infantry, and attached aviation elements, while the remaining combat elements of the division reinforce, from a central location, the screen as necessary. In smaller units, such as an

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armored regiment, it is normally executed by reconnaissance and tank units. Units smaller than a regiment may have appropriate elements attached for the purpose.

e. Organization of counterreconnaissance screen.—When a commander assigns a counterreconnaissance mission to a force, he may designate a zone or sector to be covered by the counterreconnaissance screen. This zone or sector is covered by security detachments known as counterreconnaissance detachments which in turn send out counterreconnaissance patrols. Reconnaissance to a distance beyond the screen, under the control of the commander of the counterreconnaissance force, is performed by reconnaissance units. The main body of the counterreconnaissance force marches or remains in a central location behind the counterreconnaissance detachments. It supports the counterreconnaissance detachments as the situations may require.

f. Zones and sectors.—(1) If the mission calls for screening a moving force, a zone of action is usually prescribed.

(2) If the mission calls for the establishment of a stationary screen, the instructions designate the general line and sector to be screened. A stationary screen is similar to an outpost.

g. Frontage and depth.—(1) A counterreconnaissance force is disposed to cover the entire front and in sufficient depth to give the commander thereof time to concentrate an adequate force to prevent a hostile penetration of the screen. Those parts of the front or area most vulnerable to hostile reconnaissance receive special attention in the disposal of the counterreconnaissance force.

(2) The following may be taken as a guide for the frontage that can normally be effectively covered in a moving screen by units of the infantry or reconnaissance elements of the armored division:

	Infantry	Reconnaissance units
	Miles	*Miles*
Regiment	27	
Battalion	13½	15–25
Company (or armored tank company)	3½	5–7

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(3) In a stationary screen these frontages may be increased by approximately 25 percent.

h. Moving and stationary counterreconnaissance.—(1) In a moving screen, the elements of a counterreconnaissance force usually move by bounds. Patrols operating on a broad front move from one coordinating or phase line at specified times to another. Counterreconnaissance detachments, keeping within supporting distance of their patrols, and the main body, move from one suitable defensive terrain feature to another. In marches of more than one column the movement of the main body is usually coordinated by the designation of specific lines to be reached by heads of columns at specified hours.

(2) In a stationary screen counterreconnaissance elements are posted to block the advance of the hostile reconnaissance. Maximum advantage is taken of terrain, obstacles, and defended road blocks. Patrols must be supported promptly to prevent penetration of the screen.

i. Counterreconnaissance detachments.—(1) The duties of counterreconnaissance detachments are primarily to prevent reconnaissance by the enemy's ground troops and to deny the transmission of information to the enemy. They are habitually assigned zones of action or sectors.

(2) The strength of a counterreconnaissance detachment depends chiefly upon the width of the zone of action or the frontage assigned, and the number of patrols it must furnish to accomplish its mission. These in turn depend upon the strength of the hostile forces likely to be encountered, the terrain and road net, and the nature of the screen to be established. The strength may vary from a platoon to a battalion.

(3) In general, counterreconnaissance detachments will normally be used to:

(*a*) Prevent smaller hostile patrols from penetrating the zone of action or sector assigned.

(*b*) Destroy or drive off small hostile detachments.

(*c*) Locate and delay the advance of larger detachments.

(*d*) Reinforce, or form rallying points for, their own patrols.

(*e*) Maintain liaison within that part of the screen established by the detachment as well as with adjacent detachments.

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(*f*) Reconnoiter locally to the front and flanks of the detachment.

(*g*) Furnish information to the commander of the main body.

(4) Personnel and weapons are employed in accordance with the principles of their use in offensive and defensive action by small units.

j. Counterreconnaissance patrols.—(1) The principle duties of the patrols are to locate and destroy hostile patrols and to warn the counterreconnaissance detachments of the presence and movement of larger hostile detachments that are beyond the capability of the patrol to destroy. They delay such detachments. The strength of a patrol varies from half a squad to a platoon with its organic weapons. Normally, vehicles operate in pairs.

(2) In general, the conduct of counterreconnaissance patrols, whether in moving or in stationary screens, is similar.

(*a*) In a moving screen patrols move along routes which enable them to keep under observation the likely routes of hostile advance. They patrol laterally to adjacent patrols.

(*b*) In stationary screens patrols are posted at observation points from which they can view routes of hostile approach. Active patrolling between adjoining groups is maintained.

k. Instructions to counterreconnaissance detachments.—Instructions to the commander of the detachment include:

(1) Time of starting.

(2) Zone of action (for moving screen).

(3) Sector and line of observation and defense (stationary screen).

(4) Coordinating lines and time to be passed (for moving screen).

(5) Special reconnaissance desired.

(6) Procedure if enemy is met in force.

(7) Lines of communication; responsibility for liaison between detachments.

l. Methods of operation.—In performing counterreconnaissance missions, units seek to defeat or neutralize hostile reconnaissance forces. In the execution of this mission they operate offensively, defensively, or by delaying action, resorting to all forms of combat when necessary. Hostile aviation is fired upon within range unless prohibited in orders.

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(1) Counterreconnaissance detachments attack hostile detachments whenever and wherever found.

(2) When hostile reconnaissance forces are superior in strength, or the screen must cover a broad front, the screening force may have to resort to defensive or delaying action as a means of temporarily impeding the operations of hostile reconnaissance forces. Defensive action is most effective when the screen, or an element thereof, can be established behind an obstacle, such as a stream, defile, or road block which must be crossed or passed by the enemy.

m. Artillery.—The artillery with armored force units on a counterreconnaissance mission is used to support the screening force. When the screen is moving, artillery generally accompanies the main body. In cases where the defense of a screen has become necessary or advisable, all or part of the artillery may be placed in position for the support of the screen or may be held with the main body prepared to move to the support of any part of the screen which may be threatened.

n. Aviation.—Aviation assists counterreconnaissance forces by attacking hostile aviation attempting to cross the area of counterreconnaissance, by reporting hostile ground movements, especially the movement of approaching highly mobile units, and by attacking hostile attempts in force to penetrate the screen.

o. Trains.—Trains of units composing the counterreconnaissance screen remain with the trains of the main force.

■ 42. SECURITY AGAINST HOSTILE AVIATION.—*a. General.*—(1) Hostile aviation presents a menace to operations of armored force units by attacking them or observing and rendering reports on their presence, location, and activity to enemy ground forces.

(2) Armored force units may frequently operate under the protection of supporting air units, or may even have attached to it combat aviation and antiaircraft artillery for defense against hostile aircraft. (See FM 100–5.) Regardless of the security measures taken or furnished by the higher command, all armored force units must be alert to the probability of hostile air attack or reconnaissance and must provide appropriate security measures for its own protection.

(3) Antiaircraft protection of a column depends initially

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on the efficiency of the concealment in its last bivouac. Special security measures must be taken during the time of exit from bivouac, while passing through defiles, at temporary halts, and during movement into assembly areas or bivouac.

(4) The principal security measures employed by armored force units against hostile aviation include passive measures such as night marches, concealment, and dispersion or distribution into small units or groups; active measures; and the construction of slit trenches for all personnel except crews of turreted vehicles.

b. Warning service.—(1) The first requirement of antiaircraft security is an adequate warning service. Warning of the approach of hostile aviation is provided for as follows:

(*a*) By air and ground reconnaissance units whose routine missions include reports on hostile aircraft. (See sec. II.)

(*b*) By detailing air scouts from all units. Air scouts consist of designated personnel in each unit whose duty is to observe for hostile aircraft and give timely warning. On the march they observe from the vehicle to which they are regularly assigned. At the halt, they are posted near their units.

(*c*) Where observation is limited because of the character of the terrain, such as in a defile, a flank patrol may be posted or detailed to march along high ground parallel to the column for the specific purpose of warning of the approach of hostile aircraft.

(2) All personnel must be trained in the identification of hostile aircraft.

(3) The air alarm may be transmitted by radio, improvised visual signal, prescribed whistle signal, firing weapons (see FM 17–5), or voice. Any one or all the methods may be used depending upon the distance at which the warning is given from the command and whether or not the engines of vehicles are running.

(4) Upon receiving the air alarm warning or signal, units and personnel are governed by the following rules:

(*a*) While marching, large armored force units cannot expect to keep from being observed. Since the normal dispersion of turreted vehicles renders such units an unfavorable target for air attack, they continue in motion. However, if the column consists of open vehicles or these vehicles are

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intermingled with turreted vehicles, all will halt without closing up and all possible small arms fire will be brought to bear on the attacking airplanes. Personnel in open vehicles not manning antiaircraft weapons will disperse dismounted. Movement will be resumed as soon as practicable after the hostile airplanes have passed. Small groups, such as patrols or trucks moving by infiltration, cease movement in the open, since they are primarily interested in escaping detection and are not likely to be subject of an air attack. When columns halt, vehicles are moved off the road, whenever possible, to cover and are immediately camouflaged. This is done even though the halt is for only a few minutes.

(*b*) In an assembly position, or in a bivouac area, personnel remain motionless until the "all clear" signal is given. If early warning has been received, they may seek cover and remain motionless. Men are trained not to look up, as faces are easily detected. At night, it is especially important that these precautions be observed when hostile aviation uses flares to illuminate an area. In addition, all lights not completely concealed should be extinguished during the period of the air alarm.

c. Night marches.—Large armored force units in the combat zone can best escape detection from the air by marching during the hours of darkness. These night marches are made without lights, or with the use of tactical lights only.

d. Concealment.—The presence and position of troops are disclosed to an air observer by movement, regular formation or outline, reflection of light, dust, smoke, or newly made tracks and installations. Measures taken for concealment aim to defeat both visual reconnaissance and photography from the air. These measures and the rules governing concealment are covered in detail in section I. Extensive artificial camouflage rarely will be practicable. (See FM 5–20.)

e. Dispersion.—A command diminishes its vulnerability to air observation and attack by adopting dispersed formations and by distribution into small units or groups. Dispersion may be accomplished by increased width and depth of formations; by moving in multiple columns; by distribution in assembly or bivouac areas into small units or groups to take advantage of cover; by halting at extended distances, by clearing roads, and moving under nearby cover; and by in-

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creased speed of movement between successive terrain lines affording cover.

f. Antiaircraft fire.—All units provide immediate protection against low flying hostile aircraft by using their own antiaircraft weapons and other weapons suitable for fire against aircraft.

(1) All antiaircraft weapons are alerted for antiaircraft fire at all time. Troops and personnel charged specifically with the duty of antiaircraft firing are constantly prepared for immediate action. Organic weapons provided for the purpose protect trains in movement and in service parks.

(2) Fire is opened promptly upon enemy airplanes within effective range, except from a concealed position where it is desirable to maintain secrecy and firing might disclose the presence of troops.

g. Air-borne troops.—The threat from air-borne troops, parachute and air-landing, requires that special security measures be instituted against them. Responsibility for these measures extends down through all echelons of command, the measures adopted within each echelon being coordinated in such a way as to provide a unified system over the entire danger area. In general, the security measures adopted are designed to gain early information; to attack incoming enemy transports by combat aviation and antiaircraft fire; to destroy parachute troops while in the act of landing, when they are most vulnerable, or immediately after; to obstruct all possible landing fields (airdromes, open fields, and straight stretches of level highway); and to isolate and destroy all forces that land by immediate attack before they can be resupplied and reinforced with supporting weapons. See FM 100–5 and 100–15.

h. Summary.—In order to provide its own antiaircraft security armored force units must:

(1) Provide timely warning of the approach of hostile airplanes.

(2) Rely on dispersed formations or make such appropriate use of cover or concealment as conditions offer.

(3) Keep antiaircraft guns ready for immediate action at all times.

(4) Be skillful in the antiaircraft use of its own fire weapons and open fire promptly upon enemy airplanes, except

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when security is to be gained through concealment rather than fire protection.

(5) Determine when security depends on fire power or on concealment.

■ 43. SECURITY AGAINST HOSTILE MECHANIZED FORCES.—*a. General.*—The inherent characteristics of armored units (mobility, fire power, armor protection, and shock action) provide the primary means of protection against hostile mechanized attacks. Certain armored force units, however, do not have this protection and additional means are frequently necessary for their protection, as well as for the security of the command as a whole. These additional security measures are active and passive, generally used in combinations. They supplement the normal security detachments provided for the security of the command as a whole.

(1) The active means available to armored force units include employment of tank destroyer, artillery, chemicals, and the counterattack. Combat aviation, when attached, may also be employed. (See FM 100–5.)

(2) The principal passive means employed include concealment, natural and artificial obstacles, demolitions, and antitank mines.

b. Reference.—FM 100–5 covers the methods employed to warn of mechanized threats and the use of antitank guns, artillery, and chemicals.

c. Concealment.—The rules set forth in section I governing cover and concealment apply to all armored force units.

d. Natural obstacles.—Terrain which is unsuitable for the employment of hostile mechanization is also unsuitable for the employment of friendly armored force units for offensive action. Consideration, therefore, must be given to the probable employment of friendly armored force units. Natural obstacles, which restrict the offensive operations of these units, are avoided. However, the defensive possibilities of terrain must be studied constantly from the viewpoint of protection and antimechanized defense in order to utilize existing natural obstacles to the maximum extent.

(1) A map study, supplemented by air and ground reconnaissance, may disclose avenues of approach and natural obstacles such as streams, lakes, marshes, thick woods, and mountainous country, which will impede or restrict enemy

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mechanized operations. During marches, halts, or when in position, full use is made of those terrain features which restrict the approach of hostile mechanized vehicles. When the enemy's approach is limited to a few routes crossing a natural barrier, protection is obtained by blocking these crossings.

(2) When approaches are favorable to enemy mechanized elements and march columns are exposed, chief reliance must be placed on active means of providing security.

(3) Tank destroyer and artillery units when employed on antimechanized missions take advantage of local natural obstacles, including buildings, walls, and stump covered or rocky areas.

e. Artificial obstacles.—Artificial obstacles such as barricades, demolitions, and antitank mines normally are employed by armored force units only to block crossings, defiles, and other routes of approach of hostile mechanized vehicles; to provide additional security of bivouac areas; and for local defense of tank destroyer and artillery units and weapons on antimechanized missions.

(1) Engineers with armored force units are charged with the placing and construction of major artificial obstacles. (For details see FM 5–30.) When artificial obstacles are employed, their location must be coordinated with natural obstacles and with the fire of antitank and other weapons. The main effort in the construction of artificial obstacles is made on those parts of the front possessing natural obstacles which are susceptible of improvement. The bulk of the antitank guns are placed to cover the avenues favorable for tank action. A barrier or obstacle loses much of its defensive value unless covered by fire of supporting troops. Removal of obstacles can be impeded by contamination with persistent chemical agents. In general, obstacles, demolitions, mines, and persistent gas contaminations are located where the enemy will come upon them suddenly and be unable to avoid them.

(2) Demolitions and mines are useful for quickly blocking defiles and principal avenues of approach. They constitute a means for canalizing a hostile mechanized attack. Mines have the advantage over demolitions in that mines may produce casualities both of personnel and vehicles. The location of mines must be coordinated with natural and artificial

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obstacles and with the fire of antitank guns and other weapons.

(3) Artificial obstacles, demolitions, antitank mines, and contaminated areas may restrict the movement of troops which they are designed to protect. A record must be made of the location and extent of such measures when used so that the necessary precautions may be prescribed for the safety of friendly troops.

(4) The construction of road blocks is covered in FM 5–30.

(*a*) *Employment.*—A road block is a barrier to block or limit the movement of hostile vehicles along a road. They are used to protect the flanks of a marching column or an encircling force; to delay an enemy to give time and space for deployment for combat or time to organize the defense; and as counterreconnaissance measures.

(*b*) *Location.*—Road blocks are located in defiles where they cannot be readily avoided. To be most effective a road block should be located so that the enemy will come upon it suddenly. A position immediately around a bend where vegetation shields it from view of approaching hostile elements is preferable. Covered or concealed positions from which effective machine gun or antitank gun fire can cover the obstacle are desirable.

(*c*) *Construction.*—Road blocks may be constructed by engineers when available. *However, all units must be trained in the methods of constructing hasty obstacles and in their removal.*

(*d*) *Defense.*—Road blocks must be defended by fire. Strength of the defense depends upon the means available and extent of delay desired. The defense may vary from two riflemen to several riflemen, machine guns, and self-propelled guns. Guns are so placed that their fire will prevent hostile troops from removing the obstacle or passing around it. Tank destroyer elements may be used. The employment of tanks to defend road blocks is unusual. When so used they should operate by section, taking mutually supporting positions to increase protection against stalking and to permit rapid withdrawal.

■ 44. SECURITY AGAINST CHEMICALS.—Security against chemicals is conducted in accordance with the fundamentals prescribed in FM 100–5 and procedure outlined in FM 21–40.

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■ 45. SUMMARY.—*a.* All armored force units must provide themselves with the necessary security to protect themselves *at all times* against surprise, observation, and interference by hostile air and ground forces.

b. All security measures include an adequate warning service to prevent surprise.

c. Security detachments between the enemy and the main body are detailed to prevent observation by hostile ground forces.

d. Protection of the main body against interference is obtained by making security detachments sufficiently strong to either defeat the enemy or to hold the enemy until the main body gains time for deployment to meet the threat.

e. Reconnaissance is an essential element of security.

f. Terrain and the road net are important factors in the security of a command.

g. A command's readiness for action is facilitated by the distribution of units in the main body and prior plans to meet enemy situations.

h. Special measures must be taken for protection against hostile aviation and mechanized units and enemy chemical attacks.

i. The use of armored troops on security missions, except for their own security, when others are available for this duty, is justified only under conditions of extreme emergency. It will be remembered that armored units are first, last, and always offensive troops.

SECTION IV

OFFENSIVE COMBAT

■ 46. GENERAL.—*a. Purpose.*—Offensive combat has for its object the attainment of an objective by means of the attack. The organization and equipment of armored force units are designed primarily for offensive combat. Units must be imbued with the spirit of the offensive and must be always on the alert to seize the opportunity for offensive action. The attack of armored force units should be characterized by boldness and speed in striking sudden blows in the most favorable direction.

b. Scope.—Armored force units are employed in accordance with the principles of large numbers, surprise, and maneuver. (See FM 100–5.)

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(1) *Large numbers.*—They are employed in large numbers in decisive areas which afford suitable terrain and sufficient space to utilize fully their mobility and shock action. Protection against hostile air attack and antitank weapons is a prerequisite of successful employment.

(2) *Surprise.*—Surprise is obtained by rapid maneuver, secrecy, and deception. By prompt delivery of the initial blow the commander places his adversary at a disadvantage and forces him on the defensive or prevents him from organizing his defenses. A rapid, bold attack by a small force may often accomplish more than a slower carefully coordinated attack by a larger force. By such an attack initiative is taken from the enemy and his plans for attack or defense disrupted.

(3) *Maneuver.*—The maneuver of units rapidly to project shock action and protected fire power into the vital part of hostile rear areas from an unexpected direction must be sought in all attacks.

c. Use of terrain.—Full advantage must be taken of terrain favorable for movement, concealment, and use as observation points. Terrain suitable for operations should provide: concealed assembly positions (areas), covered routes of approach, areas for attack sufficiently free of obstacles to permit movement to objectives at speed, and suitable positions and observation for supporting artillery and other ground weapons during the attack. (See par. 26.)

d. Initiative.—Initiative of subordinates plays a great part in success in any action. Commanders will often be confronted, especially when the situation is obscure, with the problem of making immediate decision and initiating prompt action. Time may, but usually will not, permit detailed reconnaissance. Mission type orders may be given and leaders of small units must be relied upon to make a prompt estimate of the situation, arrive quickly at a decision, and promptly and energetically carry out that decision. Decisions made must be in conformity with the general missions and intentions of the commander, hence it is essential that all commanders be informed of such missions and intentions. *Calm* and *clear*, yet rapid, thinking must be combined with a high degree of initiative. Snap judgment must be avoided.

e. Fire and movement.—(1) The principal means of attack

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for armored force units is a combination of fire and movement to reduce enemy opposition. By fire and movement is meant the advance by certain elements or units (maneuvering element) protected by the fire of other elements or units (base of fire). The object of this form of attack is to advance elements or units to positions from which stationary fire will annihilate enemy opposition, or to a point where a swift assault over a short distance, strongly supported by fire, can be launched to overrun the enemy position.

(*a*) This method of attack is applicable in the largest armored force unit and down to and including the section. For example, the regiment attacks by fire and movement when the armored (tank) battalions advance under the cover of the base of fire established by its machine gun and mortar units and by supporting artillery.

(*b*) Fire and movement is generally employed by the components of the maneuvering force when enemy fire is encountered. For example, a platoon in the maneuvering force, when held up by fire, furnishes its own base of fire consisting of one of its sections. This section, preferably from a partially defiladed position, fires while the other section maneuvers to a forward position from which it in turn establishes a temporary base of fire to cover the advance of the former.

(*c*) Fire and movement is also employed in displacing forward by the force constituting the base of fire. For example, the elements of the self-propelled gun platoon and mortar platoon displace forward to a new position by echelons, each echelon being protected in its advance by the fire from the elements remaining in position.

(2) The elements or units constituting the *base of fire* deliver fire from either vehicular or ground mounted weapons, depending upon the cover and the field of fire available. The vehicles of the maneuvering force advance by covered routes, where practicable; weapons being fired from the vehicle when the enemy position is in view. Where the terrain permits, vehicles move into a partially defiladed position, fire a small burst, maneuver to a new position, and repeat. The 37-mm and 75-mm guns are normally fired when the tank is halted. Where the terrain is relatively flat and smooth, a large burst of fire may be delivered while the vehicle is moving. Even under the most favorable

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terrain conditions fire will be more effective if the vehicle is halted a few seconds while a small burst is fired and then moves on. Firing from moving vehicles should only be attempted where a swift assault over open terrain for a short distance (not over 200 yards) is desired; casualties can only be held down when this assault is given the maximum fire support of supporting weapons.

f. Tactical forms of attack.—The tactical forms of attack are covered in detail in FM 100–5. The mobility of armored force units permits great latitude in the choice of direction and method of attack. Against forces of similar characteristics and against strongly organized positions, the turning movement is the preferred form. Against groups or positions highly vulnerable to armored attack, the attack may be an envelopment of one or both hostile flanks, preferably the latter. When the mission, time, terrain, and other factors do not favor an envelopment, an attack against the hostile front may be by a penetration. A prompt direct attack may be made to take full advantage of surprise or of a temporarily favorable situation.

g. Tactical groupings.—In attack the combat command groups generally are disposed into four parts: a reconnaissance force (consisting of organic reconnaissance units and attack units), a striking force (the striking echelon consisting of tanks with engineers attached), a supporting force (consisting of the support echelon, i. e., the infantry, artillery, and tank destroyer units), and a reserve. Whether the striking force makes the initial attack or main attack will depend on the terrain and the extent and dispositions of the hostile antitank defenses.

(1) *Striking force.*—When terrain is favorable for tank operation and hostile antitank defenses are not strong, the striking echelon supported by available combat aviation makes the initial attack. This attack is usually by envelopment, the supporting echelon being used as a holding force or base of fire, or a portion of the tank units may be used for such holding or secondary attack. The striking echelon will make the initial attack in a penetration *only when hostile defenses are very weak* or when given overwhelming air and artillery support. Engineers are usually attached to the striking echelon. Infantry may be attached.

(2) *Support force.*—When the striking force makes the

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initial attack, the support echelon follows to seize and hold objectives taken by the striking echelon. When terrain is unfavorable for tank operation or antitank defenses are strong, the support echelon, supported by medium tank units, may lead the attack to secure ground from which the striking echelon may attack. The support echelon usually leads the attack in a penetration. The support echelon may be used to make an attack initially to serve as a base of fire for the striking force in an envelopment. This attack serves to fix the enemy and may attract his reserves. In this manner it assists the advance of the enveloping or striking force.

(3) *Reserve.*—A part of the command, the reserve, is held out of the combat initially for employment by the commander of the whole force in furtherance of his plan of attack or for use according to the development of the action. The reserve is composed chiefly of tank units. Its strength usually varies from one-third to a small fraction of the command. A maximum is held out against an enemy composed of mechanized troops, or strong in antitank weapons. Its employment will vary with existing conditions and opportunities. As soon as the reserve is committed, a new reserve must be constituted without delay.

(*a*) The commander of the reserve must be in close communication with the commander of the whole force.

(*b*) In emergencies, he must not hesitate to act without waiting for orders, keeping in mind the mission and general plan of the commander. He must maintain personal reconnaissance and keep close contact with the attacking troops. He should anticipate possible uses of the reserve and prepare tentative plans therefor.

(*c*) The commanding officer of the reserve must conduct timely reconnaissance of routes to probable localities for employment or movement.

(*d*) The reserve is located in a position from which it can best support the main effort and protect the flanks. To support an envelopment, the reserve is located towards the flank enveloped, generally in rear of the main attack.

(*e*) When the main attack force reaches the enemy or attains its objectives, the reserve must be ready to take advantage of the situation to give an added impetus to the attack at a critical moment to clinch the victory or to resist counterattack. It may pursue a retreating enemy or tempo-

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rarily occupy the ground captured. The reserve must be prepared to cover the withdrawal or reorganization of the main attack force.

h. Employment of tanks.—(1) *General.*—In the attack, the mobility, fire power, and shock action of tanks are exploited to the maximum. Tank attacks will be costly or will result in failure to reach their objective unless employed in decisive numbers.

(*a*) The width and depth of the formation depends upon the situation and terrain. Terrain may limit the breadth of the formation and force a unit to attack on a narrow front. When the situation is obscure or great power is needed to overcome hostile resistance, a deep formation is used. This formation gives the maximum control and flexibility. When a limited objective attack is to be made such as in withdrawal, a broad formation may be used. This formation is difficult to control. Echelon formation is suitable for flank protection, units being echeloned toward the flank to be protected.

(*b*) Tank units are arranged in the attack formation in accordance with the plan of attack. They advance to their objectives by a combination of fire and movement. Within the platoons, the intervals and distances between tanks is not to be less than 50 yards, when supporting other ground troops; otherwise not less than 75 yards. The distance between successive waves must not be less than 150 yards.

(2) *Light tanks.*—The primary mission of the light tank units is to close with the enemy and to disrupt the hostile organization in vital rear areas by fast, bold action. This is accomplished by destroying hostile automatic weapons and personnel; disrupting communications; and overrunning command posts, artillery positions, reserves, and other installations essential to the enemy.

(3) *Medium tanks.*—(*a*) The primary mission of medium tank units is to assist the attack of the light tank units, chiefly by neutralizing or destroying the hostile antitank weapons. When organized resistance is encountered, especially antitank guns, medium tank units will usually precede the light tank units for this purpose. The use of one or more platoons of medium tanks following the attack of light tank units for supporting fire will frequently be desirable. Tanks so employed, for short periods, should assume turret defilade

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positions from which they can bring direct fire to bear on hostile antitank weapons as they are found.

(*b*) Medium tanks also protect the light tanks against the attack of hostile tanks. When the enemy is composed of mechanized troops, a large medium tank component, if available, is held in the reserve.

(4) For further details on the employment of tanks, see chs. 5, 7, 12, and 13.

i. Heavy tank destroyer battalions.—(1) *Organization.*—This battalion consists of a headquarters company and three heavy tank destroyer companies. The company has two heavy and one light platoon of four guns each.

(2) *Missions.*—(*a*) The mission of the tank destroyer with the armored division is to assist either by offensive or defensive action in the protection of the division against hostile mechanized forces.

(*b*) The battalion may be used to—

1. Protect a bivouac, assembly area, or rallying point.

2. Guard an exposed flank.

3. Protect the rear of the division.

(*c*) The battalion may be used as a unit or companies may be attached to armored regiments or combat commands. Except when actually emplaced to protect a bivouac, assembly area, or rallying point, tank destroyer units should be held in mobile reserve, prepared to move promptly to any threatened area.

(3) *Reconnaissance.*—Reconnaissance for positions and routes thereto is continuous during the advance. Information gained is immediately transmitted to the battalion headquarters or the company concerned. Battalions and company reconnaissance personnel supplements the reconnaissance of units to which the battalion or its companies are attached. Close cooperation must be maintained with observation aviation.

(4) *Liaison.*—The battalion sends a liaison officer to the unit to which it is attached and each company sends liaison personnel to the unit to which it is attached. Close liaison must be maintained in order that the tank destroyer units may act promptly.

(5) *Advance.*—During the advance the tank destroyer units move usually as a unit near the head of the unit to which they are attached. A detachment or the whole battalion

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may be used to guard an exposed flank. In this case they are usually attached to or act as flank guard. When the armored units go into assembly areas, tank destroyers immediately place guns in position to cover likely avenues of approach for attacking armored units. A portion of the battalion or company is held in mobile reserve ready to reinforce any threatened point.

(6) *During combat.*—Tank destroyer units may advance behind the second echelon of attack, usually the second armored battalion in depth. They are prepared to repel counterattacks from the flanks and rear. The greater part of the unit should, if terrain is suitable, be near the exposed flank.

(7) *During reorganization.*—As the attack progresses, the tank units in rear will pass through the destroyer units to enter combat. After the objective is reached, the tank destroyer units move rapidly forward and cover the rallying point to protect the reorganization.

(8) *In defense.*—In defense the tank destroyer battalion is usually kept intact in mobile reserve in such position that it may move promptly to any threatened point to repel a counterattack. Tank destroyer units are not ordinarily attached to lower units and emplaced as stationary antitank guns in defense. Their mobility is preserved.

(9) *Retrograde movements.*—In retrograde movements tank destroyer units are usually attached to the rear guard. They are held mobile ready to repel enemy armored units.

(10) *River crossings.*—In river crossings tank destroyer units should cross the river immediately after the infantry in order to repel hostile armored counterattacks.

(11) The employment of the tank destroyer company is covered in chapter 7.

j. Artillery.—(1) *Role.*—The role of the armored artillery is to support the armored division and its elements in the conduct of highly mobile ground warfare primarily offensive in character.

(2) *Sources of fire missions.*—The sources of artillery fire missions are:

(*a*) *Artillery forward observers* (with advance elements of division).—The armored vehicle serves as an armored observation post for these observers. Radio is the means of communication.

(*b*) *Air observation.*—Air observers report directly to the

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particular artillery echelon with which they are functioning. Prearrangement of plans and definite assignment of zones of responsibility for observation and fire are essential.

(c) *Artillery liaison officers.*—Artillery liaison officers accompany the armored unit commanders. Flexibility in plans and fire support by the artillery are thus facilitated.

(3) *On the march.*—The armored division usually advances in multiple columns. When contact is imminent for any column, its advance guard moves on a broad front. Artillery usually supports this type of action by immediate occupation of a position. Continuous support is effected by displacement by echelon. The artillery must be prepared to place fire on the principal routes leading toward the marching columns from the front and flanks. If no special use for the battery is contemplated, it is left under artillery control with limitations placed on its employment and displacement.

(4) *In assembly areas and bivouac.*—When armored forces are in assembly areas or bivouac, artillery is posted to cover all approaches to the area. Positions are selected from which it may bring long range interdiction fire on principal routes of approach for hostile forces. It performs counterbattery missions if within range of hostile artillery. It supplements the antitank defense of the area.

(5) *Attack of deliberately prepared hostile position.*—(a) *Fires preceding attack.*—The division artillery officer is responsible for the coordination of all fire by the artillery of the division (organic and reinforcing). A short preparation may precede the attack.

(b) *Fires in support of the attack.*—Fires in support of the attack are planned and executed as follows:

1. *Limited objective.*—Same as (5)(a).
2. *Unlimited objective.*—The mobility of the armored division practically precludes complete coordination of artillery fire in support of the attack. Normally decentralization is effected by attachment of elements of the artillery to the armored echelons.

(c) *Normal artillery fires in support of the attack.*—These fires include:

1. Counterbattery.

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2. Neutralization of antitank guns, infantry heavy weapons, and hostile reserves.
3. Neutralization of areas on the flanks of the attack.
4. Fires to oppose hostile counterattacks.

(*d*) The *organization* for combat of the artillery with the division provides for general support and direct support missions. The bulk of the artillery supports the main effort.

(*e*) *General support artillery* fires on targets capable of affecting the operation of the division as a whole. Such fires may be interdiction of crossroads, bridges, and other defiles, counterbattery fire, or the firing of concentrations on hostile known or suspected points of assembly. Direct support artillery is primarily concerned with targets that will immediately affect the operations of the supported units. Its fires are: neutralization of hostile antitank guns and observation posts; neutralization of infantry heavy weapons; neutralization of hostile reserves; and assistance by concentrations or direct laying to repel hostile counterattack. Successful artillery support as the attack progresses depends upon coordination of fires, air and ground observation, liaison and communications, and the vigorous forward displacement of the batteries.

(*f*) *Artillery* supports the tanks until they come in close contact with hostile positions, usually to about 300 yards.

(*g*) *At halt.*—When tank units halt for reorganization, artillery must be emplaced to protect them.

(6) *Attack of hastily prepared battle position.*—This situation occurs more often in a meeting engagement. Armored units attack at once and little time will be available for coordinating fires. In some cases medium tanks will provide the principal artillery fire support. Artillery supports such attack by opening fire early to assist advance elements to seize vital terrain; by counterbattery; and by neutralization of hostile antitank weapons, heavy infantry weapons, reserves, and observation posts. It neutralizes hostile fires on the flanks of the attack and fires on troops forming for counterattacks.

(7) *Exploitation.*—In exploitation, artillery control probably will be decentralized.

(8) *Pursuit.*—When the division is pursuing alone, part of the artillery will be with the direct pressure and part with the encircling force. With the direct pressure force, artillery

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gives direct support. Artillery of the encircling force takes positions from which it may fire on retreating hostile forces. It supports the attack of tank units. It assists in repelling counterattacks made against the encircling force.

k. Mortar units.—Mortar fire is coordinated with the artillery fire to avoid duplication of effort. Mortars place smoke screens at the shorter ranges, while the artillery fires smoke at the longer ranges. Infantry mortar units are employed with the infantry elements. Mortar platoons of armored battalions operate with these units, normally under centralized control. In some situations a section of the mortar platoon may be attached to a subordinate unit. For further details on the employment of mortars of armored force units, see chapter 5.

l. Aviation.—(1) Operation of the armored force is facilitated by control of the air. Such control permits free movement of units in the approach and makes possible the support of an attack by bombardment aviation. Lack of control of the air, although not prohibiting movement, makes operations much more difficult. Pursuit aviation is employed to deny the use of the air to hostile observation and bombardment aviation.

(2) Combat aviation supports armored force units by attacks on hostile supply and command installations, reserves, artillery, antitank weapons, and other resistance holding up an attack. In the advance combat aviation in close support is used to attack and delay hostile columns. In the attack it supplements the fire of artillery against critical targets; attacks targets beyond the range of artillery; gives close support to attacking units that have advanced beyond range of their supporting artillery; and attacks hostile counterattacking forces. In pursuit it gives close support to pursuing forces by attack on hostile resistances holding up the movement; by attacking and delaying withdrawing hostile forces; and by destruction of bridges on routes of withdrawal. In defense it attacks hostile attacking forces, reserves, command and supply installations.

(3) Observation aviation performs battle reconnaissance as previously discussed in this chapter. It is also employed during a crisis in combat to maintain liaison and coordination between tanks, artillery, and combat aviation.

m. Infantry element.—(1) Action of the armored infantry

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in the attack varies. Part or all of it may be employed in the secondary attack. A part of it may be attached to the maneuvering element or be held in reserve. It remains mobile as long as the situation permits and then may be employed as follows:

(*a*) To clarify or develop a situation, such as attacking to drive in hostile covering forces or attacking a hostile antitank zone.

(*b*) To seize terrain from which to launch a tank attack.

(*c*) To make holding attacks while tank units envelop.

(*d*) To follow closely the main attack to overcome the remaining hostile resistance, occupy and hold ground gained.

(*e*) To cover the flanks against a hostile threat.

(*f*) To constitute a new reserve.

(*g*) To protect tank units during their reorganization after the attack.

(*h*) To protect tank units at night in movement or in bivouac.

(2) The fire of infantry supporting weapons is coordinated with that of the artillery. The fire of these weapons supplements the artillery direct support fire, chiefly by engaging targets in the immediate foreground.

n. Engineer units.—Engineer units may be employed with the main or secondary attack forces to facilitate their movement in the attack. Engineer missions will include: removing or assisting in the passage of obstacles and mine fields; providing means for crossing streams; and protection of flanks by means of obstacles, demolitions, and mines. Engineer troops engage in combat when necessary for the accomplishment of their assigned work. (For details, see FM 5–30.)

o. Use of chemicals.—Because of the difficulty of establishing and maintaining effective chemical concentrations in mobile operations, use of chemical agents other than smoke by armored force units in the attack is limited. The employment of smoke must be limited carefully in respect to both time and space and must be coordinated carefully with other supporting fires and with the action of tanks and supporting aviation. Under favorable conditions of wind and weather, smoke is used to blind hostile observation posts, antitank guns, and infantry supporting weapons, to conceal the approach of the attacking elements, and to protect the

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flanks of the attack. It is especially useful during short periods when troops must traverse exposed ground.

(1) Smoke may be projected from artillery or mortar shell; from aircraft, or dischargers attached to tanks. Smoke placed by mortars frequently will be more effective than artillery fire in neutralizing observation and hostile antitank gun fire within a particular area.

(2) Partial loss of control and disorganization may result from tanks passing through smoke. It must not be placed on tank objectives or on areas where tanks will be required to pass in the assault unless the wind conditions are such that it will be dissipated before the arrival of the tanks.

p. Coordination.—(1) *General.*—The commander is responsible for coordination of all elements of his command. Attacks launched directly from march columns without halting, or with a short halt may result in an uncoordinated attack, loss of control, and a sacrifice of some of the capabilities of artillery, tanks, and other supporting weapons. Such attacks will usually be launched in a meeting engagement or against a retreating enemy. They may be launched against an inferior enemy, against an enemy not fully organized for defense, or against an enemy whose morale is low. Ordinarily an attack in a moving situation may be organized and coordinated in assembly or intermediate positions.

(2) *During the attack* the action of the light and medium tank units must be coordinated with each other and with the action of the infantry and other supporting units. The fire of all supporting weapons must be coordinated, wherever practicable, with the scheme of maneuver and plan of tank employment. In all cases the maximum coordination permitted by the situation and time element is sought. The measures to insure coordination are prescribed in the attack order.

(3) *Line of departure.*—See FM 100–5 and appendix I.

(4) *Intermediate position.*—If the line of departure is at a considerable distance from the assembly position, an intermediate position may be designated for coordinating the advance of all elements.

(5) *Attack position.*—An attack position, on or immediately in rear of the line of departure, may be designated for the coordination of armored force units with other ground forces they are supporting.

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(6) *Rallying and alternate rallying points.*—Rallying and alternate rallying points are designated where the unit assembles after combat for the purpose of reorganization. Rallying and alternate points are announced for each objective. The rallying point is usually just in rear of the objective. The alternate rallying point is farther to the rear and may be the attack or intermediate position. In the exploitation of a break-through a series of rallying points may be designated along the axis of advance. These are designated before the movement starts. Any change in direction of advance will require the designation of new rallying points.

(7) *Objectives.*—Each subordinate tank unit in the attack should be assigned a principal objective. Suitable objectives are:

(*a*) Hostile elements or installations, the destruction of which will disrupt most effectively the enemy operation.

(*b*) Enemy reserves.

(*c*) A decisive terrain feature.

(8) *Time of attack.*—The earlier an attack can be launched after gaining contact with the enemy, the less preparation the enemy can make to meet it and the greater the possibility of surprise. Ordinarily the main attack by tank units should not be started unless there is sufficient daylight remaining to permit such units to reach their objective by nightfall. The time of the attack will depend chiefly upon the enemy situation, terrain, and the time required to organize and prepare for the attack.

(*a*) The time of attack may be indicated by prescribing a definite hour, or by prescribing that the unit will attack upon order (radio, visual signal, or other means) of the commander; or on reaching a certain line or terrain feature.

(*b*) When the command attacks by an envelopment, the time of attack may be indicated by:

1. Prescribing a definite hour for each part of the attacking force. This method insures the best coordination of the attack and should be used whenever existing conditions render it feasible.
2. A signal, visual or otherwise. This method may be necessary when conditions of terrain and the enemy situation are so vague or uncertain as to render the prescribing of a definite hour impracticable. When employed, care should be taken to

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insure that the signal prescribed can be seen and understood.

3. Making the time of attack of one element dependent upon the time or progress of attack of the other. This presupposes that the terrain over which the attacks take place is clearly visible to one or both elements or that close liaison exists. Such a method of time coordination may prescribe that one element attack in conjunction with the other; when the attack of one element has been launched, the attack of the other is made at the same time or at such time thereafter as to bring the full weight of both attacks on the enemy.

4. The secondary or main attack force being directed to attack as soon as in position. Frequently this may be the only feasible method, because of difficulties of terrain, uncertainty, or rapidly changing conditions in the enemy situation.

(*c*) When the command attacks by a double envelopment, any one or combination of the foregoing methods may be employed that are applicable.

q. Orders.—(1) Attack orders for armored force units usually are issued orally. They are issued to the assembled staff and available unit commanders prior to the separation of the various elements for the attack. When practicable, orders are issued at a point from which the objective can be seen. To those not present, orders may be delivered, as appropriate, orally by staff officer messengers, by radio, or (written) by motorcycle messengers. Fragmentary orders are frequently used. Orders are issued sufficiently far in advance to permit subordinates as much time as possible for reconnaissance, for the preparation of plans, and issuance of their own orders. For the form and details of the attack order, see FM 101–5.

(*a*) Orders will designate or prescribe, as may be necessary—intermediate assembly positions, line of departure, time of attack, zone of action, direction of attack, objective or objectives, rallying and alternate rallying points, and the limit of pursuit.

(*b*) Orders to supporting units will contain definite instructions covering the particular support the unit is to render. As appropriate, these orders will cover positions, targets, time

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of opening fire, any limitations of fire, forward displacement, and subsequent action.

(2) When conditions require, decentralization of command is encouraged. The initiative of subordinates is relied upon. The commander issues mission type orders to those tactical groupings in which command is decentralized and attaches the means necessary to accomplish their tasks.

(3) In armored force units it is particularly necessary that smaller units be familiar with higher plans in order that they may act promptly and correctly in any situation not covered by orders. Leaders must be enterprising and always ready to seize opportunities for the employment of their commands in furtherance of the plan of the higher commander.

r. Control.—(1) The chief requirements of control during the attack are simplicity of plans and formations, rigid adherence to the procedure of follow the leader, reliable radio and visual communication, and prearranged rallying points or alternate rallying points.

(2) Control by a commander of an armored force unit during attack is difficult. He exercises such control as is possible by utilizing all practicable means of communication and liaison, and by making full use of his staff. The commander of the whole force is well forward until his troops are committed to action. He may remain with the force whose mission is of decisive importance to the action or may go to a position from which he can observe the action of both the secondary and maneuvering forces. He should at all times be in close communication with his command post and his reserve. Control is always regained at rallying or alternate rallying points.

(3) Since mobility of all elements may result in considerable dispersion, the greatest possible latitude is given subordinates to accomplish their missions in their own manner in conformity with the general plan rather than on specific instructions. During the approach march, formations are as flexible as conditions of the terrain permit. Each tank commander selects his route and rate of march to conform to the general formation, and takes full advantage of cover.

s. Formations.—Formations of units in the attack should be simple and flexible in order that units may retain their ability to maneuver. Dispositions should permit control, mutual fire support, and development of the maximum fire

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power in the shortest time with least exposure to hostile fire.

t. Frontage and depth.—The depth and frontage of the initial combat formations depend primarily upon known hostile composition and dispositions, the terrain, and distance to the objective.

(1) The main attack is delivered on the minimum frontage necessary to overcome resistance to its advance consistent with the number of tank units employed. It is launched in sufficient depth to insure sustained and successive striking power.

(2) Secondary attacks are characterized by lack of depth, limited objectives, and wide zones of action. The frontage of any unit in the secondary attack is based, in general, upon its principal weapon strength. It varies with the mission or missions and combat power of the unit, the terrain, the amount of fire support available, and the probable hostile resistance that will be encountered.

■ 47. CONDUCT OF OFFENSE.—*a. Offensive action.*—Offensive situations that armored force units will participate in are covered under subsequent paragraphs. They may be classed generally as:

(1) Meeting engagements.
(2) Attacks against enemy positions.
(3) Exploitation of a success.
(4) Pursuit.
(5) Special operations.

b. Development for combat.—(1) In anticipation of offensive combat, an armored force unit is disposed with the reconnaissance elements in contact or seeking contact with the enemy, the advance guard furnishing security en route, the combat elements in the main body in the order facilitating their employment, the light maintenance elements close up in rear, and the supply and administrative elements moving well to the rear.

(2) Development for offensive combat may be from the march column direct with the minimum amount of coordination, or if the approach is made at night it will be made from assembly positions (areas). Should the commander decide that rapidity of action is essential to retain a tactical advantage, he may dispense with assembly positions, decentralize operations to combat units, and issue orders to those

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units to develop and attack. Normally coordinated attacks are organized and launched from assembly positions. (See fig. 24.)

c. Assembly positions (see fig. 24).—Under conditions where contact is imminent, especially at night, and march formations are no longer safe to continue, the units go into previously reconnoitered assembly positions. Assignment of units to assembly positions is based chiefly upon the cover and concealment available; the disposition of units upon their probable employment; and to facilitate their initial movement from the assembly positions. Movement into positions is under protection of the advance guard. Guides are provided to lead units into their assembly positions. Depending upon the available cover, positions may be widely separated. They should not be within the range of hostile light artillery fire. Movement into assembly positions is often made under the cover of darkness. Daylight positions will have to be changed after dark if the command is to bivouac. Subordinate commanders assign assembly positions to the component units of their command in accordance with the foregoing principles.

(1) While units are moving into their assembly positions, the commander prepares his orders and completes arrangements for the execution of his scheme of maneuver, including: instructions for further reconnaissance; arrangements for coordinating the action of troops in the attack echelon with that of the artillery, combat aviation, and other supporting elements; assignment of artillery units to direct and general support; attachments to attacking troops; establishment of communications; and any other necessary measures. Before he decides on his scheme of maneuver for an attack, the commander, whenever practicable, makes a personal reconnaissance. If possible he should be accompanied by his immediate subordinate commanders.

(2) As each unit arrives in its assembly position, elements take up dispersed formations suitable to the available cover and concealment and to facilitate movement in more than one direction out of the position. Measures are taken immediately for security against both air and ground forces. Roads are cleared and exits reconnoitered. Communication is established without delay between command posts, and liaison with the next higher unit is maintained. Radio com-

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munication ceases in proximity to the enemy. Reconnaissance of routes over which the elements are to advance is initiated as soon as these routes are known.

(3) Maintenance and supply echelons are brought up to their unit assembly positions. Vehicles are refueled, last minute inspections are made, and necessary maintenance is performed until the last moment. Extra ammunition required is issued. Kitchen trucks may be brought up and personnel fed while in the assembly position.

(4) Commanders of troops in the attack echelon and commanders of units designated to support them coordinate the action of their units. Coordination of the plans for maneuver and plans of the fire of subordinate units is completed and attack orders are issued promptly.

d. Phases of attack.—Normally the attack passes through several stages. These stages are the approach march, deployment for attack, fire fight, assault, reorganization, and pursuit. Some of these phases may be omitted. For example, in a sudden meeting engagement, units may have to deploy for the attack direct from the march formation and be launched in an assault without going through an approach march or engaging in a fire fight. There must be a reorganization of attacking units afterwards. An attack may be followed by a pursuit.

e. Approach march.—(1) *Security.*—In the approach to the attack a force protects its front by the use of a covering detachment. Flanks and rear are protected by the utilization of terrain, the use of combat patrols, tank destroyer weapons supports, and reserves. Any element of the command operating at such distance that the security provided by the higher commander is not sufficient must provide its own security groups. All subordinate units are responsible for the local protection of their flanks. (For details on security, see sec. III.)

(2) *Formations.*—The main body of a combat force moves out from the assembly position, in approach march formations, at the prescribed distance in rear of the covering detachments, which move by bounds. The enemy situation and terrain determine the formation. It should be extended both laterally and in depth in anticipation of the attack and to afford protection of personnel and vehicles from hostile long range fire. The formation should be such as to take

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advantage of covered routes. Smaller units maneuver in their approach to take as much advantage of cover as the rate of advance permits. Formations may and should be changed to meet terrain conditions. (See FM 17–5.)

(3) *Intermediate positions.*—The approach march continues to the line of departure, except where halts of brief duration are made at predesignated intermediate positions for the purpose of coordination or pending further reconnaissance. Units remain disposed insofar as practicable in the same relative position as in the approach march with vehicles dispersed under cover.

f. Deployment for attack.—As soon as resistance is encountered by covering detachments, the leading waves take up attack formations before coming under effective fire. Deployment for the attack generally takes place as the line of departure is crossed. If the objective is at a distance from the line of departure, approach march formations may be continued by all or part of the attack echelon until subjected to hostile fire.

(1) Usually, if attack formations are not taken as the line of departure is crossed, a partial deployment, in anticipation of the attack formation, is made. This is done to permit the continued advance of the rear elements when the leading waves assume the attack formation. For example, a company in line of platoons may change to a wedge formation (platoons in column).

(2) Within attacking platoons, maximum extended intervals and distances, consistent with control, are taken to afford protection to personnel and vehicles and permit them to reach their objective with minimum casualties. Vehicles are disposed so that they will not interfere with the fire or maneuver of adjacent vehicles. Suitable attack formations of platoons or companies are the squads wedge, or squads echelon formations. (See FM 17–5.)

(3) Security during the attack is provided by reconnaissance elements and combat patrols. Liaison is maintained by connecting groups. (See sec. III.)

(4) For details concerning the conduct of the attack, see chapters 5, 7, 12, and 13.

g. Fire fight.—The fire fight takes place when combat units are deployed and the advance can no longer be continued without engaging the enemy by fire. The fire fight is the

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primary mission of the units in the secondary attack force (support echelon). Maneuvering units engage the enemy during their advance by fire and movement.

h. Assault.—The assault is the final combined effort of all the combat units to overcome enemy resistance.

(1) Generally, the tank units, supported by the maximum fire of supporting elements, launch their assault by a short, swift, concerted attack to overrun the enemy. It is made upon the signal of the leader of each wave after the units have deployed and advanced to a point from which the objective is readily discernible and the hostile position and direction of attack is fixed. Normally the assault is launched from 200 to 400 yards from the objective. Tanks are driven at speed, delivering a maximum volume of fire from their weapons as they close with the enemy and overrun the hostile position. Units of the secondary attack force whose fire is masked are displaced forward.

(2) Some medium tank units may be used in turret defiladed positions to support the assault by fire. These positions should be on the flank of the assaulting wave so that fire of the medium tanks may be maintained until the last practicable moment.

(3) After overruning their objectives, tank units are reorganized, as subsequently described.

i. Consolidation of positions.—Consolidation of positions is accomplished by infantry and tank destroyer units who hold the captured objective and cover the reorganization of the tank elements. Antitank weapons, artillery, machine guns, and mortars are disposed in mutually supporting positions to protect the consolidation and reorganization. The coordination of the forward displacement of all units is the function of the force commander.

j. Reorganization.—(1) After an attack, whether successful or not, the commander must reorganize his command preparatory to further operations. This is accomplished by units reorganizing at rallying points or at alternate rallying points under the protection of other combat units. If pursuit or another mission has been ordered previously, it proceeds after the reorganization.

(*a*) Depending upon the time available at these points, the tank unit commander makes any necessary reorganization of his unit; directs the tank crews, assisted by the mechanical

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crews, to make needed repairs; supervises the repair and redistribution of weapons where necessary; checks and redistributes ammunition; and regains rapidly a state of readiness for combat. When required, supply elements may be brought forward. Upon the arrival of the supply elements, tanks are refueled and ammunition replaced. First aid is rendered at this time by members of the unit and by attached medical personnel, which usually arrives with the maintenance personnel. Walking wounded are directed to the most conveniently located aid station.

(*b*) Upon completion of the reorganization, each tank unit commander reports to his next superior the combat condition of his unit. As soon as known, he issues instructions to his commanders covering the future action of his unit, with special reference to the next objective, the route, the formation, special missions, and the time to start.

(2) If unable to reach the rallying point, or if at any time it becomes necessary to rapidly reform to renew the attack or to meet an immediate hostile threat, a tank unit is rallied as prescribed in FM 17–5.

k. Continuation of attack.—The direction and continuity of the attack is of first importance. Continuity of the attack is mainained by timely movement and employment of reserves and by rapid reorganization and continuation of the attack on the next position or movement toward the next objective after successful assault on a hostile position. When the hostile position is broken through, reconnaissance elements followed by tank units immediately move out and continue the advance. Continuous pressure must be kept on the enemy in order that exploitation or pursuit may begin at the earliest practicable moment.

l. Pursuit.—The situation determines to what extent pursuit is carried out. The attack order issued by the commander informs subordinates whether or not to pursue. If a pursuit is ordered, the elements to make the pursuit are designated and the limit of pursuit is prescribed in the attack order. Upon reaching the limits of the pursuit, elements are assembled and conducted to the rallying or alternate rallying points.

m. Service park.—(1) Except for the light maintenance vehicle, the maintenance sections do not accompany their combat units in the approach march. The unit motor officer selects a position for the unit service park where maintenance

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elements assemble when combat units attack. The service park may be established at the assembly position, intermediate position, or other suitable position in rear of the line of departure, where water and cover, or concealment, are available, as dictated by the situation. The unit motor officer is responsible for the operation and immediate defense of the unit service park. He follows the course of action of the combat units by radio or other means so as to be able to meet conditions promptly. Unit maintenance officers direct the work of their unit maintenance in the service park.

(2) Light maintenance vehicles accompany their units as far forward in the approach as practicable, but not beyond the line of departure. When their units cross the line of departure, maintenance vehicles and motorcycles are assembled at a predesignated place in the vicinity of a supporting unit command post or at a battalion or regimental service park.

(3) After combat, light maintenance vehicles, motorcyclists, and heavier maintenance elements may be directed to rejoin their units at the rallying or alternate rallying points. Maintenance is continued to the last practicable moment before combat and is resumed at the first opportunity during or after combat. The location of vehicle casualties is reported to the service park.

n. Medical unit and detachments.—(1) The operations of the medical unit and detachments are covered in detail in FM 8–10.

(2) In general, regimental aid stations are established in the vicinity of the service park. Battalion sections accompany their combat units in the approach and establish battalion aid stations in the vicinity of the battalion service park where the light maintenance vehicles and motorcyclists are located. Litter bearers of units remain at their battalion aid stations. Litter bearers of infantry units follow closely behind the infantry and artillery elements. Company first aid men of infantry and artillery elements accompany them into action.

(3) The commander of the medical battalion establishes collecting points in rear of the battalion aid stations, and as near to them as ambulances can be operated with reasonable safety. Provisions are made for collecting platoons to evacuate the wounded from the aid stations to the collecting stations where clearing companies evacuate them to the rear.

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(4) After combat the battalion sections accompany the light maintenance vehicles when they rejoin their units and establish aid stations when and where needed.

o. Trains.—The supply echelons are consolidated under the command of the train commander. G–4 (S–4 in smaller units) directs the employment of the supply echelons in accordance with the situation and plan of supply. The train commander is in charge of their movement and bivouac and is responsible for reconnaissance of their routes and for their security. (See FM 17–50.)

■ 48. MEETING ENGAGEMENT.—*a. General.*—A meeting engagement may result from uncertainty or obscurity in the situation such as in the meeting of small units or when reconnaissance is ineffective. Again, it may occur when each opponent is cognizant of the other but both decide to attack without delay to retain or gain some tactical advantage, or to gain a decisive terrain feature, or because of a knowledge of superiority over the other. Except where armored units are employed to rupture a position, collision with hostile forces will usually be in the nature of a meeting engagement.

b. Plans.—(1) *Preliminary planning.*—Anticipatory planning is essential to success in a meeting engagement. Planning starts with receipt of warning orders for the movement. All available data on the route or routes of march and terrain of the zone of advance is obtained and information concerning it disseminated to commanders. The best available maps are procured and distributed. Aerial photographic reconnaissance is used to supplement the maps. Reconnaissance strips and individual photographs are taken of critical points and areas. By study of these data and maps the commander plans his march and disposes his subordinate units in various columns so as best to develop for combat. He determines the critical points in the zone of advance and makes plans for action against the enemy at those points. He determines points or areas where the enemy may be taken by surprise or at a disadvantage and plans to force combat in such areas if opportunity arises. Plans are made flexible and troops are disposed for control and to facilitate rapid entry into battle. Commanders of the main subdivisions of the command are informed of these plans and given orders, missions, or tasks for carrying them out.

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(2) *Dispositions.*—Armored units advance usually in multiple columns covered by advance, flank, and rear guards as necessary and by reconnaissance elements well to the front. Usually medium tank units may be attached to light armored regiments for the movement. Medium tank units should be placed well forward in the columns so that they may be used to counter hostile mechanized threats and may enter into combat without passing through the light tank organizations. Infantry may be attached to each column. Each column must be given artillery. Tank destroyer elements are usually detailed to march with flank columns to protect against a mechanized attack.

(3) *Scheme of maneuver.*—Direct frontal attacks are avoided when practicable and are made only when the hostile flanks are unassailable. The envelopment or double envelopment is the usual method of attack. Tank units seek to encircle the enemy and attack him from the rear. The advance guard or guards are used to seize vital terrain to limit the hostile advance to the front while the tank units move around the flanks. Infantry may be used to reinforce the advance guard or all or part of it used to follow up the tank attack.

c. Action as combat becomes imminent.—As combat becomes imminent the commander completes his plan of action and gives final instructions for the operation.

(1) *Advance guard.*—Action of the advance guard is characterized by speed and aggressiveness. If indications show that the enemy is preparing to organize or is organizing a defensive position, the advance guard drives in the hostile covering force and seeks to disrupt his defensive organization. If the advancing enemy is in a position unfavorable for our attack the advance guard may fight a delaying action or withdraw until the enemy has advanced to more favorable ground for our attack. However, the advance guard must not retire so far as to endanger or restrict the movement of the main body.

(2) *Artillery.*—(*a*) *Artillery with advance guard.*—As contact becomes imminent the artillery advances by leap frogging, part of it always being in position to support the advance guard action. It opens long range fire on hostile columns and

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interdicts routes of approach. An artillery liaison officer must be with the leading elements of the advance guard and an artillery airplane furnished.

(*b*) *Artillery with main body.*—Artillery with the main body is well forward so that it may quickly go into action. As contact becomes imminent the artillery prepares to reinforce the advance guard, to protect the flanks, and to protect the development of the main body. When the situation is obscure artillery advances by echelon, part of it always being in position to protect the column.

(*c*) *Infantry.*—The Infantry may be used to support the advance guards; to seize and hold terrain to form a pivot for maneuver. It may seize assembly positions on the flanks from which armored units launch their attacks. It may be held in reserve to follow the attacking echelons and assist in the mopping up of the hostile forces.

d. Conduct of attack.—(1) *Control.*—Control is chiefly maintained by assigning a direction of attack and objective. In some cases a commander may be given a mission order assigning him an objective and time of attack. The force commander may assign rallying points where he will regain control. Communication is chiefly by radio. Liaison airplane and messenger may be used.

(2) *Artillery.*—Artillery gives close support in initial stages of the attack by preparation fire and successive concentrations, and thereafter is used against resistances holding up the attack. Artillery observers are with forward units. Artillery interdicts routes of approach of enemy reinforcements. A part of it follows the attack closely so that it will be ready to give close support in assisting in reducing small islands of resistance holding up the attack.

(3) *Aviation.*—See paragraph 46.

(4) *Infantry.*—Infantry assists the attack by forming a base of fire about which the tank units maneuver. Where unexpected hostile organized defenses are encountered and cannot be avoided by tanks, infantry is used to attack such localities. Infantry follows the tank echelon and consolidates gains made.

e. Meeting engagement with unarmored troops.—In a meeting engagement with unarmored troops the attack is pushed to a conclusion without delay. If the hostile force is known to be poorly disposed for defense, the attack is

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launched promptly and aggressively with little or no fire support in order to afford the enemy no time to develop and concentrate his defensive means. Armored units attack on a broad front against a flank to engage the greatest possible number of enemy troops simultaneously and permit a maximum use of shock action combined with fire power of vehicular weapons. After the attack has passed through the hostile dispositions, its direction may be reversed and the assault repeated. Each march column may be given a certain task in this operation so attacks may be launched simultaneously. Flank attacks may not be practicable, in which case frontal attacks usually on a narrow front in great depth are made direct from march column. Against unarmored troops small reserves are held out.

f. Meeting engagement with hostile armored units.—In a meeting engagement with hostile armored units, maximum use is made of terrain to canalize and restrict the enemy's maneuver. If the advance guard is opposed by weak forces the reserve of the advance guard may be used at once to turn this attack into the main attack. The main attack force is composed of tank units. It maneuvers to attack the enemy from the flank or rear. It has as its objective the destruction of hostile artillery, communication and service elements. Attempt is made by feints to cause the enemy to dislocate his main body or reserves and thus place himself in a vulnerable position. Medium tank units may be used in the leading attack echelons against armored forces. A large reserve is held out and is located so as to facilitate its employment with either the main or secondary attack.

■ 49. ATTACK AGAINST HOSTILE FORTIFIED POSITIONS.—*a. General.*—In general, armored units avoid attacking enemy defensive positions. If practicable the position is screened by all or part of the support echelon while the remainder of the force passes around a flank of the hostile defenses and proceeds on its mission. After passage of this force, screening elements assemble and follow unless they are required to remain to protect the line of communication. Higher commanders detail motorized infantry units to relieve the armored infantry when necessary. When the hostile defenses cannot be screened and passed by, armored forces seek to turn the enemy out of position by encirclement or envelop-

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ment of one or both flanks. An attack of a fortified position by penetration is unusual for an armored force acting alone and should be made only when other maneuver is impracticable or a weak spot can be found in the hostile defenses. In penetrations in cooperation with other large units of the combined arms, the zone of the initial break-through is neutralized or breached completely by other troops. Armored divisions then enter the breach and launch their attack as a passage of lines.

b. Attack by envelopment.—When one or both hostile flanks are vulnerable, single or double envelopment is made. The support echelon is used to make the holding or secondary attack while the striking force envelops or encircles one or both hostile flanks. Direction and time of attack and line of departure are given for the secondary attack. The striking force is given a direction of attack including an objective or objectives, or it may be given a mission order, an objective and route or routes of approach being assigned. It may attack simultaneously with the support echelon but usually attacks later. The striking force seeks to attack the enemy from the rear and destroy his artillery, reserves, communications, and supply installations.

c. Attack by penetration.—When an attack by penetration is necessary the support echelon in conjunction with the infantry, artillery, engineers, and combat aviation neutralizes or breaks through the front to be attacked by the tank units. The attack is launched on a narrow front and in great depth. The striking echelon moves rapidly forward through the gap created or makes a passage of the infantry lines and advances through the neutralized zone. After passing through the hostile position some tank units move to the right and left and attack the enemy from the rear. Other units continue to the rear and attack hostile artillery, reserves, communications, and supply installations. The Infantry assists the tank units in mopping up the hostile position and in widening or maintaining the gap. (See figs. 3, 4, and 5.)

■ 50. BREAK-THROUGH AND EXPLOITATION OF BREAK-THROUGH.—*a. General.*—When operating with other large units armored divisions are seldom used to effect the actual operation of break-through. Their primary mission in such operations is

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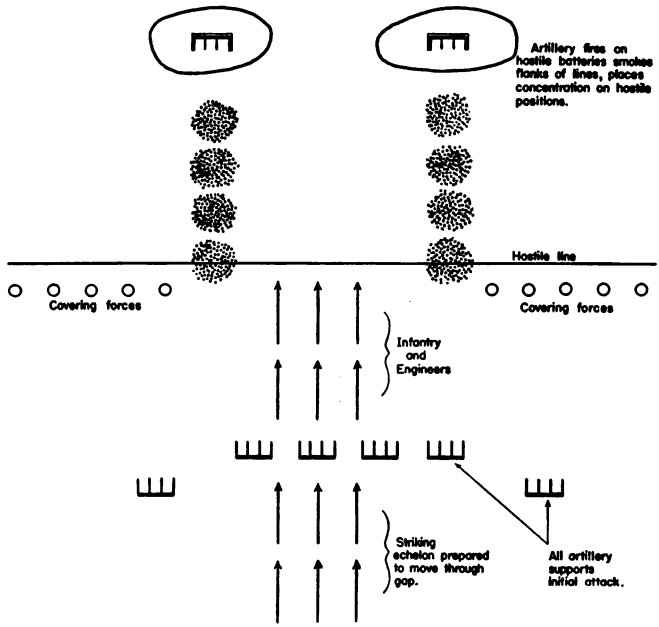


FIGURE 3.—Penetration of defensive position. (Attack made on narrow front, usually the width of an infantry battalion in the main attack, 500 to 1,000 yards.)

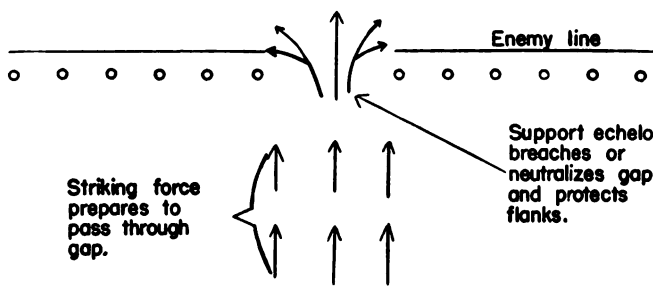


FIGURE 4.—Penetration of defensive position.

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to push through the gap created and to exploit the success gained. GHQ reserve tank units operate with units detailed to breach the hostile defenses.

b. Scheme of maneuver in break-through.—To effect a break-through and exploit such an operation, the higher commander masses his break-through troops, usually special units, supported by large groups of artillery, and such engineers, chemical troops, and GHQ reserve tank units as are necessary, behind that portion of the line to be penetrated. Armored divisions and motorized infantry or cavalry divisions

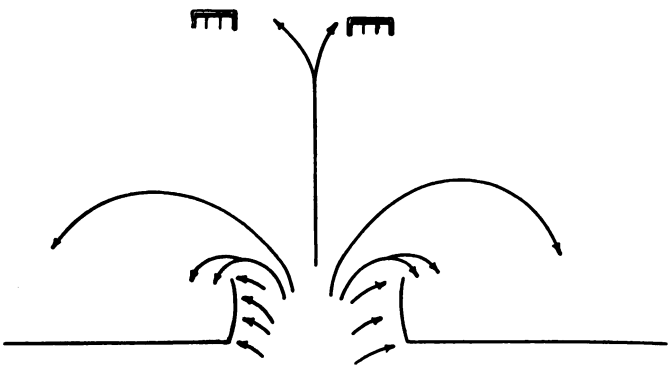


FIGURE 5.—Penetration of hostile position. (Support echelon rolls up hostile flanks created by the gap and protects tank elements pouring through the gap. Tank units pouring through the gap attack hostile positions from the rear, hostile reserves, and artillery.)

are massed behind the break-through troops ready to be pushed through the gap to be effected in the hostile line. Combat aviation is detailed to assist break-through troops and delay hostile reinforcements. Other troops are detailed to attack all along the hostile line to confuse the enemy as to the place and direction of the attack and delay movement of reserves to meet such attack. A feint may be made at some other portion of the line to draw hostile reserves away from the contemplated zone of penetration.

c. Assault unit of break-through.—When GHQ reserve tank units are not available or are present in insufficient numbers, armored divisions may be used as assault units in a break-

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through. This employment is unusual. The combat commands in such operation are used similarly to GHQ reserve tank units as explained in chapters 12 and 13.

d. Exploitation of a break-through by armored units.—(1) *General.*—The general methods employed in passing through a gap in the hostile line and in exploiting a penetration are the same. However, in the first case the gap will probably be found unexpectedly and time for deliberate reconnaissance and preparation of plans will not be available. In such a case objectives are assigned and mission or task orders issued. In the latter case definite deliberately planned orders are given.

(2) *Missions and objectives.*—Missions assigned to armored units in exploitation will be to attack hostile positions from the rear; attack and destroy hostile reserves and artillery; disrupt hostile communications, command posts, and supply installations; and to seize and hold vital terrain features or areas until the arrival of other troops.

(3) *Preliminary preparations.*—Preliminary preparations for exploitation of a break-through include reconnaissance for routes and sites; planning of movement to initial positions and preparation of plans for the attack; arrangements for coordination with other units, particularly with motorized infantry, supporting artillery, and combat aviation; arrangements for attachment of other troops such as additional engineer units, if needed, chemical troops, combat aviation; and arrangements for supply and maintenance during the operation.

(*a*) *Reconnaissance.*—Reconnaissance is made to determine assembly and intermediate positions and routes and zones of advance. Routes to the front line held by friendly troops are reconnoitered and arrangements made for marking and for guides. It must be remembered that the armored units may be several miles behind the line of departure and forward areas will be filled with troops detailed for the break-through. Map and aerial reconnaissance of the zone of advance must be made.

(*b*) *Coordination with other units.*—Arrangements are made with the break-through troops for necessary passage of line. Plans of action are coordinated by conference with commanders of following motorized infantry divisions. Liaison officers should be sent to the headquarters of the break-

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through units that are in the zone of the armored force unit's advance and also to motorized troops that follow.

(c) *Supply.*—Fuel trucks may accompany units to their assembly or intermediate positions. In case the armored unit moves deep into hostile territory additional fuel trucks may be attached to units. Empty trucks are assembled under division control. It must be expected that some fuel

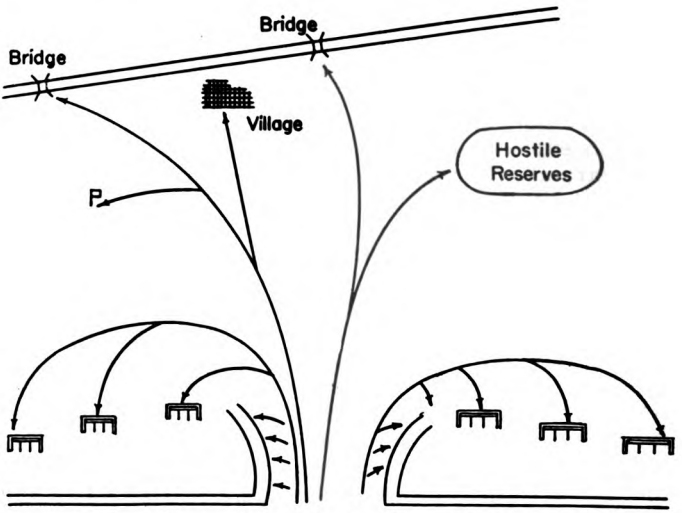


FIGURE 6.—Exploitation of a break-through. (Break-through troops hold gap open. Armored units move rapidly through. Some units attack enemy from the rear while others attack hostile reserves, seize vital points of critical areas, disrupt communications and supply systems. Motorized infantry divisions follow closely behind armored units and consolidate gains.)

trucks will be lost. In isolated cases of small units becoming separated from their organizations, fuel may be transported by airplane. Food and water are carried in each vehicle. A maximum load of ammunition is carried and replenishment is made at every opportunity.

(4) *Conduct of attack.*—Reconnaissance units lead the armored tank units after they pass through the gap in the hostile line and proceed rapidly toward previously designated objectives. The striking force units follow the reconnais-

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sance units more closely than in other forms of attack. Those units detailed to attack to the right and left fan out as soon as they emerge from the gap, advance rapidly on their objectives, and after completion of their mission rally and proceed on to the next objective. Those units that are detailed to more distant objectives move rapidly forward in columns preceded by their reconnaissance units. The support echelon follows the striking echelon. Control is exercised by assignment of routes, zones, phase lines, and objectives. (See fig. 6.)

■ 51. PURSUIT.—*a. General.*—The pursuit is launched when the enemy is decisively defeated. A commander recognizes success by the continued advance of his troops in a decisive direction and the capture of critical objectives; by the number of captured prisoners and abandoned weapons; by the number of hostile dead; by the diminution of hostile artillery fire; by the relaxation or cessation of hostile countermeasures; and from reports that the enemy is withdrawing.

b. Preparation for pursuit.—When it is recognized that the enemy is withdrawing the commander should immediately increase pressure on the enemy to maintain continuity of the attack. He regroups his reserves and makes plans for encircling and completing the destruction of the enemy. He organizes his command into a *direct pressure* and an *encircling force.* A reorganization line, usually a line of rallying points, is set from which to launch the pursuit.

c. Object of pursuit.—The object of the pursuit is the annihilation of the hostile forces. Pursuit is pushed to the utmost endurance of men and vehicles. No opportunity must be given to the enemy to reorganize his defense. Direct pressure is combined with an enveloping or encircling maneuver to place troops across the enemy's line of retreat. Every effort must be made to prevent withdrawal of the enemy under cover of darkness. Units continue to advance after dark.

d. Direct pressure force.—The function of the direct pressure force is to keep continuous heavy pressure on the retreating hostile force so that the enemy will not be able to disengage any appreciable part of his troops and send them to the rear or use them to delay the encircling force. Pursuit is launched, without halting, direct from a reorganization line set by the commander when he plans the pursuit. Reserves

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are sent in to gain the hostile flank or rear and break through his covering troops.

e. Encircling force.—The encircling force seeks to place itself across the enemy's line of retreat. When practicable it advances along roads parallel to the hostile line of retreat and attempts to block the enemy at defiles and other critical points. When the encircling force is unable to outdistance the enemy it attacks him in flank and delays him so that the direct pressure force can attack and complete the destruction. If the encircling force is not able to move around a flank it pushes through a gap in the hostile line and proceeds on its mission.

f. Pursuit by armored forces in conjunction with other arms.—(1) *General.*—When operating with larger forces, the armored division is employed in the encircling maneuvers around exterior hostile flanks or through a breach effected in the hostile dispositions. GHQ reserve tank units, if available, are usually used with the direct pressure force when armored divisions are present. However, some battalions may be attached to the encircling force. The action of GHQ reserve tank units in pursuit is covered in chapters 12 and 13.

(2) *Terrain.*—Unsuitable terrain or secure flanks of the enemy may limit pursuit operations to direct pressure initially, or may admit of only limited encircling maneuvers to areas where the retreating columns can be checked until overtaken and destroyed by troops which are following directly. Encircling forces sent to these areas are usually small, consisting primarily of infantry reinforced by reconnaissance elements, tanks, artillery, and engineers.

(3) *Cooperation with other troops.*—Infantry, engineers, artillery, and chemical troops may be attached to an armored force unit in an encircling movement. Motorized divisions may follow to consolidate gains made and to assist in the destruction of the enemy. Observation aviation reports on positions of hostile columns. Combat aviation attacks and delays the hostile retreat; thus giving the encircling force time to place itself across the hostile line of retreat.

