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**FM 17-33**

**WAR DEPARTMENT FIELD MANUAL**

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**TANK  
BATTALION**

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**WAR DEPARTMENT • DECEMBER 1944**

WAR DEPARTMENT

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FM 17-33, Tank Battalion, is published for the information and guidance of all concerned.

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BY ORDER OF THE SECRETARY OF WAR:

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For explanation of symbols, see FM 21-6.

WAR DEPARTMENT FIELD MANUAL  
FM 17-33

*This manual supersedes FM 17-33, The Armored Battalion, Light and Medium,  
18 September 1942.*

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# TANK BATTALION



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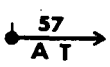



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# LEGEND

	Tank In Motion
	Tank In Position
	105mm Assault Gun
	Half - Track
	81mm Mortar Carrier
	Reconnaissance Car 1/4 - Ton
†	Platoon Leader's Vehicle
‡	Company Commander's Vehicle
⌘	Battalion Commander's Vehicle
	Base Of Fire
	Gun Battery
	Machine Gun
	57mm Antitank Gun
	Armored Artillery OP
	Explosive Shell Fire
	Front Lines

**RESTRICTED**

## **CHAPTER 1**

### **GENERAL**

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#### **Section I. GENERAL**

##### **1. Purpose and Scope**

*a.* This manual sets forth the principles governing the tactical employment of the tank battalion. The procedures are guides and are not to be considered as inflexible. Each situation is solved only after a careful estimate; rules must not be applied blindly.

*b.* Success in battle can be assured only by complete cooperation of all arms. No one arm wins battles. Success is attained when each arm, weapon, and individual is employed to afford the maximum mutual support.

*c.* Although this manual deals only with tank units, tanks usually operate in close coordination with other arms, particularly infantry and artillery. The tank battalion may be a part of a combat command; it may reinforce an infantry combat team. When operating alone, it is normally reinforced by infantry, engineers, and other units.

##### **2. Fundamentals of Employment**

*a.* **SURPRISE.** Surprise is obtained by striking the enemy at an unexpected time, from an unexpected direction, in sufficient numbers, and with sufficient support to gain the objective. Rapidity of concentra-

For military terms not defined in this manual see TM 20-205.

tion, speed of movement, the use of covered approaches, and intensity of attack assist in gaining surprise. *Seek to surprise your enemy, but do not let yourself be surprised. Give your enemy credit for as much tactical knowledge as you have, or more. Do not underestimate him. Expect the unexpected and be prepared for it. In battle the abnormal is normal.*

*b.* FIRE AND MANEUVER. The battalion advances by fire and maneuver, the maneuvering element always being covered by a supporting element. When the maneuvering force has advanced to the limit of supporting distance, it may, in turn, support the movement of the remainder of the command.

(1) The *base of fire* consists of either tanks, infantry, assault guns, mortars, supporting artillery, or a combination of these units.

(2) The *maneuvering force* consists of the tanks and any attached or supporting troops.

*c.* CONCENTRATION OF EFFORT. The power of the battalion must be concentrated on critical areas. Dispersion results in weak effort at all points and is resorted to only against a weak or demoralized enemy. Even then, the battalion must be able to concentrate rapidly. The tank is not an individual fighting weapon. Tanks are employed in mass when practicable, and concentrated in depth on a narrow front.

*d.* COOPERATION. The cooperation of all elements must be insured. Each commander must understand that his unit is only a part of a team and that he must work in close cooperation with all other units. *Team-work is obtained by combined training.* Tanks can take terrain but they cannot hold it. Tanks *must not* be expected to neutralize an objective for a long period of time.

*e.* RETENTION OF THE INITIATIVE. The initiative must be maintained, for, once lost, it is difficult and costly to regain. It is essential to have alternate plans prepared for immediate execution should the initial

thrust fail. If the enemy withdraws to new positions, reconnaissance elements maintain contact.

*f.* SECURITY. The battalion secures itself from surprise by the enemy at all times. It obtains this security by continuous reconnaissance, by the formation it assumes, and by its position with respect to other troops and to natural and artificial obstacles. Infantry may be used to protect tanks in their parks or to cover their flanks. However tank units must be prepared to protect themselves.

### **3. Factors Governing Employment**

*a.* MINE FIELDS AND OTHER OBSTACLES. Extensive mine fields, road blocks, antitank ditches and other antitank obstacles limit the employment of tanks and slow down their operation. Passages through mine fields are usually made by engineers and infantry. For methods of breaching mine fields see FM 5-31. Engineers and infantry also assist in passing other obstacles. Tank units are trained in the detection and removal of mines.

*b.* TERRAIN AND WEATHER. (1) Terrain and weather can have a decisive effect upon operation of tanks. Rain, mud, snow, ice, rocky or stumpy ground, dense woods, swamps, and extremely rough ground slow down operations or make them impossible. The full striking power of tanks can best be developed over rolling terrain in which the full cross-country mobility of vehicles can be developed.

(2) Good terrain for tank operation is most likely to be mined. Furthermore, tactical surprise may dictate the use of terrain which can be traversed with difficulty and which sometimes may be considered as impassible.

(3) Terrain in rear of the enemy position must be evaluated in planning operations. Should terrain be unsuitable for tank operation against enemy forward

positions, infantry may attack to seize ground from which a tank attack may be launched.

*c.* **ANTITANK GUNS.** Until neutralized, enemy antitank guns can cause prohibitive tank losses. The most thorough reconnaissance possible is employed to locate these guns, and effective action is then taken to neutralize them. Provisions also are made to take under fire and neutralize immediately any antitank guns that disclose themselves during the attack. It may be necessary to draw the fire of antitank guns in order to locate them.

## **Section II. ORGANIZATION, CHARACTERISTICS, AND EMPLOYMENT**

### **4. Standard Tank Battalion (fig. 1).**

This battalion is both an administrative and tactical unit. It has supply, evacuation, and maintenance facilities for a limited period of action. It consists of a headquarters and headquarters company, three medium tank companies (fig. 2), a light tank company (fig. 3), a service company, and a medical detachment. (See T/O & E 17-25.)

### **5. Light Tank Battalion (fig. 4).**

This battalion is organized similarly to the standard tank battalion except that it has only three tank companies all of which are equipped with light tanks.

### **6. Characteristics and Missions**

*a.* **GENERAL.** (1) The chief characteristics of the tank battalion are mobility, armor-protected fire power and shock action. It is particularly suited for rapid concentration of fire power and shock action upon enemy personnel, equipment, and installations.

(2) Continued operation is dependent upon adequate resupply of fuel, lubricants, spare parts, and ammunition.

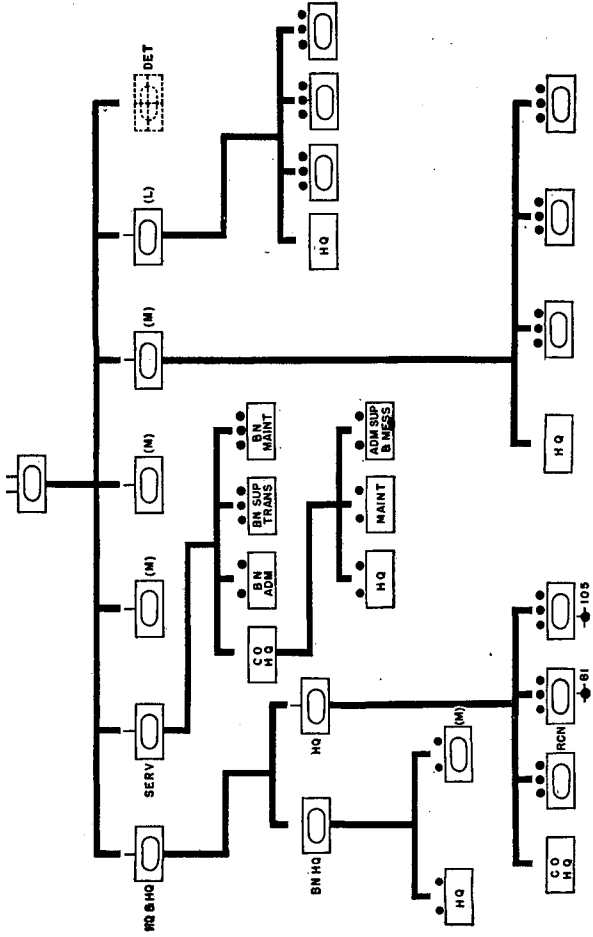
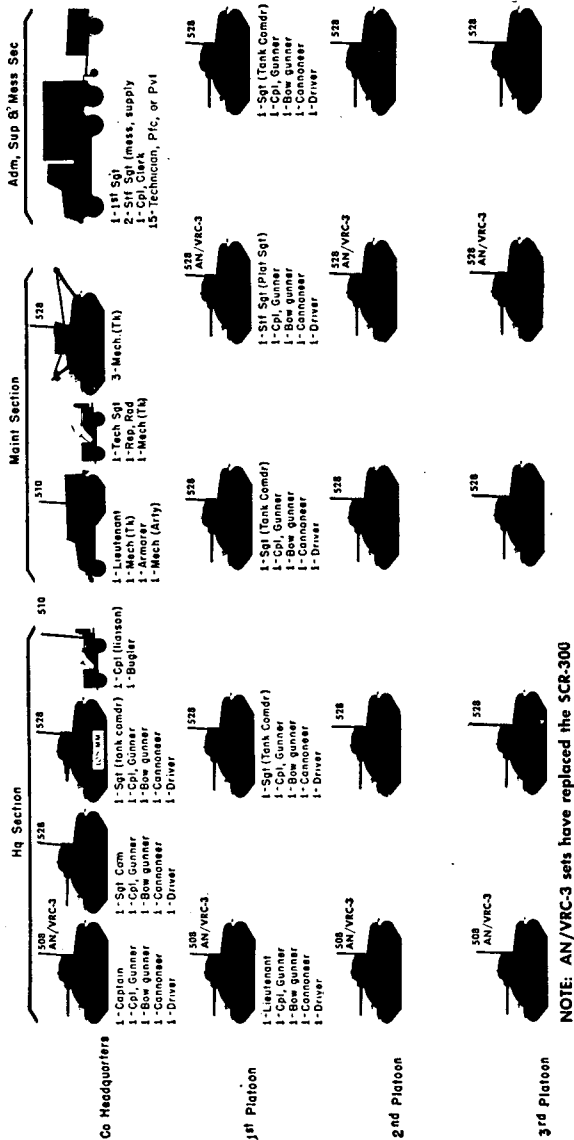
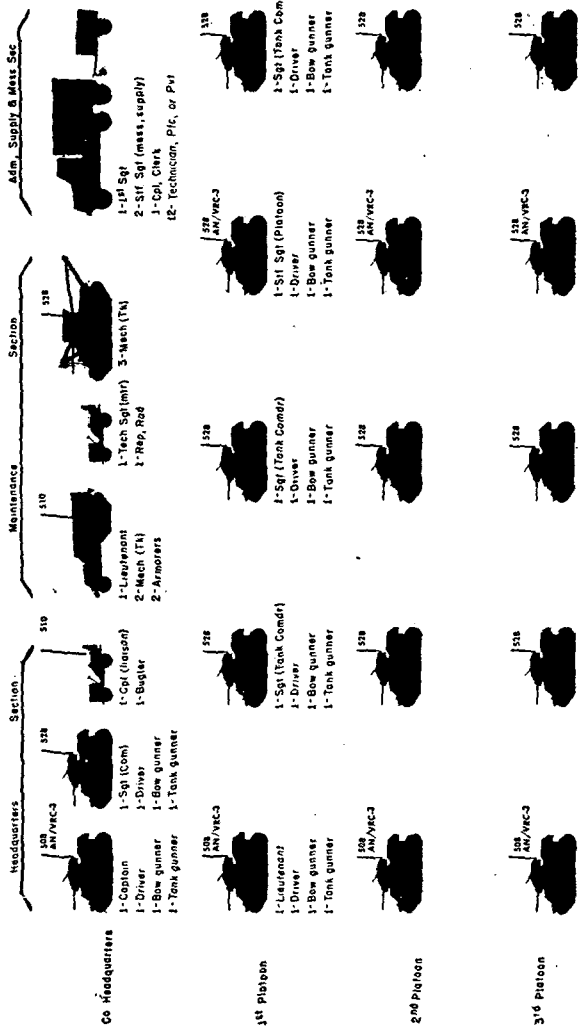


Figure 1. Standard tank battalion.



*Figure 2. Medium tank company.*





NOTE: AN/VRC-3 sets have replaced the SCR-300

Figure 3. Light tank company.

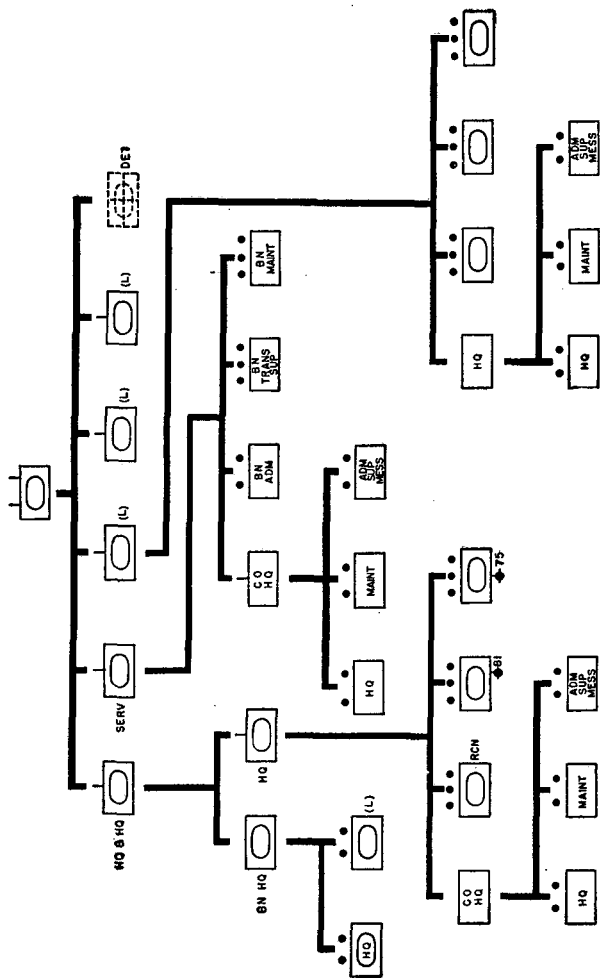


Figure 4. Light tank battalion.

*b. MEDIUM TANK.* The medium tank is a heavily armed and armored vehicle. Its weapons are suitable for close support of other tanks and ground troops. It is slower than the light tank and more sensitive to unfavorable terrain (fig. 5). Its primary mission is to close with and destroy the enemy. It may be used—

(1) To lead the attack.

(2) To support by fire the advance of the light tanks, other medium tanks, and ground troops. This support is usually by direct fire.

(3) To feel out the enemy and develop weak spots. This use is exceptional.

(4) As a reserve for exploiting a success or breaking up a counterattack against the supported unit.

(5) To accompany the infantry and assist the advance by destroying or neutralizing hostile automatic weapons and pillboxes holding up the advance.

(6) When necessary, against enemy tanks.

(7) When necessary, as dug-in pillboxes (exceptional).

(8) To reinforce artillery fires.

*c. MEDIUM TANKS (76-MM GUN)* (fig. 6). The medium tank armed with the 76-mm gun may be used—

(1) In the leading elements of the assault echelon, either in the maneuvering force or in a direct attack, against fortified enemy positions.

(2) In the supporting elements of the assault echelon, or in the support echelon, in the absence of known enemy fortifications. In such situations the 75-mm gun tanks are used in leading elements of the assault echelon, while the 76-mm gun tank, taking full advantage of the greater range and penetrating power of its gun, delivers supporting fire from hull-defiladed positions.

(3) To reinforce the antitank defense of a supported infantry unit.

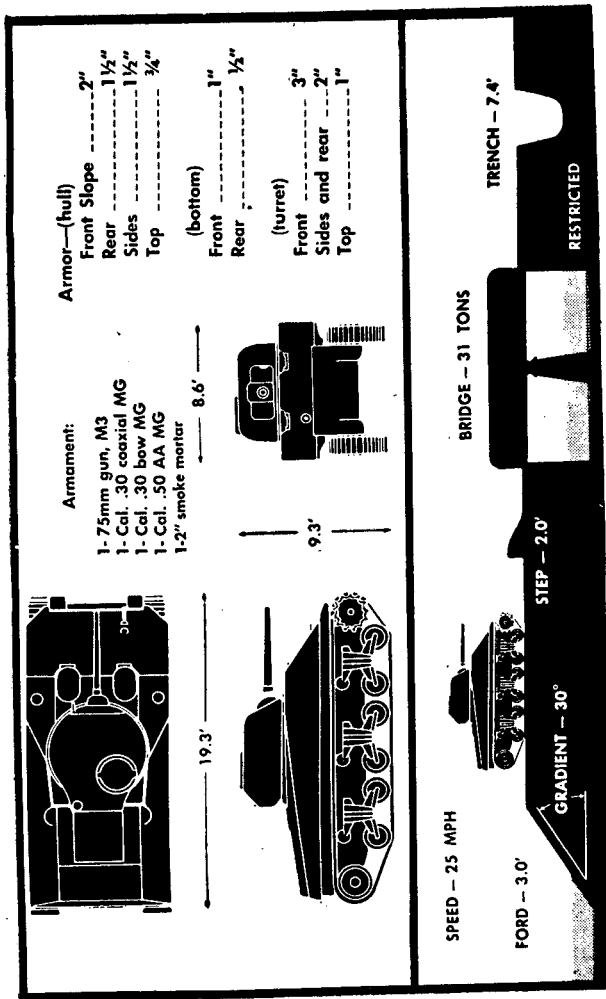


Figure 5. Medium tank.

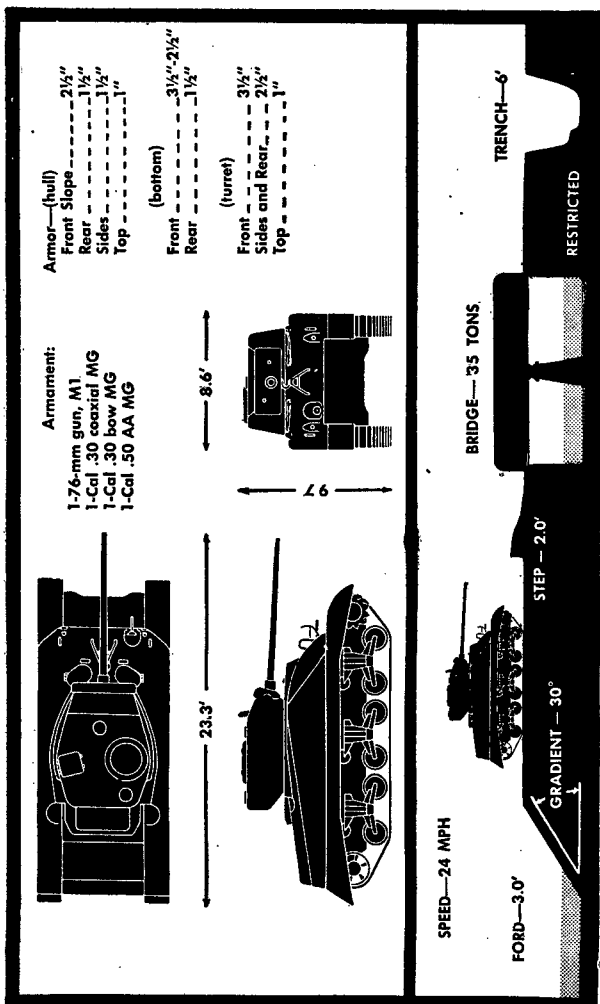


Figure 6. Medium tank M4E6 (76-mm gun).

d. **LIGHT TANKS.** The light tank is faster than the medium tank but has lighter armor and some models have lighter armament (fig. 7 and 8). The light tanks may be used—

(1) On reconnaissance and security missions.

(2) To feel out the enemy and develop weak spots in the enemy position for an attack by the medium tanks.

(3) To screen the advance of other tank units when enemy resistance is light or when the situation is vague.

(4) As a fast maneuvering force to attack the enemy flank or rear, or to exploit a success.

(5) To draw enemy armor into a trap.

(6) On terrain impassable for medium tanks.

(7) To protect the flanks of the medium tanks during the attack.

(8) When medium tanks are not available, to accompany infantry and assist its advance by destroying enemy positions.

(9) To assist the infantry in mopping up.

## **7. Headquarters and Headquarters Company**

a. **BATTALION HEADQUARTERS.** The headquarters of the tank battalion includes a headquarters section, containing the necessary command, staff, and communications personnel and equipment for the control of the battalion, and a tank section. In divisional tank battalions this section has two medium tanks. In separate battalions it has three, the extra tank being for the use of artillery forward observers.

(1) *The battalion commander.* The battalion commander is responsible for every phase of the training of every component part of the battalion; for its actions in battle; for the health and well-being of every individual in the battalion; for the supply and maintenance of all of the equipment of the battalion;

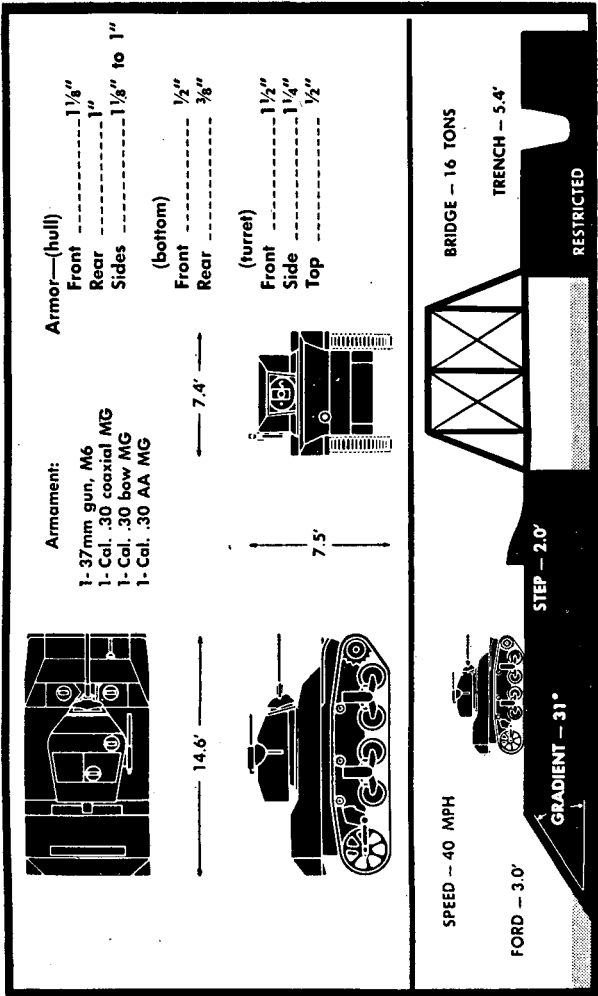


Figure 7. Light tank M5A1.

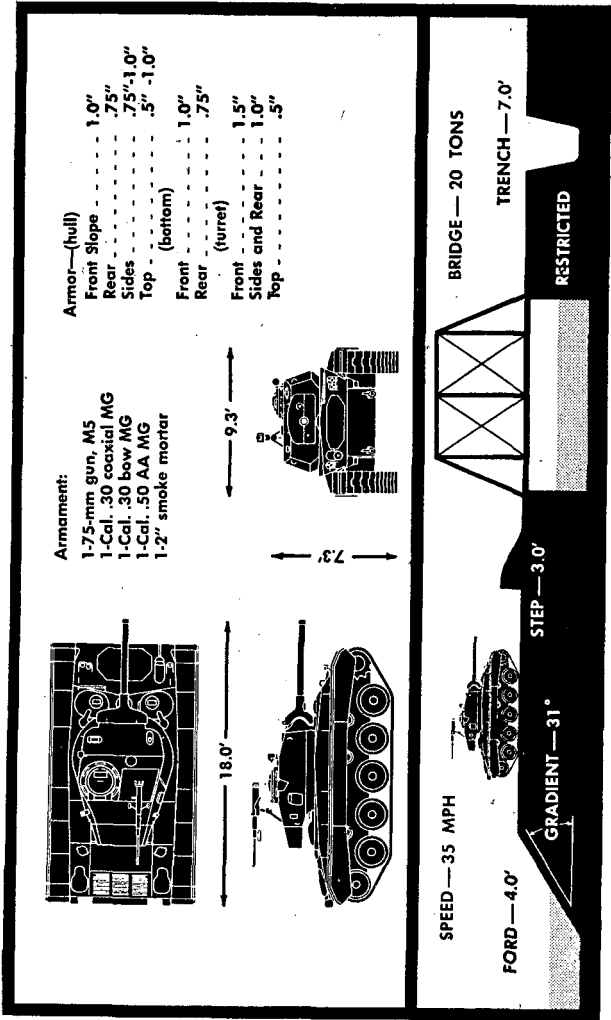


Figure 8. Light tank M24.



and the repair or replacement of all items of equipment which become unserviceable for any reason whatsoever. It is impossible for a battalion commander to perform all these duties efficiently unless he trains and utilizes to the fullest extent his staff and all the company officers and noncommissioned officers of the organization.

(2) *The staff.* Every member of the battalion staff is trained to perform not only his own duties, but those of every other section. In no other way is the continuity of staff work in battle to be assured. Duties of the battalion staff are given in FM 101-5, appendix III, and the following paragraphs.

(a) *Executive.* The executive is the assistant to the battalion commander. He is prepared at all times to assume the battalion commander's functions. A high degree of intimacy must exist between the battalion commander and his executive. They must understand each other and each other's methods. The executive supervises all staff operations.

(b) *S-1.* The S-1 is responsible for the personnel administration and other duties which may be assigned by the battalion commander. These duties are covered in detail in FM 101-5.

(c) *S-2.* The duties of the S-2 are covered in FM 101-5 and field manuals of the 30 series. The S-2 must be thoroughly trained in the basic principles of intelligence work. The S-2 works intimately with the S-3 of the battalion. See par. (d). He must be prepared to assume the duties of the S-3. He supervises, under the direction of the battalion commander, the activities of the reconnaissance platoon.

(d) *S-3.* The S-3 supervises, under the direction of the battalion commander, the execution of the training program of the battalion and the operation of the battalion in battle. In his section are prepared such overlays and maps and sketches as may be necessary. One of his principal duties in battle is coordi-

nation with attached and supported units.

(e) *S-4*. The S-4 is responsible for the supply functions of the battalion. He is responsible for coordination, procurement, and actual movement of supply vehicles to the places designated by the commander and his subordinates. The S-4 must be intimately familiar with the supply problems of the individual companies in battle. He follows the course of the battle closely and estimates the probable supply requirements of the companies so that in the event of communication failure he may use his own initiative to furnish what he believes to be the ammunition and fuel requirements of those companies.

(f) *The battalion surgeon*. FM 17-80.

(g) *Battalion motor officer*. The battalion motor officer is responsible for the supervision of the vehicle maintenance in the battalion. Company motor officers operate very closely with the battalion motor officer. He is responsible for the efficient use of the maintenance facilities of the battalion at all times to keep every vehicle operating. He is responsible for liaison and coordination with higher echelons of maintenance and, in battle, maintains close contact with supporting maintenance and evacuation units.

(h) *Communications officer*. The communications officer is responsible for the efficient use of the communication means within a battalion. Company communication personnel operate closely with the battalion communication officer. He conducts, under the supervision of battalion commander, radio schools throughout the training period and in the combat zone. He is responsible for liaison and coordination with higher echelons of communication and radio repair.

(i) *Headquarters commandant*. The duties of the headquarters commandant are diversified and detailed. Besides being commander of the headquarters company he must be prepared at any time to

assume the duties of any member of the battalion commander's staff. He is responsible for the organization of the command post, and for traffic control within it.

(j) *Liaison officer.* FM 101-5 and paragraph 12f.

b. **RECONNAISSANCE PLATOON.** The battalion reconnaissance platoon is capable of route, site, and battle reconnaissance missions. It may be used also as a billeting party, for route marking, and to establish and man observation posts. None of these duties, however, can be allowed to interfere with its primary mission. Because of its composition and the limited range of the radios, the platoon cannot operate far from the battalion headquarters unless relay stations are established.

c. **MORTAR PLATOON (FM 17-27).** The mortar platoon is equipped with three 81-mm mortars mounted in half-track vehicles. The mortar may be fired either from the vehicle or the ground. The platoon operates usually as a unit rather than by individual squads. The mission of the mortar platoon is to give close fire support to tank units with particular reference to destroying or neutralizing anti-tank guns. It operates directly under control of the battalion commander. As many of its missions will be screening, a preponderance of smoke ammunition is carried. Smoke is used as directed by the battalion commander and must not be allowed to interfere with the movement of the battalion or adjacent troops. The platoon normally moves with the battalion reserve and where it is readily available to the battalion commander.

d. **ASSAULT GUN PLATOON (FM 17-25).** The assault gun platoon is equipped with three 105-mm tanks. It may be augmented with three 105-mm tanks from the medium tank companies. The mission of the assault gun platoon is close fire support of the tanks with particular reference to antitank guns. It usually

employs indirect fire methods for the initial attack and thereafter direct fire. It operates directly under control of the battalion commander.

### 8. Medical Detachment

This attached unit is organized and equipped to provide close medical support for the tank battalion.

### 9. Service Company (Fig. 9)

a. The service company has the necessary equipment and personnel for the administration, maintenance, and supply of the battalion for a limited period of action. It is composed of the company headquarters, the battalion administrative and personnel section, the supply and transportation platoon, and the maintenance platoon. As directed by the S-4, it procures and distributes the ammunition, fuel and lubricants, rations, and water for the companies within the battalion.

b. When the battalion moves into combat, service company headquarters usually remains in the assem-

SERVICE COMPANY - TANK BATTALION

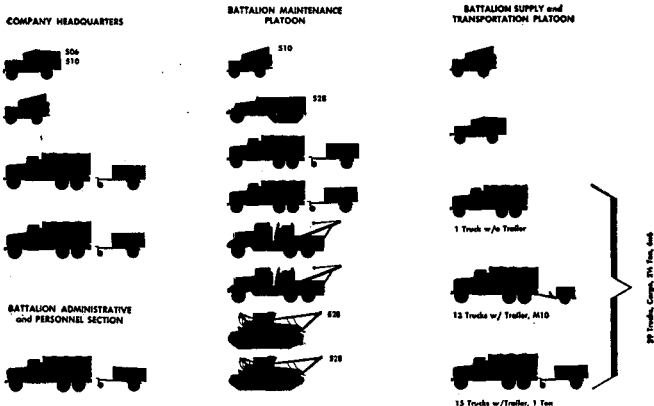


Figure 9. Service company, tank battalion.

bly area or service park, and the supply and maintenance platoons usually move forward at night to service the battalion. The supply platoon then spends the next day reloading at higher unit supply points. It is then prepared to resupply the battalion that same night.

c. If the battalion operates separately, the service company sets up gasoline, ration, and ammunition dumps in areas where the battalion is located. It draws its supplies from the unit to which it is attached or from the next higher unit. *It is the responsibility of the supply officer to contact the G-4 or S-4 of that unit and acquaint him with the requirements of the battalion.*

d. The work of the battalion maintenance platoon and that of the company maintenance sections are closely coordinated. Liaison with higher maintenance units is accomplished by the battalion motor officer.

e. When the battalion moves forward into combat, the company maintenance sections follow their respective units. The larger part of the battalion maintenance platoon remains in the assembly area or service park, though its tank recovery vehicles usually move directly behind the attack to recover disabled vehicles.

## **10. Tank Companies**

FM 17-32.

### **Section III. SIGNAL COMMUNICATION AND CONTROL**

#### **11. Signal Communication**

a. **RADIO.** The primary means of signal communication within the tank battalion is radio supplemented by messenger, wire and visual means (FM 17-70).

(1) Capabilities and limitations of the equipment radio sets (app. 1), tactical requirements, terrain, and

weather conditions, all affect the use of radio.

(2) The activity of the enemy signal intelligence necessitates strict observance of communication security measures covering radio silence, radio discipline, and transmission security (FM 17-70, FM 24-5).

(3) On the march and in bivouac, security detachments enter the battalion command net. Separate warning nets are established as required. When the tank battalion is operating with infantry or other arms, certain radio stations are designated to enter the command net of the supported unit. In addition, a liaison net may be established. Certain radio sets normally operate in the command and administrative nets of the higher unit.

(4) Within the tank battalion, voice radio (frequency modulated) is used exclusively. Between battalion headquarters and higher or adjacent units, operation is normally with amplitude modulated sets using code (CW). When circumstances permit, FM (or AM) voice channels may be used.

(5) *Radio discipline.* The large volume of traffic and limited number of channels available within the tank battalion make rigid radio discipline essential. Transmissions must be brief, unnecessary transmissions eliminated, proper procedure used, and full use made of brevity and prearranged message codes.

*b. MESSENGER.* FM 17-70, FM 24-5.

*c. WIRE.* Telephone communication affords personal contact between commanders, and higher units furnish telephone communication down to the tank battalion whenever feasible. However, the use of telephone communication within the battalion is restricted by the installation time and lack of equipment. The principal use of wire within the tank battalion is made when it is called upon to reinforce artillery fires.

*d. VISUAL.* Full use should be made of the various methods of visual signaling. These include panels, flags, flashlights, pyrotechnics, arm and hand signals, and firing of tracer ammunition. Successful use of visual signals necessitates careful coordination and prearrangement.

*e. COMMUNICATION OFFICER.* The battalion communication officer must know not only the capabilities and technical characteristics of his own radio sets, but must also be familiar with the sets used by the infantry divisions, artillery, armored divisions, and any other organizations to which the battalion may be attached. Appendix I gives characteristics and inter-netting capabilities of infantry, tank, and artillery radio sets, and show the radio nets normally used in combined actions. Figure 99 shows the range and internetting capabilities of several types of radio which are used in joint communication between tank and nonarmored units. Frequencies and channels are chosen which fall in the overlapping band, and call signs and codes arranged. When internetting is not possible, a liaison set should be sent from the armored unit to the unit to which it is attached. When liaison sets are not available, SCR 509 sets from the mortar platoon, or radio sets dismantled from vehicles in which their use is not imperative may be used.

## **12. Control**

*a. PLANNING.* The most effective way to maintain control is to plan properly. Generally, the more simple the plan, the easier will be control. Alternate plans are always made. Sufficient time should be allowed for transmission of orders to all subordinate commanders.

*b. ORDERS (FM 101-5).* Orders should be clear, concise, and incapable of being misinterpreted. Orders issued by the battalion commander are oral or in written message form and are frequently fragmentary.

Whenever possible, overlays or marked maps are used to clarify orders and reduce their length. Orders should be issued at a point from which as much of the area of operations as possible can be seen. Appendix II gives the outline of a typical tank battalion field order.

*c. COMMUNICATION* (par. 11). Without effective communications, control is impossible. For this reason, too much reliance cannot be placed upon any one means; alternate means must be available instantly. Communications with attached units, which may be equipped with radios of different types than those of tank battalion, demand especially careful preplanning.

*d. STAFF OFFICERS.* Staff officers, as representatives of the battalion commander, assist in the control and coordination of the battalion and attached troops. They procure and furnish necessary information, prepare plans, transmit orders to lower units, and supervise the execution of those orders.

*e. SUPERVISION.* The battalion commander makes frequent visits to subordinate units to observe the execution of his orders and to insure the desired degree of control and coordination. He is assisted in this supervision by members of his staff and all subordinate commanders and their assistants.

*f. LIAISON.* (1) The purpose of liaison is to secure by personal contact the desired cooperation and coordination of effort. Tank units *must* maintain liaison with higher headquarters, supported units and adjacent units by any means available (FM 17-70 and FM 101-5).

(2) Liaison may be accomplished either by personal conference between unit commanders or by means of a liaison officer who represents his unit commander. Usually, both methods are employed concurrently. The liaison officer remains at the head-



quarters to which he is sent and maintains contact between it and his own unit; the unit commanders meet whenever the tactical situation requires.

(3) Effectiveness of liaison is directly proportional to the efficiency of the liaison officer. A liaison officer must be tireless, alert, tactfully energetic, and possessed of a thorough and practical knowledge of the employment of the tank battalion. He must understand the staff procedure of higher units and the tactics and technique of other arms. He must be provided with a radio-equipped vehicle and one or more enlisted assistants who can serve as messengers.

(4) The liaison officer has three missions:

(a) To keep his own unit commander constantly informed of the existing tactical situation, the plans of the unit to which he is sent and of any changes in either.

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

(c) To serve, in the absence of his battalion commander, as an adviser to the commander of the unit to which he is sent, concerning the employment of the tank battalion.

(5) The tank battalion commander makes full use of the liaison officers from other units and arranges for them to receive the fullest cooperation from his staff. Their radios and messengers are valuable supplements to his communications system.

*g.* CONTROL DURING COMBAT. Control prior to an attack is comparatively simple. Plans and orders are prepared and missions assigned. During an attack, control is necessarily decentralized, the degree of control that the battalion commander retains being directly dependent upon the thoroughness of his planning and the effectiveness of his orders. The battalion staff is used to coordinate the attack as much as possi-

ble without restricting the initiative of subordinate commanders. Centralized control is regained during reorganization, and plans for resuming the offensive are initiated at once.

## CHAPTER 2

### TRAINING

---

#### 13. General

*Training never ceases. It is continuous before battle, during battle and after battle. Battles are critiqued at the earliest opportunity.* Something new can be learned every day—something new can be taught every day.

#### 14. Conduct

The conduct of training is covered generally in FM 100-5 and FM 21-5, and the technique of instruction in TM 21-250.

*a.* The mission of the tank battalion is offensive. Therefore, training emphasizes the offensive.

*b.* The battalion may operate alone, as part of a group or division, as part of a combat command or task force, or as the division reserve. It is essential that all training stress coordination, not only within the battalion, but with other units as well. Battalion exercises are designed to obtain maximum training in coordination, control and battle efficiency.

*c.* It is not possible to lay down hard and fast rules applicable to every situation that arises in combat. Each situation is new and innumerable adaptations and variations are made necessary by battle conditions. A standard, however, is essential for training, and if troops have been thoroughly trained they will be able to adjust themselves to all variations from the normal.

*d.* The one purpose of all training is to teach cor-

rect combat behavior so that, no matter how distracting, demoralizing, or overwhelming their first battle experience, officers and men alike will automatically meet it as it must be met—eagerly and as an efficient team. *Soldiers fight as they have been trained.*

## **15. Sequence in Training**

a. For tank company training see FM 17-32.

b. Tactical training of the battalion and its components proceeds in the following sequence:

Marches.

Security.

Offensive combat.

Defensive combat.

Special operations.

Combined infantry-tank training.

This manual covers the training of the battalion as a whole. For training of the component parts of the battalion see FM 17-25, FM 17-27, and FM 17-32.

## **16. Training of Headquarters and Headquarters Company**

This is covered in FM 2-20, FM 17-25, FM 17-27, and pertinent manuals for technicians.

## **17. Preparation of Exercises (FM 21-5)**

a. Maximum training is obtained by the careful preparation and vigorous execution of exercises.

b. The following procedure is recommended for the preparation of the exercises:

(1) Decide what phase of training is to be covered. Select and outline the principles and lessons to be emphasized, and thoroughly review the pertinent manuals and other current tactical doctrine.

(2) Make a map reconnaissance to locate a suitable area for the exercise. Then, accompanied by the battalion staff, make a personal reconnaissance of the whole area. Determine if this area is available for the

date scheduled and, if so, reserve it.

(3) Tentatively outline on the ground the situation or situations that will emphasize the type of combat to be covered. For instance, situations to be included in a field exercise on a march may include—

Road reconnaissances—advance and flank guards.

Security against air attack.

Reduction of road blocks.

Occupation of an assembly area.

Selection of command posts.

Phase lines.

Methods of communication.

Security detachments—employment of a covering detachment, flank guards and patrols.

(4) Check the zone of action from the starting point to the objective, considering it from the viewpoint both of friendly and enemy troops.

(5) Rehearse the exercise with other officers as a map or sand table exercise to determine its soundness and clarity. Correct or remove contradictory and ambiguous situations. Work out time and space factors so that companies will not be expected to do the impossible. Determine the time and places to introduce enemy action and the type of enemy action desired. Remember that a review by other officers is essential since the author may be unduly influenced by some predetermined situation and cannot always view his work in an objective manner. Also determine and list the troop, transportation, ammunition and special equipment requirements for the exercise.

(6) The problem is then drafted and issued in the form of a training memorandum. (See FM 21-5 for standard form.) Information in this memorandum includes—

Date of exercise.

Type of exercise.

Equipment.  
Place of assembly.  
The general situation.  
Enemy troops needed.

(7) Instructions to troops acting as the enemy are given in a separate memorandum or by a written message to each commander concerned. The commanders of such detachments are conducted by the battalion commander or a staff officer to the place where they are to operate and there are given specific instructions as to their part in the problem. If practicable, the enemy troops rehearse their portion of the exercise.

(8) Have all troops and all available equipment ready for the exercise.

c. In conducting the problem the following procedure may be used:

(1) Assemble company commanders and give the special situation and an oral order.

(2) Allow time for company and platoon orders.

(3) Move from service parks in battle formation, every individual alert and at his proper post.

(4) Give additional fragmentary orders as required.

(5) After the exercise, hold a critique. Emphasize lessons learned. Review the tactical doctrine involved and its application to the problem. *There may be more than one approved solution.* Comment on and correct poor solutions, and point out a correct solution. Commend good solutions but do not ridicule mistakes.

## 18. Combined Training

Combined exercises with artillery, engineer, infantry, tank destroyer, and air units are held whenever possible. The importance of this type of training cannot be overemphasized. Infantry-tank training is covered in FM 17-36.

## **19. Training of Battalion Staff**

Besides knowing his specific duties, each member of the battalion staff learns the duties of all the other members. During maneuver training and command post exercises, duties should be rotated until all officers have filled all the other positions. (For duties of staff officers see paragraph 7 and FM 101-5).

## **20. Training in the Combat Zone**

Training in the combat zone includes—

- a.* Any necessary review of previous training.
- b.* Training required to accustom personnel to the terrain and climate of the theater. In the case of mountain, desert or jungle terrain, extensive changes in methods and equipment may be required, and personnel must be sufficiently acclimated before being committed to combat.
- c.* Rehearsals for expected or planned actions, such as amphibious operations or an attack on a hostile fortified position.
- d.* Training in the use of special equipment.
- e.* Training to correct deficiencies disclosed in combat.

## CHAPTER 3

# MARCHES, BIVOUACS AND SECURITY

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### Section I. MARCHES

#### 21. General

The subject of marches is covered in detail in FM 100-5 and FM 25-10. March training may be concurrent with other instruction and should be given throughout all stages of training.

#### 22. Control

a. Successful conduct and control of the march is insured by:

- (1) Warning orders.
- (2) Planning.
- (3) March orders.
- (4) Close supervision during the march.
- (5) Preparations anticipating the arrival of the battalion at the new location.

b. **WARNING ORDERS.** Warning orders are issued far enough in advance so that proper preparations for the march may be made. Warning orders often are limited to alerting the battalion for movement at a certain time, all details being contained in the march orders issued later. After issuing the warning orders the battalion commander, assisted by his staff and other officers, formulates the plans for the march.

c. **PLANNING.** (1) Careful and detailed planning prior to departure aids materially in the successful conduct of a march. This planning includes:

- (a) Formation for the march.



(b) Designation of initial point or points for units of the battalion.

(c) Routes.

(d) Rate of march.

(e) Distances.

(f) Phase lines.

(g) Route reconnaissance.

(h) Guides.

(i) Security measures to be adopted.

(j) Methods of resupply.

(k) Halts.

(l) Trains.

(m) Billeting parties.

(2) *Formation for the march.* The battalion ordinarily marches as a serial, each of its companies being a march unit. The order of march within the battalion depends upon the enemy situation and the position of the battalion within the column of the larger unit. The formation should permit prompt deployment for combat. Figure 10 shows one formation for a reinforced tank battalion in the interior of a larger force.

(3) *Initial points (IP).* (a) An initial point is designated by the higher commander and a time set for the battalion to reach and clear it. Likewise the battalion commander designates an initial point for units of the battalion and sets a time for each unit to reach and clear this point. The initial point should be easily distinguishable on the ground but as inconspicuous as possible from the air.

(b) The battalion commander causes a reconnaissance to be made of the route from the initial point designated by him to the initial point designated by the higher commander. This route is measured and time it will take the battalion to traverse it, calculated. This time subtracted from the hour the head of the battalion must reach the IP to join the main column is the hour the leading vehicles must pass the unit IP.

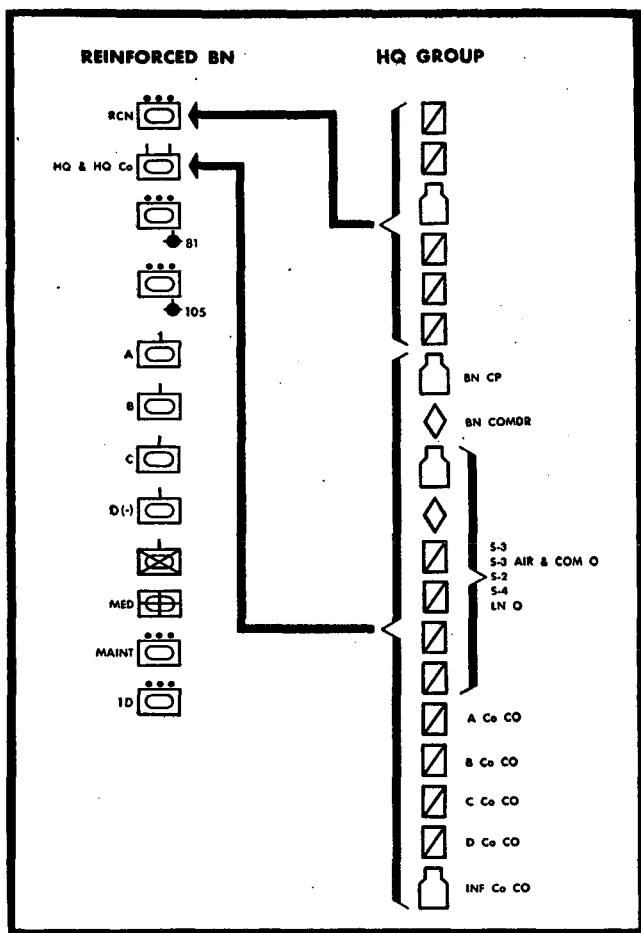


Figure 10. Typical march formation, interior battalion.

If other units are to precede the battalion to the IP the battalion commander must arrange liaison with those units and take care not to block their movement (par. 40). The IP must be reached and cleared at the time designated (fig. 11 and 12).

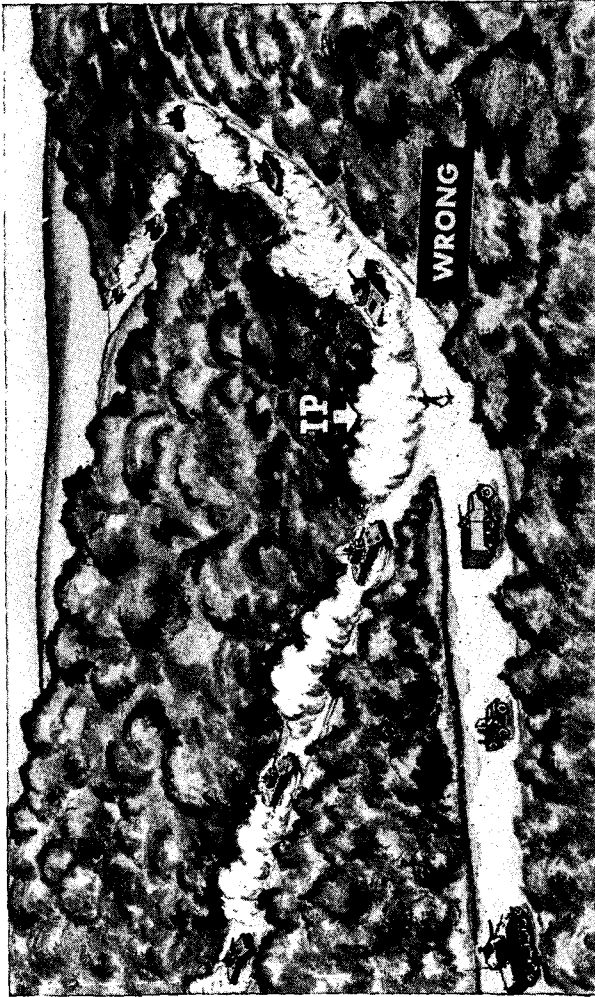
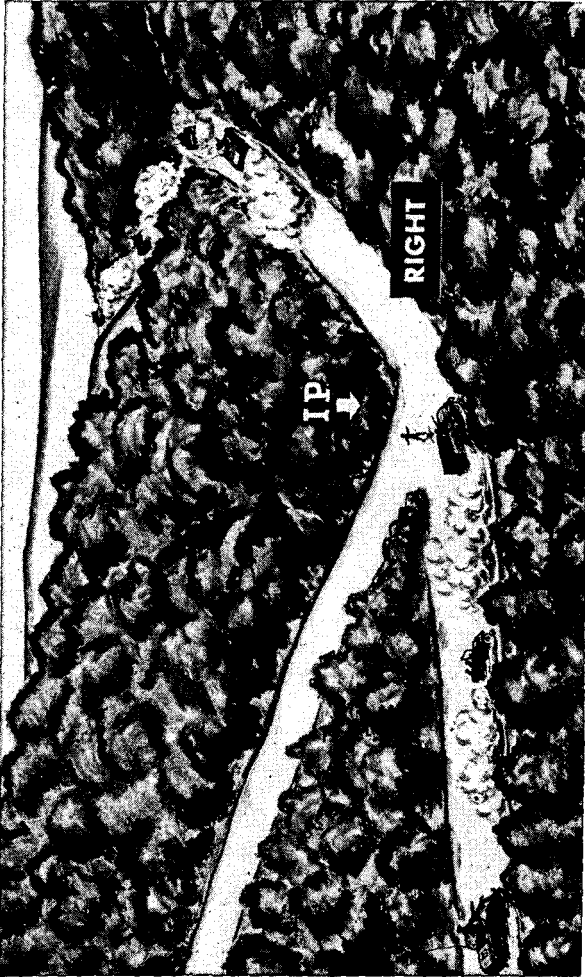


Figure 11. Do not move out too early. Here, a unit, having done so, must halt at the IP until the preceding unit clears it.