(4) *Conduct of the encircling force.*—(a) *Reconnaissance.*—Reconnaissance units operate on the flanks of the retreating columns, gain contact, and report on the composition and direction of movement of hostile forces, and execute harassing missions.

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(*b*) *Armored units.*—Armored divisions usually advance in parallel columns. Reconnaissance elements of the armored regiments precede the advance. Engineers are attached to each column to assist in removal of road blocks and construction of crossings. Artillery is placed with the advance guard or well forward in the main bodies. The artillery must be prepared to occupy positions from which fire may be brought to bear on any hostile threat. Tank destroyer units are disposed in each column. If the enemy has mechanized units, attack by such units may be expected on the heads and near flank. A medium tank unit therefore should be well forward in the column. However, the outer flank must not be neglected because hostile reinforcements may be sent in from that direction.

(*c*) *Infantry.*—The Infantry with the encircling force follows the armored units closely and takes over critical terrain gained by the tank units. It holds these areas to halt or delay the retreating columns.

(*d*) *Control.*—Control is exercised by giving march objectives, routes of advance, boundaries, phase lines, intermediate objectives to be used as bases for reorganization, and by communication, principally by airplane, radio, and motor messenger.

g. Pursuit by armored force acting alone.—(1) *General.*—An armored force unit acting alone pursues principally by encirclement, applies its strength to hostile weaknesses, strikes enemy personnel and matériel at or near the heads of the retreating columns, and seeks to gain critical points or areas on the hostile route where the enemy can be halted and destroyed.

(2) *Direct pressure force.*—The support echelon is usually employed as the direct pressure force. It may have attached to it GHQ reserve tank units if available or medium tank units from the striking force. It pushes rapidly and aggressively forward keeping constant pressure on the hostile covering forces. Suitable missions for tank units with the direct pressure force include disorganization or destruction of hostile reserves, supporting weapons, observation posts, and command and communication installations. Such tank units are given zones or routes of advance and final objectives. They advance without regard to supporting fires, using fire and movement within the unit. They will usually, after the initial

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attack, work forward in small groups by infiltration and attack the enemy wherever found.

(3) *Encircling force.*—The striking echelon is usually employed as the encircling force. Its action and conduct is as previously explained.

SECTION V

THE DEFENSIVE

■ 52. GENERAL.—*a. Role.*—The primary role of armored forces on the defensive is the tactical offensive. Their usual employment will be in the counterattack. However, armored divisions may for short periods organize and occupy a defensive position.

b. GHQ reserve tank units.—On the defensive, GHQ reserve tank units are employed primarily in counterattacks. Their use on the defensive is covered in chapters 12 and 13.

c. Types of defensive operations in which armored units may participate.—The usual types of defensive operations in which armored units participate either when acting alone or in conjunction with other troops are:

(1) Defense of a position.
(2) Withdrawal.
(3) Delaying action.

■ 53. DEFENSE OF POSITION WHEN ACTING ALONE.—*a. General.*—(1) An armored force acting alone may be forced to take up a defensive position temporarily because of superior hostile forces or it may have been assigned a mission to seize and hold a critical point, such as a bridgehead or a vital area, pending arrival of other troops.

(2) The support echelon occupies the defensive position while the striking force is used primarily for counterattacks. Reconnaissance elements perform their usual mission of reconnaissance and in addition may be used for counterreconnaissance and security missions.

(3) The defense seeks to act by surprise. Every effort is made to conceal the nature of the defense and location of the main line of resistance. Changes in the defensive arrangements, camouflage, dummy works, and skillful screening by security detachments in advance of the battle position mislead the enemy and induce him to adopt faulty dispositions. By causing the enemy to take unfavorable dispositions, the

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reserves of the defense, consisting primarily of tank units, may be able to strike him a fatal blow.

(4) Defense must be mobile. The front covered by the infantry regiment of an armored division will be small, therefore dependence must be placed upon the effective use of large tank units as mobile reserves. FM 7–40 gives frontages for infantry in defense.

b. Selection of position.—As the Infantry will occupy and defend the main battle position, selection of such position will conform to procedures laid down in FM 7–40. Full utilization of all natural obstacles must be made to restrict the direction and scope of the hostile attack. When practicable, flanks should rest on impassable obstacles. When this is not practicable, ground should be selected with a view to limiting as much as possible any flank attack. The position should afford good observation and fields of fire while denying to the enemy observation over approaches to the position from the rear. Frequently it may be located on reverse slopes where an adequate field of fire can be obtained.

c. Distribution of troops.—(1) Usually the front is not defended in uniform density. Key points of terrain are occupied and arrangements made to cover intervening spaces and flanks by fire and counterattack of reserves. Key points are usually those terrain features that afford good observation into the defensive position or over the foreground.

(2) Troops on the defense are distributed in depth. This distribution provides for—

(*a*) Security and the necessary time for manning the defenses of the battle position.

(*b*) Screening the battle position and keeping the enemy in doubt as to its location.

(*c*) Facilitating resistance on the flanks and in the rear as well as to the front.

(*d*) Avoiding offering the enemy a vulnerable concentrated target.

(*e*) Providing suitable positions for reserves.

(3) Troops are distributed in—

(*a*) A reconnaissance echelon.

(*b*) A security or counterreconnaissance echelon.

(*c*) A combat echelon.

(*d*) Reserves.

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d. Reconnaissance.—The reconnaissance battalion performs its reconnaissance missions in all directions. It contacts the enemy and gives information of his strength, composition, and movements. It withdraws through or around the defensive position and assists in flank protection. It must be ready to move out on reconnaissance when the offensive is resumed. Observation aviation performs its usual reconnaissance missions.

e. Security and counterreconnaissance.—Security detachments protect the battle position from surprise ground attack and screen it from hostile observation and investigation. Engineers, assisted by infantry, establish defended road blocks and demolitions along the principal routes leading toward the position. Strong patrols operate between the obstacles. When necessary to accomplish greater delay than can be expected by small infantry detachments not provided with antitank guns, tanks and artillery may be used to defend such road blocks. Elements of the reconnaissance company may be used to defend road blocks and for patrolling between such road blocks. Outposts are ordinarily established within range of light artillery supporting the main line of resistance. When beyond this range some light artillery is usually attached to the outpost. Local outguards sent out by units on the main line of resistance are posted within range of infantry supporting weapons. When the battle position is on a reverse slope, it is protected by combat outposts on the crest. These are either made a part of or are protected by the combat outpost. When attack by mechanized forces is expected, a strong natural obstacle in the immediate front is a requisite. The reconnaissance battalion, reinforced if necessary by the reconnaissance companies of the light armored regiments tank destroyer units, may be used to form a counterreconnaissance screen across the front. It may be reinforced and employed to delay the enemy to give time for the defense to be organized.

f. Battle position.—The Infantry organizes and defends the battle position in accordance with the methods discussed in FM 7–40. All the artillery tank destroyer units, except that detailed for defense of certain road blocks, are used to support this position. The striking force is used primarily as a reserve, therefore, infantry units need not hold out large reserves. This procedure is the reverse of that used by infantry in an infantry division. In the armored division the

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tanks furnish the reserve, whereas in the infantry division a large mobile reserve must be held out when a wide front is occupied. In cases where a wide front must be defended, the Infantry may hold out no reserves and may have attached to it small tank units for local reserves. Under exceptional circumstances individual tanks may, when the battle position is unduly extended, be placed in a turret defi-

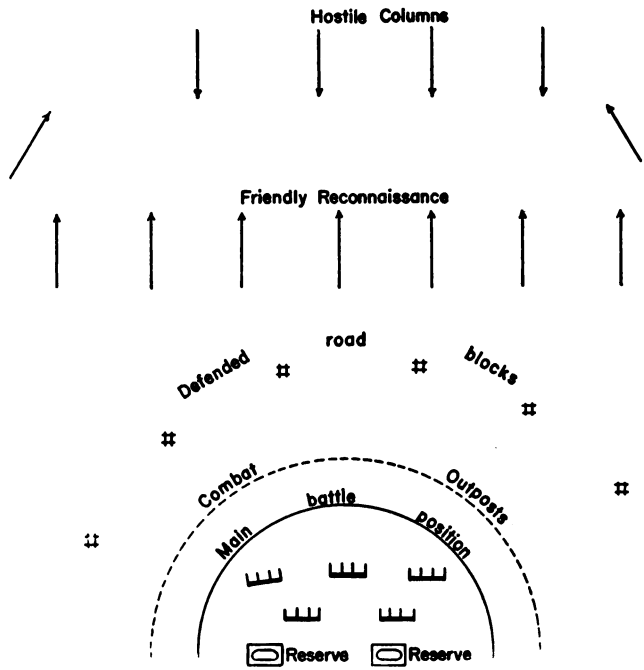


FIGURE 7.—Typical defensive position; flanks open and refused.

laded position in rear of the main line of resistance to assist in the defense of that line. Such use of tanks is unusual. However, when an armored force has been forced on the defensive because of the lack of fuel, this method would be extremely applicable. In this case the fuel from such might be drained and used to augment the fuel supply of tanks held in reserve. The use of tanks as stationary pill boxes should

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be avoided when practicable and all tanks used in reserve. Crews and weapons of disabled tanks may be dismounted and used to reinforce the battle positions. (See fig. 7.)

g. Reserves.—(1) *Composition and location.*—Reserves consist primarily of the tank units. Depending upon the terrain and the extent of the battle position, reserves are placed in one or more positions. They are located in covered positions, preferably beyond range of light artillery fire, and where they have good routes of approach to counterattack positions. Where both flanks are open, the striking echelon

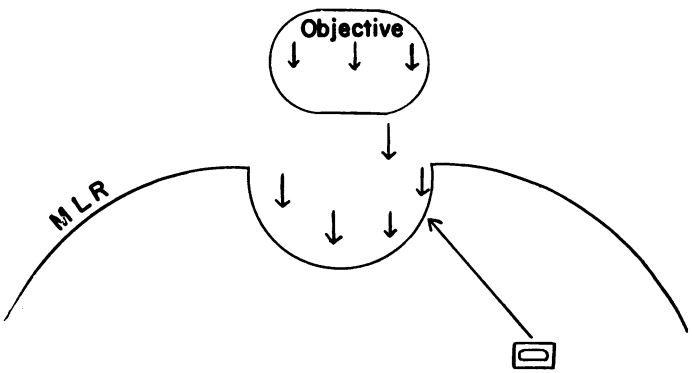


FIGURE 8.—Counterattack against a penetration. (Counterattacking force strikes flank of salient. Objective is limited distance in front of main line of resistance so that hostile attack may be disrupted.)

may be divided into two or more parts, one of which will be in position to strike hostile enveloping forces.

(2) *Counterattacks.*—Plans are made for counterattacking the enemy from any direction. Where flanks are secure the counterattack will be made to restore the battle position. This attack does not stop at the main line of resistance but continues on beyond to a limited objective to completely disrupt the hostile attack. When one or both flanks are open to counterattacks, plans are prepared not only against hostile forces attacking in front but also against hostile enveloping or encircling forces. The enemy may try to work far around the flanks and attack from the rear. Plans must

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be made to delay the heads of his forces while the bulk of the counterattacking force strikes him in the flank. (See figs. 8, 9, and 10.)

h. Conduct of defense.—(1) *Reconnaissance units.*—As the enemy advances, ground and air reconnaissance units keep him constantly under surveillance and report his strength,

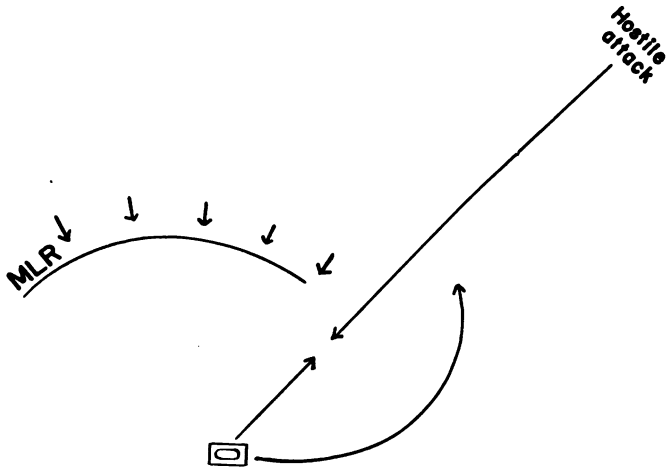


FIGURE 9.—Counterattack against hostile close-in envelopment. (Part of counterattacking force makes frontal attack while remainder strikes hostile front on outer flank.)

location, composition, dispositions, and direction of movement. Ground reconnaissance units may be ordered to delay the advance and to lead the enemy into false dispositions. As the enemy continues to advance, reconnaissance elements withdraw through the outpost or to the flanks and are used for flank security.

(2) *Security echelon.*—As the enemy continues to advance,

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he comes in contact with the obstacles and is further delayed. Available combat aviation attacks and delays his advance. The outpost screens the defensive position, forces the enemy to deploy, and assists in leading him into a false direction of attack.

(3) *Battle position.*—When the enemy approaches the battle position, long range artillery and machine gun fire is used against him. Combat aviation attacks his troop concentrations. When the enemy launches his attack all weapons

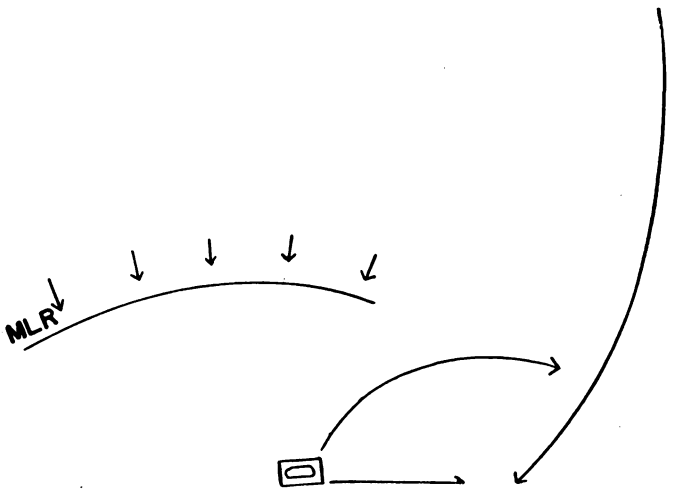


FIGURE 10.—Counterattack against hostile encirclement or wide envelopment. (Counterattacking force delays head of hostile attack by part of its force and strikes hostile inner flank with rear of force.)

available are brought against him. Tank units in reserve may be used to counterattack him before he reaches the front line. If he succeeds in penetrating the position, counterattack by reserves is made to expel him. Reserves are used to block and counterattack any hostile enveloping forces.

(4) *Communication.*—Communication will be by radio, messenger, airplane, and flag.

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■ **54. Defense in Conjunction With Other Troops.**—*a. General.*—(1) When employed in defense with other large bodies of troops, armored force units may be used to—

(*a*) Counterattack an enemy who has succeeded in penetrating the position, and disrupt his attack.

(*b*) Attack an enveloping or encircling force.

(*c*) Attack a hostile force that has committed itself to an attack but has not yet penetrated the battle position.

(2) Seldom will an armored division, when operating with other forces, be assigned to hold a sector of the defensive line. A portion of the tank units, particularly medium tank units, may be used to augment the antitank defense by taking up positions where they may ambush hostile tanks that have penetrated the position. The armored artillery may be used to augment the artillery of the defense. However, if the armored division is to perform a semi-independent mission against the flanks of attacking hostile forces or is to block an envelopment, then it should retain its artillery. The use of GHQ reserve tank units in the defense is discussed in chapters 12 and 13.

b. Counterattacks.—(1) *Positions.*—If the armored division is to be used as a whole in the counterattack, it should be located well to the rear in a covered area out of light artillery range. The location should permit of easy access to any contemplated sector of employment.

(2) *Plans.*—By reconnaissance, avenues of possible hostile attack are determined. Plans are then made for counterattacking against any probable place of hostile penetration. Routes from the reserve position to the attack positions are reconnoitered and assigned to various units. Tentative zones of action and lines of departure are assigned. All arrangements are made for quickly moving to attack positions and launching the counterattack without delay.

(3) *Objectives.*—Objectives in front of the main line of resistance are assigned in order to break up a hostile attack formation. Where the direction of the hostile attack has been determined but the full force of the attack has not reached the main line of resistance, the armored force attack might be launched against the flank of such hostile attack.

(4) *Support echelon.*—The support echelon usually follows and consolidates the gains of the striking echelon as in offensive operations.

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(5) *Artillery.*—Artillery supports the attack initially by concentrations on hostile troops. All artillery in the area should be used to support the attack.

(6) *Engineers.*—Engineers prepare routes of approach for the attacking tank units.

(7) *Reconnaissance units.*—Reconnaissance units are either retained in reserve or given reconnaissance, screening, counterattack, or flank protection missions.

(8) *Conduct of attack.*—The conduct of the attack is the same as the offensive (see sec. IV), except that after the attack tank units withdraw to a previously designated area behind the battle position, unless the offensive is to be immediately assumed.

c. Attack of an enveloping or encircling force.—The attack of a hostile enveloping or encircling force is similar to an attack in a meeting engagement. Against unarmored troops, the support echelon is used to block the hostile advance while the striking force maneuvers to strike the enemy in the flank or rear. Against armored troops, the support echelon, supported by a part of the striking force, blocks the advance while the remainder of the striking force maneuvers to attack the hostile flank.

d. Attack against hostile force that has committed itself to attack but has not yet penetrated battle position.—This is a defensive-offensive operation. The commander of the whole force may take up the defensive to require the enemy to deploy and attack. By using the armored force from concealed positions on the flank or even by passing the armored units through his own line in a certain area, the commander may strike the enemy in flank or rear. The enemy should be struck after he has made his dispositions and launched his attack, but before he has penetrated the battle position. This operation requires careful timing. The striking echelon leads the attack and may be followed by the support echelon.

■ 55. WITHDRAWAL FROM ACTION.—*a. General.*—Tactical doctrine covering withdrawal from action by armored force units is contained in FM 100–5. Action of GHQ reserve tank units in withdrawal is discussed in chapters 12 and 13.

b. Armored force units in withdrawal.—An armored force unit may participate in withdrawal either as part of a larger force or when acting alone. In withdrawal its use is prima-

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rily offensive to delay or break up hostile attacks and by so doing relieving pressure so that the withdrawal may be accomplished without undue casualties. Armored forces, except the armored infantry, are seldom used during night withdrawal. Tank units are used during the day for counterattack to assist other troops in holding out until night in order that withdrawal may be made under cover of darkness.

c. Withdrawal when acting alone.—(1) *Daylight withdrawal.*—In daylight withdrawal it may be expected that a series of delaying actions will be fought. The withdrawal of large units in daylight is dangerous and many casualties may be expected.

(*a*) *Scheme of maneuver.*—A rearward position is designated on which troops will prepare for renewal of resistance or under the protection of which they may be assembled for further retrograde movement. A covering force consisting of a part of the striking force is used to assist in the disengagement of the infantry. The infantry is disengaged and moves to the rear. Reconnaissance units assist in flank protection.

(b) *Rearward position.*—The rearward position and routes thereto should be thoroughly reconnoitered. Its selection is based upon the natural protection it affords against attack of hostile troops. It should have good routes leading to its rear.

(*c*) *Covering force.*—The covering force will consist primarily of tank units and should be strong in medium tanks. A part of the artillery may be attached to the covering force. Engineers may be attached for demolition purposes. The purpose of the covering force is to slow down or halt the hostile attack and protect the rearward movement of other troops.

(*d*) *Conduct of withdrawal.*—Counterattacks are made by reserves to halt or slow down the hostile attack. The covering force takes a position from which it may block the hostile advance. Small tank units may be moved into turret defilade positions in or in rear of the infantry lines to protect the infantry withdrawal. Artillery supports the withdrawal by concentrations on hostile troop concentrations and interdiction of critical areas. Engineers destroy bridges and perform other demolitions that will delay the hostile attack. Combat aviation assists in the withdrawal by attacking hostile troop

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concentrations and reinforcements. Trains are withdrawn first. Infantry units in front lines, as they are relieved by tank units, move to the rear in small groups, entruck, and move to the rearward position. Artillery withdraws by echelon. Tank units, supported by tank destroyer units, fight a delaying action to protect the withdrawal of the remainder of the force. Reconnaissance units protect the flanks and, if and when action is broken off by the main force, keep contact with the enemy. Maximum resort is made to ambush tactics and delay in intermediate positions.

(2) *Night withdrawal.*—Whenever practicable troops hold out until night to make a withdrawal. By counterattacking before dark with tank units pressure may be relieved and organization of the night withdrawal made easier. Rearward positions are selected, routes reconnoitered, and all necessary plans made as prescribed for a daylight withdrawal. The covering force will consist of elements of infantry, tank destroyer, and artillery, and operates in accordance with doctrine prescribed in FM 100–5. Reconnaissance units protect the flanks and are used as an additional covering force. The reconnaissance companies of the armored (tank) regiments together with tank destroyer units may be attached to the reconnaissance battalion for this maneuver. When the covering screen is withdrawn, the reconnaissance units close across the zone and cover the withdrawal. They contact and maintain contact with hostile units. Troops withdrawn to the rearward position may organize that position or retire under the protection of a rear guard. It will be unusual to assign tanks to such a force.

d. Withdrawal when opposed by unarmored troops.—When opposed by unarmored troops in a withdrawal, the striking force attacks to disrupt hostile forces. Other units disengaged by the tank attack move to the rear. The striking echelon then moves to the rear, followed by the reconnaissance elements.

e. Withdrawal when acting with other large bodies of troops.—(1) *General.*—When operating with other large bodies of troops, armored units are used primarily in daylight withdrawal. The support echelon may be used as a covering force. The artillery may and usually will be used to augment the artillery of the defense. The tank units may be used either as a unit or in two or more units for launching

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counterattacks. In some cases the armored division, and in large forces the armored corps, may be used to make a wide encircling movement to move behind the hostile lines to attack the hostile rear and break up and disorganize the hostile attack. Conduct of such forces is the same as in the offensive. Armored force units, reinforced by tank destroyer elements, will be particularly effective as a covering force acting against hostile armored units.

(2) *Counterattacks.*—The primary use of armored force units in the withdrawal in conjunction with larger bodies of troops will be in the counterattack. Such attacks may be made by the entire striking force or any portion of it. The piecemeal employment of tank units is wrong; they must be used in large numbers in a coordinated effort. When hostile mechanized forces are expected, medium tank units should be assigned each attack force and used primarily to lead the attack. Counterattacks in withdrawal are usually limited objective attacks made on a broad front to delay and disrupt the hostile attack.

(3) *Scheme of maneuver.*—See paragraph 54.

■ 56. DELAYING ACTION.—*a. General.*—Procedure governing delaying action is covered in FM 100–5. The purpose of delaying action is to give the main force time to retire, to consolidate positions, or time and space to deploy for offensive action. GHQ reserve tank units may be attached to motorized infantry or cavalry divisions engaged on delaying missions. A portion or all of an armored division, reinforced by tank destroyer units, may be used on delaying missions. When advancing hostile columns contain armored units, armored units should be used against them. The methods employed vary from use of small groups to defend road blocks, or temporary defense of a natural obstacle, to methods involving offensive action by tank units, such as limited objective attacks and ambush. Armored force units may be employed alone or in conjunction with other forces. It may delay in one or successive positions. If acting alone, delay in successive positions will be normal, terrain permitting.

b. Scheme of maneuver.—In delaying action by armored force units, one combat command is used to occupy delaying positions to check the hostile advancing columns while the other echelon with engineers threaten or attack the hostile

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flanks or rear. Combat aviation is used to attack hostile columns, troop concentrations, and artillery. Reconnaissance elements keep the columns under constant surveillance. When operating with larger forces against hostile armored units, tank units together with tank destroyer units, are used to protect the flanks of the troops on the delaying position, to limit penetrations, and to deliver counterattacks.

c. Selection of position.—Good observation, long-range fields of fire, covered routes of withdrawal, and secure flanks are desirable for a delaying position. When opposed to hostile armored troops a position covered by natural obstacles is highly desirable. Successive positions should be separated by such distance that hostile artillery will be forced to displace in order to fire effectively. Infantry units may, however, have to occupy intermediate positions for mutual support.

d. Delaying action when acting alone.—When operating alone as a delaying force, armored units may be required to cover a broad front in order to delay the various hostile columns. It will usually operate in two or more groups against the heads, flanks, and, if practicable, the rear of hostile columns. For such operations an armored division utilizes its combat command groups consisting of tanks, infantry, artillery, tank destroyers, engineers, and reconnaissance units. Each combat command group will be given a certain column or a zone to delay.

(1) *Delay of hostile unarmored units.*—In the delay of hostile unarmored units, infantry and engineers will usually be used to block the advance of the hostile columns while tank units attack the flank and rear of such columns. Some engineers and reconnaissance units should be attached to the maneuvering force. The tank attack, as in withdrawal, is characterized by quick, powerful blows to disorganize the enemy.

(2) *Delay of hostile armored units.*—In the delay of hostile armored units enemy effort is made to locate each delaying position behind a formidable natural obstacle. The infantry, supported by artillery and tank destroyer units, occupies the position. Engineers place obstacles in front of the position. Tank units are held in reserve to protect the flanks and to execute counterattacks. These counterattacks are characterized by rapid blows to disorganize the enemy attack. They

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may be launched before the enemy has reached our own front lines. They are usually followed by rapid withdrawal to a reserve position.

e. Delaying action in conjunction with other troops.—(1) *Against unarmored troops.*—Against unarmored troops, armored units, when acting in conjunction with other troops, are used as in *d*(1) above.

(2) *Against armored troops.*—When operating in conjunction with other troops in delay against an enemy having armored elements, armored units are usually left in reserve to be used to protect the flanks and to counterattack. The counterattack is usually conducted as in *d*(2) above. However, armored divisions may be used to move around a flank of the delaying position and attack the enemy in flank.

f. Withdrawal.—Withdrawal in delaying action is accomplished as previously described. Withdrawal starts before units become heavily engaged in order to avoid losses. If the delaying force does become heavily engaged every effort should be made to hold out until dark for a night withdrawal.

SECTION VI

SPECIAL OPERATIONS

■ 57. GENERAL.—The general procedure governing special operations is contained in FM 100–5. Armored units participate in special operations primarily by employment of offensive action. Such operations include attack or defense of a river line, attack in woods, attack and defense of towns and cities, and, to a limited extent, night operations. The fundamentals of attack and defense discussed in sections IV and V apply to these operations.

■ 58. NIGHT OPERATIONS.—*a. General.*—In general, night operations of armored units will consist of night marches, movement into position, and defense. Collision with hostile tank units at night will be rare because of the protective reconnaissance and security elements. However, in pursuit, armored units continue the advance to the limit of their ability at night.

b. Infantry in night operations.—The technique of employment of infantry in night operations is covered in FM 100–5 and 7–40. Infantry in the support echelons of

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armored forces may, when the division occupies a defensive position, make a local night attack to gain information, to seize defiles or to secure ground from which tank units may launch a daylight attack. Again infantry may be used at night to seize and hold vital terrain features on a flank to protect advancing armored columns. In some cases infantry might even make an attack to throw a hostile column into confusion. Hostile tank bivouacs or assemblies may provide remunerative objectives for infantry night attack.

c. Reconnaissance units.—Use of reconnaissance units is covered in chapter 4.

d. Tank units.—The use of tank units in night operations will be limited to local defense except in delaying action and pursuit. Observation from a tank is poor at the best and in a night attack they would be very much at the mercy of hostile antitank guns at close range and subject to destruction by gasoline grenades. They may be used in defense from covered positions with guns sighted on main avenues of approach. They are not used in night attack except against a badly beaten enemy under favorable conditions of visibility and terrain or in limited objective attacks over previously reconnoitered ground.

e. Artillery.—Artillery is used in night operations to support an infantry attack. It may be used to fire against hostile troop concentrations and for interdiction. Use of artillery in defense and withdrawals has already been discussed.

f. Tank destroyer units.—Tank destroyer units are used at night to cover likely avenues of approach and support the defense of infantry, artillery, and tank units.

■ 59. ATTACK AGAINST RIVER LINE.—*a. General.*—Procedure in attacks against a river line is covered in FM 100–5. Armored units may take part in such operations as part of a large force or may, when acting alone, find it necessary to force a river crossing (see ch. 9 for combat command groupings). GHQ reserve tank units must be reinforced by other troops, particularly engineers when the necessity for crossing of unfordable streams can be foreseen. Armored divisions carry some bridging equipment but must be reinforced by additional engineer troops when wide rivers are to be crossed or crossings are to be made at several points simultaneously.

b. Types of action.—Operations in the attack of a river

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line may be classed as hasty crossings of small streams or large streams where bridges can be seized intact, and forced crossings of large streams.

c. Surprise.—Surprise in a river crossing is as essential as in any other operation. Every effort must be made to deceive the enemy as to the actual point or points of crossing so he will not be able to mass his defensive means against the operations. Frequently feints are made at two or more points while the actual crossing is made at another point. The first troops usually cross just before daylight. Smoke may be used to conceal the crossing or used at the place where feints are made.

d. Security.—Air superiority is essential in forcing a crossing of large streams. Antiaircraft artillery protects the bridging operations.

e. Reconnaissance.—Prior to any operation all available data are assembled concerning streams to be crossed. This includes width, depth, swiftness of current, condition of bottom and banks, fordability, location of fords and bridges, observation on each side of the stream, and natural defensive strength of positions on hostile side. Preparations are then made to provide the necessary units and matériels to cross the streams. Engineers and tank destroyer units are attached. Extra bridging equipment may be necessary. All preparations practicable are made in order that a rapid crossing may be made.

f. Hasty crossings.—(1) *General.*—This type of crossing will occur frequently in pursuit, exploitation, and enveloping movements. Minor hostile resistance may be encountered or the enemy may be prepared to give deliberate resistance to crossing. Bridges will usually be found destroyed and fords mined or damaged. Engineers protected by infantry and tank destroyer units must be prepared to give prompt assistance in repairing or improvising crossings and in removal of obstructions and mines. Advance units must act with boldness and energy to seize bridges before the enemy is able to damage them.

(2) *Fordable streams.*—(*a*) *Streams fordable for great distance.*—Reconnaissance elements endeavor to locate undefended or lightly defended crossing points. They seize such points and hold them until arrival of other troops. The attacking unit may cross on a broad front. Part of the unit

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by either firing from vehicles in covered positions or by using weapons in dismounted positions cover the crossing by fire while other vehicles are pushed rapidly across the stream and attack the enemy from the rear. Smoke, if available, is used to screen hostile weapons and observation points. Artillery, when present, supports by concentrations on hostile defenders and by counterbattery fire. Medium tank units may be used to support the crossing. When the enemy has organized a defense on the opposite bank, the Infantry, with tank destroyers and engineers, are used to effect the crossing. (See FM 7–40.)

(*b*) *Stream fordable at only few points.*—In this case fire is brought on the hostile defenders as previously described. Dismounted men, infantry, and engineers, or a portion of the crew of the vehicles, are used as a dismounted maneuvering element to move across, up, or down stream from the hostile defensive position and attack from the flank or rear to destroy or neutralize antitank weapons. These men are armed with personal weapons and vehicular weapons such as caliber .30 machine guns. Armament includes subcaliber machine guns and grenades. In attacking a defended stream, the support echelon supported by all the artillery, tank destroyer, and engineers forces the crossing. The bulk of the tanks are kept in covered areas prepared to move across when the crossing has been effected.

g. Crossing of unfordable streams by armored unit acting alone.—(1) *General.*—In general, armored units smaller than a division, unless reinforced by engineers, rarely attempt to force a river crossing when acting alone. Armored divisions and smaller armored units move forward rapidly and seize the necessary crossings and bridgehead on the enemy's side of the river. Parachute troops may be used to seize bridges initially. They are rapidly relieved by armored troops. If it is impossible to seize a bridge intact, armored units move quickly to weakly or undefended portions of the river line and effect a crossing. Action is rapid and bold. Usually limited time will be available for detailed reconnaissance. Anticipatory planning is essential to the success of the operation. Rapid communication and exploitation of local successes are also essential. Crossings may be made either during the day or at night.

(2) *Plans.*—Plans are made before forward movement is

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started to force a crossing in case the bridgehead desired cannot be secured.

(*a*) *Scheme of maneuver.*—The scheme of maneuver is as described in FM 100–5. After the Infantry has secured the opposite bank and the bridge site from hostile small arms fire, some artillery, tank destroyer, and light tank units will be ferried across. The engineers build the bridge for the remainder of the unit to cross. Air superiority must be obtained in daytime, except in surprise crossings, and antiaircraft protection is furnished to troops building the bridge.

(*b*) *Infantry.*—The Infantry crosses in assault boats initially. Assigned objectives are seized and defensive positions to secure the bridgehead are occupied. Preparations are made to break up hostile counterattacks. *Antitank guns and tank destroyer element must* be ferried across in the leading waves.

(*c*) *Artillery.*—All the artillery supports the attack initially by concentrations on hostile positions, counterbattery, and interdiction.

(*d*) *Tank destroyer.*—Tank destroyer elements are ferried across early in the operation to assist the Infantry in antitank defense. The tank destroyer battalion crosses as soon as the bridge is constructed and before tank units.

(*e*) *Engineers.*—Engineers with the reconnaissance units reconnoiter the bridge sites and construct the bridges. The bridge company must be well forward in the column in the approach so that assault boats will be available to the Infantry at once and ponton equipment available for starting bridge construction and for ferrying, when needed. The engineers operate the assault boats and construct the bridge.

(*f*) *Reconnaissance elements.*—If hostile resistance is slight, reconnaissance units are crossed behind the Infantry and continue on reconnaissance. If hostile resistance is heavy, reconnaissance units are crossed after the tank units.

(*g*) *Tank units.*—Tank units are crossed as soon as the bridge is constructed and follow the reconnaissance units. Artillery may be crossed with tank units.

(*h*) Trains are crossed after all other troops and only when the bridgehead is secure.

(*i*) *Time of attack.*—In this action time is essential. Surprise is essential and is obtained by secrecy, deception, and speed of action. The crossing is forced at the earliest time that preparations can be made. A bridgehead must be ob-

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tained during daylight hours of the day the attack is launched.

h. Attack of river line by armored forces in conjunction with other troops.—(1) *General.*—When operating with other troops in forcing a river crossing, armored units are usually held well to the rear in covered positions until other troops have secured the bridgehead. However, armored divisions may be used to effect a surprise crossing as previously described and attack the enemy from the rear. The armored artillery may be used to reinforce the artillery of the bridgehead troops. It must, however, be ready to move forward with the division.

(2) *Plans.*—When armored forces are to cross after the bridgehead has been established, plans are made and tentative objectives are set so that it may best be employed to exploit the crossing. Plans must be flexible to take advantage of the enemy situation. Assembly positions of such armored forces are selected with a view to rapid movement to any point where a successful crossing has been made.

■ 60. DEFENSE OF A RIVER LINE.—*a. General.*—The general procedure for defense of river lines is covered in FM 100–5. A river is often used as an obstacle in front of a defensive or delaying position. It may be used as an aid in defensive-offensive action.

b. General scheme for defense of river line.—Usually a river line is not held in strength as a defensive position. Units are assigned such wide sectors that strong defense along the river bank is impracticable. The entire river line is covered by patrols, stationed to give warning of an attack. Certain favorable crossing points may be held by strong detachments. The bulk of the force is held in one or more reserve positions ready to move to defend any threatened point of crossing or to counterattack any hostile forces that have crossed.

c. Employment of armored forces in defense of river lines.—In defense of a river line armored units are most effectively used as a powerful mobile reserve to attack hostile units that have succeeded in crossing the river. Both GHQ reserve tank battalions and armored divisions may be used for this purpose. GHQ reserve tank units will seldom defend a river line alone. Armored divisions may defend a river line in conjunction with other troops either being employed as a reserve or to hold a sector on the river, or they may defend

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a river line alone, pending the arrival of other troops.

d. Employment as reserve of a larger force in defense of a river line.—(1) *GHQ reserve tank units.*—In defense of a river line GHQ reserve tank units are habitually employed in reserve. They may be attached by battalion unit to infantry or cavalry divisions for operation with the reserves of such units. They are seldom employed in units smaller than a battalion.

(2) *Armored divisions.*—Armored divisions employed as a reserve of larger units may be employed as a whole or used in two or more combat command groups, each consisting of reconnaissance, light and medium tanks, artillery, tank destroyer, infantry, and engineer units. The most effective use will be to counterattack the main enemy forces while they are in the midst of crossing or before they have had time to organize or consolidate after crossing. The division should be kept intact when the road net and other conditions permit.

(3) *Position of reserves.*—The road net and condition of cross-country approaches as well as cover, concealment, and the tactical situation, determine the position of armored units in reserve. In general, reserve positions must fulfill the same conditions as those in the defense of a position. They must facilitate speedy entrance into combat in any planned area of operation. GHQ reserve tank units usually are held near the general reserve of the unit to which they are attached.

(4) *Plans.*—Procedure in planning for the use of the reserve in defense of a river line is the same as in the defense of a position. After receiving the plan of the sector commander in whose sector he is operating, the commander of an armored unit, by detailed reconnaissance and conference with unit commanders in whose subsector he may operate, makes plans to meet all possible action by the enemy. As in defense, detailed plans are made for counterattacks and full coordination of effort and a plan of supporting fires is made in cooperation with other ground unit commanders. When the armored unit is located in two or more groups situated to support the defense of different subsectors, plans are made for the speedy movement of such reserves to support the movement of any one unit. (See fig. 11.)

(5) *Reconnaissance units.*—Reconnaissance units may be employed by the force commander to gain and maintain con-

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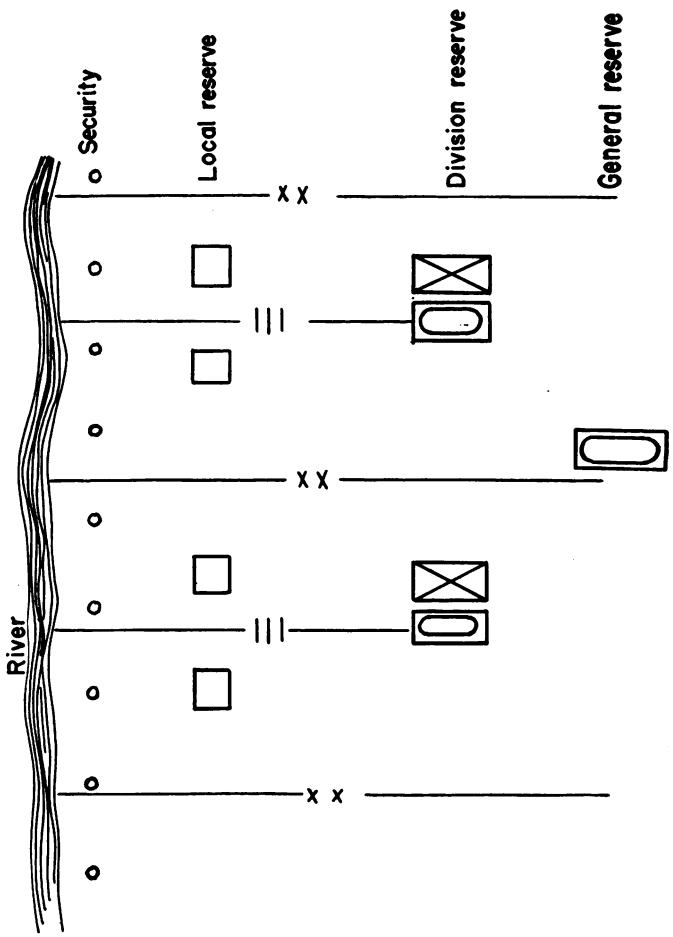


FIGURE 11.—Armored units in reserve in defense of a river line. (Armored units in division reserve are usually held near other reserves of the division. Plans are made by the higher commander for their speedy movement and employment in any other sector. Armored units in general reserve are usually held in one area ready to move against the hostile main threat once it has been discovered.)

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tact with the hostile force on the enemy side of the river.

(6) *Artillery.*—The artillery should be left with the armored units to be employed by them in the counterattack. When the armored division is divided into two or more combat command groups, each may require some artillery.

(7) *Engineers.*—Engineers are employed to prepare routes of approach and some are attached to each group in reserve.

(8) *Infantry.*—Infantry is employed as indicated in FM 7–40. The armored infantry should remain with the armored division and should not be used as a separate reserve for other units. A part of it may be attached to armored regiments detailed in separate reserve locations.

(9) *Tanks.*—Light and medium tank units are used in the counterattack. As the enemy will ferry antitank guns across early, medium tank units should be used in the leading waves of the attack. When attack is made to reduce a bridgehead, hostile tanks may be encountered. The fundamentals of tank versus tank combat then apply. (See par. 43.)

(10) *Control.*—Prior to an attack, communication is primarily by messenger. Telephone may be used between larger units. In attack, radio is the principal means of communication. Control is exercised as in the counterattack.

(11) *Conduct of attack.*—The attack is conducted as a counterattack in defense of a position. When the attacking force reaches its objective, usually the river bank where bridging work is in progress or a bridge has been built, the tanks attack the enemy by fire while infantry and engineers destroy the bridge. Tank units are then withdrawn to a reserve position.

(12) *Time of attack.*—The attack is preferably launched before the enemy has established a bridgehead and started bridging operations. It is launched as soon as the location of the hostile main effort is determined.

e. Employment in defensive-offensive.—In defensive-offensive operations attempt is made to strike the enemy while he is astride the river. Some armored units may cross the river and attack the enemy in rear or flank. Action will be similar to a meeting engagement in the offensive. Other units may counterattack troops already crossed.

f. Defense of river line when acting alone.—(1) *Scheme of defense.*—When acting alone, an armored force defends a river line by using reconnaissance and delaying elements on

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the hostile side of the river; local patrols along the bank; local defense elements at most favorable points of crossing; local reserves in defensive sectors; and a large general reserve. No attempt is made to hold the river line in strength at any one point.

(2) *Reconnaissance elements.*—Reconnaissance elements operating against advancing hostile forces delay the enemy and report his movements. Air observation is used to the maximum. When forced across the river, reconnaissance elements assist in patrolling the river line and protecting the flanks.

(3) *Engineers.*—Engineers prepare bridges for destruction and routes of approach for tank units.

(4) *Infantry.*—Infantry patrols the river line and furnishes local reserves at the most likely crossing points.

(5) *Tanks.*—Tank units are held in reserve for counterattack use.

(6) *Artillery.*—Some of the artillery supports the Infantry, but the bulk is held in mobile reserve prepared to support the striking echelon.

(7) *Destruction of fords and bridges.*—Fords and bridges are prepared for destruction. Those not to be used by withdrawing reconnaissance and delaying elements are destroyed. Others are prepared for destruction. These points are defended by fire of automatic weapons and tank destroyer elements. When reconnaissance units have withdrawn, the bridge or ford is destroyed. An officer must be stationed at the bridge or ford prepared to instantly destroy it if it is in danger of falling into hostile hands. *This officer must act upon his own initiative and not wait for instructions from higher authority.*

(8) *Conduct of defense.*—The defense is conducted as in the defense of a position.

■ 61. COMBAT IN TOWNS.—*a. General.*—In general, armored vehicles are not suitable for combat in towns, particularly large towns. Towns offer concealment to large forces, observation is limited, fire effect is reduced, and combat deteriorates to that of small groups. Such localities enable the enemy to effectively use antitank weapons, barricades, demolitions, and mines.

b. Attack of a town.—Armored units, if practicable, avoid

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attacking towns. If attack must be made, the town is encircled. A direct frontal attack is resorted to only when encirclement is impossible.

(1) *Attack by encirclement.*—The support echelon with part of the artillery makes the direct assault on the town while tank units move around one or both flanks to cut off the forces in the town from reinforcements and isolate it from hostile supporting forces. When no infantry is present, part of the tank units, supported by machine gun elements, is used for the main attack.

(2) *Frontal attack.*—This form of attack is resorted to only as a last resort or when the locality can be surprised. The Infantry supported by all the artillery makes the attack. Tank destroyer and tank units will usually be used only to repel counterattacks after the town has been taken. When no Infantry is available, elements of the reconnaissance and battalion headquarters companies may be used in the assault, while tank and artillery units cover the advance by fire. (See FM 7–5.)

c. Defense of town.—In defense of a town, infantry supported by artillery and tank destroyer units are used to defend the town itself, while tank units are held in reserve to attack enveloping forces. When a tank unit is acting alone, it uses its mobility to attack the enemy before he reaches the outskirts. (See FM 7–40.)

■ 62. COMBAT IN WOODS.—*a. General.*—The effect of woods upon movement of tanks has been previously discussed. Woods may be both a help and a hindrance to armored units in combat. They are a help in that they afford cover and concealment. However, observation in woods is limited; large closely spaced trees slow down or prevent movement except on roads or paths. Control in woods is difficult, direction is easily lost, and mixing of units often results. Tracts of heavy woods tend to canalize an attack. Woods facilitate enemy antimechanized defense. The concealment of antitank guns is easy. Demolitions, barricades, and mines can be used to good effect.

b. Attack on woods.—(1) *Hostile defenses.*—Owing to the excellent artillery target presented by the edge of a woods, defensive works are either placed some distance in front of or back from the edge. The position will depend largely on the field of fire.

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(2) *Scheme of maneuver.*—Tank units seek to avoid heavy woods. Smoke is used to blind observation and antitank guns in the front edges and flanks. Where woods must be attacked frontally, the Infantry, when available, supported by heavy artillery fire, makes the attack. When infantry is not available, tank units supported by artillery, tank destroyers, mortars, and other tank units make the attack.

(3) *Conduct of attack.*—When tanks reach their objectives, they must not halt in the edge of woods. Directions may be given and tanks push on through the woods. In heavy woods when trails only can be used, antitank mines and antitank guns may and probably will be encountered, and ambush may be expected. After the initial assault and when the distance through the woods is great, reconnaissance units may precede the tanks. When emerging from woods, tanks must be deployed.

c. Defense of woods.—The support echelon defends woods as outlined heretofore for the defense. Tank units are held in reserve to counterattack hostile attacking forces. Tanks may be concealed in woods, through which they may move by previously reconnoitered routes to attack a hostile force in flank. This maneuver is especially effective in counterattacking hostile tanks that seek to avoid heavy woods.

■ 63. ATTACKS IN MOUNTAINOUS COUNTRY.—Operations in mountainous terrain usually limit tanks to defiles, which are easily defended by antitank guns and antitank mines. Infantry and engineers, supported by artillery, clear the defiles and the tanks attack the enemy after debouching from the passes. Air superiority is a requisite to moving through mountain passes during daylight hours. (See FM 31–15.)

■ 64. TANK VERSUS TANK COMBAT.—*a. General.*—(1) Large tank units and armored divisions are highly effective means to counter hostile mechanized forces. They are used in an offensive manner, in large numbers, in execution of definite missions. The employment of these units on such missions must be closely coordinated with, and supported by, all other available antimechanized means, including tank destroyer units and combat aviation. Tanks *must not be* used as stationary pill boxes.

(2) When tanks are assigned a mission that does not con-

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template the engagement of hostile tanks, they should not be diverted from such mission, except—

(*a*) When forced to engage hostile tanks as a matter of self-preservation.

(*b*) When it is apparent that the hostile attacks will seriously disrupt the operations of other troops.

(3) When hostile tanks are superior in armor and armament, combat is avoided, if practicable. When these conditions exist, effort is made to draw the enemy into our own mine fields or into areas covered by friendly tank destroyer weapons.

(4) Maneuvers should be planned and executed so as to destroy the enemy in detail. Flank attacks in close formations to bring a great volume of fire on successive waves supported by tank destroyer elements are most effective. Speed is used to maneuver to a defiladed or covered position from which accurate fire from a halted tank may be brought to bear on hostile tanks. When the hostile armament outranges that of our own, closing within range of the enemy guns is avoided unless effective fire can be brought to bear from defilade. Attack with a view to collision is avoided unless out of ammunition or almost out of gasoline. Tanks so used will probably be sacrificed. Under exceptional circumstances, when other means are not available and time is a deciding factor, a tank may be used to block a defile.

(5) Medium tank units, owing to their superior armor and armament, are used to lead attacks against hostile mechanized units. They are supported by tank destroyer units.

(6) Tank crews must be carefully trained in—

(*a*) Recognition of hostile and friendly tanks by silhouette.

(*b*) Characteristics and capabilities of hostile tanks pertaining to armor, armament, and speed.

(*c*) Vulnerable parts of hostile tanks upon which fire will be effective.

(*d*) Range at which our weapons are effective against hostile vehicles.

(*e*) Hostile methods of tank employment.

(*f*) Methods of combating hostile tanks, such as use of speed, defilade and cover, and ambush.

(*g*) Cooperation with tank destroyer elements.

b. Offensive action.—(1) Tank units on the offensive will be used to deliberately attack hostile mechanized forces.

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Tank versus tank combat may result from contact with hostile attacking units. Tanks are most vulnerable to hostile armored fighting vehicles when actively engaged with other elements of the enemy and when undergoing reorganization.

(2) In planning his action a tank unit commander must consider the probability of hostile mechanized attack and terrain where such attacks are possible. Plans are made for countering hostile mechanized attack and definite orders given to units as to action in case of attack. Flanks and rear are particularly vulnerable. Medium tank units and tank destroyers, when available, are used not only to lead the attack, but also some units are detailed to protect the flanks and rear. Tank destroyer units also protect the flank and rear. When hostile mechanized attack is expected, a large reserve consisting primarily of medium tank and tank destroyer units should be held out. This reserve must follow the attack by such routes as to be readily available to counter hostile tanks.

c. Defense.—(1) In the defensive, tank units supplement the employment of tank destroyer units in the antitank defense. They are used in large numbers to counterattack hostile mechanized elements that have penetrated the battle position and to attack hostile forces in their assembly positions or when they have launched their attack, but have not yet reached the battle position.

(2) The counterattack of tank units against hostile tanks must be supported by fire of all available tank destroyer weapons and artillery. Support of bombardment aviation is desirable and should especially be used when the attack is made against hostile units that have not yet reached our lines. After contact has been made with hostile tanks, fire of large caliber supporting weapons will be limited because of the danger of hitting friendly tanks.

(3) Counterattacks are planned as described in section V. In counterattack against mechanized forces all available cover is used to approach those forces from the flank. If practicable, ambush may be prepared. Tank destroyer units are especially suitable for use in ambush. When used from ambush, tanks halt in covered or defiladed positions for short periods to fire their heavy weapons.

(4) Hostile tanks that break through the defensive position must be attacked immediately by tank destroyer and

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tank units. They should *not be allowed* to penetrate deeply into a position before counteraction is taken. GHQ reserve tank battalions supported by tank destroyers are suitable for such missions. The battalion will be given a certain defined sector to cover. It will in turn divide this into company sectors. The battalion as a whole is located in a central reserve position from which it or any of its elements may move quickly to any part of the sector to search for and destroy hostile tanks. As soon as an element has completed its mission it returns to the central reserve position. In this way the greater part of the battalion will be ready for other missions. Liaison officers with the headquarters of the troops holding the sector and battalion reconnaissance elements are used to report locations of hostile tanks.

SECTION VII

MARCHES

■ 65. GENERAL.—*a.* FM 17–50 covers technique of marches, both administrative and tactical.

b. The armored division habitually marches in multiple columns disposed so as to readily enter combat in accordance with the plan of the commander. It is preceded by the reconnaissance battalion, the reconnaissance companies of the tank regiments, and advance guards for each column. Columns are formed so that entry into bivouac, assembly areas, or combat may be made with the least practicable delay and confusion. Doubling of units on the road must be avoided.

c. The number and composition of columns varies with the road net, the tactical situation, and the plan for employment. The columns are composed of combat command groups, both tanks and infantry, artillery, engineer, and tank destroyer; light tanks usually lead. Infantry with tank destroyer units are placed in the lead; during the hours of darkness; when the situation is obscure; when the plan of employment contemplates commitment of the infantry prior to the tanks; and when the employment of the tanks cannot reasonably be foreseen. Artillery is placed well forward in each column. Tank destroyer elements are disposed to protect the flank and rear. Depending upon the condition of routes and the necessity for clearing hostile road blocks, engineers are

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attached to each column, including a detachment with the advance guard. Infantry should be attached to the advance guard when their use in reducing road blocks can be foreseen.

d. Control is maintained by designating march objectives; zones or routes of advance; phase lines to be passed at designated times or when ordered; and by prescribing rates of march.

e. Air superiority is a requisite for a successful daylight march. When air attacks are expected, increased distance must be taken between elements and in some cases advance is made cross-country in small groups.

f. In the presence of hostile aviation, and when secrecy is vital, night marches are habitual. The infantry, with tank destroyer unit, usually leads the march to secure assembly areas for the division.

■ 66. FORMATION.—*a.* (See ch. 7.) The armored division may march in regimental columns or it may be formed into combat command groupings with tank battalions as the nucleus of each group. Each such group may consist of light tanks, medium tanks, artillery, tank destroyers, engineers, and infantry. Within each column the light tanks usually lead. The artillery is placed well forward, usually following the light battalion.

b. Unit trains with the columns are usually grouped and follow in rear of the column. They may, however, be with their units. The division trains march on a route away from the exposed flank or in the center column where they will have the maximum protection afforded by the combat echelons.

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CHAPTER 3

SCOUTING AND PATROLLING, MOUNTED

Paragraphs
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SECTION I

GENERAL

■ 67. PURPOSE AND SCOPE.—*a. Scope.*—All personnel of armored force reconnaissance and combat units must be thoroughly grounded in the fundamentals of scouting and patrolling, both dismounted and mounted.

b. Dismounted scouting and patrolling.—The fundamentals of dismounted scouting and patrolling are set forth in FM 21–45 and FM 21–100.

c. Mounted scouting and patrolling.—The fundamentals only of mounted scouting and patrolling, which are performed by personnel mounted on motorcycles, ¼-ton trucks, or in combat vehicles, are covered in this chapter.

d. Agencies.—The application of the principles of scouting and patrolling employed by security detachments, reconnaissance and combat units is discussed in the pertinent chapters on these subjects.

SECTION II

MOUNTED SCOUTING

■ 68. EMPLOYMENT OF SCOUTS.—*a. Restrictions.*—Individual mounted scouts are used by armored force units only when strict economy of manpower is required and then only for close-in missions.

b. Training of scouts.—In addition to their dismounted training, they must be trained to note and report information of *vital importance to armored force units.* Scouts will be trained in recognition of the following:

(1) *Localities.*—(*a*) Is the terrain suitable for the employment of tanks and other armored vehicles?

What size unit will they accommodate?

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How much cover or concealment is available?
Are there any swamps, cut-over timber, or other impassable areas?
Are there any areas suitable for assembly areas, bivouacs, or service parks?
What are the routes available to get into these positions?

(*b*) Are there any fields that can be used for emergency or temporary landing fields?

(2) *Roads.*—(*a*) Are the road surfaces concrete, oiled, tar, gravel, sand, or dirt?
Are they all-weather roads?
Are they one- or two-way roads?
Where are the steep grades?

(*b*) Where are the defiles?
Can they be easily defended by the enemy?
Are they impassable for armored vehicles?
Can they be avoided?
Does your map accurately show the roads and bridges?
Are there any road blocks?

(*c*) Are there any tank obstacles?
What is required to remove them?

(*d*) Are there any important landmarks?

(3) *Streams.*—(*a*) Are they fordable by armored vehicles?
If so, how steep are the banks on either side?
Do they have rock, gravel, sand, or mud bottoms?
What is the extent of cover on either side?

(*b*) Will the bridges support a tank, other armored vehicles, or trucks?
Are they concrete, steel, or wood type bridges?
Do they need to be repaired or strengthened?
Can they be readily defended by the enemy?
What detours are available around them?

(4) *Supply.*—(*a*) What sources of water supply are available?

(*b*) Are there any gasoline filling stations? Location? Stockage?

(*c*) What facilities are there for loading or unloading supplies, tanks, and other equipment shipped by rail or water?

c. Reconnaissance scouts.—Scouts of this type are sent out primarily to verify or obtain certain information. It may be to determine: Whether the enemy occupies a particular

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area, town or route; the condition of a bridge, or other installations; the nature of important features of terrain; or other doubtful matters. They may be sent out individually, in pairs, or in groups. Reconnaissance scouts are not expected to engage in combat except in self-protection.

d. Motorcycle scouts.—The vulnerability of motorcycle scouts to small arms fire usually renders it impracticable to employ them as mounted ground scouts on the battlefield. During combat they may be used for local security. When it is impracticable for motorcycle scouts to accompany their respective units in combat, they are held under the control of their unit reconnaissance sergeant or other individual, or report to the headquarters of the next higher unit. Motorcycle scouts should rejoin their units as soon as the situation permits.

e. Reconnaissance noncommissioned officer.—Unit reconnaissance sergeants (chief scout) direct and coordinate the activities of the agents, scout and reconnaissance, of their units when operating in a group. The regimental reconnaissance sergeant should be an experienced noncommissioned officer who is capable of handling all the scouts of the regiment whenever they operate in a group. The chief scout of each unit should have an appropriately marked map to indicate routes and objectives. This map must not carry information of friendly dispositions and plans should it be captured by the enemy.

f. Orders.—(1) Orders to scouts prescribe definite missions are given orally, and are similar to the orders given patrol leaders as set forth subsequently in this chapter. The scout notes in writing only such items as will give no essential information if he is captured.

(2) Upon receiving an order to make a reconnaissance, each scout should make sure that he thoroughly understands his mission and should know exactly what he is expected to do. He should study his map and the terrain he is to traverse and plan his procedure accordingly.

■ 69. CONDUCT OF SCOUTS.—*a. Application.*—The following methods governing the conduct of individual scouts are equally applicable to the members of patrols.

b. Movement by day.—(1) Observation alone, unless long continued, will often fail to disclose the presence of the enemy.

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When the time element will not permit of delay, it is often found necessary to use additional measures. The scout may approach a suspected locality, either mounted or dismounted, by bounds in an effort to cause the enemy, if present, to disclose his presence by firing.

(2) In order to see, and not be seen, a scout must use cover to conceal his movements. In exposed areas he moves rapidly from cover to cover and remains motionless except when it is necessary for him to change position. Halts should not be made in the open, in fields, or on roads. In enemy country the scout seeks concealment from high places and other likely points for enemy observation. When low flying airplanes appear, the scout should remain motionless, if in the open. He must take full advantage of available woods, trees, buildings, or other overhead cover. Although he may have selected a suitable route of advance, it may be necessary for the scout to make wide detours, avoid open spaces, or enemy patrols.

(3) A mounted scout can march long distances by day or night on roads; when the terrain is favorable, he can make fair progress across country. The speed with which he can move, under favorable conditions, compensates to some extent for the fact that a scout from an armored force unit is more likely to attract attention than is a horseman or man on foot. In view of the characteristics of his vehicle, he resorts more frequently to dismounted work than does a horseman; he is constantly concerned with the necessity for concealing his vehicle during pauses in his advance, placing it to facilitate a rapid change in direction of route.

c. Movement by night.—(1) Scouts of armored force units operating at night normally drive without lights, and insofar as is practicable, remain on or adjacent to roads or trails. The noise of the motor is usually audible for at least 300 yards on a still night; it is impracticable for the scout to see or hear much while in motion. He progresses by bounds from one terrain feature to another. At the end of each bound he stops and proceeds on foot to look and listen for the information that he seeks.

(2) On night marches each column should be guided by competent scouts who employ their knowledge of distance, direction, maps, stars, and landmarks to guide their units correctly. If practicable, scouts should go over the route

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by day and make both mental and written notes, or preferably be posted before dark. At each critical point, such as a road junction or where the route changes direction, a scout should be stationed until the last unit has passed that point. It is essential that whenever a column subdivides, or leaves the road to go into assembly areas prior to action, a number of well informed scouts be present to guide the units.

■ 70. SUMMARY.—*a.* Mounted scouts must be thoroughly grounded in the fundamentals of dismounted scouting; they do most of their reconnoitering dismounted.

b. All scouts must know what to look for.

c. They must make full use of available cover and concealment.

SECTION III

MOUNTED PATROLLING

■ 71. PATROLS.—*a.* (1) *Strength of patrols.*—A patrol is a detachment of two or more men employed on reconnaissance or security missions beyond the immediate control of the commander by whom it is sent out. Patrols may be sent out on the initiative of the commander of the unit from which provided or on orders from higher authority. In all cases patrols should be given specific missions.

(2) *Reconnaissance patrols.*—Patrols of this type are sent out to obtain information and to get it back to the proper commander. The information may be of the enemy, terrain features, communication facilities, or on other matters. Missions should be expressed in the form of questions that require specific answers. Reconnaissance patrols regulate their movements on the enemy and avoid combat except for self-protection or when the mission requires combat. (See ch. 2.)

(3) *Security patrols.*—These patrols are sent out from security detachments, the main body, or both for the prevention of surprise and protection. They will capture or drive off hostile patrols, thus preventing counterreconnaissance. Missions should prescribe definitely the area of responsibility and the methods by which security is to be provided. They regulate their movements on the body from which sent out and frequently engaged in combat. (See ch. 2.)

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b. Factors considered in patrolling.—Prior to sending out patrols, a commander estimates the situation and considers the following factors:

(1) Information to be obtained or security to be provided.
(2) Number, size, and composition of patrols necessary.
(3) Route and locality for each patrol.
(4) Hour of starting.
(5) Time and place of rejoining.
(6) Equipment, rations, replenishment of fuel and oil.
(7) When and where information will be sent, and by what means.

■ 72. NUMBER, SIZE, AND COMPOSITION OF PATROLS.—The number and size of patrols should be the minimum required by the situation. Strength of patrols will depend on the resistance that they may have to overcome, the means of communication provided, and the number of messengers that may be required. Engineer and intelligence personnel may accompany patrols. As far as practicable, the integrity of squads, sections, and platoons should be preserved in detailing patrols. Officers should lead patrols on important missions.

■ 73. ROUTES, AREAS, OR LOCALITIES.—Reconnaissance patrols should be assigned definite routes or areas; security patrols should be assigned definite routes or localities. If not prescribed by higher authority, these are selected by the commander who sends out patrols, from a map study and other information. When it is desired to regulate the movement of patrols, phase lines or positions to be reached by certain times may be prescribed. (See ch. 4.)

■ 74. HOUR OF STARTING.—The hour of starting depends upon the time by which the information must be received or the security furnished. For a reconnaissance patrol, the time required for the patrol to obtain and transmit the information must be computed in order to determine the hour of departure of the patrol. It is unwise in making this computation to assume that all communication will be by radio. For a security patrol, it is necessary to compute only the time required for the patrol to reach its position.

■ 75. TIME AND PLACE TO REJOIN.—The time and place for patrols to rejoin depend on their missions and the movements

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of the unit from which sent out. Instructions to the patrol as to duration and as to time and place of rejoining must be definitely understood.

■ 76. EQUIPMENT, RATIONS, FUEL, AND OIL.—*a. Special items.*—Patrol leaders should have wire cutters, watch, compass, message blanks, pencil, and flashlight. If conditions warrant, they should also be furnished with maps and field glasses.

b. Supplies.—Individuals should carry enough rations for the duration of the mission. The patrol starts, whenever practicable, with extra oil and fuel containers which are later discarded or used to secure replenishment from local sources as occasion indicates.

■ 77. WHEN AND WHERE MESSAGES ARE TO BE SENT.—The points to which to send messages and the hours messages should reach these points must be given to patrols. Leaders of both reconnaissance and security patrols should know the location of the command or its route, and the location and length of its major halts. Whenever the radio is to be used, the time when messages can best be transmitted and received must be prescribed. Patrols should be required to furnish positive or negative reports at designated hours or upon reaching certain points.

■ 78. WARNING ORDERS.—Whenever time permits, warning orders should be issued covering the following:

a. Strength, composition, and leaders of patrols.
b. Time and place of starting.
c. Instructions on equipment, rations, oil, and fuel.
d. Instructions regarding maps, routes, or terrain to study.

■ 79. DUTIES OF PATROL LEADER.—*a.* Initial preparation.—Having received his warning order, the patrol leader at once notifies the men concerned, specifies the time and place of assembly, and arranges to secure any special maps or equipment that he will need. He will instruct the men concerned as to details regarding arms, uniform, any equipment to be carried, and issue proper instructions regarding letters, papers, or other matter which might reveal the identification of the unit. He then studies his map and secures information from other sources regarding the area in which he is to operate.

b. Inspection of patrol by leader.—When members of the

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patrol report for duty, the patrol leader verifies the details and inspects men, vehicles, and equipment to insure that preparations have been carried out as ordered. He particularly checks ammunition, weapons, oil, fuel, water, rations, and communications equipment; and sees that no unnecessary papers, letters, or maps are carried that might be of value to the enemy if captured. He will instruct them as to the proper procedure in the event of capture. (See TF 11–204 and 11–225.)

c. Inspection of patrol by officer.—He forms the patrol and reports it to the officer sending it out. The officer inspects the patrol and issues his orders, in the presence of the entire patrol.

■ 80. ORDERS TO PATROLS.—The following points should be covered:

a. Information of the enemy which may affect the patrols and such information of our own troops as may be necessary to insure teamwork.

b. General purpose, i. e., reconnaissance or security.

c. Specific instructions covering—

(1) Hour of starting.[1]

(2) Route or locality for each patrol.

(3) Specific questions for reconnaissance patrols; specific missions for security patrols.

(4) Under what conditions patrols should engage in combat.

(5) Time and place at which information is desired or reports will be made, and by what means.

d. Instructions on rations, oil, and fuel.[1]

e. Instructions relative to securing identifications.

f. Instructions as to authority to arrest civilians, impress guides and motor vehicles, seize telegrams and mail matter, and to destroy or interrupt hostile communications means.

g. When and where to return.

■ 81. PATROL LEADER'S ORDERS.—*a.* Supplementing the foregoing orders, the patrol leader issues his own orders, covering the following items in the sequence given:

(1) Plan of the patrol leader for accomplishing the mission.

(2) Initial formation and security measures for the patrol.

(3) Designation of a second-in-command; men and ve-

[1] If not already prescribed in warning order.

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hicles for nearby reconnaissance to the flanks; and special instructions to guides and attached scouts (if present).

(4) Designation of first assembly point, and orders regarding general conduct of the patrol, including combat.

(5) Explanation of prearranged signals to be used.

(6) Where patrol leader will march.

b. When the patrol leader has satisfied himself that all members of the patrol understand their orders and their individual assignments, he orders the patrol to move out.

■ 82. PASSAGE OF OUTPOSTS.—In leaving a bivouac area, the patrol leader informs the nearest outguard commander of his departure, asks for new information of the enemy and of friendly patrols, and informs him when and where he expects to return.

■ 83. CONDUCT OF PATROLS.—*a. Assignment of duties.*—Before starting, the patrol leader designates certain members of the patrol to observe and be prepared to reconnoiter both to the right and to the left; other members are assigned to observe for hostile aircraft and for signals from friendly aircraft. (For example, a patrol of a platoon might be instructed and arranged as shown in ch. 4.)

b. Performance of duties.—This assignment of duties having been made, the patrol leader needs only to point out the house, hill, woods, village, or other terrain feature he wishes investigated, and the previously designated personnel moves out. A patrol leader should not send men on missions or reconnaissance too far away from the patrol. When an essential feature is too far distant to be covered by part of the patrol, the entire patrol goes there. When en route, the patrol leader observes in all directions. Designated personnel observe as previously instructed. The last man in or on the last vehicle looks frequently to the rear for the enemy. The second in command of a patrol rides at the rear. The patrol moves with the least possible noise.

■ 84. MOVEMENT OF PATROLS.—*a. Conduct of advance.*—(1) The patrol and the parts thereof proceed by bounds. When crossing a ravine, stream, or narrow valley the leading vehicle should be on the farther side before the main body crosses.

(2) When approaching a crest, the leading vehicle should increase the rate of speed in order that it may be sufficiently

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in advance to allow the car commander to dismount and peer cautiously over the top to make sure that the enemy is not in the immediate vicinity before the rest of the patrol arrives.

(3) Dismounted observations are more accurate than mounted ones, therefore, if a rapid survey is insufficient to disclose the desired information, one or more men may dismount and, with field glasses, examine the terrain in front for any movement or sign of the enemy. Particular attention should be given to woods, crests, and folds in the ground. These observations may be made while the rest of the patrol is closing up. The patrol then proceeds to the next vantage point, where the procedure is repeated. The same method is carried out at the edge of a wood or thicket.

(4) A patrol moves under cover as much as possible, utilizing all shadows such as those cast by rows of trees and hedges. It crosses open spaces at increased speed and may move slowly under cover. When practicable, it avoids raising dust by marching on grass or damp ground.

(5) When near the enemy, a patrol operates preferably off the roads to avoid enemy groups and dispositions. Large bodies of the enemy use the main roads; small bodies may use side roads. The patrol may therefore observe better by choosing routes and observation points off the roads, with much less danger of being discovered.

(6) During halts a march outpost is established.

(7) When necessary to pass through a town or village, patrol on leaving may start in a false direction in order to mislead hostile inhabitants, later changing direction when beyond the range of their observation.

b. Assembly points.—An assembly point is designated by the patrol leader for use in case the patrol is dispersed. As the advance progresses, new assembly points are designated at 3- or 4-mile intervals. Such a point should be a prominent natural feature such as a hill or a clump of trees which men can see a long way off. If the patrol is suddenly and unexpectedly attacked and scattered, each man or individual vehicle looks out for himself, or itself, returning as soon as possible to the assembly point designated by the patrol leader. The patrol then, reunited, continues on its mission.

■ 85. AVIATION.—*a. Friendly aviation.*—(1) Aviation and reconnaissance patrols cooperate in obtaining information.

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Aircraft may detect movement at a certain place or have its suspicions aroused as to some locality. By use of a signal or dropped message it informs the patrol which then reconnoiters the indicated locality as required.

(2) In all cases the aerial observer is given information in advance as to the routes to be followed by patrols and missions to be accomplished. The observer and patrols communicate with each other through an air-ground code and prearranged signals, in accordance with existing instructions or restrictions as to use of radio.

b. Hostile aviation.—(1) When hostile aviation is active in any area, patrols therein govern their actions accordingly. If the area has formerly been free from patrols, their presence, when noted by hostile aviation, may convey important information to the enemy. Under the circumstances, patrols must make every effort to avoid being observed. When an airplane approaches, the patrol takes cover at once under trees, in buildings, or in the shade of buildings, among scrub, or at any other place where the vehicles cannot be seen. If absolutely in the open, patrols scatter, vehicles halt and remain motionless; geometric formations that might indicated an organized body are avoided. If material for camouflage, such as hay, straw, cornstalks, etc., is available, it should be used to limit visibility and to deceive the enemy. If under trees or other equally good concealment, patrols may continue to advance.

(2) When a patrol must continue on its mission, regardless of enemy airplanes, it advances by vehicle at greater distances, or the leader disperses the vehicles which proceed by devious routes to a designated assembly point. In no case should the dispersion be so great that the patrol leader cannot quickly assemble his patrol in case an enemy on the ground is met.

(3) When uncertain whether an airplane is hostile or friendly, the patrol assumes it to be hostile and seeks concealment. The presence of hostile airplanes must not be allowed to prevent accomplishment of the mission of the patrol.

(4) When an enemy balloon is up, a patrol can generally avoid observation by keeping a mask, such as a ridge or tree line, between itself and the balloon.

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■ 86. COMBAT.—*a*. The officer sending out the patrol indicates the general line of conduct to pursue in the face of the enemy or when hostile patrols are met.

b. If the higher commander desires to keep the enemy in ignorance of the presence of his force, he directs the patrols to resort to concealment to obtain their information, to return without allowing themselves to be discovered, and to avoid combat except in self-defense or when it is necessary to accomplish the mission.

c. On the other hand he may direct the patrol to engage in combat for any of the following reasons:

(1) To prevent enemy patrols from gaining information.

(2) To prevent enemy patrols from getting in rear of friendly reconnaissance and thus harassing the messenger service.

(3) To obtain prisoners.

(4) When the patrol has a security mission.

d. The patrol leader in any given case has certain decisions to make even though his general line of action may have been indicated to him, for example—

(1) If concealment is ordered, is combat necessary in self-defense or for the purpose of accomplishing the mission? Assume that the patrol encounters a hostile patrol very close by. Both parties are surprised. There is no time for concealment. The patrol opens fire at once. Surprise, audacity, and rapid movement bring success against a force of approximately equal size. Even against a greatly superior enemy, bold determined action may enable the patrol leader to throw him into confusion, inflict losses, and get away.

(2) If combat is ordered, is this a situation which promises success, or is concealment or flight necessary? The commander does not expect the patrol to sacrifice itself in futile combat. The patrol leader makes hasty estimate of the situation and considers his chances of success. He should never hesitate to attack equal numbers and may attack greatly superior numbers, if he possesses certain advantages such as surprise, favorable terrain, and an enemy unprepared to receive the attack. When in doubt, the patrol leader adopts the bolder course.

(3) When the patrol has a security mission, it is guided by the necessity of providing the required protection as prescribed in its orders.

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■ 87. HOSTILE MECHANIZED ELEMENTS.—When hostile mechanized elements are encountered suddenly, the patrol scatters or seeks cover in terrain. Since hostile mechanized reconnaissance vehicles may be encountered at any time, the patrol leader in designating assembly points considers terrain to which movement may be made under cover.

■ 88. NIGHT DISPOSITIONS.—Unless so ordered, a patrol does not stop for a prolonged rest before returning. If necessary to remain out over night or to make a prolonged halt, the patrol avoids villages, farms, or inclosures in selecting a bivouac. The position chosen should provide concealment from both air and ground observation and several routes for movement therefrom. It should offer opportunities for observation, defense, and departure. In daytime it should be near high ground offering distant all around observation. At night it should be on low ground so as to bring approaching persons into view against the sky. By night or day the front, flanks, and rear are protected by observation.

■ 89. MESSAGES.—*a. Reference.*—See FM 21–45 for scouting and patrolling, dismounted.

b. Methods of sending (see FM 21–45).—Information must be returned in time to be acted upon. In addition to radio and motorcycle messenger a patrol may have several means at its disposal for getting back messages. In friendly country the telephone or telegraph, if available, should be utilized whenever possible; motor cars or motorcycles may be impressed. Code signals may be arranged with cooperating aviation or messages may be sent by pick-up arranged with aviation.

c. Duties of patrol leader in sending message.—(1) Reads and explains message to messenger and ascertains that he understands.

(2) Tells him the place where the message should be taken.

(3) Tells the messenger to destroy the message if in danger of capture, and on getting through to repeat it verbally to the officer to whom it is sent.

(4) Indicates the route to take and, if necessary to leave road, the compass bearing to follow.

(5) Indicates what to do after delivering message.

(6) Prescribes the rate of march or movement.

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■ 90. SUMMARY.—*a*. Patrols must be given specific missions and assigned definite objectives in order of priority.

b. All members of a patrol must be familiar with the orders.

c. All personnel must be thoroughly trained in the duties of scouts.

d. The function of reconnaissance patrols is to obtain information. They move rapidly, with skillful use of the terrain and as stealthily as the accomplishment of the mission will permit. Combat is avoided unless necessary to accomplish their mission.

e. The frequent use of dismounted scouts is essential to obtain information.

f. Information must be promptly reported.

g. In case of capture, information of value to the enemy must not be allowed to fall into enemy hands or be divulged thereto.

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CHAPTER 4

RECONNAISSANCE PLATOON AND COMPANY, ARMORED

Paragraphs

SECTION I. General 91–99
II. Reconnaissance platoon 100–109
III. Reconnaissance company 110–118

SECTION I

GENERAL

■ 91. SCOPE.—This chapter deals with the tactics and technique of employment of the armored reconnaissance company and its subordinate elements. Fundamentals applicable to the leading and employment of the platoon and company are set forth separately. The basic doctrine applicable to all reconnaissance elements is covered in chapter 2. For further details of reconnaissance, see chapter 8.

■ 92. ORGANIZATION AND DRILL.—The organization, drill, and maneuver formations of the reconnaissance company and its subordinate elements are covered in FM 17–5.

■ 93. SECURITY.—*a.* Security is the responsibility of each unit commander. It is his duty to take measures to protect his command from annoyance, surprise, and observation by the enemy. The energetic and intelligent use of reconnaissance elements materially assists in such security measures.

b. Reconnaissance platoons or detachments provide their own security against ambush or surprise. During movement, they are covered habitually by advance and rear guards. Small reconnaissance detachments may only need to be covered by scouts in ¼-ton trucks; however, when in close proximity to the enemy they will advance by bounds, one vehicle covering with its weapons the advance of another. For this reason, reconnaissance or security detachments consist of at least two vehicles. During temporary halts, march security detachments perform outpost security. For protracted halts, outposts are detailed and definite sectors of responsibility assigned for "all around" security.

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c. All elements must be constantly prepared to repel air and mechanized attack. When halted or while moving, vehicles must be disposed so as to minimize losses in case of air or mechanized attack. Full use will be made of cover and concealment at all times to minimize losses and to prevent hostile ground and air observation.

d. Careless and unnecessary exposure of vehicles must be avoided at all times. Maximum mobility is sought through skillful use of the vehicles in taking advantage of cover and by rapid movement, but critical terrain features such as defiles and important road intersections must be carefully investigated by prompt dismounted reconnaissance before advancing mounted.

e. In the combat zone, operation with tactical lights or without lights at night will be habitual. Display of open lights is prohibited except when specifically authorized.

■ 94. MOVEMENT.—*a.* In the presence of the enemy all units habitually move by bounds, halts being on distinct terrain features, usually just behind ridges or phase lines. Individual vehicles move rapidly from one position of observation and concealment to the next. Small units usually make shorter bounds than larger units. In flat, open country bounds are longer than in rolling or close country.

b. Halts are made at points where cover is available, if practicable. In the event that no cover is available, vehicles are dispersed so as to form an unprofitable target. At prolonged halts when there is danger of air attack, personnel of each vehicle dig slit trenches.

■ 95. USE OF TERRAIN.—In the selection of, and approach to, positions for observation, reconnaissance detachments avoid serious obstacles and take advantage of terrain favorable to observation and concealment from hostile observation, and the avoidance of, or protection from, hostile fire.

■ 96. SCOUTING AND PATROLLING.—All personnel of reconnaissance units must be thoroughly grounded in the fundamentals of both mounted and dismounted scouting and patrolling. These subjects are covered in FM 21–45, 21–100, and chapter 3 of this manual.

■ 97. COMMUNICATIONS.—*a.* The successful functioning of reconnaissance elements is dependent upon rapid, reliable com-

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munications. Radio motor and motorcycle messengers are the principal means of communication in reconnaissance companies. Auxiliary means include: panel, drop and pick-up messages with airplanes; air courier; motor messenger; and commercial wire (telephone or telegraph).

b. Radio is the normal means of distant communication within the company and to higher units. To keep the various commanders abreast of the situation, all radio operators copy all messages coming over their nets whether addressed to their station or some other. Radio traffic must be kept to a minimum. Radio operators transmit only written messages which are given to them by competent authority and use the minimum of procedure signals necessary for net operation. Platoon leaders, section leaders, and car commanders must be capable of operating radio sets on voice. All ranks should understand that unnecessary radio traffic not only delays transmission of important information, but also gives enemy intercept agencies more opportunity to gather information.

c. The tactical situation may require radio silence, or distance, static, interference, mechanical failure, or casualties may render radio useless. Any and all means must be employed to maintain communications under these conditions. No matter how much information the reconnaissance unit gathers, if the information fails to reach the higher commander in time to be of use, the reconnaissance unit has failed in its mission.

d. Motorcycle messengers are used whenever practicable to supplement radio transmission and to reduce radio traffic.

e. The airplane messenger is the most rapid means of communication, other than radio or commercial telephone, over long distances. Messages may be transmitted to the airplane for relay by means of radio, panel, or pick-up device; or the airplane may be able to land nearby to receive the message or courier. Reconnaissance companies normally maintain one radio set in the air-ground net.

f. Constant consideration must be given by all concerned to the most expeditious communication agency to be employed. Full advantage must be made of runners, motorcycle messengers, and liaison agencies. The originator of a message is responsible that it is written in legible, brief, military terms, and that it is properly encoded (where necessary) before being transmitted. He also is responsible that

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all coded messages begin with his location and include the time of observations reported.

■ 98. ROUTINE ITEMS OF INFORMATION.—In addition to essential items of information prescribed by higher commanders for a particular mission, all reconnaissance units habitually obtain, as a matter of routine, information concerning certain items. These routine items of information are set forth in chapter 2.

■ 99. LIMITING FACTORS.—Some of the factors, other than enemy activities, that limit the operations of reconnaissance units are:

a. Availability of fuel, lubricants, and other supplies.

b. Necessity for maintenance of vehicles and rest periods for personnel.

c. Vulnerability to fire of antitank weapons.

d. Difficulty of operating unobserved in the vicinity of the enemy and the difficulty of observing while the vehicle is moving rapidly.

e. Unsuitability of vehicles for locating small bodies of the enemy and the necessity for dismounted scouting and patrolling to secure accurate, detailed information.

f. Limited cross-country mobility over difficult terrain.

SECTION II

RECONNAISSANCE PLATOON

■ 100. ORGANIZATION.—*a. Administrative.*—The reconnaissance platoon is organized for administrative purposes into three sections: an armored car section, a scout section, and a gun section.

(1) The armored car section consists of four armored reconnaissance cars, each manned by a crew of six. It is commanded by an officer who is also in command of the platoon. The platoon sergeant is assigned to this section.

(2) The scout section consists of four ¼-ton trucks, each manned by a crew of three. It is commanded by an officer who is also second-in-command of the platoon. A section sergeant is provided.

(3) The gun section consists of a self-propelled assault gun and a half-track ammunition carrier. Each vehicle transports a crew of four. It is commanded by a sergeant.

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b. Tactical.—The platoon may be organized into patrols consisting of any combination of vehicles as desired for a particular mission or operation.

■ 101. CHARACTERISTICS.—*a. Vehicles.*—The combat vehicles of the reconnaissance platoons are characterized by the following:

(1) Armored reconnaissance cars have good road mobility and good cross country mobility.

(2) Half-track carriers have good road mobility and good cross country mobility.

(3) Half track carriers have limited armor protection for personnel against small arms fire from hostile ground units. Armored reconnaissance cars have reasonable armor protection for personnel against small arms fire from hostile air and ground units and against hostile antitank fire.

(4) One-quarter-ton trucks have good road mobility and good cross country mobility. They are quiet in operation and easily concealed, but have no armor protection.

(5) Self-propelled guns have good road mobility and good cross country mobility. They are lightly armored against small arms fire from hostile ground units.

b. Armament.—(1) The armament of each armored reconnaissance car consists of two or more machine guns, one antitank gun, and one submachine gun. All machine guns can be fired from the vehicle, or may be dismounted and fired from the ground. One machine gun is immediately available for antiaircraft fire, when mounted on the vehicle.

(2) Two of the ¼-ton trucks are equipped with 60-mm mortars for ground use. The other two ¼-ton trucks will tow 37-mm antitank guns where antitank guns are not mounted on armored vehicles. Each vehicle is equipped with a submachine gun.

(3) Self-propelled assault guns consist of a 75-mm or higher caliber gun capable of direct fire against hostile mechanized vehicles, antitank guns, and personnel.

(4) All personnel are armed with the pistol or the carbine.

■ 102. EMPLOYMENT.—*a.* The reconnaissance platoon is normally employed on reconnaissance missions under control of the company commander. It may be detached from the company and detailed on separate reconnaissance missions when necessary. When employed on reconnaissance missions,

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the platoon avoids combat, except when necessary to secure essential information or to defend itself.

b. The reconnaissance platoon may be assigned security or combat missions, either as part of the company or when operating alone. When so employed, the reconnaissance platoon may be reinforced by the attachment of combat elements from other units such as a section of tanks, a platoon of infantry, or a platoon of antitank guns.

■ 103. TACTICAL GROUPING AND OPERATION.—*a. General.*—Normally the platoon operates as a unit, however, the different sections or specially organized patrols of the platoon may operate separately. Platoons or separate patrols may be reinforced by elements attached from other units when necessary. Normally one motorcycle messenger from company headquarters will be attached to the platoon.

b. Organization of patrols.—For reconnaissance missions the platoon is organized into patrols of two or more vehicles, each patrol under the command of a leader. The composition of these patrols will vary with the mission, the width of the zone or area assigned to the platoon, the nature of the terrain, the number and type of roads, the time available, and many other factors. A patrol never consists of less than two vehicles.

c. Composite patrols.—Normally, the platoon will be organized into patrols composed of elements from both the armored car section and the scout section, with the gun section attached to the patrol led by the platoon commander. Such an organization is shown below:

(1) *Patrol No. 1.*
Armored reconnaissance car (point car).
Armored reconnaissance car (platoon leader).
¼-ton truck (platoon sergeant).
¼-ton truck (60-mm mortar).
Self-propelled gun (section sergeant).
Ammunition carrier (corporal, squad leader).

(2) *Patrol No. 2.*
Armored reconnaissance car (point car).
Armored reconnaissance car (platoon second in command).
¼-ton truck (scout, section sergeant).
¼-ton truck (60-mm mortar).

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The type of organization shown above is applicable whether the platoon advances as a unit or with each patrol marching on separate routes. Each patrol may be further subdivided into an armored car squad and a scout squad, each of which may be used separately for patrolling as needed. In many situations it will be advisable for the platoon to operate by sections, the armored car section constituting one more patrol and the scout section operating as a patrol. The gun section may be attached to either patrol, depending on the situation.

d. Tactical employment of sections.—(1) *Armored car section.*—This section is the primary reconnaissance and fighting element of the platoon. It constitutes a powerful reconnaissance agency with sufficient fire power and protection to force its way through light hostile resistance. Vehicles or squads of this section form the basis for the formation of patrols which may be supplemented by the attachment of vehicles or squads of the scout section.

(2) *Scout section.*—The scout section may be employed as a unit, or subordinate elements of the section may be attached to the armored car squads of the platoon.

(*a*) When employed as a unit, it may be assigned reconnaissance, security, or combat missions. Some of these missions are: Supplementing the reconnaissance of the armored car squads; detailed and rapid reconnaissance of areas, localities, or roads which are difficult or unsuitable for the armored cars; missions requiring dismounted patrolling and reconnaissance; combat missions requiring dismounted action such as flank security, seizing or defending road blocks, bridges, or other defiles, and counterreconnaissance; combat missions requiring the use of the 60-mm mortars; establishment of outposts in bivouac.

(*b*) Vehicles of the scout section may be attached to the armored car section when the situation or the mission indicates the necessity for their use. When attached, they supplement the activities of the armored car section by: Reconnaissance of secondary roads, and of areas and localities unsuited for the larger vehicles; by dismounted reconnaissance where mounted reconnaissance is impracticable; by dismounted combat; by firing the 60-mm mortars.

(3) *Gun section.*—(*a*) The gun section is used to assist the mission of the platoon by: Neutralization or destruction of hostile antitank guns; by destruction of hostile armored ve-

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hicles; by neutralization or destruction of hostile automatic weapons. When the platoon or a patrol thereof is engaged in reconnaissance, the assault gun is used primarily to neutralize or destroy hostile antitank guns or armored vehicles which impede the advance of the patrol. It should be placed well forward in the patrol formation, preferably behind the patrol leader's vehicle, where it can be placed in action quickly. In offensive or defensive combat, it constitutes a powerful supporting weapon for use in conjunction with the other weapons of the platoon.

(*b*) For training of personnel in the technique of fire, all gun sections of the company may be consolidated into a provisional platoon for brief periods.

■ 104. TACTICAL TRAINING AND DUTIES OF PERSONNEL.—*a. Drivers.*—(1) Individual training of all drivers of combat vehicles must cause them to—

(*a*) Be responsive to the car commander's control but not to be dependent upon it.

(*b*) Utilize maximum cover in moving toward the objective.

(*c*) Drive close to a crest to enable the car commander to see over the top without unduly exposing the vehicle. The driver does not drive so close to the crest that he himself can see over it.

(*d*) Drive fast over open terrain, always looking ahead for cover and for places to turn around or to get off the road.

(*e*) Keep the vehicle in proper gear so that the maximum acceleration can be obtained when necessary.

(*f*) Avoid stalling the engine, realizing that a stalled engine may cause the loss of a vehicle and the lives of its crew.

(*g*) Place the vehicle under cover in such a manner that it is always headed out so that immediate movement can be made forward.

(*h*) Camouflage the vehicle at halts with branches, brush, top cover, or shelter tent when other means of natural concealment are not available.

(*i*) Man the vehicle weapons when he is the only member of the crew left with the vehicle at a halt.

(*j*) Remain in the vehicle and to dismount only when so directed by the car commander.

(*k*) Have the vehicle ready to move when the crew returns to it.

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(*l*) Learn the capabilities of his vehicle in movement over all types of terrain so as to avoid stalling or getting it stuck or mired.

(*m*) Drive the vehicle boldly when on difficult terrain.

(*n*) Drive the vehicle with all ports closed under all tactical conditions.

(2) The tactical training of drivers is of the utmost importance and is the first step in the tactical training of the car crew. It must be realized that the skillful driver can do much to free the attention of the car commander from the detailed movement of the vehicle and allow him to concentrate his attention on observation. The trained driver can be expected to select the next objective for each bound. The car commander cannot supervise the handling of his vehicle and still perform his functions of command and observation.

(3) All drivers must be capable of operating all weapons when necessary. They perform "drivers" or 1st echelon maintenance. (See FM 25–10.) The most skillful driver should drive the platoon leader's car.

b. Car commanders.—(1) The duties of the car commander vary somewhat depending upon the location of his car in the platoon formation. For instance, the platoon leader must command the platoon and the leader of each patrol must command his patrol. The detailed work of organizing and training the car crew is a responsibility of the noncommissioned officer car commander of the platoon leader's car; therefore, the general functions of all car commanders are the same. The particular tactical functions of each leader will be discussed later.

(2) The car commander must know and have confidence in his driver. With training and practice a single word or signal will be the only control required. The desirability of maintaining the integrity of at least this much of the team or car crew is extremely important. In most units, especially during the training period, the integrity of the remainder of the crew cannot be maintained; therefore, the first duty of the car commander is to organize his crew. He first designates the second in command whose specific function is to assume command of the vehicle when for any reason the car commander leaves it. He designates a member of the crew to watch to the rear for signals from other vehicles and

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for the approach of hostile ground or air forces from that direction. The car commander designates one or two men for close-in security of the vehicle, when it is halted, and personnel who are to form dismounted patrols. He will generally lead the latter in person. He insures that observation to the right and left and for hostile aircraft is maintained. He designates the gunners for each machine gun. He makes use of his field glasses for distant visual reconnaissance and designates the next objective or bound to the driver. He relays all signals to the front and rear and maintains the signaling flag close at hand to transmit such signals as may be necessary. He stays within visual signaling distance of the next car ahead. He places his own car to cover by fire the movement of the car ahead.

(3) In addition to his purely tactical functions the car commander is responsible that the driver performs the required "driver maintenance" and that necessary supplies of gasoline, oil, ammunition, and rations are loaded in the vehicle. He is responsible also for securing necessary maps and overlays or sketches and keeps the car crew informed of the situation and the missions. Car commanders must be trained drivers and gunners, and must be able to operate the radio set on voice.

c. Commander of leading or "point" car.—The vehicle commander of the leading or "point" car has one of the most important and difficult tasks in the platoon. In addition to the duties listed above for the car commander, he must visually reconnoiter and select each bound or objective before leaving the cover or concealment of his present position. He must select as his next objective a position which offers cover, concealment, and observation, especially from the front. He is responsible for maintaining the prescribed route. When the enemy is observed, he makes an immediate decision as to the action required and immediately signals to the rear. If unobserved, he may elect to remain concealed for further observation; he may decide to withdraw to better concealment; or he may decide to ambush the enemy. He may decide that conditions require him to open fire immediately on the enemy. If fired upon he seeks cover without delay. He decides when critical points require dismounted reconnaissance. He carefully investigates road intersections, bridges, and other defiles for mines, and for location of pos-

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sible road blocks or ambush. This may require dismounted reconnaissance on his part; furthermore, he is always accompanied by previously designated dismounted scouts. When his vehicle is halted for other than brief periods for observation, he posts one or two scouts in observation to prevent surprise by enemy patrols. He insures that all dismounted movement is covered whenever possible by vehicular weapons. When this would unduly expose the vehicle, he causes one of the caliber .30 machine guns to be suitably sited on its ground mount. He transmits information gained to the platoon or patrol leader and frequently signals the platoon (patrol) leader forward to impart information or to request instructions. When road blocks or suspected locations of ambush are observed, he takes cover, posts dismounted security elements, and signals the platoon (patrol) leader forward.

NOTE.—If deemed desirable, the platoon leader may assign any noncommissioned officer of the platoon to the "point" car if by so doing he can better fulfill his mission.

d. Patrol leader.—The patrol leader commands his patrol under the direction of the platoon leader. When the platoon operates as a unit on the same route, the leader of the second patrol halts his patrol under cover and maintains visual contact with the platoon leader's vehicle. When his patrol is employed separately, his duties are, in general, the same as those of the platoon leader. In a tactical situation the leader of the second patrol acts as car commander of the vehicle in which he rides.

e. Radio operators.—(1) The technical training of radio operators is amply covered in existing manuals (see FM 24–5). Radio operators are permanently assigned to the same set and to the same station in the net. Efficient teamwork between the radio operator and the platoon or section leader requires familiarity and constant work together.

(2) Radio operators must be trained to function as drivers and gunners; also when necessary be prepared to take part in offensive or defensive action. They must be taught to inform the section or the platoon leader promptly of any messages received or intercepted, and to report when outgoing messages have been cleared. Frequently, time will be saved if messages which are incomplete or have some words or letters missing are referred to the leader before asking for a

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repeat. The leader, who will be familiar with the information or the orders expected, often will be able to decipher the messages. This is particularly true with reference to unusual geographical names which are the cause of frequent requests for "repeat." The operator must learn to reduce the noise, incident to operation of his set, when it may disclose the location of the vehicle to the enemy. During the press of circumstances and duties, the platoon or section leader frequently will forget his radio operator. Therefore, the radio operator should not hesitate to request time for relief and relaxation when the opportunity presents itself.

(3) The training of the radio operator must be concurrent with the training of the other key members of the platoon. Satisfactory results will be attained only when the operator is a permanent member of the team.

■ 105. ORDERS TO PLATOON LEADER.—Orders to platoon and detached patrol leaders are issued by the company commander. Orders are usually oral; special reconnaissance instructions may be written.

a. Warning orders are issued when time permits. These include information as to—

(1) Mission.
(2) Time of starting.
(3) Reinforcements, if any.
(4) Gasoline, oil, ammunition, equipment, and rations.
(5) Maps.

b. Detailed instructions.—Following the warning order, detailed instructions are issued. They contain general and special instructions.

(1) General instructions include—

(*a*) Information of the enemy which has a direct bearing on the mission.

(*b*) Mission, time of departure, route, and objectives of main body.

(*c*) Information of other reconnaissance or security agencies, particularly adjacent reconnaissance units.

(*d*) Mission, route, and objectives of the company.

(2) Special instructions include—

(*a*) Special information required (stated in the form of a specific question or assigned as a specific mission).

(*b*) Zone, area, or route to be covered.

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(*c*) Objectives and time each is to be reached.

(*d*) Reconnaissance phase lines and time each is to be crossed.

(*e*) Instructions for transmission of reports or time reports are desired.

(*f*) Instructions concerning communication with observation aviation.

(*g*) When and where the platoon or patrol must rejoin.

(*h*) Location of the company command post.

■ 106. EXECUTION OF RECONNAISSANCE.—*a. Preparation.*—Upon receipt of a reconnaissance mission, the platoon leader issues warning orders; estimates the situation, usually by a map study; plans his reconnaissance; and causes speedometer reading, gasoline, oil, ammunition, and radio equipment to be checked. Prior to starting, the platoon leader inspects his personnel and vehicles, transmits information in his possession to all members of the platoon, and issues detailed orders.

b. Passage of outpost line.—The platoon leader, upon reaching the friendly outpost line, when starting on a reconnaissance mission, should inform the nearest outguard commander the route he plans to follow and when he expects to return. He should ask the outguard commander for information concerning the enemy, the location of friendly patrols and detachments, and pass the information received to the car commanders. The platoon, if not already in formation at this point, assumes patrol formation and makes final preparations to move out on its mission. Guns and ammunition are put in readiness for action; machine guns are half loaded. Specific men in each vehicle, if not already detailed, are designated to observe to the front, flanks, rear, and overhead for hostile airplanes and for signals from friendly aviation.

c. Formations.—(1) Formations are adopted which provide for all around security, facilitate control, and offer the minimum target to hostile fire.

(2) On roads, the leading car of the first patrol acts as a point and precedes the platoon. The platoon leader rides in the second car of the first patrol. One motorcycle messenger, if present, follows the platoon leader's car. The second patrol follows the first patrol within supporting

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distance, the patrol leader's car leading. The rear vehicle acts as a rear point.

(3) When operating cross country, the platoon deploys in both width and depth, with sections far enough apart to secure wide observation and to utilize the best available covered routes of advance.

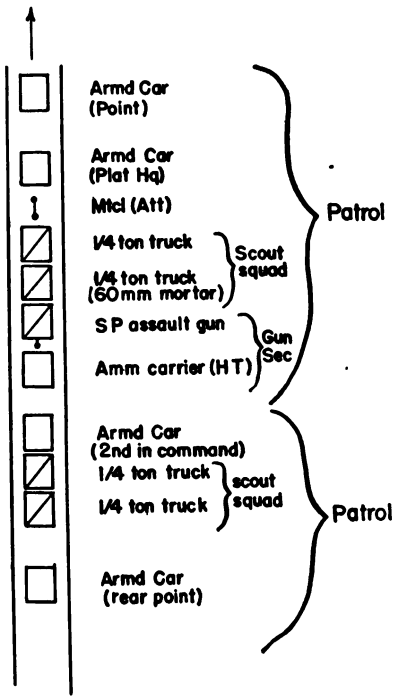


FIGURE 12.—Platoon moving as a unit on one road. (Organized into two composite patrols, either of which may be given a separate route or mission.)

(4) Some possible formations of the platoon on reconnaissance are shown in figures 12, 13, and 14.

d. Advance by bounds.—(1) The normal method of advance of the platoon is by bounds from one position of observation and concealment to the next. After arriving

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at the end of a bound, the leading car observes the intervening terrain to the next bound and, if all is clear, advances at maximum speed. The remaining car of the leading squad covers the advance of the leading car from its original posi-

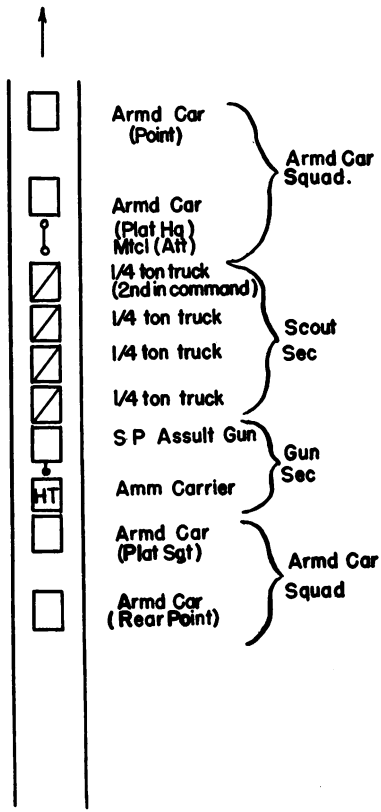


FIGURE 13.—Platoon moving as a unit on one road. (Organized by sections; gun section may precede scout section.)

tion, or follows it at a suitable distance prepared to support its movement by fire. The remainder of the platoon follows at supporting distance. Cars remain within visual signaling distance of each other.

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(2) In each case the preliminary reconnaissance of the next bound must be as brief as possible to avoid undue delay in the advance of the platoon.

(3) The distance between bounds varies with the situation and the terrain. When moving across country, bounds are generally short and squads or cars may be echeloned.

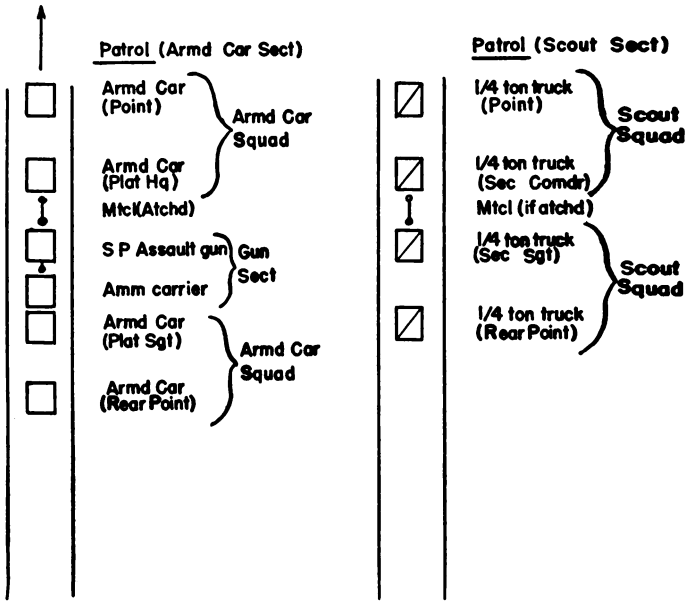


FIGURE 14.—Platoon operating by section on separate roads. (Gun section may be attached to either patrol.)

(4) Various modifications of this method are possible and frequently advisable. The leading car may turn and back up to the crest for observation whenever the necessity for a quick withdrawal is anticipated.

(5) Dismounted reconnaissance may be necessary before moving to the next bound. In this case the car must be concealed during the reconnaissance and located for a quick departure. Personnel remaining with the car must be on the alert, observing in all directions. This procedure is always advisable when in close proximity to hostile troops.

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in moving up to towns and villages, or when approaching dangerous localities.

(6) The gun section is usually placed well forward in the platoon formation to facilitate early action against hostile mechanized vehicles or antitank guns which impede the advance of the platoon.

e. Basic doctrine.—(1) The reconnaissance platoon avoids combat except when necessary for the success of its mission. In general, it avoids unnecessary encounters by resorting to flight, concealment, or by making a detour; it seeks to attain its objective by stealth and by outwitting the enemy, rather than by force. To be diverted from its assigned task by targets of opportunity, or to allow intermediary developments to interfere with the mission, is fatal; such procedure reveals to the enemy the presence of the platoon and seriously reduces its strength. The most effective reconnaissance platoon is one that sees without being seen.

(2) The platoon uses every means available to maintain contact with the company command post.

(3) The frequent use of dismounted scouts and patrols is essential. Accurate and detailed information from inhabitants, tracks, abandoned articles of enemy equipment, former bivouac areas, and other sources, cannot otherwise be obtained. To secure accurate information about a culvert, bridge, or road block, requires the use of dismounted men, particularly at night. The carbine and the submachine gun are the principal weapons of dismounted scouts and patrols. Investigations by dismounted patrols take time and require skill to execute; but when necessary, the time is profitably spent.

f. Reconnaissance of village.—In reconnoitering a village suspected of containing hostile troops, approach to the village from a flank or the rear is desirable. A detailed reconnaissance with field glasses is first made. This is followed by a mounted reconnaissance around the village where practicable. A part of the platoon, either a scout squad, dismounted men, or a squad of armored cars, then enters the village for a detailed reconnaissance. The remainder of the platoon takes position from which it can guard or assure an exit.

g. Reconnaissance of bridges and defiles.—The platoon conducts thorough road reconnaissance in its zone of opera-

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tion or on its assigned route. In approaching a locality such as a bridge or a defile where the enemy could advantageously place road blocks, mines, or other ambush, the leading car proceeds cautiously. It is better to take time for dismounted scouting than to rush blindly into the enemy's trap. Unless specifically ordered to avoid road blocks and press on to more important reconnaissance objectives, the platoon thoroughly reconnoiters each road block encountered before going on. Such reconnaissance consists of determining the nature and extent of the road block; the strength, armament, and disposition of defending troops; configuration of the adjacent terrain; and detours available.

h. Passing through dangerous localities.—In passing through a village, over a bridge, or through a short defile, the passage by the leading element is covered by the remainder of the platoon from a position on the rear side with guns sighted on possible enemy positions. The rearward part of the platoon moves out when the leading element has secured the far exit. When a defile is of such extent that visual contact is lost, a squad, rather than a single car, is sent ahead. For the passage of a short defile, bridge, or road intersection, it will frequently be desirable to send a dismounted patrol ahead, despite the fact that doing this consumes valuable time.

i. Reconnaissance of hostile forces.—(1) The reconnaissance of a hostile column on the march is best made from several successive observation positions on the flank of the column.

(2) The reconnaissance of an enemy bivouac is made by successively approaching the bivouac area from several directions on the flanks and rear to secure observations. As stealth is essential, the use of dismounted scouts or patrols is necessary to secure accurate and detailed information.

(3) When on a mission of battle reconnaissance, the platoon commander, upon his own initiative, promptly and vigorously attempts to ward off any hostile development which constitutes an immediate threat to the success of the main body. During combat, missions assigned to reconnaissance platoons are definite and prescribe either reconnaissance or security missions, or disposition in reserve. Each reconnaissance platoon commander must know what his platoon is to do; and in the absence of orders he must

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do whatever will contribute most to the success of the main body.

j. Reconnaissance to flanks.—Vehicles of the scout section are used to supplement the reconnaissance of the combat vehicle elements by patrolling to the flanks. Scout squads may be sent to investigate side roads or trails for a limited distance.

k. Reports.—The platoon leader records all information obtained and makes the necessary reports to the company commander. Information specially called for in his orders is transmitted as soon as obtained or at the time specified. Routine items of information are transmitted in accordance with the standing operating procedure established by the company commander.

■ 107. RECONNAISSANCE BY PATROLS.—If the patrols are employed separately on reconnaissance missions, the procedure is as prescribed for the platoon. If each patrol contains a scout squad, it may be used to assist in patrolling to the front and flanks.

■ 108. SECURITY MISSIONS.—*a. General.*—The performance of reconnaissance missions by reconnaissance platoons is in itself a security measure. In addition, because of the mobility, armor, and armament of the platoon, it constitutes a potentially strong security element and may be assigned security missions.

b. Security detachments.—When the situation warrants, reconnaissance platoons or patrols are employed as mobile security detachments on the front, flanks, or rear of a command. They may operate under the control of the company commander or may be attached to other units. The conduct of security detachments is discussed in chapter 2.

■ 109. COMBAT.—*a. General.*—A reconnaissance platoon engages in combat when necessary to accomplish its mission or for self-preservation. Missions which may be expected include—

(1) To secure identifications.
(2) To reduce a road block.
(3) To delay or harass a hostile column.
(4) Counterreconnaissance.

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(5) To secure and hold temporarily a bridge, defile, or other terrain feature.

(6) Security missions.

b. Initial contact.—(1) When the enemy is sighted before he sees the platoon, every precaution is taken to prevent disclosing the platoon's presence. The leading car, on observing the enemy, halts at the nearest cover and informs the platoon leader, who transmits the information to the other elements of the platoon and immediately makes a personal reconnaissance. The rear elements keep the platoon leader under observation for signals and place their vehicles so as to cover the flanks and rear of the platoon. If the mission and immediate situation require combat, the platoon leader decides whether to employ offensive or defensive action. When combat is incidental to securing identifications or engaging hostile reconnaissance vehicles, an ambush is set. Consideration must always be given to the terrain, road net, and mutual supporting action between elements of the platoon.

(2) When the leading car is taken under surprise fire, or surprises a hostile force, it utilizes its maximum fire power to inflict the greatest possible damage at once, and quickly seeks cover from which to continue its fire fight. The platoon commander, informed of the encounter by personal observation, the sound of firing, or by message, must decide promptly whether to attack, defend, or retire. When the mission permits, offensive action by fire and movement against one of the enemy's flanks often affords the best chance of success. Regardless of how the leader plans to handle the situation, he should provide assistance at once for the leading car by taking his own car or sending another to a position where supporting fire can be delivered on the enemy. If the hostile force consists of mechanized vehicles or is equipped with antitank guns, the self-propelled assault gun of the platoon must be brought forward and placed in action immediately. His next immediate concern is to assure himself that his platoon is so disposed that his flanks and rear are reasonably secure. If he has run into an ambush or a force stronger than his own, he promptly breaks off the action and retires swiftly; then continues his reconnaissance by another route. If in doubt, he may maintain contact and dispose his platoon for defense while making further investigation.

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Even though his platoon is well disposed for its own security, and appears to have the initial advantage, he does not commit it to an attack unless—

(*a*) His mission justifies an attack.

(*b*) A personal reconnaissance convinces him that an attack will succeed.

c. Offensive combat.—Such action will always be by a combination of fire and movement, i.e., one element supporting by fire the advance of the other elements. Whenever practicable, attacks are made against the hostile flanks. They may be made mounted or dismounted, or by a combination of the two. The scout section provides flank security and fires the 60-mm mortars. The assault gun is used to destroy hostile armored vehicles and to neutralize hostile antitank guns and machine guns. During combat, elements of the platoon may be separated, but usually remain within supporting distance of each other. When conditions prevent the designation of a rallying point at the time combat orders are issued, separate elements return to the platoon axis of movement and rejoin other elements of the platoon.

(1) *Attack of road blocks.*—(*a*) When the platoon encounters a road block, dismounted reconnaissance is made to determine the nature and extent of the obstacle; whether it is isolated or merely one of a series; whether it is defended, and, if so, in what strength and by what type of weapons; and whether it can be detoured. If a detour is practicable, the platoon detours the road block and continues on its mission, reporting promptly and in detail the information obtained. When detour is impracticable or reconnaissance reveals a weak defense, the platoon may attack.

(*b*) The method of attack of a road block will depend on the location, strength, and composition of the hostile defending troops. Usually the scout section and the gun section are employed near the axis of movement to engage the enemy by fire, while the remainder of the platoon, utilizing surprise to the maximum, maneuvers to a favorable position on the flank or in the rear, and attacks by fire and movement. Stalking is particularly applicable in such action. The attachment of mortar and tank elements facilitates greatly in the reduction of road blocks.

(2) *Delaying and harassing action.*—(*a*) In a delaying action, the platoon or its subdivisions occupy successive positions

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between the hostile force and its objective in order to force the hostile column to deploy frequently for attack. One element goes into action on a forward position and opens fire at long range while the other element occupies a position in rear to cover the withdrawal of the element from the forward position. These measures may be combined with surprise attacks by fire from positions on the hostile flanks. Guns may be placed on the ground, with vehicles concealed nearby, when good vehicular firing positions are not available.

(*b*) In harassing action, the patrols annoy and wear down the hostile resistance by frequent surprise attacks on the enemy's front, flank, and rear. In both delaying and harassing action, combat vehicles are dispersed in depth and width, but within supporting distances. In withdrawing, individual cars or squads withdraw successively and mutually support each other. Provision must be made for security when cars are halted. Security measures include the posting of one or more men in observation within supporting distance of the vehicle in order to prevent surprise and to give warning of the approach of hostile forces.

(3) *Counterreconnaissance.*—Platoons assigned counterreconnaissance missions seek to defeat or neutralize hostile reconnaissance forces. In the case of a moving counterreconnaissance screen, platoons will normally be assigned zones of advance. When the stationary counterreconnaissance screen is employed, the platoon will be assigned a sector and should be located behind an obstacle. The platoon will maintain reconnaissance beyond the obstacle to warn of the approach of hostile troops. The use of ambush is particularly effective.

d. Defensive combat.—Defensive combat of the reconnaissance platoon will be of brief duration and will usually involve the holding of a key terrain feature, bridge, or defile, pending arrival of reinforcements from other units. In accomplishing such missions, the action may take the form of delaying or harassing action in advance of the assigned objective, or may include the occupation of a defensive position. If a strong defensive position is available, guns may be dismounted and vehicles dispersed under cover. Defensive positions selected must have good observation and long fields of fire, afford cover close by for vehicles, and have good avenues of withdrawal.

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SECTION III

RECONNAISSANCE COMPANY

■ 110. GENERAL.—The reconnaissance company is the principal reconnaissance element of the armored regiment and of the reconnaissance battalion of the armored division. It has great fire power and road mobility, and is capable of both offensive and defensive action. Although normally employed on roads, its elements move across country, on suitable terrain, when necessary. It assists the higher commander by gaining information of the enemy, the road net, terrain, and resources of the theater of operations. The company may also be used to harass and delay the enemy, to secure critical routes or areas, to participate in counterreconnaissance missions, or to provide security detachments.

a. The reconnaissance company of the armored regiment operates as much as 50 miles (2 to 6 hrs.) in advance of the regiment. When the regiment is operating alone, the reconnaissance may be extended to as much as 100 miles.

b. The reconnaissance company of the reconnaissance battalion acting as part of the battalion may operate as much as 75 to 150 miles (3 to 24 hrs.) in advance of the armored division. This is necessary in order that information may be secured and reported to the division commander in sufficient time for him to take full advantage of the information gained.

■ 111. MISSION.—*a.* The normal mission of the reconnaissance company is distant or close reconnaissance within a given zone, to locate and report on the main body of hostile troops, and to obtain other items of information. It is not concerned with small hostile forces except insofar as they may interfere with the accomplishment of the mission assigned.

b. The commander who assigns a reconnaissance mission should give the reconnaissance company commander all available information pertaining to the enemy and to friendly troops, and should keep the company commander posted as to changes in the situation as the operation develops. Orders and plans of the higher commander, all available data on the road net and terrain, and a specific statement of his mission, including questions to be answered and information partic-

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ularly required, should be given the reconnaissance company commander. He should be instructed, before he starts, when, where, and by what means to submit his reports. If this information is not given, he will obtain it and pass it on to his platoon commanders. Maximum efficiency in reconnaissance operations, where situations change rapidly, is possible only when every member of the company has a thorough knowledge of the situation, orders, and missions.

c. When a higher commander assigns a mission to the reconnaissance company, he may assign a zone of action, designate a locality or area, or assign an axis or route. Boundaries given are not to be construed as limiting the movements of reconnaissance units, but rather as definite guides as to areas of responsibility.

■ 112. TACTICAL EMPLOYMENT.—*a.* The reconnaissance company functions as a unit only in the sense that the company commander controls and coordinates the activities of his platoons. The platoon is the basic tactical unit, and separate missions are assigned each platoon. The company commander employs his platoons to carry out the mission assigned to the company as a whole. This necessitates assignment of zones, routes, or areas to each platoon, together with other necessary measures for control and coordination.

b. The company commander, in assigning missions to his platoons, observes the following:

(1) The platoon is the basic tactical unit.

(2) Each platoon is assigned a mission.

(3) Each platoon is assigned a zone or route(s).

(4) Normally one platoon is held in company reserve.

(5) Ample time must be allowed for dismounted scouting and patrolling.

■ 113. OPERATION.—*a.* The command group, reserve platoon, combat trains, and attached units march in one serial on the axis of reconnaissance prescribed by higher authority. The command group usually moves by bounds and halts at convenient intervals to maintain contact with the platoons and with higher headquarters. All elements are kept informed about the location of the company command post. It is desirable that these locations permit satisfactory radio communication and rapid motor liaison with all platoons and

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be at easily located geographical features. The reserve platoon furnishes security for the company command group, both while moving and when halted.

b. The company commander assures the continuity of operation of the platoons by use of the company reserve. He does not hesitate to send the reserve platoon to assist the action of another platoon, if the fulfillment of the company's mission depends on the success of that particular platoon's operation.

■ 114. TRANSMISSION OF INFORMATION.—The reconnaissance company commander evaluates all information received from platoons and other sources, and takes the necessary measures to assure the prompt transmission of information to the higher commander. To save time and promote coordinated teamwork, he transmits this information directly to the commanders of security detachments whose operations may be influenced thereby. Liaison between the reconnaissance and security elements of an armored unit is best effected by attaching a security liaison officer to the reconnaissance company. This liaison officer should have his own radio-equipped vehicle and is charged with transmitting to his unit commander all information obtained by the reconnaissance company commander and by his own observation that will affect the operation of the security detachment. Such information includes—

a. Routes—condition of road or trail, landmarks, distances, obstacles (extent, nature, and detours), and alternate routes.

b. Nature of terrain adjacent to the route, i. e., wooded, bare, level, rolling, mountainous, good offensive or defensive positions.

c. Road blocks—nature and extent, strength and armament of defending troops, detours, terrain adjacent to the road block, and use and extent of demolitions.

d. All information of the enemy giving strength, composition, disposition, direction of movement if moving, and location of flanks if halted or in a defensive position, and antitank defensive measures.

e. If the enemy is encountered in defensive position, give information in *d* above; show positions on map or sketch. Report nature of terrain over which operations may be made and routes to probable attack positions.

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■ 115. CONTROL AND COMMUNICATION.—*a. General.*—Control of reconnaissance units must be rapid, flexible, and dependable. Control is exercised by direct command, as far as practicable, and is supplemented by all available means of communication.

b. With higher commander.—To facilitate the exchange of information and the issuance of orders, the command post of the reconnaissance company in bivouac is close to that of its next higher commander. On the march, the reconnaissance company commander avails himself of favorable opportunities to report to his higher commander in person. Whenever practicable, he joins his higher commander when the force makes its last halt before an anticipated action, and remains with the higher commander until orders have been issued for the action. If the reconnaissance company is held in reserve, the company commander turns the company over to the second-in-command, and remains with the higher commander.

c. With platoons.—The platoons are kept under control by assigning them definite missions, prescribing routes or zones, and limits beyond which they do not pass until stated times or further orders are issued. In addition, platoons are ordered to check in by radio, or other means, at stated times or on arrival at prescribed localities. The company commander, in order to properly determine the situation, may personally visit platoons which have been held up.

d. Means of communication.—Radio is the most important means of communication in the reconnaissance company. Voice radio between commanders concerned is the most satisfactory method. When combat is imminent, information of the enemy sent in the clear may be necessary to save time. Because it is necessary for the company to maintain radio communication to the rear with higher headquarters, to the front with two or three separate platoons, and, possibly, with adjacent units and with observation aviation, it is essential that all messages be brief and clear, and that strictest radio discipline be observed. Whenever a platoon is in company reserve, its radio may operate in any net which will facilitate the reception and transmission of information and orders. When radio is not available or the distance involved does not warrant its use, motorcycle messengers are employed. Normally, one or more motorcycle messengers

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from company headquarters are attached to each of the reconnaissance platoons. Frequently, time will be conserved and more information furnished by transmitting marked maps or overlays.

e. Cooperation with other agencies.—(1) Cooperation between observation aviation and reconnaissance units requires that direct communication be maintained between them by means of radio, dropped or pick-up messages, and panels.

(2) There must be complete cooperation and coordination of effort between companies of the reconnaissance battalion operating in advance of an armored division and the reconnaissance company operating in advance of the regiment of which it is a part. This coordination must be effected by higher headquarters.

■ 116. RECONNAISSANCE.—*a.* One of the functions of the company is to furnish road information upon which the higher commander can make early decisions as to the route of march. Information about road conditions which might affect the march of the main body is promptly furnished by the platoons to the company for transmission to the higher commander.

b. Prior to contact, the company reconnoiters the zone of advance, locates hostile forces, and reports their size, composition, disposition, and movements. This reconnaissance extends far enough to secure information concerning the location of the enemy's flanks and the depth of his dispositions.

c. When the main body is committed to combat, the reconnaissance company, unless ordered into reserve, performs battle reconnaissance and provides security for the flanks. This includes continuous observation of hostile flanks and rear, to secure timely information of changes in enemy dispositions, and to observe routes over which enemy reinforcements may advance.

d. When engaged in pursuit or while covering a withdrawal, the reconnaissance company carries out intensive reconnaissance and harassing action against the head and flanks of the enemy force.

e. The effectiveness of reconnaissance is in direct ratio to the degree of cooperation maintained between observation aviation and the reconnaissance company. Ground reconnaissance is greatly facilitated by timely information from

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observation aviation on location of the enemy main body, other hostile forces in the zone of reconnaissance, and extent and nature of road blocks and demolitions in the zone of reconnaissance.

f. Reconnaissance of an enemy who is disposed on a broad front is accomplished by assigning zones of action to platoons. The width of the zones is dependent on the road net, terrain, visibility factors, and the strength, mobility, and probable reaction of the enemy.

■ 117. SECURITY MISSIONS.—The reconnaissance company may be detailed as a security detachment for other units. When so detailed, it is conducted in accordance with fundamentals set forth in chapter 2.

■ 118. COMBAT MISSIONS.—Although normally employed on reconnaissance missions, the reconnaissance company may be used to harass or delay a hostile column or to secure critical routes or areas, pending the arrival of other forces. When engaged in reconnaissance missions, the reconnaissance company may be required to engage in combat in order to carry out its mission. When the necessity for combat can be foreseen, the reconnaissance company is reinforced by the attachment of other units. These attachments may include mortar elements, tank elements, rifle elements, or tank destroyer elements.

a. Delaying action.—(1) In a delaying action, the mission is to impede the advance of a hostile force; hence, early contact is desirable. Maximum delays are made at natural terrain features, such as streams or ridge lines. The delaying position must be such that the enemy must attack it or consume much time in avoiding it. The ideal delaying position for reconnaissance elements is one covering the route of the enemy at a point where his advance is limited to a narrow front, such as a bridge or defile. Such a position must have good observation, good fields of fire at mid and long ranges, and at least one route of withdrawal free from hostile observation and fire.

(2) It is advisable to take up successive positions rather than hold one position so long as to run the risk of getting too deeply involved or of allowing the enemy to cut off the avenue of withdrawal by flanking movement. The withdrawal from successive positions may be made by each platoon as a

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unit, although it is generally accomplished by subordinate elements leapfrogging and mutually supporting each other.

(3) The assignment of one or more platoons to operate against the enemy's flank is desirable in delaying action. In harassing action, the company annoys and wears down the hostile resistance by frequent surprise attacks by fire against the enemy's front, flank, and rear. In both types of action, elements of the platoon may be dispersed in width and depth but seldom beyond mutual supporting distance.

b. Securing critical routes or areas.—The reconnaissance company may be employed to secure a critical route or area. When assigned such a mission, the company is reinforced with mortar units, rifle elements, and tank destroyer units, if available, which take over the immediate defense of the critical area and allow the reconnaissance elements freedom to locate the enemy, and, if possible, to delay him at considerable distance therefrom. Lacking reinforcements, the reconnaissance company must provide the immediate defense, and conduct such reconnaissance and delaying action as is within its power.

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CHAPTER 5

ARMORED COMPANY AND ARMORED BATTALION, TANK, LIGHT AND MEDIUM

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SECTION I

GENERAL

■ 119. SCOPE.—This chapter deals with the tactics and technique of tank units up to and including the battalion. Fundamentals applicable to the training and employment of the individual tank, the section, platoon, company, and battalion are set forth in separate sections. The general methods applicable to tactical employment of tank units in combination with other armored force units are covered in chapter 2. Drill and maneuver formations are contained in FM 17–5.

■ 120. GENERAL ORGANIZATION.—*a.* Tank battalions both light and medium are organized similarly. Each has a headquarters company and three tank companies. The difference is mainly in equipment. For detailed organization see current tables of organization.

b. Battalion headquarters company.—The battalion headquarters company consists of a headquarters section, company headquarters, mortar platoon, and assault gun platoon. For detailed discussion of the battalion headquarters company, see chapter 9.

c. Tank company.—(1) The tank company, both light and medium, consists of a company headquarters and three tank platoons of five tanks each. The company headquarters consists of a command section; a tank section of two tanks; a communication, liaison, and reconnaissance section; a maintenance section; an administrative and supply section; and a mess section. Each tank platoon consists of a platoon headquarters and two sections of two tanks each.

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(2) The tank company (medium) differs from the tank company (light) in that it contains more personnel and has heavier armor and armament.

■ 121. CHARACTERISTICS OF TANKS.—*a. Light tanks.*—Light tanks combined with medium tanks furnish the striking power of armored force units. Their armament consists of antitank weapons, weapons for use against hostile personnel, and weapons for protection against low-flying aircraft. They possess mobility, fire power, armor protection, and shock action. Some of their most important capabilities and limitations are listed in chapter 2.

b. Medium tanks.—Medium tanks may be used as the assault echelon or to assist the attack of the light tanks, primarily by neutralizing or destroying hostile antitank weapons, and secondarily by protecting the light tanks against the attack of hostile tanks. Similarly they assist each other. They differ from the light tanks in the following characteristics:

(1) *Capabilities.*—(*a*) Greater obstacle crossing ability.

(*b*) Greater crushing ability.

(*c*) More fire power. Includes fire from at least four caliber .30 machine guns and one 75-mm gun. Some medium tanks have both a 37-mm and a 75-mm gun.

(*d*) Greater armor protection, which gives it reasonable protection against light antitank fire as well as small arms fire, shrapnel, and bomb fragments.

(2) *Limitations.*—(*a*) Slower road and cross country speeds than the light tank.

(*b*) Limited use on roads having weak culverts and bridges.

■ 122. RECONNAISSANCE.—The type and extent of reconnaissance necessary for tank operations is discussed in chapter 2. Prior to combat the leader of each unit makes a personal reconnaissance, as thoroughly as time will permit, to verify and complete information regarding the enemy and terrain. The reconnaissance may be limited to a hasty glance at the enemy and terrain, as in a meeting engagement or sudden collision with other armored units. In some instances it may be necessary to supplement this reconnaissance by employing scouts or patrols. The reconnaissance by the leader is made under the protection of local security, such as scouts or a covering detachment; and, whenever possible, the leader is

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accompanied by the leaders of his next subordinate units. It may be made mounted or dismounted, or a combination of the two. The proper reconnaissance of hostile positions, particularly those of antitank weapons, requires the use of all available means; motorcycles, scout cars, tanks, men on foot, and aviation when available. Use should always be made of available cover and the advance of reconnaissance elements should be by bounds with the elements in motion covered by stationary weapons. For reconnaissance to be of value the information obtained thereby must be communicated to the commander in time to affect the employment of his unit.

■ 123. SECURITY.—Leaders of any units operating separately under combat conditions must protect their units from surprise by employing small organized groups, termed security detachments, between their commands and the enemy. These security detachments may be advance guards, flank guards, rear guards, covering detachments, scouts, combat patrols, or outposts, according to their missions. The methods of operation and conduct of these security detachments are discussed in chapter 2.

■ 124. SCOUTING AND PATROLLING.—All personnel of tank units must be thoroughly grounded in the fundamentals of scouting and patrolling, both dismounted and mounted. The fundamentals of dismounted scouting and patrolling are set forth in FM 21–45. Mounted scouting and patrolling for armored force units are covered in chapter 3.

■ 125. MOVEMENT.—In the presence of the enemy, tank units, when deployed habitually move by bounds. Individual tanks and units move rapidly from one position of observation and concealment to the next. Each bound is followed by a check to observe to the front, to keep in touch with the rear, and to plan the next bound. The length of the bound varies with the size of the unit and the character of the terrain. Small units usually make shorter bounds than larger units. In open or rolling country, bounds are longer than in wooded, broken country.

■ 126. MOBILITY.—The retention of mobility is a primary requisite in tank units. This is directly dependent upon driver training, march discipline, and vehicular maintenance,

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as well as the type of the terrain. Inadequately trained drivers or poor march discipline may cause delay which will often prove costly. Preventive vehicular maintenance must be continued until the last possible moment before engaging in combat, therefore light maintenance sections must accompany units on the march and to lines of departure or attack positions. *Reconnaissance of routes and terrain will save time and trouble.* During halts of any length, engines should be stopped. Needless running of engines will consume fuel which may be badly needed during combat.

■ 127. INFLUENCE OF TERRAIN.—*a.* Tanks are relatively sensitive to terrain. The primary natural obstacles to tanks are water lines which cannot be forded, marshes, cliffs, deep ravines, areas containing many large closely spaced boulders, and woods with trees of large diameter growing close together. Artificial obstacles include tank traps, wide and deep trenches, iron or concrete posts closely spaced, and suspended cables. Secondary obstacles include fordable streams with soft banks, rising slopes of over 25°, woods and heavy brush, and stumps higher than the clearance of the tank.

b. Frequently, obstacles of considerable depth and width are encountered in terrain over which tanks must operate. Generally, tank unit commanders have several choices of maneuver in avoiding such obstacles. The terrain over which a tank unit is to operate must be analyzed from the viewpoint of the enemy as well as that of friendly troops. The commander must determine the probable location and type of hostile defensive installations and select the route or routes that will lead him quickly to the objective.

c. Full advantage must be taken of terrain favorable for movement, concealment, and use as observation points. Terrain suitable for operations should provide concealed assembly areas, covered routes of approach, areas for attack sufficiently free of obstacles to permit movement to objectives at high speed, and suitable positions for supporting elements.

■ 128. CONCEALMENT AND CAMOUFLAGE.—See chapter 2 of this manual, FM 5–20, and 21–45.

■ 129. COMMAND.—*a.* Command is exercised through the leaders of subordinate units who control the movements and

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dispositions of their units by means of signals or radio as long as tactical conditions will permit, then by the previous assignment of objectives and missions.

b. Tactical missions are assigned to leaders of subordinate units to effect the accomplishment of tasks for which the unit is responsible. As units are committed to combat, each successive leader may assign tactical missions to the leaders of subordinate units down to include the section. The section is the smallest unit which is normally employed on a separate mission.

■ 130. ESTIMATE OF THE SITUATION.—Having been given a mission by higher authority, a leader must clearly understand the mission and must have information about the enemy, supporting troops, and the terrain before he makes a decision as to how it will be executed. This information is obtained from higher authority, from patrols and scouts, and by personal reconnaissance. He makes an estimate of the situation, however brief, covering the following points:

a. Mission.—He considers what he has been directed to do—that is, what he must accomplish.

b. Enemy.—He considers how the enemy may interfere with the performance of his mission.

c. Own troops.—He considers his strength as compared to that of the enemy and what assistance he may expect from friendly troops.

d. Terrain.—He considers how the terrain may assist or hinder him in the performance of his mission, and how it favors the enemy.

e. Plans.—He considers plans by which he can perform his mission.

f. Decision.—From the foregoing he decides what he will do; and when, where, and how he will do it. Before starting out on a mission the leader of a unit should be able to answer in his own mind the following questions:

Where am I going?
How am I going to get there?
In what formation am I going to march to assure security?
What am I going to do when I get to my objective?
If I cannot reach my objective, what then shall I do?

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While carrying out any mission, he should frequently ask himself the following questions:

What is my mission?
Am I on a side track?
Am I keeping my commander properly informed of my actions and those of the enemy?
With what elements of other units should I maintain contact?

■ 131. ORDERS.—*a.* After the decision is made, individuals and units concerned must be given definite orders to insure cooperation in carrying out the plan. In tank units, all smaller elements down to include tank commanders must be made as familiar as possible with higher plans in order that they may act intelligently in any situation not covered by orders. Orders to small units will usually be issued orally. They may be delivered by radio or by messenger to units not present.

b. To make certain that an order is complete, the general form set forth in FM 101–5 will be followed.

NOTE.—Under paragraph 4 of the order will be included instructions, if necessary, covering supply, refueling, maintenance, and equipment.

c. Only the essentials of the form of an order are used. For small units, frequently only paragraph 3 will be used. In hasty action when time is a vital element, the order will be reduced to a minimum, and may consist only of visual signals.

■ 132. MESSAGES.—When time permits and distances are not too great, messages should be written and sent by motorcycle messenger. Radio traffic must be reduced to a minimum. For important messages both means should be used. All messages must be brief and clear. If oral messages are used, they should contain but one thought or idea. A sketch is often better and contains more information than a written message. This subject is covered in detail in FM 21–45 and in chapters 3 and 9 of this manual.

■ 133. CONTROL.—The control of tank units, both on roads and cross country, is difficult due to the noise of engines, lack of visibility in turreted vehicles, and speed of movement. This is particularly true under combat conditions. Leaders

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of all units, down to include individual tanks, must be constantly on the alert, watching the next higher commander for signals. Simplicity of plans and formation, rigid adherence to the example of "follow the leader" and reliable radio and visual communication are necessary for control at all times. During attack, control of small units is decentralized. It is regained through the assignment of definite objectives and rallying or alternate rallying points. Compass bearings between important points (attack position, line of departure, objective, rallying point) may be given, down to and including the commander of each individual tank. Compass bearings are particularly effective when used in conjunction with speedometer readings. The methods of control of armored units are covered in chapter 2.

SECTION II

INDIVIDUAL TANK

■ 134. ORGANIZATION AND DUTIES OF CREW.—The training, organization, duties, and functioning of the individual members of the crew of both light and medium tanks is covered in detail in FM 17–5.

■ 135. TACTICAL EMPLOYMENT.—The individual tank is not employed alone, that is, beyond supporting distance of other tanks. As part of the section or platoon, it attacks, defends, and performs reconnaissance or security missions.

■ 136. TECHNIQUE OF EMPLOYMENT.—*a. Terrain.*—Tank commanders must be able to judge terrain and to take advantage of favorable features for employment of their tanks. Movement under existing cover should be habitual. Difficult places such as mud holes or deep ditches should be avoided. It may become necessary for the tank commander to dismount when not under fire, and guide the tank on foot in a doubtful situation.

b. Night movements.—Night movement without lights or with tactical lights requires that the tank commander and the driver be constantly alert. If in column, it is essential to keep well closed on the vehicle ahead to avoid being lost. Movement off roads and into assembly areas or bivouacs can be expedited by the tank commander dismounting and leading his vehicle on foot. Tanks are located in assembly

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area or bivouac to favor an exit in the desired direction of movement. Previous reconnaissance of exits is essential.

c. Security.—Security missions assigned to an individual tank will ordinarily be limited to that of a point of the advance guard where the remainder of its section or platoon constitutes the next higher element of the advance guard. In the case of a platoon acting alone, an individual tank may constitute the advance guard for the platoon. If available, one or two motorcycles will be attached to the point. The conduct of the point is covered in detail in chapter 2. As part of a section or platoon, individual tanks will participate in all types of security missions, such as advance guards, flank guards, rear guards, patrols, outguards, and covering detachments. In addition to carrying out specific assigned duties, each tank commander must observe the following general rules, wherever applicable:

(1) Take advantage of all possible cover and concealment, both while moving and when halted.

(2) Keep a minimum of 35 yards between vehicles.

(3) When halted under cover, locate his tank so that it can cover effectively with fire the intervening terrain in the most likely direction of attack.

(4) On outpost duty, always post a dismounted member of the crew to protect the tank against surprise.

(5) Always have at least one member of the crew manning the guns of the tank. *Do not let yourself be surprised.*

d. Reconnaissance.—As part of the section or platoon, tanks may be attached to reconnaissance units or may participate in reconnaissance missions. On such missions tanks are normally employed for security for other reconnaissance units. All tank commanders must be thoroughly grounded in the fundamentals of reconnaissance set forth in chapter 2. In addition, they should receive special training in tank reconnaissance. This comprises—

(1) Reconnaissance for routes and positions in rear of the line of departure.

(2) Reconnaissance of the zone of action, when possible, from the line of departure to the objective—for the purpose of locating natural obstacles, antitank weapons, tank obstacles, and covered routes.

(3) Reconnaissance during combat for information of the enemy, location of rallying points and alternate rallying

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points, and routes thereto. Special training should also cover map reading, aerial photograph interpretation, and sketching.

e. Combat duties of tank crew.—(1) *Before combat.*—(*a*) Before leaving the assembly position (or the intermediate assembly position, if time permits), the tank commander causes a thorough inspection of his tank to be made. Necessary refueling, servicing, and maintenance is performed. Guns and ammunition are carefully checked. On leaving the assembly position, he is responsible that his tank conforms to instructions, and he repeats to tanks in rear any orders or signals that may be passed back during the movement to the attack position and line of departure. Advantage should be taken of all means of cover and concealment for his tank in movement and during halts. He accompanies the platoon or section leader on reconnaissance when directed and takes his tank driver with him when practicable. When ordered, he reports with a part of his crew to the platoon or section leader to receive the attack order. He makes certain that he understands the order, and that he is oriented on the ground and on the map or aerial photograph. He selects and plots on his map, if time permits, any prominent terrain features that might be used as guides or landmarks. On returning to his tank he assembles the crew, and verifies the fitness of the tank for combat. If the entire crew did not receive the platoon or section order, he orients them, particularly the driver, as to its content. He determines and announces the magnetic azimuth (direction) of the objective, and where applicable, of the rallying point and alternate rallying point. He notes the speedometer reading with a view to using this as a means of checking distances from the attack position or the line of deparure. If time and the situation permit, he takes his driver, and, at times, other members of the crew, to a point from which the terrain to the front may be observed, and points out the salient features on the ground, including the objective and the route to be followed. He reconnoiters to the front as far as practicable. He notifies his section leader when his tank is ready for action.

(*b*) When directed by the tank commander, the crew performs such inspections, refueling, servicing, and checking of armament and equipment as time permits. The radio operator, in tanks so equipped, operates his radio as directed.

(2) *During combat.*—(*a*) At the proper time the tank

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commander causes his tank to move forward in the attack, in accordance with orders of his platoon or section leader. In the movement forward, he takes advantage of available cover and changes direction, and speed, within the limits imposed by his place in the formation, route, and direction of attack, in order to reduce the effectiveness of the fire of hostile antitank weapons. When halting to deliver accurate fire on enemy targets, he should always endeavor to halt his tank in such a position that it has hull down or is concealed. He observes the other tanks, particularly that of the section leader. In case contact with the section leader is lost, he regains it. He directs the driver so as to maintain direction and to prevent closing with the other tanks of the platoon. By constant reconnaissance during the attack, observation of other tanks, and the changing situation, he can determine the future conduct of his tank and crew. He points out targets to the gunners and the driver. In light tanks, he fires the turret weapons. In the assault, he endeavors to maintain his place in the platoon formation, while delivering the maximum fire of all weapons on the hostile position. When ordered by the section leader, or if he becomes lost, he directs his tank to the rallying point.

(*b*) The tank driver moves the tank forward toward the objective, in accordance with the signals of the tank commander. He aids the gunners by seeking favorable ground when fire is to be delivered. He fires fixed guns by remote control. If a zigzagging advance is adopted, he moves the tank directly toward the target for a while then turns to the right or left. After traveling a short distance he again changes direction. This change of direction must be coordinated with the firing of the weapons and will be made on signal of the tank commander. He avoids skylines or a background against which his tank will be contrasted. He seeks to attack from the direction of the sun so the gunner of the opposite tank or antitank gun will be somewhat blinded by the sun's rays. He tries to cross unavoidable obstacles or difficult terrain without unduly decreasing speed or exposing the lightly armored belly of the tank. In the event of mechanical trouble or damage to his tank, he attempts to maneuver to a covered position. Upon arrival on the objective, he cruises on the objective or takes a position to cover the objective by fire as

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directed by the tank commander, until ordered to either proceed to the rallying point or to his next objective.

(*c*) Gunners observe continually throughout their field of vision, point out targets to the tank commander, and open fire on suitable targets.

(*d*) During the attack (unless firing a gun) and particularly after arrival on the objective the radio operator in medium tanks attends his radio for reception of orders from the platoon leader. In the case of the command tank, he transmits such orders as are given to him by the platoon commander. In general, in addition to their specified duties, all members of the crew observe other tanks of the platoon and are constantly on the alert for signals from the section leader's tank. The tank commander and platoon leaders habitually use the radio themselves.

(3) *After combat.*—(*a*) Upon arrival at the rallying point, the tank commander seeks such cover as he can find and takes steps for local security as prescribed by the section leader. He prepares for further action, with special reference to immediate readiness for meeting a hostile counterattack. He checks his crew, supervises first aid, and directs other crew members in need of medical attention to the aid station. He causes the remaining members of the crew to perform the steps prescribed for them in preparing for action. He reports to his section leader, giving casualties, mechanical condition of the tank, weapons, radio, and ammunition, fuel, and oil requirements. He orients himself as to the situation, and obtains information as to feeding, servicing, and replenishing ammunition and other supplies. In the event that his tank is in need of repairs or servicing, he notifies the section leader as to the mechanical condition of his tank. He supervises the work of other members of the crew, and orients them as to the situation. If necessary, he reorganizes his crew. In case his tank fails to reach the rallying point, he sends a message to the section commander giving the exact location of the tank and the nature of the damage, and stating whether the tank can be repaired in its present location.

(*b*) Upon arrival at the rallying point each member of the crew performs the duties prescribed for him. Duties of disabled members of the crew are performed by others as directed by the tank commander.

f. Control.—The principal requisite for maintaining con-

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trol is thorough training of all crew members prior to combat. The tank crew is a team, habitually working together inside the cramped space of the crew compartment. Each crew member not only must know his own duties, but he also must be familiar with the duties of the other crew members. Definite orders, completely understood by all members of the crew, are an important factor in effecting control. In addition to constituting a team among themselves, the tank crew must function as a part of the section team. The tank commander must be sure that each member of his crew knows exactly what the section as a unit is to do, what the tank as a part of the section team is to do, and what he, as a member of the crew is to do.

g. Communication.—The combination of battle noises outside the tank, and operating noises inside the tank, complicate communication among crew members. Touch signals are prescribed for control of the driver by the tank commander. Intratank telephones facilitate communication. The tank commander may in some cases transmit his instructions to individual crew members by pointing or other visual signals.

h. Employment in combat.—(1) *General.*—A combat tank normally operates as a part of the section, in furtherance of the section mission. Command and staff tanks are employed as the appropriate commander sees fit. The success of any tank attack will depend largely upon the initiative and training of individual tank commanders and their willingness to take advantage of opportunities promptly as they are presented. Tank commanders utilize the inherent characteristics of their combat vehicles: mobility, fire power, armor protection, and shock.

(2) *Targets.*—Tanks engage targets in the order of importance to themselves and their unit. The order of importance is:

(*a*) Hostile tanks, the weapons of which are effective against our own tanks.

(*b*) Hostile antitank guns.

(*c*) Hostile armored vehicles, the weapons of which are not effective against our tanks.

(*d*) Hostile personnel and weapons, the destruction of which will materially effect our maneuver. Medium tanks, because of their armor and armament, may be used to support an attack by fire. However, mobility must not be lost, and

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these tanks advance from position to position from which they bring the most effective fire on the enemy. The medium tank battalions are the main attacking elements of the armored regiment.

(3) *Action against antitank guns.*—When one or more tanks are endangered by a hostile antitank weapon, other tanks in the vicinity must assist in destroying it. If cover or concealment is available, stationary fire from a position of hull down or in concealment is the most effective. Some tanks fire from such positions while others maneuver to close with the antitank gun. Where cover is not available, tanks seek to reduce their vulnerability by zigzagging or pursuing irregular courses. Each tank independently changes direction at frequent intervals, deviating at random toward either flank. Tanks open fire when within effective range, and continue to fire until the antitank gun is put out of action. When possible, one or more of the tanks present approach the antitank gun from the flank or rear. The tank nearest the gun crushes it to prevent its being remanned. When the gun has been destroyed, tanks immediately return to their original mission. Some tanks may halt out of the effective range of the hostile antitank weapon and bring fire to bear on such weapon while other tanks close to crush it.

(4) *Action against mines.*—Where extensive mine fields are encountered during an action, tanks will have to proceed around them, unless assistance is available for clearing a passage through them.

(5) *Method of attack.*—(*a*) The method of attack upon any specific target depends upon the target, the terrain, and the range. The safety of the tank depends upon its speed, change of direction by zigzagging, change of speed, the effectiveness of the fire from the tank, and the utilization of available cover and concealment. The decision whether to open fire and when to open fire is left primarily to the individual tank commander, although initially it may be controlled by the section or platoon leader. It is based on the mission, power, and characteristics of the weapons, the range, and the importance of the targets encountered. Fire from a stationary tank is more effective than fire from a moving tank. Fire from a moving tank gains effectiveness as the range decreases. In general such fire is not effective beyond ranges of 300 yards. An exposed tank which is not in motion

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is extremely vulnerable. Tanks may stop to fire from partially defiladed positions, exposing only the turret; they may stop under good cover to deliver fire for brief periods, or they may stop momentarily to enfilade a hostile position.

(*b*) An assault may be made simultaneously by all tanks of a platoon. Speed of movement and volume of fire are important in the assault. Tanks unable to fire continue to advance with the platoon and obtain the maximum effect of their crushing and shock power. Tanks utilize their crushing power to destroy hostile automatic weapons and personnel, to disrupt communications, and to overrun command posts, artillery positions, and other installations.

(6) *Disabled tanks.*—If a tank becomes a casualty, or is so disabled that it cannot continue to the objective, the tank commander displays the flag signal "disregard my movements." The tank is then moved to cover, if possible. If the tank is completely immobilized, the tank commander determines whether the crew will continue the fire fight from the tank, repair the tank, fight on foot or abandon the tank. He must consider the location of the tank as to concealment from hostile observation, and the field of fire obtainable. In the event that he decides to fight on foot or abandon his tank, he and the other members of his crew follow the procedure prescribed in FM 17–5.

SECTION III

TANK SECTION AND PLATOON

■ 137. ORGANIZATION.—The tank platoon of both the light and medium armored companies consists of a platoon headquarters tank and two sections of two tanks each. Each section is commanded by a sergeant.

■ 138. TACTICAL EMPLOYMENT.—The section or the platoon is normally employed for combat as part of the company. They may be attached to other armored units engaged in reconnaissance and security missions. They are considered as acting separately when they are beyond immediate supporting distance of other troops. Alone, the section or platoon performs reconnaissance or security missions which frequently involve combat.

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■ 139. DUTIES OF PLATOON AND SECTION LEADERS.—*a. When platoon or section is acting alone.*—The platoon or section leader must be thoroughly familiar with the general provisions pertaining to leaders of tank units as set forth in this chapter. Before proceeding on his initial mission, and in subsequent situations, he must carefully estimate the situation and issue definite orders. These orders must be transmitted to each tank commander and the commander of attached units, if any. He must take the necessary measures for reconnaissance, security, cover, and concealment throughout the entire operation. Above all, he must keep his tank commanders informed as to all developments which may affect the situation.

b. When acting as part of the company.—The primary duties of the platoon or section leader when operating with the company are—

(1) Control of his unit.

(2) Conduct of his unit in accordance with orders.

(3) Transmission of all orders and information to his tank commanders.

(4) To keep his next higher commander informed of his progress and changes in the situation.

■ 140. RECONNAISSANCE MISSIONS.—Tank sections or platoons *will not* normally be assigned reconnaissance missions other than battle reconnaissance. In the tank company of the reconnaissance battalion they may be used for reconnaissance over terrain that is unsuitable for wheeled vehicles. Reconnaissance platoons may be reinforced by tank sections or platoons when it is anticipated their employment is necessary in order to gain information. If employed on reconnaissance missions, they are conducted in accordance with the fundamentals set forth in chapter 2.

■ 141. SECURITY MISSIONS.—Alone or as part of a larger unit, tank sections or platoons perform security missions as advance guards, rear guards, flank guards, combat patrols, covering detachments, and outposts. Light tank elements only are normally employed on security missions for other armored force units. Medium tank elements perform security missions for their own units or may be attached to other units when the necessity therefore can be anticipated.

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a. Advance guards, rear guards, and flank guards.—(1) A tank section normally performs the security missions for a tank company when the company is acting alone. When so used, two or more motorcycle scouts will be attached from battalion headquarters. A self-propelled assault gun may be attached.

(2) A tank platoon may constitute the entire advance guard for a battalion or may be the leading element of an advance guard for a larger force, in which case it is called the advance party. One or more motorcycles with a ¼-ton truck will normally be attached. A section of engineers may be attached. A tank platoon may be similarly employed in rear and flank guards.

(3) The detailed conduct and employment of advance, flank, and rear guards is set forth in chapter 2.

b. Combat patrols.—Tank sections or platoons will often be employed as combat patrols to protect the main body or to protect their own units. The formation and method of operation of such patrols is similar to that of reconnaissance patrols (see ch. 4). Their conduct is different in that combat is usually required for the accomplishment of their mission.

c. Covering detachments.—The mission, formation, and method of operation of covering detachments are discussed in chapter 2.

(1) A section will normally constitute the covering detachment for a tank company advancing alone. The tanks of the section will be deployed at extended interval (150 to 300 yards).

(2) A platoon will normally constitute the covering detachment for a battalion. The formation will be similar to that of the section.

(3) The platoon or section leader in command of a covering detachment must be constantly on the alert to guard against surprise by the enemy and must designate an observer to observe to the rear for signals from the commander of the main force. Control of the actions and movements of a covering detachment is exercised through the designations of bounds.

d. Outposts.—The subject of outposts is discussed in chapter 2 of this manual and in FM 100–5. Normally, rifle and machine gun units provide outpost protection for tank units. However, when operating as advance, rear, or flank guards

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of a larger armored force, or when operating alone, tank units may be required to furnish their own outpost protection.

(1) *March outposts.*—The tank section or platoon, operating as the advance or rear guard, or as the advance or rear party of an advance or rear guard, will habitually establish a march outpost at each halt, including the halt for the night. Tanks will be posted under cover at commanding points to protect the axis of movement. The tanks of a section are posted so as to be mutually supporting.

(2) *Bivouac.*—When in bivouac and not closely protected by other ground troops, tank units may be required to outpost their own areas. In this situation, tank elements will be so disposed that they furnish all around protection of the area. Tanks may be located so as to be mutually supporting with bands of fire from their machine guns. They should be concealed from ground and air observation and protected by dismounted members of the crews. They should be faced in the direction in which they may be required to act. Crews should bivouac at their vehicles. Machine guns should be sighted and half-loaded. Sections or platoons are posted to cover likely routes of approach. They should not be placed beyond supporting distance from the main body.

e. Road blocks.—Road blocks will normally be established and defended by infantry machine gun, rifle elements, and antitank weapons. However, tank sections or platoons on security missions, either acting alone or as part of a larger force, will frequently be required to establish temporary road blocks on important routes of approach. They will also be required to reduce hostile road blocks which have been placed on the axis of march of a larger unit. When available, engineer troops and infantry rifle units are attached for such missions. The subject of road blocks is discussed in chapter 2. In attacking road blocks part of the platoon brings fire on the defenders from covered or concealed positions while the remainder maneuver to close with the enemy. The heavy weapons of the tank may be used to destroy the road block in some cases.