*Figure 12. Move out from bivouac so that the IP may be passed at the proper time without halting.*

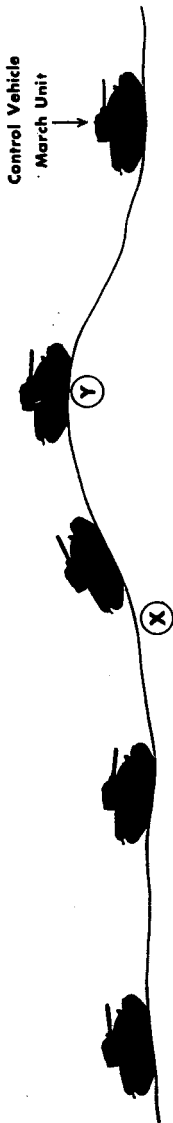
(4) *Routes.* The route usually is designated by the higher commander. When a zone of advance is given, or the battalion is operating alone, the battalion commander, by map reconnaissance, picks his route and alternate routes. A road priority may be given to the battalion for its march.

(5) *Rate of march.* The rate of march of a column is limited by the maximum practicable speed of the slowest vehicle. The leading vehicle in a column containing medium tanks does not exceed 17 miles per hour on good roads by day. Light tanks and wheeled vehicles may march at 20 miles per hour under similar conditions. For night marches without lights except in bright moonlight, this rate is reduced to approximately 10 miles per hour on good roads. A control vehicle at the head of the column adjusts the speed of the column over a varied terrain to prevent "whip" in the rear of the march unit (FM 25-10 and fig. 13).

(6) When combat is imminent, marches are made at the rate of speed required by the situation. Cross-country marches reduce materially the rate of march of the column. Before undertaking a long cross-country march, extensive terrain reconnaissance is made, if practicable, to determine the nature of the soil to be traversed and whether it is capable of sustaining the movement of a large number of vehicles.

(7) *Distance.* For a detailed discussion of distances between vehicles see FM 25-10. Ordinarily these distances are between 35 yards and 100 yards. In theaters where friendly air superiority is assured, reduced distance between vehicles may be prescribed. For distances during night marches see paragraph 23.

(8) *Phase lines.* Phase lines are clearly distinguishable terrain features such as streams, crossroads and well defined ridges along the line of march. They are used to control the movement of two or more columns, including flank guard units. The heads of columns



**MAXIMUM SPEED -- LEADING VEHICLE -- 17 MPH**  
**RATE OF MARCH -- 12 MPH**  
**SPEED OF LEADING VEHICLE FROM X TO Y -- 8 MPH**  
**TO PREVENT WHIP, LEADING VEHICLE OF EACH MARCH UNIT**  
**AFTER PASSING Y GRADUALLY INCREASES RATE OF MARCH**  
**TO THAT PRESCRIBED**

*Figure 13. Avoiding "whip."*

reach or cross phase lines at predesignated times upon order of the higher commander.

(9) *Route reconnaissance.* (a) After receiving warning orders the battalion commander obtains all available information concerning the route of advance. This information includes the condition of roads and bridges, location of defiles, places where guides must be posted, and areas where enemy attack may be expected. When acting alone he orders an advance reconnaissance of as much of the route as practicable, employing the battalion reconnaissance platoon for this purpose. When operating as part of a larger unit he depends primarily on map reconnaissance and information received from higher headquarters, although he may supplement this with his own reconnaissance.

(b) The map should be carefully examined and checked for the following (fig. 14):

Places where the column might stray from the route.

Streams which may present difficulties.

Routes for flank guards.

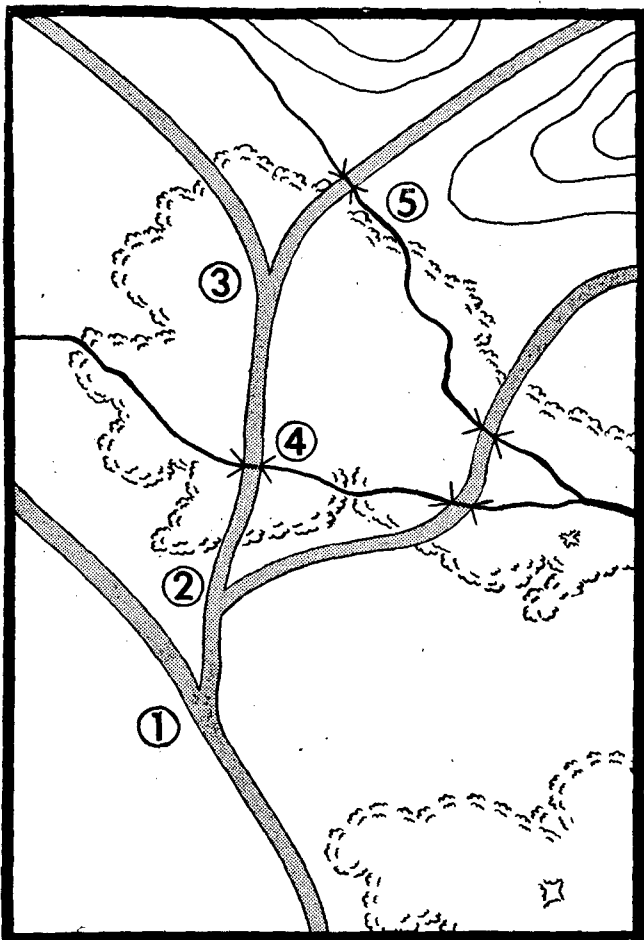
Narrow defiles.

Possible alternate routes.

Places where the column might be ambushed.

(c) The ground reconnaissance is planned from an examination of the map, and specific missions, based upon this examination, may be given to the reconnaissance platoon.

(10) *Guides.* Road guides for the battalion are placed at key positions along the line of march. Personnel used for this purpose should be familiar with all units of the battalion and preferably known by all key personnel within the battalion. They should be supplied with appropriate route markers, dimmed flashlights, and white arm bands. They are posted in pairs, one man covering the other.



*Figure 14. Route reconnaissance by map. Guides needed at (1), (2), and (3). Bridges (4) and (5) must be examined. Woods are defiles where the enemy may ambush the column. Hills must be reconnoitered. Measure distances.*



(11) *Security measures to be adopted.* Security is covered in section III.

(12) *Methods of resupply.* The tank battalion carries enough fuel, including the load of the fuel and lubricant section of service company for approximately 125 miles of operation for all vehicles. On extended marches in the rear area, refueling points may be established along the line of march in order to keep the organic load intact. During the march refueling is best accomplished at halts made for that purpose. Trucks from the fuel and lubricant section pass along the column, distributing full five gallon gasoline cans and collecting empty ones on the return trip. One or two trucks ordinarily can service a tank company in this way.

(13) *Halts.* (a) Normally a scheduled halt of 15 minutes is made after the first hour, and halts of 20 minutes made every 2 hours thereafter.

(b) Refueling halts of a half to  $\frac{3}{4}$  of an hour duration are made at approximately 4-hour intervals. All vehicles refuel at these scheduled halts regardless of the distance travelled. Halts for feeding usually coincide with refueling halts.

(c) The time and space factors are considered in determining halts, especially when the battalion has been granted road priority for a certain period over a designated route. Driver maintenance is continuous during the march. (TM 9-2810, TM 21-300, TM 21-301, and Technical Manual for the vehicle.)

(14) *Trains* (chap. 7). (a) Usually the battalion trains are not moved in the forward areas during daylight hours. If the march is conducted or terminates near the front, an assembly area for the trains is designated and plans made to bring them up to refuel and resupply the battalion under cover of darkness. In some instances, fuel and lubricants, ammunition, and kitchen vehicles may accompany the battalion on the march. Company and battalion maintenance

vehicles normally move with the battalion, the company maintenance vehicles at the tail of each company column. Ammunition, fuel and lubricant, and kitchen vehicles may be consolidated under the control of the service company commander at the tail of the march column.

(b) The battalion medical detachment may be distributed throughout the battalion column or may march as a unit at the tail of the column (FM 17-80).

d. MARCH ORDERS. The march order for a battalion is issued only after the plans for the march have been completed. Usually it is issued orally, supplemented whenever possible by sketches or marked maps of the route. If practicable, each vehicle commander and each driver should be told destination and the route, and when practicable, be given a sketch of the route. Any deviation from the battalion SOP for marches should be clearly indicated in the order.

e. CLOSE SUPERVISION DURING THE MARCH. (1) Successful and uninterrupted movement from the bivouac area into the march formation requires alertness by all vehicle commanders. Crews are warned just before the movement begins, especially during night marches.

(2) The company commander may appoint one of the company officers as control officer or pace setter for the company (3) below, while he checks the company column. In addition, a battalion staff officer patrols the column. These officers check for presence of all vehicles, their condition, distances between them, and breaches of march discipline. When necessary, corrections are made immediately.

(3) A designated officer or noncommissioned officer rides at the head of each march unit of the battalion column and acts as the pace setter. He is preceded by another officer or noncommissioned officer, in a

1/4-ton truck, who serves as the navigator, or pathfinder.

(4) Vehicle commanders and sentries should be constantly alert to maintain all-around observation, to pass on signals from vehicles in front of them, to signal vehicles doubling the column to pass when they can do so with safety, and to clear the road and signal the rest of the column to pass if a vehicle is disabled.

(5) Radio silence is observed during marches in the presence of the enemy. Messages are then transmitted by means of messengers, pyrotechnics, and flag and arm signals.

*f.* PREPARATIONS ANTICIPATING THE ARRIVAL OF THE BATTALION AT ITS NEW LOCATION. The billeting party which precedes the battalion to its new location consists of experienced personnel with special training. The battalion headquarters and each company attempts to furnish the billeting officer (S-1 or S-3), with the same personnel each time in order to achieve the maximum efficiency in preparing for the arrival of the battalion at its new location. Officers or noncommissioned officers are preferable for this duty.

### **23. Night Marching**

In the combat zone, most marches near the forward areas are conducted during the hours of darkness. In many areas even blackout lights are prohibited. Every element of the battalion must be able to make an efficient night march.

*a.* TRAINING. Constant practice offers the most valuable training for night marches. Effort is made to train under all conditions, and over unfamiliar terrain. Before starting a night march, drivers remain in darkness for 30 to 50 minutes to accustom their vision to darkness.

*b. Conduct.* Special attention must be directed to the planning and execution of night marches. Route reconnaissance and the proper use of road guides become doubly important.

(1) *Control.* Control of a march during darkness is facilitated by decreased speed, decreased distance, and increased reconnaissance and security. When weather, terrain, and distance prevent enemy air and ground observation, driving lights may be used.

(2) *Distances.* Distances between vehicles on night marches vary with terrain, weather, and visibility. As a guide only, the distance is the maximum at which the driver can see the black-out tail light of the preceding vehicle. Increased distances can be employed during bright moonlight, while hilly and rough terrain, bad roads, rain, fog, dust, or complete darkness force the column to close up to maintain contact.

(3) *Camouflaging tank noises.* (a) Every effort is made to cover the noise of tanks moving near front line positions. This may be accomplished by—

An artillery preparation on the enemy forward positions.

Firing of friendly automatic weapons and mortars in a feigned attack.

A limited night attack on enemy forward positions.

Aerial activity over nearby enemy positions.

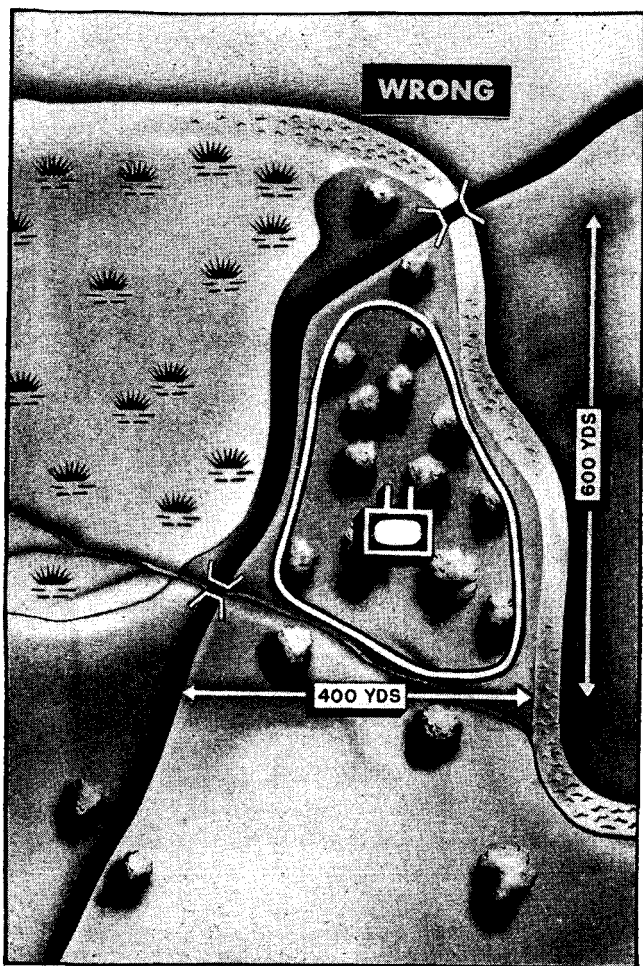
(b) Motor noise may be decreased by driving slowly in first or second gear without racing the motor.

## Section II. BIVOUACS

### 24. Characteristics (figs. 15 and 16).

*a.* A satisfactory bivouac area has been the following characteristics:

(1) Concealment from air and ground observation.



*Figure 15. Bivouac area. This area provides little concealment, can be easily flooded, has only two exits, and is crowded.*

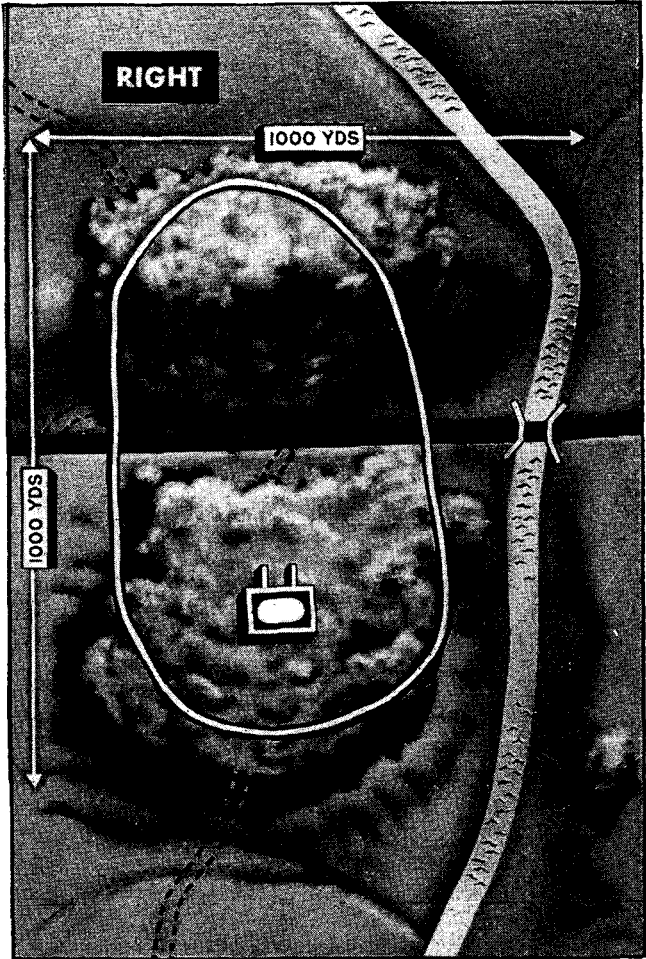


Figure 16. Bivouac area. This area has ideal cover, good stand-ings, ample exits, and sufficient area. Vehicles are at least 50 yards apart.

(2) An area large enough to permit normal dispersion of vehicles. Under average conditions, this is about 1000 by 1000 yards for the tank battalion alone.

(3) Firm, all-weather standings for all types of vehicles and ground smooth enough to permit easy vehicular maintenance and movement.

(4) A sufficient number of entrances and exits from a good road net, permitting rapid displacement in any direction. One entrance and one exit per company is necessary; several are better. These should be in good enough condition to permit vehicles to leave the road without materially reducing speed.

(5) Natural terrain protection against hostile mechanized attack.

*b.* Other characteristics, such as good fields of fire for defending weapons and a suitable water supply within or near the bivouac area, are highly desirable but not essential. Avoid ground likely to become boggy in wet weather or areas which must be entered through defiles which the enemy can block readily.

## **25. Assignment**

Bivouac areas are assigned by the higher commander, in keeping with the existing tactical situation and plans for the employment of the tank battalion. A specific area should be assigned only after a physical reconnaissance by competent officers. An assignment based on a map study designates only a general area and leaves the actual location of the tank battalion to a staff officer who is on the ground or to the battalion commander.

## **26. Organization**

Elements of the tank battalion are disposed within the bivouac area so that—

*a.* The battalion headquarters and headquarters and service companies are encircled and protected by the tank companies.

*b.* All units are able to move into and out of the bivouac without passing through other units' areas except on roads.

*c.* Service elements, such as the battalion maintenance platoon and the medical detachment, are easily accessible to all companies.

*d.* Circulation within the area is reduced to a minimum.

*e.* Units can move out readily in their proper order of march.

## **27. Billeting Officer**

*a.* A tank battalion sends a billeting party forward to its assigned bivouac area as soon as possible. When the battalion is a part of a larger command, this party accompanies that of the latter. The party is drawn from all units of the battalion, is equipped with pioneer tools and should be strong enough to reconnoiter the area, furnish any needed security, and make necessary improvements on entrances to and routes within the bivouac area.

*b.* The billeting officer must know the type and size of area required by his battalion. When the area assigned him is unsatisfactory, he immediately notifies the billeting officer of the higher command, and seeks to have it changed. However, he works against time and his battalion must be put under cover as soon as it arrives. If there is not time to obtain and organize a new area, the first one is occupied and necessary adjustments are made later.

*c.* The battalion billeting officer rapidly reconnoiters the area assigned him, divides it into company areas, and posts guides. Company billeting personnel further organize their assigned areas (FM 17-32). The billeting officer also selects a tentative location for the battalion command post, prepares recommendations for the security of the bivouac, and develops



a circulation plan which disturbs the existing terrain pattern as little as possible.

### **28. Entering Bivouac**

The battalion moves into its bivouac area without halting (fig. 17).

### **29. Disposition of Vehicles**

*a.* Once within their assigned areas, vehicles are directed rapidly to temporary positions to keep the entrances free. Every effort is made to obtain a dispersion of at least fifty yards between vehicles. This distance must be greater if concealment is lacking. Any adjustments are made as soon as the unit has completely cleared the road. When the bivouac is occupied at night, much rearrangement of vehicles is likely to be needed and is made as soon as it is light enough next morning. All unnecessary movement is prohibited. Existing tracks and paths are followed whenever possible. After dark vehicles are preceded by dismounted guides.

*b.* When necessary, all or part of the tank battalion may halt, by company or platoon, in temporary positions while the reconnaissance and the preliminary organization of its assigned area are completed. All possible cover and concealment afforded by buildings, trees, hedges, and embankments is utilized; subordinate units are dispersed as much as is consistent with effective control. *Under no circumstances should the advance of other units be hindered by tanks halted along roads or across avenues of approach.*

### **30. Organization and Security (paragraph 39)**

As each unit enters its area, it immediately establishes local security. Camouflage is erected, prone shelters or fox holes dug (fig. 18) and first echelon maintenance begun. Wheeled and half-tracked vehi-

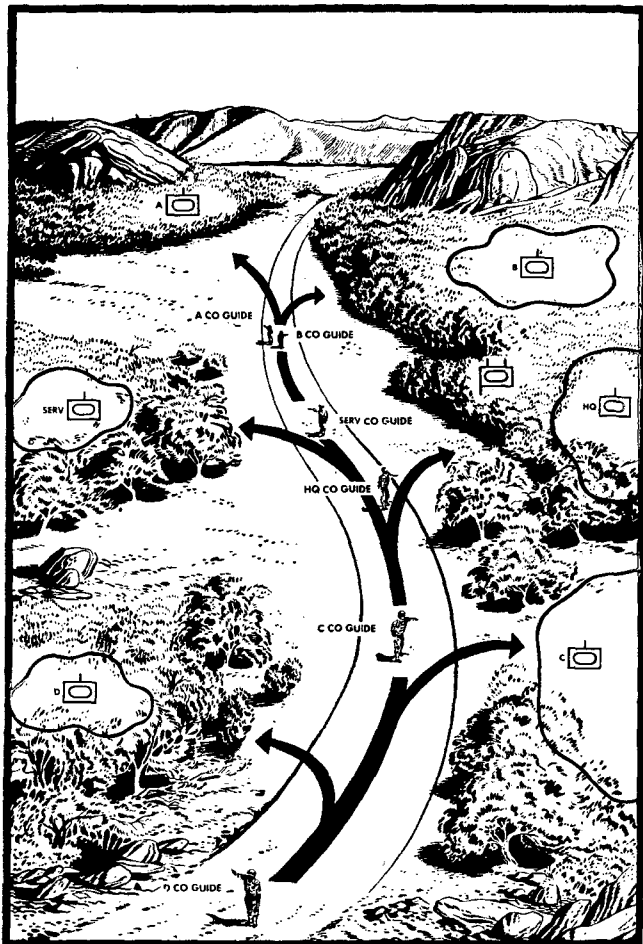


Figure 17. Post guides. Move column in quickly without halting on road.



*Figure 18. Brush out tracks, disperse vehicles, dig fox holes.*

cles are dug in to protect their tires from bomb and shell fragments. Unit command posts are set up and positions and dispositions reported to the next higher commander. The latter consolidates the area, making such changes in the preliminary arrangements as are necessary. He establishes an outpost system, if acting alone, initiates reconnaissance, and issues necessary orders as to camouflage, circulation, and resupply. A flexible and practical unit standing operating procedure is useful in the occupation of bivouac and other areas. The first consideration is that all equipment be made ready to move at the earliest practicable moment, by efficient performance of maintenance and rapid resupply. Men are fed after the bivouac has been sufficiently organized. Not until then are they allowed to rest.

### **31. Signal Communication**

The signal communication system of a tank battalion in bivouac consists of messenger, wire, radio, and visual means. Messengers are supplemented by an exchange of liaison personnel or agents. The use of radio normally will be restricted by higher headquarters by prescribing radio silence. Radio sets may be located some distance from the bivouac area and operated by remote control as an additional security measure.

### **32. Liaison**

a. The location of the higher unit command post usually is announced in advance, though the location may be given in general terms only. Each subordinate command post reports its location to the command post of the next higher unit and sends a representative to that command post. Thus, the tank battalion sends its liaison officer to the command post of the combat command, or similar higher unit, of which it is a part. The tank companies send their liaison agents to the

battalion command post. The tank platoons send runners to their company command post. The liaison officer and company agent have a vehicle and radio for communication with their own units.

*b.* The command post of an attached unit is located near that of the unit to which it is attached, whenever possible. The attached unit establishes liaison.

*c.* Contact is made with adjacent units to coordinate security measures, circulation, camouflage, and other pertinent matters. This enables units to move out of their bivouac areas and take up march formations without confusion, friction, or delay. Representatives are exchanged when necessary.

### **33. Camouflage**

Maintenance of satisfactory camouflage discipline demands constant effort on the part of all personnel. The most careful planning and erection of camouflage can be nullified by the careless disposition of ration containers, mess kits, and individual laundry by a few individuals. Natural indolence, carelessness and fatigue have to be resisted constantly. Where necessary, paths or roads are wired in to control traffic. Guards are posted to enforce camouflage discipline. The battalion commander or a member of his staff makes frequent checks. This is accomplished best by observation of the battalion area from one of the artillery's organic liaison planes.

### **34. Resupply (chap. 7)**

Resupply usually is accomplished at night. This demands careful light and traffic discipline. Fuel and ammunition vehicles may be brought up to each tank or may be halted in a central spot under cover and the supplies carried to the individual tanks by their crews, whichever can be done more conveniently and safely. Each company and platoon commander makes

a careful study of the resupply problem of his unit, by daylight if possible, and is ready to receive, unload and release those supply vehicles which reach him. It is essential that *all* empty water and gasoline cans in the unit be collected, ready to exchange for full ones. The contents of partly empty cans are consolidated.

### **35. Departure from Bivouac**

*a.* Warning orders are issued sufficiently in advance of departure from the bivouac to permit the lowest element to complete all necessary preparations for departure.

*b.* Each unit reports itself to the next higher commander as ready to march *when its preparations are complete.*

*c.* A representative with a radio vehicle is sent to the unit or march element which will precede the battalion in the column. This representative keeps his commander informed as to the progress of that march element, thus permitting the battalion to move out so as to reach and clear the IP at the prescribed rate of march and distance without having to halt. Similar arrangements are made between the companies of the battalion itself (par. 22). This is especially important during night movements. When radio silence is ordered messengers are used for this purpose.