■ 142. OFFENSIVE COMBAT.—*a. Tank section acting alone.*—The section may attack by fire alone, with the tanks occupying stationary positions under cover (hull down); or

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it may attack by fire and movement. In the latter case, the section leader utilizes one tank to deliver accurate fire from a defiladed position, while the other tank maneuvers to a more advanced firing position. By continuing this method of advance, he can maneuver his section to a position where stationary fire will annihilate the opposition or to a point where an assault can be made over a very short distance with effective moving fire. Unless support fire is furnished by other units, it must be furnished by one of the tanks of the section. An assault gun, if attached, is used to support the movement.

b. Tank platoon.—(1) *Acting alone.*—(*a*) A tank platoon will frequently be required to engage in combat when employed on reconnaissance or security missions. When so employed it may be reinforced by motorcycle scouts and a section of machine guns. The method of attack will depend on the mobility of the enemy, the element of surprise, and the terrain. If machine gun elements are present, they should be utilized to support the attack by fire from a suitable position. Motorcycle scouts are used to reconnoiter enemy dispositions. The tank platoon maneuvers via covered routes to a flank position from which it can attack by surprise fire or fire and movement. If fire support by other elements is lacking, one section of the tank platoon, from hull-defiladed positions, may be used to furnish the support fire, while the other section maneuvers to a flank position from which it can attack by fire and movement. Where support fire is furnished by other troops, and the platoon maneuvers as a unit, the platoon leader habitually leads his platoon in the attack. A covering detachment of one tank or one section is provided in the approach to the attack position. The formation in the approach march may be column, line, echelon, or wedge; closed or extended, depending on the terrain and hostile situation. Usually the platoon leader controls the movement of the platoon in the attack by the movement of his own tank supplemented by the use of radio and visual signals, or where necessary, by the fire of tracer ammunition to designate objectives. Team play is essential in all phases of the employment of the tank platoon.

(*b*) The attack may be by fire alone; by a combination of fire and movement; by assault; or by fire and movement, followed by assault.

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(*c*) The attack by fire alone is usually employed—

1. Where the terrain does not favor an assault.
2. Where the platoon leader merely wishes to delay by forcing a hostile deployment, withdrawing before becoming heavily engaged.
3. Against hostile tanks caught in movement.

(*d*) The normal method of attack from a flank position is by a combination of fire and movement. The platoon, attacking by fire and movement, advances by sections. One section halts momentarily to deliver accurate fire on hostile targets while the other section moves rapidly to advanced cover. This "leap-frogging" advance is continued until the platoon has reached a position favorable for an assault and all hostile antitank weapons on the objective have been destroyed.

(*e*) In the assault, the platoon leader leads his platoon. The formation may be line, echelon, or wedge. The assault is made simultaneously by all tanks of the platoon except those engaged in reducing antitank fire. It is made at maximum speed with the maximum volume of fire from all weapons. The assault is continued until the objective is overrun. After overrunning the objective, the platoon leader assembles his platoon under cover at the designated rallying point where he may quickly reform and again attack in the reverse direction or may reorganize for future missions. Supporting units, if any, displace forward as soon as the tank attack is launched and occupy the objective or rejoin, as ordered.

(2) *As part of company.*—(*a*) The platoon leader conducts his platoon in the approach march and in the attack as directed by the company commander. The direction, objective, line of departure, formation, time of attack, rallying point, and alternate rallying point are prescribed by the company commander. The platoon normally attacks as heretofore described, within the limitations prescribed by the company commander. Unless directed otherwise, platoons in rear conform to the movements and actions of the leading platoon.

(*b*) The platoon leader of an interior platoon must not only conduct his platoon to conform to the advance of other platoons of his own company, but must also coordinate the advance of his platoon with that of adjacent platoons from

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other companies. This is accomplished by regulating the rate of advance of his own platoon and by timely assistance to adjacent platoons in reducing hostile targets which may be holding up their advance.

(3) The platoon leader of a flank platoon must be constantly on the alert to guard against a hostile surprise attack on his exposed flank. A suitable attack formation for flank platoons is echelon. This formation not only permits the employment of all tanks of the platoon in the advance on the assigned objective, but also affords greater protection from a hostile flank attack and facilitates the employment of the platoon against such an attack.

(4) The platoon leader of a support platoon employs his platoon against hostile targets as directed by the company commander. Normally, this platoon will advance as the rear wave of the company and will be personally led by the company commander. It may be used to give depth to the attack, to assist leading platoons temporarily held up, to assist supporting elements, or to engage unforeseen targets. It may advance in line, echelon, or wedge formation.

■ 143. DEFENSIVE COMBAT.—The tank is an offensive weapon. Tank sections or platoons temporarily employed on defensive missions, either alone or as part of the company, accomplish their missions by the same methods of fire and movement as set forth in this chapter. Full use is made of stationary fire from covered positions. The assault is used in the counterattack.

SECTION IV

TANK COMPANY, LIGHT AND MEDIUM

■ 144. ORGANIZATION.—This subject is covered in section I.

■ 145. DUTIES OF MEMBERS OF COMPANY HEADQUARTERS, TANK COMPANY, LIGHT.—*a. Company commander.*—(1) The company commander is responsible for the administration, maintenance, supply, training, and operation of the company.

(2) On the march he leads and supervises the advance of the company.

(3) In combat he assigns missions to platoons and sections employed separately, controls and supervises their employment, maintains communication with them, and is responsible for security measures.

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(4) He rides in a command tank.

b. Forward echelon.—(1) *Sergeant, communications, liaison, and reconnaissance.*—The communication sergeant supervises the training and operation of all radio operators in the company. In the field he is the message center for the company commander. He acts as liaison agent for the company commander, when necessary, and is used for reconnaissance missions.

(2) *Tank driver.*—Drives the command tank and is responsible for 1st echelon maintenance.

(3) *Radio operators.*—Operate the radio sets in the command tank and in motor maintenance section.

(4) *Corporal, communications, reconnaissance, and liaison.*—Performs liaison and reconnaissance missions as directed by the company commander.

(5) *Bugler.*—The bugler sounds calls and serves as dismounted messenger when the forward echelon is halted. He may act as relief driver and gunner in the vehicle to which he is assigned.

(6) *Half-track car drivers.*—Drive and perform 1st echelon maintenance on the half-track cars in the forward echelon.

(7) *Basic privates.*—All basic privates of platoons and company headquarters ride in the half-track cars of the forward echelon. They perform duties as relief drivers, gunners, and assistant gunners. They replace casualties as necessary.

(8) *Armorers.*—Repair and maintain all armament of company. They ride on a ¼-ton truck.

(9) *Maintenance officer.*—The motor maintenance officer trains and supervises the work of the company maintenance personnel. He makes frequent inspections of the motor vehicles in the company and advises the company commander on matters pertaining to motor vehicle maintenance and supply. He prepares requisitions for and controls the disposition of minor spare parts. He normally rides in a half-track car.

(10) *Maintenance sergeant.*—The maintenance sergeant is the principal assistant to the maintenance officer. He is in direct charge of the company mechanics. He rides on a ¼-ton truck at the rear of the company.

(11) *Sergeant, mechanic.*—Assists the maintenance ser-

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geant. He normally rides in a maintenance half-track car at the rear of the company.

(12) *Mechanics.*—The mechanics perform 2d echelon maintenance on all motor vehicles in the company, as directed by the maintenance sergeant. They must be capable of operating machine guns assigned to the section. One or more mechanics may be assigned to the rear echelon.

c. Rear echelon.—(1) *First sergeant.*—The first sergeant assists the company commander and is in immediate charge of the enlisted personnel and records of the company. He normally rides in a ¼-ton truck. He may ride in any vehicle.

(2) *Mess sergeant.*—The mess sergeant is in charge of the company mess. He rides in the kitchen truck and operates a train defense gun.

(3) *Supply sergeant.*—The supply sergeant obtains and delivers supplies to the company and is responsible for the care of company property and the records pertaining thereto. He rides in the combat truck and operates a train defense gun. When the trains are released, he moves forward with the company trucks and joins the company. He supervises the operation of all establishments in the rear echelon.

(4) *Chauffeurs.*—Chauffeurs drive and perform 1st echelon maintenance of the kitchen and combat trucks and other administrative vehicles.

(5) *Cooks.*—The cooks prepare and serve meals under the supervision of the mess sergeant. They must be capable of acting as alternate chauffeurs and in aiding in the defense of vehicles of the rear echelon.

(6) *Corporal (clerk).*—Is in charge of the preparation and keeping of company and individual records under supervision of the regimental staff. He is responsible for the receipt and dispatch of mail. He rides in the ½-ton pick-up truck.

(7) *Cook's helper and orderly.*—Perform such duties as they are assigned by the mess sergeant.

■ 146. DUTIES OF MEMBERS OF COMPANY HEADQUARTERS, TANK COMPANY, MEDIUM.—Although the strength and vehicular equipment differ slightly from that of the light tank company, the members of the company headquarters perform similar duties.

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■ 147. EMPLOYMENT.—The tank company (light and medium) is not a self-contained unit. It normally operates as part of the tank battalion in conjunction with supporting elements from other troops. It is capable of sustained separate action for a limited period. It may be detached from the battalion to perform reconnaissance and security missions for larger units. When detached on such missions, supporting elements should be attached. The normal attachment to a light tank company is one assault gun, one mortar squad, and one engineer platoon or section, depending on the mission assigned and the troops available.

■ 148. RECONNAISSANCE AND SECURITY MISSIONS.—When detached on these missions, the tank company is employed according to the methods set forth in chapter 2. Tank companies used on detached missions will frequently engage in combat.

■ 149. OFFENSIVE COMBAT.—*a. Tank company, with attached support elements, acting alone.*—This situation will usually occur where the company is employed on a security mission, such as an advance, flank, or rear guard for a larger force. The resulting action will ordinarily be in the nature of a meeting engagement. (See ch. 2.)

(1) *March column.*—The company is preceded by an advance guard, consisting of a tank section. Two or more motorcycle scouts, an assault gun squad, and one or more mortar squads from battalion headquarters companies usually are attached to the company. The company commander marches at the head of his company. The mortar squad is usually near the head of the company. The assault gun squad with motorcycles are with the point. Maintenance and rear echelon elements, if present, march at the rear of the company.

(2) *Approach march.*—When contact is imminent, the company changes from march column to an approach formation. It moves off the road if terrain is suitable and the rate of march permits. The advance guard operates as a covering detachment and develops the enemy situation. When contact is gained, it may be directed to drive in the enemy security groups and attack by fire and movement in order to seize favorable terrain. Normally, the company follows the covering detachment in an approach formation, usually

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line of platoons or sections. Intervals between platoons may vary from 75 to 150 yards, dependent on terrain. The company commander normally moves in the interval between the covering detachment and the company where he can control the movements of both.

(3) *Form of attack.*—Based on information gained from the covering detachment and by personal reconnaissance, the company commander formulates a plan of attack. A direct frontal attack is avoided when practicable and is made only when terrain does not permit of a flank attack, or against a weak, disorganized enemy force when time is a vital factor. Surprise is essential. The usual method of attack is by an envelopment. The support elements and/or the advance guard attack frontally by fire while the tank company moves under cover to a flank position from which it attacks the hostile rear or flank.

(4) *Envelopment.*—(*a*) *Plans for the attack.*—Having decided on the form of attack, the company commander formulates detailed plans for its execution. He decides on the strength, direction, and objective for the supporting elements, and the strength, direction, and objective for the main (flank) attack, and the route to its attack position. He also decides the method of coordinating these attacks; the strength and location of the support; the limit of pursuit; and the location of a rallying point and alternate rallying point; screening missions for the mortar elements, if present; the disposition of motorcycles and other vehicles which do not participate in the attack; and on special security measures to be taken.

(*b*) *Dispositions for the attack.*

1. The assault gun squad and the covering detachment fix the enemy by fire. As the attack progresses these elements move forward and join in the assault.
2. If mortar squads are attached, they may be assigned the mission of screening by smoke the movement of tank elements towards the flank for an attack. It may also screen terrain adjacent to the objective from which hostile fire may be delivered. Position for the mortar squad is selected near the support elements. Smoke in the attack should not be used indiscriminately. It may disclose the ma-

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neuver. The company commander controls this action by radio or visual signals.

3. The tank company (less detachments) makes the envelopment. The position from which this element attacks should be one which it can reach unobserved and from which it can launch an attack by fire or movement or a combination of the two against the hostile flank and rear. This attack is launched as a surprise and should follow or be made simultaneously with the frontal attack by support elements.

4. The movement of the tank company to the line of departure for the flank attack is conducted in suitable approach formation preceded by a covering detachment. If time permits, personal reconnaissance is made from this position by company, platoon, and tank commanders prior to launching the attack. The company commander points out platoon objectives, direction of attack, specifies the formation, and indicates rallying points.

5. The formation for the attack may be in successive waves, in line, in echelon, in wedge, or it may be a combination of these. In hasty action against unarmored units, an attack in successive waves favors control and assures maximum striking power.

6. The company commander holds out a support, normally of one platoon, which he usually controls by personally leading it. It may follow directly in rear of the attacking platoon or it may be echeloned to one flank, depending on the situation. He uses this support to influence the action, employing it against the enemy at a critical point, to meet an unexpected threat, or to give depth and strength to the tank attack. Suitable formations of the tank company in the attack are shown in figures 15, 16, 17, and 18.

7. Motorcycle scouts from battalion headquarters company may be used to reconnoiter and develop enemy dispositions or to observe on exposed flanks to prevent surprise. They may be used as messengers prior to the time the attack is launched. They do not participate in the attack but report

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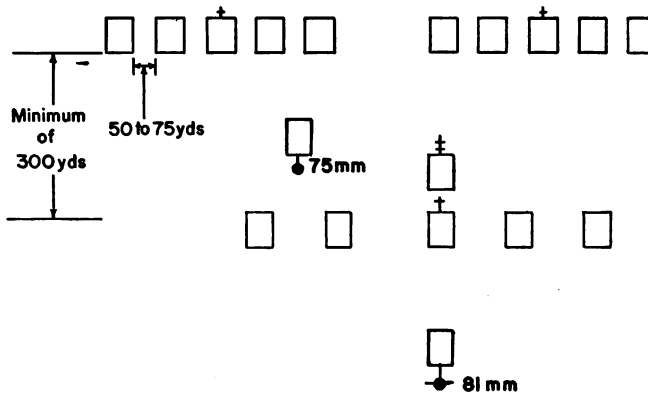


FIGURE 15.—Possible formations of a tank company reinforced attack. (Company covering a broad front with some depth; company headquarters omitted.)

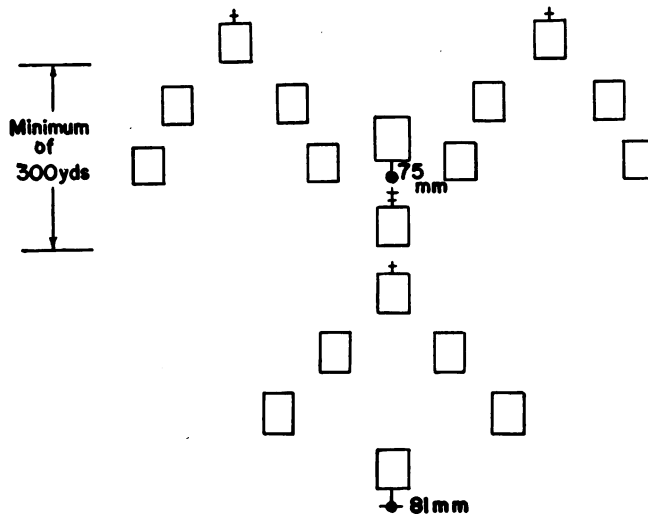


FIGURE 16.—Possible formations of a tank company reinforced in the attack. (Company covering a broad front; excellent fire power and control; company headquarters omitted.)

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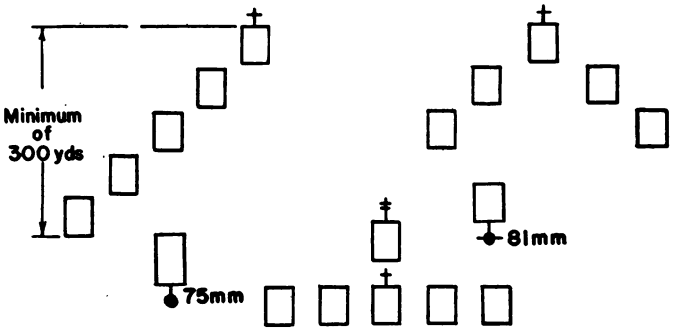


FIGURE 17.—Company reinforced attack formation with hostile threat against left flank. (Company headquarters omitted.)

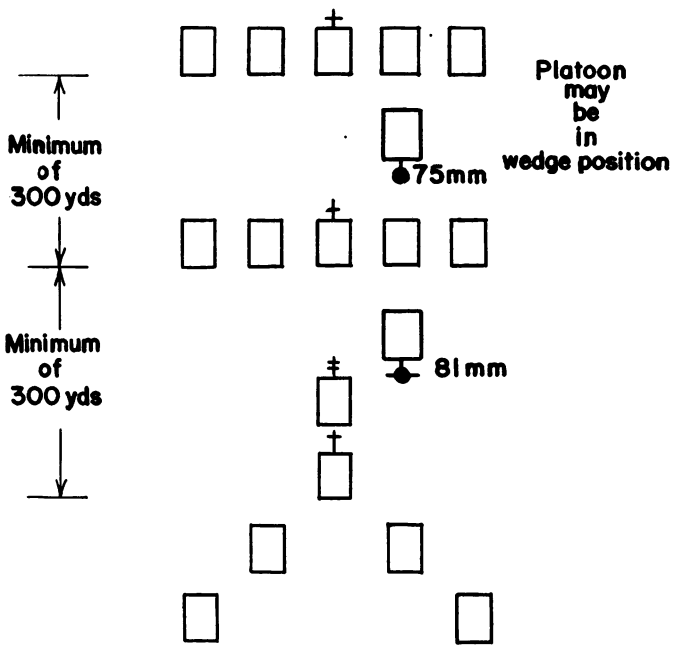


FIGURE 18.—Company reinforced attack formation, successive waves. (Company headquarters omitted.)

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to the maintenance section unless detailed on other missions. Half-track cars of company headquarters may be used to furnish additional fire support or may be used as a security detachment on an exposed flank.

8. The light maintenance vehicle accompanies the maneuvering force to the line of departure, cover being available. Thereafter it returns to the protection of the supporting fire elements and awaits orders. Rear echelon vehicles, if present with the company, are placed in concealed positions well in rear of the support elements. They usually remain with the rear echelon of the regiment.

(c) *Control.*—The attack of all elements may be controlled initially by the company commander. Fire of the support elements may be intensified just prior to and during the early stages of the tank attack. It is usually lifted as the tank platoons close in the assault. The mortar section, if present, and its employment is necessary, must time its smoke screen to give the maximum protection to the leading tank elements. The company commander may control all of these actions by radio, by visual signals, by messenger, and/or by designating a definite time for the tank attack. During the execution of the attack, the company commander can exert his influence on the action by personal example and by his use of the support. Control is regained on arrival at the company rallying point or alternate rallying point. The assault gun squad, if present, is used to support the attack by fire on antitank guns. It assists in repelling armored counterattacks.

(d) *Attack.*—Tank platoons attack as previously described. The assault is made simultaneously by platoons in the leading wave. This requires teamwork and coordination on the part of platoon leaders. A piecemeal attack loses a great deal of its effect. Where more than one platoon is in the leading wave, coordination is effected by designating the base platoon. An attack by fire and movement is employed until all antitank weapons in the position are destroyed. Normally an assault is made when about 300 yards or less from the objective. In the assault stage of the attack, movement is greatly accelerated and all tanks not engaged in reducing antitank fire close rapidly with the enemy. Speed is essen-

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tial to success. If halts to fire are made, they must be momentary, and defiladed or screened whenever practicable. Tanks must not halt on the skyline. Rapid movement is their chief protection. If the attack is not successful, tanks must return to their alternate rallying point and another attack launched. When practicable the assault is launched with the sun behind the attacker.

The supporting elements increase their fire just prior to and during the early stages of the tank attack. When this fire is masked by the tank elements, the secondary attack elements prepare to displace forward. As soon as hostile resistance is reduced, they displace forward and occupy the enemy position, prepared to hold it against counterattack and to cover the reorganization of the tank elements.

Tank elements must be on the alert to facilitate the advance of attached supporting elements, protecting the latter from hostile counterattack and thus enabling them to mop up and secure the objective with a minimum of hostile interference. Tank elements may assist in mopping up and reducing any remaining hostile resistance by throwing hand grenades in slit trenches or on gun positions.

(*e*) *Reorganization.*—Upon the termination of the engagement, the company and attached elements assemble at the designated rallying point(s). The company commander reorganizes the company, checks vehicular and personnel casualties, and makes preparations for continuing the mission, reporting the engagement at the earliest opportunity. During reorganization at the rallying point, full advantage must be taken of cover. Cohesion must be quickly reestablished for subsequent action. Platoons must be prepared to meet a counterattack. Local security measures must be taken immediately to prevent surprise. Maintenance and other sections rejoin the company. Servicing, refueling, and repair operations are carried out to the extent that time and the situation permit.

(5) *Direct frontal attack.*—This form of attack is normally avoided, inasmuch as the inherent mobility of the tank company favors attacks on the flanks, or on the hostile rear. However, against an enemy whose flanks cannot be turned, it may be necessary to attack frontally. Rapidity of action is essential in order to achieve surprise. This form of attack against an enemy in position must be supported by artillery

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and air bombardment. Against a well fortified position infantry leads the attack.

(*a*) *Plan of attack.*—Reconnaissance is made to discover possible weak points in the hostile position and to determine suitable terrain for the attack. If weak points are discovered, the company commander may decide to attack in depth, with a view to penetrating the hostile position and disrupting rear establishments. If the situation is obscure, he may decide to attack in width and develop the situation. His plan for attack must include the direction of attack, objectives, formation, line of departure, use of fire support elements, security measures, and the location of the rallying point and alternate rallying point.

(*b*) *Dispositions for attack.*

1. The assault gun and mortar elements are immediately placed in position to support the attack.
2. The covering detachment continues to attack by fire and prepares to follow in the support wave of the main attack.
3. The tank company advances under available cover, deploys for the attack, and crosses the line of departure on a flank or flanks of the machine gun elements.
4. Combat patrols composed of motorcycle or ¼-ton truck elements are sent to the flanks.

(*c*) *Attack in column.*—The tank company attacking in column of platoons advances rapidly on the objective and seeks to penetrate the hostile position. After passing through the hostile position, a designated platoon moves to the right and another platoon to the left and attack the enemy from the rear. The leading platoon usually continues to the rear and attacks the enemy local reserves.

(*d*) *Attack in line.*—The tank company attacks with two platoons in the leading wave and one platoon in the support wave. The attack is on a broad front. It seeks to discover weak points in the hostile position. A platoon held up by fire from strongly held positions changes direction and goes through a gap effected by the other platoon. After penetrating the front of a position, defense areas may be reduced by attacking from the rear.

(*e*) *Fire support elements.*—If the tank attack is successful, assault gun and mortar or infantry elements displace for-

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ward to mop up and occupy the hostile position and to cover the reorganization of the tank company. If the tank attack is repulsed by the enemy, assault gun and mortar or infantry elements cover the withdrawal and reorganization of the tank company and seek to hold their position until the tank company can reorganize and renew the attack. The mortar section can render effective aid by placing smoke on enemy points of observation.

(*f*) *Control.*—Initially, the company commander controls the attack by all available means from a position near the fire support elements. When the tank attack is launched, he leads the support platoon of the tank attack.

(*g*) *Reorganization.*—After the attack, the company and attached units assemble at the rallying point or alternate rallying point as previously described, and reorganization is effected. The rallying point is located in rear or to one flank of the objective. Reorganization is effected under the protection of the fire support elements after they have occupied the objective. The alternate rallying point is located near the initial position of the fire support element. If the tank attack is repulsed, reorganization will be effected under protection of fire from the fire support elements.

(6) *Pursuit.*—A tank company operating alone on a security mission normally engages in combat only in order to carry out a mission assigned by higher authority. When the enemy force is defeated, the company continues on its original mission. Pursuit is made only to the extent necessary to prevent interference with this mission. If pursuit is ordered it must be launched at the earliest possible moment. Reorganization of the company is quickly effected and pursuit of the retreating enemy force by fire and movement of tank platoons is undertaken. One or more tank platoons may be sent out locally to intercept the hostile force and cut off escape to the rear. Within a unit as small as a tank company, platoons operate within supporting distance of each other.

(7) *Security.*—(*a*) *General.*—A tank company operating alone on a security mission must protect the main body. If it is unsuccesful in defeating and driving off a hostile force which it encounters, it must secure the main body by reporting the situation and by preventing further hostile advance until the higher commander is prepared to meet the situation.

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(*b*) *Advance guard.*—When the company is acting as an advance guard and its attack is unsuccessful, it must quickly reorganize and, with its attached fire support element as a base, hold the position against hostile advance until the main body can prepare for action or can change its route.

(*c*) *Flank guard.*—When acting as a flank guard, the tank company has more latitude for maneuver, but, if unsucessful in driving off the hostile force, must give prompt warning and delay the hostile advance until the main body has passed critical points.

(*d*) *Rear guard.*—In rear guard action, the tank company accomplishes its mission by a succession of attacks and withdrawals.

b. Tank company, acting alone, without support elements.—This situation will be exceptional. When it occurs, the company will be employed by methods similar to those discussed heretofore. Where fire support from other elements is lacking, it must be furnished by elements of the tank company.

c. Tank company, acting alone against other tank units.—(1) *General.*—The tank company attacks and destroys hostile tank elements that are markedly inferior in armor, armament, and maneuverability. These encounters are to be expected. When hostile tanks are encountered, the company commander must make a quick estimate of the situation and evolve a plan of action which can be executed quickly. This plan includes the use of terrain combined with fire and movement. Under no circumstances should tanks be used to charge (collide with) hostile tanks in the attack. The most dangerous time to be attacked by hostile tanks is when the company is engaged against other hostile troops or when undergoing reorganization. All effective weapons must be prepared to protect the maneuver or reorganization.

(2) *Technique of employment.*—Although each situation differs as to details of execution, certain basic fundamentals, largely dictated by the characteristics of tanks, will have to be considered. Some of these are—

(*a*) *Initiative.*—The company commander should endeavor to take and maintain the initiative, thereby forcing the enemy on the defensive. Maximum use must be made of terrain in order to canalize and restrict the enemy's maneu-

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ver. Every effort must be made to obtain surprise as to direction, time, and strength of the main attack.

(*b*) *Fire.*—Fire delivered by the antitank weapons of tanks is much more accurate and effective when the vehicles are halted. However, tanks should halt only where they are in concealment or partially defiladed. In a fight with hostile tanks, the tank company should endeavor to surprise the enemy by opening accurate fire *first* with its major weapons, from the halt at effective ranges. Every means should be employed to intercept hostile vehicles while they are in the open.

(*c*) *Movement.*—Every possible use should be made of movement under cover in order to reach positions which will afford superiority of fire. Maneuver must be planned and executed so as to destroy the enemy in detail.

(*d*) *Speed.*—Speed of movement is important. Inactivity, particularly in the open, is the most ineffective method of employing the tank and may prove fatal. Speed permits concentration of a number of tanks against small elements of the enemy. It permits rapid movement from one covered position to another. It is the best means of protection against other tanks. Rapid movement does not prohibit the tank from halting to fire its major weapons.

(*e*) *Cover.*—Full advantage must be taken of cover to minimize losses from hostile fire.

(*f*) *Ambush.*—Where terrain permits, an effort is made to ambush the hostile tanks while in movement. Ambush tactics are particularly suitable when the movement of the hostile tank unit is restricted to a defile, bridge, ford, or a path through a mined area.

(*g*) *Antitank mines.*—When antitank mines are available, they may be used to restrict hostile tank units to definite routes of approach or they may be used to protect friendly tank and other units by denying likely avenues of approach to the enemy.

d. Tank company as part of battalion.—(1) *General.*—When participating in combat as part of the battalion, the battalion commander conducts the approach march. He announces the zone of action, objective, rallying point, and alternate rallying point of the battalion. He assigns objectives, direction of attack, line of departure, time of attack, and the initial formation for each company.

(2) *Preparations for attack.*—Having received his orders

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from the battalion commander at the assembly or intermediate position, the company commander assembles his platoon leaders, and, if conditions are favorable, the tank commanders. If time permits, he makes a detailed reconnaissance, accompanied by his platoon leaders. He selects routes of advance to the objective. He decides on a plan of attack; and, if practicable, issues his orders from a point overlooking the zone in which his company is to operate. Care must be taken to keep under cover at the observation point. In issuing the order, the company commander points out the physical features on the ground and/or on a map. He issues the necessary instructions to maintenance personnel as to the location of the service park. If time permits, the platoon leaders, with their tank commanders, in turn reconnoiter the routes to the line of departure, over which their platoons will operate.

(3) *Conduct of attack.*—In accordance with the order of his battalion commander, the company commander issues orders for the advance of the company from the assembly position or the intermediate position. If no covering detachment is furnished by the battalion commander, he sends out his own covering detachment. The company may advance in an approach formation or in attack formation. On passing the line of departure, the company advances in an attack formation. The company commander conducts the rear platoon as a support wave, which he uses to assist the leading platoons in the attack. The platoon leaders are left generally to their own initiative in carrying out their assigned missions. Their movements should be coordinated as to time and space, so as to insure that one will not mask the fire or hinder the action of the other. The company commander should not interfere with their movements unless there is evidence of a mistake in direction and objective, or a very serious error in execution. Generally, the attack is conducted so as to provide a strong concentration of fire on the most dangerous targets. When the objective is overrun and hostile opposition is reduced, the platoons move promptly to the previously designated rallying point(s) where the company is reorganized as previously described.

(4) *Reorganization.*—At the company rallying point, the company is quickly reorganized, necessary repairs are made

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to vehicles, and first aid is rendered to wounded personnel. As soon as possible, the company commander conducts his company to the battalion rallying point where he reports the extent of casualties, both in vehicles and personnel, to the battalion commander. Arrangements are then made, so far as practicable, for evacuating the wounded, resupplying fuel and ammunition, and servicing and repairing vehicles.

■ 150. DEFENSIVE COMBAT.—The tank company, acting alone, will seldom engage in defensive missions. However, in rear guard or flank actions, it may be required to hold key positions or terrain features temporarily to delay the advance of enemy forces. In such situations the company commander accomplishes his mission by offensive action using the same methods of fire and movement as previously mentioned. Machine gun or tank elements are located near the axis of movement to deny it to the enemy. The company commander delays a hostile force by surprise fire and shock action from a flank, with the remainder of his company. He withdraws before becoming heavily engaged.

SECTION V

TANK BATTALION, LIGHT AND MEDIUM

■ 151. ORGANIZATION.—The organization of the battalion is covered in section I.

■ 152. EMPLOYMENT.—*a. Light tank battalion.*—The light tank battalion engages in combat alone, or as part of the regiment. It is the light maneuvering element of the regiment. It performs security missions for larger forces. When operating alone, it may be reinforced by the attachment of additional reconnaissance elements, artillery, engineers, and medium tanks, and is usually supported by observation and bombardment aviation.

b. Medium tank battalion.—The medium tank battalion is the heavy striking force of the regiment. It may operate alone, but if so employed, it is usually reinforced by the attachment of reconnaissance elements, artillery, and engineers. It should be supported by observation and bombardment aviation. Light tank units may be attached in special situations.

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■ 153. RECONNAISSANCE.—*a. General.*—(1) The operations of a tank battalion must be preceded by thorough reconnaissance. The responsibility for reconnaissance and the types and extent of reconnaissance performed by special reconnaissance agencies of larger forces is covered in chapter 2. Personal reconnaissance prior to combat is discussed previously in this chapter.

(2) A tank battalion has available to it organically the reconnaissance section of the battalion headquarters company.

b. Close reconnaissance.—A tank battalion operating as part of a larger force does not execute missions of close reconnaissance. It relies for such information upon the reconnaissance agencies of the unit with which it is operating. This information is furnished to the battalion by means of radio messages or through liaison agents. If operating alone it should have attached to it additional reconnaissance elements from larger units. The method of employment of reconnaissance elements is discussed in chapter 4.

c. Battle reconnaissance.—(1) *Ground.*—Battle reconnaissance begins when the battalion gains contact with the hostile forces and continues until the engagement is terminated. It is executed by all elements of the command. Initially it is made to gain information on which to base the plan of employment of the battalion. In addition to information supplied by regular reconnaissance agencies, the battalion commander and subordinate unit commanders make a personal reconnaissance (see sec. I). Security detachments, scouts, and patrols supplement this reconnaissance both before, during, and after combat. During combat, reconnaissance must be maintained by all elements to obtain information as to the following:

(*a*) Changes in location of our troops.
(*b*) Progress of attack.
(*c*) Routes to rallying point.
(*d*) Changes in enemy disposition.
(*e*) Arrival of enemy reinforcements.
(*f*) Enemy air and tank attacks.
(*g*) Plans for further offensive action.
(*h*) Probable direction of hostile counterattacks.
(*i*) Need for engineer assistance.
(*j*) Location of antitank guns, mines, and obstacles.

(2) *Air.*—(*a*) Airplanes are valuable reconnaissance agen-

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cies both before, during, and after combat (see ch. 2). The air observer keeps the supporting troops informed of the progress of the tank attack. He reports hostile reactions to the attack, the location of obstacles and antitank weapons, and indications of hostile tank attacks. He is particularly alert for hostile counterattacks during reorganization. If pursuit is to be instituted, he furnishes information as to the route of hostile withdrawal. During pursuit, he performs reconnaissance and liaison missions.

(*b*) When the tank battalion is operating as part of the tank regiment or a larger force, request for observation and combat aviation support will be made by the regiment. When the battalion is operating alone, such request will be made by the battalion commander. Effective air support requires the closest cooperation between tank and air corps personnel. The use of observation and combat aviation in support of tank units is covered in chapter 2.

■ 154. SECURITY.—*a. When acting alone.*—The tank battalion acting alone must furnish its own security detachments. These detachments are organized and conducted as set forth in chapter 2.

(1) *Advance guard.*—The advance guard of a tank battalion will normally consist of one or more tank platoons with an assault gun squad attached.

(2) *Rear guard.*—The rear guard must be made strong enough initially to accomplish its mission. It will vary from a reinforced tank platoon to a tank company.

(3) *Flank guards.*—Flank guards are sent out on either or both flanks to protect the main body. They will usually consist of a tank platoon reinforced with an assault gun squad.

(4) *Covering detachments.*—The covering detachment for a tank battalion will normally consist of a tank platoon.

(5) *Security during halts.*—During halts, march outposts and local security detachments are posted. At least one man must be in each vehicle at all times to man the guns in case of attack. In bivouac, the battalion secures itself by outposts.

b. When with the regiment or other units.—When a part of a larger unit, responsibility for its own local security is the function of the battalion. Local ground and air warning sentinels are posted.

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c. Security against air attack.—Both active and passive defense measures are employed.

(1) *Active measures.*—Air sentinels are detailed to observe for hostile airplanes and to give warning of their approach. When attacked, all elements of the battalion use all available small arms and automatic weapons against low flying hostile aircraft.

(2) *Passive measures.*—The battalion protects itself from air attack by use of cover and concealment, camouflage, night and cross country marches, dispersion of vehicles, and increased distances on roads. Assembly areas or bivouacs occupied during the day should be vacated immediately after dark and the battalion moved to another location.

d. Acting as security detachments for larger units.—The light tank battalion will normally be detailed as the advance guard during daylight marches for the armored brigade or division. When so detailed, it will be reinforced by the attachment of supporting elements (see ch. 2). The battalion may be similarly detailed as flank guard or rear guard. The type and size of attached elements will depend on the mission and the strength of hostile resistance which is expected. Observation airplanes, although not normally attached, may be directed to cooperate with the battalion on security missions.

■ 155. ASSAULT GUN PLATOON.—*a.* This platoon is an integral part of the armored battalion headquarters company and consists of a platoon headquarters; three gun squads each having one self-propelled assault gun; and an ammunition section of 3 half-track vehicles. Each assault gun is usually accompanied by one of the half-track ammunition vehicles.

b. Tactical employment of assault guns.

(1) *Assault gun squads* may be used as a platoon or they may be attached to the tank companies of the battalion. They are for direct support, and are moved close up where they can fire by direct laying. The question of control decides whether to use them as a unit or to attach them to lower units.

(2) *Targets for assault guns.*—Assault guns are used to provide close up heavy gun fire to support tank units. For such use their primary targets are hostile antitank guns and hostile armored vehicles. They may be used to fire against

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observation posts. If smoke shell is provided, these guns may be used for screening missions. However, the mortar is a much better weapon for this purpose.

(3) *Positions.*—Assault gun carriers are lightly armored. The gun is not suited to firing from a moving vehicle. It is therefore essential that they occupy covered, and if practicable, concealed positions from which direct fire may be obtained. A position in deflade where only the gun is above the cover is best. This position should also be concealed by woods or brush when practicable. The muzzle blast will quickly disclose its position. Because of this, alternate positions must be selected and routes thereto reconnoitered. Advance from one position to another is made by covered routes when practicable and by use of maximum speed when such routes are not available. Positions selected should provide for local security, that is, whenever possible do not occupy a position that can be easily approached by hostile troops from concealed routes. Further security is afforded by the small caliber weapons of the ammunition vehicle. The ammunition vehicle should be placed close to the gun position and under cover. Routes for quick withdrawal from the position should be reconnoitered.

(4) *Employment in attack.*—(*a*) In the attack, assault guns are pushed well forward as close as practicable to the line of departure where they may use direct laying to support the attack. They fire on hostile antitank guns that disclose themselves, on armored vehicles that may be counterattacking, and on probable observation posts. As the attack progresses the guns are moved forward so as to give continuous support to the attacking tanks.

(*b*) The guns may initially be used as a platoon under control of the battalion commander. This method of employment is applicable when attack is launched in a column of companies. As the attack progresses and rear companies are used to extend the flanks or to envelop a flank, guns may be attached to the company.

(*c*) When the attack is made with two companies in the attack and one in reserve, the assault gun platoon may be held under control of the battalion commander or attached to the leading companies. If the attack is on a broad front the guns should be attached. All guns may be attached to the company making the main effort. Usually the platoon

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or the platoon less a squad is attached to the company making the main effort or the company on an exposed flank.

(*d*) In these rare cases when three companies are in the assault, one gun may be attached to each company or they may all support the main effort.

(*e*) In employment of these guns in attack they will be kept under battalion control if the front is narrow and control can be effectively exercised. If the attack is on a wide front, attach them to lower units.

(5) *Employment in defense.*—In defense, assault guns are used as antitank guns to cover favorable avenues of tank approach.

(6) *Employment at rallying points.*—At rallying and alternate rallying points, assault guns protect reorganization by covering likely avenues of approach for armored vehicles. They may be used to fire on approaching dismounted troops.

(7) *Employment in bivouac.*—In bivouac, assault guns are attached to the outpost to cover avenues of approach of armored vehicles. They should be protected by local dismounted security elements.

(8) *Employment with advance guards and flank guards.*—One assault gun is usually assigned to the point and is placed usually behind the leading tank. It should be prepared to cover the maneuver of the tanks by fire.

(9) *Employment with rear guards.*—With rear guards the assault guns are well to the rear and are used to cover road blocks and force enemy deployment.

■ 156. MORTAR PLATOON.—*a. General.*—(1) The primary missions of the mortar platoon are to neutralize enemy observation and antitank guns by high explosive or smoke shell and to screen the movement of friendly troops with smoke shell.

(2) The use of smoke by tank units in the attack is generally confined to the following:

(*a*) To screen the movement of tank elements towards the objective.

(*b*) To blind hostile observation points.

(*c*) To neutralize the action of hostile antitank weapons.

(*d*) To be used as a feint in a doubtful situation.

(3) Atmospheric conditions including the velocity and the direction of the wind affect the application of smoke. Smoke should never be used indiscriminately.

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(4) Hostile antitank weapons constitute the greatest menace to armored units. A smoke screen which precludes well-aimed fire by hostile antitank gunners constitutes an efficient defense against them, especially when smoke is laid in front of the gun positions (see fig. 19). The mortar is a

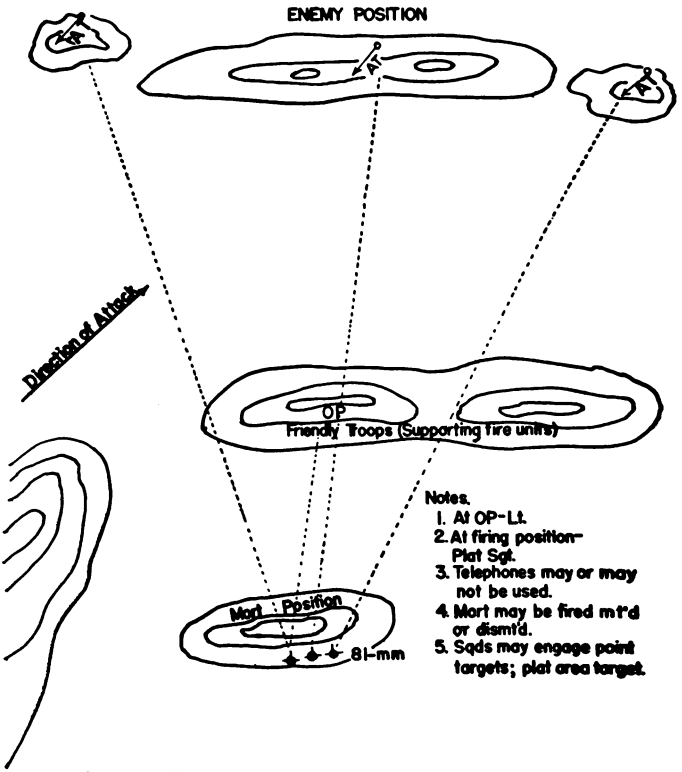


FIGURE 19.—Mortar platoon in support of attack.

reasonably accurate weapon, and by the use of high explosive shell may be used to inflict casualties on personnel or vehicles, and to reduce or destroy suitable objects, such as road blocks. (See fig. 20.)

(5) The mortar carrier has excellent cross country mobility, and can usually follow tanks without loss of distance.

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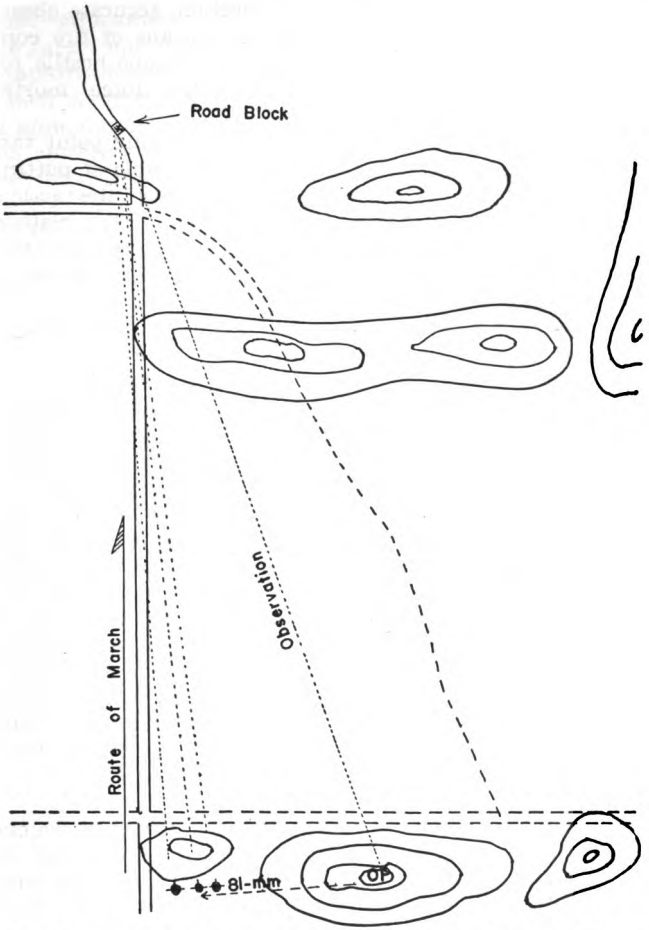


FIGURE 20.—Mortar platoon reducing road block by using HE shell.

It carries one 81-mm mortar, 100 rounds of 81-mm mortar ammunition, 2,000 rounds of caliber .30, and 750 rounds of caliber .50 ammunition. It mounts one caliber .30 and one caliber .50 machine gun, and has a caliber .45 submachine gun with 550 rounds of ammunition, for close defense.

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(6) Speed in the occupation of a position, accurate observation coupled with rapid and positive means of fire control, and speed in going out of action to escape hostile retaliatory fire must characterize armored force mortar employment.

(7) Although figure 19 shows squads engaging point targets (antitank guns), also the platoon is capable of putting down smoke in front of the main hostile position, the tactical situation could be such that all the mortars of the platoon would be engaged first in the destruction of located antitank weapons and later employed in putting down smoke in front of the objective of the attacking force.

b. Ammunition.—Two types of ammunition are normally employed to execute the mission of the mortar platoon; namely, smoke and high explosive. White phosphorus is the normal smoke agent, although for peacetime training, FS may be used. White phosphorus is an effective smoke producing medium. In addition, it has an excellent casualty producing effect on personnel, and incendiary properties on combustible material. The high explosive mortar shell contains a bursting charge of TNT. A combination quick and delay fuze allows a fuze setting to obtain either casualty producing effect on personnel or demolition effect. It will be used to harass and hinder hostile forces and may be fired with smoke shell while establishing and maintaining a smoke screen. For detailed data on shell and fuzes, refer to FM 23–90 or the appropriate Standard Nomenclature List.

c. Adjustment of fire.—For detailed information on the technique of adjusting fire, fire commands, and duties of the 81-mm mortar squad dismounted, refer to FM 17–5 and 23–90.

d. Smoke.—(1) The variable factors affecting smoke screens which can be determined only by observation on the spot are atmospheric conditions, terrain, ground, time of day, wind velocity, and direction . Allowing time for flight of the shell and time for the smoke material to burn, a satisfactory smoke screen can be established about two minutes after fire for effect begins. Because the initiation of a smoke screen will attract immediate attention to the location of the mortars, and because the smoke will obscure his observation, the mortar commander must adjust his fire quickly. The procedure may be considered in three phases:

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First, adjustment, during which the mortars are laid on the target and wind effect is observed; second, rapid fire to establish the screen quickly; third, slow fire to maintain the screen as long as necessary with the minimum expenditure of ammunition. Effort is made to put the smoke in front of the objective rather than on the objective itself. The reason for this is that when our own troops arrive at the objective their actions should not be hampered by the smoke put down by our own mortars.

(2) To adjust fire, a smoke shell should be fired with firing data calculated as accurately as possible. A single round, instead of a salvo, is fired to conserve ammunition and to avoid revealing prematurely the presence of the platoon as a whole. If the first round fails to indicate necessary corrections in firing data, another round is fired. When satisfactory data are obtained, the screen is established by firing the necessary number of rounds as quickly as possible from all mortars. The laying of each mortar should be checked after its first round. With a dense obscuring screen established, the method of fire is changed to maintain a screen of obscuring density without wasting ammunition. When there is no wind, the screen may be maintained by firing approximately two shells per minute for each 100 yards of screen frontage. For firing with head or tail winds blowing, the time interval between rounds must be shortened as the velocity of the wind increases. For flank winds, one section or mortar may be able to maintain the screen with an economical expenditure of ammunition. Constant practice in control of fire is necessary to insure an effective screen during the desired periods.

(3) (*a*) Smoke screens are employed most satisfactorily under the following conditions:

Sky—Heavily overcast.
Time of day—Dawn or dusk.
Terrain—Level fields or water.
Ground—Colder than the air.
Wind—Steady, 5 to 8 miles per hour, and parallel to the front to be screened.

(*b*) Smoke may be favorably used under the following average conditions:

Sky—Partly overcast.
Time of day—Mid morning or late afternoon.

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Terrain—Moderately rolling farm land.
Ground—Air and ground nearly the same temperature.
Wind—Slightly shifting, 8 to 12 miles per hour.

(*c*) The following conditions are *unfavorable* to the use of smoke:

Sky—Clear.
Time of day—11:00 AM to 4:00 PM.
Terrain—Broken or wooded.
Ground—Warmer than the air.
Wind—Variable, and/or over 12 miles per hour.

Although the above conditions are unfavorable for the use of smoke, the existence of any or all of these conditions should in no way preclude the use of smoke if the tactical situation indicates the desirability of its use.

(*d*) Smoke screens may be put down with advantage with cross, head, and tail winds provided that proper allowance is made for dispersion and that the wind velocity is not in excess of 12 miles per hour.

(4) Before, during, and after the attack, smoke will frequently be used in blinding hostile OP's, artillery, and antitank weapons. These targets may or may not be within the zone of the unit supported by the mortars. The primary consideration regarding such use is: Will these targets, if not engaged, interfere with the mission of the troops supported by the mortars?

e. High explosive (HE).—(1) The firing of high explosive shell may be considered in two phases, adjustment fire and fire for effect. For adjustment, the target is bracketed for range and the deflection is adjusted for direction. For fire for effect, a suitable amount of ammunition is fired at the target in a manner depending upon the nature of the target and the mission assigned. The target may be either a point target, such as an antitank gun (see fig. 19) or an area target. The mission may be neutralization or destruction. The proper setting of the fuze is made to effect demolitions or to inflict casualties.

(2) In the selection of HE shell it should be borne in mind that although the amount of TNT contained in the M45 shell is slightly more than double the amount contained in the M43, its range is somewhat less than one-half the range of the latter.

f. Observation and fire control.—(1) Accurate observation

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of the shell impact area and rapid means of transmitting fire-control data are essential factors in laying an obscuring smoke screen, or in firing high explosive shell to inflict casualties on personnel or vehicles. In the attack of armored units the mortar commander must observe the progress of the attack and cease firing before the leading elements of the attacking force close with the enemy. If mortar fire with smoke shell is continued until tanks close with the enemy, the smoke will cause confusion in the attacking force and, by lowering visibility, will lessen the effectiveness of the fire from the tanks and other supporting weapons.

(2) When observation cannot be obtained otherwise, the necessity of aerial observation is indicated for the mortar platoon. However, this method of observation and adjustment of mortar fire is exceptional.

g. Communication.—Communication between the observation post and the mortar position must be rapid and reliable. The quickest means is radio, using portable short wave voice equipment. An alternative means is the use of field telephones. However, to lay and reel up telephone wire consumes valuable time. When practicable, the mortar position should be selected close enough to the observation post to permit transmission of firing data by voice, messenger, or visual signals. In action, it is particularly desirable where the mortar platoon is employed as a unit that its observation post and that of the battalion be in close proximity.

h. Coordination.—When the battalion commander issues his attack order, he prescribes the measures to be taken to coordinate the fire of mortars with the attack. He may direct that a smoke screen be established as soon as mortars are in position, and that the attack will be launched as soon as smoke is laid. In situations calling for the attack to be launched at a specified time, the mortar commander regulates his fire so as to cover the target during the critical period. The battalion commander may direct that combat elements take an assembly position and be prepared to attack on his order. In this event mortars are laid and, upon receipt of the order for the attack to be launched, the fire is delivered. Whenever practicable, phase lines for the control and the coordination of all elements will be prescribed by the senior commander present. It is important that each mortar unit commander be fully informed as to phase lines

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in order that he may regulate his fire and displacements accordingly.

i. Reconnaissance, selection, and occupation of a position.— (1) The mortar platoon commander who has been assigned a mission in a combat situation is confronted with the problem of selecting and occupying a position without delay. Accompanied by the platoon sergeant and radio tender, he proceeds to select a defiladed firing position with the target well within the range of the mortars. This firing position should not be so far to the flank that it is exposed to surprise attacks; usually a position can be selected in the general vicinity of the supporting machine guns, which will help to afford the necessary security. Mortar units are responsible for the local protection of their own flanks and rear. The mortar commander indicates the selected position, the route thereto, method of going into action, and the target to the platoon sergeant who sets the aiming stakes on the line mortar-target. The observation post is then selected and communication, either by radio, telephone, or otherwise, is established with the mortar position. In the meantime the platoon is brought forward by the senior gun squad leader to the mortar position. The platoon sergeant having set the aiming stakes, meets the platoon and points out the firing position, the aiming stakes, and indicates whether the mortars will be fired from the vehicle or from the ground. The platoon sergeant directs squad leaders to their places on the indicated line. The platoon sergeant rejoins the mortar platoon commander at the observation post to help compute firing data. When the platoon sergeant reports all mortars ready for action, the firing data are transmitted and the fire is controlled by the mortar commander. The mortar platoon commander is normally at the observation post; his second in command, the platoon sergeant, directs the actual firing. Whenever practicable, the observation post for the mortar unit and that of the unit supported should coincide.

(2) Special situations may demand that the mortars be fired from their vehicles. Observation of the impact area and quick adjustment of fire are required. Full advantage must be taken of brush, trees, hills, or fields in the ground for concealment, defilade, and cover.

(3) An alternate position must always be selected so that

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after any action the platoon may be moved rapidly to escape hostile retaliatory fire.

j. Attachment of sections.—Whenever a tank company is given a combat mission requiring the attachment of supporting units, a squad of mortars may be included. One motorcycle messenger from headquarters company may accompany each detached mortar section. When a detached mortar squad has no radio or telephone equipment, its commander must use every available means to keep himself informed as to the mortar needs of the company he is supporting. Due to the limited amount of personnel and equipment in the mortar squad, it may frequently be desirable for the commander of the unit being supported to attach some personnel and equipment to the mortar squad. Mortar squad commanders must frequently, on their own initiative, decide when and where to place their fire, and when to cease firing.

k. Ammunition supply.—As replacement of expended ammunition will always be uncertain, ammunition must be conserved in every action. The ammunition in the mortar vehicles is sufficient to place three separate 5-minute screens 1,200 yards long under favorable wind conditions. After each action, the first opportunity must be taken to replenish ammunition supply.

■ 157. OFFENSIVE COMBAT.—*a. General.*—(1) The fundamentals governing the employment of tank units and other armored force units in combat are set forth in chapter 2.

(2) *Terrain.*—Terrain is a major factor in the employment of the tank battalion. The routes of advance, method and formation of attack, direction of attack, objectives, and zones of action will be influenced by terrain. It may sometimes be necessary to delay tank attacks until favorable terrain is seized by other troops.

(3) *Surprise.*—The attack of the battalion must be planned

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to strike unexpectedly against definite objectives. Surprise is gained by attacking in large numbers at an unexpected time and place, and in an unexpected direction.

(4) (*a*) *Supporting elements.*—The battalion has its own supporting self-propelled assault guns and mortars. In the attack it is further assisted by artillery fire support and bombardment aviation. A light tank battalion may be reinforced by one or more companies of medium tanks. Engineers are usually attached.

(*b*) The tank battalion, when operating alone, will be reinforced by the attachment of artillery, engineers, and infantry units.

(*c*) The tactical missions of supporting elements are covered in chapter 2.

(5) *Fire and movement.*—The battalion, whether operating as part of the regiment or operating alone on detached missions, attacks by a combination of fire and movement. This method of attack is discussed in detail in chapter 2 and in previous sections of this chapter.

b. Coordination.—The battalion commander is responsible for the coordination of the attack of all companies of his battalion and all attached elements. When operating under regimental control, the attack of the battalion is coordinated with that of other units by the regimental commander. In this case, the battalion commander is concerned only with coordinating the attack of his tank companies and attached elements, if any, in compliance with the orders given him by the regimental commander. When operating alone, he must coordinate the attack of all units under his control. Ordinarily, an attack is organized and coordinated in an assembly or intermediate position. Means of coordination are prescribed in the attack order. When attacking from march column as in a meeting engagement, control is decentralized and coordination is brought about through training and standing operation procedure. Coordination of the battalion attack with supported units is facilitated by the use of a liaison officer. This officer, in a radio equipped vehicle, is sent to the headquarters of the supported unit. Artillery and aviation support for the battalion are best coordinated by having an artillery observer and an air observer accompany the battalion in radio equipped armored vehicles.

c. Orders.—The battalion commander habitually issues at-

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tack orders orally. They are issued to his staff, company commanders, and attached unit commanders. If practicable, orders are issued at a point from which the salient topographical features can be seen. They are issued as early as possible in order to permit company commanders time to reconnoiter, prepare plans, and issue their orders. Form and details of the attack order are covered in FM 101–5. Contents especially applicable to armored force units are discussed in chapter 2. In his detailed instructions to companies, the battalion commander must specify the direction and time of attack, assign definite objectives, indicate the battalion zone of action and line of departure, and designate a battalion rallying point and alternate rallying point.

d. Control.—Initially, the battalion commander decentralizes control within the battalion. As agencies for communication, he utilizes radio, motorcycle messengers, staff officers, and visual signals. Coordination of attacking units is achieved by the issuance of simple, definite orders. The battalion commander retains control of the reserve. He usually leads it in the attack. Control that has been decentralized is regained at the rallying or alternate rallying point.

e. Zone of action, boundaries.—When attacking as part of a larger force, the battalion may be assigned a zone of action, or may be assigned simply a direction of attack and objective or successive objectives. The battalion is ordinarily the smallest unit which is assigned a zone of action. Boundaries of the zone of action will be clearly defined by easily recognizable topographical features. Open flanks are not ordinarily bounded. Within the limits of the zone assigned to him, the battalion commander is free to maneuver his battalion as he sees fit in order to accomplish his mission. He assigns a direction of attack and an objective to each company. He normally does not attempt to extend the attack formation across the entire zone of action. He may maneuver outside the assigned zone, if necessary, to assist adjacent units or to utilize favorable terrain, but must not interfere with the action of adjacent units.

f. Development for combat.—(1) *March column.*—When marching as part of the regiment, the battalion is conducted as a march unit in the regimental column, in compliance with orders of the regimental commander. Light maintenance vehicles march at the rear of their respective com-

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panies. Combat, kitchen, and heavy maintenance trucks march with the regimental trains, except when their presence with the battalion is required by the tactical situation.

(2) When marching alone, on a detached mission, the reinforced battalion will be preceded by the reconnaissance platoon. An advance guard, consisting of one or more tank platoons, and a squad of assault guns will furnish security en route. Flank guards are sent out if necessary. If the battalion is operating in rear of the enemy, a small rear guard may also be necessary. The remaining machine gun elements and the mortar elements, if present, will ordinarily march near the head of the main body. Engineer elements will be placed well forward. Artillery elements attached to the battalion will ordinarily march at the rear. Light maintenance vehicles are with their companies. Combat, kitchen, and heavy maintenance vehicles may accompany the battalion or may be kept with the regimental train. If present, they are consolidated at the rear of the battalion.

(3) *Methods of development.*—Development for combat may be made direct from the march column or it may be made from assembly or intermediate positions. If rapidity of action is essential, the regimental or higher commander may dispense with assembly positions, develop the regiment for combat, and issue orders for the attack. This will be the usual method for the battalion acting alone on detached missions, such as security detachments.

g. Assembly position (area).—(1) This subject is covered in detail in chapter 2. When operating as part of the regiment or other unit, the battalion occupies the assembly position in accordance with the plan of the regimental commander or the commander of the unit to which attached. The battalion commander disperses his companies in formations suitable for cover and concealment and to facilitate movement out of the assembly position. He provides for local security against air and ground attack. He sends a liaison officer to the headquarters of the regiment or other unit with which he is operating. Each company sends a liaison agent or runner to the battalion headquarters. Maintenance, combat, and kitchen trucks join their companies. Vehicles are refueled, serviced, inspected, and repaired as necessary. Ammunition and supplies are issued. If time permits, personnel are fed.

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(2) As soon as he receives his orders from the regimental or other unit commander, the battalion commander, with the assistance of his staff, prepares plans and issues orders for the battalion attack. If practicable, he makes a personal reconnaissance, accompanied by his company commanders. If the assembly position is considerably in rear of the line of departure, the final attack order may not be issued until an intermediate position is reached. However, all pertinent information is given subordinate commanders at the earliest opportunity. On leaving the assembly position, heavy maintenance, combat, and kitchen trucks join the regimental rear echelon. Light maintenance vehicles accompany their companies to the line of departure. Thereafter they rejoin the battalion in rallying points after combat.

h. Phases of the attack.—Normally these phases consist of the approach march, deployment for attack, fire fight, assault, seizing an objective, and reorganization. In hasty attacks, such as meeting engagements, the battalion may deploy for the attack direct from a march formation and may be launched in an assault without engaging in a fire fight. Reorganization after the attack will follow.

i. Approach march.—(1) *Security.*—During the approach to the attack, unless preceded by other units, the battalion commander protects his immediate front by the use of a covering detachment. Exposed flanks must be protected by small combat patrols. He is responsible for local security.

(2) *Formations.*—The main body of the battalion moves out from the assembly position, approximately 1,000 yards in rear of the covering detachment, in an approach march formation. (*See* Covering detachments, ch. 2.) The enemy situation and the terrain will determine the formation. Companies and attached units are disposed in the order in which they will participate in the attack. Extended intervals and distances are used. Formations are adopted by companies to take advantage of covered routes of approach and to afford protection from hostile artillery fire. During the approach march, formations are changed to meet terrain conditions and hostile reactions. The battalion commander normally marches in the interval between the covering detachment and the main body of his battalion, where he can control the advance of both elements. Some suitable formations are:

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(*a*) *Line of companies.*—This formation is best for cross country movement and is easy to control, having the company commanders in front. Companies may be in any suitable formation.

(*b*) *Column of companies.*—This formation is difficult to lead cross country unless terrain is favorable.

(*c*) *Echelon.*—This formation may be used where one flank of the battalion is exposed to a flank attack.

(*d*) *Column.*—This formation with extended distances may be necessary where the advance is limited to a definite route.

(3) *Intermediate position.*—Halts are made at previously designated intermediate positions in accordance with orders of higher commanders. These positions are designated for coordination and reconnaissance. Further detailed attack orders may be issued to companies after arrival at an intermediate position. Normally, halts at these positions will be brief. Companies will remain disposed in the same general formation, if cover permits. Further servicing, inspection, and maintenance are performed, if time permits. On leaving the intermediate position the battalion continues the approach march towards the line of departure.

j. Deployment for attack.—(1) When resistance is encountered by the covering detachment, the leading units change from approach formation to attack formations. Normally this deployment takes place as the line of departure is crossed. If the objective is at a considerable distance from the line of departure, rear elements may continue in approach march formation until they are subjected to hostile fire.

(2) Attack formations for the battalion vary considerably with the type of attack ordered by the regimental commander and the mission assigned to the battalion as well as the nature of the terrain. The battalion commander may deploy his battalion in line of companies, in column of companies, in echelon, in wedge, or in any combination of these formations. (See FM 17–5.)

(*a*) *Regimental attack in column.*—If the regiment attacks in column of battalions, the leading battalion may be deployed with all companies in line. Succeeding battalions may conform to the formation of the leading battalion or may be deployed with two companies in line and one in reserve.

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One battalion may follow in reserve, echeloned to an exposed flank. The reserve is usually deployed in depth.

(*b*) *Battalion attacking in assigned zone.*—The battalion may be assigned a zone, or direction of attack and objective, separated in distance from the attack of other units. In this situation the battalion commander will adopt formations suitable to the objective assigned him. He may attack in depth (column of companies) or in width (line of companies). Companies may be assigned objectives and directions of attack separated by distance. All or part of a company may be held out initially in battalion reserve. The reserve may follow echeloned to one flank or may be centrally located.

(*c*) *Battalion in support of foot troops.*—This subject is discussed in chapter 12.

(3) If security is not provided by higher units, combat patrols are sent out. This is particularly necessary on an exposed flank.

k. Conduct of attack.—(1) *Time of attack.*—The battalion advances from the line of departure in attack formation in conformance to the plan of the higher commander. The attack of the battalion is coordinated with that of other units by the regimental commander. A definite time may be specified or radio or visual signals may be used. The battalion commander uses similar means to coordinate the attack by units of his battalion.

(2) *Fire and movement.*—Attack by fire begins when the advancing elements are within effective range of the enemy. The fire fight is the primary mission of the support elements of the regiment, whether centrally controlled or attached to the battalion. The tank companies engage the enemy during their advance by fire and movement, as previously described. During this phase of the attack, the battalion commander follows the rear attacking wave and observes the progress of the attack. He personally leads his reserve so that he can employ it quickly when the need arises. He may use the reserve to assist companies unable to advance, to meet an unexpected flank attack, to repulse a counterattack, or to give depth and increased shock action to the assault.

(3) *Assault.*—The assault takes place when the leading wave has advanced to a previously designated assault position or when the time has arrived to drive home the attack.

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It is conducted as previously described for the platoon and company.

(*a*) It is made on signal from the leader of each wave when all elements of the wave have advanced to a point from which the objective is easily seen, their frontage and direction is fixed, and terrain favors an assault. The assault is launched at a distance of 200 to 400 yards from the objective.

(*b*) After overrunning their objectives, certain previously designated tank elements may be ordered to cover the objective by fire and movement until supporting units take over, after which they proceed to their company rallying points. If hostile resistance has not been reduced, companies are quickly rallied and the attack is renewed pending the arrival of ground support units.

(4) *Consolidation of position.*—If assault gun and mortar units are centralized under battalion control, they are displaced forward, as ordered by the battalion commander, to occupy the captured objective and cover the reorganization of the battalion. If elements of support units are attached to the companies, the company commander must coordinate their displacement forward to effect this mission for the battalion. The means for this coordination are covered in the attack order.

l. Reorganization.—At the company rallying points, each company is guickly assembled and a brief check made of personnel and equipment. The company commander then conducts his company to the battalion rallying point. If the battalion is operating with the regiment, the battalion commander then conducts his battalion to the regimental rallying point. Here more thorough reorganization, servicing, inspection, repair, and first aid is effected with a view of further employment. If the battalion is operating separately, this reorganization will take place at the battalion rallying point.

m. Maintenance sections.—(1) Light maintenance vehicles accompany the elements of the battalion as far forward in the approach march as practicable, but not beyond the line of departure. When the battalion crosses the line of departure, maintenance vehicles and attached medical elements and motorcycles are assembled in a service park

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near the line of departure prepared to move to rallying points on order.

(2) After combat, light maintenance and attached medical elements and motorcyclists will normally be directed to rejoin their companies at the battalion rallying or alternate rallying points.

n. Battalion medical section.—(1) The battalion medical section accompanies the battalion in the approach march and establishes a battalion aid station in the vicinity of the battalion service park where the light maintenance elements and motorcyclists are located.

(2) After combat, the battalion medical section accompanies the light maintenance elements, when they rejoin their companies, and establishes aid stations as needed.

■ 158. COMBAT SITUATIONS.—In order to utilize to the maximum the inherent mobility, fire power, and shock action of tanks, the tank battalion will normally be used offensively, even though its mission or that of the larger unit with which it is operating may be temporarily of a defensive nature. The method of employment of the tank battalion and subordinate units previously discussed in this chapter will be generally applicable in all special situations in which the battalion may participate. Combat situations pertaining primarily to regimental missions are discussed in chapter 7. Some of the special combat situations in which a tank battalion may be employed are covered in subsequent paragraphs. They are listed as follows:

a. Tank battalion, light.

(1) Security missions.
(2) Attack against road blocks.
(3) Envelopment of hostile flank or rear.
(4) Pursuit.
(5) Attack against hostile artillery.
(6) Counterattack hostile tanks.
(7) As reserve of larger unit.

b. Tank battalion, medium.

(1) Attack against hostile artillery.
(2) Attack of hostile antitank installations.
(3) Counterattack hostile tanks.
(4) As reserve of larger force.

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■ 159. SECURITY MISSIONS.—The tank battalion employed as advance, flank, or rear guard for an armored brigade or division is employed in combat by methods similar to those previously discussed.

■ 160. ATTACK AGAINST ROAD BLOCKS.—*a. General.*—(1) The tank battalion will encounter hostile road blocks on—

(*a*) Important roads leading to the front, flanks, or rear of a hostile defensive position.

(*b*) Roads leading to important hostile rear installations.

(*c*) Roads leading to the flank of a hostile marching column.

(2) Road blocks may be—

(*a*) Of a temporary nature, hastily constructed.

(*b*) Of a semipermanent nature, very elaborately constructed.

(*c*) They may be heavily mined or not mined at all.

(*d*) They may be strongly or lightly defended.

(3) The methods of construction and defense of road blocks are covered in FM 5–30, chapter 2 of this manual, and TF 5–148 and 5–149. Normally, road blocks will be defended by hostile antitank weapons and small arms fire. Important road blocks may be defended by artillery.

(4) Information concerning road blocks on the most important avenues of approach to enemy forces or positions will normally be obtained by distant or close reconnaissance agencies and furnished to armored battalions operating on those roads prior to actual encounter.

(5) If alternative routes are available, the armored battalion does not attempt to attack or reduce a road block, but goes around it.

b. Attachments.—When it is known or anticipated that the battalion will encounter strong road blocks, supporting troops should be attached to assist in reducing the hostile defense and in the removal or passage of obstacles.

(1) *Engineer troops.*—Engineer troops are essential for removal of mines, construction of culverts or bridges, demolition of concrete or semipermanent obstacles, and excavation of earthworks.

(2) *Artillery.*—Artillery is of great assistance in reducing hostile resistance, neutralization of hostile artillery, neutralizing antitank weapons, detonating mines, and in destruction

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of barricades. If artillery is not available, medium tanks may take over certain of these missions.

(3) *Mortar elements.*—Mortar elements may be used for neutralization of antitank weapons or for screening missions.

(4) *Combat aviation.*—Although not normally attached, light bombardment aviation may be directed by a higher commander to cooperate in reducing a critical road block. By dive bombing, combat aviation may assist materially in the destruction of barricades, detonation of mines, destruction of antitank guns, and neutralization of artillery.

c. Reconnaissance.—When a road block is encountered, careful reconnaissance must be initiated to secure the following information:

(1) Possible routes around the road block.

(2) Strength and dispositions of hostile defending troops.

(3) Location of antitank mines in vicinity of road block and in adjacent terrain over which maneuver is contemplated.

(4) Possible routes for maneuver with a view to attack on flanks or rear.

d. Terrain.—As in all other operations, the nature of the terrain will exercise a predominant influence on the method of attack of a road block. Normally road blocks will be constructed at points such as defiles, culverts, bridges, road cuts, swampy areas, densely wooded areas, and other points where the attacking force is confined to the road or where freedom of maneuver is limited.

e. Method of attack.—(1) Where the terrain permits, the battalion commander seeks to attack by envelopment. Artillery elements, if present, seek to neutralize hostile artillery and antitank weapons. Medium tank elements seek to destroy antitank weapons. They may support the attack of the maneuvering force from suitable positions or may lead the attack. The light tank companies attack by fire and movement from one or both flanks. A reserve normally is held out.

(2) Where maneuver is restricted to the vicinity of the axis of movement, the battalion commander must attack frontally. Full advantage must be taken of cover and of

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available dismounted troops to overcome antitank weapons. If the road block is strongly defended, artillery or medium tanks are utilized to the maximum. Against strong defenses in depth, close support aviation, when available, should be utilized to assist the attack.

(3) When antitank weapons have been neutralized or destroyed, and gaps have been effected in the barricade by artillery or medium tank shell fire, an attempt may be made to send tanks through the gaps in the barricade.

(4) After the hostile resistance has been completely neutralized, engineer troops are used to remove the barricade and mines or to bridge a passage over the obstacles.

■ 161. ENVELOPMENT OF HOSTILE FLANK AND REAR.—The battalion, when acting alone or as part of the enveloping force of a larger unit, employs methods similar to those set forth previously in this chapter.

■ 162. PURSUIT.—The battalion as part of the regiment is employed on pursuit missions in accordance with methods discussed in chapter 2. Tank battalions employed separately on pursuit missions are conducted similarly to GHQ tank battalions. (See ch. 12.)

■ 163. ATTACK AGAINST HOSTILE ARTILLERY.—When attacking artillery in position, the battalion must first gain a location on the flanks or rear, outside of the firing arc of the guns being attacked. A small portion of the command may attack by fire from frontal positions as a ruse to engage the attention of the hostile artillery. The main attack is made from the flank or rear, with the tanks closing on the gun positions at maximum speed, firing all vehicular weapons. Surprise is essential. The attack must be made on as wide a front as possible. Subordinate units attack from different directions. If possible, guns are crushed when taken. Medium tank units are more suitable for this mission than light tank units.

■ 164. COUNTERATTACK HOSTILE TANKS.—Medium tank battalions are more suitable for attack of hostile tanks than light tank battalions. A battalion held in regimental reserve will often be given this mission. Methods of attack will be similar

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to those set forth in chapter 2. (See FM 100–5 for anti-mechanized defense.)

■ 165. BATTALION AS RESERVE.—A tank battalion held in reserve by a larger unit will be assigned combat missions in accordance with the situation. The battalion will normally be held in a position of readiness under cover near the location of the command post of the larger unit. Local security must be provided against air and ground attack. The battalion commander, or a liaison officer from his staff, will report to the higher commander and remain with the commander's group. The battalion must be kept in a constant state of readiness for attack. The battalion commander keeps his subordinate commanders oriented as to the situation. He prepares possible plans for the use of the battalion. He initiates reconnaissance for possible routes of movement. The staff of the higher commander keep him informed as to possible plans for use of the reserve so that he can be prepared to act promptly.

■ 166. DEFENSIVE COMBAT.—The tank battalion, acting alone, will seldom engage in defensive combat. However, such situations may occur when the battalion is employed on security missions for a larger unit. The method of employment is similar to that of the tank company, previously discussed in this chapter. Defensive missions are accomplished by local offensive combat.

■ 167. BIVOUAC.—*a.* The tank battalion normally bivouacs as part of the regiment in rear of protection provided by other arms. If bivouacked with the regiment, or if bivouacked alone, the battalion commander must provide for local, all around security of his battalion. In all bivouacs, regardless of location, advantage is taken of available cover and concealment. Camouflage measures may be used to supplement natural cover. Vehicles are disposed for all around defense and for quick movement out of the bivouac area. Routes leading out of bivouac are reconnoitered. Vehicles enter in column, if practicable, in order to minimize the number of tracks visible from the air. All tracks are erased or covered with brush.

b. Protection is provided by blocking the main avenue of approach and by posting outguards at critical points.

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CHAPTER 6

MAINTENANCE COMPANY, ARMORED REGIMENT

■ 168. ORGANIZATION.—The maintenance company includes a company headquarters, a tank platoon, and a maintenance platoon.

■ 169. EMPLOYMENT.—The company is employed as a regimental organization and is charged with the repair or proper disposition of all disabled vehicles assigned or attached to the regiment which cannot be repaired by company maintenance sections.

■ 170. COMPANY HEADQUARTERS.—Company Headquarters consists of a command section, a communication-liaison-reconnaissance section, an administrative-supply section, and a mess section.

a. Command section.—The command section consists of a major as company commander, a captain as executive officer, and the crew of the half-track command car. The company commander is responsible for the administration, supply, training, and operation of the company. In addition, he functions as regimental motor officer on the staff of the regimental commander. In this capacity he exercises technical supervision over the maintenance sections of all companies of the regiment. The functions and duties of the motor officer are set forth in FM 17–50 and 25–10.

b. Communication - liaison - reconnaissance section.—The communication-liaison-reconnaissance section consists of a lieutenant, a communications sergeant, and messenger, all transported in a ¼-ton truck. The lieutenant assumes tactical command of the tank platoon when it is used to furnish security for the division trains.

c. Administrative-supply section.—The administrative-supply section functions only for the administration and supply of the company.

d. Mess section.—The mess section provides messing facilities for all personnel of the company. Sufficient personnel and facilities are provided to take care of vehicle operators or

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crews of other organizations when their vehicles are temporarily undergoing repair at the maintenance company. When the tank platoon is detached for duty with the division trains, sufficient mess personnel accompanies it.

■ 171. TANK PLATOON.—The tank platoon, consisting of three officers and 52 enlisted men, comprises a platoon headquarters, two medium tank sections, and one light tank section. These tank sections serve the dual purpose of being available as replacements for disabled vehicles, or until so required, to serve as protective units for the rear echelon of the armored regiment. All tanks assigned to this platoon are manned by reduced crews. Each tank section includes four tanks, either medium or light, complete with armament. The officers of this platoon serve as maintenance assistants when the platoon is not engaged in security missions.

■ 172. MAINTENANCE PLATOON.—The maintenance platoon, consisting of one officer and 87 enlisted men, comprises a platoon headquarters, a repair section of four maintenance crews, a supply section, and an inspection and allied trades section.

a. Platoon headquarters.—The platoon headquarters consists of a maintenance officer, two noncommissioned officer assistants, a clerk, a mechanic, and the skeleton crew of the half-track command car. The maintenance officer commands the maintenance platoon and is in direct charge of the technical and tactical training, operation, and functioning of the maintenance platoon under the general supervision of the maintenance company commander. In garrison, in bivouac, and in combat, he establishes a mobile repair shop at the regimental service park as directed by the maintenance company commander.

b. Repair section.—The repair section consists of 57 enlisted men organized into three battalion maintenance crews and a reserve crew.

(1) Each battalion crew includes noncommissioned officer supervising personnel, mechanics, skeleton vehicular crews, and antitank gunners. The crew is transported in two personnel carriers and one ¼-ton truck. One antitank gun is towed. The 1st and 2d battalion crews contain personnel specially qualified in the repair and maintenance of medium

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tanks, whereas the 3d battalion crew is qualified in the repair and maintenance of light tanks.

(2) The reserve crew is, as the name implies, a reserve working group which, in addition to its other duties, is charged with the repair and maintenance of the vehicles of the four separate companies of the regiment. This crew also furnishes wrecking service for the regiment. In addition to one personnel carrier and a ¼-ton truck, it is equipped with four heavy 10-ton wreckers. These vehicles and crews carry out the salvage operations of the regiment. The wrecker group is always the last element in the regimental or separate battalion column on the march. In garrison, in bivouac, and in combat, it operates from the service park as directed by the maintenance officer.

c. Supply section.—The supply section is charged with the handling of all motor maintenance parts, not only for the use of the regimental maintenance company, but for the use of all other companies of the regiment.

d. Inspection section.—The inspection section consists of a foreman mechanic with two or more assistants and a clerk. This section functions under the supervision of the company commander who utilizes the personnel of this section to inspect all vehicles sent to the regimental maintenance for repair. After the completion of the necessary maintenance operations, personnel of the inspection section inspect the vehicle to determine the adequacy of the repairs made. This section will maintain a record of all experimental motor equipment in the regiment, to include the date of installation, periodic reports on performance, details of failures, and final disposition. Personnel of this section will make frequent periodic inspections of all companies for general condition of vehicles and to check on the procedure and efficiency of company maintenance sections.

e. Allied trades section.—The allied trades section consists of specialists such as, blacksmiths, painters, machinists, welders, and electricians. It performs repair work of the nature indicated, on all vehicles of the regiment, under the supervision of the foreman mechanic. In the field the personnel of this section ride on shop trucks assigned to the company.

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■ 173. MAINTENANCE PROCEDURE.—*a.* Maintenance procedure in garrison, in bivouac, on the march, and during combat, is discussed in FM 17–50. The maintenance platoon normally marches at the rear of the regiment with echelon A of the regimental trains.

b. The regimental maintenance company, less the maintenance platoon, marches with the division or combat commands group trains (echelon B). Under certain conditions it may march at the tail of the regiment.

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CHAPTER 7

THE ARMORED REGIMENT

Paragraphs

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SECTION I

ARMORED REGIMENT

■ 174. ORGANIZATION (see current Tables of Organization).—*a.* The armored regiment is organized into a command echelon (headquarters and headquarters company); a reconnaissance echelon (reconnaissance company); a striking echelon (three tank battalions; one light and two mediums); and a service echelon (service company, maintenance company, and attached medical personnel). Each battalion, as described in chapter 5, has its own support echelon in the mortar platoon and assault gun platoon.

b. The functions of the reconnaissance company are described in chapter 4, the headquarters company in chapter 9, the service company in chapter 10, and the maintenance company in chapter 6.

c. The reconnaissance company performs close reconnaissance for the regiment. It may perform distant reconnaissance when the regiment is acting alone or is part of a combat command acting alone. For its employment see chapter 4.

d. The light armored battalion is the fast maneuvering force for the regiment. The two medium battalions are the main striking force. All other elements of the regiment are organized for the purpose of assisting the armored battalions.

■ 175. TACTICAL EMPLOYMENT.—*a.* The armored regiment is organized as a mobile striking force to penetrate deep within and behind the hostile lines to destroy hostile establishments such as command posts, hostile reserves, artillery, communications, and supply points. It forms the nucleus about which the combat command group is usually built.

b. The regiment may engage in any of the forms of combat but its primary mission is offensive combat.

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■ 176. ATTACHED AND SUPPORTING ELEMENTS.—The regiment may have attached to or supporting it any or all of the following:

One or more companies of infantry.
One or more batteries of artillery.
One or more companies of engineers.
One or more tank destroyer companies.
Observation and combat aviation.
Additional reconnaissance elements.
A medical company.
A maintenance unit.

Usually when these elements are with the regiment in greater strength, the whole is termed a division combat command as covered in chapter 9.

■ 177. CHARACTERISTICS.—*a.* The armored regiment, due to its organization and equipment, is the most mobile, self-contained combat element of the armored division. From a functional and organizational viewpoint, it is comparable to the division, having its own command, reconnaissance, striking, and service elements. Supporting units are attached as required by the situation. Due to its inherent ability to operate and supply itself over wide areas and for prolonged periods; to subdivide into smaller, relatively self-sufficient combat units; and to its speed of action; the armored regiment is the principal combat agency of the division. It forms a nucleus for the organization of task forces for combat command groups. Its mobility particularly adapts it for exploitation of a break-through or pursuit of a defeated enemy.

b. Tactics of the armored regiment stresses speed of maneuver, fire and movement, and bold and aggressive action. It creates surprise by the sustained celerity and power of its tactical movement. It uses its mobility to reach vital enemy rear areas. It seeks to attack where the enemy is unprepared to meet mechanized attack. It avoids strongly organized positions. Maximum strength in the attack is secured by initial coordination of fire power and maneuvering forces and reliance upon the initiative of subordinates thereafter until objectives are reached and the mission accomplished. Operations are predicated upon careful, timely detailed planning and rapid aggressive execution.

■ 178. MARCHES.—*a. General.*—The regiment may march in

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one or more columns. It is preceded by the reconnaissance company at a distance of from two to several hours. The units are disposed in the column in the expected order of engagement in combat. Advance, flank, and rear guards are detailed as previously described in chapter 2.

b. Daylight marches.—(1) During daylight the order of march, including attached units, is usually as follows:

Reconnaissance company.
Advance guard (light tanks, self-propelled gun squads, mortar squads), infantry, engineers, tank destroyer elements, artillery.
Main body.
Forward echelon R HQ.
Light tank battalion (less detachments).
Engineers (less detachments).
Tank company.
Tank destroyer company (less detachments).
Artillery battalion (less detachments).
Medium tank battalions.
Infantry (less detachments).
Trains (train detachments may be with the battalions).
Medical unit.
Maintenance unit (less detachments).

(2) Light tanks are used as a covering force as previously described. Engineers must always be well forward to make quick repair of routes. Infantry and tank destroyer units are well forward to assist in reduction of road blocks and to seize and furnish protection for assembly areas. Artillery must be prepared to bring prompt fire on hostile troops.

c. Night marches.—At night infantry with tank destroyers and engineers attached usually forms the advance guard.

d. When more than one column.—When the armored regiment marches in more than one column, infantry, if available, engineers, tank destroyer elements, light tanks, and artillery should be a part of each column.

■ 179. COMMAND.—*a.* The armored regiment is a relatively large and highly complex unit. The variety and amount of armament, of vehicles, and of communication and other equipment in the regiment are of little combat value unless they are manned by highly trained personnel, each of whom knows his particular job and functions properly in the team,

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whether that team be a radio net, a tank crew, a company, or a battalion. The regimental commander is largely dependent upon the efficiency of his company and battalion commanders and he must encourage their initiative and place upon them the responsibility for training their units. He may expect those commanders to employ their organizations under a given plan without having to be told just what to do and how to do it. All elements of the regiment are combined to form a fighting team; all separate companies operate to assist the advance of the three tank battalions.

b. Although the regimental commander may place much responsibility upon his subordinate commanders, he must still, personally and through his staff, coordinate and direct their actions. This staff consists of an executive officer, who is second in command; an adjutant (S–1); an intelligence officer (S–2); an operations officer (S–3); a supply officer (S–4); a maintenance officer; a liaison officer; and a communications officer. (See ch. 9.)

■ 180. FUNCTIONS AND DUTIES OF REGIMENTAL STAFF.—This subject is covered in FM 101–5.

■ 181. ORDERS.—*a.* Due to the mobility of the regiment, it is necessary, especially in combat, for all organization commanders to know the general plan of operations, to keep abreast of the situation which may change rapidly, and to take prompt steps to carry out assigned tasks. The staff must disseminate information promptly; and, by means of warning messages, alert all commanders concerned. Having been warned of impending action, it is the duty of the battalion or separate company commanders to be well forward in column or at the probable place where combat orders will be issued. Battalion and company commanders require similar procedure from their subordinates.

b. Orders are brief, often oral, and usually fragmentary in form. For contents of field orders see chapter 2 and FM 101–5.

■ 182. COMMUNICATION.—While radio and motorcycle messenger are the principal and usual means of communication within the regiment and to other units, all other practical means must be used to supplement these when necessary or as a substitute when normal means fail. Liaison agents are

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habitually sent from lower to higher units, and are provided with necessary additional transportation and radio to insure communication. For short distances, light, flag, and sometimes sound signals are used as supplementary means.

■ 183. RECONNAISSANCE.—*a. Reconnaissance company* (see ch. 4).—General information of the enemy, routes, critical points, and terrain are vital to the success of the tank battalions. When the regiment is operating as part of the division, the reconnaissance company performs close reconnaissance missions. It usually precedes the regiment by at least one or two hours and operates in rear of the division reconnaissance battalion. When the regiment is operating alone, the reconnaissance company performs distant reconnaissance missions and may operate up to a hundred miles from the regiment. On distant missions it may be reinforced. It may be used to secure and hold critical points, such as defiles, for the passage of the regiment. It does its work, if possible, without fighting. It endeavors to gather information and get it back promptly to the regiment. If combat is anticipated, the company should be suitably reinforced before departure on the mission. Such reinforcements may consist of a light tank platoon or company. In any event, it should be dispatched early in order to accomplish its mission thoroughly. During the attack, the reconnaissance company continues reconnaissance and protects the flanks. It seeks out hostile attacks which may be developing, hostile reserves, artillery, command and supply installations, and any other appropriate targets. Contact is maintained with the reconnaissance battalion of the division. Close cooperation is maintained with observation aviation.

b. Personal reconnaissance.—Prior to combat, the regimental commander and his staff make such detailed personal reconnaissance as practicable to verify and complete information regarding the enemy and terrain. (See ch. 2.)

c. Battle reconnaissance.—Battle reconnaissance is executed by all elements of the regiment continuously throughout an engagement. (See ch. 2.)

■ 184. SECURITY.—*a. General.*—FM 100–5 gives the fundamentals of security. Timely warning is vital to protection against surprise, especially from enemy armored forces and aviation. Consequently, all around security, both ground and

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air, is necessary at all times; day and night, whether in combat, on the march, or while in bivouac. Security depends largely upon the efficiency of concealment and reconnaissance and upon the efficiency of security ground detachments in preventing discovery in bivouac and during movement. In all situations, subordinate units of the regiment are responsible for their own local security. Precautions and protection against attack, both ground and air, are stressed during periods of reorganization, refueling, and maintenance. Congestion is avoided at all times and maximum use made of cover. During darkness the use of lights, other than tactical lights, is usually prohibited. This prohibition is habitual unless instructions are issued to the contrary.

b. During movement.—Security on the march is obtained by the use of security detachments such as advance, flank, and rear guards. When the regiment is marching as part of a larger force, these security detachments are sent out by the higher commander. If the regiment is marching as a separate column, the regimental commander must provide for these security detachments. In daylight marches the advance guard will usually consist of a light tank company reinforced with one or more assault gun squads and motor squads and a platoon of engineers. The battalion reconnaissance platoon may be attached to the advance guard. In night marches infantry, if present, usually constitutes the leading elements of the advance guard. When moving cross country, a covering detachment precedes the regiment. The size and composition of such detachment will depend upon the situation and the terrain (see ch. 2). A part of the light tank battalion is used as a covering force for the regiment.

c. Bivouac.—In bivouac, security is obtained by an outpost, by reconnaissance and counterreconnaissance measures, by selecting a bivouac area to take advantage of obstacles, and by blocking main routes of approach. Light tanks with additional assault guns and tank destroyer units attached are employed as the outpost for the regiment. When infantry is attached, the outpost consists of infantry with assault guns attached.

d. Assembly areas.—Security in assembly areas is obtained by cover, concealment, dispersion, and posting of security detachments. Infantry, if attached, may be used to secure the area. Light tanks, tank destroyer units, and assault guns

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are placed in position to cover avenues of hostile approach.

e. Rallying points.—One of the most dangerous periods of combat is during reorganization. Units must be ready to repel promptly any enemy counterattack. At rallying and alternate rallying points tank units acting alone place tanks in position to cover avenues of approach. Infantry, if available, assault guns, and attached tank destroyer elements are used to secure the rallying point. Some tank destroyer elements are held in mobile reserve ready to move to any threatened point. Reconnaissance is intensified to discover enemy movements and enemy positions and routes thereto.

f. Air.—Antiaircraft guns are habitually ready for use. Air warning sentinels are posted in all subordinate units, both while moving and when halted. Reconnaissance agencies furnish timely information of the approach of hostile airplanes.

g. Employment of security detachments.—The strength, composition, and technique of employment of security detachments are covered in chapter 2.

SECTION II

TACTICAL EMPLOYMENT

■ 185. GENERAL.—*a.* (1) The fundamentals of offensive combat of armored force units are set forth in chapter 2. The attack of the armored regiment is characterized by speed of maneuver to strike vital enemy objectives.

(2) *Forms of attack* (see fig. 24).—Normally the regiment attacks by enveloping the hostile flank or rear. Attack by penetration is only made against an unorganized position. When operating alone, the regiment usually attacks by envelopment. A direct frontal attack is justified only when the enemy position is unorganized and the terrain prohibits other forms of attack.

(3) *Tactical groupings.*—In an attack, the combat elements of the regiment usually are disposed in three tactical groupings: a main attack force which comprises the bulk of the regiment's striking power (the tank battalions); a secondary attack (holding) which supports the main attack, engages the enemy's attention, and contains him; and a reserve. (See FM 100–5.)

(*a*) *Main attack.*—The main attack force usually consists of two or more armored battalions. These battalions may

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be reinforced by infantry, engineer, and tank destroyer units, depending upon the enemy situation, mission, terrain, and other factors. The main attack force is maneuvered so as to take advantage of weak spots in the hostile defense or to approach the enemy, if practicable, from a flank or rear. It is made on the minimum frontage necessary to overcome enemy resistance initially encountered in order to maintain flexibility and freedom of action throughout the attack. The main attack is rapid and deep and is usually made in a series of waves, supported by rapid concentrations of artillery, and combat aviation fires on critical objectives, if such support is available.

(*b*) *Secondary attack* (*holding*).—Normally, when the regiment is acting alone, the secondary attack is composed of those security units which first come in contact with the enemy and protect the deployment of the regiment. Light tank elements may be in the secondary attack force. Artillery, if attached, may be with either the main or secondary attack force. The secondary attack force establishes the base of fire about which the main attack force maneuvers. The fire of the attached artillery and of assault guns is concentrated on the enemy to neutralize his antitank weapons. The mortar platoons will smoke enemy observation and screen the movements of the maneuvering force. After the main attack force has gained its objectives, infantry elements following the attack displace forward rapidly to seize and mop up the positions and to cover the reorganization of the regiment. Tank destroyer units protect the flanks and rear and provide security for reorganization.

(*c*) *Reserve.*—A part of the regiment is held out of the combat initially for use as a reserve by the regimental commander. It is kept mobile. It is used to maintain the continuity of the attack by extending the envelopment or by being employed to strengthen the main attack force. It may be used to protect the flanks or rear of the main attack force or to counter enemy action. The reserve for a regiment will normally consist of a tank company or battalion. It is located in a position from which it can best support the main attack. It may be used to assist the main attack, to extend the envelopment, to repulse a counterattack, or to cover a withdrawal.

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(4) *Fire and movement.*—The regiment habitually attacks by a combination of fire and movement. The armored battalions advance with support of fire of the assault gun and mortar. Within the armored battalions, platoons advance by fire and movement (see ch. 5). Fire and movement are also used by the assault gun elements when they displace forward. (See ch. 5.)

(5) *Employment of armored battalions.*—No fixed rule for employment of the armored (tank) battalions can or should be prescribed. However, the following general rules usually apply:

(*a*) Against personnel when hostile armored units are not present or suspected, the tank attack will disorganize and demoralize the enemy by overrunning the area, using the fire of all appropriate automatic weapons.

(*b*) If the objective is one of appreciable depth comprising command posts, supply establishments, artillery positions, and such installations, the attack will usually be made in depth and will depend principally upon speed, automatic fire, and sustained momentum to attain the demoralization and disorganization desired.

(*c*) If the situation is obscure, it is usually desirable to launch the attack in a deep column of deployed tank units, light tanks leading, and supported by medium tanks of the second echelon of attack. One or more medium tank companies may be attached to the light tank battalion.

(*d*) If the hostile objective or position is strong in antitank weapons, the medium tank elements lead the attack. If the situation is obscure, they may follow the light tank battalion and support the attack. If a counterattack by hostile tanks is anticipated, tank destroyer units and medium tanks are disposed to meet such threat.

(6) *Employment of artillery.*—When artillery units are attached to the regiment, they are usually employed under regimental control. In exceptional situations attachment may be made to armored battalions but only for such time as support may be required. The tactical missions of artillery with armored force units are covered in chapter 2.

(7) *Employment of infantry.*—Infantry elements, when attached, are employed as set forth in chapter 2.

(8) *Employment of engineers.*—Engineer units, when attached, are employed as set forth in chapter 2.

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b. Coordination.—The regimental commander must coordinate the attack by all elements of his command in order to achieve decisive results. The attack must be coordinated with the division plan. Coordination is best obtained by prescribing a definite time for the attack. In hasty actions, where it is impracticable to set a definite time for all elements, coordination is effected by radio. Visual signals may be used where distances are short and terrain permits. Liaison officers may be used to effect coordination.

c. Control.—Initially, the regimental commander controls the attack by the assignment of zones, objectives, and directions, and time of attack and lines of departure. He regains control at the regimental rallying point or alternate rallying point. He may influence the action by use of the attached fire support elements and the reserve.

d. Zones of action; boundaries.—(1) When attacking in close contact with other units, the regiment may be assigned a zone of action.

(2) If the attack of the regiment is separated by some distance from that of other units, it may be assigned a direction of attack and an objective or successive objectives. In many situations it will be given a mission type order.

(3) The regimental commander, in turn, assigns zones of action, direction of attack and objectives, or missions to his armored battalions and his support elements. Zones of action will normally be used when time permits detailed organization for the attack, and when the battalions are attacking abreast. When it is desired to have the battalions attack from different directions, the direction of attack and objectives for each will be designated. Mission type orders are usually given in hasty engagements or where subordinate units are operating beyond immediate supporting distance of the regiment.

e. Development of combat.—The regimental commander may develop his regiment for combat directly from the march column or he may place it in assembly areas (positions). When rapidity of action is essential, he dispenses with an assembly area and attacks from march column. This will be the normal method for the regiment acting alone or when participating in meeting engagements, raids, or pursuit missions. When participating in a coordinated attack of the division, the regiment will normally be developed for combat from assembly areas.

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f. Assembly area (or position) (see fig. 23).—(1) The selection and occupation of assembly areas is discussed in detail in chapter 2. The assembly area may be selected and assigned by higher commanders, or the general location only may be designated. In the latter case, the regimental commander must reconnoiter and select assembly positions for his regiment. Maintenance and supply are facilitated if the units of the regiment are not too widely separated. The advance guard furnishes security for the movement into the assembly area. The reconnaissance company maintains contact with the enemy force and intensifies reconnaissance of the area over which the regiment is to operate. All or part of the regimental trains are brought forward. The maintenance officer establishes a service park in or near the assembly area. Vehicles are serviced, inspected, and repaired as necessary.

(2) As soon as he receives his order from higher headquarters, the regimental commander formulates his plan of attack and communicates it to his battalion and separate company commanders. If the assembly area is at considerable distance from the objective, final details of the attack order may not be issued until the *intermediate position* is reached.

(3) In his detailed instructions for the subordinate units of the regiment, the regimental commander must include—

(*a*) *Reconnaissance company.*—Special reconnaissance or security missions during combat; designation of areas in which it will operate; general plan of the commander.

(*b*) *Support elements.*—

1. *Tank destroyer units.*—Location; missions; means of coordination with main attack; action to be taken if main attack is repulsed; action to be taken if enemy tanks counterattack; instructions for forward displacement.
2. *Artillery.*—Location; missions; objectives; time of attack; means of coordination; instructions for forward displacement.

(*c*) *Armored battalions.*—Line of departure; zones of action and/or objectives and direction of attack; time of attack; means of coordination with other units; initial formation for attack; action to be taken if hostile tanks counterattack; limit of pursuit.

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(*d*) *Reserve.*—Composition; location; initial mission; probable future missions.

(*e*) *Supply and service elements.*—Location; special security measures; attachment of combat units as guard when necessary; action in case of advance; action in case of withdrawal; location of service park; location of regimental aid station.

(*f*) *All units.*—Location of regimental rallying point and alternate rallying point; location of regimental command post; location of service park; location of regimental aid station.

g. Approach march.—Subordinate units of the regiment move out from the assembly area in approach march formations in accordance with the orders of the regimental commander. Covering detachment from the light tank battalion usually protects this movement. Normally the regimental commander does not lead his regiment in the approach march. Where the line of departure is at a considerable distance from the assembly area and the final plan of attack has not been determined, he may personally conduct the regiment to the intermediate position from which he delivers the final attack order. In any event, he retains control until the line of departure is crossed, either by personal leading or by radio, visual signals, staff officers, or messengers.

h. Deployment for attack.—The deployment of subordinate units for the attack is covered in the chapters of this manual which pertain to those units.

i. Conduct of attack.—(1) Subordinate units advance to the attack at the specified time or on receipt of orders or signals from the regimental commander. The conduct of the attack by subordinate units of the regiment is covered in other chapters of this manual.

(2) During the attack, the regimental commander establishes his command post where he can best observe the progress of the main attack and can control the actions of support elements and the reserve. By personal reconnaissance and by reports from reconnaissance agencies, he keeps informed as to the situation. As the attack progresses he continuously plans for the employment of the reserve. He makes plans for constituting a new reserve in case the reserve is committed to action. He avoids commitment of the reserve in action too soon, since this would leave him without

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any means of repulsing a hostile counterattack by tanks or of assisting in the reduction of critical points. He may utilize the reserve to repulse hostile counterattacks, to protect an exposed flank, to assist units in reducing critical points, or to give depth to the main attack. If not used in the main attack, the reserve may be used to protect the support elements against hostile counterattack while displacing forward to occupy the objective. He initiates the order for the displacement forward of support elements after the main attack has overrun the objective.

(3) After the objective has been overrun and occupied by the ground support elements, the regimental commander with certain members of his staff proceeds to the regimental rallying point and supervises the reorganization of his regiment.

j. Reorganization.—(1) Reorganization of the armored battalions may be necessary after each objective is overrun. Hasty reorganization is effected at the company and battalion rallying points as previously described in other chapters of this manual. At the regimental rallying point, more thorough reorganization, servicing, inspection, repair, and first aid is effected. The necessary sections of the regimental trains are brought forward and the regiment is made ready for further combat. If the regiment must move out immediately on pursuit or other missions, repair operations are reduced to a minimum. The regiment or certain units thereof may return to the service park for reservicing. If time and other considerations permit, the regimental service park is moved and reestablished at or near the rallying point.

(2) During reorganization, the tank destroyer and reconnaissance elements are employed to give all around protection. Special security measures against hostile counterattack by tanks or combat aviation are necessary.

■ 186. MEETING ENGAGEMENT.—*a. General.*—(1) A meeting engagement usually results in attack by envelopment of one or both flanks. Leading units attack directly from march column while units in rear maneuver to strike the enemy in flank and rear. There is little time for coordination of fires.

(2) As opposing forces approach contact, ground and air reconnaissance elements seek information of and report on the strength, dispositions, composition, and location of hostile

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forces. The locations of flanks and the direction of deployment of hostile forces must especially be found and reported upon.

b. Advance guard.—The advance guard attacks and halts the hostile advance. It is assisted by artillery.

c. Light tank battalion, supported by artillery, immediately attacks from march column and fixes the enemy. It attempts to disorganize leading enemy units and to delay hostile development for the attack. Formation is usually column of companies as one company is in the advance guard.

d. Infantry and tank destroyer units well forward in the column move to one or both flanks and protect the development of the medium tank battalions. When the attack starts, infantry and tank destroyer elements follow the rear waves of the tank battalion and are prepared to repel hostile attacks.

e. Medium tank battalion may attack one flank, or both flanks simultaneously. If terrain is suitable both flanks should be enveloped. They move from march column directly to attack positions and attack. The objective is the enemy hostile forces, reserves, and communication installation. The regimental commander designates an objective and rallying point. Speed is essential to strike the enemy while he is partially deployed.

f. Reserve.—The reserve consists of infantry not with the advance guard, tank destroyer units, and usually one medium tank company. The reserve usually follows one of the enveloping forces. The medium tank company is used to extend the envelopment, or counter an enemy attack. The infantry assists in mopping up the area.

g. Bombardment aviation.—Bombardment aviation targets are designated by reconnaissance units and battalion commanders in a meeting engagement.

h. Completion of attack.—When the attack is completed, battalions quickly reorganize under the protection of the infantry and the tank destroyer units.

■ 187. PENETRATION.—*a.* In a penetration, the armored regiment attacks from an assembly area (see fig. 23). It seeks to attack through lightly defended localities in the enemy line. Attack is *not* made in areas heavily defended by antitank guns, tank obstacles, and mines until those defenses have

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been removed by infantry and engineers, or neutralized.

b. The attack must be coordinated with artillery and bombardment aviation. If it is made in conjunction with infantry, the attack of the infantry and tanks must be coordinated.

c. Reconnaissance units are used to find the weak links in the enemy line. When reconnaissance units are unable to find such weak localities, the light tank battalion, supported by a medium tank company, attacks on a broad front to develop the situation.

d. The attack is made in three echelons on a front of 1,000 to 2,000 yards to provide necessary power for penetration. Each echelon consists of a tank battalion. Each battalion attacks usually with two companies in assault. Objectives are—

(1) *First echelon.*—Enemy machine guns and antitank weapons in forward areas, enemy artillery, enemy reserves, command posts, and rear communications.

(2) *Second echelon.*—Supports first echelon by fire and movement. Attacks hostile machine guns, antitank guns, and artillery passed over by the first echelon. Attacks hostile reserves and command posts.

(3) *Third echelon.*—Attacks enemy installations missed by other echelons. Used as a reserve for exploitation or pursuit.

e. (1) *First echelon of the attack.*—(*a*) When the situation is obscure, the light armored battalion supported by tank destroyer, artillery, and one or two medium tank companies, is the first echelon. The battalion attacks on a broad front and seeks enemy weakness. It may attack in conjunction with infantry.

(*b*) When the attack is made through a known weak link, a light armored battalion supported by artillery also constitutes the first echelon.

(2) *Second echelon.*—The second echelon is a medium armored battalion. Some of its elements may be attached to the first echelon. Tank destroyer units usually follow this echelon prepared to protect either flank or the rear. When the light armored battalion leads the attack, the second echelon passes through that battalion when heavy resistance is met which the light tanks cannot overcome.

(3) *Third echelon.*—The third echelon reserve unit consists

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of medium tanks. This echelon is usually followed by infantry.

■ 188. ENVELOPMENT.—The formation described in the preceding paragraph is suitable for envelopment. Either of the second or third echelons can be moved to the flank to envelope the enemy.

■ 189. PURSUIT.—*a. General.*—(1) The tactical employment of armored force units in pursuit is covered in chapter 2. The regiment may be employed in pursuit missions as part of the armored division combat command or it may be employed alone. If employed alone, it may be reinforced by the attachment of supporting units. The light tank battalion with reconnaissance, infantry, and engineers, because of its mobility, is usually used as the encircling force. If the entire regiment is used these units lead.

(2) The regiment in pursuit is best employed by using its speed and mobility to encircle a retreating enemy column and strike its head and flank or to seize critical localities to halt the retreating enemy. The mission is the complete destruction of the enemy. Strong hostile positions are avoided.

b. Communication and control.—(1) Because of the rapid movement and greater distances involved, communication with higher units may be difficult. Radio is the principal means of communication. Control by the higher commander may be facilitated by designation of routes to be followed and phase lines for establishment of liaison with other units or report to higher headquarters.

(2) Cooperation by observation and bombardment aviation is necessary in pursuit. This cooperation must be provided by higher headquarters. It assists the higher commander to control the regiment. It guides the regiment to its objectives and assists the reconnaissance company in locating hostile antitank threats. It also keeps the regimental commander informed of the progress of other friendly pursuit forces. It assists in overcoming local hostile resistances.

(3) Control and communication within the regiment is effected by the same means as in other forms of combat.

c. Reconnaissance.—The reconnaissance company precedes the regiment on normal reconnaissance missions. Due to the rapid rate of march of the regiment, opportunity for ground

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reconnaissance will be limited. Observation aviation is invaluable in directing the reconnaissance elements to points of greatest importance.

d. Scheme of attack.—The regiment attacks generally by the same methods previously described. Action is characterized by rapid and audacious thrusts. Time for detailed coordinated attacks is usually lacking. The action is similar to a meeting engagement.

e. Supply.—Supply of the regiment in this type of operation will be accomplished according to the division or higher plans. Essential supply and service sections of the regimental trains may accompany the regiment. Protection for these supply elements must be provided when necessary by attachment of combat elements from the regiment. The supply and replenishment of supply of a regiment on pursuit missions are very important factors. It may be necessary to place the supply trains in the center of the march column. Supply may be made by air transport.

■ 190. EXPLOITATION.—*a.* Exploitation is a mission of an armored division or larger force. Acting as a part of the division, the regiment, alone or reinforced, will have missions assigned to it by the division. The regimental commander must be thoroughly familiar with the general plan of action of the higher commander. Such an operation will usually involve rapid movement from an initial assembly area (position) through a breach in the hostile lines or around a hostile flank, to a selected assembly area in the hostile rear. Here it may be necessary first to dispatch the reconnaissance company quickly to verify the location of previously reported hostile objectives, or, if information is lacking, to seek out suitable objectives. In some situations advance information may be sufficient to warrant offensive action without delay. In any event, once the assembly area in the hostile area is reached, the entire regiment, or reinforced armored (tank) battalions from the regiment, will be dispatched against objectives with the least practicable delay. If the exploitation is to be made in depth, definite objectives in the hostile rear are assigned. The advance may be pushed rapidly with little attention given to mopping up enemy resistance encountered en route. In such cases the regiment passes around hostile resistance and marches rapidly on the final division ob-

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jectives. Control is decentralized until the objective is reached. (See FM 100–5.)

b. Supply of the regiment in this type of operation presents problems similar to those in the pursuit. Adequate supplies of ammunition and fuel must be carried.

■ 191. TRAINING WITH OTHER ARMS.—The regiment in combat attacks in close cooperation with the infantry, field artillery, engineers of the armored division, and attached tank destroyer units, as well as with attached observation and combat aviation. When operating alone as a reinforced regiment, it will have elements of some or all arms attached. It is essential that the regiment have units of other arms attached to it frequently in order that teamwork may be developed.

■ 192. DEFENSIVE COMBAT.—*a.* The employment of a light armored regiment to hold a defensive position is resorted to only in emergencies. In such cases, mutually supporting machine gun elements and antitank weapons form the framework of the defense. Where necessary, weapons are dismounted from combat vehicles and employed on the ground. The defense is elastic and characterized by the counterattack. It is conducted on mobile lines with covering detachments from the reconnaissance company operating to the front, on the flanks, and to the rear. Active and continuous reconaissance is necessary to know in time when, where, and in what strength the enemy will attack. The defensive area selected must be such as to take advantage of natural obstacles both in front and on the flanks. Obstacles or road blocks must be placed so as to canalize the main hostile attack. The bulk of the armored (tank) battalions is held in reserve in covered positions favorable for rapid employment. On the defense, tank units are usually held in reserve and given counterattack missions.

b. In the execution of delaying actions, the reconnaissance company, assault guns, mortars, and tank destroyer elements operate against the head of the advancing column while the light armored battalion attacks the hostile flanks and rear. The medium tank units are held in reserve to execute counterattack missions.

■ 193. NIGHT COMBAT.—Due to the difficulties of control and movement over unknown country in darkness without the

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use of lights, combat at night is avoided when possible. Vehicles which have occupied defensive positions in daytime can deliver fire at night with some effectiveness. Marches and movement into assembly areas will often be made at night. In night marches, the infantry and reconnaissance elements furnish the security for the regiment.

SECTION III

GENERAL

■ 194. BIVOUAC.—*a. General.*—The subject of bivouacs for armored force units is discussed in FM 17–50. The armored tank regiments normally bivouac in rear of protection provided by other arms (see fig. 23). In the armored division, the armored infantry regiment supported by artillery and the tank destroyer battalion will usually furnish the protection. However, in all bivouacs, regardless of location, advantage is taken of available cover and concealment, supplemented by camouflage measures. Each unit provides for its own local all around security. Positions are taken and all routes leading out of bivouac are reconnoitered, so that all vehicles can quickly leave the bivouac area in darkness without confusion. Vehicles enter a bivouac in one column, if possible, in order to minimize the number of tracks leading into the bivouac. All tracks are then covered or eliminated to prevent hostile air observation from noting them. Bivouac areas occupied in daylight may be changed as soon as it is dark.

b. Selection of bivouac areas.—Some of the tactical considerations which enter into the selection of a bivouac are:

(1) Suitable position for security, preferably in rear of natural obstacles.

(2) Concealment and cover.

(3) Good field of fire.

(4) Exits to the front and rear.

(5) Hard standings for vehicles.

c. Defensive measures.—In bivouac, the regiment is disposed for all around defense. Formations are irregular to confuse observation by air. Protection is afforded by blocking main avenues of approach and by establishing an outpost, located at critical points. Alternate bivouacs must be recon-

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noitered for use in case the ones occupied are discovered or fired on from the air or by hostile artillery.

■ 195. SUPPLY.—*a. General.*—(See FM 17–50.) The supply of an armored regiment in the field is difficult and extremely important. The supply problem directly affects every operation of the regiment. In planning operations and throughout each movement, the regimental commander must constantly consider the status of supply in his command. Ammunition, gasoline, oil, rations, and spare parts must be provided at all times. If possible, the vehicles of the regiment are serviced just prior to combat. Every precaution must be taken against running out of fuel just prior to or during combat.

b. Supply officer.—The supply officer (S–4) is a member of the regimental commander's staff and is directly charged with the supply of the regiment in the field. The consolidated unit trains of the regiment are employed under his direction.

c. Unit train.—The train of the regiment is normally organized as follows:

(1) *Echelon A.*—Those vehicles which are normally needed with the combat troops include the following: light maintenance trucks, ammunition, fuel, lubricant trucks, and medical vehicles.

(2) *Echelon B.*—Those vehicles which are not normally required with the troops. These are: Heavy maintenance trucks, kitchen and combat equipment trucks, and engineer bridge trains. In certain situations these vehicles may accompany the regiment. Part or all of the rear echelon vehicles may be marched under division control.

d. Protection of unit trains.—Armament is provided for local protection of the unit train against air and ground attack. However, neither organic personnel nor armament is sufficient to adequately protect the train vehicles against a determined attack. If the regiment is operating independently in hostile territory, it may often be necessary to detail a train guard from combat units to insure that supplies get through to the regiment. However, motorized infantry or other troops should be provided by higher authority to protect the trains.

e. Disposition for combat.—Prior to combat, after vehicles

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are serviced and the personnel fed, rear echelon B vehicles, except maintenance and medical vehicles, revert to the control of the supply officer and are moved to the rear echelon bivouac. During combat, rear echelon A vehicles usually remain at the regimental service park.

■ 196. EVACUATION.—The regimental medical detachment is organized to establish a regimental aid station and an aid station for each armored (tank) battalion. During the attack, these stations are located at the regimental service park or other establishments in rear of the line of departure. After an attack, these stations may be moved forward to the battalion or regimental rallying points. Evacuation is made by the division medical battalion. (See FM 8–10.)

■ 197. MAINTENANCE.—See chapter 6.

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CHAPTER 8

RECONNAISSANCE BATTALION, ARMORED

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SECTION 1

GENERAL

■ 198. ORGANIZATION.—The reconnaissance battalion of the armored division consists of the following: a battalion headquarters and headquarters company; three armored reconnaissance companies; one tank company, light; and an attached medical detachment.

■ 199. MOBILITY.—The reconnaissance companies are mounted in wheeled vehicles (armored reconnaissance cars) and their cross country mobility is limited by the type of vehicle with which they are equipped. This fact should be borne in mind when assigning missions to this battalion. Under normal conditions of terrain, these companies and their elements will operate very largely on roads.

■ 200. FUNCTIONS.—*a.* In the armored division, the division commander depends upon the picture built up by his reconnaissance agencies, both ground and air, as the principal foundation upon which to formulate his plans in a rapidly moving situation. This is generally accomplished without the benefit of any personal reconnaissance. The reconaissance battalion is organized and equipped for the specific purpose of providing, in conjunction with the air corps, this picture of the enemy situation.

b. The primary function of the reconnaissance battalion is the gathering of information, both positive and negative, and the prompt transmission of this information to the division commander. The reconnaissance battalion as a general prac-

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tice seeks to avoid combat. However, there will be many occasions when it will be necessary to fight to obtain the desired information. It is essential that the battalion does not become so involved in combat that it will require the use of other units of the division to extricate it. Under such a situation, the effectiveness of the battalion is materially reduced.

c. In the tactical employment of the reconnaissance battalion, it is essential that *all* personnel of the battalion be thoroughly familiar with and understand their specific mission and also that of the battalion. This is essential because the crew of individual vehicle, in many situations, will be wholly on their own. Carrying out its mission the action of the battalion is aggressive, roving, but not foolhardy. When there is sufficient time, it will operate by stealth and avoid combat when possible. When time is a factor, it will not hesitate to fight for information.

■ 201. DEPTH AND FRONTAGE.—The reconnaissance battalion operates at varying distances up to one day's march (100 to 150 miles) in front of the division. The battalion can reconnoiter a front of from 30 to 50 miles and at the same time move forward at from 10 to 15 miles per hour. Thus, if the rate of the forward movement of the reconnaissance battalion is increased, the front that it reconnoiters must be decreased. Conversely, if its normal frontage is decreased, the rate of the forward movement may be increased. A platoon of the reconnaissance company can normally cover a front of about 5 to 7 miles. The number of roads to be reconnoitered by a reconnaissance company and its elements will influence the front that can be efficiently covered and also the speed of the forward movement. The more dense the road net, the less the frontage covered and the slower the rate of forward movement. Hostile counterreconnaissance and security detachments in proximity to a large enemy force may delay this rate of advance to from 3 to 5 miles per hour. Finally, in determining detailed information of the enemy main body, the rate of reconnaissance may be slowed to the speed of dismounted scouting. The figures given are a general guide only, and vary greatly according to the terrain and to the hostile resistance encountered.

■ 202. METHODS OF EMPLOYMENT.—*a.* The action of the re-

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connaissance battalion must be aggressive and continuous. It is characterized by speed in decision and mobility of action. It is not sufficient merely to gain contact with the foremost hostile elements. Reconnaissance must seek to identify hostile units and determine their dispositions and flanks. Where practicable and when the tactical situation so demands, reconnaissance elements should, by avoiding or brushing aside hostile counterreconnaissance and security elements, locate hostile artillery positions, trains, routes of supply, centers of communication, and any other rear installations which may become an objective of the armored division. In seeking this information reconnaissance elements must not become so involved in combat with hostile troops that the engagement cannot be promptly broken off; also, a route of withdrawal must be assured. In some instances it will be necessary to employ other troops of the division to develop the situation and facilitate the obtaining of this information.

b. Contact once made with the enemy is retained, day or night.

c. Reconnaissance is fully as important on the defensive as on the offensive.

d. The inability to determine *all* items of information of the enemy and of the terrain requires that reconnaissance be concentrated on those which are essential.

■ 203. MISSIONS.—*a.* In assigning missions other than reconnaissance to the battalion, the division commander considers the availability and location of other troops more suited to perform these missions and the relative importance of the mission and of reconnaissance. The reconnaissance battalion destroys hostile centers of communication, raids and damages hostile air fields, captures enemy headquarters, or holds a terrain feature when these actions do not interfere with or delay reconnaissance and will further the plan of the commander.

b. Under no circumstances will the reconnaissance battalion be considered a security detachment such as an advance guard of the division. These duties are performed by other units of the division and in the same manner as if the reconnaissance battalion were not out in front of the division. However, the reconnaissance battalion must provide for its own local security.

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c. When the division is moving under cover of darkness, reconnaissance is pushed out during daylight to a line beyond the expected bivouac location of the division. A line of observation is established during the hours of darkness to warn of the movement of hostile troops that might interfere with the march or bivouac of the division.

■ 204. COOPERATION BY OBSERVATION AVIATION.—In order to properly utilize the potential value of the reconnaissance battalion, there must be close cooperation between the battalion and the aviation attached to the division. This indicates the necessity of these organizations frequently training and operating together.

■ 205. ATTACHED ENGINEERS.—In all operations the reconnaissance platoon of the engineer battalion of the armored division is attached to the reconnaissance battalion. It assists the advance of the battalion by removing obstacles, road blocks, and mine fields which cannot be detoured. It transmits to the engineer battalion the information necessary for the engineer battalion to make timely preparation for the repair of roads and bridges to be used by the division. This platoon likewise prepares road blocks and demolitions to delay or halt hostile forces.

■ 206. SUPPORT FROM OTHER UNITS.—*a.* When it is impossible for the reconnaissance battalion to break through the enemy groups and detachments to obtain the desired information, the division commander may attach other troops in sufficient strength to brush aside or drive back the hostile groups and thus assist the reconnaissance battalion to accomplish its mission.

b. The attaching to the reconnaissance battalion of liaison personnel in radio equipped vehicles from each of the reconnaissance companies of the light armored regiments will greatly facilitate the employment of these companies in their normal reconnaissance duties. This attachment may aid regimental commanders in receiving more timely information of the existing terrain and tactical situation.

c. When practicable, an air corps liaison officer and an artillery liaison officer accompany the reconnaissance battalion in tactical situations. The presence of these officers with the reconnaissance battalion materially assists in the prompt and effective employment of their respective arms.

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Liaison officers accompanying the reconnaissance battalion will provide their own communications facilities and channels.

SECTION II

RECONNAISSANCE

■ **207. ROUTES, ZONES, AND AREAS** (see ch. 2).—The reconnaissance battalion commander's instructions to each of the reconnaissance companies must clearly define the routes they are to follow, the zone or area of responsibility, and the limit of reconnaissance.

■ **208. ROUTINE DETAILS.**—*a.* The following may well be considered routine subjects upon which information will be obtained and reported appropriately under the varying conditions encountered and will be found present to a greater or lesser degree in all situations:

(1) *Hostile ground forces.*—Location, time, composition, direction of movement or disposition, and identification.

(2) *Hostile aircraft.*—Location, time, type, altitude, and direction of flight.

(3) *Obstacles, demolitions, mines, and contaminated areas.*—Location, character, extent, and means of avoiding them.

(4) *Routes and bridges.*—Type, condition, load, and traffic capabilities, necessary repairs, and availability of repair materials.

(5) *Continuing brief estimate of terrain.*—Fordability of streams, areas unsuited for tank employment, commanding ground, defiles, and suitable bivouac areas.

(6) *Landing fields.*—Location, type, suitability, condition, and repairs necessary.

(7) *Supplies and resources.*—Location, type, quantity, and condition; particularly of fuel and lubricants, water and food, abandoned military stores, transportation and construction material.

(8) *Utilities.*—Water, sewage, electric power, gas, communications, railroads, and shelter; their condition, capacity, and repairs necessary.

(9) *Any other information specifically requested.*

b. The timely reporting of this information as follows:

(1) Information listed under subparagraphs (1), (2), (3), and (4) above, insofar as it applies to the unsuitability of

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selected routes for division loads, and any information especially called for in orders will be reported by the most expeditious means as soon as obtained.

(2) All other information will be noted in writing or marked on a map, when obtained, consolidated by companies and submitted by messenger to the battalion command post.

(3) Engineers, when attached, will normally report, in part at least, on information listed under subparagraphs (3) to (8) above, inclusive. Copies of their reports are submitted to battalion headquarters.

c. These missions will be performed in varying degrees of detail by different echelons of reconnaissance, depending upon the proximity of hostile forces. For instance, the battalion will report initially on only the more important routes in its zone and whether or not they will support division loads; the less important routes are left to be covered by the regimental reconnaissance echelon. Before coming in close contact with the enemy, the report of terrain may be very general, including only such items as stream crossings and defiles; in contrast while in proximity to the enemy, areas unsuited for tank employment, observation, cover and concealment, and routes, must be reported in the most minute detail.

■ 209. METHODS.—Although it may be considered that the reconnaissance performed by the battalion is a mounted reconnaissance, in reality a great deal of the actual reconnoitering is done by dismounted personnel, especially after contact has been made. The vehicle will be placed in a concealed position where it can provide covering fire for personnel engaged in dismounted reconnaissance. It will often be necessary, particularly at night, to resort to dismounted reconnaissance for detailed information. Dismounting for the purposes of detailed reconnaissance has particular application to the scout sections of the reconnaissance platoons. In the performance of this dismounted reconnaissance, the provisions of FM 21–45 apply. Details and methods of mounted scouting and patrolling will be found in chapter 3.

■ 210. STRENGTH OF DETACHMENTS.—*a.* The reconnoitering missions are normally performed by the reconnaissance companies of the battalion which may be reinforced by detachments from the tank company, and by attached engineers.

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The strength of these attached elements is dependent upon the particular situation and information available.

b. Economy of force.—Due to the arduous nature of reconnaissance duty, the minimum of troops necessary from each company to perform the assigned mission will be employed, and every opportunity will be utilized to allow personnel to rest and for the servicing of equipment. If this is not done, the unit soon will become ineffective. Normally a reconnaissance company will retain at least one of its reconnaissance platoons in reserve ready to relieve one of the platoons on duty. Only under exceptional circumstances will a platoon be kept on continuous reconnaissance for a period longer than 24 hours, usually for a much shorter period.

■ 211. CONTROL.—*a.* The advance of the reconnaissance elements will be regulated by the designation of phase lines, or of objectives, and the time for the passage of those lines. Phase lines are usually selected at well defined terrain features such as a river, a railroad, or a highway, and are spaced from 1 to 2 hours apart. Their use should not delay reconnaissance. When it is impracticable to designate phase lines or objectives, a rate of advance may be indicated.

b. Normally, lateral communication between reconnaissance elements is obtained by contact on phase lines, or at designated contact points.

■ 212. CLOSE AND BATTLE RECONNAISSANCE.—*a.* As contact is made with hostile forces the resistance to the forward movement of the reconnaissance battalion will, in most cases, gradually increase, and thus slow its rate of advance. The division then closes on its reconnaissance. As this occurs, it is essential that the detailed reconnaissance of the terrain and of the enemy dispositions be intensified so as to enable the division commander to make more detailed plans for the tactical employment of the division prior to making contact with the hostile main forces.

b. As the distance between the division and the reconnaissance battalion is further closed, and the regimental reconnaissance companies and security detachments of the several columns make physical contact with the elements of the reconnaissance battalion, the latter may gradually be shifted to one or both flanks to continue reconnaissance, directed at the enemy rear and rear areas, or to go into division reserve.

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c. When the reconnaissance battalion goes into division reserve, the battalion commander should formulate his plans for the future employment of his battalion in the pursuit or the withdrawal, depending on how the situation as a whole develops.

■ 213. TRANSMISSION OF INFORMATION.—*a.* The most valuable information is wholly valueless unless transmitted to the higher commander in ample time to be of use. Often information, which in itself appears to be of slight value, when considered in connection with other information becomes of the utmost value. Therefore, *all* information obtained must be forwarded with a minimum of delay consistent with the tactical situation.

b. Elements of the reconnaissance battalion are well supplied with the means of transmitting this information. Some of these means are: radio, motorcycle messenger, airplane-radio, panels, and dropped and pick-up messages. Impressed motor transportation for messengers and commercial telephone and telegraph may be used.

c. From information furnished by the Air Corps, and reports from his reconnaissance detachments, the reconnaissance battalion commander is able to determine where he should place more strength and what features or areas require more detailed or special reconnoitering. The battalion commander does not transmit his own evaluation of information obtained, but does transmit information, verified where practicable, in such manner as to present a true picture.

d. Not only must all information be promptly transmitted to the higher echelons, but the higher echelons must promptly transmit pertinent information to subordinate elements.

■ 214. COMMUNICATION.—The reconnaissance battalion will normally designate its own and company axes of communication and points where contact will be effected between adjacent organizations. Similarly, companies will designate axes or routes and contact points for their separate platoons. The designation of axes of communication facilitates the location of command posts by messengers. At contact points, elements will exchange confirmation copies of radio messages sent since last contact and any information gathered that was not transmitted by radio. This information will be

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transmitted to company headquarters where it will be consolidated and forwarded by appropriate means to battalion headquarters.

■ 215. STANDING OPERATING PROCEDURE.—In order to conserve time in the issuance of instructions and at the same time insure thorough and proper instruction in reconnaissance duties, a well thought-out standing operating procedure should be set up in each organization guided by the considerations outlined in paragraph 208.

SECTION III

SECURITY

■ 216. GENERAL.—*a. Responsibility.*—In every tactical situation the commander is directly responsible for the security of his command. This security extends to the front, flanks, and rear, depending on the situation. It includes security from attacks by air and by motorized and mechanized enemy.

b. Means.—Reconnaissance platoons and detachments provide their own security against surprise and ambush by means of motorized scouts, by movement, by avoidance of dangerous areas, by use of dismounted scouts, or by "leap-frogging" (one element, from a protected location, covering the forward movement of another element). Normally elements of the armored (tank) company provide march security for battalion headquarters. At night, operations will habitually be without lights, or with tactical lights only. Display of open lights is not permitted.

c. During halts.—During temporary halts, march outposts furnish the security. For protracted halts, outposts are usually detailed from the tank company. Formations will be adopted to facilitate protection. Maximum use will be made of cover and concealment to prevent hostile observation from ground and air.

SECTION IV

MOVEMENT

■ 217. TACTICAL MARCHES.—*a.* In a tactical situation the reconnaissance battalion will seldom march as a unit. If it does, and if marching alone, it will establish reconnaissance and security measures appropriate to the situation.

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b. Normally the reconnaissance battalion moves and operates on a broad front (30 to 50 miles), with two of the reconnaissance companies, reinforced, operating in its designated zone. Usually battalion headquarters and trains will follow some centrally located route protected by elements of the tank company and the reconnaissance company which are held in reserve.

c. Movement is by bounds. Halts are made on previously designated phase lines or terrain features. Vehicles are spaced not less than 70 yards apart to reduce vulnerability to air, antitank, or artillery fire.

d. Locations selected for halts should have cover for all vehicles from both fire and observation. If no cover is available, vehicles will be dispersed, to take advantage of accidents of the terrain and the use of camouflage. In either case they are so located as to provide mutual protection.

■ 218. ADMINISTRATIVE MARCHES.—*a.* The company is the march unit.

b. The reconnaissance battalion will normally march as a serial, with the forward echelon of battalion headquarters leading. The combat vehicles of the four combat companies follow, maintenance vehicles being with their respective companies. Headquarters company with the rear echelon of battalion headquarters and the administrative, supply, and remaining maintenance vehicles of the battalion usually march at the rear of the battalion. In exceptional circumstances the rear echelon may be ordered to march with the consolidated trains of the division. In a march of several days, the order of march of the companies within the battalion is rotated.

c. March rates seldom exceed the limits set by local traffic laws. Minimum distances in yards between vehicles is determined by multiplying the speedometer rate by two or three. All personnel assist in the free flow of civilian traffic up and down the column. Upon approaching a town or congested area the rate of march at the head of the column is reduced early enough to permit the column to close without increasing speed. Reduced distances are maintained while passing through such locality to prevent the march unit from being broken by other traffic and unduly delayed or a part of it lost.

d. If for any reason the announced march route is changed,

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all elements must be informed. This applies especially to any elements which may be following at some distance, such as trains or maintenance vehicles.

e. For complete details pertaining to marches, see FM 17–50 and 25–10.

f. Motorcyclists handle traffic so as to insure maximum safety for both military and civilian traffic and the uninterrupted march of their units. For complete details for traffic control, see FM 17–50 and 29–5.

SECTION V

COMBAT

■ 219. EMPLOYMENT.—*a. The fight for information.*—When the hostile resistance is such that the reconnaissance companies cannot break through or drive back the hostile groups to obtain the desired information, and when *time* is a primary factor, it will be necessary to resort to "reconnaissance in force," to obtain the desired information. The reconnaissance company, assisted by the tank company or elements thereof, is well suited for this task. Combat by units of the reconnaissance battalion may take place during reconnaissance, pursuit, or while engaged in delaying the enemy. It is characterized by brief encounters with small hostile elements and by harassing action over a wide front and against the flanks and rear of larger units.

b. Fire and movement.—When engaged in combat, the action is by fire and movement, that is, one element supporting by fire the movement of another element.

c. Seizure of key position.—The reconnaissance battalion may be employed to seize and hold an important terrain feature pending the arrival of other troops of the division when it is recognized that control by the enemy would adverseiy affect the plan of the division or higher commander; when the position or area cannot be attained by other elements either because of time or distance; and in other emergency situations.

d. Pursuit.—When the division engages in a pursuit, the reconnaissance battalion operates with the encircling force. It gains contact with the retreating columns; operates on their flanks; locates routes that will enable them to reach the heads of these enemy columns; find and report on routes that

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will enable the encircling force to avoid obstacles and hostile security elements; and locate key positions from which the encircling force may operate against the heads of the retreating enemy columns and thus facilitate the destruction of the enemy by the direct pressure forces. This reconnaissance during a pursuit must be pushed with great vigor. (See also FM 100–5.)

e. Retrograde.—In a retrograde movement, the reconnaissance battalion operates on the hostile flanks to establish road blocks, and to locate, harass, and delay hostile pursuing forces. Withdrawal must be effected before becoming too closely engaged. The delaying force must be kept constantly informed of the progress of the hostile troops. Contact is maintained and enemy progress reported by elements of reconnaissance companies observing the hostile route of march from positions along the flanks. These detachments harass the enemy by firing into the flank of the hostile force and quickly retiring to other points of observation. During a retrograde movement there will be frequent opportunities for elements of the reconnaissance battalion to prepare well planned ambushes into which enemy troops, especially security groups, can be drawn and then annihilated. The tank company may be used with the delaying force, or moves on routes parallel to the hostile route prepared to crush enemy security forces or other small groups. Unit commanders will ordinarily be given mission type orders in an action of this nature. Every means of communication will be used to effect coordination and control. Air cooperation is invaluable in maintaining hostile and friendly contact and in reporting targets of opportunity. This cooperation is not restricted to observation aviation but envisages the utmost use of combat aviation to operate against the heads of enemy columns and reconnaissance elements.

SECTION VI

EVACUATION

■ 220. GENERAL.—*a. Sick and wounded.*—First aid is administered by the vehicle crew and the medical detachment aid men assigned to the company. In tactical situations, an ambulance or personnel carrier and necessary personnel from the battalion medical detachment is attached to each of the

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reconnaissance companies. When impracticable to transport casualties they are left in a sheltered place and their location reported to the division medical service.

b. Prisoners.—Prisoners are retained by elements until transportation is available to evacuate them. Prisoners from whom important information may be obtained are sent to battalion headquarters as soon as practicable. When the number of prisoners is large, they are placed under guard and their location reported for collection. Prisoners must not be allowed to delay the operations of reconnaissance elements. Prisoners may be disarmed, searched, and started toward the rear under a very small guard.

c. Material.—Captured documents of importance are sent to battalion headquarters as soon as practicable. Captured matériel, equipment, stores, and transportation will either be secured, rendered unserviceable, or destroyed, as ordered by higher headquarters.

SECTION VII

BIVOUAC

■ 221. HALTS.—*a. Tactical.*—The battalion may bivouac as a unit, but will usually bivouac in small detachments widely dispersed. Cover and concealment are essential. Buildings afford excellent places for command posts, maintenance shops, and shelter. Vehicles are so disposed that they may be rapidly driven out of the bivouac area in daylight or at night. If a concealed bivouac is occupied during daylight, care must be exercised that tracks made going into the bivouac do not disclose its presence. A new bivouac should be secured and occupied after nightfall. (See also FM 17–50.)

b. Administrative.—Administrative bivouacs will be occupied as ordered by the battalion or division commander.

SECTION VIII

SUPPLY AND MAINTENANCE

■ 222. GENERAL.—*a. Requirements.*—The supply, maintenance, and evacuation problems of the reconnaissance battalion are among the most difficult of any unit in the division. This is because the battalion operates over such a wide frontage at a considerable distance ahead of division installations.

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b. Supplies.—Organically the battalion carries sufficient ammunition on its combat vehicles for at least two days of reconaissance. Enough fuel and lubricants are carried on the vehicles and with the companies to travel 100 miles; the battalion train will carry enough for another 100 additional miles of travel. One day's field ration is with the man, one on the kitchen, one on the unit train, and one field ration on the division train.

c. Trains.—Companies will normally be accompanied by armored maintenance vehicles and a 2½-ton truck (carrying extra fuel). Other noncombatant vehicles will be consolidated with the battalion train which may accompany battalion headquarters which moves by bounds.

d. Operation at night.—Under cover of darkness, the battalion will dispatch company kitchens, fuel, lubricants, and other supplies to the companies. Also during darkness a detachment of the division train will contact the battalion at some forward rendezvous, the situation permitting, to replace the day's expenditures.

e. Maintenance.—Vehicles that cannot be repaired by forward company maintenance will be left under guard and the battalion notified of their exact location and diagnosis of repairs needed. The battalion maintenance officer will contact these vehicles by repair-crew or wrecker or arrange for repair by higher echelon.

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CHAPTER 9

HEADQUARTERS COMPANY, ARMORED

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SECTION I

GENERAL

■ 223. MISSION.—The mission of the headquarters company and detachment is to furnish personnel and equipment to assist the commander and his staff in the control, administration, and supply of the unit.

■ 224. ORGANIZATION.—*a.* This chapter applies to the headquarters and headquarters company of the armored corps; armored division; armored regiment (tank); armored battalion (tank), light and medium; the armored reconnaissance battalion; the GHQ tank group; and GHQ tank battalions, light and medium. The organization and size of the company vary with the unit concerned, each organization being fitted to the needs of its unit. In general the organization consists of a unit headquarters, for furnishing personnel for the commander and his staff; a company headquarters, for administration and supply of the company; a tank platoon; a reconnaissance platoon or section; a communications platoon or section; a transportation platoon or section; a maintenance platoon or section; and in some units a mortar platoon and an assault gun platoon.

b. Current tables of organization describe the organiza-

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tion in detail. This chapter deals with the duties of the personnel and the tactical employment of the unit. Succeeding sections deal with specific organizations.

■ 225. TRAINING.—Basic training requirements for the individuals of the headquarters company are the same as for the men of other elements of the unit. This training is conducted under the supervision of the company commander. Technical and tactical training is conducted under the supervision of the staff officer to whose section the individual is assigned or the officer who commands the platoon or the section.

■ 226. COMPANY HEADQUARTERS.—Company headquarters contains personnel for the control and the administration of the company and for the supply and the messing of both the headquarters and the company. It is divided into a command group and a supply and administration group.

a. The command group in general consists of the company commander, the executive officer, the first sergeant, and certain orderlies and chauffeurs.

b. The administration and supply group consists of the supply sergeant, the mess sergeant, the company clerk, cooks and cooks helpers, and basic privates.

■ 227. UNIT HEADQUARTERS OR STAFF SECTION.—*a. General.*—The staff section furnishes enlisted personnel for the various staff sections of the headquarters.

b. Administration or personnel section.—The adjutant is in charge of this section and the sergeant major is his principal enlisted assistant. The sergeant major performs such duties pertaining to administration as may be directed by the adjutant. He must have a good knowledge of army and administrative regulations and military correspondence. He keeps himself informed of the strength and the location of all units of the command. He supervises under the direction of the adjutant the preparation of correspondence and personnel reports and the filing of administrative records, orders, bulletins, and other matter received and issued by the unit. He may be assisted by a personnel sergeant major. Such clerical assistants as necessary are detailed to the personnel section. In combat the personnel section is with the rear echelon of the headquarters.

c. Intelligence.—The intelligence section is charged with

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the planning and preparation of orders for the collection of enemy information; it evaluates, interprets, and distributes this information; and in larger units it is concerned with counterintelligence activities. This section is assigned clerical assistants, scouts, and reconnaissance personnel. The intelligence sergeant is the chief enlisted assistant of the intelligence officer. He keeps the situation map and section journal. He prepares routine reports as directed by the intelligence officer. He trains clerks, messengers, enlisted scouts, and other personnel in intelligence duties. He must be trained in map and aerial photograph reading, sketching, and drafting; in the collection, evaluation, interpretation, and distribution of information of the enemy; in the establishment of observation posts; in reconnaissance; in examination of prisoners of war and enemy deserters; and in the search for and the examination of enemy documents.

d. Operations section.—The operations and training section is charged with those functions of the staff which relate to organization, training, and combat operations. The section is furnished with such clerks and other specialists as are necessary for its operation. The operations sergeant is the assistant to the operations officer, G–3 or S–3. He keeps the necessary operations maps and records data for the journal and diary. He trains clerks in operations duties. He must be skilled in map and aerial photograph reading, sketching and drafting, and in the technique of preparation of combat orders. He must be able to prepare march graphs and march tables.

e. Supply.—The supply section is charged with the preparation of policies and the supervision of execution of arrangements for supply, evacuation, transportation, and other administrative matters related thereto. In the light and the medium armored regiments, the service company furnishes personnel for the supply section. In other organizations this personnel comes from the headquarters company. The supply sergeant (not to be confused with the company supply sergeant) is the principal enlisted assistant of the supply officer and performs such duties as may be prescribed by that officer. He must have a knowledge of the system of supply of units in the field, and of the receipt, storage, issue, and care of supplies. He must know how to prepare all papers pertaining to supply. He must be trained in the use of rail

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and motor transportation, and in the methods of billeting and of establishing camps and bivouacs. He keeps himself informed of the location of all units of the organization, of the state of their supply, of the location of supply installations, and of current traffic circulation instructions.

■ 228. COMMUNICATIONS.—*a. General.*—In units up to and including the armored regiment and GHQ tank group, communications personnel are a part of the headquarters detachment or company. The armored division has a signal company and the armored corps will usually have attached to it a signal battalion. Discussion in this chapter is limited to the communications personnel and equipment in the headquarters companies.

b. Means of communication.—Communication elements of the armored units are equipped with part or all of the following communication means: radio, messenger, panels, telephone, flags, lamps, and pyrotechnics. In addition pigeons may be used. Frequently airplanes will be assigned for courier or pick-up service. Motorcycle or other motor messenger and radio are the most frequently used means of communication. For short distances a motorcycle messenger is faster than radio.

c. Communication personnel.—(1) The communications officer is responsible to the unit commander for the training, operation, and maintenance of all communication agencies within the unit. He must have a practical working knowledge of the methods of communication used by all units with which the armored force may operate. He is responsible for the execution of the details of communication between his unit and the next higher and lower units. He makes recommendations for and supervises communication with subordinate units in accordance with the approved communication plan. His duties are prescribed in FM 24–5 and 101–5.

(2) *Communication chief.*—The communications chief is the enlisted assistant to the communications officer and performs such duties as that officer directs. He must be a highly trained technical man as well as a leader. He must be thoroughly familiar with the preparation, issuance, and execution or signal operations instructions and signal annexes; with message center procedure; and with the operation, inspection, and maintenance of all communication facilities of the unit.

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He must be a qualified radio operator. He assists the communications officer in the conduct of unit communication schools and in the instruction of communication personnel.

(3) *Message center chief.*—The message center chief may be in the communications platoon or the staff platoon. The message center, however, is under the supervision of and operates directly under the communications officer. The message center chief must be thoroughly familiar with message center procedure and the preparation of records and reports. He keeps himself posted on the location of higher and lower headquarters and the means of communication available. He dispatches messages by the most rapid means consistent with secrecy. He is responsible for the prompt dispatch of messages entrusted to him. The messengers and code clerks are under his control.

(4) *Clerk, panel and code.*—This man, usually a noncommissioned officer, encodes and decodes messages and displays panels for air-ground liaison. He is an assistant to the message center chief.

(5) *Sergeant, radio supply.*—This man is responsible to the communications officer for the preparation of requisitions and the inspection, repair, and maintenance of radio sets.

(6) *Radio electrician.*—This man assists in the inspection of radio equipment and makes repairs in conformity with existing regulations.

(7) *Messengers.*—These men, usually mounted on solo motorcycles, operate either directly under the message center chief or may be assigned to a staff officer. On the march a motorcycle messenger follows immediately in rear of each staff vehicle. These men must be trained thoroughly in map reading.

(8) *Radio operators.*—Beside being radio operators, these men must be able to encode and decode messages.

(9) *Radio tenders.*—These men operate the voice radio sets for the commander concerned when that commander is not operating the set himself.

d. Message center procedure.—(1) *General.*—FM 24–5 prescribes message center procedure in detail. Armored force units operate under conditions that require wide variation from standard message center procedure. The organization and operation of message centers in units of the armored

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force below the division and in the GHQ reserve tank group and battalion are based upon the following:

(*a*) Command echelons are each distributed in several vehicles. Voice radio and messengers are available for intra-staff communication. Command, air-ground, liaison, and other radio nets are controlled from the vehicle of the staff officer concerned.

(*b*) Tank battalions and their components use voice radio. The commander usually operates this radio.

(*c*) The message center consists of the communications officer, the communications chief, the message center chief and assistant, and the radio operators. Each radio equipped vehicle constitutes a section of the organization message center. Persons riding in the vehicle may be called upon for assistance in encoding and decoding messages.

(*d*) No forms other than the message book are required except that in vehicles carrying a radio operator the radio log sheet is kept.

(2) *Incoming messages.*—Incoming messages are handled as prescribed in FM 24–5.

(3) *Outgoing messages.*—The procedure is as outlined below.

(*a*) The writer of a message furnishes two copies to a representative of the message center. On the march, in the assembly area, or during combat, this representative may be the radio operator in his own car or he may be a messenger called for the purpose from the command echelon. In bivouac a more formal message center organization is established and operation corresponds more closely to that prescribed in FM 24–5.

1. *Delivery by messenger.*—The messenger receives two copies from the writer or the message center, delivers the message to the addressee, obtains a receipt, and returns the receipt to the writer or the message center. The receipt consists of the addressee's initials and the time received written on the duplicate copy.
2. *Transmission by radio.*—Normally messages to be transmitted by radio originate in the vehicle carrying the radio station involved. The writer of a message hands two copies to the radio operator who transmits the message, services it in duplicate, files the original, and returns the duplicate

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to the writer. If the message is destined for a radio station in another net, the writer sends the message by any appropriate means to the proper car or operator. The operator handles it as above.

3. *Other means of transmission.*—When other means of transmission, such as signal light, airplane pick-up, panel, telephone, or pigeon are employed, the message is given to the proper message center representative or operator who completes arrangements for transmission. The receipted or serviced duplicate is returned to the writer when the message has been transmitted.

(*b*) Since it is impossible to establish a single complete message center throughout mobile situations, message center numbers are not used. The writer of a message who wishes to check on its delivery refers to it by its context or by the time signed.

(*c*) Since it is desirable to have a single file of all messages originating in an organization or delivered thereto, the individual vehicle files of messages are turned over to the message center chief of the organization whenever a suitable opportunity presents itself.

(*d*) Officers and enlisted men handling messages exert every effort to prevent messages in clear from being filed with the same messages in code. If possible they are filed in separate vehicles. Commanders destroy copies of all messages when contact with the enemy is imminent.

(*e*) When messages are transmitted by voice radio by the originator himself, he makes such notes as to context and time transmitted as he deems necessary. Such notes are placed in the vehicle file for eventual delivery to the message center chief.

e. Communication in bivouac.—In bivouac, communication may be by radio, messenger, telephone, panels, lights, and any other means of communication with which the unit is equipped. When the unit is in bivouac, especially in proximity to the enemy, use of radio is either prohibited or limited to stations set up at least five miles outside the bivouac area. The armored division and the GHQ reserve tank group communications agencies are equipped with telephones and telegraph instruments. These may be used, when a bivouac is to be occupied for an extended period, for temporary

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connection with commercial telephone lines, and when a higher unit lays a telephone line to the headquarters. The GHQ reserve tank group are not equipped to lay wire circuits to subordinate units. Foresight in planning the location of command posts with respect to each other will greatly facilitate communication in bivouac.

f. Communication during advance.—During the advance, communication is usually limited to messenger and contact airplane when in the proximity of the enemy. Radio silence, especially during the hours of darkness, is usually observed by all units except reconnaissance elements. Receivers are kept on although transmission is prohibited.

g. Communication in offense.—(1) *The attack.*—During the attack, communication within the battalion is usually by voice radio in the clear or by flag signal. Short code words or letter groups may be used for brevity. Such a code must be simple and the number of groups small. The commander usually uses the radio himself. The radio operator (tender) copies for future reference any important orders and other messages sent or received. Communication other than within the battalion may be by radio, messenger, or contact airplane. Radio is the primary means of communication and voice is ordinarily used except for long distances. Information of the enemy is sent in the clear. Orders are usually sent in brevity code or secret code. Short orders during combat are in the clear when execution is to be immediate. When detailed orders are sent, messengers or pick-up message are utilized for secrecy. To send a long order by radio requires too much time for encoding and decoding.

(2) *Exploitation.*—In exploitation, the principal means of communication is by radio. All messages may be in the clear except for perhaps the use of a map code and a brevity code. Motorcycle messengers may be used. A contact airplane is of great assistance in such operations. Battalions depend primarily on voice radio.

h. Communication on defensive.—On the defensive, armored units usually are held in reserve. Radio silence is preserved and communication is primarily by messenger. The GHQ reserve tank groups may have telephone and telegraph communication with higher units. When the units are used for counterattack, the system of communication discussed in (1) above applies.

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i. Communication in retrograde movement.—In retrograde movements radio is used to the fullest extent until contact is broken and the retirement is begun. Radio silence is then usually preserved.

■ 229. TRANSPORTATION.—Transportation for personnel is usually within the sections to which such personnel is detailed. However, the armored reconnaissance battalion headquarters and headquarters company has a small transportation platoon for supply of lubricants and rations. The GHQ reserve tank group and battalions have transportation platoons to furnish transportation for the headquarters company. The transportation platoon of the GHQ tank battalions contains vehicles for supply of the battalion.

■ 230. RECONNAISSANCE.—Each headquarters contains reconnaissance personnel for local reconnaissance. The armored battalions and GHQ tank battalions have a small reconnaissance platoon. These operate usually for close and battle reconnaissance.

■ 231. MILITARY POLICE.—The division headquarters company has a small military police section that is under the control of G–3. The military police platoon is in the service company.

■ 232. ECHELONS OF THE HEADQUARTERS.—The headquarters is divided into two echelons, forward and rear. The forward echelon consists of the staff agencies and command facilities immediately required by the commander for assistance in tactical operations. The rear echelon consists of the administrative and the supply agencies of the unit.

■ 233. COMMANDER'S GROUP.—The commander's group is part of the forward echelon of the headquarters. It consists of such personnel and equipment as the commander may desire. It is the group that accompanies the commander when he leaves the command post and moves forward to combat, or when he visits higher headquarters. The rest of the forward echelon is known as the command post group.