*d.* Whenever possible, the departure is so organized that each vehicle of each unit leaves its place of concealment and falls into the moving column, in its proper place at as near its assigned rate of march and distance as possible.

*e.* Any vehicles which, for any reason, are unable to move with the battalion—such as vehicles disabled while moving out—are reported promptly to the battalion maintenance platoon if necessary. Otherwise their crews are given instructions as to where and when to rejoin their unit. If supply or other vehicles, known to be en route to the bivouac area, have not yet

reached it, a guide is posted to meet them and bring them forward.

### **Section III. SECURITY**

#### **36. General**

The fundamentals of security are given in FM 100-5.

a. Security includes all measures taken by a command to protect itself against annoyance, surprise, and observation by the enemy. Adequate and timely information of the enemy is the basis of all security measures. Reconnaissance is the secondary mission of troops on security duty.

b. Security is a *command* responsibility. The tank battalion commander is responsible for the local security of his own battalion. In addition he provides for the general security of his battalion and of the larger unit to which it is a part to the extent required by the higher commander.

#### **37. Responsibility**

Every subordinate unit of the tank battalion, regardless of size or primary function, is responsible for its own local security. Sudden attacks by specially trained and equipped formations, thoroughly familiar with the terrain and capable of doing heavy damage within a few minutes, must be expected and prepared against. Security elements are always alert to meet an attack from any direction. They cover the perimeter of the command.

#### **38. Security Detachments**

Security against attack by enemy troops while on the march is obtained by use of advance, flank, and rear guards (fig. 19). (For security against air attack, see par. 46.) March orders include all necessary instructions relative to security.

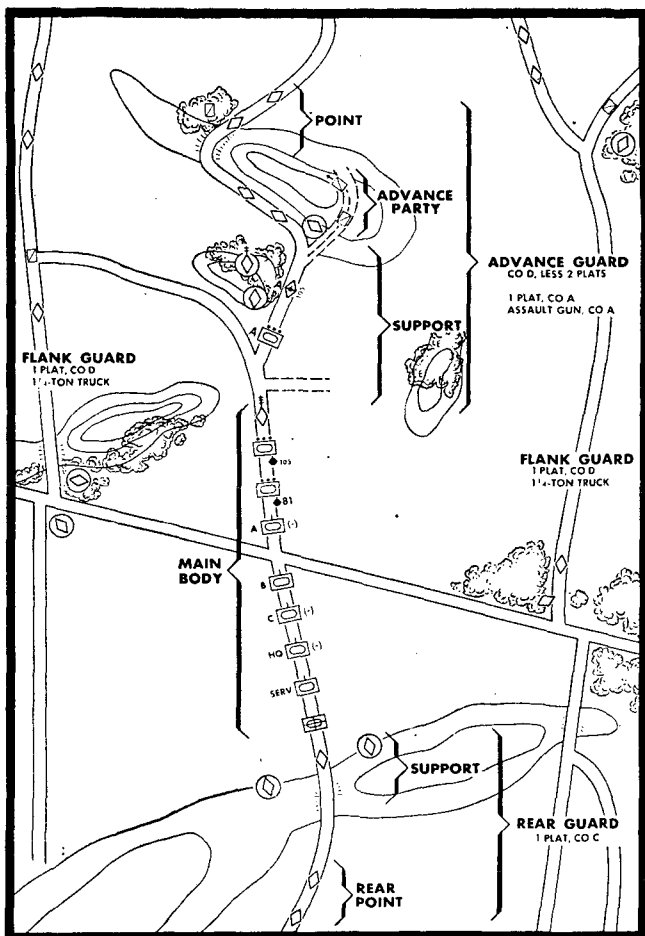


Figure 19. Security on the march, tank battalion acting alone.  
Use as a guide only.



*a.* **ADVANCE GUARD.** (1) The duty of the advance guard is to prevent unnecessary delay of the main body and to protect it against surprise and ground observation. Reconnaissance to the front and flanks is continuous. Obstacles are removed and demolitions repaired. Small enemy parties are pushed back or destroyed before they can get within sight or range of the main body. Larger forces are checked and their strength and exact positions determined. The advance guard meanwhile covers the deployment of the main body, subsequently serving as a base of fire for its maneuvers. An unforeseen change of direction by the main body may require that it take over the duties of a flank or rear guard. It may be detached to contain a bypassed pocket of resistance, in which case a new advance guard is constituted. It varies in size, to meet changing tactical situations and terrain, from a small fraction to one-third of the strength of the entire force.

(2) The advance guard precedes the main body by a distance which will enable the main body to deploy for action without undue interference. It does not move so far ahead that it may be overwhelmed before assistance can reach it. This distance varies with the relative sizes of the two elements and with the terrain and visibility. On routine marches the advance guard moves at a rate of march set by the higher commander. When contact with the enemy is imminent, or at night, the advance guard may set the rate of advance.

(3) The command of an advance guard demands courage and initiative, intelligent caution, and understanding of tactics, constant alertness, and force. The advance guard commander must be thoroughly familiar with the higher commander's plans. He avoids bringing on a general engagement unless directed to do so.

(4) Tank units, because of their speed, armor protection, and great fire power, are suitable for advance

guards during a daylight advance. On average terrain they should be reinforced by engineers and infantry and—in larger formations—artillery. On the average night march tanks are unsuitable for advance guard mission and are largely replaced by other troops.

(5) The advance guard is divided from front to rear into the *point*, the *advance party*, the *support*, and the *reserve*. In advance guards consisting of less than a battalion, the reserve is usually omitted, its duties devolving upon the support.

(a) *Point*. The *point* pushes forward by bounds, maintaining visual contact between vehicles, reconnoitering the road on which the column is moving and utilizing all convenient points of vantage to observe to the immediate flanks. It attacks boldly and swiftly when enemy patrols are encountered, investigates villages along the line of march, and removes any small obstacles it encounters. It covers the advance party's deployment when an enemy force too strong for the point to handle is encountered. Dismounted scouts are used to reconnoiter suspected positions. Infantry forms a part of the point whenever available. It leads in defiles and close or wooded terrain. The tanks reinforced by infantry, usually move first in open or rolling country. The order of march is changed whenever the terrain or tactical situation requires. Mutual support is maintained at all times.

(b) *Advance party*. The advance party is a reconnaissance, a maneuvering, and a holding (pivot) element. It maintains connection with the point and advances promptly to assist it in overcoming resistance. If halted by the enemy, it determines the enemy's exact location, and serves as a base of fire for the support. The advance party extends its reconnaissance to about a 1/2-mile to either side of the line

of march, either by the use of flank guards marching parallel to it at that approximate distance, or by dispatching patrols directly to important terrain features from which they observe, afterwards returning to the party.

(c) *Support*. The support has the same basic duties as those of the advance party. If the latter is unable to overcome enemy resistance, the support attacks, utilizing the base of fire the advance party has established, and the information of the enemy it has obtained. In large march units, the support covers the deployment of the reserve. In those of a battalion or less it becomes the main striking and maneuvering force in the advance guard. If it is unable to advance, it holds and extends its reconnaissance pending the deployment or bypass of the main body. The advance guard commander ordinarily marches at the head of the support, accompanied by the artillery forward observer. When contact is imminent, the forward observer moves by bounds from one good observation point to the next. If artillery has been attached to the advance guard, the artillery commander marches with the advance guard commander. The support also should contain engineer troops. It extends its reconnaissance for about a mile to either side of the line of march in the same manner as the advance party.

(d) *Reserve*. The reserve is the striking element of the advance guard of larger columns. As such, its employment is based upon the information which the advance guard commander obtains from the lesser forward elements and other sources. It usually advances by bounds, Artillery, if present, usually marches with the reserve.

(6) The composition of the advance guard is variable and flexible, depending on the troops available, the tactical situation, the terrain, the weather, visibility, the time of day, and like considerations.

No set rules can be given, examples are given *as guides only* (figs. 20 and 21):

(a) Tank battalion, reinforced, as an advance guard for an armored division, advancing along one route.

(b) *Point*. A section (2) tanks, a squad of armored infantry, a 1/4-ton truck.

(c) *Advance party*. A tank platoon (less the section with the point), a platoon of armored infantry (less one squad), a squad of armored engineers, a tank battalion mortar squad, three 1/4-ton trucks.

(d) *Support*. A tank company (less one platoon), a company of armored infantry (less one platoon), the tank battalion reconnaissance platoon, assault gun platoon, and mortar platoon (less one squad), a platoon of armored engineers (less one squad). The tank battalion commander with the artillery and infantry commanders marches at the head of the support.

(e) *Reserve*. A tank battalion (less one company, and the mortar and assault gun platoons, a company of armored infantry, a company of armored engineers (less one platoon), a battery of armored field artillery.

(f) Should the division advance in several columns along parallel routes, each column is preceded by its own advance guard. Lateral contact is maintained.

(g) When strong antitank defenses are expected in rolling or broken country, an armored infantry battalion, reinforced by one or two companies of tanks, is substituted for the formation shown above (FM 17-42). The attached tanks protect the infantry against hostile armor, counterattack, and furnish fire support. The rest of the division's tanks march with the main body.

(7) Tank company, reinforced, as an advance guard for the tank battalion acting alone (fig. 21).

(a) *Point*—A section (2) tanks, one 1/4-ton truck.

(b) *Advance party*—A platoon of tanks (less one section), a mortar squad, two 1/4-ton trucks.

(c) *Support*—A tank company (less one platoon) and a mortar squad.

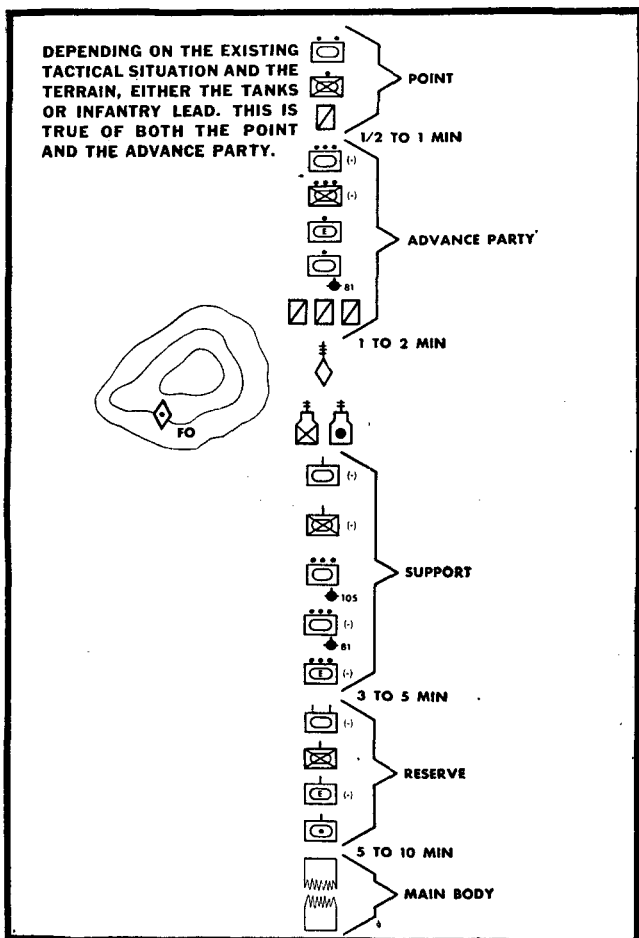


Figure 20. Reinforced tank battalion as an advance guard for an armored division. This is one method.

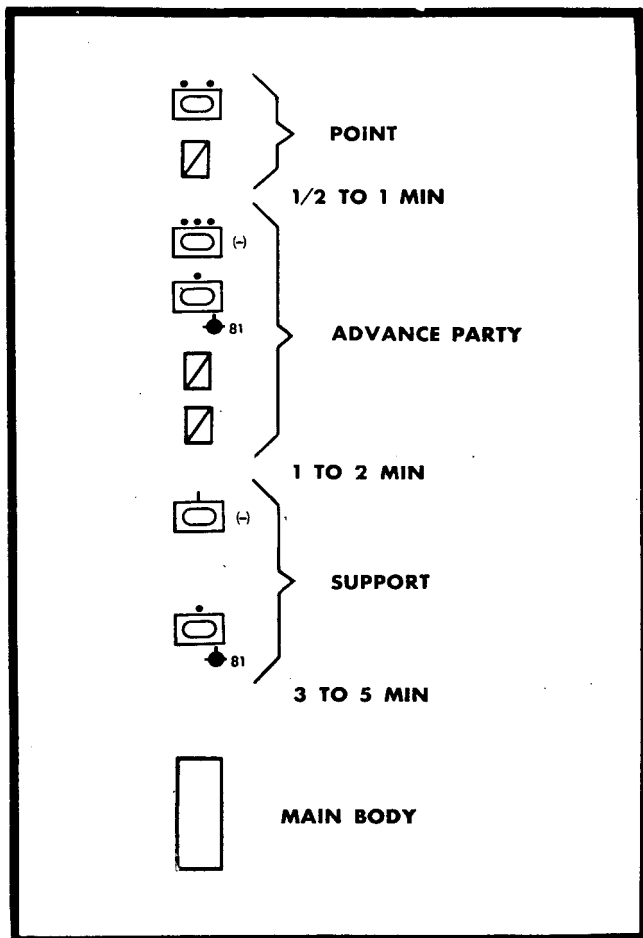


Figure 21. Reinforced tank company as an advance guard for a tank battalion acting alone; one method. In a larger advance guard the reserve follows the support by 3 to 5 minutes and precedes the main body by 5 to 10 minutes.

(8) For distances in daylight over average terrain see figure 21.

*b.* **FLANK GUARD** (figs. 22-24). A column protects itself also by flank guards, especially when no protection is offered by adjacent troops. A flank guard is usually the first element of a command to move out and the last to close in bivouac. Its duties are similar to those of the advance guard.

(1) Flank guards must cover those routes of approach which would favor hostile attacks against the flanks of a command. The point of the flank guard may be well ahead of the point of the advance guard, in order to obtain ground and hold it until the main body passes.

(*a*) When there is a route parallel to, and at the proper distance from the line of march of the main body, the flank guard marches parallel to the main body, distributed in detachments in sufficient depth to be able to offer resistance to attack anywhere along the flank of the main body and to repulse or destroy small enemy parties.

(*b*) When the direction of the attack is well defined, the largest part of the flank guard may occupy a position covering this avenue of approach until the main body has passed. This does not preclude vigorous reconnaissance for other threats to the flank of the column.

(*c*) Where several such localities must be passed during the march, echelons of the flank guard move by bounds from one position to another, occupying key terrain features from which good observation is possible.

(*d*) Where considerable doubt exists as to the most likely avenue of hostile approach, the flank guard may take up a position of readiness at some conveniently located key point and carry out intensive reconnaissance to locate the enemy. If strong enough, it

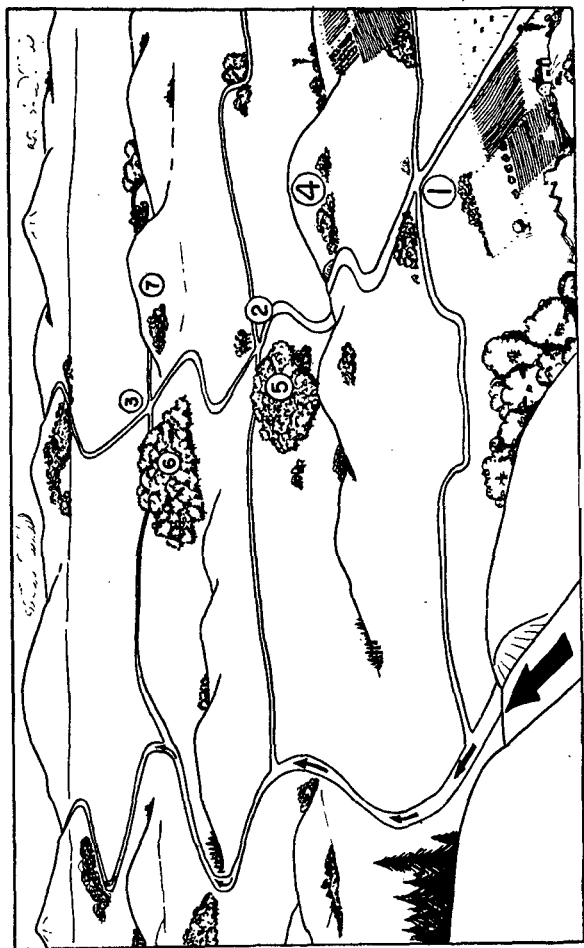
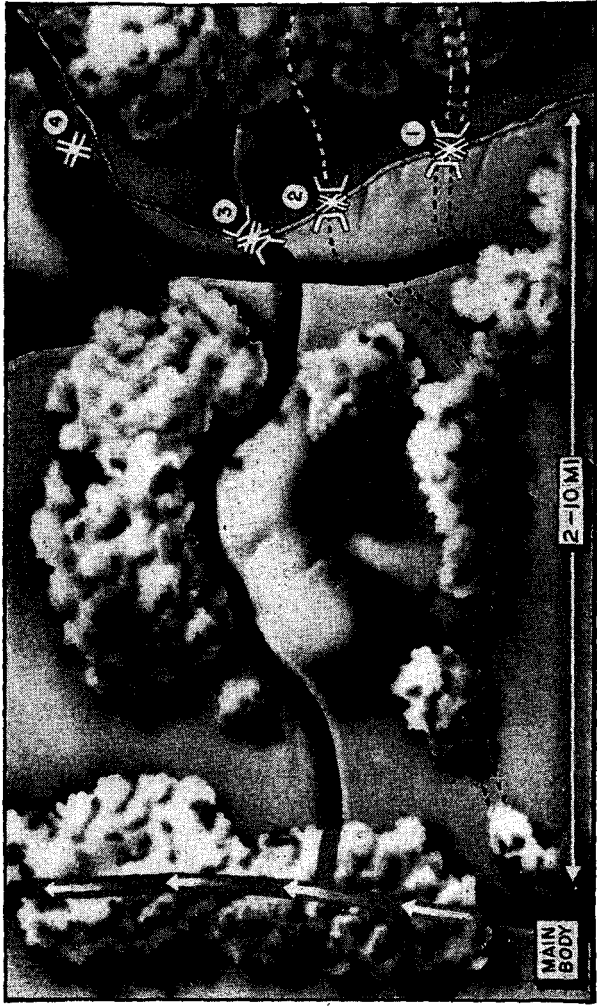


Figure 22. Action of flank guard. Establish observation on hill ④ to cover the avenues of approach through cross roads ① and ②. Do likewise on hill ⑦ to cover avenues of approach through cross roads ② and ③. Check woods ⑤ and ⑥. Be prepared to block ①, ② or ③.





23 Figure 23. Flank guard for a large unit holding critical points. Place temporary road blocks at ①, ②, ③ and ④ until main body passes. Put OP's on high ground.

may occupy two such points. A mobile reserve is kept ready to move to meet the enemy as soon as his line of approach is known.

(2) When the enemy is encountered, the flank guard may attack, delay in successive positions, or defend a single position, as the situation requires. It must keep the main body informed, but it *usually cannot expect reinforcement unless the force attacking it is recognized as the enemy's main effort.*

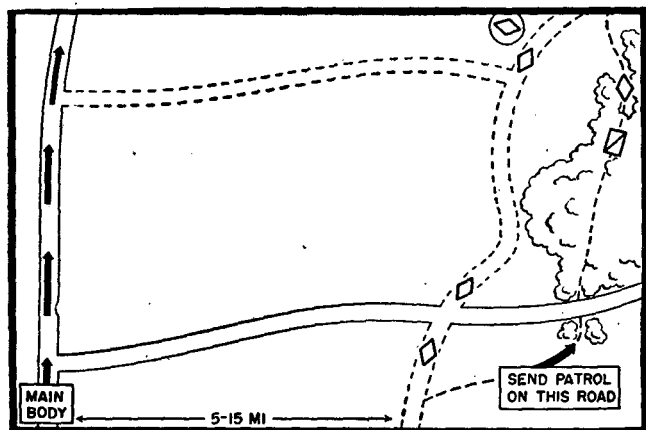


Figure 24. If there are no defiles, march in groups. Cover roads. Send out flank protection. Arrange for quick support of any unit attacked.

(3) Large flank guards operate at a distance from the main body that will prevent the enemy from placing effective light artillery fire upon it. Small flank patrols are far enough out to give protection from machine gun and antitank gun fire. The flank guard of a battalion usually operates at a distance of from two to five miles from the main body. The actual distance depends on the tactical situation, the terrain, the visibility, and particularly upon the existing road net.

(4) The rate of march of the flank guard conforms generally to that of the main body. Its progress is controlled by the main body commander by means of phase lines, time limits, or objectives. Contact is maintained by patrols where possible; otherwise by radio or messengers. Lateral control is maintained by assigning specific routes or zones.

(5) *Flank guards provide their own front, flank, and rear security.* Movement is ordinarily by bounds. Their elements remain within mutual supporting distance to prevent their being overwhelmed separately. When a flank march is made in the presence of the enemy, the flank guard toward the enemy is greatly strengthened.

(6) A reinforced tank battalion may cover the flank of a division or larger unit. However, such use decreases the striking power of the main body. One or more tank platoons or companies may be attached to an infantry flank guard.

(7) Light tanks, because of their superior mobility, are *usually* better fitted for flank guard duties than medium tanks.

(8) A flank guard for a tank battalion may consist of a platoon of light tanks with a 1/4-ton truck attached for liaison and messenger duty. If the battalion has been reinforced by at least a company of infantry, a squad of that arm may be added to the flank guard.

*c. REAR GUARD.* The rear guard is the security detachment which follows and protects the main body on the march. Advancing units employ a small rear guard to collect stragglers, to protect their trains from attack by guerrillas and raiding parties, and to delay stronger hostile forces which may be attempting an envelopment. During retrograde movements the rear guard is greatly increased. It should be composed of

fresh troops. In size it varies from a small fraction to about one-fourth of the command.

(1) The rear guard may fight by attacking, by defending, or by a delaying action (see chap. 5). It usually opens fire at long ranges to force the enemy to deploy early. It must not commit itself too fully for it cannot expect help if it is cut off. If it is cut off and lost, the main body forms a new rear guard as it continues its withdrawal. *When required to do so, the rear guard must be prepared to sacrifice itself to insure the escape of the rest of the command.* It never allows itself to be driven in on the main body.

(2) The composition of a rear guard is the same as that of the advance guard. The reserve follows the main body; then comes the support, the rear party, and the rear point in order named. When the size of the main body makes it impracticable to have all of these elements, they are omitted from the front to rear, starting with the reserve. *There is always a rear point.* The missions of each element and the distance at which they may operate to either side of the line of march are about the same as those of the corresponding elements in the advance guard.

(3) The distances between the elements of the rear guard are roughly the same or slightly greater than those given for the advance guard. The governing factor is the requirement that the rear guard must protect the main body from being fired upon, observed, or surprised and yet must not permit itself to be cut off. Each element therefore maintains such distance as allows the one preceding it to deploy for action, yet does not expose itself to being encircled.

(4) The rear guard usually retires by bounds, basing its rate of march on that of the main body or upon time limits set by the main body commander for the holding of certain key localities. When contact with the enemy has been successfully broken off, it

may follow the main body at a steady rate of march.

(5) Because of their mobility and fire power tank units are suitable for rear guard duty. They can resist to the last minute and then rapidly withdraw. The rear guard should also be strong in engineer troops and in infantry with a high percentage of automatic weapons and mortars. Armored artillery is attached to large rear guards.

(6) Tank units with the rear guard are ordinarily part of the reserve, or of the support if no reserve is present. Their mission is to counterattack any enemy assault on the rear guard. Enemy mechanized forces usually attack the flanks of the rear guard or attempt to encircle it. The tank unit, if tank destroyers are not present, maneuvers to ambush and repulse these threats. Smaller tank units move with the rear party and even with the rear point, furnishing direct fire support, preferably from dug-in positions, and protecting the other troops from enemy armor. In case of a heavy attack against either of these two elements, they, with their attached tanks, held in position while the reserve, or support, launches a limited objective counterattack around the base of fire they have established. (See fig. 25.)

(7) Tank units have a limited use at night. Therefore, they are usually withdrawn and replaced by infantry after dark. The tanks rally and reorganize in a position which will enable them to be available at first light.

(8) The rear guard has the important additional duty of destroying all equipment, supplies, installations, means of communications, and anything else that may be of value to the enemy.