■ 234. COMMAND POST.—*a.* The command post is defined as the forward echelon of the headquarters and also as the location of that echelon. It consists of the operations and the intelligence sections and such communication facilities and transportation as are necessary. In the larger headquarters,

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representatives of the administrative and the supply sections are present at the command post.

b. On the march the command post moves at the head of the unit or between the head of the main body and the

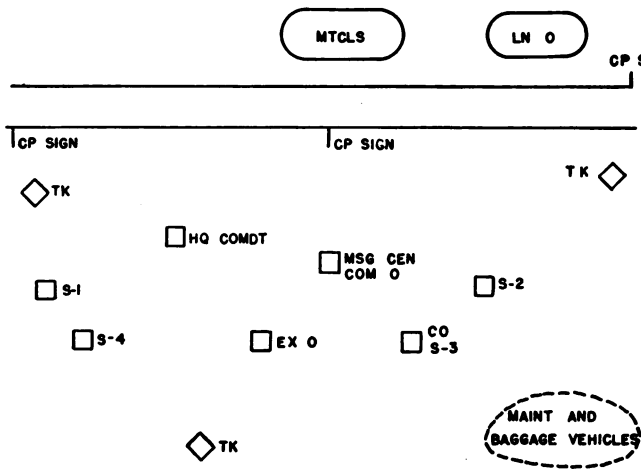


FIGURE 21.—Type command post arrangement in assembly area. The arrangement will vary according to the cover available and size of the command post. Combat vehicles are disposed for all-around defense. At least one man must be in the vehicle at all times to man one of the vehicular weapons.

advance guard. When the command marches in multiple columns, the command post marches with that column from which the commander can best control the movement and

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subsequent action of the unit. The order of march of the command post varies with the unit concerned and the desires of the commander.

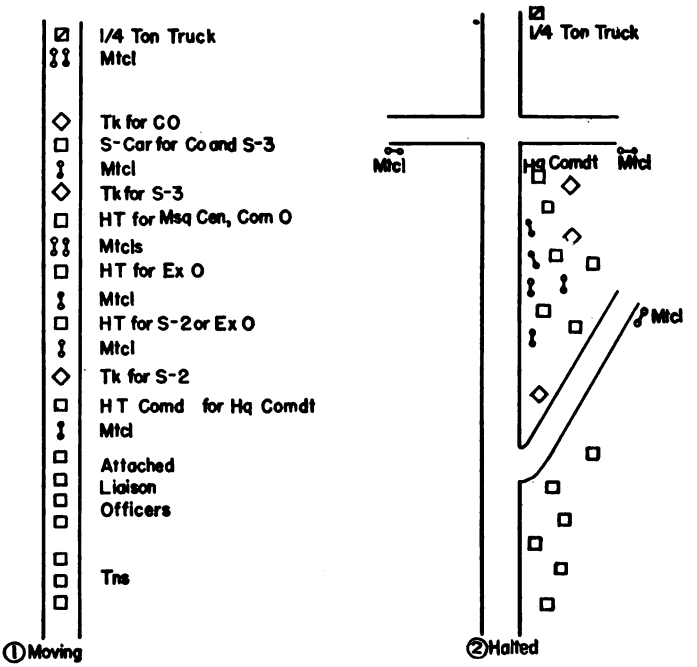


FIGURE 22.—One method of arrangement of command post vehicles for the march. (Fig. ① shows the column in motion. Fig. ② shows the column halted. At halts all vehicles when practicable, are moved off the road under cover and camouflaged. Tracks of vehicles are brushed out. Motorcycle and crews on ¼-ton trucks are sent to the front and flank to give warning of approach of hostile ground troops. One man remains in each combat vehicle prepared to operate any of the weapons. The headquarters commandant or his assistant inspects the column, checks security measures, and moves to the head of the column.)

c. In bivouac the command post is located centrally in well concealed positions.

d. In combat the command post is moved from position to position as the situation dictates. It usually follows the unit making the main effort. The executive is responsible for the

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proper functioning of the command post. He moves it as and when the commander orders.

e. (1) Each headquarters down to and including the battalions has personnel for liaison with bombardment aviation. This group consists of the S–3 for air and a small enlisted detachment. It is equipped with radio for communication with the airplanes.

(2) It is the duty of this group to contact the bombing planes and give them instructions concerning targets and time of attack. Location of targets is sent by radio by improvised coordinate code. As the airplanes approach, this group describes the exact location of the target and operates any ground prearranged signals to indicate the target.

f. The headquarters company commander is the headquarters commandant. He is responsible for the forming of the vehicles of the commander's group and other vehicles of the forward echelon in the proper order for the march; selection of command post sites; and security on the march, at halts, and in bivouac.

g. The command post depends primarily on subordinate units for security. However, command post personnel must be trained in the use of the weapons with which they and their vehicles are equipped and must be prepared to furnish their own local security. At temporary halts certain men and vehicles are detailed to protect the column. Motorcyclists are sent to the front and the flanks. In bivouac and assembly areas, vehicles are distributed so that vehicular weapons cover avenues of approach. Sentinels are posted to give warning of any hostile approach.

■ 235. REAR ECHELON.—The rear echelon is divided into two parts, echelon A and echelon B (see app. I). It consists of the supply and the administrative elements of the headquarters company, maintenance personnel not needed with the forward echelon, and such trains as may be attached. The rear echelons of lower units may march with the trains of the higher unit. For example the regimental rear echelon may march with the division trains. During combat the rear echelon A is at the service park.

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SECTION II

HEADQUARTERS AND HEADQUARTERS COMPANY, ARMORED BATTALION, LIGHT AND MEDIUM.

■ 236. ORGANIZATION.—The headquarters and headquarters companies of the armored battalions light and medium have similar organizations, the only difference being in the type of tanks in the tank section. Detailed organization is contained in current tables of organization. The company consists of battalion headquarters, company headquarters, mortar platoon, and assault gun platoon. The battalion is a tactical unit only.

■ 237. BATTALION HEADQUARTERS.—*a.* The battalion headquarters consists of the command section, communications section, tank section, and battalion reconnaissance platoon.

b. Command section.—(1) The battalion is commanded by a lieutenant colonel; has a major who is S–2 and S–3, and a captain who is adjutant and also acts as S–3 for air cooperation. The operations sergeant is a technical sergeant. The remainder of this section consists of radio operators, drivers, chauffeurs, and machine gunners.

(2) On the march the lieutenant colonel and major ride in the half-track vehicle. During combat three officers ride in tanks. The adjutant and technical sergeant ride in ¼-ton trucks.

c. Communications section.—This section has a lieutenant, battalion communications officer; a technical sergeant, communications sergeant; two privates, agent messengers, mounted on motorcycles; and a chauffeur. The lieutenant and sergeant ride in a ¼-ton truck. The lieutenant, in addition to his duties as communications officer, acts as liaison officer for the battalion.

d. Tank section.—The tank section is equipped with three tanks, light or medium, depending upon the type of battalion. One tank is for the battalion commander, another for the S–2–3, and the third for an artillery observer. The section is commanded by a lieutenant who is also a battalion liaison officer. Crews for the tanks are as prescribed in tables of organization.

e. Battalion reconnaissance platoon.—This platoon consists of a platoon headquarters and two reconnaissance

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squads. It is equipped with one half-track vehicle, four ¼-ton trucks, and two motorcycles. It is primarily used for close reconnaissance.

■ 238. COMPANY HEADQUARTERS.—*a. General.*—Company headquarters is organized to administer, supply, and mess the headquarters and headquarters company. It consists of the command section, communications-liaison-reconnaissance section, maintenance section, administrative-supply section, and a mess section.

b. Command section.—The command section consists of a captain, company commander, who also acts as headquarters commandant; and a radio tender, driver, bugler, and machine gunner. The section is transported in a half-track vehicle. The command section is usually with the battalion headquarters on the march and remains at the battalion command post when an attack starts.

c. Communication-liaison-reconnaissance section.—This section consists of one staff sergeant, company communications sergeant, and two privates. They are transported in a ¼-ton truck. The section is used for messenger service, for local reconnaissance near the command post, and for liaison with higher or lower units, if necessary.

d. Maintenance section.—This section consists of a lieutenant, maintenance officer; a staff sergeant, maintenance; a corporal, supply; and mechanics, drivers, and a chauffeur. It is equipped with a half-track maintenance vehicle and a ¼-ton truck. The section accompanies the forward echelon of the command post. The maintenance section maintains only vehicles of the battalion headquarters and headquarters company.

e. Administrative-supply section.—This section consists of the first sergeant, supply sergeant, and other administrative personnel, except mess. It is in the rear echelon of the company.

f. Mess section.—This section consists of the mess sergeant, cooks, cooks' helpers, and orderlies. It is in the rear echelon.

■ 239. MORTAR PLATOON.—The mortar platoon consists of a platoon headquarters and three mortar squads. It is commanded by a lieutenant. For tactical employment of the platoon see chapters 2 and 5.

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■ 240. ASSAULT GUN PLATOON.—This platoon consists of a platoon headquarters, three gun squads, and an ammunition section. It is commanded by a lieutenant. For tactical employment of the platoon see chapters 2 and 5.

■ 241. TACTICAL EMPLOYMENT.—*a. Forward echelon.*—(1) The forward echelon of battalion headquarters company consists of the battalion headquarters; the command section, communication-liaison-reconnaissance section, and the maintenance section of the company headquarters; the mortar platoon; and the assault gun platoon.

(2) On the march the forward echelon marches at the head of the battalion or the head of the main body if the battalion is acting alone. The order of march is prescribed by the battalion commander. The following order is suggested:

Battalion reconnaissance platoon.
Command section, battalion headquarters.
Communications section.
Command section, company headquarters.
Communications-liaison-reconnaissance section, company headquarters.
Tank section.
Assault gun platoon.
Mortar platoon.
Maintenance section.

(3) In assembly areas the command post is protected by the three tanks and by vehicular weapons. The assault gun platoon and reconnaissance platoons will be protecting the battalion as a whole.

(4) When the battalion moves forward to the attack, the adjutant is responsible for the command post. He moves the command post when so ordered by the battalion commander.

b. Rear echelon.—The rear echelon consists of the administrative-supply section and the mess section. It usually marches with the regimental trains.

c. Communications.—The principal means of communication are radio and motor messenger. Voice radio is usually used. Radio nets are as prescribed in appendix II.

d. Commander's group—During combat the commander's group is the personnel in the three tanks.

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SECTION III

HEADQUARTERS AND HEADQUARTERS COMPANY, ARMORED REGIMENT

■ 242. ORGANIZATION.—The headquarters and headquarters company, armored regiment, consists of the regimental headquarters, tank platoon, communications platoon, reconnaissance platoon, and company headquarters. Detailed organization is contained in current Tables of Organization. The regiment is both an administrative and a tactical unit.

■ 243. REGIMENTAL HEADQUARTERS.—*a. General.*—The regimental headquarters is divided into the command and S–3 section, S–2 section, administrative section, and personnel section.

b. Command and S–3 section.—This section consists of the colonel, commanding; executive officer, who is operations officer; five majors, one S–3 for air, one adjutant, one S–2, one S–4, and one assistant operations officer; one captain chaplin; one master sergeant, operations; draftsmen, clerks, chauffeurs, and drivers. The section is equipped with one half-track vehicle, three ¼-ton trucks, and a 5-passenger sedan. The latter is with the rear echelon during combat. During combat any of the officers may ride in the tanks of the tank platoon. On the march the executive officer rides with the S–2 section and the adjutant rides in the half-track vehicle of the administrative section.

c. S–2 section.—S–2 is in charge of this section. He has at his disposal one technical sergeant, two sergeants, and three privates. The technical sergeant and the two sergeants ride with the reconnaissance platoon.

d. Administrative section.—The adjutant is in charge of this section. It consists of the sergeant major, clerks, a driver, a radio operator, and a stenographer.

e. Personnel section.—This section consists of a captain, personnel officer, and various noncommissioned officers and clerks.

f. Band.—The band is commanded by the adjutant.

■ 244. TANK PLATOON.—This platoon is equipped with five light tanks in which the commanding officer and such staff officers as he desires ride during combat. One tank is reserved for the artillery observer.

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■ 245. COMMUNICATIONS PLATOON.—This platoon is commanded by a lieutenant, communications officer, and consists of a regimental signal center, a message center section, and a radio repair section. It is equipped with two half-track vehicles, two ¼-ton trucks, and two motorcycles.

■ 246. RECONNAISSANCE PLATOON.—This platoon is commanded by a lieutenant, reconnaissance officer. It has one half-track vehicle, four ¼-ton trucks, and two motorcycles. It is used for close reconnaissance and for keeping liaison with lower and adjacent units.

■ 247. COMPANY HEADQUARTERS.—The company headquarters is divided into a command section, maintenance section, administrative-supply section, and a mess section. These sections have the same function as similar sections in the company headquarters of the armored battalion. The maintenance officer, in addition to his other duties, commands the tank platoon for administrative purposes.

■ 248. TACTICAL EMPLOYMENT.—*a. Forward echelon.*—(1) The forward echelon of regimental headquarters and headquarters company consists of the regimental headquarters, less the personnel section and band; the maintenance section of the company headquarters; the tank platoon; the communications platoon; and the reconnaissance platoon.

(2) On the march the commander's group consists of the personnel in the half-track vehicle of the command and S–3 section. During combat it consists of such personnel as the commander desires to take in his tanks; usually the S–3, S–2, and the artillery observer. One tank is left at the command post for the executive.

(3) During the march the forward echelon marches at the head of the main body. The order of march is prescribed by the commanding officer. The following is a guide:

Reconnaissance platoon.
Command and S–3 section.
S–2 section.
Administration section.
Communications platoon.
Tank platoon.
Maintenance section.

(4) At the command post the weapons of the half-track vehicles and the tanks are disposed for local protection.

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During the attack the executive officer remains at the command post and conducts it forward as directed by the commanding officer.

b. Rear echelon.—The rear echelon consists of the personnel section; the band; and the command, administrative-supply and mess sections of company headquarters. The rear echelon marches with the regimental trains. The towed antitank gun is for local protection of the rear echelon elements.

c. Communication.—The principal means of communication is radio and motor messenger. Appendix II shows the radio sets for the regiment.

SECTION IV

HEADQUARTERS AND HEADQUARTERS COMPANY, RECONNAISSANCE BATTALION

■ 249. ORGANIZATION.—The headquarters and headquarters company reconnaissance battalion consists of battalion headquarters, transportation platoon, battalion maintenance platoon, and company headquarters. Current Tables of Organization give the detailed organizations.

■ 250. BATTALION HEADQUARTERS.—*a. General.*—The battalion headquarters consists of the command and administrative section, communications section, battalion supply section, and the personnel section. The battalion is both an administrative and tactical unit.

b. Command and administrative section.—This section consists of a lieutenant colonel, battalion commander; major, executive and operations officer; two captains, one assistant operations and intelligence officer, and one operations for air; four lieutenants, one supply, one adjutant, one liaison, and one intelligence; and sergeants, clerks, and other enlisted men as set forth in Tables of Organization.

c. Communications section.—The communications section consists of an armored car section, signal center section, and motorcycle section. Space is provided in the armored cars for the battalion commander, executive officer, and the assistant S–2. The signal center section has space for six officers and men of the command and administrative section.

d. Battalion supply section.—This section consists of a mas-

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ter sergeant for supply, and several assistants. It is equipped with three 2½-ton trucks. The supply officer is in charge of this section.

e. Personnel section.—This section consists of a lieutenant, personnel officer, and necessary assistants.

■ 251. TRANSPORTATION PLATOON.—This platoon consists of a platoon headquarters, a fuel and lubricants section, and a rations section. It is equipped with two ¼-ton trucks and twelve 2½-ton trucks. This section is under the direction of the supply officer.

■ 252. BATTALION MAINTENANCE.—This platoon consists of a platoon headquarters, three maintenance sections, and a wrecker section. The platoon is commanded by a lieutenant who is battalion maintenance officer. The platoon performs second echelon maintenance for the entire battalion. Two maintenance sections are for armored cars and one for other wheeled vehicles. The maintenance platoon must be distinguished from the maintenance section of company headquarters. That section performs maintenance for headquarters company only. The maintenance sections of the platoon may be used to reinforce the maintenance sections of the reconnaissance companies.

■ 253. COMPANY HEADQUARTERS.—Company headquarters consists of a command section; reconnaissance section for local reconnaissance near the command post; the maintenance section, for company maintenance only; administrative, supply section; and mess section.

■ 254. TACTICAL EMPLOYMENT.—*a. Forward echelon.*—(1) The forward echelon of the command posts consists of all the company except the personnel section.

(2) The commander's group consists of personnel as he desires, usually his S–2. During combat this group rides in armored cars.

(3) During the advance the command post advances by bounds along the axis of advance usually on an interior road. The tank company until used for combat advances with the command post. It furnishes local protection for the command post, and advance and rear guards for the command post while moving.

b. Rear echelon.—The rear echelon consists of the person-

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nel section and such supply and administrative vehicles as the battalion commander may direct.

c. Communications.—Communication is principally by radio and motor messenger. Appendix II gives the radio nets within the battalion.

SECTION V

HEADQUARTERS AND HEADQUARTERS COMPANY, ARMORED DIVISION

■ 255. ORGANIZATION.—The headquarters and headquarters company, armored division, consists of a command and general staff section, two combat commands (see sec. VI), division air officer, division artillery command, chemical warfare service section, and headquarters company. The division is both an administrative and tactical unit.

■ 256. COMMAND AND GENERAL STAFF SECTION.—This section consists of the division commander and aides, Chief of Staff, G–1, G–2, G–3 and bomber control unit, and G–4. For assistants and equipment see tables of organization.

■ 257. COMBAT COMMAND.—See section VI.

■ 258. DIVISION AIR OFFICER.—This officer is on the division commander's staff to coordinate all matters affecting aviation.

■ 259. DIVISION ARTILLERY COMMAND.—See section VII.

■ 260. CHEMICAL WARFARE SERVICE SECTION.—This section coordinates all matters pertaining to use of and defense against chemicals.

■ 261. HEADQUARTERS COMPANY.—*a.* This *company* consists of a company command section; communications-reconnaissance-liaison-section; three tank platoons; G–3 traffic control section; maintenance section; administrative section; company mess section; and division headquarters mess.

b. Company command section.—The company is commanded by a captain who is also headquarters commandant. The company headquarters section consists of the captain, a sergeant, and six privates.

c. The *communications-reconnaissance-liaison-section* consists of a sergeant, communications sergeant, and three privates. It is for use of the company commander for messenger service, local reconnaissance, and liaison.

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d. The *tank platoon* is to provide tanks for the division commander and staff for each of the combat command staffs, and for local protection of the command post. The three platoons are commanded by the senior platoon leader.

e. The G–3 *traffic control section* consisting of one lieutenant and eight enlisted men mounted on motorcycles is for use by G–3 in traffic control in forward areas.

f. The *maintenance section* maintains the vehicles of division headquarters and the headquarters company.

g. The *administrative section* is for administration and supply of the company.

h. The *company mess section* takes care of the mess for the company. Separate messes are provided for division headquarters and for each combat command.

■ 262. TACTICAL EMPLOYMENT.—The headquarters and headquarters company, armored division, is the forward echelon of division headquarters. The rear echelon is in the service company. The command post usually marches at the head of the division reserve. During combat it moves by bounds usually behind the unit making the division main effort.

SECTION VI

COMBAT COMMAND

■ 263. ORGANIZATION.—In each division headquarters are two combat commands. Each is commanded by a brigadier general and consists of a headquarters, a reconnaissance-liaison section, a tank platoon, staff section, and mess section. This unit is tactical only. The combat command has a complete staff. The division signal company furnishes it with signal center vehicles as needed, operators, motorcyclists, and message center personnel and equipment.

■ 264. TACTICAL EMPLOYMENT.—*a.* The combat command is used by the division commander to direct and control a major tactical grouping on the march and during combat. These groupings depend upon terrain, the enemy situation, and the particular type of operation contemplated. The groupings listed below are suitable for the type of action indicated.

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(1) *Advance—contact imminent.*

Combat command A.	Combat command B.
Reconnaissance company from reconnaissance battalion may be attached.	Reconnaissance company from reconnaissance battalion may be attached.
Armored regiment.	Armored regiment (less one medium battalion for division reserve).
Infantry battalion.	Infantry battalion.
One or more artillery battalions.	One or more artillery battalions.
Engineer company.	Engineer company.
The attached heavy tank destroyer company.	The attached heavy tank destroyer company.
Medical detachment.	Medical detachment.
Maintenance company.	Maintenance company.

Forward echelon armored division.
Infantry regiment, less detachments.
One medium armored battalion.
Heavy tank destroyer battalion, less detachment.
Engineer battalion, less detachment.
Division artillery, less detachment.
Rear echelon.

(2) *River crossing or passing a defile.*—Combat command A forces the crossing or defile.

Combat command A.	Combat command B.
Reconnaissance battalion.	Two tank regiments (less detachments).
Infantry regiment.	One or two engineer companies.
All or the greater part of the division artillery.	Medical company.
Engineer battalion (less one or two companies).	Two maintenance companies.
One medium armored battalion.	
One light tank company.	
Forward echelon armored division.	
One heavy tank destroyer company.	
Medical company.	
Maintenance company.	
Rear echelon armored division.	

NOTE.—When combat command B crosses a river, one or more battalions of artillery and a company of the engineer battalion may join it.

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(3) *Pursuant or exploitation.*—Combat command A is used as a fast moving pursuing force and is especially qualified for encircling movement.

Combat command A.
Reconnaissance battalion.
Two light armored battalions.
Infantry regiment (less one or more battalions).
One or more battalions of artillery.
Tank destroyer battalions.
One or more companies of engineers.
Medical company.
One maintenance company.

Combat command B.
Armored regiments (less light battalions).
One or more battalions of artillery.
Engineer battalion (less detachments).
Medical company.
One maintenance company.
Forward echelon armored division.

Rear echelon armored division.

(4) *Defense.*—Combat command A occupies defensive position. Combat command B is the counterattacking force.

Combat command A.
Infantry regiment.
Engineer battalion (less bridge company and other detachments).
All artillery (may be directly under the division commander).
Tank destroyer company.
Medical company.

Combat command B.
Two armored regiments (less battalion of medium tanks in division reserve).
Tank destroyer company.
Engineer company.
Medical company.
Maintenance company.

Forward echelon armored division.
One medium battalion.
Tank destroyer battalion, less two companies.
Rear echelon armored division.

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(5) *Withdrawal from action and retrograde movements.*—Combat command A is the delaying force. Combat command B engages only in extensive counterattacks in force.

Combat command A.	Combat command B.
Reconnaissance battalion.	Armored regiments (less light armored battalions).
Two light armored battalions.	Engineer company.
Infantry regiment.	One battalion of artillery if available.
Two or more battalions of artillery.	Medical company.
Engineer battalion (less bridge company and one other company).	Maintenance company.
Tank destroyer battalion.	Forward echelon armored divison.
Medical company.	
Maintenance company.	

Rear echelon armored division.

b. The groupings above are suitable for the actions indicated. The situation dictates the exact grouping and strength of each combat command group.

c. The employment of the tank destroyer battalion is described in chapters 2 and 7.

SECTION VII

DIVISION ARTILLERY HEADQUARTERS AND HEADQUARTERS DETACHMENT

■ 265. ORGANIZATION.—The division artillery headquarters and headquarters detachment consist of a colonel, division artillery officer; a lieutenant colonel, S–3 and assistant to the division artillery officer; one major and one captain, assistants to S–3; one major, S–2 and a lieutenant, assistant S–2; and enlisted men assistants. The detachment is transported in scout cars, half-track vehicles, and ¼-ton trucks.

■ 266. EMPLOYMENT.—*a.* The division artillery officer is the advisor to the division commander on all matters pertaining to artillery. He may at times command during combat all or part of the division artillery.

b. When the division artillery can be efficiently controlled by one headquarters, it is placed under the command of the

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artillery officer. Such occasions may arise during the initial attack on a narrow front and when forcing a river line. Artillery is usually attached to the combat command groups.

SECTION VIII

HEADQUARTERS COMPANY, ARMORED CORPS

■ 267. HEADQUARTERS COMPANY, ARMORED CORPS.—*a.* T/O 170–1 prescribes the organization of the headquarters armored corps and T/O 170–2 prescribes that for the headquarters company armored corps. The corps is not an administrative unit except for corps troops. Corps headquarters is attached to the corps headquarters company.

b. The headquarters company armored corps is divided into company headquarters, transportation platoon, special platoon, and postal section. The corps headquarters is divided into a forward and a rear echelon. (See T/O 170–1.)

c. The transportation platoon furnishes transportation for the corps headquarters and maintains the transportation of the headquarters company.

d. The special platoon furnishes personnel for the operation of messes and for orderlies.

e. The postal section collects and distributes mail.

f. The forward echelon of corps headquarters moves by long bounds by shuttling. Transportation furnished is not sufficient to move all personnel at one time.

g. The corps headquarters company has two radio sets. These are used by the company commander and the transportation platoon. Other communication facilities are furnished by the corps signal battalion.

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SECTION IX

HEADQUARTERS AND HEADQUARTERS, GHQ RESERVE TANK GROUP

■ **268. HEADQUARTERS AND HEADQUARTERS DETACHMENT.**—*a.* Current Tables of Organization prescribe the organization of the GHQ Reserve headquarters and headquarters detachment. The group is not an administrative unit, except insofar as personnel of group headquarters is concerned.

b. The detachment is divided into a headquarters section; a reconnaissance-liaison section; tank platoon; staff section; and a mess section. The mess section is the rear echelon while the remainder of the detachment is the forward echelon.

c. The group is commanded by a colonel; has a lieutenant colonel as executive and operations officer; two majors, one S–3 for air and the other is intelligence officer; three captains, liaison officers; one lieutenant, communications officer.

d. The reconnaissance-liaison section consists of three captains (liaison officers from the headquarters section) and 10 enlisted men. It has two motorcycles and four ¼-ton trucks.

e. The tank platoon has five tanks with their crews. It is commanded for administrative, training, and maintenance purposes by the liaison officers. The type of tank, light or medium, depends upon whether the whole group is equipped with light or medium tanks. One tank is reserved for an artillery observer while the others are used by the commander and staff as necessary.

f. The staff section contains enlisted personnel for the operations and intelligence sections of the headquarters.

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■ 269. HEADQUARTERS AND HEADQUARTERS COMPANY, GHQ RESERVE TANK BATTALION, LIGHT.—*a.* T/O 17–56 prescribes the organization for the headquarters and headquarters company, GHQ reserve tank battalion, light. The battalion is an administrative and tactical unit; the headquarters company contains personnel for administration and supply.

b. The company is divided into battalion headquarters, company headquarters, staff platoon, reconnaissance platoon, maintenance platoon, and transportation platoon.

c. The forward echelon of the company usually consists of the operation and the intelligence personnel of the staff section, the reconnaissance platoon, part of the maintenance section, and the necessary transportation from the transportation section. The following manning table for the forward echelon is a guide only:

Tank No. 1	Battalion commander. Tank commander. NCO chief or radio operator. Driver.	(Commanding officer may ride in car, half-track.)
Tank No. 2	S–3. Tank commander. NCO chief or radio operator. Driver.	(S–3 may ride in car, half-track.)
Tank No. 3	Executive officer. Tank commander. NCO chief or radio operator. Driver.	(S–2 or artillery officer may ride in this tank and executive officer in car, half-track.)
Car, half-track, No. 1.	Company commander and party.	
Car, half-track, No. 2.	(Battalion commander.) (S–3.) Operations sergeant.	

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	Operations personnel.
	Radio operator.
	Clerks.
	Driver.
Car, half-track, No. 3.	S–2.
	Communications officer.
	Communications sergeant.
	Message center chief.
	Radio operator.
	Clerks.
	Driver.
Reconnaissance platoon.	
Motorcycles_____	Agents, scout and reconnaissance.
¼-ton truck____	Corporal supply.
	Radio electrician.

The commander's group in combat consists of the three tanks. At other times it is composed of such vehicles and personnel as the commander may desire. On the march the forward echelon is at the head of the main body of the battalion. During combat it remains at the intermediate or attack position and moves forward to the rallying or the alternate rallying point as ordered by the battalion commander.

d. The rear echelon consists of that portion of the company not with the forward echelon. It is composed primarily of the supply and the personnel section, a portion of the maintenance platoon, and a portion of the transportation platoon. The supply officer may be at either the forward or the rear echelon. On the march the rear echelon marches at the rear of the battalion column or with the group rear echelon. During combat it is at the service park.

e. Employment of the reconnaissance platoon is discussed in chapters 4 and 12.

f. (1) The maintenance platoon is organized to perform second echelon maintenance for the entire battalion. Its

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functions are similar to the maintenance platoon of the service company of the armored regiments. The maintenance officer commands the platoon. He is responsible to the battalion commander for the maintenance of all vehicles of the battalion headquarters company and for the general technical supervision of maintenance throughout the battalion. He makes mechanical inspections of vehicles and assists the battalion commander in command inspections.

(2) The maintenance platoon is capable of being divided into three maintenance teams to reinforce the maintenance personnel of the tank companies. One such team usually accompanies the company maintenance personnel during combat.

g. The transportation platoon operates the supply vehicles of the company. This platoon contains vehicles for the second day's supply of gasoline and/or ammunition. The transportation officer is the assistant to S–4.

h. The company has no communication platoon as such. Most of the communication personnel are in the staff platoon. Communication within the battalion is principally by voice radio and motorcycle messenger. Communication to higher headquarters is by radio, voice, or key, and by motorcycle messenger. Appendix II shows the radio communication system for the battalion.

■ 270. HEADQUARTERS AND HEADQUARTERS COMPANY, GHQ RESERVE TANK BATTALION, MEDIUM.—*a.* T/O 17–46 prescribes the organization of the headquarters and headquarters company, GHQ reserve tank battalion, medium. The organization is similar to that of the headquarters and headquarters company of the GHQ reserve tank battalion, light, and the functions of the various sections and platoons are the same.

b. The following is suggested as a manning table:

Tank No. 1_____	Battalion commander.	(Commanding officer and S–3 may ride in car, half-track.)
	NCO chief or radio operator.	
	Tank commander.	
	Gunner.	
	Gunner.	
	Driver.	

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Tank No. 2	S–2 or artillery observer.	(S–2 may ride in car, half-track.)
	Tank commander.	
	NCO chief.	
	Gunner.	
	Gunner.	
	Driver.	
Tank No. 3	Executive officer.	
	Tank commander.	
	NCO chief.	
	Driver.	
Car, half-track, No. 1	Company commander and party.	
Car, half-track, No. 2	(Battalion commander.)	
	(S–3.)	
	Operations sergeant.	
	Clerks.	
	Gunner.	
	Driver.	
	Radio operator.	
Car, half-track, No. 3	S–2.	
	Communications officer.	
	Communcations sergeant.	
	Message center chief.	
	Clerks.	
	Gunner.	
	Driver.	
	Radio operator.	
Appropriate vehicles	Reconnaissance platoons.	
Solo motorcycles		
Maintenance vehicles	Agents, scout and reconnaissance and personnel.	

c. The rear echelon consists of those elements not in the forward echelon. Some personnel may be in either echelon, depending upon the desires of the commander.

d. The forward and the rear echelon are conducted the same as for the light tank battalions.

e. Communication within the battalion is similar to that of the light tank battalions. Appendix II shows the radio communication system for the GHQ reserve tank battalion, medium.

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CHAPTER 10

SERVICE COMPANY, ARMORED REGIMENT AND DIVISION

Paragraphs
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SECTION I

SERVICE COMPANY, ARMORED REGIMENT

■ 271. ORGANIZATION.—The service company includes a company headquarters, a regimental supply section, and a transportation platoon. (See current tables of organization.)

■ 272. EMPLOYMENT.—The service company is employed as a regimental transportation and supply agency. It transports regimental equipment, rations, fuel, lubricants, and ammunition under the direction of the regimental supply officer. It normally does not function as a unit, but usually operates by platoons and sections.

■ 273. COMPANY HEADQUARTERS.—*a. General.*—The service company headquarters is composed of a command section, a communications-liaison-reconnaissance section, an administrative and supply section, a mess section, a maintenance section, and an attached train section.

b. Command section.—The command section consists of the company commander and the crew of his command vehicle. Radio communications are provided for control and command of the unit trains. The company commander is responsible for the administration, supply, and training of the company. He conducts the basic and disciplinary training of all members of the company. He supervises the technical and tactical training of the platoons, which is conducted by the platoon commanders. On the march and during combat he commands the consolidated regimental trains and is responsible for the train defense. When the trains are divided into echelon A and echelon B, he normally conducts the march of the rear echelon.

c. Communications - liaison - reconnaissance section.—The communications-liaison-reconnaissance section consists of

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four motorcyclists used for traffic control and messenger service.

d. Administrative and supply section.—The administrative and supply section consists of the enlisted personnel and vehicles necessary for the administration and supply of the company.

e. Mess section.—The mess section consists of the enlisted personnel and vehicles necessary for the messing of the company and attached unit trains. Two kitchen trucks and crews are provided, one to operate with echelon A of the unit trains and one to operate with echelon B.

f. Maintenance section.—The maintenance section consists of the necessary personnel and vehicles for the second echelon maintenance of the organic vehicles of the company. When the regimental trains are consolidated, this section is reinforced by a detachment from the regimental maintenance company.

g. Attached train section.—The attached train section consists of the necessary personnel and vehicles to control and command the consolidated kitchen and combat equipment trucks of the companies of the regiment.

■ 274. REGIMENTAL SUPPLY SECTION.—This section, under the direction of the regimental supply officer, operates, where necessary, to draw and issue rations, ammunition, fuel, lubricants, and all other supplies for the regiment. It consists of the regimental supply sergeant, noncommissioned officer assistants, and the necessary clerks and chauffeurs. In addition to the transportation required for the section personnel, records, and equipment, this section contains a pool of ammunition trucks. These trucks may be used to transport ammunition, fuel, and lubricants, or other cargo as required and may be used for resupply of these items in combat. The functioning of the supply system is discussed in FM 17–50.

■ 275. TRANSPORTATION PLATOON.—*a. Organization.*—This platoon consists of a platoon headquarters, a fuel and lubricants section, and a ration section.

b. Platoon headquarters.—The platoon headquarters consists of the transportation officer, an assistant transportation officer, a truckmaster, and two ¼-ton trucks with chauffeurs. The transportation platoon leader is charged with the training, control, marching, and dispatching of the vehicles of the

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platoon in accordance with the orders of the regimental commander. The assistant transportation officer also serves as regimental munitions officer and commands the ammunition trucks of the regimental supply section.

c. Fuel and lubricants section.—This section is subdivided into three battalion sections and a regimental section. Each battalion section has its own section leader, assistant section leader, and motorcyclist, with the necessary truck transportation and personnel to transport fuel and lubricants for one battalion. The regimental section is similarly organized and equipped to transport fuel and lubricants for the headquarters, reconnaissance, maintenance, and service companies of the regiment.

d. Ration section.—The ration section, operating directly under the supply officer, is organized and equipped to transport and distribute the rations for the regiment.

■ 276. OPERATION.—*a. In garrison and bivouac.*—In garrison and in bivouac the service company maintains a service park for the company vehicular equipment, a dispatcher's office, a pool for truck transportation available to the service company and the regimental commander, and a shop for the maintenance of its own equipment. Under the direction of the service company commander and in accordance with requests of the regimental supply officer, it furnishes the necessary transportation for drawing and distributing supplies for the regiment.

b. On march.—On the march the service company may have attached to it the combat and kitchen trucks of all the companies of the regiment. They operate as the attached train section. This section, with the service company, constitutes the consolidated regimental trains and is commanded by the service company commander. The consolidated regimental trains may be marched at the rear of the regiment or may be marched as part of the consolidated division trains. In many situations the consolidated regimental trains will be divided into two echelons, echelon A and B with echelon A marching at the rear of the regiment and echelon B marching with the consolidated division trains. Echelon A consists of those vehicles necessary for the supply of the regiment on the march and prior to or during combat. It is subdivided into battalion sections to facilitate dispatching

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of vehicles to units in combat. Echelon B consists of those additional vehicles necessary for the supply of the regiment in bivouac or at the end of the day's operation.

■ 277. COMBAT.—*a.* During combat, echelon A of the service company and regimental units, which consists of those elements of the trains accompanying the regiment, and the heavy maintenance vehicles of the maintenance company, establishes a service park. The service park is located under cover as close to the combat elements as the situation will permit. It is established and operated under the supervision of the maintenance company commander, who issues the necessary instructions for local security. Where a portion of the trains are with echelon A, the second-in-command of the service company normally commands this echelon and is responsible for the necessary local security measures. Maintenance elements operate under instructions of the regimental maintenance officer; supply elements operate under instructions of the regimental supply officer.

b. Echelon B of the service company and regimental units establishes a bivouac for the remainder of the consolidated trains and takes the necessary measures to defend them. Normally, the service company commander will be in direct command of this echelon and will operate under the tactical control of the regimental S–4 or the division train commander. In special situations, when the regiment is operating separately, its control may be decentralized to the regiment. In any case, the service company commander is responsible for his own local security measures. The location of the train bivouac will depend on the tactical situation. If the trains are consolidated under division control, the train bivouac may be located at a considerable distance from the combat elements. If the regiment is operating alone, it may be located close enough to receive protection from the security detachments sent out by the main body to cover its flanks and rear.

■ 278. TRAIN DEFENSE.—*a. General.*—The trains of the regiment may be a primary target for hostile aircraft and hostile mechanized units. The service company commander must utilize all available means to protect the regimental trains against air and ground attack. The fundamentals of security

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are set forth in chapter 2. Special instructions for the defense of motorized columns are discussed in FM 25–10 and chapter 11.

b. Organic means.—The half-track cars of the company are provided with their normal vehicular armament. All ¼-ton trucks and motorcycles are equipped with submachine guns. Fourteen caliber .50 machine guns are mounted on trucks and eight caliber .50 machine guns are carried on trucks for ground use. Twenty-five caliber .30 machine guns are mounted on trucks and fifteen caliber .30 machine guns are carried on trucks for ground use. All personnel are armed with either the carbine or the pistol.

c. Attachments.—In many situations it will be necessary to attach combat elements from other organizations of the regiment to protect the trains against attack. These combat elements may consist of armored vehicles from battalion and company headquarters, temporarily organized into platoons or similar units, or they may consist of tank units. Antiaircraft units may be used, when available.

■ 279. TRAINING.—*a.* All personnel of the service company must be thoroughly trained in the operation of vehicles, both individually and in convoy. For instruction in marching, the combat and kitchen trucks of the other companies of the regiment should be frequently attached to the service company, since they will normally march with the regimental trains in the field. Fundamentals applicable to training of drivers and to marching are covered in FM 25–10 and 17–5.

b. All personnel of the company, and the personnel of attached vehicles, must be trained both individually and as a unit in active and passive measures of train defense.

SECTION II

SERVICE COMPANY, ARMORED DIVISION

■ 280. ORGANIZATION.—The service company includes a command section, a communications-liaison-reconnaissance section, a maintenance section, an administrative section, a company mess section, a special mess section, a headquarters supply section, a transportation platoon, and a military police platoon.

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■ 281. EMPLOYMENT.—The service company is employed as a transportation, supply, and administrative agency for its own organic elements and for the sections of the rear echelon of division headquarters. It also functions as a supply agency for the division headquarters company and the division signal company.

■ 282. COMPANY HEADQUARTERS.—The service company headquarters proper includes certain sections that function directly for the service company. They are: the command section, the communications-liaison-reconnaissance section, the maintenance section, the administrative section, and the company mess section. These sections are organized and perform functions similar to those of the service company of the armored regiment. Other sections and platoons of the division service company, while administered by the service company, function for several separate units of the division including the rear echelon. These are: the headquarters supply section, special mess section, transportation platoon, and military police platoon.

■ 283. HEADQUARTERS SUPPLY SECTION.—This section consists of the headquarters supply officer and the necessary enlisted assistants. This section operates where necessary to draw and issue rations, ammunition, fuel, lubricants, and all other supplies for the division headquarters company, the division signal company, and the service company.

■ 284. SPECIAL MESS SECTION.—This section includes the necessary personnel and equipment to establish and operate a mess for the officers of division headquarters rear echelon. It also includes an electrician, a carpenter, and several orderlies.

■ 285. TRANSPORTATION PLATOON.—This platoon contains the necessary personnel and vehicles for the transportation of all personnel of the division headquarters rear echelon not specifically otherwise provided for. It also contains a ration truck with the necessary personnel to draw and distribute rations to the division headquarters company, the division signal company, and the division service company. This truck and its personnel operate under the direct orders of the headquarters supply officers. The fuel and lubricants section

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of the platoon consists of five trucks and a fuel and lubricants supply sergeant. This section operates under the headquarters supply officer to draw, transport, and distribute fuel and lubricants to the three headquarters organizations previously referred to.

■ 286. MILITARY POLICE PLATOON.—*a. Organization.*—This platoon consists of a platoon headquarters, a military police section, and a motorcycle section.

b. Platoon headquarters.—The platoon headquarters consists of a captain, three lieutenants, a platoon sergeant, and an assistant platoon sergeant. The captain, in addition to commanding the platoon, acts as assistant to the division provost marshal. Three lieutenants are provided so that one officer will be on duty at all times.

c. Military police section.—This section consists of three sergeants, three corporals, and twenty-four privates. It is transported in trucks and is organized to furnish three complete reliefs of watchmen wherever needed.

d. Motorcycle section.—This section consists of one staff sergeant, three corporals, and twelve privates, all transported on solo motorcycles. It furnishes military police for traffic control and mounted patrolling wherever needed.

e. Employment.—This platoon is employed under the orders of the division provost marshal, in accordance with the provisions of FM 100–10. Regulations and instructions for the general guidance of military police are set forth in FM 29–5.

■ 287. OPERATION.—*a. On march.*—On the march the division headquarters rear echelon and service company, under the command of the service company commander, marches as a unit in the division trains under control of the train commander.

b. In bivouac.—In bivouac, the service company establishes and services the rear echelon of the division headquarters. It maintains a service park for the company vehicular equipment, a dispatcher's office, a pool for administrative cars and truck transportation available to the service company and the rear echelon sections, and a shop for the maintenance of its own equipment. It operates messes for all rear echelon personnel. Under the direction of the service company commander and in accordance with

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the requests of the headquarters supply officer, it furnishes the necessary transportation for drawing and distributing supplies to the three companies operating the division headquarters.

c. During combat.—During combat, the rear echelon of the division headquarters and headquarters company operate under the supervision of the division train commander for movements, control in bivouac, and defense. In accordance with the division train commander's instructions, the service company commander places his company in concealed bivouac, provides for local security, and takes such other measures as are necessary for defense.

■ 288. SECURITY.—*a. General.*—The division train commander is responsible for the general defense of the trains, including the rear echelon of the division headquarters and service company. However, the service company commander must utilize all available organic means to protect his unit against air and ground attack, both while moving, or halted, and when in bivouac.

b. Organic means.—For local security the company has eight submachine guns as vehicular armament on its ¼-ton trucks, two caliber .50 machine guns, and six caliber .30 machine guns mounted on trucks, and one antitank gun. In addition all personnel are armed either with the carbine or the pistol.

■ 289. TRAINING.—*a.* All personnel of the service company, including the personnel of the division headquarters sections, must be thoroughly trained in the operation of vehicles, both individually and in convoy. Fundamentals applicable to training of drivers and to marching are covered in FM 25–10 and 17–50.

b. All personnel of the company and the personnel of the rear echelon of the division headquarters must be trained both individually and as a unit in active and passive measures of train defense and in dismounted combat.

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CHAPTER 11

DIVISION TRAINS, ARMORED

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II. Train headquarters and headquarters company 292–293
III. Tactical operation of division train 294–298

SECTION I

GENERAL

■ **290. COMPOSITION.**—*a. Organic.*—The division train of an armored division consists organically of a train headquarters and headquarters company, a supply battalion, a maintenance battalion, and a medical battalion.

b. Normal attachments.—Normally the rear echelon of division headquarters and the division service company, together with the rear echelon of the division signal company, are attached to the division train for movement, bivouac, and security. In addition, the echelon B of the unit trains of all regiments and separate battalions of the division will usually be consolidated under the division train commander prior to combat.

c. Other attachments.—When additional quartermaster truck companies or special engineer bridge units or other similar units are attached to the division for a special operation, they may be temporarily placed under the division train commander.

■ **291. PURPOSE AND SCOPE.**—This chapter deals with the tactical operation of the division train in the field under combat conditions. The division train is organized and consolidated under one commander for tactical reasons only and is not an administrative unit. The technique of supply, maintenance, and evacuation by the services constituting the component units of the train is covered in FM 17–50. The method of operation of the unit trains of the regiments and separate battalions of the division train is covered in other chapters of this manual and in the manuals of other arms and services.

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SECTION II

TRAIN HEADQUARTERS AND HEADQUARTERS COMPANY

■ 292. TRAIN HEADQUARTERS.—*a. Composition.*—The train headquarters consists of the train commander, an executive and operations officer, two column commanders, an intelligence officer, an assistant operations officer, a liaison officer, and a chaplain, with the necessary enlisted assistants, including vehicle crews. Three scout cars, two command and reconnaissance trucks, and a ¼-ton truck are provided.

b. Duties of personnel.—(1) *Train commander.*—The train commander is a tactical commander directly responsible to the division commander. He exercises tactical control of the division train on the march and in bivouac. This does *not* include control of supply, maintenance, and evacuation activities and administrative functions normally handled by the general and special staff sections of the division commander. However, the train commander endeavors to facilitate the accomplishment of these activities by giving them priority when tactical considerations permit.

(2) *Two column commanders.*—The two column commanders are provided to assist the train commander when the consolidated division train is separated into two groups. This will be the rule rather than the exception. Each column commander will command a group of unit trains, both on the march and in bivouac, under the direct orders of the train commander.

(3) The *staff* performs functions as set forth in FM 101–5. The liaison officer normally remains at the forward echelon of division headquarters.

(4) The *chaplain* functions for the organic units of the division train.

■ 293. HEADQUARTERS COMPANY.—*a. Organization.*—The train headquarters company consists of a company headquarters, a reconnaissance platoon, a communications platoon, and a tank command headquarters.

b. Company headquarters.—The company headquarters includes a command section, a communications-liaison-reconnaissance section, a maintenance section, an administrative section, and a mess section. These sections provide facilities

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for the administration, supply, and messing of the company and the train headquarters.

c. Reconnaissance platoon.—The reconnaissance platoon consists of a platoon headquarters and two reconaissance squads. The platoon headquarters consists of an officer and seven enlisted men transported in a personnel carrier. Each reconnaissance squad includes two noncommissioned officers and five privates, transported in two ¼-ton trucks and a motorcycle. Radio communication is provided. This platoon functions as a reconnaissance agency for the train commander. It secures information as to routes, bivouac sites, and terrain features, as well as furnishing early information of the approach of hostile forces.

d. Communications platoon.—(1) The communications platoon consists of a headquarters section and six signal centers. The headquarters section contains a communications officer and a driver, transported in a ¼-ton truck. Each signal center consists of a communications sergeant and seven privates, transported in a scout car and two motorcycles. The scout car is equipped with radio for both distant and close communication.

(2) This platoon provides radio and motorcycle messengers for communication between the train commander and division headquarters; between the train commander and the two column commanders; and between the two column commanders and their respective unit train groups.

e. Tank command headquarters.—The tank command consists of one officer and five enlisted men transported in a half-track M–2. This command group is provided for the tactical control of the tank platoons which accompany echelon B of the unit trains of the armored regiments. The tank command functions directly under the train commander who employs the tank units for train defense.

SECTION III

TACTICAL OPERATION OF DIVISION TRAIN

■ **294. GENERAL CONSIDERATIONS.**—*a. Reconnaissance.*—The fundamentals of reconnaissance discussed in chapter 2 apply to the division train and its subordinate elements. The reconnaissance platoon of the train headquarters, supplemented when necessary by reconnaissance sections from subordinate

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units, is utilized for local reconnaissance missions and for patrolling to the flanks and rear. Since the train habitually operates in rear of the combat units of the division, distant reconnaissance is not normally required.

b. Scouting and patrolling.—All personnel of combat and reconnaissance vehicles operating with the train must be thoroughly grounded in the fundamentals of scouting and patrolling, both dismounted and mounted, as set forth in FM 21–45 and in chapter 3.

c. Concealment and camouflage.—All personnel of train units must be thoroughly trained in the use of natural cover and concealment. Where cover is available, it must be utilized to the maximum as a means of passive protection against air and ground attack. When cover is not available, camouflage must be resorted to. The fundamentals of this subject are covered in chapter 2 and in FM 5–20.

d. Marching and march discipline.—The division train is marched in accordance with the fundamentals set forth in FM 17–50 and 25–10. Altthough the train commander is not charged with the training of the subordinate units, the state of training of these units in marching and march discipline is of primary concern to him. For this reason he should schedule periodic marches of the consolidated division train in order to check on this important subject and to train subordinate units in the prescribed method of control.

e. Communication and control.—(1) Control of train units when in movement is effected by careful planning, maximum use of available road nets, and by the use of reliable radio and motorcycle messenger communications. The bivouac area and road space required for the consolidated train requires the train commander to largely depend on radio communication to control the train in movement, to transmit information to subordinate units, and to issue orders for defensive measures.

(2) When radios are silenced or other conditions prevent its use, motorcycle messengers are used as a supplementary means of communication.

(3) If conditions warrant, liaison agents from subordinate units are kept at train headquarters.

(4) Whenever it can be foreseen that the trains will remain in bivouac for sufficient time to warrant it, wire is laid by the division signal company to the three service battalions, to the two column commanders, within the components of the rear

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echelon, and to the train commander's command post. This is the most satisfactory means of intertrain communication.

f. Bivouacs.—Bivouac sites are selected and occupied in accordance with the provisions of FM 17–50. In the selection of bivouac sites for the service units, consideration must be given to the location of the combat units which they serve and the connecting road net. (See fig. 23.)

g. Security.—The fundamentals of security are set forth in chapter 2. Each column of the train must be protected during movement by advance, flank, and rear guards. In bivouac, outposts must be established for all around protection against air and ground attack.

■ 295. TRAIN DEFENSE.—*a. Organic means.*—(1) The organic units of the division train, supplemented by the division service company, contain within themselves considerable defensive armament. In addition to approximately twenty scout cars and half-track cars with complete vehicular armament, these units have available: 22 towed antitank guns; 82 caliber .50 machine guns; 168 caliber .30 machine guns; 52 caliber .45 submachine guns; 1,133 carbines or rifles; and 337 pistols.

(2) The B echelon of the unit trains of the armored regiments and separate battalions of the division, when consolidated under the train commander, are accompanied by their own organic means for defense consisting of armament similar to that enumerated.

(3) The B echelon of the unit train of each armored regiment of the division is always accompanied by the reserve tank platoon of the maintenance company. These two tank platoons are consolidated for tactical employment under the control of the tank command of the train headquarters.

(4) Combat vehicles undergoing repair in the maintenance battalion are available for employment when necessary.

b. Attachments.—In addition to the organic train defense elements mentioned above, it will often be necessary for the division commander to detail other combat units to protect the consolidated train. Combat units when so detailed operate directly under the control of the train commander. These attachments may consist of any or all of the following: infantry, tank units, artillery, engineers, self-propelled assault guns, tank destroyers, and antiaircraft elements.

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c. Added protection.—In addition to the train defense afforded by train defense elements specially and habitually provided for that purpose and by the organic means existing within the trains themselves, in most situations the tactical dispositions of the combat troops automatically provide for further protection, particularly when the distances between the combat troops and the trains are not extreme. The division commander's tactical dispositions and the tactical dispositions of adjoining troops, in accordance with measures taken for security of the flanks and rear of the division or larger unit to which the division belongs, will result in this added protection for the trains.

d. Organization of train defense.—(1) When combat is imminent and it is known that the combat elements of the division will move forward in the combat area, leaving the trains, including echelon B of the unit trains, behind under control of the division train commander, commanders of the units of the trains or their commissioned representatives report to the division train commander. The division train commander ascertains the means of defense available to him under the particular situation, and organizes the unit trains into column commands. Considering the probable enemy threats, he assigns defensive missions to the two column commanders, to the commander of the tank command, and to other units of the trains. Measures for organizing local and general reserves are prescribed. When practicable, the maintenance and supply battalions are assigned missions that require only their own local defenses and organization of general reserves in order that they may give maximum effort to their normal supply and maintenance functions.

(2) The plan of the division train commander must provide for all around defense of the trains as a whole, including bivouacs, supply points, distributing points, dumps, collecting and clearing stations, and other installations of the rear area for the defense of which the division is responsible. His plan further provides for reconnaissance, liaison, and communications. The location of antitank guns and ground machine guns must be coordinated by the train commander to provide for all around defense, with particular attention to likely avenues of approach.

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(3) Passive measures of defense against air and ground attack must be utilized to the maximum. These measures include the following:

(*a*) Immediate movement off roads whenever halted.

(*b*) Dispersion of vehicles and of units.

(*c*) Maximum use of cover and concealment.

(*d*) Erasures of vehicular tracks leading into bivouac areas.

(*e*) Movement at night without lights.

(*f*) Movement by infiltration during daylight.

■ 296. MOVEMENT OF TRAINS.—*a*. Methods and procedure of marching are covered in FM 25–10 and 17–50.

b. Normally, if the trains are established in satisfactory and well concealed locations it is desirable not to move them as a whole or in part unless their destruction is threatened. They are more vulnerable when in movement and their important supply and maintenance functions may be disrupted or impeded. Frequently these considerations must be weighed against the advantages of better dispositions for defense in another location.

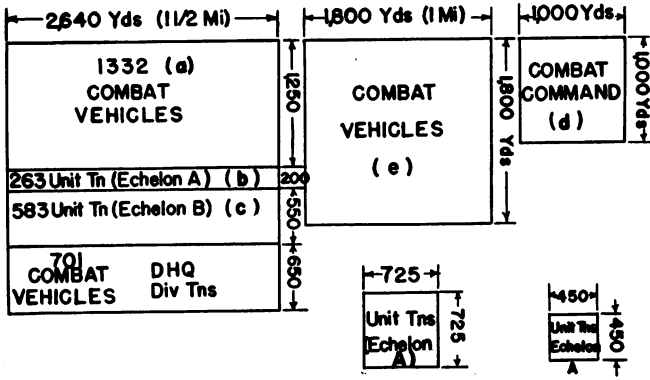
c. Under some circumstances it may be advisable to move the trains before orders are received from the division commander. In such cases the division train commander makes the decision on his own responsibility.

d. When movement of the train is contemplated or necessitated, a reconnaissance of the new locations should be made in advance. Assignment of new bivouac areas and other arrangements are facilitated if billeting officers from subordinate units accompany the reconaissance party.

e. In all movements of the trains full use should be made of the military police with the rear echelon division headquarters for traffic direction and control. The officer in charge of the military police should be given all possible and early information regarding contemplated movements to enable him to make reconnaissance and other preparations.

f. Protection of the trains when moving as an entire body or when portions of the trains are moving separately presents varied problems which must be solved in accordance with the means available. It will always be necessary to use elements of the train defense as advance guard, rear guard, or flank guards.

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NOTES

(a) Does not include motorcycles or trailers.

(b) Echelon A–Vehicles for for light maint, fuel, lubricants, ammunition.

(c) Echelon B–Vehicles for kitchens, baggage, supply, heavy maint, Engr Br Tns

(d) Composition of Combat Command:
- Tank Regt (less 1 Co)
- 1 Co Engrs
- 1 Bn FA
- 1 Bn Inf

(e) Diagrams are based on 50 yd distances and intervals between vehicles.

FIGURE 23.—Armored division, minimum assembly areas.

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■ 297. SUPERVISORY MEASURES.—*a.* Constant effort must be exerted by the train commander to insure full compliance with passive measures for defense, such as use of blackout measures, dispersion of vehicles, placing of service installations under concealment with sufficient intervals, and proper road and camouflage discipline.

b. Frequent inspections by officers must be initiated in order to keep sentinels, guards, and crews of vehicles on outpost duties constantly alert and vigilant, particularly in periods of relative quietness and after unusual exertion and hardships.

c. Each unit and detachment commander must be required to prepare plans for and have frequent practices in alerting and assembling for local defense and for prompt action as a reserve.

■ 298. UNIT TRAINS.—When directed by the division commander, the train commander releases all or part of the B echelon of the unit trains to their respective units. They are met by guides at designated points and conducted to the bivouac of the parent unit. While en route from the division train bivouac, to the bivouac or assembly area of the combat unit, protection for the unit train must be provided by its own organic defense elements or must be furnished by the parent unit.

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CHAPTER 12

GHQ RESERVE TANK BATTALION, LIGHT AND MEDIUM

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SECTION I

GENERAL

■ 299. ROLE OF GHQ RESERVE TANK BATTALIONS.—The role of GHQ reserve tank battalions is to furnish additional striking power to other ground forces. These battalions are normally attached for specific operations to those corps and divisions (infantry, cavalry, motorized or armored) requiring the support of tank units to insure the success of the particular operation. Under exceptional circumstances, tank units may be attached to lower echelons to operate on missions definitely assigned by the division commander. (See SOFM 100–5.)

■ 300. ORGANIZATION, TACTICAL AND ADMINISTRATIVE.—*a.* GHQ reserve tank battalions are separate units suitable for inclusion in tactical groupings such as GHQ reserve tank groups. Separate battalions may be attached to divisions for specific operations. GHQ reserve tank battalions are provided with sufficient staff and operating personnel to function independently as administrative and tactical units. However, organic supply and maintenance facilities are not capable of sustaining extended operations. Therefore, higher headquarters attaches as necessary service elements to GHQ reserve tank units and makes necessary supply arrangements prior to attachment of these units to lower echelons. For continuity of operation, maintenance facilities must be provided by attachment of ordnance companies (HM) and quartermaster companies (LM).

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b. The GHQ reserve tank battalion is composed of a headquarters and headquarters company, a service company, three tank companies, and attached medical detachment (see T/O 17–27, 17–45, 17–46, 17–55, 17–56, 17–57). The headquarters and headquarters company consists of a battalion headquarters, company headquarters, staff platoon, reconnaissance platoon, maintenance platoon, and transportation platoon. The reconnaissance, maintenance, and transportation platoons are organized into three sections each, for attachment to the tank companies of the battalion when desirable. The tank company is composed of a company headquarters consisting of a headquarters section and a motor maintenance section, and three platoons of five tanks each. Command and staff tanks are provided in the staff platoon of headquarters company and the headquarters section of the tank company.

■ 301. BATTALION STAFF.—The battalion staff is organized to assist the commander in executing his command functions. Through their staff functions they materially assist the commander in exercising control. SOFM 101–5 outlines the duties of the various members of the staff.

■ 302. CHARACTERISTICS.—*a.* Tanks, now provided GHQ reserve tank battalions, are classified as light or medium tanks. The battle capabilities of each type determine its tactical employment in combat. Characteristics of light and medium tanks, including their capabilities and limitations, are covered in detail in chapters 2 and 5.

b. Medium tank units, in conjunction with the supporting fires of other weapons, destroy or neutralize hostile antitank weapons within their zones of operation. They may also assist light tanks to destroy automatic weapons after accomplishment of their primary missions. In the absence of light tanks, medium tanks perform the missions for both. They are used offensively against hostile tanks. (See ch. 2.)

c. Light tank units are designed to advance through the fire of hostile automatic weapons to the enemy position where the fire power and crushing action of the tanks neutralize and demoralize all organized resistance.

d. Tank units are committed to combat in large numbers. All tank combat is offensive in nature. Tank units use their mobility to the utmost in the accomplishment of their missions.

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■ 303. ALLOTMENT OF TANK UNITS.—*a.* Tank units of the GHQ reserve are allotted by GHQ to armies, army corps, and divisions for specific operations. Only in exceptional circumstances will GHQ tanks be allotted to lower echelons, and then only for specific missions. In any case the integrity of battalions is maintained to avoid dissipation of tank strength on unimportant missions.

b. Tank units are allotted to afford the maximum assistance to the main attack. A commander having tank units at his disposal may—

(1) Hold them in reserve initially.

(2) Assign them a specific combat mission.

■ 304. POSITIONS AND ESTABLISHMENTS.—(See fig. 24.) Positions and establishments, as they pertain to other units of the Armored Force, are covered in detail in chapter 2. Appendix I defines such establishments. Only such positions and establishments as pertain to GHQ reserve tank units are discussed in this paragraph.

a. Detraining point.—The detraining point may be in the concentration area and even in the service park area. More often, because of threat of hostile air attack and use of the detraining point by other units, the service park will be at some distance from the detraining point.

b. Service park.—Tank units usually assemble at a service park after detraining or after movement into a forward area by road. The service park is located so as to facilitate the movement of tank units to intermediate or attack positions and the delivery of supplies. It will provide concealment from the air and be beyond range of hostile light artillery fire. Administrative, supply, and maintenance operations preparatory to combat are performed at the service park. Administrative personnel and material, except gas trucks and maintenance vehicles, remain at the service park when the battalion moves to the intermediate or attack positions. The service park is moved forward as the attack progresses.

c. Intermediate position.—(1) The intermediate position may be occupied or passed through by tank units after they leave the service park. A position beyond the range of hostile light artillery is desirable. When the attack position is at a great distance from the service park, the tank unit moves to the intermediate position after dark to be closer to the

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line of departure. When obstacles which may cause a bottleneck exist between the service park and the line of departure, intermediate positions forward of such obstacles are occupied. Generally, when intermediate positions are to be occupied,

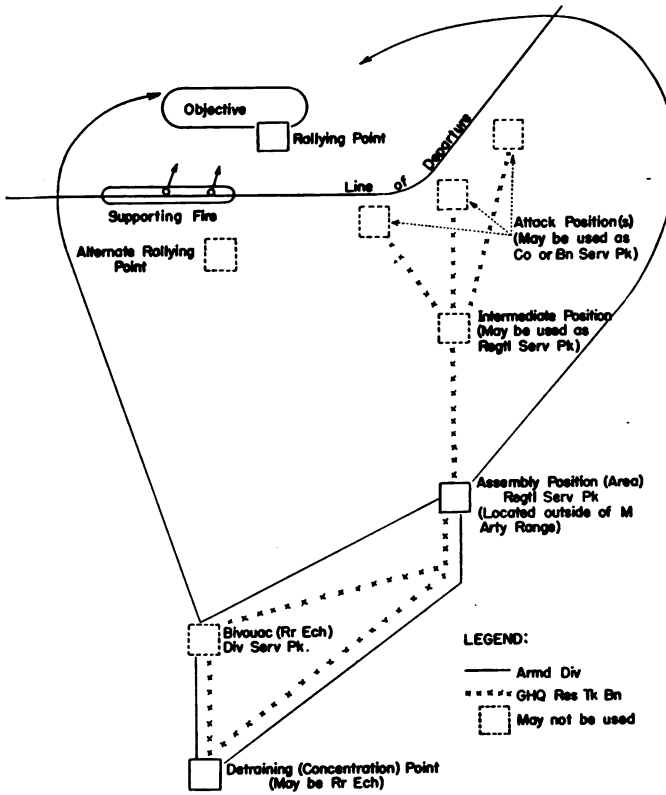


FIGURE 24.—Positions and establishments in offensive.

movement should be initiated at such an hour that only the time necessary for last minute coordination, inspection, servicing, and gassing is spent before movement is begun to attack positions and the line of departure. Should the tank unit in its movement forward between the intermediate position and attack position be forced by a hostile air or mobile ground

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force attack, or threat, to reorganize or change its plan, the intermediate position may be used as a rallying point for regaining control and issuing orders.

(2) In moving forward from the service park to or through intermediate positions, tank units take up approach march formations, using the best available routes and avoiding places likely to be under hostile observation or fire. Arrangements must be made to insure reconnaissance of terrain over which the approach at night is to be made, and to have guides at hand to conduct units to their positions.

d. Attack position.—(1) The attack position is a control position where any halt made is of short duration, preferably for not more than a few minutes. Attack positions are selected immediately in rear of the line of departure. Here control is regained, final instructions are issued, and last minuate coordination with ground troops is made.

(2) Maintenance personnel and medical personnel remain at the intermediate position ready to move forward as the attack progresses.

e. Rallying point.—The rallying point should be a well defined terrain feature. In its selection consideration will be given to defense against hostile counterattacks. At this position the tank unit commander regains control after an attack. He makes such reorganization as is necessary and contacts the commander of the unit to which he is attached, or which he is supporting. If his mission calls for further action, he issues necessary orders and instruction, and proceeds to his next objective. Rallying points are usually in the zone of advance of the unit to which the tank unit is attached, or which it supports, and near the last objective.

f. Alternate rallying point.—An alternate rallying point is prescribed in orders and is to be used in case the rallying point cannot be reached or is untenable. It may be the attack position, but is usually on the near side of the objective.

g. Position in reserve.—A tank unit in reserve is located where it will be immediately available to the unit to which attached or which it supports, and far enough to the rear to permit employment anywhere within the supported unit's zone of action.

■ 305. FACTORS INFLUENCING TANK OPERATIONS.—*a. Terrain.*—Terrain is a major factor in the employment of tanks. At

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times it may be desirable to delay tank attacks until favorable terrain from which to launch the attack is secured by other troops. Weather, as it affects the terrain, must be considered. Rain, melting snow, and thaws influence tremendously the suitability of terrain. (See ch. 2.)

b. Routes of advance.—Routes of advance are selected with a view to favorable terrain and tactical suitability for tank employment.

c. Objectives and zones of action.—Tank battalions are assigned specific missions which will assist the supported troops. They will attack in large numbers, successively or simultaneously, against the enemy's front lines or flanks and command, supply, communications, and artillery installations. Zones of action must provide freedom for maneuver. Tank units must not be tied to the movement of foot troops, otherwise their mobility is sacrificed and vulnerability to hostile antitank weapons increases.

d. Surprise.—Tank attacks are planned to strike unexpectedly against definite objectives. Surprise is gained by striking in large numbers, at an unexpected time and place, and in an unexpected direction.

e. Combat formations.—Combat formations (see chs. 2 and 5) should permit control, mutual fire support, and development of the maximum fire power in the shortest practicable time with the least exposure to hostile fire. They depend upon the mission, terrain, obstacles, nature of hostile resistance, number of tanks available for the operation, and state of training of the unit. Formations must be simple and flexible in order that units may retain freedom of maneuver. (See ch. 5.)

■ 306. ACTION AGAINST ANTITANK MEASURES.—GHQ tank units exercise the same measures against antitank defenses as other armored units of the same type. (See ch. 2.)

■ 307. ACTION AGAINST HOSTILE MECHANIZED FORCES.—*a.* Chapter 2 covers action of tank units against hostile mechanized forces.

b. During the course of an attack GHQ tank units may be used offensively, in conjunction with other available antitank measures, to attack hostile mechanized forces threatening to break up or disorganize the main effort.

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c. In either attack or defense, when the armor and armament are equal to or superior to the enemy, GHQ tank units attached to army corps or divisions may be used in large numbers to break up hostile mechanized formations. This counterattack is made on the enemy flank or rear before the enemy launch their attack or before they reach friendly formations.

■ 308. COMBAT ORDERS.—*a.* Orders of army corps and division commanders to tank units, while prescribing necessary details of coordination and cooperation, must not be so restrictive that the initiative of the tank unit commander will be stifled.

b. Combat orders of GHQ tank units are similar in form, sequence, and technique to combat orders of similar armored units. Orders are usually oral. They may be fragmentary. Overlays, sketches, and maps are used to the maximum. Written orders will be the exception. Orders are issued in accordance with FM 101–5.

SECTION II

COORDINATION AND COOPERATION

■ 309. GENERAL.—*a.* The action of tank units must be fully coordinated with that of all other arms participating in the operation. Coordination is achieved by thorough planning and the issuance of instructions in sufficient detail to insure complete understanding by all units. There must be the maximum cooperation between units.

b. The following must be particularly coordinated:

(1) Infantry supporting fires.
(2) Advance of foot troops.
(3) Artillery fires.
(4) Air observation and air supporting fires.
(5) Use of smoke.
(6) Engineer support.
(7) Supply, maintenance, and evacuation.

■ 310. DISMOUNTED TROOPS.—*a.* The infantry, cavalry, or engineers, on foot, assist the supporting tank units by placing all available fire on known or suspected locations of hostile antitank guns and observation posts.

b. Infantry advances rapidly behind the tanks to seize and hold the positions overrun by the tanks.

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c. Infantry may seize ground from which a tank attack may be launched.

d. Infantry or other dismounted troops will assist the advance of tank units by stalking hostile antitank weapon using methods of infiltration.

■ 311. TANK UNITS.—Tank units assist infantry and other foot troops whom they are supporting by—

a. Neutralizing or destroying hostile automatic weapons likely to hold up the advance of the foot troops.

b. Making passages through wire or other obstacles.

c. Maintaining neutralization of hostile resistance by attack in depth until arrival of foot troops on the objective.

d. Neutralizing or destroying hostile reserves and artillery formations in the battle area.

e. Destroying or disorganizing hostile command, communications, and supply installations in the battle area.

f. Breaking up hostile counterattacks.

■ 312. ARTILLERY.—*a.* Effective artillery support of a tank attack requires definite detailed plans. These are made in a conference of the commander of the unit to which tanks are attached or which they support, the artillery commander, the commander of the tank unit, and appropriate staff officers. These plans cover such points as the protection of the flanks of the attacking tanks, areas to be covered by artillery fire and avoided by tanks, and time schedules of fires. The areas to be avoided and time schedules of artillery fires must be known to all tank commanders.

b. Preparation fires are requested on areas known or believed to contain antitank weapons. Smoke may be used to blind hostile observation points and antitank guns. Smoke is not placed on the objective unless it will be dissipated before arrival of the tanks.

c. Artillery furnishes direct support to the leading tank echelons. Fires are lifted to targets on the flanks or in rear before tanks reach the first objective. Thereafter fire support is accomplished by an artillery liaison officer who follows the attack closely in a tank accompanying the tank unit commander, and by means of radio causes fire to be placed on new targets. The air observer for artillery also observes the progress of the tank attack and keeps the artillery informed.

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■ 313. AVIATION.—*a.* It is highly desirable that tank units have observation aviation for reconnaissance and liaison, and combat aviation for close support, throughout an operation.

b. Observation aviation is of great value in maintaining liaison between the division commander and the commander of the tank unit, and in indicating an objective to the tanks. Progress of tank units is reported as a routine measure to give a continuous picture of the situation to the tank unit commander.

c. Bombardment aviation support is highly desirable for employment of tank units against organized objectives. The immediate assistance of bombardment aviation to reduce antitank guns and other hostile resistance is of particular value in all stages of the attack both to augment the fire of artillery and to replace this fire when artillery is unable to render close support. Missions are requested through the accompanying air liaison officer.

■ 314. ENGINEERS.—Engineer assistance must be requested in time to allow engineer reconnaissance and preparations to be made. Stream crossings are improved or constructed, mine fields are cleared, demolition work is performed, and camouflage assistance is furnished by available engineer troops. These engineer operations are coordinated with the scheme of maneuver so that supporting troops neutralize hostile troops interfering with engineer projects.

■ 315. CHEMICAL TROOPS.—Chemical troops, by use of smoke, screen hostile observation posts and antitank weapons. This fire must be coordinated with the artillery and the infantry mortars.

SECTION III

CONTROL, COMMUNICATIONS, AND LIAISON

■ 316. CONTROL.—Control of a GHQ reserve tank battalion is of vital importance before, during, and after combat. The degree to which the battalion commander can exercise control may be the difference between success and defeat. In order to exercise control the battalion commander must use every agency at his command. The principal means by which the battalion commander can exercise control lie in the thorough training of individuals, tank crews, platoons, and companies in their combat functions; in the battalion staff; in liaison

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with higher headquarters, and supported and supporting units; in rapid and accurate communications; in prescribed formations for units; and in a simple plan of operations and maneuver.

■ 317. COMMUNICATIONS.—*a.* Efficient communications is the major means by which the GHQ reserve tank battalion commander directs and controls his battalion. Disrupted communications result in loss of control and rapid loss of offensive power.

b. The battalion communications officer is responsible to the battalion commander for the training of personnel and operation of all communication agencies within the battalion. Upon him falls the responsibility for maintaining at all times efficient communications with all units within the battalion and with attached and supported units.

c. Radio is the principal means of communication. Runners and mounted messengers must be used when radio silence is in effect or radio has failed, and for transmission of routine reports in order that air channels will not be clogged with unimportant details.

d. The communications officer's plan of signal communication must fit and serve the tactical plan of operation of the commander. Furthermore, it must be coordinated with the plan of the supported unit.

e. Appendix II shows the radio nets for GHQ reserve tank units.

■ 318. LIAISON.—*a.* The liaison officer of a GHQ tank battalion, equipped with radio and accompanied by mounted messengers, reports to and remains at the headquarters of the unit to which the GHQ tank battalion is attached or is supporting. He will furnish his battalion commander, through the battalion intelligence officer, information continuously of—

(1) The tactical situation.
(2) The enemy.
(3) Our own troops.
(4) Terrain and road nets.

b. The commanding officer of an artillery unit attached to or supporting the attack or maneuver of a GHQ tank battalion sends an artillery liaison officer, equipped with radio and mounted messengers, to the headquarters of the GHQ

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tank battalion. The artillery liaison officer will keep his headquarters informed of—

(1) The plan of maneuver of the GHQ tank battalion.

(2) Type of artillery fire requested and area to be covered by the fire.

(3) The time the artillery fire is to begin, be lifted, or cease.

c. The communications officer of the GHQ tank battalion acts as liaison officer with airplanes that are assigned the task of observing for or supporting the attack or maneuver of a GHQ tank battalion. He will be in constant communication with the airplane(s) by a radio tuned to the frequency assigned to the airplane(s). He relays—

(1) Requests for tasks to be performed by airplane(s).

(2) Information received from the airplane(s) to the battalion commander, through the battalion intelligence officer, or direct, as the situation requires.

SECTION IV

RECONNAISSANCE

■ 319. GENERAL.—*a.* Tank operations must be preceded by a thorough reconnaissance. The responsibility for reconnaissance, the types of reconnaissance, and methods and means of obtaining the information desired are covered in detail in chapters 2 and 5.

b. GHQ reserve tank battalions have available to them as organic reconnaissance personnel the reconnaissance platoon of headquarters company, commanded by the reconnaissance officer. The reconnaissance officer is responsible to the battalion commander for reconnaissance for the battalion before, during, and after combat.

c. Each tank company in the battalion has a small reconnaissance detachment. This detachment is responsible to the company commander for company route and site reconnaissance, reconnaissance into and out of positions, and route reconnaissance from the attack position to the line of departure. Company reconnaissance detachments may be used to reinforce the battalion reconnaissance platoon as the situation dictates.

d. Reconnaissance is a major security measure in a GHQ reserve tank battalion.

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■ 320. RECONNAISSANCE.—*a.* The reconnaissance platoon of a GHQ reserve tank battalion executes such employment, route, and site reconnaissance missions as the situation dictates. It seeks information from the reconnaissance agencies of the ground force unit to which the battalion is attached or which it supports. Reconnaissance is continuous for checking routes and sites, bridges, terrain, friendly and hostile troop dispositions and obstacles, and for seeking every bit of information that may be of value to the commander.

b. Route and site reconnaissance from assembly position (area) to intermediate positions and attack positions are of prime importance. Company reconnaissance agents may be used to supplement the battalion reconnaissance platoon for this reconnaissance.

■ 321. BATTLE RECONNAISSANCE.—*a.* Battle reconnaissance is discussed in detail in chapters 2 and 5.

b. Personal reconnaissance, as executed by a GHQ reserve tank unit commander, requires the gathering of information not normally furnished by other agencies. Such reconnaissance is made to determine when, where, and how tanks can best be employed. It begins when the use of tanks is contemplated and continues throughout the engagement.