*d. MARCH OUTPOSTS.* During halts of more than a few minutes duration, and prior to the establishment of a regular outpost system at the end of a march, a command protects itself by establishing

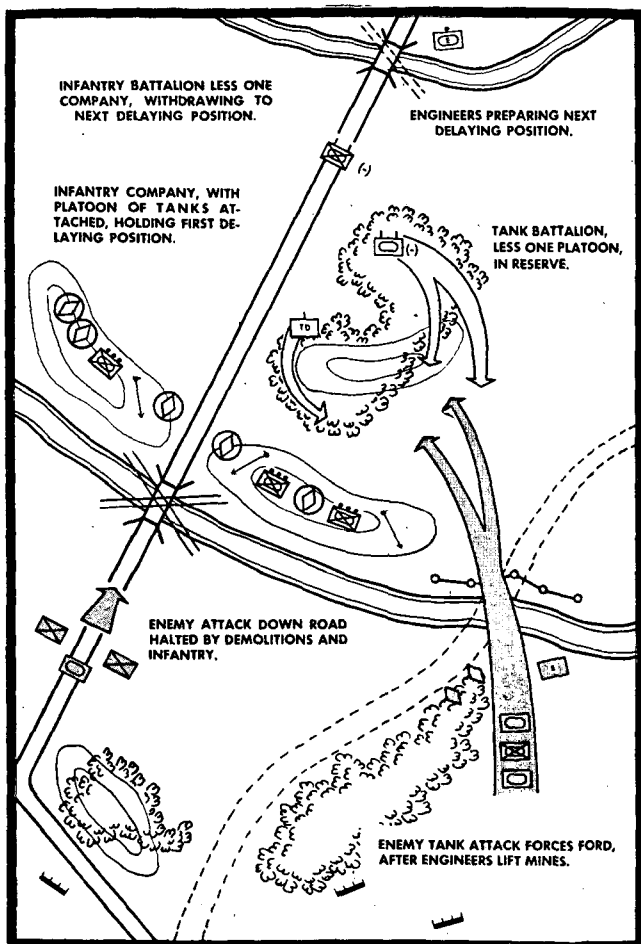


Figure 25. Tank battalion as part of a rear guard during a withdrawal.

*march outposts.* These occupy critical terrain features which cover the approaches to the column, establish outguards, and send out necessary patrols. March outposts are formed by the usual security detachments employed by marching troops. For example, a march outpost to cover the head and flanks of a tank battalion is formed by the advance guard. The advance party and point move to commanding terrain features and establish outguards. The rear guard likewise forms a march outpost to protect their respective portions of the main body. Flank guards may be used to establish an outpost on the flank.

(1) When a reinforced tank battalion constitutes the advance guard of a larger unit, the battalion commander, when forming a march outpost (fig. 26) :

(a) Assigns company sectors in such a way as to cover all avenues of approach from the front.

(b) Establishes contact with the flank guards or covers flanks.

(c) If artillery is attached, places it to cover the most likely avenues of approach. If not, the assault guns perform this duty while arrangements are made for artillery support as quickly as possible.

(d) Places his reserve in a control position from which it can counterattack effectively any enemy assault on the outpost.

(e) Sends out reconnaissance elements from 3 to 7 miles in advance of his position.

(f) Reports his dispositions to the higher commander. Attached engineers construct temporary road blocks and hasty mine fields behind which the infantry establish resistance. A part of the tanks are placed to give direct fire support; most are held in reserve, ready to counterattack. Whenever possible, the tank battalion is replaced by infantry before dark, and withdrawn for reorganization.

(2) A reinforced tank battalion, when acting

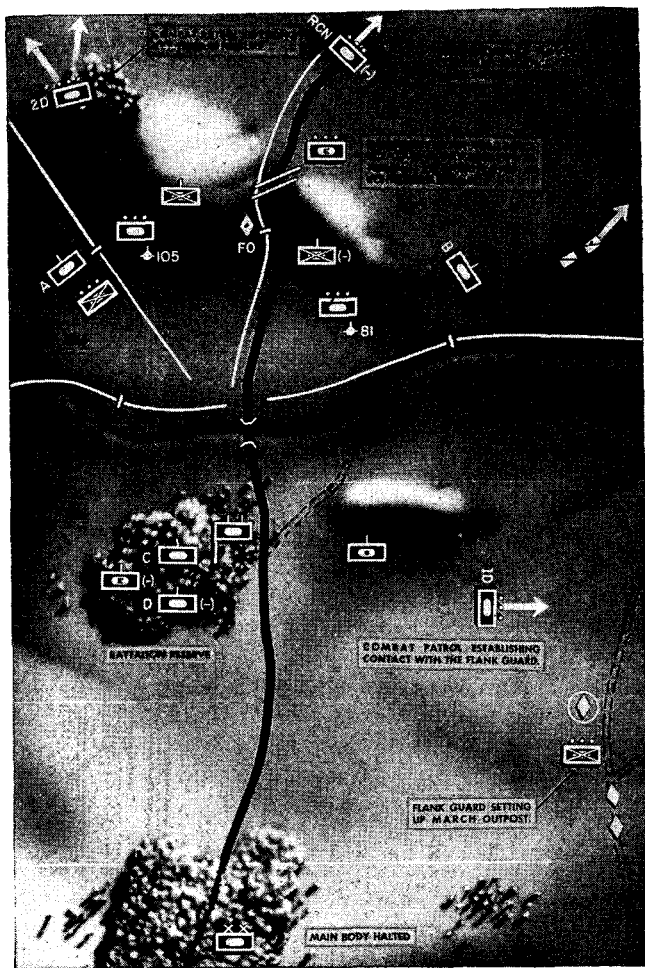


Figure 26. Reinforced tank battalion as a march outpost for a division.



alone, establishes a march outpost according to the same plan though on a smaller scale (fig. 27). In case the battalion has not been reinforced by infantry, dismounted tank personnel with machine guns may be substituted as necessary for local security.

*e.* (1) Tank units on the march with the main body itself are responsible for their own local security against surprise attacks by hostile groups which may have allowed the advance guard to by-pass them or which have penetrated the flank guards (fig. 28).

(2) Reconnaissance parties—usually two  $\frac{1}{4}$ -ton trucks—are sent up all side roads and to all good observation points and suspicious localities. If necessary, reinforce the battalion reconnaissance platoon with available  $\frac{1}{4}$ -ton trucks from the tank companies.

(3) Air and ground alert sentries are posted. One weapon, at least, on each vehicle is kept half-loaded and manned. Each platoon or vehicle is assigned the mission of guarding against attack from a certain direction, thus maintaining all-around defense even when on the march.

(4) At halts, dismounted men are sent out as ground scouts and sentries. A march-outpost and observation posts to cover the column are established.

### **39. Security in Bivouac**

Security in bivouac is obtained by concealment, by the utilization of natural or artificial obstacles, by local security measures, by reconnaissance, and by the establishment of an outpost system, including antimechanized defenses.

*a.* The outpost has the mission of protecting a resting command or defensive position against annoyance, surprise, or observation by ground forces. It is established while the main body is still protected by the march outpost (paragraph 38).

*b.* Security is all-around. A complete perimeter of

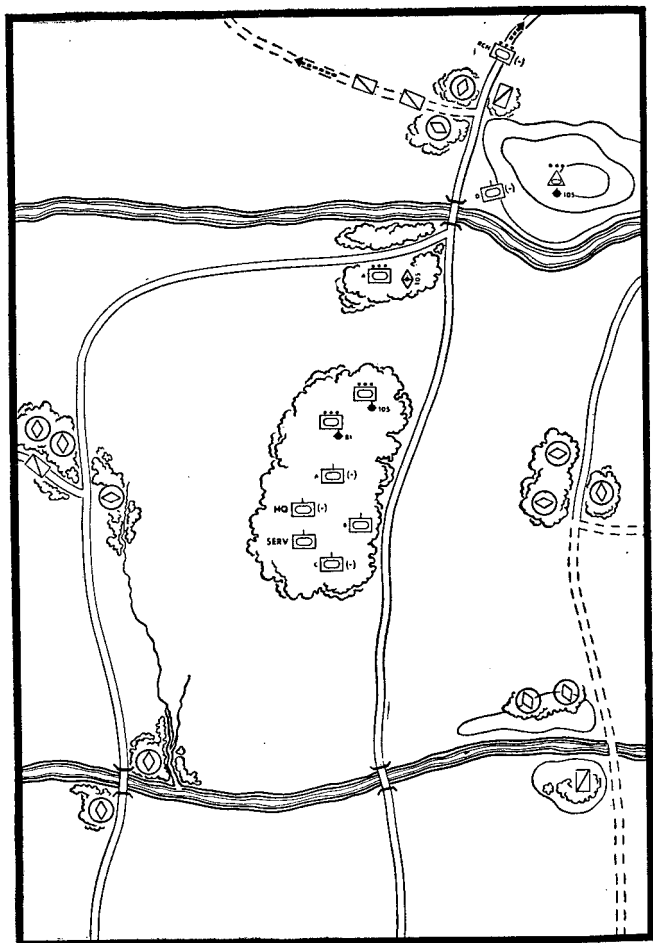


Figure 27. March outposts. Tank battalion acting alone.

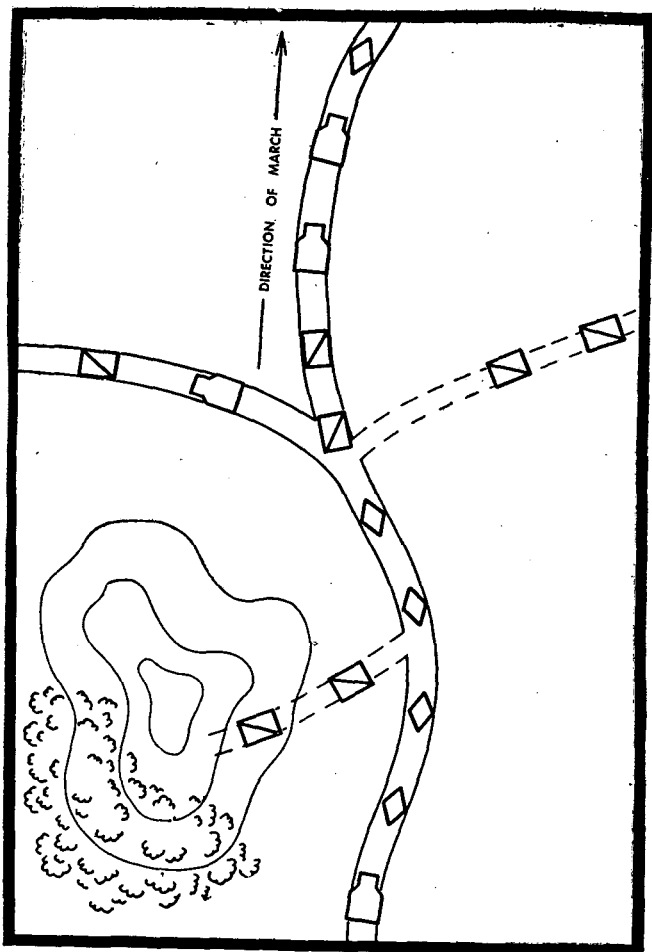


Figure 28. Local security of a tank battalion on the march as an interior battalion. The reconnaissance platoon reconnoiters short distances to the flanks.

defense is organized and fires carefully coordinated. Because of the need for concealment and dispersion against hostile air attacks, the area to be covered is quite extensive.

*c.* Tank units which are attached to or a part of other forces usually depend upon the general security these furnish. *However, this does not relieve them of the responsibility of providing their own local security.*

*d.* Antiaircraft fire and sectors of responsibility are coordinated by higher commanders.

*e.* The outpost system is commanded by an officer designated as the force commander. Upon receiving his assignment, he makes a map or air photo reconnaissance and divides the area surrounding the bivouac into sectors. Each of these is assigned to a *support*, and the necessary orders for the establishment of the outpost system given. After the various elements have taken up their positions, he inspects them, makes necessary changes, coordinates their fire plans, organizes a system of patrols, arranges for supporting artillery fires, places his reserve—if he has one—and makes plans for its use. He then reports his dispositions to the higher commander, accompanying the report with a sketch or overlay showing the location of all units, their fire plans, and related matters.

*f.* (1) The degree of organization of the outpost system depends upon whether contact with the enemy has been established or is imminent. The outpost is given sufficient strength to enable it to accomplish its mission, but is made no stronger than is necessary as outpost duty is fatiguing and greatly reduces the subsequent combat efficiency of the troops involved. Also, the striking power of the main body is not to be dissipated through unnecessarily large security detachments. The basic consideration is that a command must not allow itself to be surprised.

(2) The distance from the main body at which

the outpost system is established depends very much on the terrain, the degree of enemy activity, and the size of the main body. The outpost system of a combat command or division should protect it from medium artillery fire, which may require that some patrols operate at least 15,000 yards out from the bivouac. For smaller units the distance is decreased.

g. The troops of the outpost system are divided from rear to front into a reserve, supports, and outguards (fig. 29). It may be necessary on occasion to establish *detached posts*, observation and combat groups which hold points essential to the security of the command, but too far from it to be included within its normal outpost organization.

h. In commands the size of a battalion or smaller, the *reserve* may be frequently omitted, its functions devolving upon the *supports*. These are established in good positions on the best defensive ground encircling the bivouac area, on or near the *outpost line of resistance*, and covering likely avenues of approach. They are numbered from right to left around the perimeter of the outpost system. Each one is assigned a definite sector, the boundaries of which are well defined on the actual terrain.

i. Outguards are small groups which are charged with observing and reporting any hostile advance. These form a line of observation about the bivouac. They occupy points of vantage well out from the main body that give them an unobstructed view of the surrounding terrain. By night, they form two-man listening posts.

j. The observation and security service of the outpost is further extended by the use of reconnaissance and other patrols. These are usually sent out by the supports. They are especially useful in scouting ground which is masked from the outguards and in keeping the support in contact with its outguards and

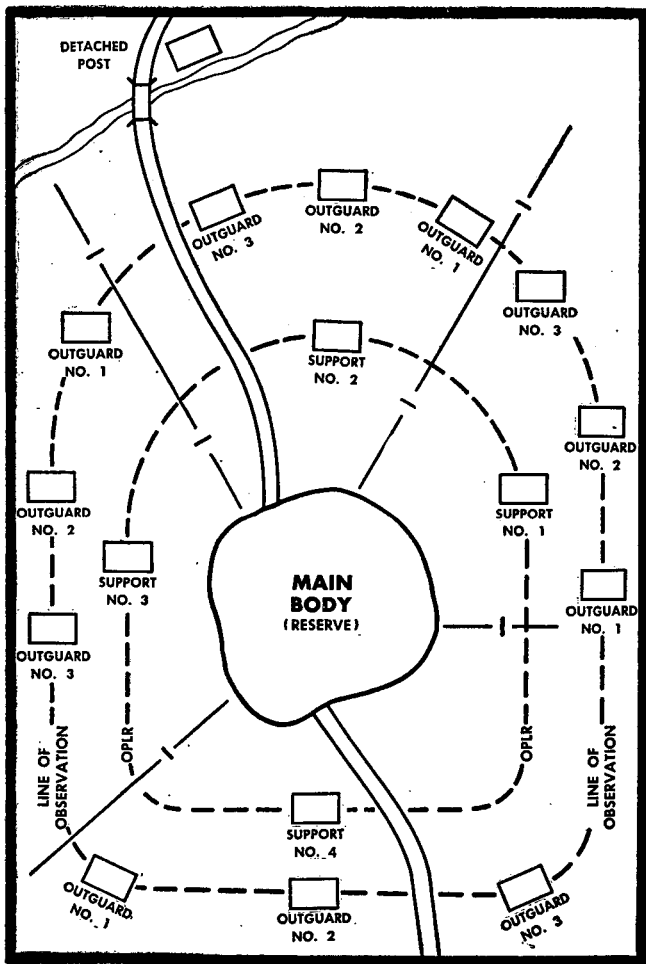


Figure 29. Outpost system.

with other supports. Patrols avoid following regular routes or schedules since these make them liable to ambush (FM 21-75).

k. The reserve, when used, occupies a central position, often within the bivouac area itself, from which it can move rapidly to reinforce the outpost line of resistance.

l. All security installations protect themselves by the use of *sentinels*, who are charged with the observation of a certain sector, with the discovery of hostile activity, and with giving the alarm in case of attack. Sentinels at the post of the support and of the outguards are alert to repeat signals given by advanced sentinels. Duties of sentinels are prescribed definitely in general orders. Sentinels are posted in pairs, one man to challenge and one man to cover him from the flank.

m. (1) Outpost troops are composed principally of infantry with a high proportion of automatic and other infantry supporting weapons. These may be augmented by tanks and other troops. The tanks form part of the reserve or support, or may be used to defend road blocks, bridges, fords, and other defiles along the routes of approach. When so employed, they are dug-in in concealed positions well off the road from which they can cover those points with effective direct fire. They are protected by infantry if available, otherwise by dismounted tank personnel.

(2) When tanks are employed on outpost duty, they should have at least one alternate position. Routes to these are reconnoitered and marked, ranges to probable target areas are determined and range cards for both primary and alternate positions prepared before darkness. Liaison is established with other troops in the vicinity, alarm signals prescribed, and listening posts established. If possible, prepara-

tions are made to fire haystacks, houses, or similar inflammable structures to illuminate terrain over which the enemy may advance. This may be accomplished by outguards or by firing tracer ammunition into the object to be set afire.

*n.* (1) Supports vary in size from a platoon to a company depending upon the mission, terrain, proximity of the enemy, and the size and physical condition of the whole command.

(2) An outguard varies in strength from four men to a platoon depending on the number of sentinels it is to furnish. Posts at a short distance from the outguard may be held weakly, while important posts at a considerable distance are strongly held.

*o.* Communication and contact between elements of the outpost system is maintained normally by messengers and patrols. Telephones are used if wire is available and there is time to lay it. Radio silence, until an attack develops, is the rule. Visual signals, such as flares, can be used in accordance with a pre-arranged code.

*p.* (1) Each separate element of the outpost system is placed to command an adequate field of fire to its front and to sweep with fire the intervals between it and adjacent elements. Ranges to prominent terrain features are determined and range cards prepared for each weapon. The organization of this fire plan is one of the most important duties of the outpost commander. Arrangements are made to secure fire support from the artillery, assault guns, and mortars on logical avenues of approach.

(2) Road blocks and other obstacles are constructed from local materials and placed across avenues of approach in front of the outguards and supports. Such obstacles are located to take advantage of defiles and natural barriers. They are covered by fire. Mines and booby traps are used freely.



*q.* In the event of an attack, the outguards observe, report, and delay it. In case they are forced to withdraw, the outguards fall back into previously reconnoitered positions along the outpost line of resistance. The support, especially if it has tank units, may counterattack to support this withdrawal. The outpost line of resistance is held at all costs pending orders from the higher commander, as the main body must be given time either to withdraw or deploy. The reserve, if present, counterattacks or builds up the outpost line of resistance.

*r.* During the night, outguards are usually moved back into new positions closer to their supports and patrolling is intensified. The supports may be reinforced if the enemy is active. Special precautions are taken during storms, fog or in early morning when the noise of hostile mechanized units may be muffled.

#### **40. Local Security**

*a.* Local security is posted by each unit. It handles traffic within the unit area, enforces camouflage discipline and other regulations, and prevents hostile or suspicious personnel or vehicles from entering, observing, or firing into the bivouac area proper. Night positions of local security elements are usually closer to the bivouac than those occupied during the day.

*b.* In the tank battalion each company establishes its local security, the battalion coordinating the whole. Besides covering the perimeter of the area, guards are placed at vital installations such as the command post.

*c.* Tanks are placed so that they cover the perimeter of the bivouac and all entrances with their full armament. Vehicular weapons reinforce this screen. Positions affording a good field of fire outside the bivouac proper and tanks moved to them if necessary.

## **41. Battalion Bivouacking Alone**

*a.* When the tank battalion is acting alone it establishes an outpost system similar to that described before, pushing its outguards out far enough to protect the bivouac from small arms and antitank gun fire, and to warn of hostile threats.

*b.* (1) In open, flat terrain or dense jungle, a perimeter defense system is used (fig. 30). The bivouac is organized with the tanks on its perimeter and the lightly armored and unarmored vehicles on the interior. Tank weapons are sited to cover the whole circle. Fox holes and machine gun positions are dug between the tanks, the machine guns being emplaced to provide final protective fires for the whole perimeter. Range cards are prepared for all weapons. The assault guns and mortars, plus any attached artillery, are placed centrally to permit them to fire in any direction. Out from the center of the bivouac, dismounted personnel are dug-in in pairs. They are well provided with automatic weapons and grenades. Reconnaissance patrols operate outside this line. Recognition signals and signals to indicate the presence of the enemy are arranged. In a well-planned installation of this sort, cross fires of maximum intensity are provided.

(2) When the enemy is very aggressive and skilled in infiltration, it is sometimes necessary to require that all battalion personnel remain in their fox holes and maintain absolute quiet throughout the night or until a prearranged signal. Anyone moving within the area is fired upon without challenge. The men in the outpost line signal the approach of any sizable body of the enemy, which is then brought under the concentrated fire of all available weapons.

## **42. Security During Combat**

Security during combat depends basically upon maintaining the cohesion and coordination of the tank

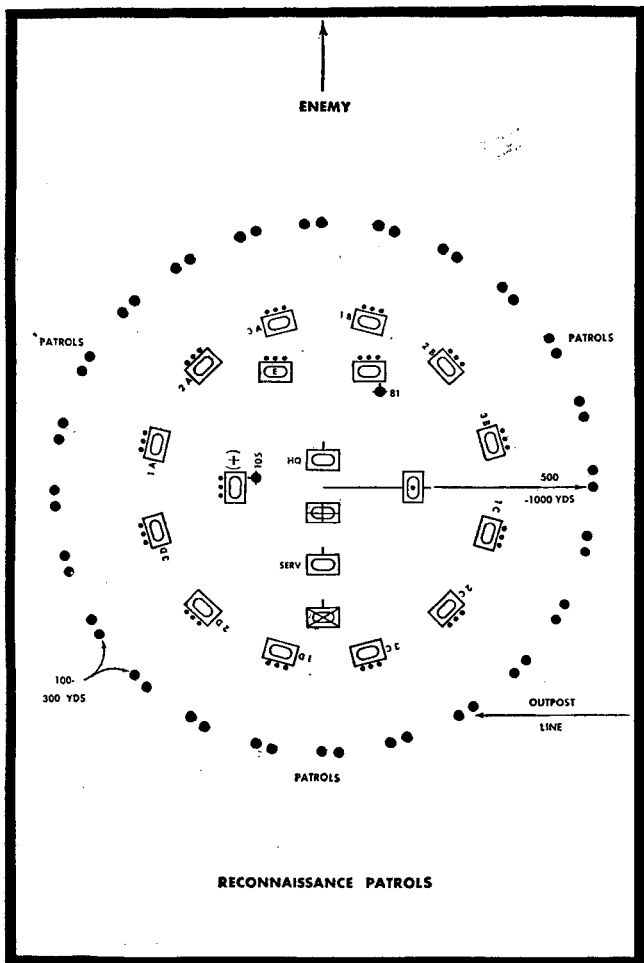


Figure 30. One form of outpost in open or jungle terrain. This organization may be varied to conform to minor irregularities of the ground. Company assault guns are with the tank battalion assault gun platoon.

battalion, properly utilizing the terrain, reporting promptly, coordinating observation, and finally upon maintaining intensive, efficient, and unceasing reconnaissance. Covering detachments and patrols are extensively used.

### **43. Covering Detachment**

*a.* Frontal security for armored units in motion is provided by an advance guard or a covering detachment. The covering detachment protects the unit's front as it moves in approach march formation (figs. 31 and 32).

*b.* The covering detachment provides frontal security for a larger unit by observation, attack, defense, or any combination of these methods. The primary mission is that of security; the secondary mission is reconnaissance. Specifically its missions are to—

(1) Guard the main body from frontal surprise, and obtain information by observing to the front and flanks.

(2) Push aside small enemy patrols, outposts, or detachments, and offer resistance to larger forces until the main body attacks.

(3) Guide the main body over the best terrain available.

(4) Provide the main body with battle reconnaissance by determining the disposition of the enemy.

(5) Develop the situation.

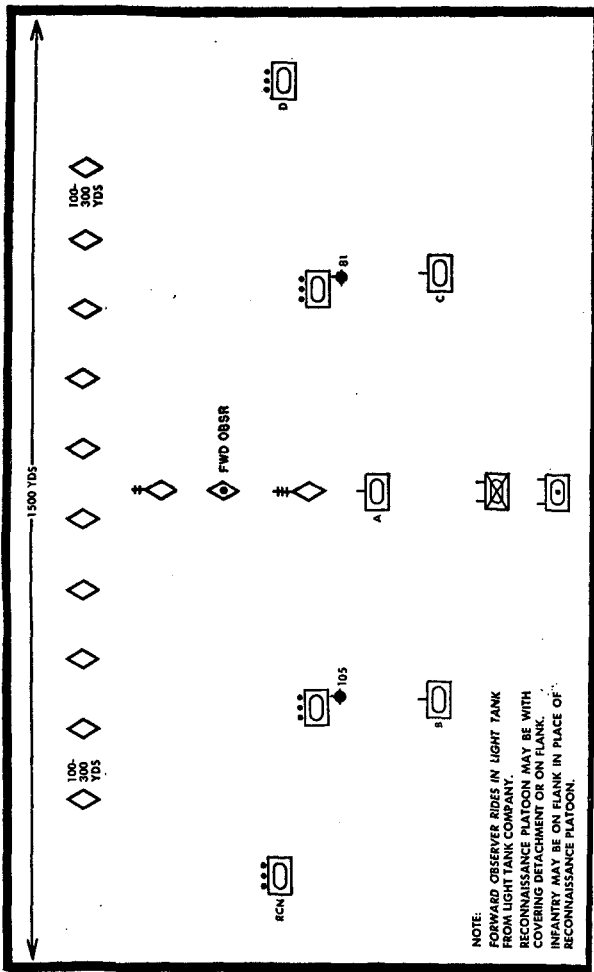
(6) Provide protection for the main body commander in his personal reconnaissance of the forward area.