(1) When the tank battalion commander reports to the headquarters of the unit to which his unit is attached or is to support, he obtains from that commander all available information in regard to the hostile strength, armament, organization, dispositions, establishments, and nature of the terrain, including location of tank obstacles, mine fields, and other pertinent information. He learns the disposition of friendly troops, including adjacent troops, also the plan of the unit which he is to support.

(2) The tank battalion commander will make a personal reconnaissance and utilize his reconnaissance personnel and staff to supplement the information received and to gather other pertinent information on which he may base his recommendations.

(3) After a study of the information obtained, the tank unit commander submits his recommendations for the employment of his tanks to the commander of the troops which his unit is to support or to which it is attached. When the decision of this supported unit commander regarding

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these recommendations is announced, the tank battalion commander issues his orders to his subordinate leaders.

(4) Reconnaissance by subordinate tank unit commanders is begun immediately. The tank company commanders contact the unit(s) through which they attack (if that should be the case), and arrange for a passage of lines. Routes into the attack position and from the attack position to the line of departure are thoroughly reconnoitered by platoon leaders and by tank commanders, if this is feasible. As thorough a reconnaissance as possible is made of the terrain beyond the line of departure, to include known enemy installations, obstacles, and prominent landmarks.

(5) During the tank attack, reconnaissance is continuous to determine the following:

(*a*) Suitable terrain for tank employment.
(*b*) Progress of the supported ground forces.
(*c*) Routes to rallying points.
(*d*) Location of hostile mechanized units.
(*e*) Probable direction of hostile counterattacks.
(*f*) Need for engineer assistance.

c. Other than as covered above, reconnaissance as executed by units of GHQ reserve tank battalions is the same as that prescribed for units of the armored regiment. (See chs. 2, 5, and 7.)

■ 322. AIR RECONNAISSANCE COOPERATION.—*a.* Airplanes are valuable reconnaissance agencies before and during the progress of the action. (See chs. 2 and 5.) To the separate tank battalion(s) they are of the utmost value in maintaining contact with the supported units. These results can be accomplished only by means of the closest cooperation between tank and air corps personnel and frequent experience in combined training.

b. Requests for aviation support for a tank attack should be made by the commander of the unit to which the tank unit is attached or is supporting. These requests may be initiated by the tank unit commander. Definite plans and arrangements for the execution of the missions requested will be effected best by conference between the tank unit commander and the representative air corps unit designated

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to accomplish the mission. Air corps personnel should be informed of the plan of attack, including the plan of cooperation between tanks, infantry, and artillery. The details of communication between the air service and the tank unit must be announced to the personnel concerned.

c. Air observation keeps in close touch with the tank unit from the time the tanks leave their attack position. It keeps the supported infantry and the supporting artillery constantly informed of the progress of the tank action. It should be on the alert for and report the hostile reaction to the attack. It immediately reports any threatened hostile counter measures such as a hostile tank attack. During that critical period just following the capture of an objective and before the tank unit has reassembled and reorganized and the foot troops have completed the organization of the terrain captured, air observation is particularly alert for hostile tanks or other highly mobile units that may launch surprise counterattacks and nullify all that the operation has accomplished.

d. On pursuit or exploitation missions, prior visual and photographic air reconnaissance normally will form the basis for planning the route for the tanks to their objective and the location of intermediate positions and rallying points. It observes along the route to the objective for any hostile troops and defensive measures which may require a change in the plan of tank employment. Information concerning the condition of bridges, roads, and causeways over swamps, and other defiles is particularly important. This information should be transmitted promptly both to the commander of the pursuing force and to the tank unit commander. At the same time observation aviation will maintain continuous surveillance of the progress of the tank movement, keep the tank unit commander constantly informed of the location and progress of his own elements, and help him maintain his direction and routes when the terrain does not permit sufficient forward visibility for proper orientation. Throughout the entire operation, a liaison airplane should be used to communicate with accompanying motorized forces and with the headquarters of the entire force, keeping them informed of the tank operation so that the tank effort may be promptly assisted by and coordinated with the other arms.

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■ 323. INTELLIGENCE.—Separate tank battalions supplement their intelligence operations by cooperating with the intelligence service of the ground force unit to which they are attached or are supporting. (See ch. 2.)

SECTION V

SECURITY

■ 324. GENERAL.—Security measures, in general, for all tank units are covered in chapter 2.

■ 325. SECURITY IN REAR AREAS OF FRIENDLY TROOPS.—*a.* In assembly positions, intermediate positions, or attack positions, local security detachments are posted. Timely warning from the reconnaissance elements of the approach of a hostile threat affords the best security for the battalion. Positions will be occupied automatically and organized for all around defense with the tanks generally on the perimeter of the position and administrative installations in the center. For control, individual tanks of platoons will be grouped together with not less than 50 yards between tanks. Intervals between platoons and companies are considerably greater. Security from visual and photographic observation is obtained through concealment and camouflage. Security from artillery fire and aerial attack is obtained through concealment, dispersion, and the use of defiladed positions. Gas and air alarm sentries will habitually be posted. Security against ground attack, especially mechanized attack, is obtained by reconnaissance patrols, by outposts, by siting tanks for mutually supporting fires, by exploiting obstacles, by use of land mines, and by covering routes of approach with fire. Upon being warned by the reconnaissance and security elements of the approach of hostile forces, the battalion must be prepared to move out in any direction, at a moment's notice by day or night, without confusion or delay.

b. On the march in rear areas GHQ reserve tank battalions normally will not require a large advance guard. At times the reconnaissance platoon provides sufficient security.

■ 326. SECURITY WHEN ATTACHED TO OTHER UNITS.—Attachment to a unit does not relieve GHQ reserve tank battalions from responsibility for local security. The security measures enumerated in paragraph 27 should be taken regard-

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less of the general security afforded by the unit to which the battalion is attached.

■ 327. SECURITY WHEN ACTING ALONE.—GHQ reserve tank battalions will not normally operate alone. If this situation arises they cover themselves with such security detachments as are necessary to prevent surprise. These may comprise, in addition to the reconnaissance personnel, a platoon as advance guard, a platoon as rear guard, and a platoon in each flank guard. Half-track vehicles may be attached to the platoon.

■ 328. SECURITY AGAINST AIR ATTACK.—The GHQ reserve tank battalion uses both active and passive defense measures against air attack.

a. Active defense.—Air guards are detailed to give instant warning of impending air attack. When attacked, tank units use all available small arms and automatic weapons against low flying hostile aircraft. Although tanks are not vulnerable to small arms fire from the air, the fire of large caliber weapons may be destructive to tanks, and light bombs falling near the vehicle may break a track.

b. Passive defense.—Tank units protect themselves from air attack by use of cover and concealment, camouflage, night and cross country marches, dispersion of vehicles, and increased distances on roads. Assembly areas or bivouacs occupied during the day should be vacated immediately after dark and the unit moved to some other location. Full use will be made of engineer camouflage troops when available.

SECTION VI

OFFENSIVE COMBAT

■ 329. GENERAL.—The tactics of GHQ reserve tank battalions must be flexible. They must be prepared to function as separate tactical organizations either alone or attached to an infantry or cavalry division, in one operation, to conform to the requirements of a tank groupment in another, or to function organically within an armored division in still another operation. Tactical training, doctrines, and techniques for the GHQ reserve tank battalions must therefore prepare them to accomplish these various tactical missions.

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■ 330. EMPLOYMENT IN PRELIMINARY OPERATIONS.—A battalion to be used against hostile advance elements may be held in a reserve position or may advance by bounds behind the main body of infantry or cavalry, when these units are not disposed in great depth. When contact is imminent, a GHQ reserve tank battalion with the advance guard may follow the advance guard by bounds. With motorized units, tank units are located in column so as to facilitate their entry into combat.

■ 331. APPROACH INTO COMBAT.—*a. General.*—The approach into combat begins when a tank unit enters the zone threatened by hostile artillery fire.

b. Approach by day.—In approaching into combat by day, tank units take full advantage of terrain and of maximum practicable speed to obtain surprise. Covered routes are used in the approach march to the line of departure. In any event, local air superiority must be secured and maintained. When cover is not available, maximum practicable speed is used in the approach march. Security from artillery fire is obtained by dispersion of the unit into small groups, or columns. However, dispersion must not be so great that control is lost.

c. Approach by night.—The units move on routes and into their positions under close control. Routes are thoroughly marked and guides posted at critical points. Engineers are detailed to prepare crossings over streams and ditches. Characteristic tank noises at night will disclose movement into position unless care is exercised. Decision may be obtained by having a few tanks make considerable noise in moving into a false attack position while other tanks move with least practicable noise into the rear position. This, of course, should not be done if it is desired to conceal the presence of all tanks. Artillery fire and aviation may be used to drown the noise of tanks moving into position.

■ 332. PLAN OF ATTACK.—*a.* The following are particularly considered in planning the attack:

(1) Intermediate position.

(2) Attack positions.

(3) Time of attack of the tanks.

(4) Objectives, routes, and zones suitable for tank operations.

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(5) Mission of the tank unit.

(6) Fire support to be given tanks including all infantry weapons, artillery, chemical troops, and bombardment aviation.

(7) Coordination with other arms and units.

b. Time of attack.—In recommending the time of attack of the tanks, the time required to move all tanks from the attack position to the line of departure must be considered.

c. Passage through foot troops on departure position.—(1) Sufficient passages through the line of departure of an infantry unit are reserved for tanks. When practicable, the tanks pass through the foot troops on a relatively narrow front, which they later extend in accordance with the situation. If the situation requires the tanks to debouch on a wide front, care must be exercised by both infantry and tank personnel. Whenever practicable, detailed reconnaissance by individual tank company officers is made. This will include a definite method of indicating to supported troops when the last tanks cross the line of departure. Whenever detailed arrangements cannot be made, timely warning will be given the foot troops.

(2) Launching the tank advance in the trace of foot troops while they are attacking an objective is exceptional; such action is practicable only when the tanks have available a route of advance which does not pass through the rifle units.

d. Passage through foot troops between objectives.—If the plan contemplates initiation of the tank attack while the foot troops are attacking an objective, a tank route of advance must be defined prior to the attack, and foot troops fully informed. Where practicable, commanders keep their units clear of the tank route.

■ **333. Conduct of the Attack.**—*a.* Action of the tank company and battalion during the attack is discussed in chapter 5.

b. In the initial stages of their advance, tank elements proceed by routes and take formations that permit full use of cover. They deploy before becoming exposed to hostile antitank fire or artillery fire. At the proper time they assault (close on their objective), preferably from several directions, using maximum fire and greatest speed consistent with the terrain.

c. Some medium tanks may halt in defilade behind a crest

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or under cover to support by direct fire the advance of other tanks. After short periods of fire these tanks move to new positions to avoid destruction. They move forward when their fire is masked or the range becomes too great. The supported tanks may take up a similar position to cover the advance of the supporting tanks. Individual companies, platoons, or sections, advance by teamwork involving fire and movement.

d. When both light and medium tank battalions are present, light tank battalions usually advance behind the medium tanks, destroy or neutralize hostile automatic weapons and tank weapons overlooked by leading tank elements, and demoralize the hostile defense. When the hostile antitank defense is known to be weak, light tank units may lead the attack. In an attack against hostile mechanized units, medium tank units should lead and, if available, some should be held in reserve (see ch. 2). Speed is used to search for and crush local hostile resistances. Foot troops follow the tank attack rapidly to seize and hold the objective, allowing the tanks to proceed to their next objective or rallying point.

e. When light tank battalions only are available, bombardment aviation, artillery fire, and infantry weapons fire replace the fire and shock action of the medium tanks.

■ 334. ACTION AT RALLYING POINT.—Details concerning dispositions and actions taken at rallying point are covered in chapter 5. Tanks in a rallying point must be prepared to break up hostile counterattacks.

■ 335. PURSUIT.—Pursuit is covered in chapter 13.

SECTION VII

DEFENSIVE COMBAT

■ 336. GENERAL.—*a.* When attached to an army corps, an infantry division, or a cavalry division in a defensive position, the role of GHQ reserve tank units is the tactical offensive. Plans for counterattack include attack by tank units in conjunction with a coordinated attack by reserve troops with available combat aviation and artillery supporting the action.

b. Attached GHQ reserve tank units held in army corps or division reserve constitute a powerful mobile striking ele-

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ment to be used in conjunction with other suitable means for offensive operation against the flanks or rear of any hostile penetration or envelopment.

c. Besides affording cover and being beyond effective hostile artillery range, positions for tank units in reserve must be selected with a view to being invulnerable to surprise attack, facilitate rapid entry into any probable sector or area of combat, and be far enough to the rear to provide freedom of maneuver. A central location is desirable.

d. Tank units may participate in the following defensive operations:

(1) Defense.
(2) Withdrawal.
(3) Delaying action.

■ 337. PLANS FOR THE DEFENSE.—When tank units are to support the counterattack, the ground, where practicable, should be chosen to suit the characteristics of the tanks. The fires of all supporting units must be coordinated with the tank plan of attack. Infantry support must be prompt and vigorous.

■ 338. DEFENSE.—*a.* In the defense, tank units are used offensively to support a counterattack. They are not used as stationary machine gun or antitank gun emplacements.

b. A commander having tank units allotted to his command may attach tank units to his counterattacking unit or he may employ them under his own control to support the counterattack. The latter method is especially desirable when the tank units attack from a direction different from that of the counterattacking foot troops. Tank units used in large numbers in the counterattack may break up hostile mechanized formation by attacking them in flank or rear before their attack is launched, or has reached our formations.

c. Fire support for tank units in the counterattack should be as fully coordinated as in the offensive. Instructions issued are similar to those applicable to an offensive operation.

■ 339. WITHDRAWAL.—*a.* Tank units are effective in daylight withdrawals, but are seldom used at night.

b. The principal role of tanks in the withdrawal is to assist in disengagement of hard pressed units by counterattacking

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and disrupting the hostile attack. They should be supported by artillery and combat aviation.

c. Tank attacks in withdrawals are characterized by fast, aggressive attack which are limited in depth. Such action is more effective if directed toward a flank. In withdrawing, tank units acquire early information of terrain features including routes and positions for future offensive employment.

d. Tank units may be attached to the general covering force or may be retained by the commander as a mobile reserve. This decision depends to a great extent upon the immediate need of the general covering force for tank support and the composition and disposition of hostile pursuing forces.

■ 340. DELAYING ACTION.—In delaying action the role of tank units is similar to that in withdrawal.

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CHAPTER 13

GHQ RESERVE TANK GROUP

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SECTION I

ROLE AND ORGANIZATION

■ **341. ROLE.**—The role of the GHQ reserve tank group is to furnish additional striking power to corps and to infantry, cavalry, and armored divisions in the tactical offensive. The fundamentals given in chapter 12 are applicable to the GHQ reserve tank group.

■ **342. ORGANIZATION.**—*a.* The GHQ reserve tank group is a tactical unit consisting of a headquarters and headquarters detachment and three tank battalions. It may be equipped with either light or medium tanks.

b. For organization and functions of the group headquarters see chapter 9.

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■ 343. ALLOTMENT.—*a.* GHQ reserve tank groups are allotted for specific operations to armies, army corps, and divisions in accordance with the strategic plan of general headquarters. GHQ reserve tank groups may form the nucleus of a composite force, including the necessary supporting arms and services, for employment on missions ordinarily assigned armored divisions. (See SOFM 100–5.)

b. After attachment to a unit for a specific operation the group may be employed as a unit or it may be suballotted by battalion to commanders of combined arms teams.

c. Recommendations for suballotment of GHQ reserve tank units are made by the group commander after consideration of terrain and the scheme of maneuver.

SECTION II

CONTROL, COMBAT ORDERS, AND LIAISON

■ 344. CONTROL.—*a.* A tactical operation involving the use of GHQ reserve tank groups is a carefully coordinated action requiring continuous control of all participating elements. The GHQ tank group commander obtains the necessary control over the tank battalions under his command by utilizing every available means of communication and liaison. Methods of communication prescribed by FM 11–17 for the armored division are generally applicable to the GHQ reserve tank group.

b. The communication platoon of the GHQ reserve tank group is organized to function as a unit to furnish communication for the group headquarters. It is capable of being

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divided to furnish communication for two subgroups. (See par. 342*b*(2).)

■ 345. COMBAT ORDERS.—Combat orders are usually oral and fragmentary, and are issued in accordance with the provisions of SOFM 101–5. Orders of the commander for the tank group, while prescribing all necessary details, coordination, and cooperation, must not restrict the initiative of subordinate commanders.

■ 346. LIAISON.—*a.* A group liaison officer is always maintained at the headquarters of the supported unit. This officer must be provided with means of communication by the GHQ reserve tank group.

b. When necessary, special liaison officers from the group maintain contact with reconnaissance agencies, combat aviation, and artillery.

c. Each tank battalion within the group sends a liaison officer to group headquarters when engaged in active operation.

d. Liaison officers have the following specific duties (see FM 101–5):

(1) To be familiar with the plans of his own unit and the higher unit.

(2) To know the capabilities and limitations of his tank unit in any given situation.

(3) To report to the higher unit and to his own unit all pertinent information that might, in any way, affect tank unit operation or the scheme of maneuver of the higher commander.

(4) To arrange all details connected with requests from his tank unit for support.

(5) To seek constantly information in order to keep his commander abreast of the changing situation.

SECTION III

RECONNAISSANCE AND SECURITY

■ 347. RECONNAISSANCE, GHQ RESERVE TANK UNITS.—The GHQ reserve tank group commander is primarily concerned with reconnaissance measures to obtain information and data affecting tank operation in the area of the projected operation. The GHQ reserve tank group has reconnaissance

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elements for execution of such reconnaissance missions. These elements are not organized to perform extensive distant reconnaissance. The GHQ reserve tank group commander, therefore, usually limits his reconnaissance to those measures necessary to furnish security for his unit and to form the basis for the plan of employment of his tank battalions.

■ 348. AGENCIES.—The GHQ reserve tank group is provided with a reconnaissance platoon organized to execute the close tank reconnaissance missions required by this unit.

■ 349. PROCEDURE.—*a.* As soon as practicable after attachment to a unit the tank group commander, accompanied by certain members of his staff, reports to the unit headquarters. Reconnaissance elements of the group and battalions are moved in the meantime to a central location near the unit headquarters where they can be given detailed instructions after the group commander has been informed of the general scheme of maneuver.

b. After the general plan has been outlined to the group commander, he should obtain all pertinent information and data from those staff officers who are able to supplement the commander's instructions.

c. Usually it will be necessary for the group commander to make a hasty initial reconnaissance of the general area before making recommendations for the employment of his tank units. After making the preliminary reconnaissance the group commander returns to the headquarters to which his group is attached, prepared to make recommendations for the employment of his unit.

d. The commander conducting the operation, after considering the recommendations of the tank group commander, decides what employment will be made of tank units and issues orders to the tank group commander. Measures for detailed reconnaissance of the operations area are initiated immediately by the tank group commander. Usually the area is divided into battalion zones corresponding to probable operating areas for each battalion, and orders are issued directing detailed reconnaissance by battalion reconnaissance platoons within the assigned area.

e. In order to control and coordinate the reconnaissance efforts of subordinate units, the group commander through

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his S–2 requires special and periodic reports. Within a few hours enough information may be assembled to give the group commander a clear picture of the area insofar as operation of tank units is concerned.

■ 350. SECURITY.—*a.* Security measures applicable to all armored units are covered in chapter 2. GHQ reserve tank group commanders take all necessary measures for local security to supplement the general measures adopted by higher headquarters. Battalion commanders are responsible for the security of their units.

b. During movement under control of the group commander, subordinate units are covered by security detachments in accordance with instructions issued by the group commander. In bivouac, local security is coordinated by the group commander with the general protection afforded by the higher units.

SECTION IV

OFFENSIVE COMBAT

■ 351. GENERAL.—Employment in large numbers in a decisive direction is of primary importance in offensive combat. In such operations those characteristics peculiar to tank units—mobile fire power, armor protection, and destructive crushing power, are utilized to the maximum. Attacks by units smaller than a tank battalion are seldom warranted.

■ 352. MISSIONS.—The GHQ reserve tank group may be given a mission as follows:

a. To assist the foot troops in seizing and holding the hostile battle position by executing surprise attacks in large numbers against hostile forward areas, rear positions, reserves, artillery, and command, and supply installations within the battle area. When the frontal attack is necessary and terrain permits, the penetration is made in sufficient depth to give power and momentum for a continuous effort through the hostile areas offering the greater chance of success.

b. To attack in conjunction with cavalry, foot or motorized infantry, or armored divisions by employing decisive mass against vital objectives in rear of the hostile position.

c. To assist in the pursuit of a defeated enemy either as an element of the encircling force, as a reinforcement for the direct pressure troops, or as an independent encircling force.

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■ 353. PLANNING THE ATTACK.—*a*. The mission and area of operation having been decided, the GHQ reserve tank group commander plans his attack. He considers the following:

(1) His mission.

(2) Scheme of maneuver of the force to which he is attached or which he is supporting.

(3) Hostile dispositions, defenses, and capabilities.

(4) Objective of the force to which his unit is attached or is supporting.

(5) Zones of action of group and battalions.

(6) Coordination of supporting fires.

(7) Coordination of attack of combat aviation.

(8) Liaison with the unit to which he is attached or which he is supporting.

(9) Air observation and reconnaissance.

(10) Tank installations.

(11) Routes and provision for guides.

(12) Methods of regaining control—rallying points.

(13) Preparatory measures for crossing obstacles; engineer support requested if necessary.

(14) Plans for maintenance, supply, and evacuation.

(15) His own dispositions for the attack, including assignment of objectives and zones of action.

(16) Hour and direction of attack.

(17) Lines of departure.

(18) Instructions for secrecy, such as reduction or masking of noise of movement into position, radio silence prior to attack, deceptive measures, if any, to be employed, and use of lights.

b. After announcing his plan to his staff and battalion commanders, the GHQ reserve tank group commander releases his battalion commanders so that they may make necessary arrangements for the attack as discussed in chapter 12.

■ 354. CONDUCT OF ATTACK.—*a*. The initial formation for the attack depends primarily upon known hostile dispositions and located antitank guns, the terrain, distance to the objective, and the number of battalions available.

b. The attack must be launched with sufficient depth to insure continued effort to the objective. The advance is characterized by fire and movement utilizing all available cover and terrain features to cover approach to hostile position.

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c. The objective assigned the tank group will be that of the main effort of the force to which it is attached or which it supports or an objective the taking of which will vitally affect the main effort. When deep penetration is contemplated, a series of objectives may be assigned each battalion. Each battalion moves by the route prescribed to its objectives. Throughout the attack the group commander maintains communication with advancing battalions and directs changes in the original plan as necessary. Observation aviation must be used to observe progress and assist in control of battalions. Bombardment aviation, when available, should support the attack. Maintenance of liaison and communication with higher headquarters and supported units is necessary for complete coordination of the attack. After final objectives have been overrun each battalion proceeds to its assigned rallying point. Battalion procedure at rallying points is covered in chapters 5 and 12.

■ 355. PURSUIT.—*a.* In pursuit the GHQ reserve tank group may be employed with either the direct pressure or encircling force. In either case, the cooperation of bombardment and observation aviation with the tank effort is required. When armored divisions are available, GHQ reserve tank units will usually be used in direct pressure.

b. In attaching GHQ reserve tank units for pursuit the following should be considered:

(1) Attach all tank units to the direct pressure force when—

(*a*) Terrain over which the encircling force is to operate is unfavorable.

(*b*) Time is a vital factor.

(*c*) The enemy is badly disorganized.

(2) Attach all tank units to the encircling force when—

(*a*) Terrain over which the direct pressure force is to operate is unfavorable.

(*b*) When the enemy has covered his withdrawal by heavy antitank defense.

(3) When terrain is favorable for employment with both direct pressure and encircling forces, the bulk of the tank units may be assigned to the encircling force.

(4) When tank units operating with the direct pressure force are to be employed on such a broad front that control

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is difficult, control is decentralized to subgroups or individual battalions.

c. Direct pressure.—Tank units with the direct pressure force seek to pass through gaps that have been opened in the hostile defense, or to break through the enemy covering forces. They then move rapidly deep along the hostile line of withdrawal. Hostile reserves, command posts, and hostile columns are particular objectives. Ground reconnaissance is pushed to the maximum. Tank battalions will operate in many cases well beyond the range of small arms supporting weapons. Artillery support will be limited. Tank battalions advance by a combination of fire and movement, using the fire of a portion of the tanks to cover the advance of the others when necessary. Control is exercised by giving zones or routes of advance and areas (critical terrain features) as objectives. All radio restrictions are removed. Liaison airplanes should be detailed to operate with the tank group and tank battalions. Action is characterized by rapid, audacious thrusts.

d. Encircling force.—(1) The encircling force seeks to place itself across the enemy's line of retreat. When practicable, it advances along roads parallel to the hostile line of retreat and attempts to block the enemy at defiles, bridges, and other critical points. When the encircling force is unable to place itself across the line of retreat of the enemy, it attacks him in flank and delays him until the direct pressure force can arrive and complete the destruction.

(2) When the tank group is detailed as an encircling force, it may act independently or it may have attached to it infantry, mechanized cavalry reconnaissance elements, artillery, and engineers. The reconnaissance platoons of the various battalions may be combined to form a reconnaissance group for the tank group. The commander is usually given a mission type order which permits him great freedom in the execution of the operations. Routes and objectives are assigned to battalions by the group commander. Infantry or cavalry, when attached, is used to seize and hold vital terrain features, the control of which will block or delay hostile retreat, and to assist in reducing hostile antitank defense.

(3) Supply elements are reduced to the minimum but must be ample to cover any possible extended operation.

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SECTION V

USE OF GHQ RESERVE TANK GROUP WITH INFANTRY DIVISIONS, MOTORIZED INFANTRY, ARMORED, AND CAVALRY DIVISIONS

■ 356. GENERAL.—*a.* GHQ reserve tank groups operate with infantry divisions as explained in preceding sections of this chapter.

b. GHQ reserve tank groups may be attached to mobile combat units such as armored, cavalry, and motorized infantry divisions. When attached to these units, GHQ tank groups furnish the additional striking power necessary for a decisive effort against vital objectives deep in hostile rear areas. Such operations are characterized by swift movement through weak or hastily organized defensive positions. In general, attacks may be made on a broader front than when supporting foot troops. When confronted with strong hostile antitank defense, it will usually be advisable for other troops to make a gap for the employment of tank units. Reconnaissance measures covering long distances must often be augmented.

■ 357. EMPLOYMENT WITH MOTORIZED INFANTRY DIVISIONS.—When GHQ reserve tank groups and battalions are attached to motorized infantry divisions, their role is unchanged. Their mobility and offensive striking power assist the motorized infantry division to accomplish its mission. Air observation and bombardment aviation are especially desired for support of these missions.

■ 358. EMPLOYMENT WITH ARMORED DIVISIONS.—The GHQ reserve tank group may be attached to the armored division to furnish additional striking power for a particular operation. In such a case it may be employed as a unit directly under the division commander, or its battalions may function as additional battalions of the armored brigade. The armored division provides necessary reconnaissance and fire support for GHQ units so attached.

■ 359. EMPLOYMENT WITH CAVALRY DIVISIONS.—In general, the GHQ reserve tank group attached to a cavalry division will be employed as with the motorized infantry. Tank units are held in reserve until committed for the attack against the decisive objective.

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SECTION VI

DEFENSIVE COMBAT AND RETROGRADE MOVEMENTS

■ 360. GENERAL.—Defensive roles of the GHQ reserve tank group are executed by offensive action. The group or individual battalions are usually employed to assist in the counterattack in conjunction with other troops. In the defense, GHQ reserve tank units are initially held in reserve under cover, out of artillery range until the situation is favorable for their employment. (See ch. 12.)

■ 361. PLANS.—*a.* Based upon the defense plan of the force commander and upon reconnaissance, the GHQ reserve tank group commander makes plans for the use of his group in all practicable areas of employment. This may involve attachment of the group or its units to combat elements or employment of the group with the general reserve. These plans cover, in general, the same subjects as plans for an attack.

b. When attachment to designated units is contemplated, plans are made for operation of individual battalions with the divisions of the defending force. Subgroup or battalion commanders establish liaison with the headquarters of the division whose support is contemplated. Reconnaissance is made of terrain and routes for the employment of tank units. Counterattack plans of the division are studied and plans are made for support of counterattacks. Coordination of fires is arranged.

c. If the GHQ reserve tank group is to act in conjunction with the general reserve, the group commander by conference with the commander of the reserve makes plans for the possible employment of his group either in support of or attached to the general reserve in any contemplated action.

■ 362. COUNTERATTACKS.—*a.* The employment of a GHQ reserve tank battalion in the counterattack is discussed in chapter 12. The same fundamentals of employment apply to the GHQ reserve tank group. The tank group may support a reserve division used to counterattack against a penetration. In any case, its action is similar to that in the offensive in which all possible supporting fires are coordinated with bombardment aviation.

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b. Attack by a GHQ reserve tank group to assist in a counterattack is preferably made against a flank of the penetration. Efforts are made to obtain the full effect of a surprise attack in large numbers, supported by the fires of all available weapons in this operation.

■ 363. RETROGRADE MOVEMENT.—*a.* GHQ reserve tank groups may assist in retrograde movement by constituting a highly mobile reserve. In these operations the action of the tank units is always offensive.

b. Tank units may harass an advancing enemy from the flanks or they may make limited objective attacks when opportunity offers a favorable situation for tank operation. As with other mobile elements of any force moving to the rear, the GHQ reserve tank groups must not be committed to action unless maneuver room and terrain permits withdrawal when desired.

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APPENDIX I

GLOSSARY OF MILITARY TERMS

Accompanying artillery.—Single batteries, platoons, or pieces attached to assault infantry regiments or battalions for their close support.

Action.—An engagement or battle, usually one on a small scale.

Administrative map.—A map on which is recorded graphically information pertaining to administrative matters; such as supply and evacuation installations, train bivouacs, rear echelon, straggler line, collecting points for stragglers and prisoners of war, main supply road(s), and the line forward of which no lights will be shown; necessary tactical details also shown.

Administrative order.—An order covering administrative details, such as traffic, supply, and evacuation, when the instructions are too voluminous to be included in paragraph 4 of the field order, and at other times when necessary to publish administrative instructions to the command; usually issued by divisions and higher units.

Advance.—The progress of a command toward the enemy. To move forward. To make progress in the direction of the enemy.

Advance by bounds.—An advance controlled by the assignment of successive movement objectives usually from one terrain line to the next.

Advance by echelon.—An advance of a unit by successive movements of its component elements.

Advance command post.—The location of the commander or a small staff party, or both, other than at the command post or rear echelon of the unit.

Advance guard.—A security detachment which precedes the main body on the march.

Advance message center.—A communication center for the reception and relay of messages to facilitate communications with advanced units or units operating on a flank.

Advance on.—Advance toward.

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Advance party.—A detachment that it sent out by and moves ahead of the support of the advance guard and forms a reconnoitering element of the support. A detachment which precedes its unit to make administrative or other arrangements.

Aerial (or air) observation.—Observation from balloons, airplanes, or airships.

Aerial photograph.—A picture taken from any kind of aircraft.

Aerial photograph, oblique (vertical).—*See* Oblique (vertical) aerial photograph.

Agency of signal communication.—A term embracing the personnel and equipment necessary to operate message centers, signal intelligence, signal supply, and messenger, pigeon, radio, visual, sound, and wire communication.

Aid station.—An establishment of the Medical Department provided for the emergency treatment, sorting, and further disposition of casualties in combat. The first station on the route of evacuation to which the wounded are brought. Aid stations are usually established for each battalion in combat by the battalion medical detachment.

Air attack.—The attack of objectives on the earth's surface by aircraft.

Air base.—An establishment which is equipped and organized for sustaining the operations of one or more tactical air units.

Air-borne troops.—A general term used to include both parachute and air landing troops.

Airdrome.—A landing field, with the necessary additional installations for servicing, arming, operating, and maintaining military aviation units.

Air-landed troops.—Troops moved by aircraft who disembark after the aircraft reaches the ground.

Air reconnaissance and observation.—The gaining of information through visual and photographic means carried in aircraft.

Air scouts (or air guards).—Personnel detailed to furnish warning of the approach of hostile aircraft.

Air superiority.—Superiority over enemy aviation sufficient to permit air or ground operations in any desired locality without effective hostile air opposition.

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Alert.—A state of readiness for movement or action. An alarm warning. Vigilant.

Alinement.—A straight line upon which several elements are formed or are to be formed, or the dressing of several elements upon a straight line.

Allotment.—Allocation of units for certain missions or assignment. Applicable to GHQ reserve tank units.

Alternate emplacement.—An emplacement prepared for occupation in case the principal emplacement becomes untenable or unsuitable.

Alternate firing position.—A firing position from which the same fire missions can be executed as from the primary firing position.

Alternate rallying points.—A place selected as a precaution in case the rallying point is not accessible or becomes untenable.

Ambulance loading post.—A point where casualties are loaded into ambulances.

Ambulance station.—A point established for the administration and control of ambulance units and the regulation of movement of ambulances from front to rear and vice versa.

Ambush.—A concealed place or station where troops lie hidden for the purpose of attacking by surprise. Troops posted in such a position. To attack from such a position.

Annexes.—Orders, maps, overlays, sketches, forms, charts, tables, graphs, etc., employed to amplify orders and reports.

Antiaircraft defense.—That class of defense provided by the coordinated employment of air and ground forces against attack from the air. It includes passive means of defense.

Antimechanized defense.—The measures employed to protect troops, installations, and establishments against mechanized or armored units.

Antitank ditch.—A ditch designed to stop the passage of track laying vehicles.

Antitank mine.—A device consisting of a container with a quantity of high explosive which detonates when pressure is exerted on it; also, any device similarly operated.

Antitank mine field.—A grouping of antitank mines placed in concealed position so spaced as to stop or impede the progress of track laying or wheeled vehicles.

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Antitank weapons.—Those weapons whose primary mission is employment against armored vehicles.

Approach.—A route by which a place or position can be approached by an attacking force. The route leading to anything, as a bridge.

Approach march.—The advance, usually in extended formations, from the point where hostile medium artillery fire is expected or air attack is encountered to the point of effective small-arms fire.

Armored force.—A combined force comprising reconnaissance, assault, and supporting troops of more than one arm or service, transported in wheeled or track laying type motor vehicles, the bulk of which are provided either with partial or complete armor.

Arrive.—To reach a designated point or line. Refers to the head of a unit.

Artificial obstacles.—Obstacles prepared by human agency; they may be fixed or portable.

Artillery position.—A position selected for and occupied by an artillery fire unit for the delivery of fire.

Artillery preparation.—Intensive artillery fire delivered on hostile forward elements (short preparation) and other objectives (longer preparation) during the period immediately prior to the advance of the infantry from its line of departure to attack.

Artillery with the corps.—A term used to indicate all the artillery in a corps; includes corps, division, and attached artillery.

Assault.—To close with the enemy in order to employ weapons and shock action. When delivered by mounted troops, it is called the "charge". To deliver a concentrated attack from a short distance. To close with the enemy in hand-to-hand combat.

Assault, general.—An assault delivered on an extended front under coordination of a higher commander.

Assault, local.—An assault initiated and executed by a small unit (squad, section, platoon, company, battalion) in order to take immediate advantage of local conditions.

Assembly.—The regular grouping in close order, of the elements of a command. The grouping of units in areas, prior to or following combat, for the purpose of coordination or reorganization preceding further effort or movement.

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Assembly area (or position).—The area in which elements of a command are organized preparatory to further action.

Attached unit.—A unit placed temporarily under the direct orders of the commander of another unit to which it does not organically belong.

Attack.—An advance upon the enemy to drive him from his position.

Attack position.—A position immediately in rear of the line of departure, in the last available cover from hostile ground observation, where commanders of attacking units (elements) make final contact and coordination with cooperating troops before launching their attack.

Attacking echelon.—The leading echelon in attack.

Automatic supply.—A process of supply under which deliveries of specific kinds and quantities of supplies are moved in accordance with a predetermined scheduled. *Daily automatic supply* means that supplies are dispatched daily to an organization or installation.

Auxiliary arm.—Any arm that assists the principal arm assigned the mission of gaining or holding ground.

Axis of advance.—A road or series of locations along the contemplated direction of advance.

Axis of signal communication.—The initial and probable successive locations of the command post of a unit, named in the direction of contemplated movement.

Barrage.—Prearranged fire on a line or lines, either stationary or moving.

Barricade.—To fortify or close with a barrier, usually applied to roads.

Barrier.—A group of obstacles, either natural or artificial, or both, that block or restrict entrance into an area.

Barrier tactics.—A term used to describe the use of obstacles defended by fire.

Base of fire.—The supporting weapons of the unit of the attacking echelon when emplaced in firing position to support the advance.

Battle map.—A map, prepared normally by photogrammetric means and at a scale of 1:20,000, for the tactical and technical needs of all arms.

Billets.—Shelter consisting of private or public buildings.

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Bivouac.—An area in which troops rest on the ground with no overhead cover or under natural cover, shelter tents, or improvised shelter.

Bombardment aviation.—That type of aviation whose primary mission is the attack of surface objectives; classified as *light, medium,* and *heavy.*

Bound.—The distance marched by a unit when advancing in a successive series of moves.

Boundary.—Lines designating the lateral limits of zones of action or of areas or sectors of defense.

Box barrage.—A system of standing barrages inclosing an area.

Break-through.—A penetration of the entire depth of a defensive system into unorganized areas in rear.

Bridgehead.—Position occupied by advance troops to protect the passage of a river or defile by the remainder of the command.

Call sign.—A signal, usually a group of letters, or of letters and numerals, used for radio station identification.

Call (supply).—A demand for the delivery of supplies covered by credits.

Camouflage.—Work done for the purpose of deceiving the enemy as to the existence, nature, or location of material, troops, or military works.

Camp.—Shelter consisting mainly of heavy tentage. A temporary location or station for troops. To put into camp. To establish camp.

Canalize.—To restrict an advance by natural or artificial obstacles and by fire into a narrow zone.

Capture.—To take or seize by force or stratagem. "Also used for disabled, destroyed, or captured vehicles."

Casualties.—Losses in numerical strength by death, wounds, sickness, discharge, capture, or desertion.

Casualty agent (chemical).—A material of such physical and chemical characteristics that a dangerous or killing concentration can be set up under conditions encountered in the field.

Censorship.—Measures taken to prevent the leakage of information; they are applied to private communications, photography, press dispatches, radio broadcasts, publications, and all communications.

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Center.—The middle point or element of a command. If the number of elements considered is even, the right center element is considered the center element.

Check concentrations.—Registration of fire on easily identified points throughout the zone of fire, from which transfers can be made to targets of opportunity.

Chemical agent.—A substance useful in war which, after release and acting directly through its chemical properties, is capable of producing a toxic effect, a powerful irritant effect, a screening smoke, or an incendiary action.

Chemical land mine.—A container of persistent gas employed with a detonator to contaminate surrounding ground and vegetation.

Chief of Staff.—The senior general staff officer, detailed as such, on duty with the staff of a division or higher unit.

Chlorination.—The process of sterilizing water for drinking purposes by treatment with calcium hypochlorite.

Cipher.—A method of secret writing that substitutes other characters for the letters intended or transposes the plain text letters or employs both these processes.

Circulation map.—A map showing the measures for traffic regulation.

Class I.—A class of supplies consisting of those articles which are consumed at an approximately uniform daily rate irrespective of combat operations or terrain, and which do not necessitate special adaptation to meet individual requirements; such as rations and forage.

Class II.—A class of supplies consisting of those authorized articles for which allowances are established by Tables of Basic Allowances; such as clothing, gas masks, arms, trucks, radio sets, tools, and instruments.

Class III.—A class of supplies consisting of engine fuels and lubricants, including gasoline for all vehicles and aircraft, Diesel oil, fuel oil, and coal.

Class IV.—A class of supplies consisting of those articles which are not covered in Tables of Basic Allowances and the demands for which are directly related to the operations contemplated or in progress (except for articles in classes III and V); such as fortification materials, construction materials, and machinery.

Class V.—A class of supplies consisting of ammunition, pyrotechnics, antitank mines, and chemicals.

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Clear (in the).—The sending of messages, orders, or instructions in plain (uncoded) language.

Clearing station.—The corps or division medical installation where sick and wounded are assembled from the collecting stations and aid stations, sorted, treated if necessary, and turned over to the army for further evacuation. (Formerly called hospital station.)

Clear (verb).—To pass a designated point or line. Refers to the tail of a unit.

Code.—A method of secret writing that substitutes arbitrary groups of symbols given in a code book as equivalents of whole sentences, phrases, words, letters, or numbers.

Collecting point.—A point designated for the collection of prisoners of war or stragglers.

Collecting station.—An establishment located in the forward combat zone for the purpose of collecting and receiving casualties from aid stations and units, and preparing them for further evacuation by ambulance.

Column.—A formation in which the elements are placed one behind another. A *march column* comprises all elements of a command marching on one route under the control of one commander, including such forward, flank, and rear security forces as may be employed.

Combat aviation.—A term applied to bombardment and pursuit aviation.

Combat echelon.—The principal element of offensive or defensive power.

Combat intelligence.—Military intelligence produced in the field, after the outbreak of hostilities, by the military intelligence section of GHQ and military intelligence sections of all subordinate units.

Combat orders.—Oral, dictated, or written orders issued by a superior to a subordinate unit, covering any phase of operations in the field. Combat orders include field orders, letters of instruction, and administrative orders.

Combat outpost.—The outpost or security detachments established by subordinate commanders (company or battalion) when the distance of a security echelon from the main line of resistance is so reduced that the security troops can be more effectively coordinated with, and supported by, the combat echelon than a separate outpost under the control of higher commanders.

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Combat unit loading.—*See* Unit loading.

Combat vehicle.—A self-propelled, armed vehicle, with or without armor, manned by combat personnel.

Combat zone.—The forward area of the theater of operations required for the active operations of the combatant forces. It is divided into army, corps, and division areas.

Combined operations.—The tactics of the combined or associated arms, as the infantry, armored force, cavalry, field artillery, corps of engineers, air corps, or any two or more of them. Joint operations, as by two or more allies, the army and navy, etc.

Command.—The authority which an individual exercises over his subordinates by virtue of rank and assignment. The direction of a commander expressed orally and in the prescribed phraseology. A body of troops or a locality under the command of one individual. One of the essential elements of military organization, the other two being combat and supply elements. The vertical height of the fire crest of the parapet above the original natural surface of the ground. The vertical height of any ground over other ground in its vicinity. To order or exercise command.

Commander's group.—A subdivision of the forward echelon containing certain key officers and men who usually accompany the commander. During combat it may be combined with the command post.

Commanding ground.—A rising ground which overlooks a post or position.

Command post.—The staff agencies and command facilities immediately required by the commander for assistance in tactical operations. The locations of such agencies and facilities.

Compartment of terrain.—An area of terrain inclosed on at least two opposite sides by terrain features such as ridges, woods, cities, or bodies of water, which prevent ground observation and direct fire into the area.

Composite photograph.—The picture that results from the joining together of the vertical and transformed oblique photographs made by a multilens camera.

Concealment.—The state or condition of being hidden from the enemy's view. Any object affording protection from the view of the enemy.

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Concentration.—An assembly of troops in a particular locality, on mobilization for training, attack, or defense. The amount of toxic chemical vapor in a given volume of air at any particular time and place. A volume of fire placed on an area within a limited time.

Conference call.—A telephone call in which one individual desires to obtain telephone connection with two or more other individuals at the same time in order to transmit instructions or information to all parties simultaneously.

Connecting file.—Elements of a connecting group used within a march column.

Connecting group.—Any group used to maintain contact between separated forces or elements.

Contain.—To hold in place. To inclose. To restrain.

Containing action.—An attack designed to hold the enemy to his position or to prevent him from withdrawing any part or all of his forces for use elsewhere.

Containing force.—A body of troops whose mission is to hold an enemy force in check or position.

Contaminated area.—An area contaminated with persistent gas.

Contaminated vehicle area.—An area to which vehicles are sent for decontamination.

Contingent zone.—An area within the field of fire, other than the normal zone, within which a unit may be called upon to fire.

Controlled mosaic.—An assembly of two or more overlapping vertical photographs oriented with respect to each other and to a framework of points appearing on the photographs whose locations on the ground have been definitely determined.

Control of the air.—Total neutralization of enemy's aviation. Freedom of all friendly air and surface forces to operate without hostile air opposition.

Control point.—An agency established by a unit at a convenient point on the route of its trains at which information and instructions are given and received in order to facilitate and regulate supply or traffic.

Convoy.—Any group of transportation temporarily organized to operate as a unit during movement. To escort. To accompany for the purpose of protecting.

Convoy unit loading.—*See* Unit loading.

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Cooperation.—The act of working together for the accomplishment of a common end.

Coordination.—The act of supervising, regulating, and combining, to gain the best results.

Corridor.—A compartment of terrain of which the longer dimension lies generally in the direction of movement of a force, or leads toward an objective.

Cossack post.—An outguard consisting of four men posted as an observation group, with a single sentinel in observation, the remaining men resting nearby and furnishing the reliefs for the sentinel.

Counterattack.—An attack by a part or all of the defending force against a hostile attacking force for the purpose of regaining ground lost or destroying hostile elements.

Counterbattery fire.—Artillery fire delivered for the neutralization or destruction of enemy batteries in position.

Counterespionage.—Measure taken to prevent espionage by the enemy.

Counteroffensive.—An offensive operation launched by an entire defending force for the purpose of defeating the enemy.

Counterpreparation.—Prearranged fire delivered in a defensive action just prior to the enemy attack for the purpose of breaking up the attack or reducing its effectiveness.

Counterreconnaissance.—Those measures taken to screen a command from hostile ground and air observation, and reconnaissance.

Cover.—Natural or artificial shelter or protection from fire or observation, or any object affording such protection. The vertical relief of a trench measured from the bottom, or from the trench board, to the top of the parapet. To protect or provide security for another force or a locality.

Covering detachment (or force).—Any body or detachment of troops which provides security for a larger force by observation, reconnaissance, attack, or defense, or any combination of these methods.

Credit.—An allocation of a definite quantity of supplies which is placed at the disposal of the commander of an organization for a prescribed period of time.

Crest.—The summit or highest line of a ridge. The actual or topographical crest.

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Critical points.—Selected terrain features along a route of march with respect to which instructions are given to serials for the purpose of controlling the movement.

Cruising.—Operation of tanks on the objective to keep down hostile fire until arrival of attacking foot or other troops.

Cryptography.—The science which embraces the methods and devices used to convert a written message into code or cipher.

Daily telegram.—A telegram or other message dispatched daily by divisions and larger units giving the unit's situation as regards supplies. A strength report is included.

Daily train.—The train arriving daily at a railroad with supplies for troops which the railhead serves.

Danger space.—That portion of the range within which a target of given dimensions would be hit by a projectile with a given angle of fall.

Day of fire.—*See* Unit of fire.

Day of supply.—The estimated average expenditure of various items of supply per day in campaign expressed in quantities of specific items or in pounds per man per day.

Dead space.—Ground which cannot be covered by fire from a position, because of intervening obstacles.

Debouch.—To march from a defile, wood, or other close country into open country.

Decision.—The general plan of a commander expressed definitely and briefly. A decisive outcome of a battle, one side being decisively defeated.

Decode.—To translate a code message into ordinary language.

Defend.—To maintain against force. To secure against attack. To conduct a defensive battle.

Defense.—The means adopted for resisting attack. The act of defending, or state of being defended.

Defense area.—That part of the battle position (or outpost zone) assigned to a unit as its area of responsibility in the all around defense of the area of a higher unit (ordinarily used when referring to units smaller than a regiment. *See* Sector.

Defensive position.—Any area occupied and more or less organized for defense. A battle position. A system of mutually supporting defensive areas or tactical localities of varying size.

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Defensive zone.—A belt of terrain, generally parallel to the front, which includes two or more organized or partially organized battle positions.

Deferred message.—A message whose delivery to the addressee may be delayed until the beginning of office hours of the morning following the day on which it is filed.

Defilade.—Protection from hostile ground observation and fire provided by a mask. Vertical distance by which a position is concealed from enemy observation.

Defile.—A terrain feature or a structure which can be traversed only on a narrow front, or which restricts lateral movements; such as a mountain pass or a bridge.

Delaying action.—A form of defensive action employed to slow up the enemy's advance and gain time without becoming decisively engaged.

Delaying position.—A position taken up for the purpose of slowing up or interfering with the advance of the enemy without becoming decisively engaged.

Demonstration.—An attack delivered on a show of force made on a front where a decision is not sought and for the purpose of deceiving the enemy.

Density.—The amount of traffic moving one way on a road, expressed in number of vehicles per mile.

Deployment.—An extension of the front of a command.

Depot.—An organized locality for the reception, classification, storage, issue, or salvage of supplies; or for the reception, classification, and forwarding of replacements. *Arm or service depots* pertain to a single arm or service and *general depots* pertain to two or more supply arms or services.

Depth.—The space from front to rear of any formation or of a position, including the front and rear elements.

Detached post.—A post established outside the limits of the outpost proper for a special mission, as to observe or guard some locality of special importance.

Detachment.—A part of a unit separated from the main organization.

Detraining point.—A point on a railroad where troops and equipment are unloaded.

Development.—The distribution of a command from mass or route column disposition into smaller columns or groups in preparation for action.

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Dictated order.—An order delivered orally, of which a verbatim record is made by the receiver.

Direction of march.—The direction in which the base of the command, whether actually in march or halted, is facing at the instant considered.

Direct laying.—Laying in which the sights of the weapon are alined directly on the target.

Direct pursuit.—Pursuit conducted against the rear of the retreating columns, and including envelopment thereof.

Direct pressure force.—Force which executes direct pursuit.

Direct support.—Support provided by that artillery which has the primary mission of supporting a designated subdivision of the combined force of which it is a part.

Discipline.—That mental attitude and state of training which render obedience and proper conduct habitual under all conditions.

Displacement.—The movement of supporting weapons from one firing position to another.

Disposition.—The distribution and the formation of the elements of a command and the duties assigned to each for the accomplishment of a common purpose.

Distance.—Space between elements in the direction of depth.

Distributing point.—A place, other than a depot or railhead, where supplies are issued to regiments and smaller units. Distributing points are designated by the class of supplies therein, and by the identity of the unit establishing them, such as "Class I Distributing Point, 1st Division," or "Ammunition Distributing Point, 1st Infantry."

Distribution.—The manner in which troops are disposed for any particular purpose, as battle, march, or maneuver. Dispersion of projectiles. An intentional dispersion of fire for the purpose of covering a desired frontage or depth, accomplished in various ways. A delivery of supplies, specifically by the supply officer of a higher unit to subordinate units, or to individuals.

Distribution, dump (railroad) (unit).—*See* Dump (railroad) (unit) distribution.

Dump.—A temporary stockage of supplies established by a corps, division, or smaller unit. When supplies are ordered issued from dumps, the latter become distributing points. Dumps are designated by the identity of the unit establishing them and the class of supplies therein, such as "1st

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Infantry Ammunition Dump" or "1st Division Class I Supply Dump."

Dump distribution.—Issue of Class I or other supplies to regimental or (similar unit) transportation at a dump established by higher authority.

Echelon.—A formation in which the subdivisions are placed one behind another extending beyond and unmasking one another wholly or in part. In battle formations, the different fractions of a command in the direction of depth, to each of which a principal combat mission is assigned; such as the attacking echelon, support echelon, and reserve echelon. The various subdivisions of a headquarters; such as forward echelon and rear echelon.

Effective range.—The range at which, for a particular gun, effective results may be expected.

Element.—One of the subdivisions of a command. The term "elements" is used in an inclusive sense to refer to all those various smaller units or parts of units, generally different in character; as *service elements,* meaning quartermaster, ordnance, engineer, and medical units, etc.

Emergency barrage.—A barrage which may be ordered fired to cover gaps in the normal barrage line or to reinforce the normal barrage of another part of the line.

Emergency counterpreparation.—Fire planned by the artillery of one division to reinforce the local counterpreparations of other divisions.

Emplacement.—A prepared position from which a unit or a weapon executes its fire missions. *See* Firing position.

Encircling force.—A pursuing force which moves around the hostile flanks or through a breach to reach and attack the heads of retreating enemy columns and bring them to a halt.

Encode.—To translate ordinary language into code. To prepare a message in code.

Enfilade.—To fire at a target so that the line of fire coincides with the long axis of the target.

Entraining point.—A point on a railroad at which troops or vehicles are loaded on trains.

Entrucking (detrucking) point.—The point at which the head of a truck column halts for the entrucking (detrucking) of troops or supplies.

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Entrucking group.—Troops, matériel, or supplies properly disposed for loading at an entrucking point.

Envelopment.—An offensive maneuver in which the main attack is directed from an area wholly or partially outside and to the flank(s) of the initial disposition of the enemy's main forces and toward an objective in his rear; usually assisted by a secondary attack directed against the enemy's front.

Escort.—A body of armed men to guard a person, persons, or goods on a journey, or to accompany as a mark of respect or honor.

Escort force.—A part of the naval local defense forces charged with the duty of protecting convoys within naval district waters.

Espionage.—The process of obtaining information of the enemy by means of spies.

Essential elements of information.—That information of the enemy, of the terrain not under our control, or of meteorological conditions in territory held by the enemy, which a commander needs in order to make a sound decision, conduct a maneuver, avoid surprise, or formulate the details of a plan. They include questions relating to enemy capabilities, other intelligence specifically desired by the commander, and information requested by other units.

Estimate of the situation.—A logical process of reasoning by which a commander considers all available data affecting the military situation and arrives at a decision as to a course of action, including the expression of his decision.

Evacuation.—The withdrawal of troops or civilians from a given area; also, the act of clearing personnel (such as stragglers, prisoners of war, sick, and wounded), animals, or matériel (such as salvage and surplus baggage) from a given locality.

Evaluation of information.—An analysis of information to determine its probable intelligence value; i. e., its accuracy, its credibility, and its application to the situation.

Evolution.—A movement by which a command changes its position or formation.

Executive.—An officer charged with the responsibility of supervising the work of the staff in a command not provided with a general staff; generally, the second-in-command.

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Exploitation.—The act of taking full advantage of a success. To utilize.

Extended order.—Formations in which the individuals or elements are separated by intervals or distances, or both, greater than in close order.

Extreme range.—The maximum range of any weapon.

Feint.—An attack or demonstration intended to deceive the enemy. A pretense. A strategem. To make a feint.

Field expedients.—Improvised means used to facilitate continued employment of equipment in the field. Particularly applicable to automotive equipment.

Field fortification.—The act of increasing the natural strength of a defensive position by words designed to permit the fullest possible fire and movement of the defender, and to restrict to the greatest possible extent the movement and the effects of the fire of the attacker. Defensive works of a temporary nature used in the field in both the attack and defense.

Field order.—An order conveying the directions of the commander to the subordinate commanders charged with the execution of tactical operations.

Final protective line.—For machine gun fire, a predetermined line along which, in order to stop assaults, is placed grazing fire, often fixed as to direction and elevation, and capable of delivery under any condition of visibility.

Fire, assault.—Fire delivered by the unit while advancing at a walk.

Fire, collective.—The combined fire of a group of individuals.

Fire, combined traversing and searching.—Fire distributed both in width and depth by changes in direction and elevation of the gun.

Fire, conduct of.—Employment of technical means to place accurate fire on a target.

Fire control.—Fire control includes all operations connected with the preparation and actual application of fire to a target.

Fire, converging.—Fire from different directions brought to bear upon a single point or area.

Fire, destruction.—Artillery fire delivered for the express purpose of destruction and when it is reasonable to expect that relatively complete destruction can be attained.

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Fire, direct.—Fire in which the sights of the weapon are alined directly on the target.

Fire direction.—Exercise of the tactical command of one or more units in the selection of objectives and, at appropriate times, in the concentration or distribution of fire thereon.

Fire discipline.—That condition resulting from training and practice which insures an orderly and efficient conduct of the personnel in the delivery of fire.

Fire distributed.—Fire distributed in width for the purpose of keeping all parts of the target under effective fire.

Fire, field of.—The area in the direction of the enemy which can be effectively covered by the fire of a firing unit, from a given position. That portion of the terrain or water area covered by the fire of a gun, battery, or other unit.

Fire, fixed (concentrated) (point).—Fire directed at a single point, without traversing or searching.

Fire, flanking.—Fire directed against a unit or objective from an area on its flank. Flanking fire may be enfilade or oblique.

Fire for adjustment.—Fire delivered primarily for the purpose of correcting, by observation, inaccuracies in the firing data.

Fire for effect.—Fire delivered for the purpose of neutralizing or destroying a target, or the accomplishment of the tactical effect sought. Any fire against a hostile target, other than for registration.

Fire, frontal.—Fire delivered approximately at right angles to the front of the enemy's line, or other linear target.

Fire, grazing.—Fire which is approximately parallel to the surface of the ground and does not rise higher above it than the height of a man standing. Fire with a long or continuous danger space.

Fire, high-angle.—Fire delivered at elevations greater than the elevation corresponding to the maximum range.

Fire, indirect.—Fire in which the weapon is aimed by indirect laying.

Fire, leading.—Fire delivered to strike a moving target.

Fire, low-angle.—Fire delivered at angles of elevation below that required for maximum range.

Fire, oblique.—Fire delivered from a direction oblique to the long axis of the target.

Fire, observed.—Fire which is adjusted by observation.

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Fire on targets of opportunity.—Fire on targets appearing suddenly or unexpectedly during the course of an engagement.

Fire, overhead.—Fire that is delivered over the heads of friendly troops.

Fire, plunging.—Fire in which the angle of fall of the bullets with reference to the slope of the ground is such that the danger space is practically confined to the beaten zone and the length of the beaten zone is materially lessened.

Fire, searching.—Fire distributed in the direction of depth by successive changes in the elevation of the gun.

Fire superiority.—A condition of fire whose effect is greater than that of the enemy.

Fire, traversing.—Fire distributed in the direction of width by successive changes in the direction of the gun.

Fire unit.—A unit whose fire in battle is under the immediate and effective control of its leader.

Firing position.—A locality or emplacement from which a unit or a weapon executes fire missions; classified as primary, alternate, or supplementary.

Fixed obstacles.—Obstacles which are securely placed or fastened.

Flank.—The side of a command, from the leading to the rearmost element, inclusive. *Right* flank is the right side, when facing the enemy, and does not change when the command is moving to the rear.

Flank guard.—A security detachment which protects the flanks of a marching force.

Flanking attack.—An attack directed against the flank of a hostile force.

Flank march.—A march across or nearly parallel to the front of the enemy.

Flight.—The basic tactical unit of air corps organization.

Follow.—To regular movement on the element in front.

Follow-up.—The act of exerting close, direct pressure on a withdrawing force.

Forced march.—Any march in which the march capacity of foot and mounted troops is increased by increasing the number of marching hours per day rather than by increasing the hourly rate of march.

Fox hole.—Small, individual shelter or rifle pit.

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Fragmentary orders.—Combat orders issued in fragmentary form, and consisting of separate instructions to one or more subordinate units prescribing the part each is to play in the operation or in the separate phases thereof.

Fragmentation.—The breaking up and scattering of the fragments of a shell, bomb, or grenade.

Fragmentation bomb.—A bomb intended primarily for use against personnel on the ground.

Front.—The direction of the enemy. The line of contact of two opposing forces. The space occupied by an element, measured from one flank to the opposite flank.

Frontage.—The space, in width, occupied or covered by a unit in any formation.

Front line.—The line formed by the most advanced units, exclusive of local security, in any given situation.

G–1, G–2, G–3, G–4.—*See* General staff.

General counterpreparation.—A counterpreparation planned to meet a general attack and involving all the weapons capable of firing on the threatened front.

General staff.—A body of officers detailed to the performance of staff duty in the War Department or with divisions and higher units. The general staff is headed by a chief of staff who may be assisted by one or more deputy chiefs. Each section is headed by an assistant chief of staff. The sections of the general staff are as follows: G–1, personnel; G–2, intelligence; G–3, operations and training; G–4, supply; and with the War Department, a fifth section, war plans. In units smaller than the division, to include the battalion (or equivalent unit), duties corresponding to those of the general staff are assigned to officers designated as executive, S–1, S–2, S–3, S–4.

General support.—Support provided by that artillery which supports the entire force of which it is a part.

Group.—A tactical unit of the harbor defense formed for the purpose of fire direction. An Air Corps unit composed of two or more squadrons of a single class of aviation. An armored force unit composed of two or more GHQ reserve tank battalions either or both of light, medium, or heavy tanks.

Groupment (field artillery).—A temporary grouping of two or more battalions or larger units which have the same tactical mission.

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Guide.—An individual who leads or guides a unit or vehicle over a predetermined route or into a selected area.

Harass.—To annoy and disturb the enemy by fire, raids, frequent small attacks, etc.

Harassing agent.—A chemical agent used to force masking and thus slow up the enemy operations.

Harassing fire.—Fire delivered to interfere with and annoy the enemy, to keep his troops alerted unnecessarily, and to lower his efficiency and morale.

Head of column.—First element of a column in order of march.

Hold (verb).—To retain physical possession.

Holding attack (or secondary attack).—That part of the attack designed to hold the enemy in position and prevent redistribution of his reserves.

Hull down.—Position taken by a combat vehicle whereby only the fighting compartment (turret) is exposed to hostile fire or view.

Identification panels.—Panels of cloth or other easily handled material which are displayed by ground troops to indicate to friendly aircraft the position of a unit.

Identifications.—Any distinctive marks or other means by which personnel, organizations, or equipment are identified.

Immobilize.—To tie down. To deprive of mobility.

Incendiary agent.—An agent used primarily for setting fire to material.

Indirect laying.—Laying in which the line of sighting is directed upon a fixed object other than the target.

Individual requirements.—Those supplies necessary to enable the individual to function as a soldier.

Infiltrate.—To pass troops in relatively small numbers through gaps in the enemy's position or in his field of fire. To move vehicles at extended distance, usually 600 yards or greater.

Initial requirements.—Those supplies required to meet the original demands incident to field operations.

In position.—A term which indicates that the weapons of a unit are in position and ready to fire and the necessary systems of observation and communication have been established.

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In readiness.—A term which indicates that an artillery unit is held near one or more possible positions, prepared to move quickly into position when ordered. This term may be applied to other units to indicate a state or condition of preparedness.

Integrity of tactical units.—The maintenance of complete tactical units.

Intercept station.—A station that copies enemy radio traffic for the purpose of obtaining information, or friendly traffic for the purpose of supervision.

Interdict.—To prevent or hinder the use of an area or route by the application of chemicals or fire, or both.

Interdiction fire.—Fire delivered on certain areas or routes to prevent or hinder their use.

Intermediate objective.—The objective whose attainment precedes and is usually essential to the attainment of the final objective.

Intermediate position.—A position between the assembly positions and the line of departure which may be occupied temporarily by units of the attacking echelon for coordination of the attack, for further reconnaissance, or last minute servicing of vehicles.

Intermediate scale maps.—Maps normally of a scale from 1:200,000 to 1:500,000, intended for planning strategic operations, including the movement, concentration, and supply of troops.

Interpretation of information.—An analysis of information to determine its probable significance in the existing situation.

Interval.—Space between individuals or elements of the same line. *See also* Time interval.

Irritant smoke.—A chemical agent which causes sneezing, coughing, lacrimation, or headache followed by nausea and temporary physical disability.

Issue.—A delivery of supplies. Specifically, the delivery of supplies of any kind by a supply department to responsible persons authorized to receive them on behalf of their organizations. The supplies so delivered. To send out officially or publicly, as orders or communiques. To emerge or sally forth, as from a defile or fortress.

Journal.—A chronological record of events affecting a unit or staff section.

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Key point.—A tactical locality, affording observation and communication, the possession of which may be vital to the success of an engagement.

Lacrimator.—A chemical agent which causes a continuous flow of tears and intense, though temporary, eye pains.

Landing field.—A field or system of runways suitable for the landing and take-off of airplanes.

Large scale maps.—Maps normally of a scale not greater than 1:20,000 intended for the technical and tactical needs of the combat arms.

Leading.—The acts of a commander in controlling his unit by personal direction.

Leapfrog.—To advance the elements of a command in the attack by passing successively through or by the other elements.

Liaison.—The connection established between units or elements by a representative—usually an officer—of one unit who visits or remains with another unit.

Limiting points.—Designated points where the several lines in a defensive position or outpost shall cross the unit sector boundaries, used to insure coordination between adjacent units.

Line of departure.—A line designated to coordinate the departure of attack elements.

Line of observation.—The line occupied by the observation elements of the outpost position. The line from a position finder to a target at the instant of a recorded observation.

Lines of action.—The possible plans open to a commander in a particular situation.

Lines of communication.—The network of railways, waterways, and roads which lead into the combat zone from administrative establishments located in the communications zone or in the zone of the interior.

Listening post.—A concealed or sheltered position established in advance of a defensive line for early detection of the enemy's movements.

Litter relay point.—A point where litter bearer squads change the mode of transport, such as from hand litter to wheeled litter, or where a new litter bearer squad takes over further movement of the patient.

Livens projector.—A mortar installed in the ground to project chemical agents.

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Local counterpreparation.—A counterpreparation covering only that portion of the front threatened by a local attack and normally employing only the division artillery supporting the threatened front.

Local sector.—One of the subdivisions of a subsector.

Local security.—A security element, independent of any outpost, established by a subordinate commander to protect his unit against surprise.

Logistics.—That branch of military art that comprises everything relating to movement, supply, and evacuation.

Loss replacement.—A replacement to fill a vacancy which has been created by the loss to the organization of the original occupant.

Lung irritant.—A chemical agent which causes irritation and inflammation of the bronchial tubes and lungs.

Main attack.—That part of the attack in which the commander concentrates the greatest possible offensive power.

Main body.—The principal part of a command. A command less all detachments.

Main effort.—In each tactical grouping, the employment of the mass of the available means in a decisive direction.

Main line of resistance.—A line at the forward boundary of the battle position designated to coordinate the defensive fires of all units and supporting weapons.

Main supply road.—The principal inbound road over which supplies are carried to troops in the forward area. Formerly called *axial road.*)

Maintenance, first echelon.—Driver's maintenance, covering the simple operations that can be trusted to the skill of the average driver using tools and supplies available on the vehicle.

Maintenance, fourth echelon.—That maintenance normally performed in the rear areas by quartermaster and ordnance personnel.

Maintenance requirements.—Those supplies required to replace expenditures.

Maintenance, second echelon.—That maintenance, other than first echelon maintenance, performed by the using arms and services.

Maintenance, third echelon.—That maintenance normally performed in the field by quartermaster and ordnance personnel.

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Maneuver.—Movement so designed as to place troops, matériel, or fire in favorable strategic or tactical locations with respect to the enemy. Also a tactical exercise executed on the ground or map, in simulation of war and involving two opposing sides, though one side may be outlined, represented, or imaginary. The plural of the term applies to a series of such exercises, generally involving large bodies of troops in the field in simulation of war.

Map.—A representation (usually on a flat surface) of the surface of the earth, or some part of it, showing the relative size and position, according to some given scale or projection, of the parts represented.

Maps, intermediate scale (large scale) (medium scale) (small scale).—*See* Intermediate scale (large scale) (medium scale) (small scale) maps.

March discipline.—The observance and enforcement of the rules of good marching, especially as relates to the conduct of individuals and operation vehicles.

March graph.—A graphical presentation of a march, used in planning and controlling marches and in preparing and checking march tables.

March on.—March toward.

March outpost.—A temporary outpost established for the protection of the command during a brief halt, or while regular outposts are being established.

March table.—A combined location and movement schedule for a march.

March unit.—A subdivision of a marching column which moves and halts at the command or signal of its commander.

Martial law.—Military authority substituted for civil government in the home country or any district thereof, either by proclamation or as a military necessity, when the civil government is temporarily unable to exercise control.

Mask (obstruction).—Any natural or artificial obstruction which interferes with view of fire; usually an intervening hill, woods, etc. Friendly troops located between a gun and its target may constitute a mask.

Means of signal communication.—An agency of signal communication capable of transmitting messages such as messenger, pigeon, radio, visual, sound, and wire communication.

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Mechanization.—A term used to denote the process of equipping a military force with armed and armored motor-propelled vehicles.

Mechanized cavalry.—Cavalry, equipped with armored and self-propelled motor vehicles designed for combat purposes and in which weapons are mounted.

Mechanized unit.—A unit which moves and fights in motor vehicles, the bulk of which are armed, and armored vehicles self-contained as to crew and weapons.

Medium scale maps.—Maps normally of a scale from 1:50,000 to 1:125,000, intended for strategical, tactical, and administrative studies by units ranging in size from the corps to the regiment.

Meeting engagement.—A collision between two opposing forces, each of which is more or less unprepared for battle.

Meeting point.—The point at which guides meet their units or transportation.

Message.—A term which includes all instructions, reports, orders, documents, photographs, maps, etc., in plain language or code, transmitted by a means of signal communication.

Message center.—The agency of the commander at each headquarters or command post charged with the receipt, transmission, and delivery of all messages except those transmitted directly by the writer to the addressee by telephone or personal agency, those handled by the military or civil postal service, local messages, and those arriving by special messengers.

Message, deferred (priority) (routine) (urgent).—*See* Deferred (priority) (routine) (urgent) message.

Military crest.—The line nearest the crest of a ridge or hill from which all or nearly all of the ground toward the enemy and within range may be seen and reached by fire.

Military government.—A government established by the land or naval forces in enemy territory or in domestic territory recovered from rebels treated as belligerents.

Military information.—Information, gathered from any source, which may serve to throw light on the enemy or the theater of operations.

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Military intelligence.—Evaluated and interpreted information concerning a possible or actual enemy, or theater of operations, together with the conclusions drawn therefrom.

Military police.—A class of troops charged with the enforcement of all police regulations in the theater of operations and in other places occupied by troops.

Minimum range.—The least range setting at which the projectile will clear the mask when the gun is fired from a given position.

Mission.—A specific task or duty assigned to an individual or unit, or deduced from a knowledge of the plans of the immediate superior. For the Air Corps: each separate flight operation of a single airplane or of a formation.

Mobile reserves.—Reserve supplies held on trucks or on railroad cars for prompt movement forward.

Mopping up.—The act of searching an area or position that has been passed over by friendly troops in the attack and of killing or capturing any enemy found.

Morale.—The psychological condition or mental state of an individual or body of troops.

Mosaic.—An assembly of two or more overlapping vertical aerial photographs: classified as *controlled, uncontrolled,* or *strip.*

Motorization.—The process of equipping a military force exclusively with motor-propelled vehicles.

Motorized unit.—A unit equipped either organically or temporarily with sufficient motor vehicles to carry all its matériel and personnel at the same time.

Motor park.—*See* Park.

Motor pool.—Assembly of all vehicles of an organization into one group to be dispatched under the direction of the commander or his representative.

Mutual support.—The support involving fire or movement or both, rendered one another by adjacent elements.

Natural obstacles.—Any terrain features which hamper military maneuvers or operations, such as deserts, mountains, streams, swamps, forest, etc.

Neutralization fire.—Fire delivered for the purpose of causing severe losses, hampering, or interrupting movement or action, and in general destroying the combat efficiency of enemy personnel.

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Neutralize.—To destroy or reduce the effectiveness of personnel or matériel by the application of chemicals or fire.

Nonpersistent agent.—A chemical agent whose effectiveness in the air at a point of release is dissipated within 10 minutes.

Nontoxic.—Not poisonous.

Normal barrage.—A standing barrage laid in immediate defense of the sector which it supports. The barrage which is fired on prearranged signal from the support unit.

Normal zone.—That portion of the zone of fire of a unit within which its fire is ordinarily delivered.

Objective.—A locality which a command has been ordered to reach and occupy or a hostile force which a command has been ordered to overcome. For the Air Corps: That locality or thing which must be destroyed in order to accomplish an assigned mission.

Oblique aerial photograph.—An aerial photograph made with a camera whose optical axis is oblique.

Observation aviation.—Units whose primary functions are reconnaissance and observation of near objectives, observation of artillery fire, and command, courier, and liaison duty for ground units.

Observation post.—A point selected for the observation and conduct of fire, for the observation of an area or sector, for the study of objectives, or for the purpose of securing information of the enemy and his activities. A position from which friendly and enemy troops can be seen and from which fire is controlled and corrected.

Observed fire.—Fire which can be adjusted by ground observation of the target either at the emplacement of a weapon or at an observation point in liaison with it.

Obstacle.—Any device or feature, either natural or artificial, used in field fortifications for the purpose of delaying the hostile advance. A natural terrain feature or artificial work which impedes the movements of the troops. Obstacles are classified as natural or artificial, tactical or protective, fixed or portable, etc.

Operation map.—A graphic presentation of all or parts of a field order, using conventional signs, military symbols, abbreviations, and writing or printing.

Oral order.—An order delivered by word of mouth.

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Order of march.—The disposition of troops for a march, or their order in the march column.

Organizational requirements.—Those supplies necessary for the organization to function as a unit.

Organizational unit loading.—*See* Unit loading.

Organization for combat.—The measures taken by a commander to insure that the troops of his command are so grouped that they can most efficiently carry out the mission assigned.

Orient.—To determine one's position on the ground with respect to a map or to the four cardinal points of the compass. To identify directions on the terrain. To place a map so that its meridian will be parallel to the imaginary meridian on the ground, and all points on the map in the same relative positions as the points on the ground which they represent. To inform or explain, to make another conversant with.

Outflank.—To pass around or turn the flank or flanks of an enemy. To extend beyond the flanks of the enemy's line.

Outguard.—The most forward security unit posted by an outpost.

Outpost.—A detachment detailed to protect a resting or defending force against surprise and observation by hostile ground forces. *See* Combat outpost.

Outpost area.—A belt of terrain lying in front of a battle position, occupied by the observation or outpost elements.

Outpost line of resistance.—A line designated to coordinate the fires of the elements of the outpost and its supporting artillery.

Overlay.—A sheet of translucent paper or cloth, for laying over a map, on which various locations, as of artillery, targets, field works, enemy positions, etc., are shown.

Parachute troops.—Troops moved by air transport and landed by means of parachutes.

Park.—An area used for the purpose of servicing, maintaining, and parking vehicles.

Party.—A detachment of individuals employed on any kind of duty or special service. For the artillery: Certain key officers and men who usually accompany the commander on the march and assist him in reconnaissance, in issuing his initial orders, in initiating the movement forward to

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position, and in the occupation and organization of the position.

Passage of lines.—A relief of a front line unit in the attack in which the rear unit moves forward through the already established line; the unit passed through may remain in position or move to the rear.

Patrol.—A moving group or detachment sent out from a larger body on an independent or limited mission of reconnaissance or security, or both. The act of patrolling.

Penetration.—A form of attack in which the main attack seeks to break the continuity of the enemy's front and to envelop the flanks thus created.