(7) Support the main body in the attack, when passed through.

*c.* USE. The covering detachment may be used—

(1) In the advance from the assembly area to the attack position.

(2) From the attack position to the line of departure.



*Figure 31. Reinforced tank battalion advancing with covering detachment.*

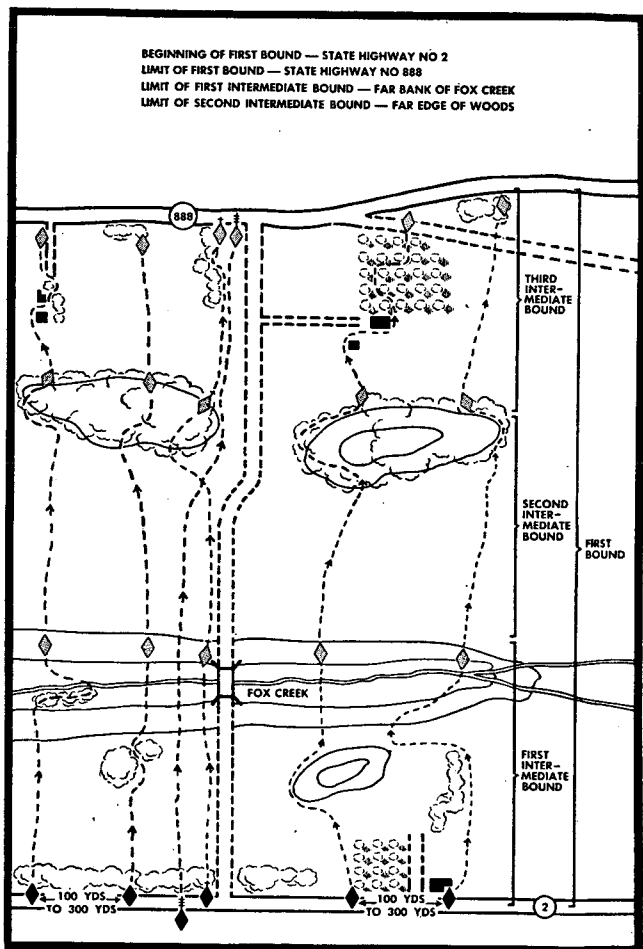


Figure 32. Tank platoon as a covering detachment for the tank battalion.

(3) Beyond the line of departure, when the situation is vague.

(4) In any movement over previously unreconnoitered terrain as in a pursuit.

*d.* COMPOSITION. The covering detachment ordinarily comes from the unit whose movement to the objective is being covered. It is rarely reinforced except for reconnaissance vehicles, but it is normally supported by assault gun and mortar fire from the head of the main body. The size of the covering detachment varies with the size of the unit protected, the terrain, and the frontage desired. Normally, the covering detachment of a tank platoon is a tank section; of a company, a section or a platoon; of a battalion, one or two platoons; of a combat command, two platoons to one company. Because of their mobility, light tanks are especially suited for this work.

*e.* COMMUNICATION AND CONTROL. (1) Communication and control between the main body and the covering detachment are normally maintained by radio messenger tanks, and 1/4-ton trucks.

(2) The commander of the unit being covered, from a position between the covering detachment and the main body, controls the direction and speed of the entire covering detachment, by prescribing limits (terrain objectives) of bounds to be made.

(3) That paragraph of the order of the commander of the main body, pertaining to the covering detachment should contain—

(*a*) The general route to be taken.

(*b*) The frontage to be covered.

(*c*) The limit (terrain objective) of the first bound, and tentative subsequent bounds when practicable.

(*d*) Tentative orders for the conduct of the covering detachment when its mission is completed.

(*e*) Fire support available from the main body.

(4) Communication and control are normally

maintained within the covering detachment by the use of radio, flag signals, and, occasionally, messengers in  $\frac{1}{4}$ -ton trucks.

(5) The covering detachment commander prescribes limits of intermediate bounds.

f. OPERATION (fig. 32). (1) The covering detachment moves forward as a unit within limits of the intermediate bounds set by the covering detachment commander, using line formation with an interval of 100—300 yards between tanks.

(2) Each tank moves forward in its respective zone, taking advantage of cover and concealment, examining suspected localities, and searching its entire zone by observation. Reconnaissance by fire may be used.

(3) When resistance is met on any section of the front covered, nearby tanks support by fire and limited maneuver. Should the enemy be too strong for the tanks in that area to overcome, the covering detachment commander calls for supporting fire to neutralize the position while the tanks *in that sector* maneuver to destroy it. The assault gun and mortar platoons are normally placed at the head of the approach march column of the main body for this purpose.

(4) If the resistance is still too strong, the tanks affected may be ordered to contain the enemy in that area, to withdraw, or to by-pass the resistance.

(5) The covering detachment commander at all times attempts to sweep and probe the entire area to the *limit* of the bound prescribed by the main body commander. When resistance is met on the one flank, the center and the other flank continue to advance. When casualties occur, each vehicle takes on additional frontage. If a position is ordered by-passed, the entire frontage is resumed as soon as possible.

(6) Upon arrival at the forward limit of each



bound, the covering detachment takes cover, reports pertinent terrain or enemy information, observes to the front and flanks, reorganizes, picks tentative routes for the next bound, and awaits orders to move forward.

(7) The main body guides upon and follows the covering detachment. Based upon the information passed back, it follows the best terrain, by-passes or attacks small enemy groups not cleared by the covering detachment, and, in most cases, attacks through the covering detachment when the enemy positions are fixed. The distance at which it follows depends upon available frontal cover and the size of the force being protected. Normally this distance is from 500-2000 yards.

(8) When its mission has been accomplished, the covering detachment may furnish flank and rear security, follow in reserve or, if exceptionally strong (medium or heavy tanks), may constitute leading element of the assault echelon, or join the support echelon in the attack.

#### **44. Patrols (FM 21-75 and 17-100)**

A patrol is a detachment of troops sent out from a larger body on a mission of reconnaissance, security, or combat.

a. RECONNAISSANCE PATROLS, which specialize in the collection of information through stealthy scouting, avoiding combat except in self-defense or when essential to gain the required information. This mission is performed normally by the tank battalion reconnaissance platoon, either mounted or dismounted. However, special patrols for probing enemy positions may be composed of tanks. These are employed after contact is established. These are both combat or reconnaissance patrols. They probe aggressively into the enemy's positions seeking to locate his antitank guns, mine fields, artillery and reserves—

especially armored troops—and to ascertain the relative strength of various parts of his position. To accomplish this, they may expose themselves and seek to draw fire. The actions of the patrol are followed constantly by air and ground observers who have a wider field of vision than the members of the patrol. By day, probing is done by tanks or dismounted personnel; by night, it is a dismounted mission.

*b.* **COMBAT PATROLS.** This term, generally speaking, is applied to any type of patrol which must fight in order to accomplish its mission. These patrols may be employed as flank guards for small units, as a means of maintaining contact between two adjacent units in battle, or in clearing out small enemy pockets of resistance. This duty is best assigned tanks, either light or medium.

#### **45. Security of Installations**

*a.* **ASSEMBLY OR RESERVE POSITION.** The security of an assembly position or reserve position is similar to that of a bivouac area (par. 39), except that prone shelters are not dug if the position is to be occupied only momentarily. Care is exercised because, when crew members are preparing their tanks for combat, an armored unit is very vulnerable to surprise.

*b.* **ATTACK POSITION.** The advance to the attack position is protected by the covering detachment which covers the short occupancy of that installation from its front (par. 43). However, to prevent flank attack and surprise, flank guards are formed for the movement, usually from the light tank company, and a rear guard may be formed if the situation requires it. During the short halt at the attack position, these security detachments form march outposts, thereafter moving out in their assigned position in the attack.

*c.* **RALLYING POINT.** As tank units are especially vulnerable while reorganizing, the first concern of

each unit commander upon reaching the rallying point is to post observation and weapons to cover the most logical avenues of approach. Later units reinforce this, and the battalion commander checks and coordinates these security detachments before proceeding with the reorganization of his command. The battalion reserve is used to defend the area by counterattack.

#### **46. Security Against Air Attack**

Security against hostile air attack is obtained by warning systems, concealment, dispersion and fire.

*a.* The warning system, whether the tank battalion is a part of a larger force or is acting alone, must be in constant operation. One battalion headquarters radio set is always on the air warning net and one or more sets in each company is placed in it. Standard signals, such as sirens and flares, and the radio are used to transmit the warning to the rest of the unit.

*b.* Air alert sentries are designated in each vehicle on the march; air alert observation posts are established in bivouacs, assembly areas and like installations. Definite sectors of observation are assigned.

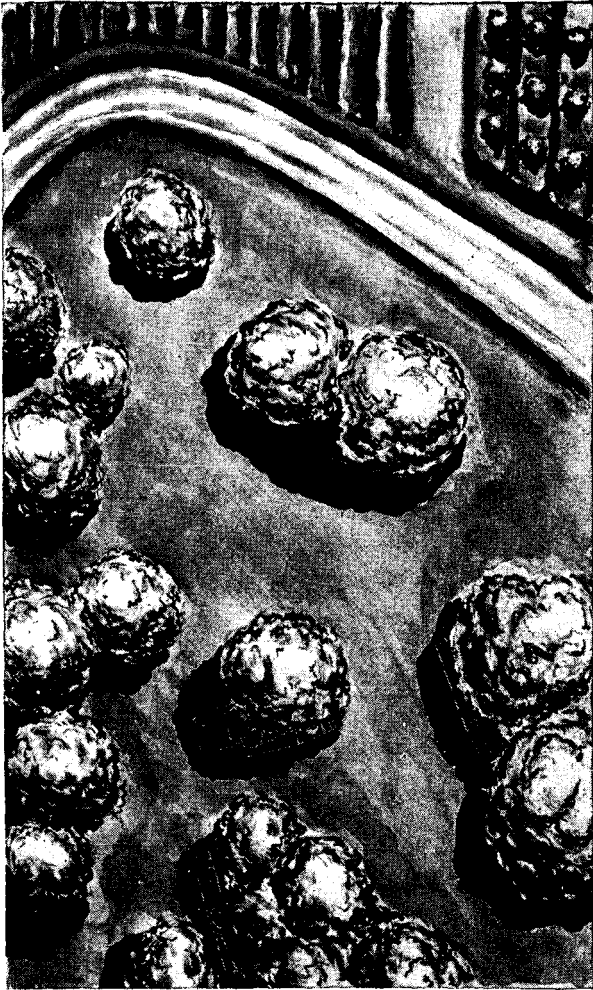
*c.* Concealment may be achieved by—

(1) Using natural concealment — woods, brush, shadows, villages (fig. 33).

(2) *Using camouflage.* See FM 5-20.

(3) Marching and occupying positions after dark, using black-out lights or no lights.

*d.* Dispersion is achieved by increasing the intervals and distances between vehicles and by distributing the unit in small groups. The battalion may move in multiple columns or may march by infiltration. Dispersion is sought in all installations and on the march. It may be increased if possible when under actual attack. *Never close up at the halt; halt at extended intervals.*



*Figure 33. Advantage was taken of available concealment and shadows here.*

e. The organic anti-aircraft weapon of the battalion is the caliber .50 machine gun.

(1) All anti-aircraft weapons are kept manned, uncovered, and ready for instant use while on the march (figs. 34 and 35). Vehicles or platoons are assigned zones of fire. In bivouac or assembly position, certain guns are trained on points where low-flying aircraft are likely to appear, such as the top of a nearby tree line.

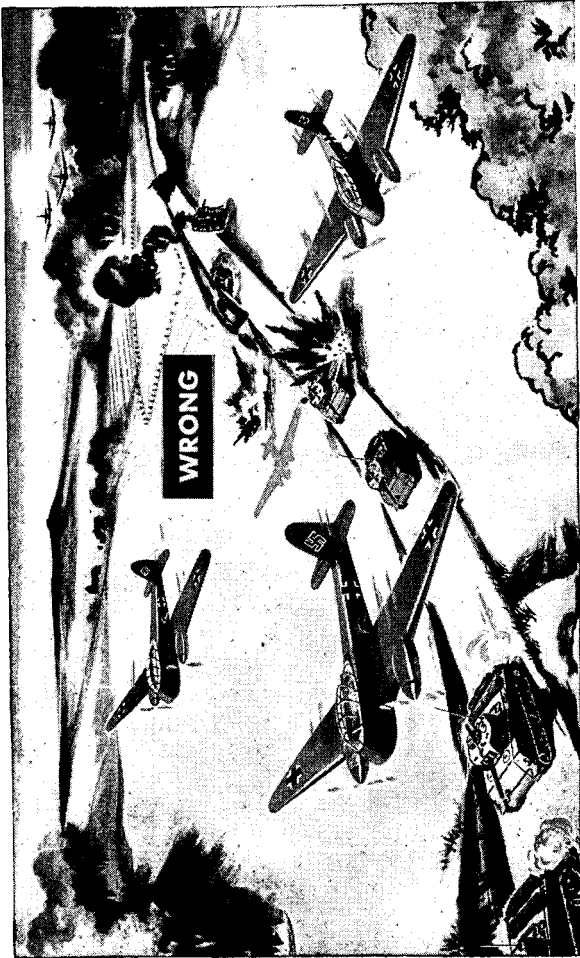
(2) Immediate protective measures are taken against low-flying aircraft. All personnel charged with this duty are constantly prepared for immediate action, but will fire only on order of an officer or responsible noncommissioned officer. No aircraft will be fired upon unless it has been clearly recognized as hostile or is positively identified as hostile or attacks with bombs or gun fire. All effective weapons are used against hostile aircraft. Carbines, sub-machine guns, and pistols are not considered effective.

(3) If planes stay above the effective range of the caliber .50 machine gun, defensive fires must be left to attached or nearby anti-aircraft artillery. *Only when the planes fly very low, approximately 500 yards or less*, are all effective weapons used. All personnel are trained in anti-aircraft firing (FM 23-65).

f. Defense against air attack by vehicles on the march depends on the friendly or enemy air superiority. Higher headquarters prescribes the precautions against, and action to be taken in case of air attack.

#### **47. Security Against Airborne Troops**

a. Security against parachute and airborne troops demands a thorough reconnaissance to locate all usable landing areas and the early development of special security measures. These usually are coordinated by the higher commander, but the tank bat-



*Figure 34. This column was not alert. Hostile airplanes attacked over woods in rear. Vehicles closed up at bottom of hill and made a perfect target. BEWARE OF DEFILES.*



Figure 35. Here some guns pointed to rear and covered woods. Vehicles are properly spaced. This column was alert.

talion commander prepares his own plans in advance.

*b.* The air warning net is used to give warning of airborne, as well as air, attacks.

*c.* Obstacles may be placed on all nearby landing areas (airdromes, air strips, open fields, and straight stretches of level highway).

#### **48. Security Against Chemical Attack**

Security against hostile chemical attack (FM 21-40 and 17-59) consists of an adequate warning system; individual and collective protective equipment; provision for the prompt decontamination of individuals, equipment, vehicles, and supplies; tactical measures to decrease the efficiency of hostile chemical attack; and a high standard of individual and unit training.

*a.* A gas alarm system is established and gas sentries posted. Trained personnel also reconnoiter for, locate, and mark contaminated areas.

*b.* Personnel are taught to use and care for their gas masks, protective clothing, and gas detection equipment such as gas detector crayon, paint and paper. Discipline in this regard is strict and constant.

*c.* Decontamination of personnel, equipment, vehicles, areas, and supplies is taught and arrangements made for decontamination of installations. The necessary equipment is kept available and in good order.

*d.* Tactical protection against gas attack is increased by occupation of terrain unfavorable for gas concentrations and the avoidance or evacuation of gassed areas. Alternate positions are selected. For example, heavy gasses such as mustard tend to settle into hollows and low ground. Positions high on hill-sides usually are free from them.



## CHAPTER 4

# OFFENSIVE ACTION

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### Section I. GENERAL

#### 49. Fundamentals of Offensive Action

See paragraph 2 and FM 100-5.

#### 50. Cooperation

The effectiveness of offensive action is dependent upon the coordinated teamwork of all components in the attacking force. This teamwork is assured when each arm understands the capabilities, limitations, and techniques of all the arms. Mutually understood doctrines of employment utilize the capabilities of one to offset the limitations of the others. The technique of applying these doctrines is learned only in intensive combined training.

#### 51. Positions and Installations (fig. 36)

*a.* ASSEMBLY POSITION (fig. 37). This is an area where the tank battalion is assembled for servicing, inspection and repair of vehicles, resupply, feeding of troops, and issuance of orders preparatory to moving to an attack position. It is occupied, organized and secured in the same manner as the bivouac area. The attack order usually is issued in the attack position to key personnel while the troops are still in the assembly position. The assembly position should have the following desirable characteristics:

(1) Out of range of artillery fire. It is usually at least 8000-9000 yards from the line of departure in

order to place it out of range of enemy light, and when possible, medium artillery fire. It should be placed within light artillery range only in the following instances:

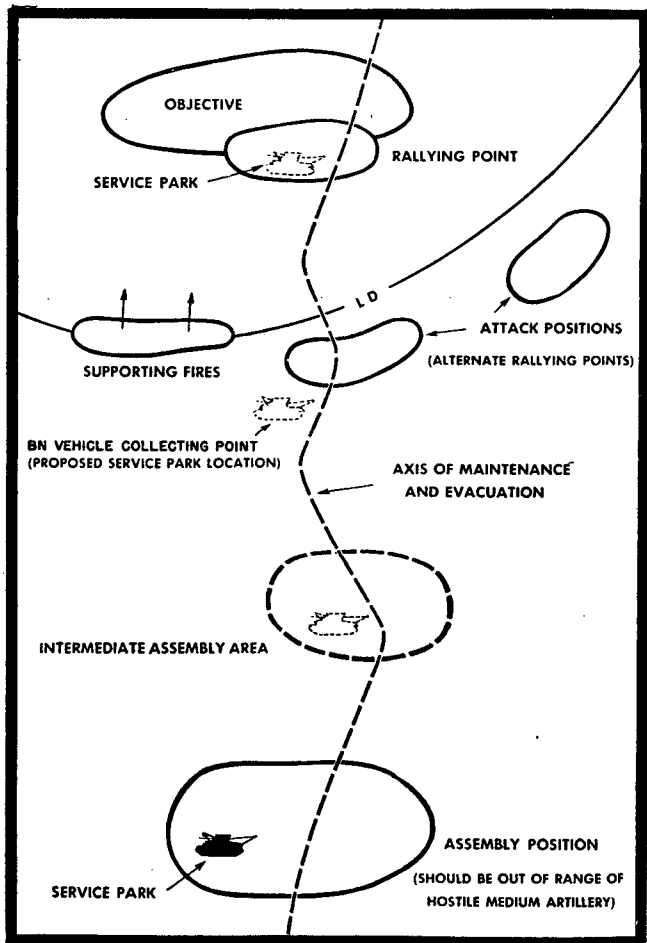


Figure 36. Tank battalion installations.

(a) When defiles or obstacles exist through which adequate lanes cannot be cleared, the assembly position is placed between them and the line of departure (fig. 37).

(b) When darkness, a full knowledge of the situation and cover, together with a plan of attack already decided upon, favor an advanced position.

(2) Concealment from observation.

(3) Firm standing.

(4) Space to avoid crowding.

(5) Adequate entrances and exits.

(6) Adequate routes of communication within the area.

(7) Access to favorable routes to attack positions.

*b. INTERMEDIATE POSITION.* When the distance from the assembly position to the attack position is great or the intervening terrain is especially difficult, an intermediate position may be used. This position is occupied only long enough to coordinate the movement of the battalion with that of other units, to regain control, and for necessary servicing.

*c. ATTACK POSITION.* The attack position is immediately in rear of the line of departure in the last available covered position. Here all commanders regain control and establish final contact and last minute coordination with cooperating troops before launching the attack. Companies and platoons assume a deployed or partly deployed formation before reaching their respective positions. Here platoon leaders generally orient the tank commanders and drivers and complete the issue of orders. On arrival they take the formations they will use to cross the line of departure. The order of march and movement into the position is so planned that only a minimum time is spent there by all elements.

*d. LINE OF DEPARTURE:* The line of departure is used to coordinate the departure of attack elements.

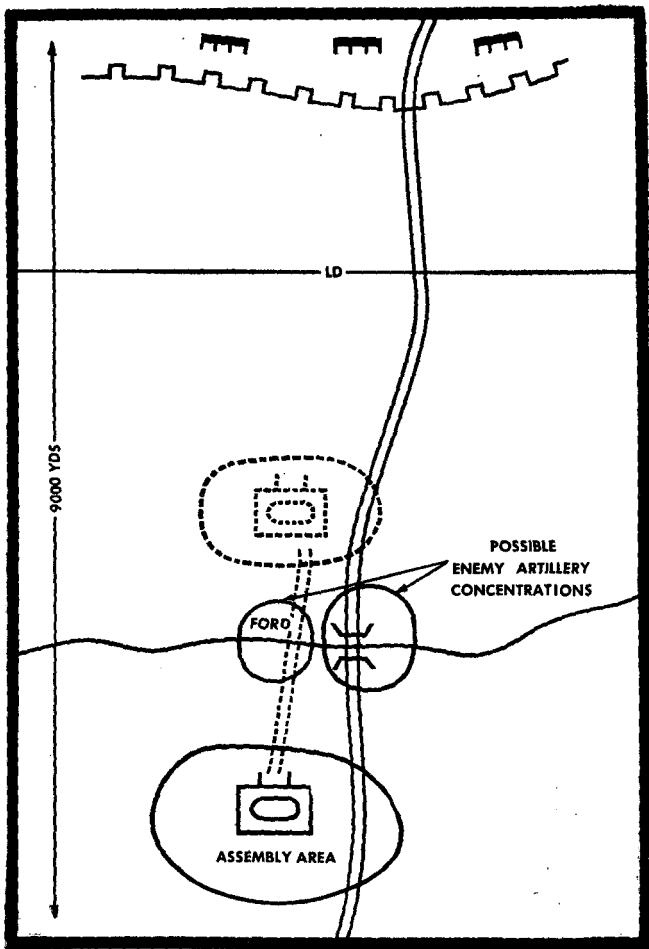


Figure 37. Do not select an assembly area with defiles in front of it that can be blocked by artillery. Move forward through defiles before being discovered by the enemy. Disperse to minimize losses.

It is selected so as to be easily recognized on the ground. Whenever possible it should be perpendicular to the direction of attack. Separate lines of departure may be used by different elements to take advantage of terrain features, and to achieve proper timing or convergence of effort.

*e.* **VEHICLE COLLECTING POINT.** This is a place on or near the axis of evacuation where combat units collect disabled vehicles to await repair or evacuation by higher echelons of maintenance. It may be at the battalion service park but during combat is usually forward of that point. Cover, concealment and space for dispersion of vehicles are desirable.

*f.* **AXIS OF MAINTENANCE AND EVACUATION.** This is a designated line, normally a road or series of points within the zone of advance, along which maintenance details advance, and along which vehicle and personnel casualties are evacuated.

*g.* **SERVICE PARK.** The battalion service park is set up initially by battalion service elements in the assembly area. Thereafter it moves forward by bounds along the axis of maintenance. It may use previously occupied vehicle collecting points. The battalion maintenance platoon works out from it, furnishing wrecker service and doing as much maintenance and repair work as possible. Part or all of the service park may be moved to the rallying point after combat.

*h.* **RALLYING POINT.** This is a well defined, pre-designated terrain feature at which the unit assembles after it reaches the objective. It is usually in rear (on the friendly side) of the final objective, and is selected to take advantage of all the cover and security afforded by the terrain. Here control is regained. At the rallying point the battalion secures itself against counterattack, reorganizes, resupplies as necessary, cares for the wounded, and prepares for further action. Alternate rallying points are desig-

nated in case the objective cannot be attained, or the selected rallying point is untenable. The attack position may be designated as an alternate rallying point. A rallying point and an alternate rallying point is selected for each objective.

## **52. Zones, Frontages, Depths and Formations**

*a.* In planning zones, frontages, depths and formations to use, the following factors are weighed:

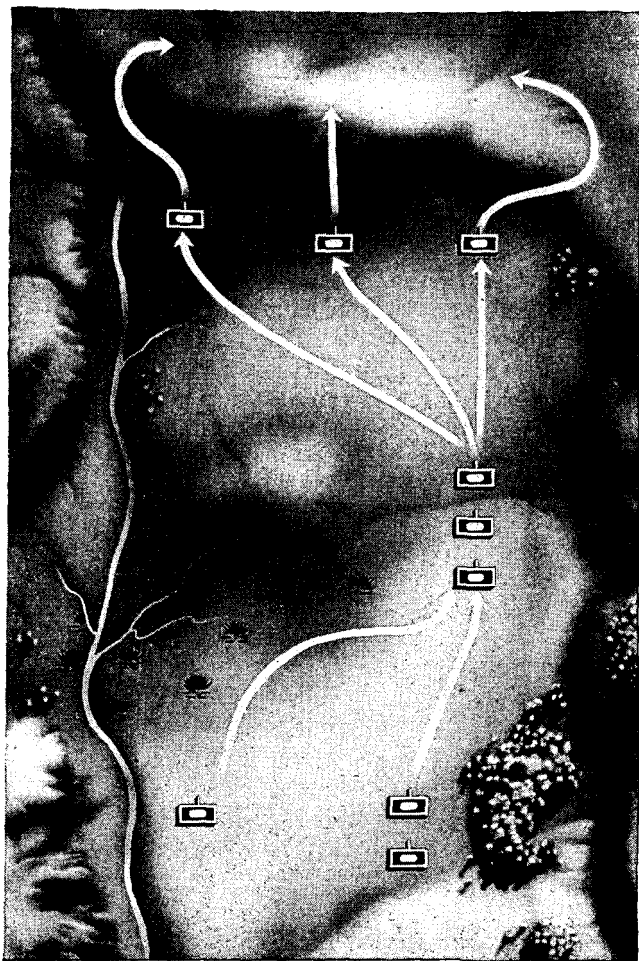
- (1) Mission.
- (2) Control.
- (3) Fire power.
- (4) Supporting fires.
- (5) Enemy opposition.
- (6) Security.
- (7) Terrain.

After considering the advantages and disadvantages of different zones (if a choice is possible) and formations against the above factors the commander plans his scheme of employment and requests the support needed. For type formations see figures 39 to 42, inclusive.

*b.* **ZONES.** (1) The zone for a tank battalion in the attack is normally from 800 to 1500 yards wide and extends through the objective at least as far as the hostile artillery positions. It should be wide enough to permit elements to maneuver within the zone. If necessary to maneuver outside the zone, arrangements are made for the required coordination with adjoining units before the attack, or, when this cannot be foreseen, as the occasion demands.

(2) When tanks and infantry attack together, the zone of action of the tank battalion is normally the zone of the infantry unit to which it is attached (FM 17-36).

*c.* **FRONTAGES AND DEPTHS.** (1) Wide frontage may be taken on a covering mission. A penetration



*Figure 38. Influence of terrain on formations.*

requires narrow frontage and great depth to give sustained power.

(2) A narrow frontage, to facilitate control, is taken in wooded terrain. Impassable ground may narrow the formation (fig. 38). In open terrain, wider frontages than for wooded terrain are practicable and desirable.

(3) When the enemy has few antitank guns and his other antitank defenses are light, a wide frontage may be taken. If antitank defenses are concentrated at one point, a wide frontage may be required for envelopment. If the enemy antitank defenses are strong on a broad front or cannot be avoided, a narrow frontage and formation in great depth is taken.

(4) When well supported by artillery and bombardment aviation, the frontage may be greater than when such support is light or lacking and tanks must furnish their own supporting fires.

*d. INVERTED WEDGE* (fig. 39). This formation is suitable for any echelon of attack. It provides strong fire power to the front, flank protection, fire support, and a reserve to influence the action.

(1) Frontage in this formation rarely exceeds 1500 yards.

(2) The depth depends upon the terrain, mission, and the fire support furnished by other units.

(3) The reserve is usually located behind the company making the main effort. It moves from firing position to firing position to give continuous support to the leading companies. It is prepared to repel counterattacks from the flank, to pass through a depleted leading company and continue the attack, or to maneuver to a flank.

(4) Unless an extremely wide front is covered, the mortar and assault gun platoons are retained under battalion control.

*e. WEDGE* (fig. 39). This formation is used in



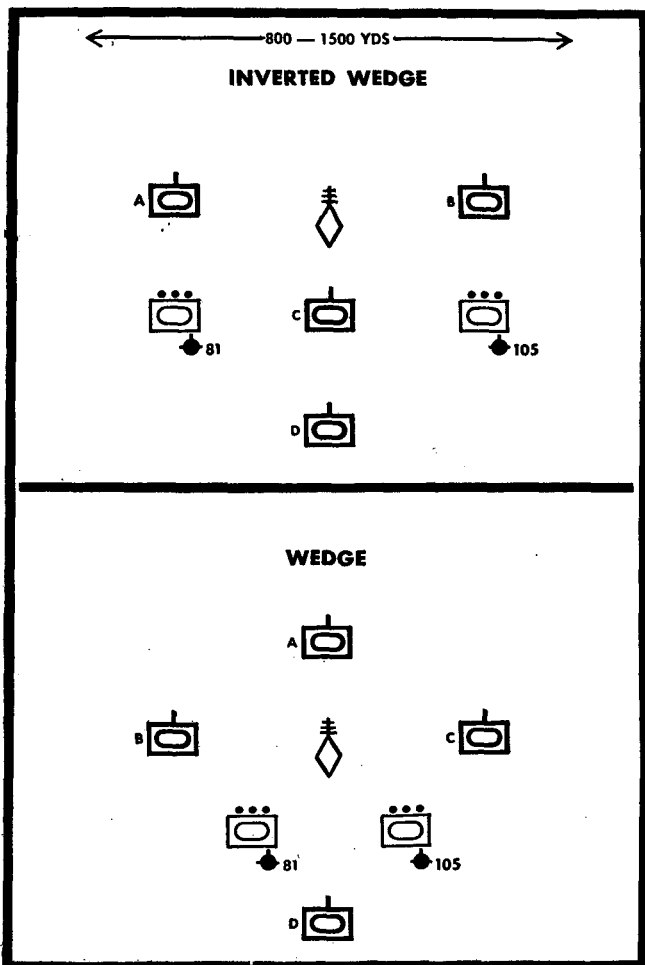


Figure 39. Wedge formations.

advancing against an enemy whose defenses have not been definitely located. The leading company protects the advance of the other two companies. These companies in turn protect the flanks, give fire support to the leading company, and are prepared to maneuver to either flank. Mortars and assault guns support the leading company.

f. **COLUMN** (fig. 40). Column gives maximum control and driving power. The battalion may be quickly deployed to either flank. This formation is useful in passing through woods. It may have to be used in passing a defile. It is the best formation for a penetration when the battalion is acting alone. For the initial advance against light enemy resistance, the leading company usually covers a broad front.

g. **ECHELON** (fig. 41). The battalion may be echeloned either to the right or left. This formation is useful for a flank battalion, permitting rapid deployment to the exposed flank. Assault guns and mortars may be attached to companies.

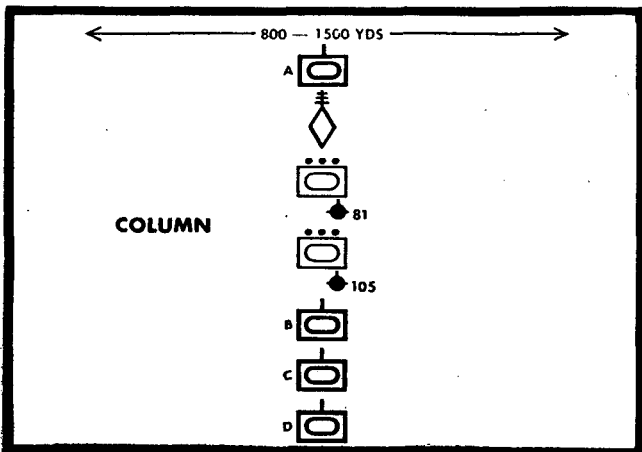


Figure 40. Column formation.

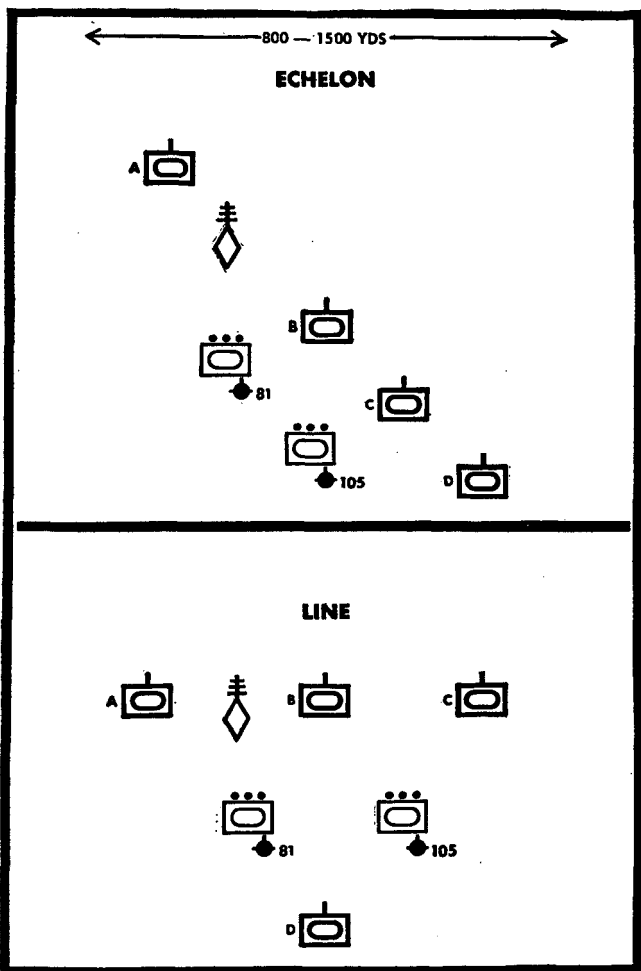
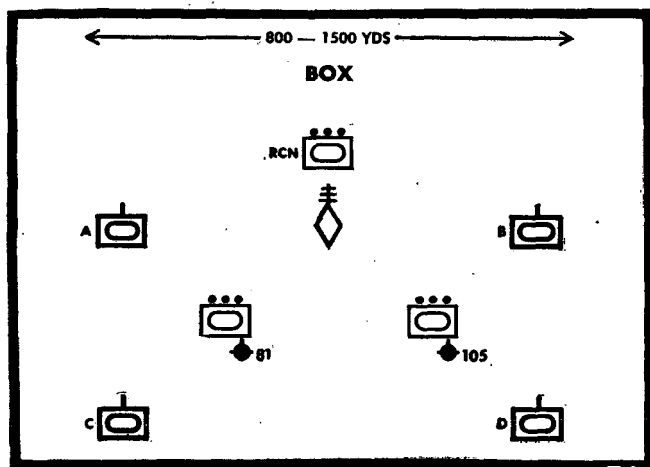


Figure 41. Echelon and line formations.

*h.* **LINE OF COMPANIES** (fig. 41). This is rarely used as it provides little depth and consequently low sustaining power. It may be used for screening and counterreconnaissance missions or to develop maximum frontal fire when the battalion is the base of fire for the maneuver of a larger force. Assault guns and mortars should be attached to companies.

*i.* **OTHER FORMATIONS.** There are other formations or modifications of the above formations that may be used to meet a particular tactical situation. For example, in the echelon formation the rear company may follow in trace of the center company. A box formation (fig. 42), with armor on all sides, covered by patrols, permits employment in any direction.

*j.* **COMPANY FORMATIONS.** In any of the battalion formations referred to, each company assumes the tactical formation dictated by the situation and the terrain (FM 17-32).



*Figure 42. Box formation.*

### 53. Echelons of Attack

*a.* The attack is usually organized in three echelons—the assault, the support, and the reserve (fig. 43). The tank battalion, when operating as part of a larger command, is usually in one of these. When operating alone, it may contain all three.

*b.* Each echelon commonly is organized in depth. It attacks by the fire and maneuver of its component elements which are mutually supporting (figs. 44 to 46). The organization of each echelon, and of the elements within each echelon, is highly flexible. Regrouping is frequently necessary due to changes in the tactical situation and terrain.

*c.* THE ASSAULT ECHELON advances close behind the supporting artillery, assault gun, or mortar fire. When its leading elements consist only of tanks, they may advance directly under artillery time fire (fig. 47). The whole echelon advances aggressively by fire and maneuver, taking full advantage of all favorable terrain (figs. 45 and 46).

(1) The echelon assaults, takes, and neutralizes the assigned objective until relieved, destroying all possible enemy personnel and weapons. It then covers the advance of the support echelon.

(2) In order to maintain the momentum of the attack, elements of the assault echelon may pass through or replace other elements of the same echelon which become disorganized or depleted.

(3) A highly successful assault echelon may continue in the lead beyond the objective in an attack upon a new objective, such as enemy reserves or rear installations.

*d.* THE SUPPORT ECHELON (fig. 48) (reserve for attacking force) aids the assault echelon in the attack by performing one or more of the following missions:

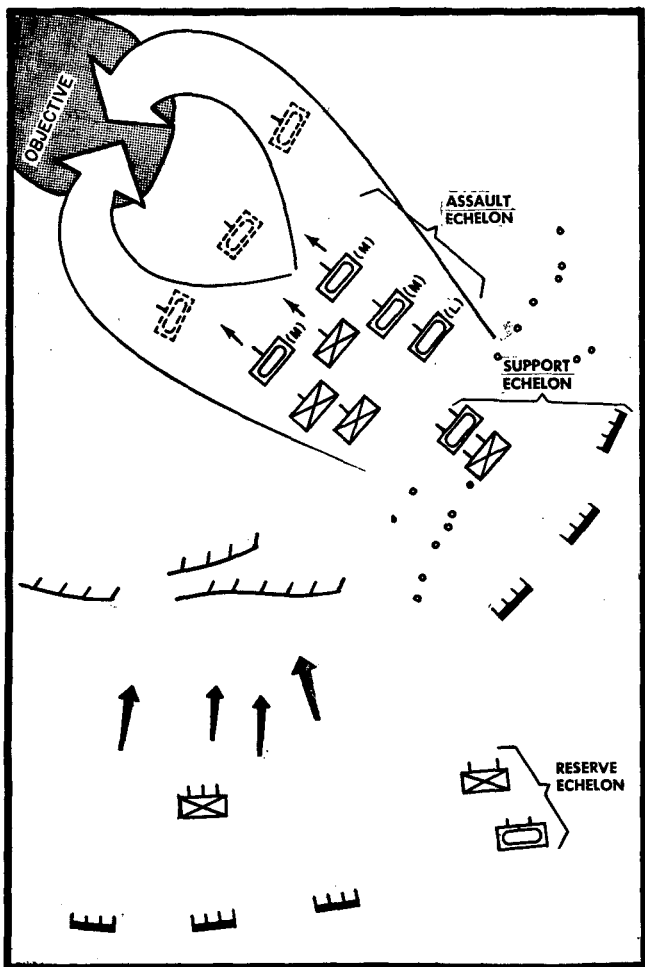


Figure 43. The echelons of attack.

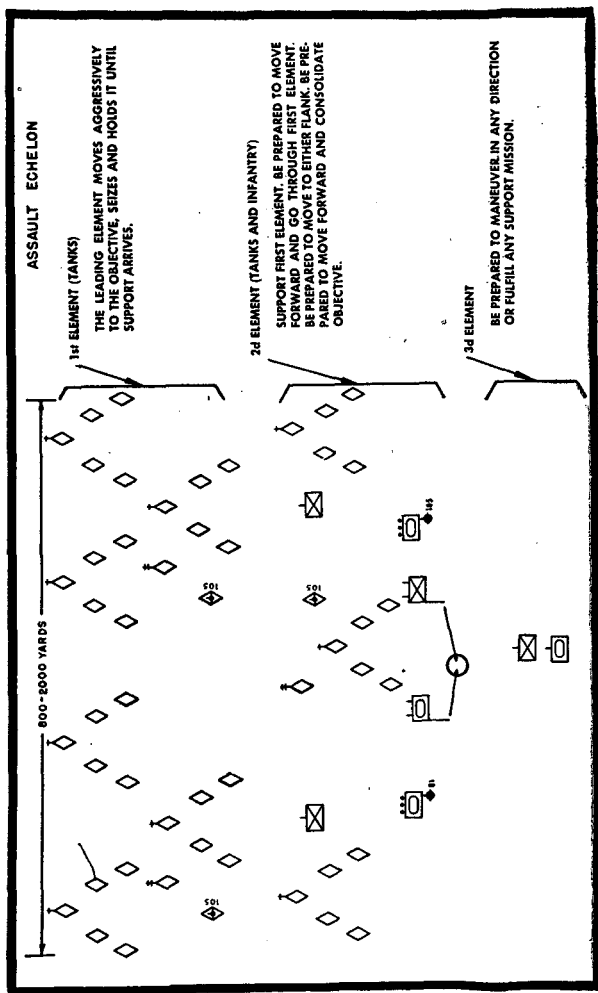


Figure 44. Organization of the assault echelon.



Figure 45. Fire and maneuver by companies of the assault echelon. Attach assault gun. Coordinate assault gun fire, mortar fire, artillery fire, and attack of all three companies. Attack may be launched upon signal by Company C when it is in position.



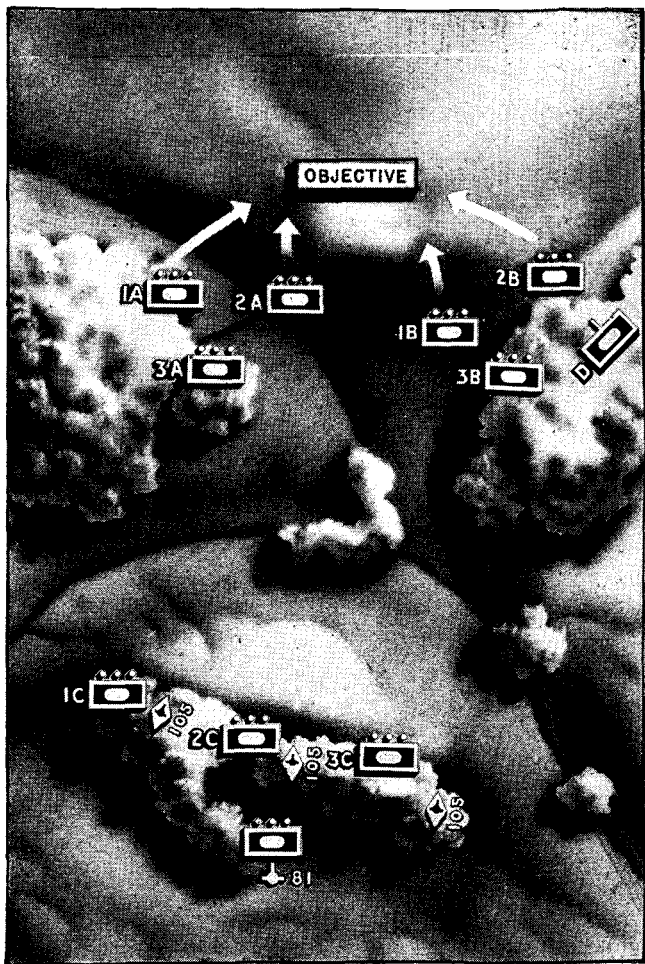


Figure 46. Fire and maneuver by companies of the assault echelon. Use reserve as necessary for fire support. Mortars and assault guns displace forward so as to maintain continuous fire support.



*Figure 47. Tanks on objective covered by artillery time fire.*

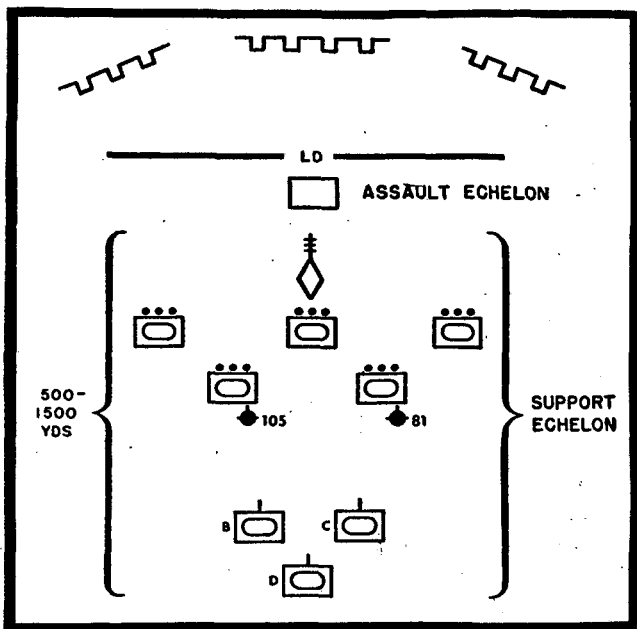


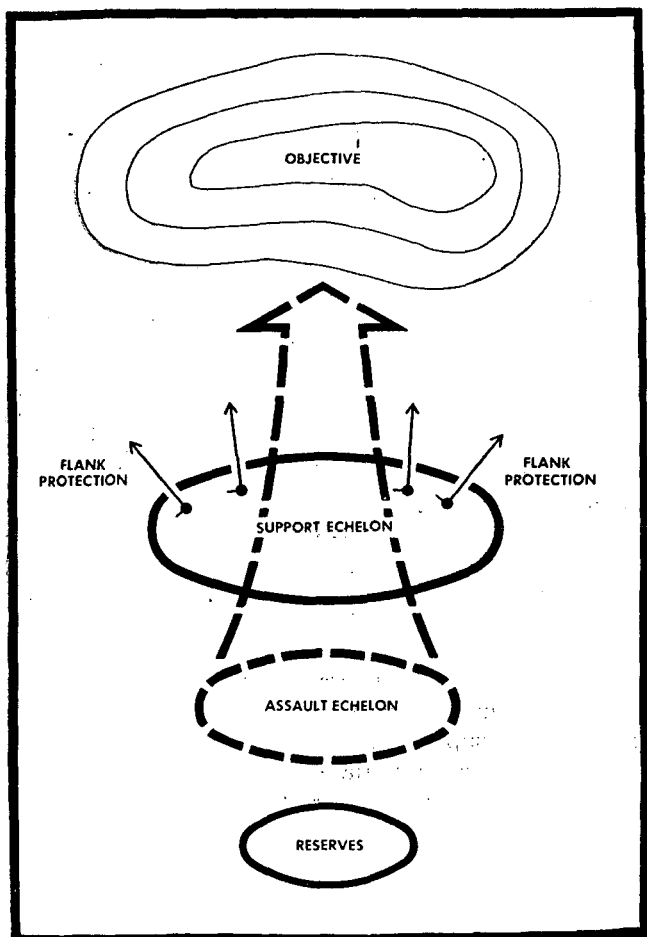
Figure 48. The tank battalion as a support echelon in the attack position.

(1) Supporting the assault echelon by fire (fig. 49). In order to occupy positions from which it can provide this support at the earliest possible moment, the support echelon initially may move forward ahead of the assault echelon, which subsequently passes through it.

(2) Protecting the flanks of the assault echelon by employing fire and maneuver against hostile weapons or counterattacks.

(3) Enveloping the objective with part of its elements while the assault echelon continues a frontal assault.

(4) Passing through the assault echelon, should



*Figure 49. Support echelon initially in forward position ready to support the attack of the assault echelon.*

the assault echelon become so disorganized or suffer such heavy losses as to be unable to continue its attack, the support then becomes the assault echelon, and the former assault echelon becomes the support or reverts to the reserve, depending upon its condition and the existing situation (fig. 50).

(5) Destroying hostile personnel and weapons bypassed or overlooked by the assault echelon, consolidating the objectives taken, and continuing to support the advance.

*e.* (1) *The reserve echelon* is normally held under the direct control of the higher commander, who may use it—

(a) To influence the action developed by other echelons.

(b) To defeat large-scale counterattacks.

(c) To exploit a success gained by the other echelons.

(d) To pursue a defeated enemy.

(e) To accomplish any other mission required by the situation.

(2) The reserve echelon may contain all arms. Infantry should be included whenever possible.

#### **54. Employment of Infantry**

Infantry may be included in any or all of the echelons when the terrain and the tactical situation make its presence advisable. For its employment, see FM 17-36.

#### **55. Forms of Attack**

Attack may be either by envelopment (par. 56) or penetration (par. 57).

#### **56. Envelopment (FM 100-5)**

The tank battalion may be employed as an enveloping force or as part of an enveloping force, and may

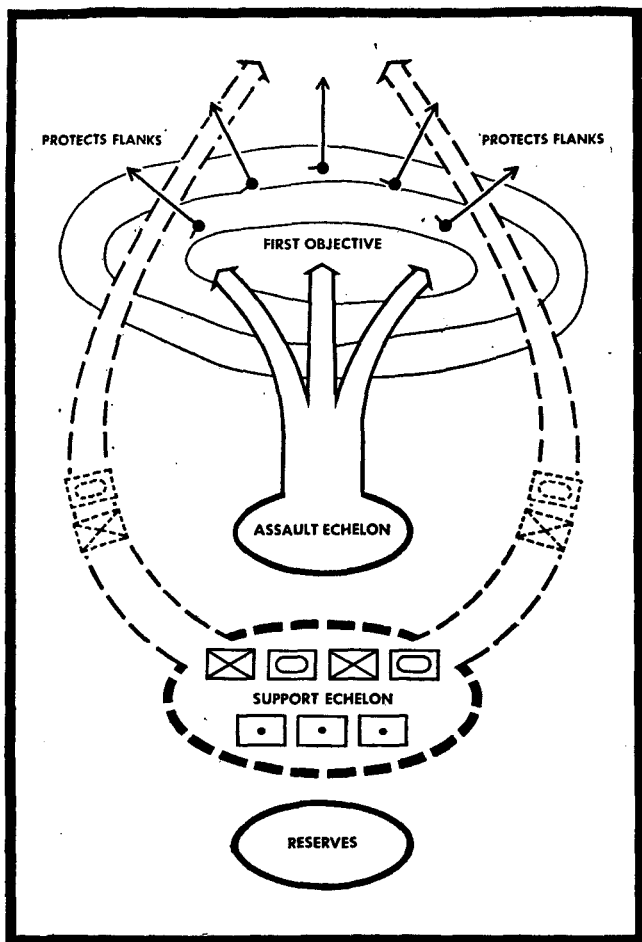


Figure 50. Support echelon becomes assault echelon.

itself use enveloping action. As an enveloping force the tank battalion is reinforced normally.

a. **FORCES AND MISSIONS.** In attack by envelopment two or more forces are used—a *main attack* (enveloping) force or forces and a *secondary attack* (base of fire) force. There may be two main attack forces depending upon whether one or both flanks are to be enveloped.