Persistent agent.—A chemical agent which will maintain an effective vapor concentration in the air at point of release for more than 10 minutes.

Personnel carrier.—A motor vehicle, sometimes armored, designed primarily for the transportation of personnel and their weapons to and on the battlefield.

Phase line.—A line or terrain feature which troops are directed to reach by a specified time, and which is utilized by a commander for control or coordination.

Photographic reconnaissance.—All military aerial photography accomplished for other than mapping purposes.

Photomap.—An aerial photograph upon which information commonly found on maps has been placed, including at least a scale and a directional arrow.

Picket.—A detachment of an outpost sent out to perform the duties of an outguard at a critical point, the detachment being stronger than an ordinary outguard and establishing sentinel posts of its own. A stake of wood or steel used in the construction of revetments and obstacles. To guard, as a camp or road, by an outlying picket. To post as a picket.

Pin point.—A vertical aerial photograph in which the object of interest is centered.

Plain text (or clear text) (or plain language).—The text of a message which, on its face, conveys an intelligible meaning in a spoken language.

Plan.—A scheme or design, specifically for any military operation. A course of action or method of procedure decided upon and adopted by a commander, and which is the basis for his orders to his command.

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Point.—The patrol or reconnaissance element which precedes the advance party of an advance guard, or follows the rear party of a rear guard.

Portable obstacles.—Obstacles capable of being moved.

Position in readiness.—A position assumed as a temporary expedient in a situation so clouded with uncertainty that positive action is considered unwarranted.

Prearranged fires (or schedule fires).—Supporting fires for which the data are prepared in advance and which are delivered according to a time schedule or on call from the supported troops.

Precede.—To regulate movement on the element in rear.

Preparation, artillery.—*See* Artillery preparation.

Primary firing position.—The firing position from which a unit or a weapon executes its primary fire mission.

Priorities.—Definite rulings which establish, in order of time, the precedence of shipment; movements of rail, road, water, or other transport; or performance of several tasks.

Priority message.—A message of less urgency than those entitled to urgent classification but which warrants precedence over routine messages in order to reach the addressee in time for effective action.

Prisoners of war.—Persons captured and held in captivity or interned by a belligerent power.

Protective fires.—Fires placed by supporting weapons on enemy rearward areas for the purpose of hindering enemy fire or movement against the friendly attacking rifle or tank elements. For infantry weapons such fires are usually delivered at long range.

Protective obstacles.—Obstacles whose chief purpose is to prevent a sudden incursion of attacking forces.

Pursuit.—An offensive operation against a defeated enemy for the purpose of accomplishing his annihilation.

Pursuit aviation.—That type of aviation whose primary function is air fighting; classified as interceptor and fighter.

Quartering party.—A detail sent out to reconnoiter for billets or quarters. A billeting party.

Raid.—A sudden and rapid incursion. An offensive movement, usually by small forces directed against an enemy.

Railhead (truckhead) (navigation head).—A supply point where loads are transferred from the particular type of transportation being employed; such as "Class I Rail-

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head, 1st Division," "Ammunition Railhead, 1st and 2d Divisions."

Railhead distribution.—Issue of Class I supplies to regimental (or similar unit) transportation at the railhead.

Rallying point.—A point, designated by a unit commander, where he assembles his unit for reorganization pending further operations after the attack of an objective.

Rate of march.—The average speed over a period of time including short periodic halts.

Ration.—The prescribed allowance of the different articles of food for the subsistence of one person or one animal for one day.

Ration cycle.—The period of time within which the three meals of a ration are consumed. Normally it begins with the evening meal.

Rear.—That part of a force which comes last or is stationed behind the rest. The direction away from the enemy.

Rear guard.—A security detachment which follows the main body and protects it on the march.

Rear party.—The detachment from the support of a rear guard which follows and protects it on the march.

Reconnaissance.—The operation of searching for information in the field.

Reconnaissance aviation.—Units whose primary function is reconnaissance of distant objectives.

Reconnaissance patrol.—A patrol whose primary mission is to obtain information, maintain contact with the enemy, or to observe terrain.

Reconnaissance strip.—A series of overlapping vertical photographs made from an airplane flying a selected course.

Refilling point.—Formerly, a supply point or establishment at which the trains of the supply services of divisions or larger units drew supplies. *See* Supply point.

Regimental reserve line.—A line designated to coordinate the locations and actions of the regimental reserves in the battle position.

Registration.—An adjustment on a selected point to determine data for use in preparation of fire.

Regulating point.—An easily recognizable point where an incoming motor transport column is separated into detachments for entrucking or detrucking purposes.

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Regulating station.—A traffic control agency established on lines of communication and through which movements are directed and controlled by the commander of the theater of operations.

Regulation officer.—The officer in charge of a regulating station.

Reinforcements.—Troops used to augment the strength of another body of troops, especially for combat purposes.

Rendezvous.—In bivouacking, the point at which a person assigning bivouac areas meets unit representatives.

Repatriate.—An individual who is restored or returned to his own country or citizenship.

Replacement.—An individual available for assignment.

Requirements.—The computed needs for a military force embracing all supplies necessary for its equipment, maintenance, and operation for a given period. They are classified as individual, organizational, initial, maintenance, and reserve.

Requirements, individual (initial) (maintenance) (organizational) (reserve).—*See* Individual (initial) (maintenance) (organizational) (reserve) requirements.

Requisition.—A request for supplies, usually on a form furnished for the purpose; also used to signify the purchase by demand of supplies in hostile occupied territory.

Reserve (tactical).—A fraction of a command held initially under the control of the commander to influence future action.

Reserve (or rear) battle position.—Any battle position in rear of the main battle position, that has been reconnoitered and staked out, and generally partially organized, for use in case the troops are driven out of the main battle position.

Reserve requirements.—Those supplies necessary to meet emergency situations incident to campaign.

Reserves (supply).—Supplies accumulated in excess of immediate needs for the purpose of insuring continuity of an adequate supply; also designated as "reserve supplies."

Battle reserves are supplies accumulated by the army, detached corps, or detached division in the vicinity of the battlefield in addition to individual and unit reserves.

Individual reserves are those carried on the soldier, animal, or vehicle for his or its individual use in an emergency.

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Unit reserves are prescribed quantities of supplies carried as a reserve by a unit.

Retirement.—A retrograde movement of the main forces which, while contact with the enemy is not an essential condition, is generally made for the purpose of regaining initiative and freedom of action by a complete disengagement. A movement made to forestall a decisive engagement, to attract the enemy in a desired direction, or to gain time for the reorganization of the forces preparatory to renewed efforts against the enemy.

Retreat.—An involuntary retrograde movement forced on a command as a result of an unsuccessful operation or combat. The act of retreating. To retire from any position or place. To withdraw.

Retrograde movement.—A movement to the rear.

Reverse slope.—A slope which descends away from the enemy and forms the masked or sheltered side of a covering ridge. The rear slope of a position on elevated terrain.

Right (left) bank of stream.—The bank which is on the right (left) of the observer when facing downstream.

Road block.—A barrier to block or limit the movement of hostile vehicles along a road.

Road crater.—A hole blown in the road at points which cannot be easily detoured.

Road space.—The distance from head to tail of a column when it is in a prescribed formation on a road.

Rolling barrage.—Artillery fire on successive lines, advancing according to a time schedule and closely followed by assaulting infantry elements.

Routes of communication.—The road net available for tactical maneuver or supply; the presence of rail facilities, navigable waters, and airplane landing facilities.

Routine message.—A message requiring no special precedence.

Roving gun (field artillery).—An artillery piece withdrawn from its regular position and posted in a temporary position for the execution of a specific mission upon the conclusion of which it rejoins its battery.

Runner.—A foot messenger.

S–1, S–2, S–3, S–4.—*See* General Staff.

Salient.—A portion of a battle line or fortification which extends sharply to the front of the general line.

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Salvage.—The collection of abandoned, captured, or unserviceable property with a view to its utilization or repair. Property so collected. To recover or save.

Sanitation.—The use or application of sanitary measures.

Schedule fires.—*See* Prearranged fires.

Scheme of maneuver.—The commander's plan for employing subordinate units to accomplish a mission.

Scout.—A man especially trained in shooting, in using ground and cover, in observing, and in reporting the results of observation. A man who gathers information in the field. To reconnoiter a region or country to obtain information of the enemy or for any other military purpose. To act as a scout.

Screen.—To prevent hostile ground reconnaissance or observation. The body of troops used to screen a command.

Screening smoke.—A chemical agent used to blind hostile observation.

Secondary attack.—*See* Holding attack.

Secret text (or secret language).—The text of a message which, on its face, conveys no intelligible meaning in any spoken language. The secret text of a message constitutes a cryptogram.

Sector.—One of the subdivisions of a coastal frontier. A defense area designated by boundaries within which a unit operates and for which it is responsible. *See* Defense area.

Secure.—*Same as* Seize.

Security.—All measures taken by a command to protect itself from observation, annoyance, or surprise attack by the enemy; and to obtain for itself the necessary freedom of action. The protection resulting from such measures.

Security detachment.—Any subdivision of a unit disposed to protect the unit against surprise or interference by the enemy.

Seize (or secure).—To gain physical possession of, with or without force.

Sentry squad.—A squad posted for security and information with a single or double sentinel in observation, the remaining men resting nearby and furnishing the relief for the sentinels. An outguard of one squad.

Serial.—One or more march units, preferably with the same march characteristics, placed under one commander for march purposes.

Service park.—A place in the forward area where the organic maintenance elements and attached medical elements assemble when combat units enter combat.

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Service units (or elements).—Those organizations provided for by Tables of Organization within larger units whose functions are to provide for the supply, transportation, communication, evacuation, maintenance, construction, and police of the larger unit as a whole.

Shelter.—Any form of concealment from view, of protection against the elements or the fire of weapons. That which covers or defends. A screen. Protection. To afford or provide shelter. To screen or cover from notice.

Signal communication.—All methods and means employed to transmit messages and telephone conversations.

Signal operation instructions.—A type of combat orders issued for the technical control and coordination of signal agencies throughout the command.

Signal security.—The security of friendly signal communication message traffic against the availability and intelligibility of that traffic to enemy or other intelligence agencies.

Situation.—All the conditions and circumstances, taken as a whole, which affect a command at any given time, and on which its plans must be based. They include such items as the positions, strength, armament, etc., of the opposing forces and any supporting troops, considerations of time and space, the weather, terrain, etc., and the mission to be accomplished. A consideration of these conditions and the possible courses of action open, followed by a decision, constitute the estimate of the situation.

Situation map.—A map showing the tactical or administrative situation at a particular time, usually for use as a graphic aid in carrying on the work of a staff section or as an annex to staff reports.

Skirmishers.—Soldiers, dismounted, deployed in line and in extended order in drill or attack.

Slit trench.—A very narrow trench used for protection against shell fire and passage of tanks, especially in massing troops close to the front.

Small scale maps.—Maps of a scale varying from 1:1,000,000 to 1:7,000,000, intended for the general planning and strategical studies of the commanders of large units.

Smoke screen.—Curtain of smoke employed for masking either friendly or hostile activities or installations.

Sniper.—A soldier, usually an expert shot, detailed to fire at and pick off individuals of the enemy.

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Special staff.—A staff group, subordinate to the general staff of a unit, whose duty it is to assist the commander in the exercise of his tactical, administrative, technical, and supply functions. It includes the heads of the administrative, technical, and supply services, and certain technical specialists. In divisions and higher units the general and special staffs are separate, but in lower units they partly merge into each other. A special staff officer may also exercise command in his own branch.

Speed.—The rapidity of movement at any particular instant expressed in miles per hour.

Staff authority.—The authority exercised by a staff officer. A staff officer, as such, has no authority to command. All responsibility rests with the commanders, in whose name all orders are given.

Staging area.—One of a series of areas on the route of march occupied by troops for a long halt.

Standing barrage.—A stationary artillery or machine-gun barrage laid for defensive purposes in front of an occupied line or position. Fire on a line, usually placed across a probable avenue of enemy approach, or an exposed sector of the front, in order to prevent passage of enemy troops.

Standing operating procedure.—Routine procedure prescribed to be carried out in the absence of orders to the contrary.

Stereo-pair.—Two vertical aerial photographs taken preferably with an overlap of not less than 60 percent nor more than 75 percent.

Stereo-triplet.—Three vertical aerial photographs taken so that the entire area of the center picture is overlapped by the other two.

Sternutator.—An irritant smoke.

Straggler.—A soldier who has become separated, without authority, from his organization. A motor vehicle that has fallen behind for any reason in an advance.

Straggler line.—A line, usually designated by means of well-defined terrain feature such as roads, railroads, or streams, along or in rear of which the military police patrol in order to apprehend stragglers moving to the rear.

Straggler post.—The point at which straggling vehicles or personnel are directed to proceed and where they are assembled into groups to be conducted to their units.

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Strip mosaic.—A mosaic compiled by assembling one strip of vertical aerial photographs taken on a single flight.

Subsector.—Usually one of the subdivisions of a sector.

Supplementary firing position.—A firing position assigned to a unit or weapon to accomplish secondary fire missions, other than those to be accomplished from primary or alternate positions.

Supplies.—A general term covering all things necessary for the equipment, maintenance, and operation of a military command, including food, clothing, equipment, arms, ammunition, fuel, forage, and materials and machinery of all kinds.

Supply point.—A general term used to include depots, railheads, dumps, and distributing points.

Support (noun).—The rearmost combat element of a rifle company (troop) or platoon in attack or defense.

Supporting distance.—Generally, that distance between two units which can be traveled in the time available in order for one to come to the aid of the other. For small infantry units: That distance between two elements which can be effectively covered by their fire.

Supporting fire.—Fire delivered by auxilary weapons for the immediate assistance of a unit during an offensive or defensive action.

Supporting unit.—A unit acting with but not under the direct orders of another unit to which it does not organically belong.

Support of the advance guard.—That part of the advance guard which marches in front of the reserve and protects it by observation and combat.

Support of the outpost.—The principal echelon of resistance of an outpost.

Support of the rear guard.—That part of the rear guard which marches behind the reserve and protects it by observation and combat.

Switch position.—A defensive position oblique to and connecting successive defensive positions paralleling the front.

Tactical groupings.—The balanced grouping of combat units and means within a command to accomplish a tactical mission. It may be accomplished by Tables of Organization, by standard operating procedure within a command, or improvised for a particular operation.

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Tactical obstacles.—Obstacles whose chief purpose is to hold the attacking forces under the effective fire of the defense.

Tail of column.—Last element of a column in order of march.

Tank traps.—Concealed ditches placed in roads, level stretches of ground, or other similar practicable routes of approach so designed that vehicles will fall into them and not be able to escape.

Target.—The specific thing at which fire is to be directed.

Task force.—A temporary tactical unit, composed of elements of one or more arms and services, formed for the execution of a specific mission or operation.

Telegram, daily.—*See* Daily telegram.

Terrain compartment.—*See* Compartment of terrain.

Theater of operations.—The area of the theater of war in which operations are or may be conducted. It is divided normally into a combat zone and a communications zone.

Time distance.—The distance to a point measured in time. It is found by dividing the ground distance to the point by the rate of march.

Time interval.—The interval of time between march units or serials, measured from the tail of the one in front to the head of the one in rear.

Time length.—The time required for a column to pass a given point.

Time of attack.—The hour at which the attack is to be launched. The hour designated for the forward movement from the line of departure to begin.

Toxic.—Poisonous.

Train.—That portion of a unit's transportation, including personnel, operating under the immediate orders of the unit commander primarily for supply, evacuation, and maintenance. It is designated by the name of the unit; such as "1st Infantry Train." Trains are subdivided into "Echelon A" and "Echelon B."

Echelon A includes those vehicles of the unit train that are essential for combat, i. e., light maintenance, fuel, lubricants, and ammunition.

Echelon B consists of the remaining vehicles of the unit train, i. e., kitchen, baggage, and heavy maintenance.

Transfer point.—The point at which control over railway trains, motor convoys, or reinforcements passes from one commander to another.

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Troop leading.—The art of leading troops in maneuver and battle.

Troop movement by air.—A movement in which troops are moved by means of air transport.

Troop movement by marching.—A movement in which foot troops move as such and other units move by their organic transport.

Troop movement by motor.—A movement in which foot troops and all other elements move simultaneously by motor vehicles.

Troop movement by shuttling.—A movement by motor in which all or a portion of the trucks make successive trips in moving both cargoes and troops.

Truckhead.—See *Railhead.*

Turning movement.—An enveloping maneuver which passes around the enemy's main force, and strikes at some vital point deep in the hostile rear.

Uncontrolled mosaic.—An assembly of two or more overlapping vertical photographs accomplished by the matching of photographic detail only, without the benefit of a framework of control points.

Unit.—A military force having a prescribed organization.

Unit distribution.—The delivery of Class I supplies to the regimental (or similar unit) kitchen areas by the quartermaster.

Unit load.—A term used to indicate method of loading vehicles; supplies required for a particular unit being loaded as required on one or more vehicles.

Unit loading.—Method of loading which gives primary consideration to the availability of the troops for combat purposes on detraining or landing, rather than utilization of railroad or ship space.

Combat unit loading.—Method of loading in which certain units are completely loaded on one train or ship with at least their essential combat equipment and supplies immediately available for detraining or debarkation with the troops, together with the animals and motors for the organization when this is practicable.

Convoy unit loading.—Method of loading in which the troops with their equipment and supplies are loaded on transports of the same convoy, but not necessarily on the same transport.

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Organizational unit loading.—Method of loading in which organizations, with their equipment and supplies, are loaded on the same train or transport, but not so loaded as to allow detraining or debarkation of troops and their equipment simultaneously.

Unit mile of gasoline.—The amount of gasoline in gallons required to move every vehicle of the unit one mile.

Unit of fire.—The quantity in rounds or tons of ammunition, bombs, grenades, and pyrotechnics which a designated oganization or weapon may be expected to expend on the average in one day of combat.

Unit replacement.—The system of repair by which an unserviceable unit assembly is replaced by a like, serviceable unit assembly.

Urgent call.—A telephone call believed by the calling party to be more important than any call which might be in progress. This classification of calls should be used cautiously.

Urgent message.—A message requiring the greatest speed in handling.

Vehicle park.—An area used for the purpose of parking vehicles. The place where vehicles of a unit are parked.

Vertical aerial photograph.—An aerial photograph made with a camera whose optical axis is at or near the vertical.

Vesicant.—A chemical agent which is readily absorbed or dissolved in both the exterior and interior parts of the human body, followed by the production of inflammation, burns, and destruction of tissue.

Visual signals.—Signals conveyed through the eye; they include signals transmitted by flags, lamps, panels, heliograph, pyrotechnics, hand, and arm.

"Walkie talkie" (colloquial).—A radio set which may be carried and operated for both receiving and sending by one man.

Warning order.—An order issued as a preliminary to another order, especially for a movement, which is to follow; it may be a message or a field order, and may be either written, dictated, or oral. The purpose is to give advance information so that the commanders may make necessary arrangements to facilitate the execution of the subsequent field order.

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Wave.—One of a series of lines of foragers, mechanized vehicles, skirmishers, or small columns into which an attack unit is deployed in depth.

Wire entanglement.—An obstacle of barbed wire, erected in place on pickets, or constructed in rear of the site and brought up and placed in position.

Wire line.—One or more wire circuits.

Withdrawal from action.—The operation of breaking off combat with a hostile force.

Writer.—The originator of a message.

X-X line.—A limiting line in the direction of depth to define the primary responsibility of corps and division artillery for certain classes of fire missions.

Y-Y line.—A limiting line in the direction of depth to define the primary responsibility in the handling of certain fire missions by subdivisions of the corps artillery.

Zone defense.—A form of defense which includes several successive battle positions, more or less completely organized.

Zone of action.—A zone designated by boundaries in an advance or a retrograde movement within which the unit operates and for which it is responsible.

Zone of fire.—The area within which a unit is to be prepared to deliver fire.

Z-Z line.—A limiting line in the direction of depth to define the primary responsibility of corps and army artillery for certain classes of fire missions.

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APPENDIX II

RADIO CHANNELS OF COMMUNICATION AND RADIO NETS

■ 1. EQUIPMENT.—*a.* The Armored Force is equipped for long range operation with the SCR–506 radio set or its substitute and some SCR–299, which is an extra long range set. The SCR–506 set can be tuned to any one of 125 channels. Four such channels are preset and can be obtained by turning a switch on the set. Other SCR–506 sets are equipped with one transmitter and two receivers as noted in the following charts. The SCR–506 set *can* be netted with SCR–299 *only.*

b. For short range communication, radio sets SCR–508, 510, 528, and 538 (receiver only) and their substitutes are furnished. The SCR–508 and SCR–528 sets have ten preset channels, any one of which can be obtained by pushing a button. The SCR–510 has two such channels. Other channels are obtained by retuning sets and changing crystals.

■ 2. RADIO DIRECTORY.—A radio directory showing channels for each radio net or unit will be issued by the division or other unit signal officer. A radio set can be changed from one net to another by simply pushing a button or turning a switch. This makes for simplicity and flexibility.

■ 3. RADIO DISCIPLINE.—Because of the great number of sets and the ease of transferring from one net to another it is essential that strict radio discipline be observed. Messages must be short and conversation limited to the minimum.

■ 4. RADIO SETS.—Figures 25 to 58, inclusive, show the radio sets in each unit. Sets connected with a line can communicate with each other. They may be in the same channel or may have to change channels for such communication. Unit Signal Operations Instructions will show how many channels

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are allotted to each unit together with station call letters or words.

NOTE.—1. Receivers are kept on the radio channel assigned until another channel is to be used. When another channel is to be used, that is, when communication is desired with an element whose set is in another channel, push the button for that channel, and listen to determine if any traffic is in progress. *Do not interrupt.*

2. If no traffic is in progress, report to the net control station of the unit, giving station with which you wish to communicate. When that permission is granted, call the station, transact business as rapidly as practicable, and return to your own channel.

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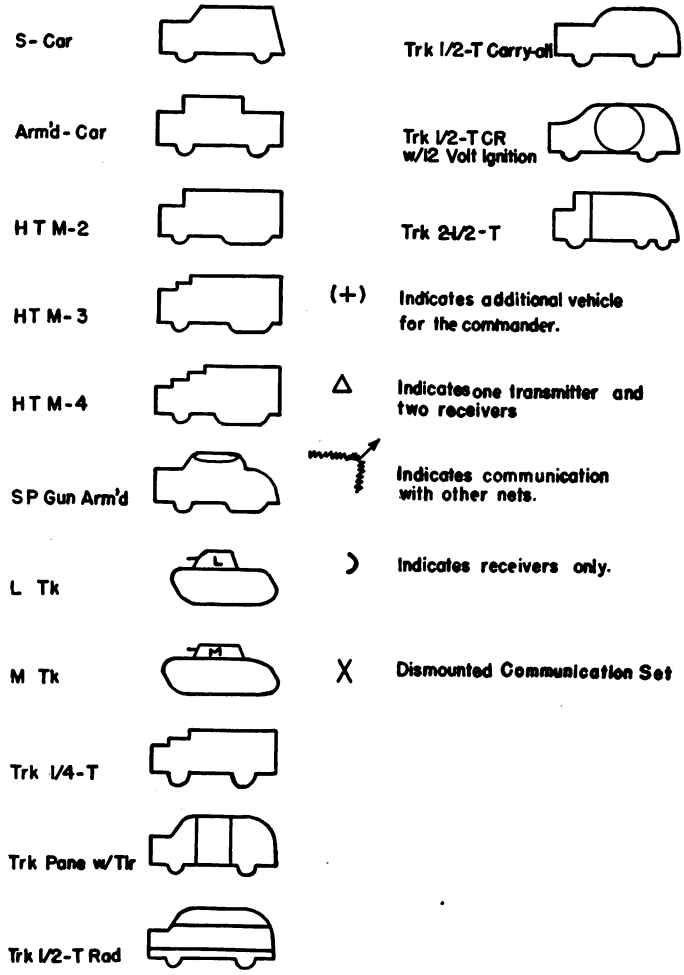


FIGURE 25.—Identifying symbols—radio channels and nets.

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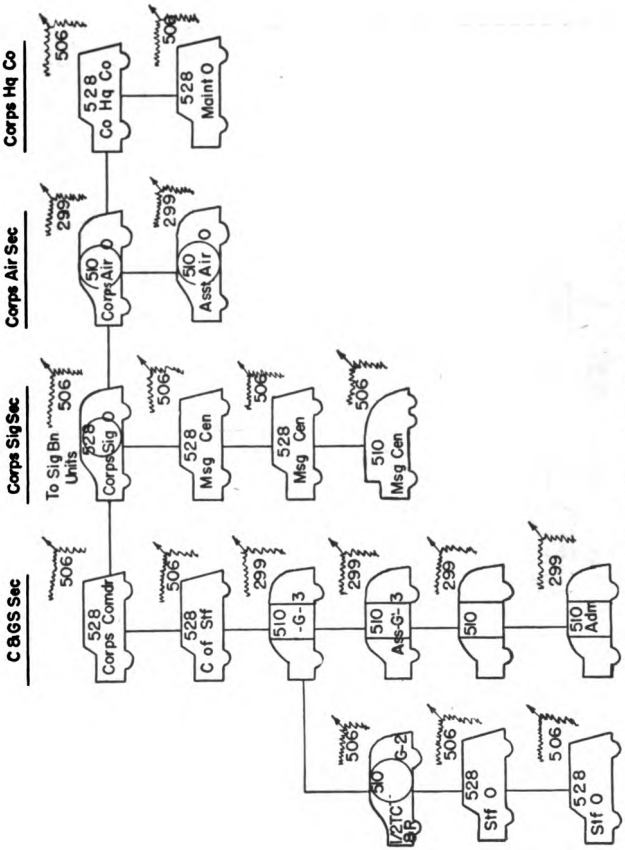


FIGURE 26.—Armored corps headquarters.

NOTE.—A pool of four sets SCR-510 are held for staff use.

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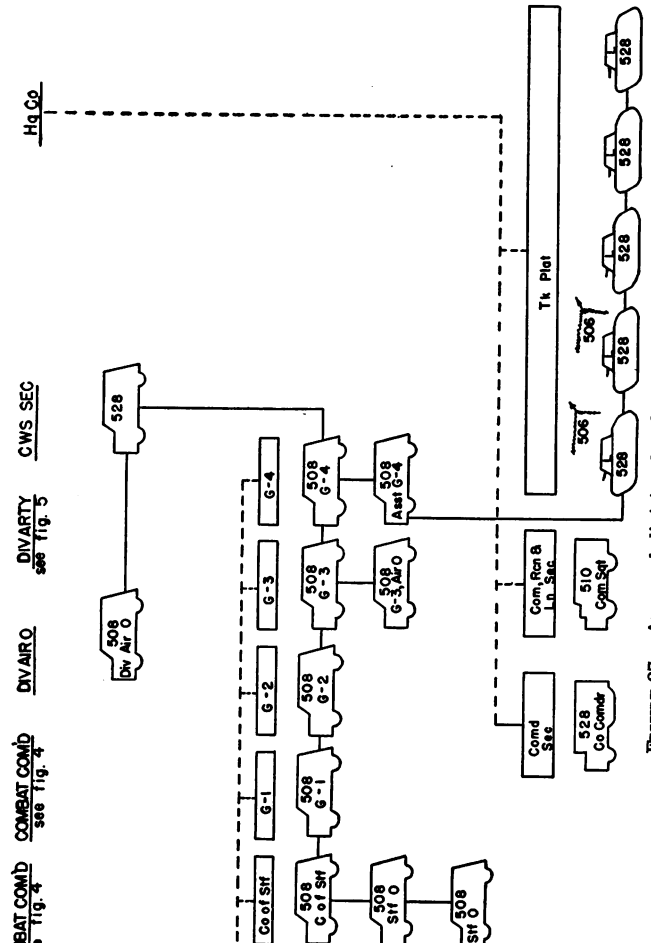


FIGURE 27.—Armored division headquarters.

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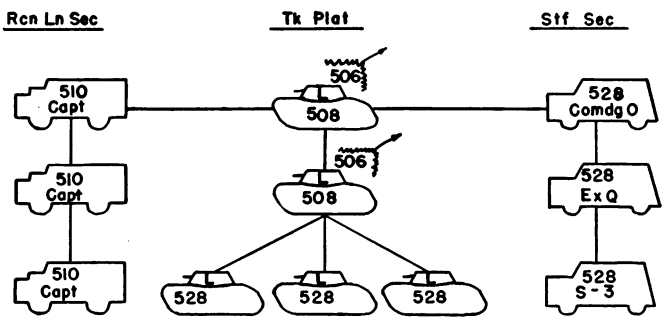


FIGURE 28.—Combat command, armored division.

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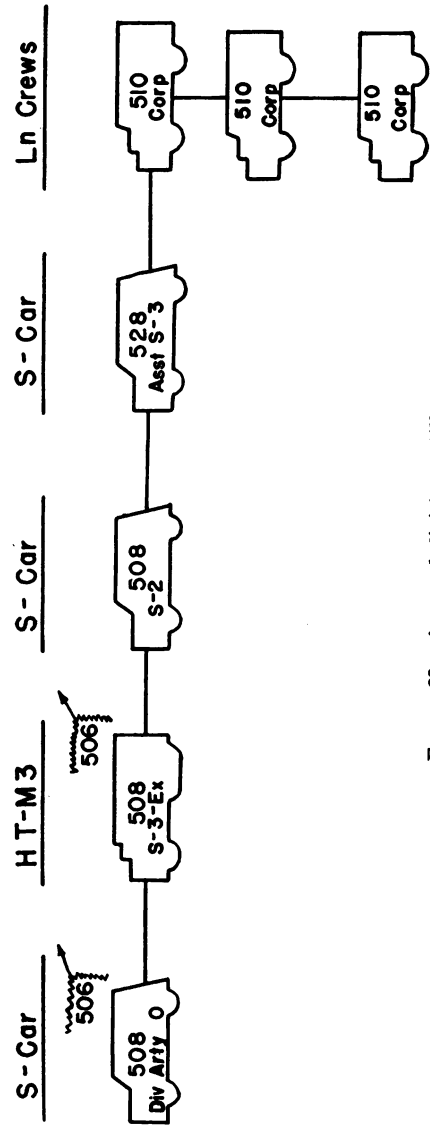


FIGURE 29.—Armored division artillery.

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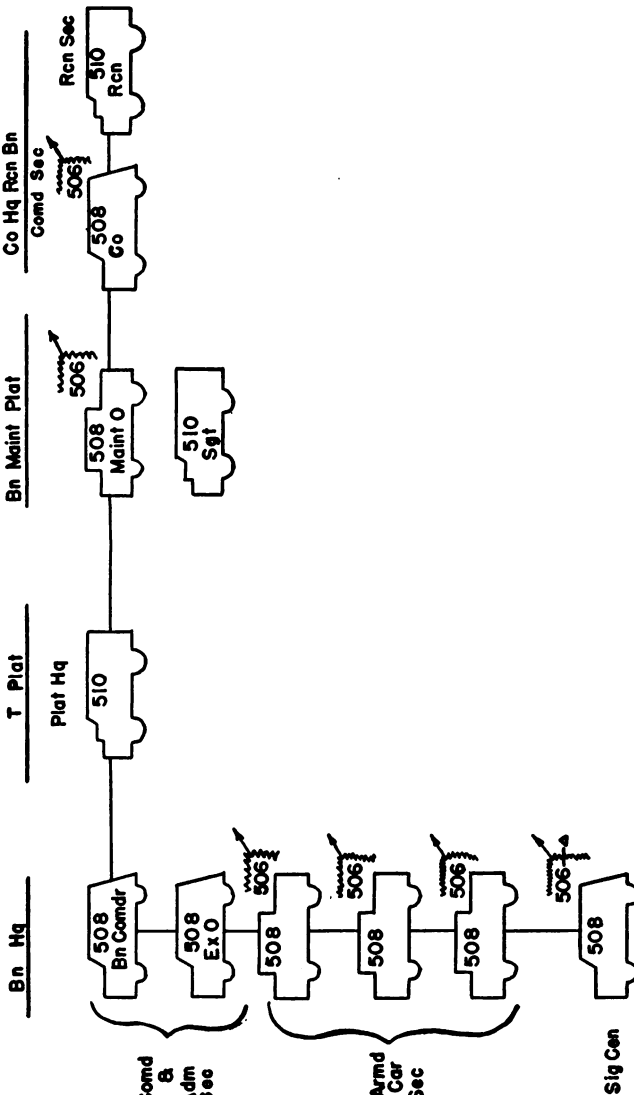


FIGURE 30.—Headquarters and headquarters company, armored, reconnaissance battalion.

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FIGURE 31.—Reconnaissance company, armored.

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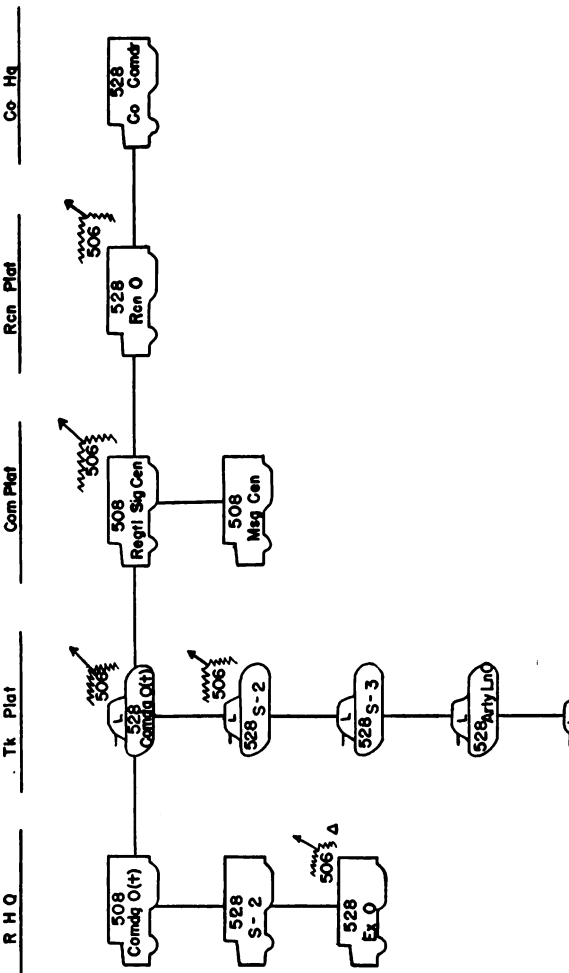


FIGURE 32.—Headquarters and headquarters company, armored regiment, tank.

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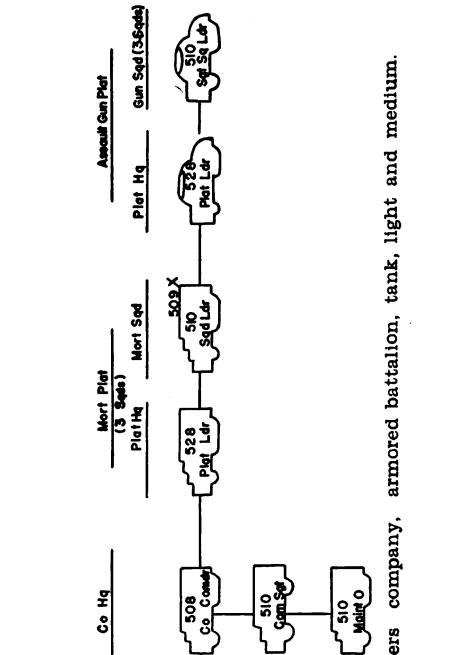


FIGURE 33.—Headquarters and headquarters company, armored battalion, tank, light and medium.

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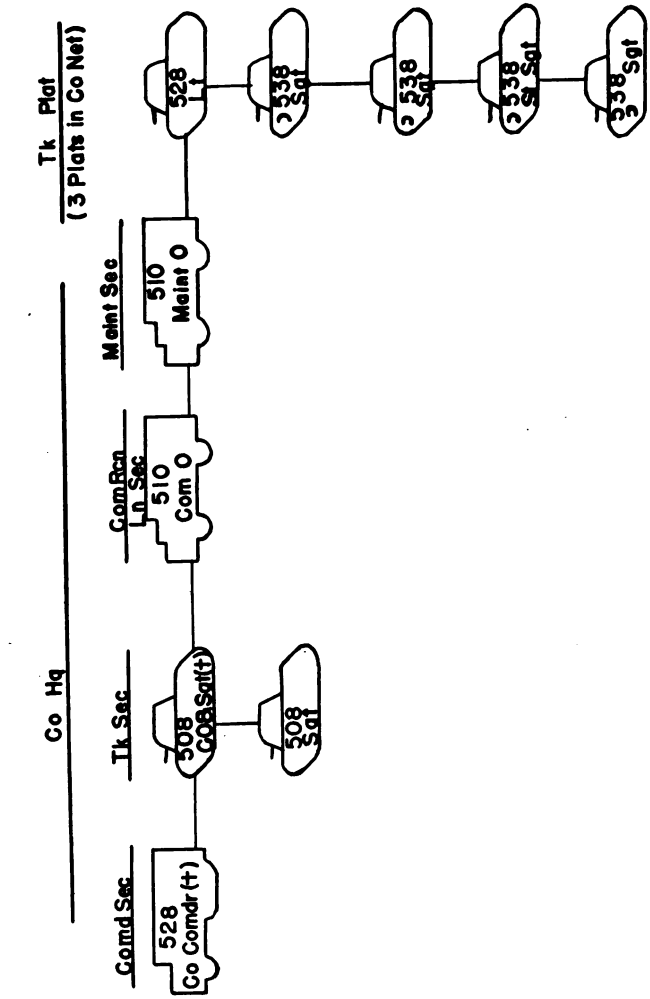


FIGURE 34.—Armored company, tank, light and medium.

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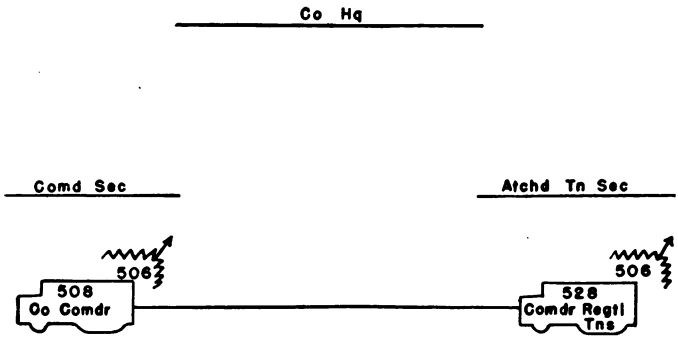


FIGURE 35.—Service company, armored regiment.

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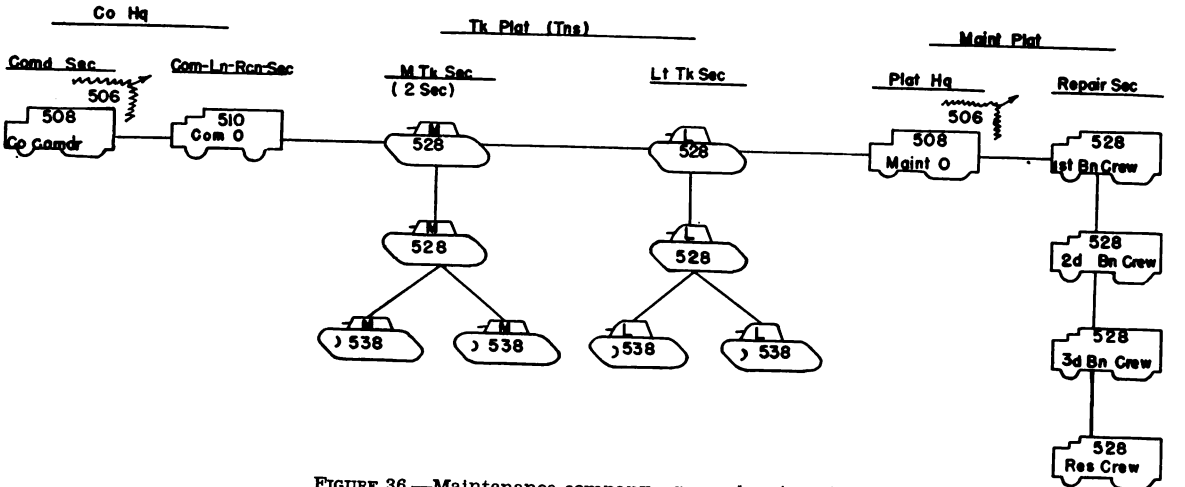


FIGURE 36.—Maintenance company, armored regiment.

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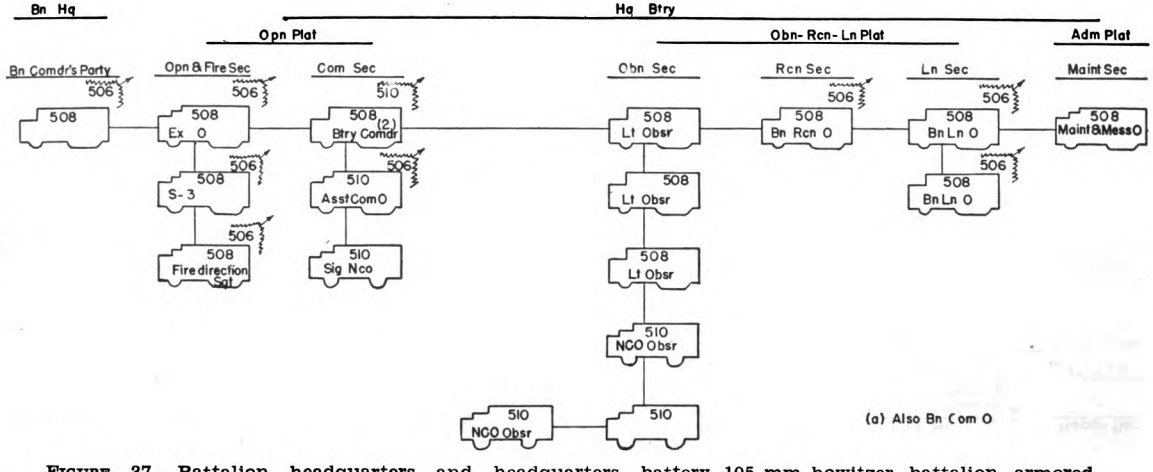


FIGURE 37.—Battalion headquarters and headquarters battery, 105-mm howitzer, battalion, armored.

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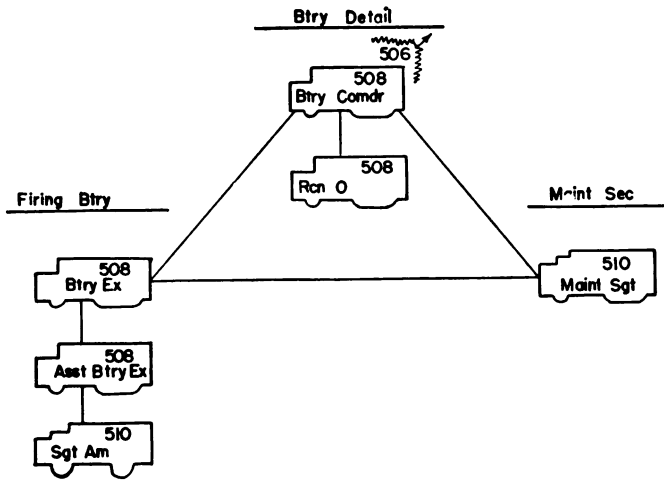


FIGURE 38.—105-mm howitzer battery, armored.

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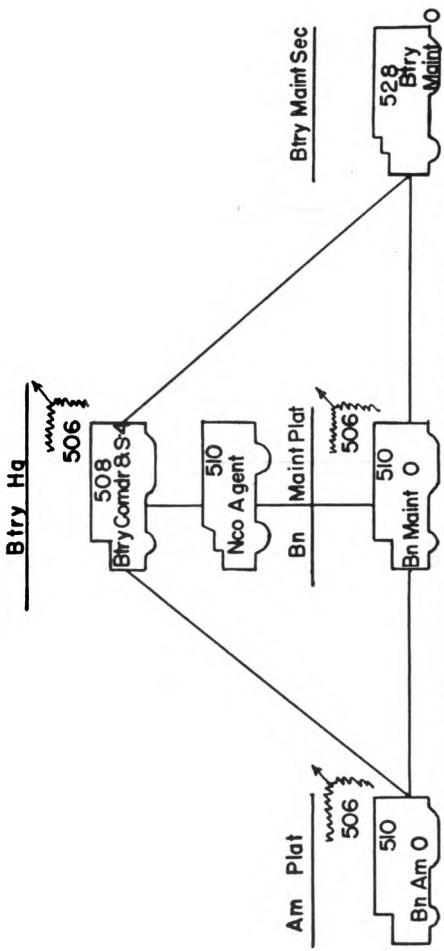


FIGURE 39.—105-mm howitzer service battery, battalion, armored.

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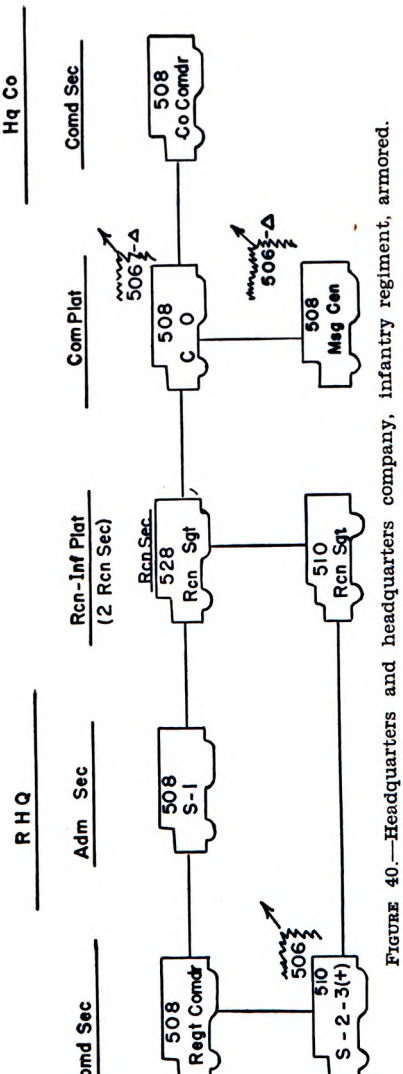


FIGURE 40.—Headquarters and headquarters company, infantry regiment, armored.

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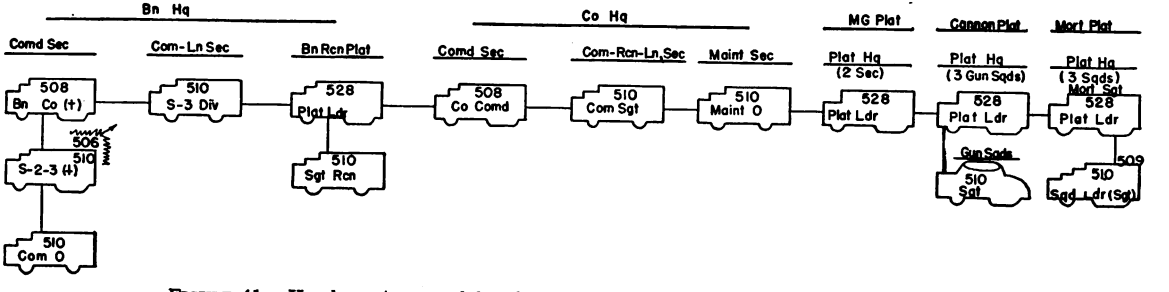


FIGURE 41.—Headquarters and headquarters company, infantry battalion, armored.

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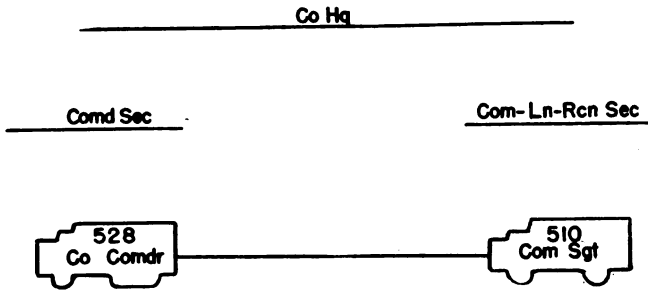


FIGURE 42.—Rifle company, infantry, armored.

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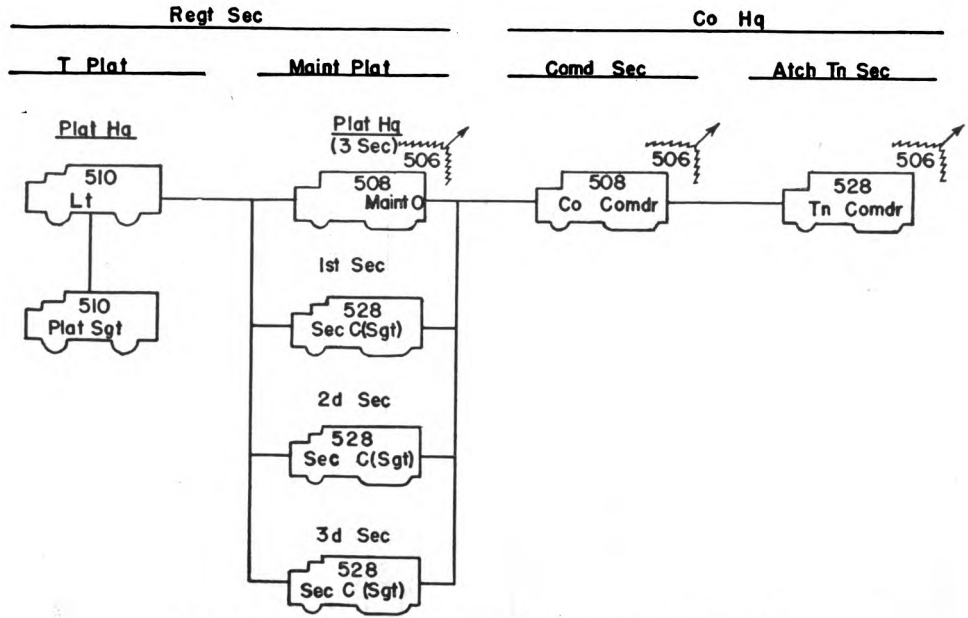


FIGURE 43.—Service company, infantry regiment, armored.

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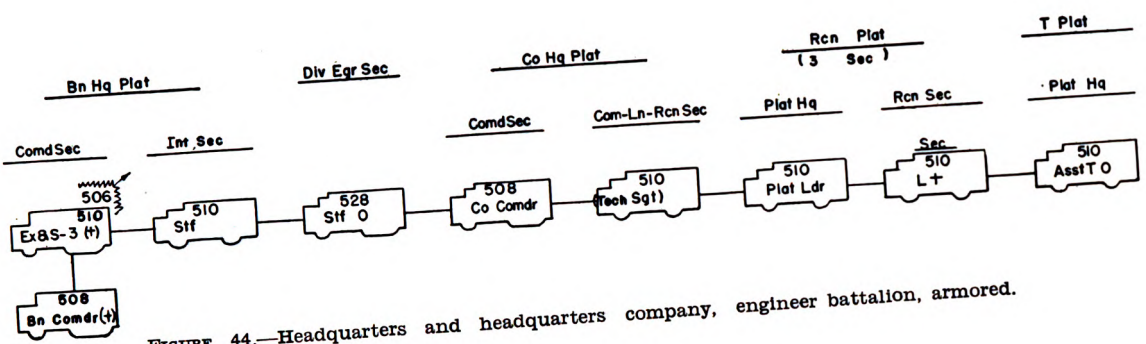


FIGURE 44.—Headquarters and headquarters company, engineer battalion, armored.

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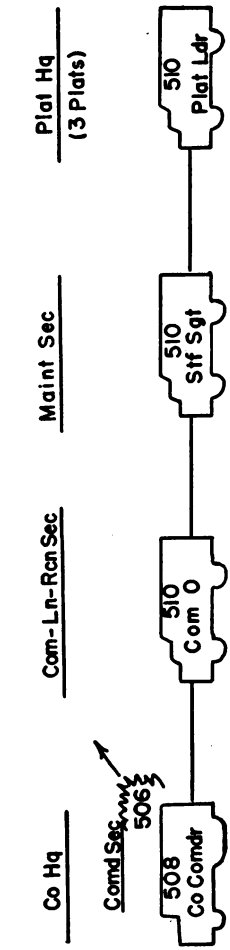


FIGURE 45.—Engineer company, armored.

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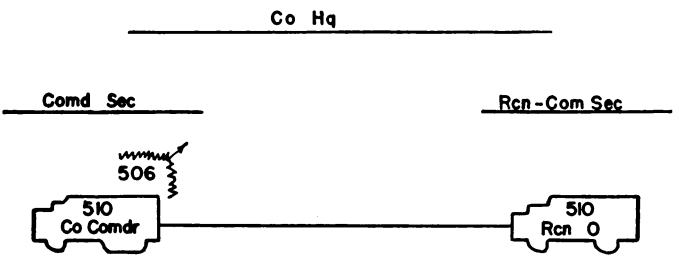


FIGURE 46.—Bridge company, engineer, armored.

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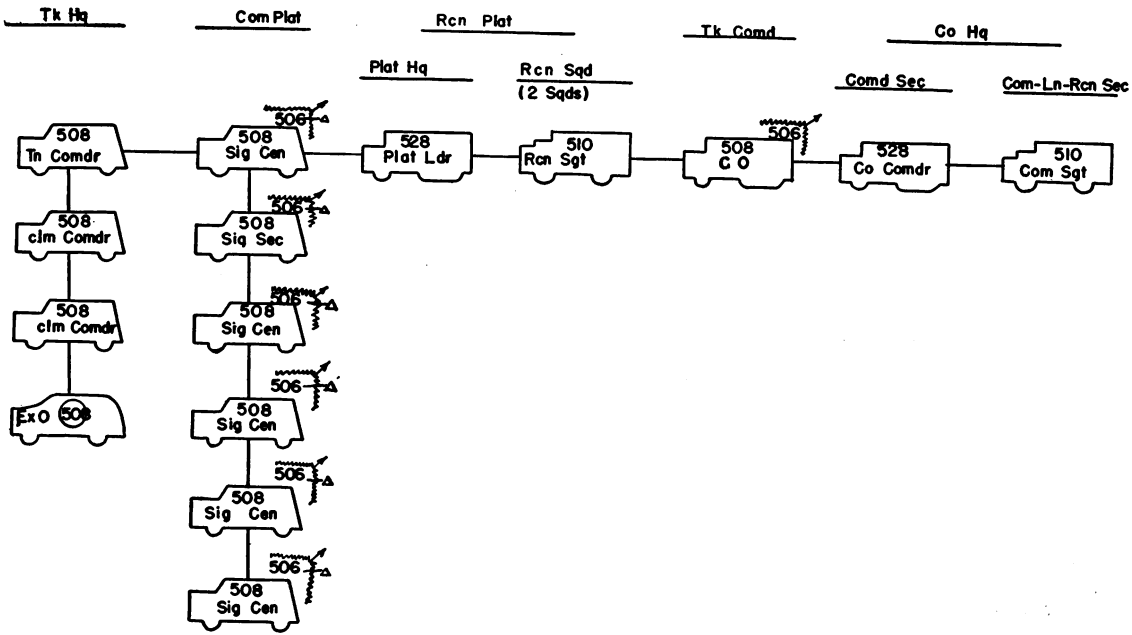


FIGURE 47.—Trains headquarters and headquarters company, armored division.

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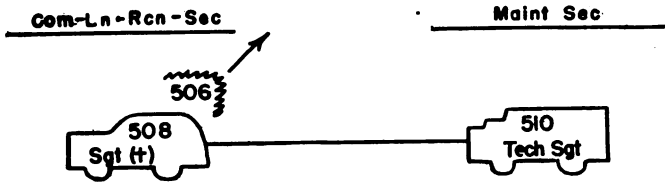


FIGURE 48.—Division service company.

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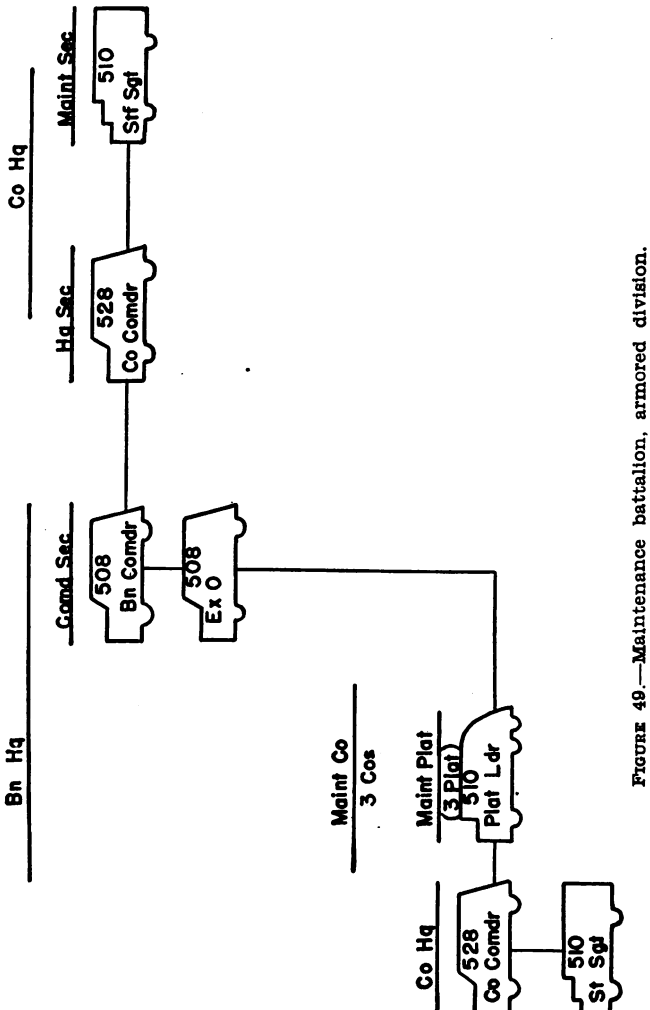


FIGURE 49.—Maintenance battalion, armored division.

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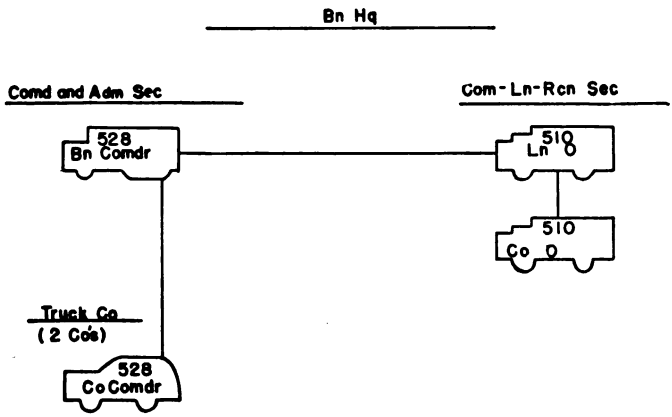


FIGURE 50.—Supply battalion, armored division.

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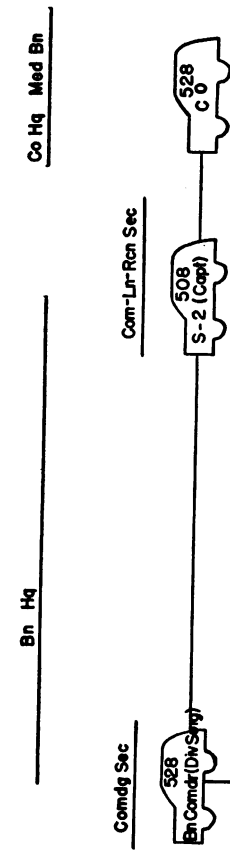
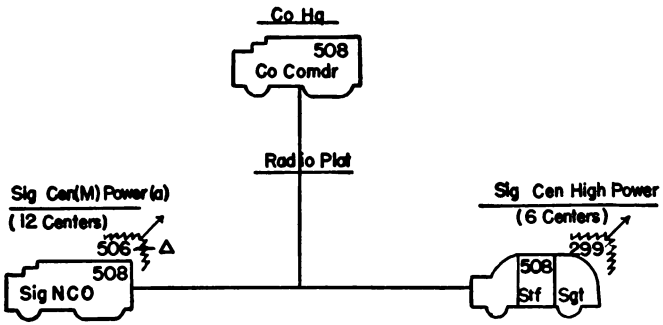


FIGURE 51.—Medical battalion, armored division.

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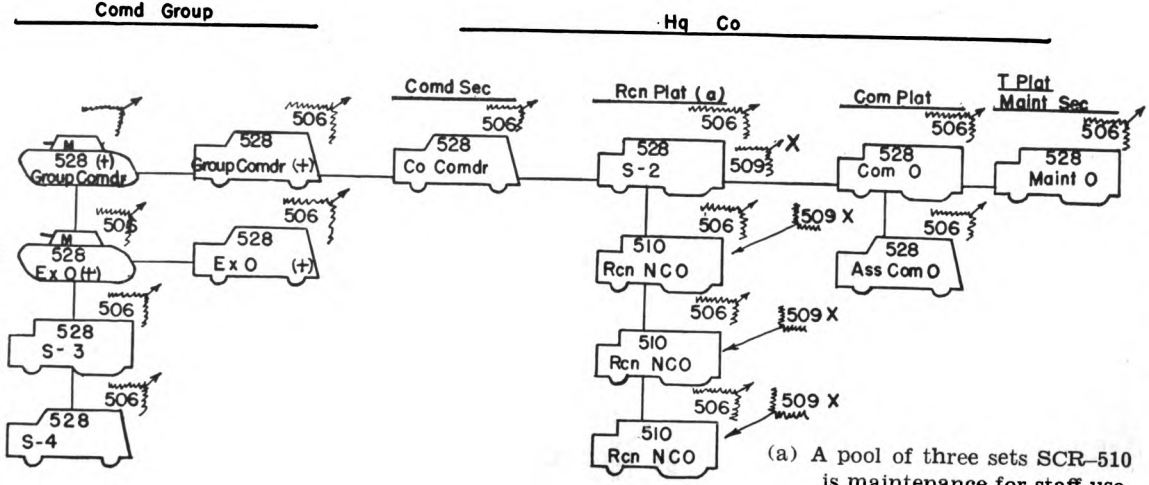


(a) also carries 2 telephones, panels, pyrotechnics and 1000 ft of wire.

FIGURE 52.—Signal company, armored.

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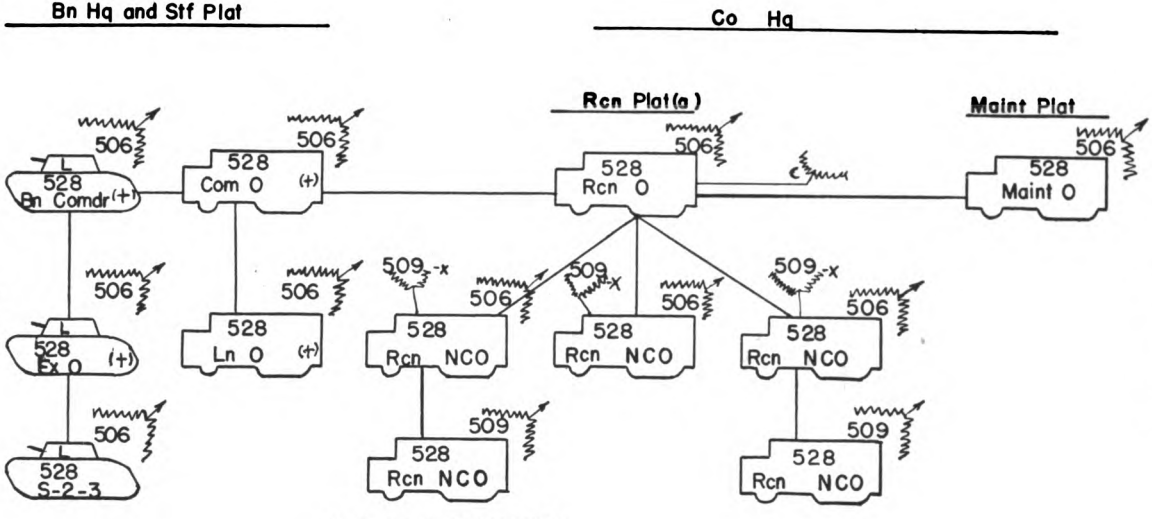


(a) A pool of three sets SCR–510 is maintenance for staff use.

FIGURE 53.—Headquarters and headquarters company, armored tank group, GHQ reserve.

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(a) A pool of 3 SCR-510 sets held for staff use

FIGURE 54.—Headquarters and headquarters company, GHQ reserve tank battalion, light.

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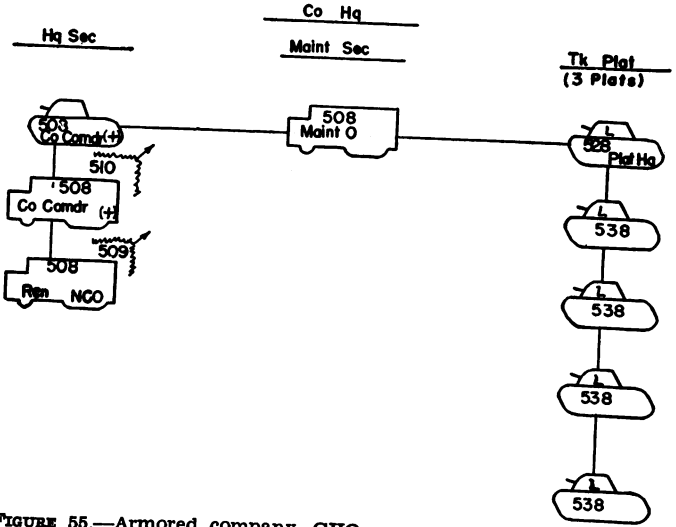
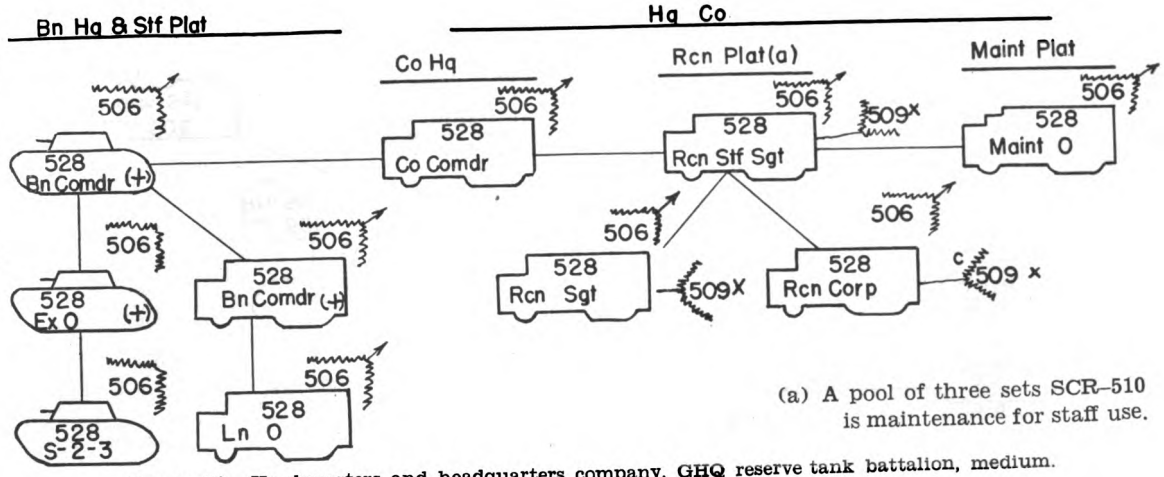


FIGURE 55.—Armored company, GHQ reserve tank battalion, light.

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(a) A pool of three sets SCR–510 is maintenance for staff use.

FIGURE 56.—Headquarters and headquarters company, GHQ reserve tank battalion, medium.

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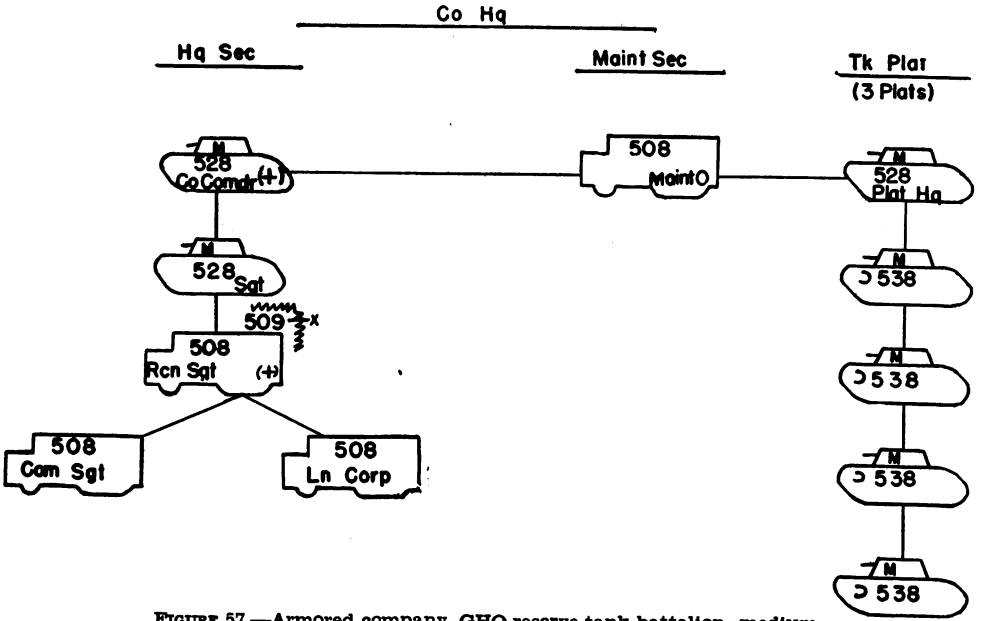


FIGURE 57.—Armored company, GHQ reserve tank battalion, medium.

NOTE.—*The "Rad Opn Co" contains a pool of* mobile sets (six SCR–299 and eight SCR–506).

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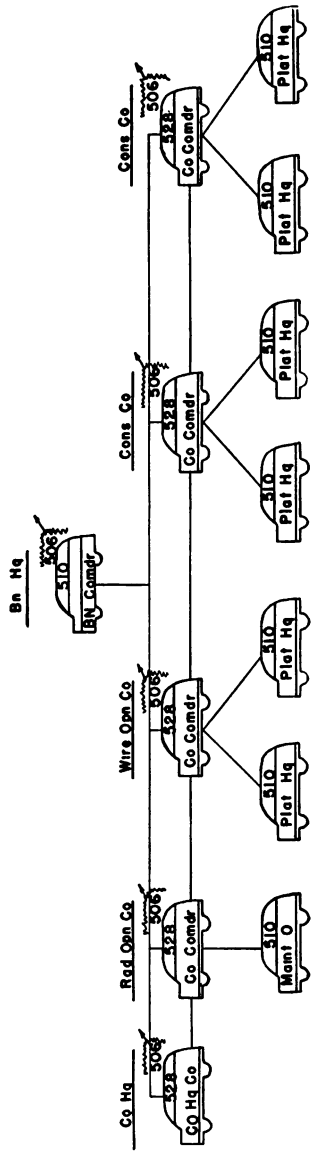


FIGURE 58.—Corps signal battalion, armored.

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Defense	53	120
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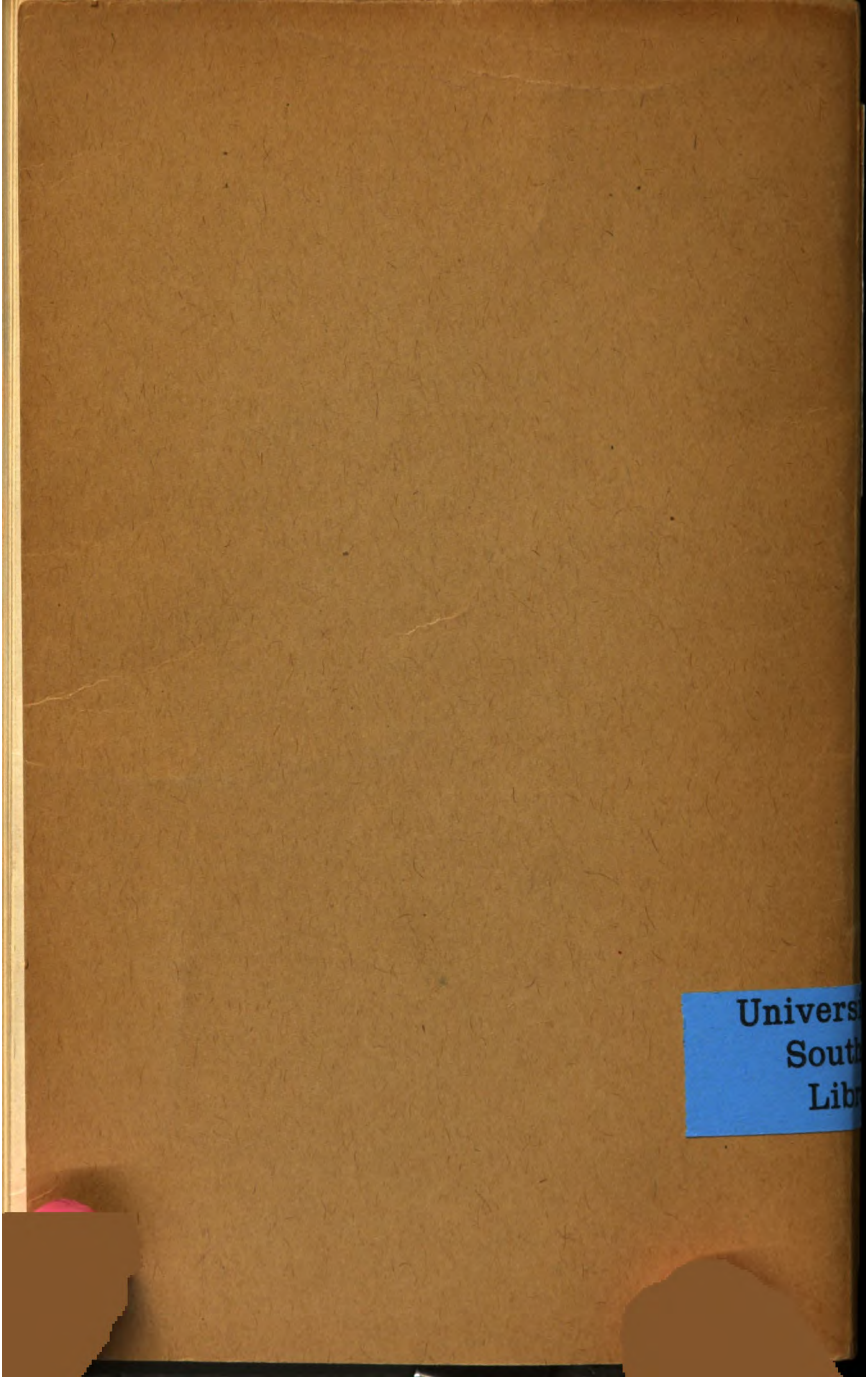
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