(1) The *main attack* is launched against the flank or rear of the initial dispositions of the enemy's main forces and toward an objective in réar of his front lines. The attack is characterized by a narrow front and deep formation, and rapid, aggressive action.

(2) The *secondary attack* (base of fire), directed against the enemy's front assists the *main attack* by attracting the enemy's attention and pinning him to the ground. The employment of this force is characterized by a lack of depth, reduction of reserves to the minimum, and maximum fire power on a broad front. The secondary attack force usually consists of infantry heavily supported by field artillery.

b. **BATTALION AS ENVELOPING FORCE.** As an enveloping force the battalion usually is reinforced with infantry and often with engineers. The attack is coordinated with the secondary attack. The secondary attack may start first. The objective and time of attack are set by the higher commander. The time of attack may be upon signal that the enveloping battalion is in position.

(1) Maximum coordination, especially of supporting fires, is required.

(2) Route and attack position reconnaissance on the enemy's flank may have to be limited to the use of very small parties or to map reconnaissance to avoid loss of surprise. Covered or concealed routes are used when practicable. Contact is made with higher unit reconnaissance agencies in the area.

(3) In advancing to attack positions on the enemy's flank, a strong covering detachment, consisting of one or more platoons of tanks (usually light tanks), and infantry (figs. 51 and 52), is used. A strong flank guard should be detailed. Companies and attached units are disposed in the order in which they will participate in the attack, in formations that take advantage of covered routes. The battalion commander normally marches in the interval between the covering detachment and the main body.

(4) In the attack position the reconnaissance platoon or light tanks are used to reconnoiter the exposed flank. The exposed flank is protected with tanks or tank destroyers if the latter are available.

(5) If fire and maneuver is necessary within the enveloping force, mortars, assault guns, infantry and if necessary, a tank company are used in the base of fire, with the rest of the battalion as the maneuvering force. Attached infantry follows the attack closely, in carriers as far as possible, and mops up the enemy position (FM 17-42).

(6) In open terrain where surprise and covered approach are impossible, tanks alone may comprise the covering detachment and flank security.

(7) If the enemy's reserves attempt a counter envelopment, care must be exercised not to over-extend or become separated from the secondary attack. In this situation it is usually better to take advantage of the enemy's extension by penetrating his thinly held front, than to attempt further outflanking of the position. Help from higher headquarters may have to be called for to protect the exposed flank.

*c.* BATTALION ACTING ALONE. When acting alone the battalion may use a single or double envelopment maneuver. (Figs. 53 and 54.) Infantry, if present, with a medium tank company and the assault gun and mortar platoons, less detachments, forms the base



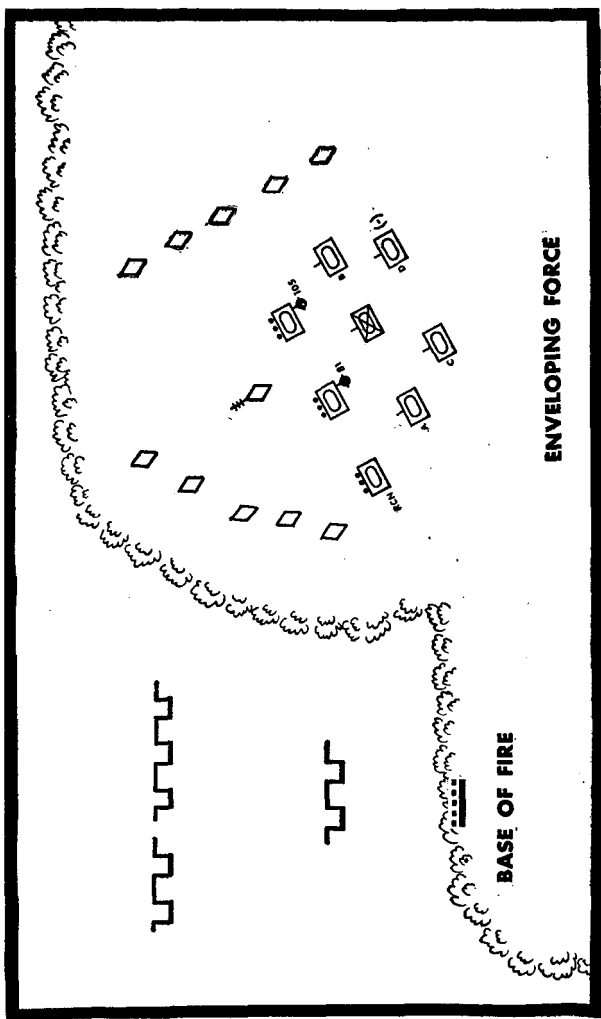


Figure 51. Movement to attack positions in an envelopment by a reinforced tank battalion.

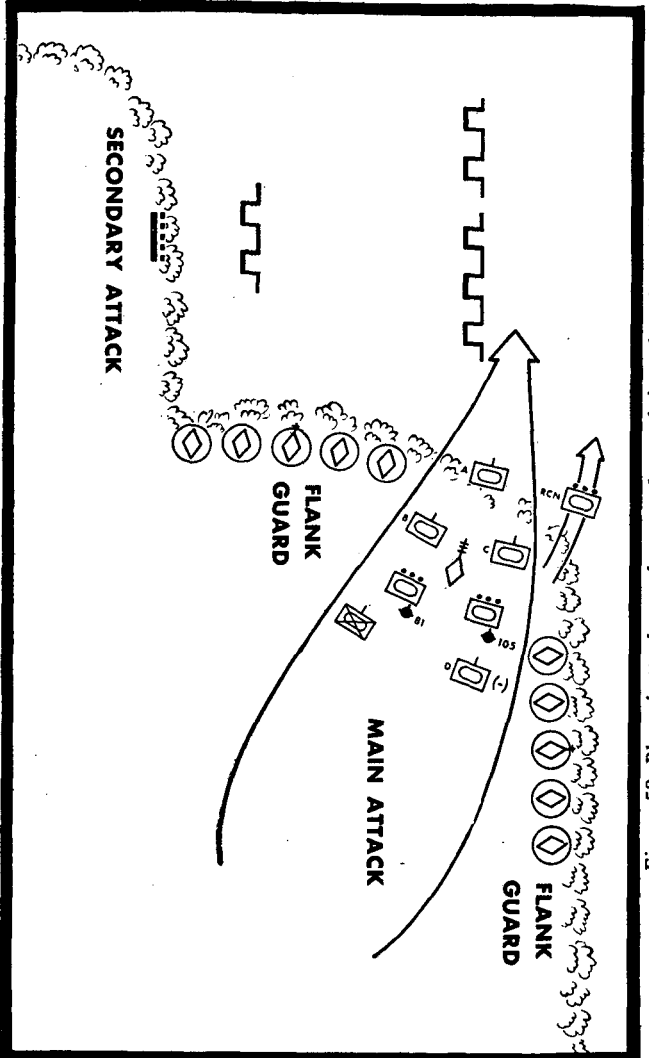


Figure 52. Plan of attack, envelopment by a reinforced tank battalion.

of fire. The remainder of the battalion envelops one or both flanks. The base of fire may begin the fire fight before the envelopment starts in order to contain the bulk of the enemy. The reconnaissance platoon is used for flank reconnaissance.

(1) *Single envelopment*. (See fig. 53.) This is undertaken on the flank that offers the best terrain unless antitank defenses are strong. To avoid anti-tank defenses and obtain surprise it may be better to use tanks over the difficult terrain. A successful initial envelopment may be exploited by passing to a double envelopment through use of reserves.

(2) *Double envelopment* (fig. 54). This action requires considerable superiority of numbers and fire. The battalion must be capable of deploying on a broad front against an enemy on a much narrower front or with little capability or room for maneuver. Reserve elements may complete the envelopment by an attack from the rear.

**d. BATTALION AS PART OF AN ENVELOPING FORCE.** As part of an enveloping force tanks may lead, if terrain is suitable, they may attack with infantry or support an infantry attack, or they may be held in reserve until infantry seizes ground from which a tank attack may be launched.

## **57. Attack by Penetration**

*a.* A penetration is used when lack of time or the disposition of the enemy does not favor envelopment. Armored units seek to attack through weak spots. Attack is made through a well organized position only when attack on other points is impracticable.

*b.* A penetration is characterized by attack on a narrow front with deep formations, complete rupture of the enemy's position, seizure of the objective by operation through the gap, and subsequent envelopment of one or both of the flanks so created. There is a

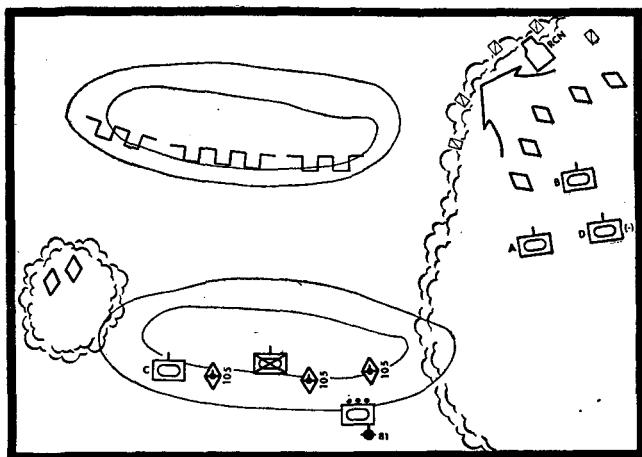


Figure 53. Single envelopment by a reinforced tank battalion acting alone.

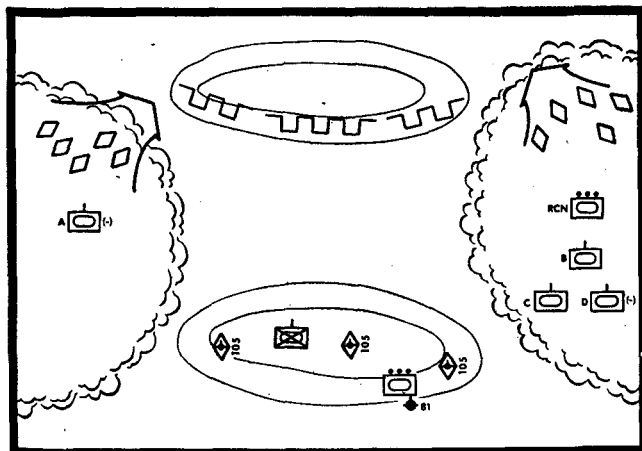


Figure 54. Double envelopment, reinforced tank battalion.

maximum coordination of all means of attack, with a massing of all available supporting fires.

*c.* The wider the breach made in the enemy's defenses, the deeper the penetration can be driven. The deeper the penetration the more effective will be the action of reserves in seizing the objective and rolling up the hostile flanks on either side of the breakthrough. Normally the frontage of the initial attack will not exceed 1500 yards when the assault echelon is a tank battalion. The battalion usually attacks in a column or wedge formation. The latter formation usually is best as it affords more support and better flank protection for the leading company.

*d.* The attack is made in three echelons. In application of the principles discussed in paragraph 38, the following missions may be assigned the echelons in a *penetration of a weak spot or gap* in the enemy's front (fig. 55):

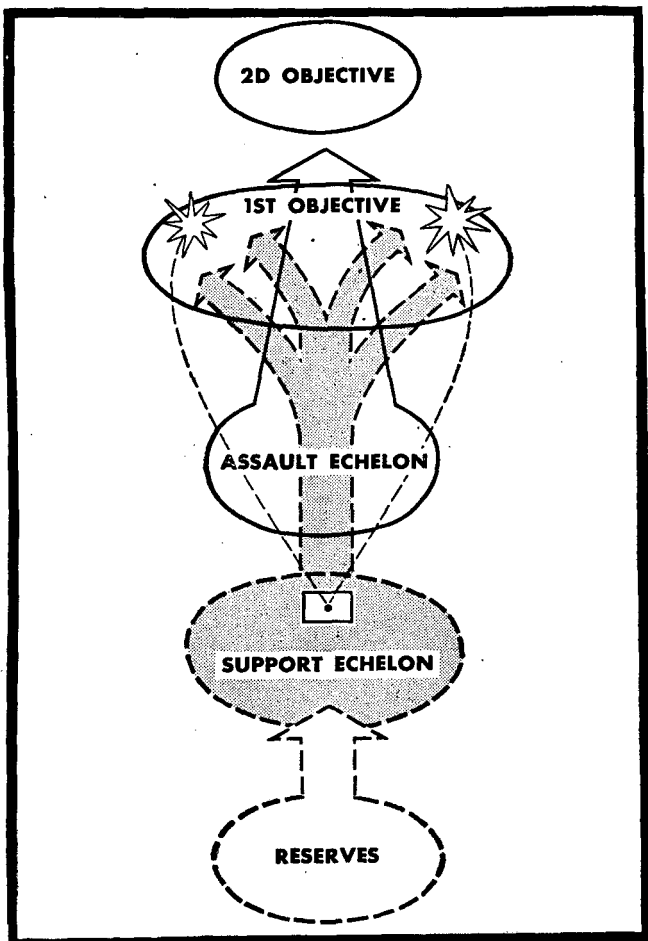
(1) *The assault echelon* makes the initial breakthrough. Supporting troops may have to attack first to seize ground from which the assault echelon may attack.

(2) *The support echelon* assists in the breakthrough, seizure of the objective, and exploitation of the success. As soon as the penetration is accomplished, the artillery is prepared to shift to the flanks of the gap to assist in keeping it open.

(3) *Tanks of the reserve echelon* are held in readiness to repel counterattacks.

*e.* Against a more strongly organized position infantry assists more closely in the breakthrough. The support echelon may have to pass through the assault echelon to accomplish the breakthrough or may be employed in widening the gap and enveloping the flanks. Tanks of the reserve echelon may be used later to operate through the gap in attacking the objective.

*f.* PENETRATION TO A DEEP OBJECTIVE. See FM 17-100.



*Figure 55. In penetration of a weak position, the assault echelon takes the first objective and continues to the second objective. The support echelon consolidates the first objective and prepares to continue forward. Artillery places fire on flanks of the penetration. The reserve may be employed to widen the gap, repel counterattacks, or reinforce the assault.*

## 58. Action Upon Reaching the Objective (fig. 56)

a. Plans for the attack include action to be taken upon reaching the objective. They include neutralization of the objective until arrival of the infantry, use of smoke or shell fire to neutralize or destroy hostile antitank guns, assistance to infantry in mopping up the position, protection against counterattack, and rallying.

b. Upon reaching the objective enemy resistance is overrun and tanks are placed in position to cover the objective by fire. Halting on the skyline is avoided. Assistance of artillery and mortars is called for to neutralize antitank guns beyond the position. Enemy resistance within the area is reduced by gunfire. Emplaced hostile weapons are destroyed by gunfire rather than crushing as approaches will be mined usually.

c. As the infantry arrives tanks assist in the complete reduction of the position, and some tanks are sited to cover favorable avenues of counterattack for hostile armor until antitank guns are in position.

d. As the infantry organizes the position and antitank guns take over the antimechanized defense, some tank units may be relieved and sent to the rallying point. *It is imperative that some tanks remain near to assist in repelling counterattacks until the position is fully organized.*

e. If the attack is to be continued the battalion is quickly reorganized and prepared for action. Tanks do not move forward of the objective unless covered by fire of direct fire weapons.

## 59. Meeting Engagement

a. A meeting engagement is a collision between two opposing forces enroute. As the tactical situation which develops on first contact may have a strong influence on the course of subsequent action, great advantage accrues to the force which first completes effective preparations for combat. Action cannot await



*Figure 56. After taking the objective, take positions to cover the objective by fire, where supporting weapons can cover the tanks. Keep off the sky line. Infantry advances rapidly to relieve the tanks.*



the result of detailed reconnaissance. Prompt estimate of the situation, decision, and action are essential to success (FM 100-5).

*b.* The tank battalion may participate in a meeting engagement as advance guard for a larger force or as part of the main body. The attack will be made usually from march column, if the battalion is advance guard. As part of the main body the battalion may attack from march column or go into an assembly area prior to the attack.

#### **60. Attack from March Column (fig. 57)**

*a.* A tank battalion or larger unit may be deployed for attack without first going into an assembly position. If a meeting engagement by the advance guard reveals apparent superiority over the enemy, a rapid attack from march column may deprive him of freedom of action and prevent the coordinated employment of his forces, either in defense or attack.

*b.* If the advance guard is opposed by very weak forces, the commander of the main body may direct that the reserve of the advance guard be used at once to turn this attack into the main attack by penetration.

*c.* If a penetration appears inadvisable, due to the terrain or the tactical situation, the main attack is delivered as an envelopment.

*d.* Attack from march column is characterized by—

(1) *Immediate orders and rapid action.*

(2) *Initial issuance of fragmentary orders* in a sequence based on the priority of, and time required for, execution. However, instructions given in the deployment order are as complete as possible so that the attack order may be brief.

(3) *Decentralized control* because of the lack of time for full coordination.

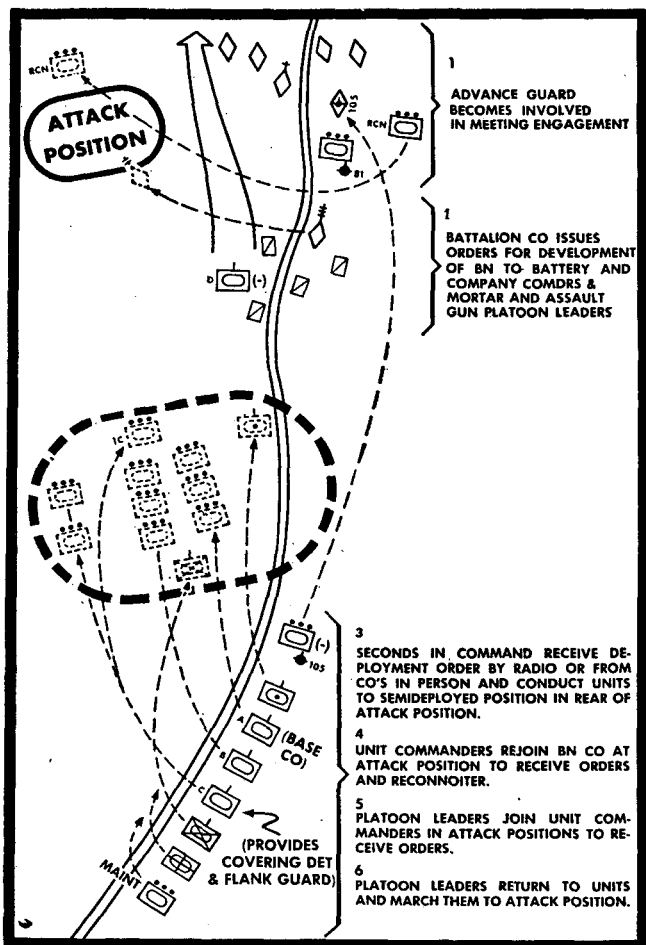


Figure 57. Attack from march column.

(4) *Detail of a strong covering detachment and flank guards* during development for the attack and for the maneuvering elements. After the covering detachment has been stopped, rapid reconnaissance is made visually by commanders or by probing patrols.

*e.* The following are steps in the development of a reinforced tank battalion into attack formation from march column:

(1) The battalion commander, as soon as he makes his decision to attack, requests the artillery to cover both the development and the attack.

(2) The main body is ordered forward to form multiple columns, generally disposed in the order in which they will be employed. This move is protected by a covering detachment and flank guards, usually detailed from the reserve companies. The companies are told where to halt, usually under cover and concealment in rear of the general attack position area. A base company may be designated on which the other companies will form. During this move company and other element commanders go forward to meet the battalion commander at the attack position to receive their orders and to reconnoiter routes.

(3) As soon as elements reach their positions in rear of the attack position, platoon leaders go forward to meet the company commanders, receive orders, and make any further reconnaissance necessary. A base company again may be designated to help in coordination of the move through the attack position to the line of departure.

(4) The move to the attack position is timed so that there is only a momentary halt there by all elements before crossing the line of departure. However, in some cases, it may be necessary to allow time for orientation of tank commanders.

*f.* If the column is unexpectedly attacked, each company moves directly to the attack. It rallies on

the road or at such other place as the battalion or company commander may direct. When company commanders are at the head of the battalion column they return to and assume command of their companies with all possible speed.

*g.* When attacking armored troops from march column, maneuver to bring maximum fire on a portion of the enemy, while containing the remainder with a small force or blinding him with smoke.

## **Section II. PREPARATION FOR ATTACK**

### **61. Reconnaissance**

Reconnaissance is covered in detail in FM 2-20, 2-30, and 17-32.

*a.* A combat command or other unit to which the tank battalion is attached furnishes available information of the enemy and terrain that will be helpful to the tank battalion. Unless acting entirely alone, the battalion performs only close route and battle reconnaissance.

*b.* **RECONNAISSANCE PROCEDURE.** The battalion commander, staff officers, and subordinate commanders make personal reconnaissance of as much of the area of employment as practicable. The steps of reconnaissance are depicted in figure 58. Each commander is assigned a zone to reconnoiter. This zone is the one tentatively decided upon as that in which his unit is to operate. Specific reconnaissance missions are given to each commander and all are told when and where to report. These missions include—

- (1) Suitability of terrain for tanks.
- (2) Additional information of the enemy.
- (3) Attack positions and line of departure.
- (4) Landmarks, possible boundaries and axes of maintenance.
- (5) Firing positions (should not be in or near infantry attack positions).

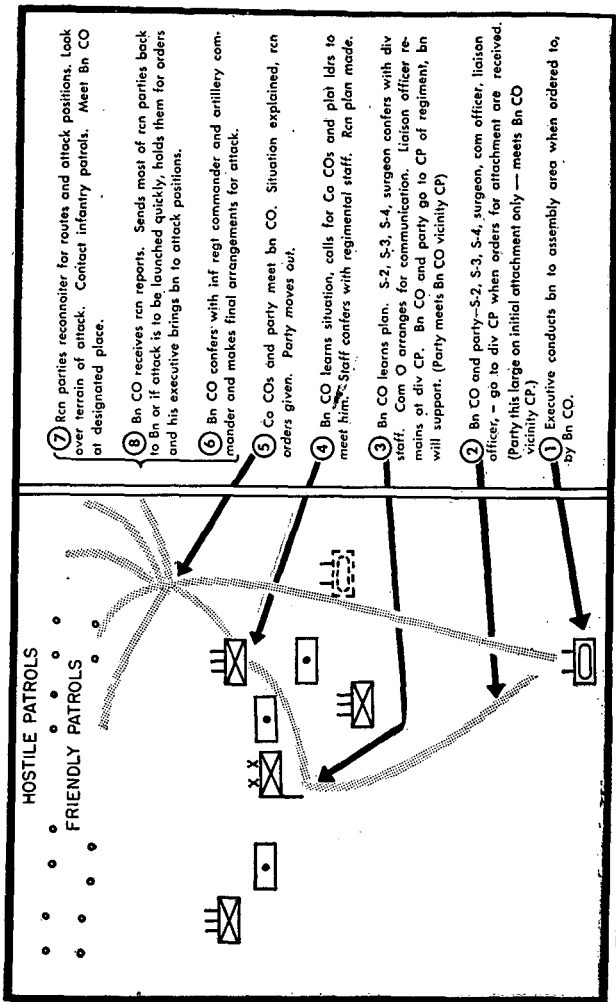


Figure 58. Reconnaissance procedure for a tank battalion attached to an infantry division.

(6) Likely targets and possible enemy observation posts.

(7) Routes of advance to attack positions and points where guides will be needed.

(8) Preliminary contact with the infantry or reconnaissance units and the first steps of continuous coordination.

*c.* Ample time should be allowed for reconnaissance. Each platoon leader and, when practicable, each tank commander should view the terrain over which the attack is to take place and have the initial objective pointed out to him.

*d.* Reconnaissance is continuous throughout the action.

## **62. Preliminary Coordination**

*a.* Careful planning, exact coordination and timing, and vigorous execution are essential to a successful attack. Preliminary coordination is started as soon as the decisions and general plans are made, since it covers the whole plan of attack.

*b.* Coordination is obtained by clear orders covering all phases of the action, including alternate plans in case the objective is not taken, and tentative plans for continuation of the attack. Commanders or their staff officers confer and make certain that each unit knows exactly what the other units or elements are going to do and when they are to do it. Close liaison is maintained. Communications are checked. Care is taken that fires are distributed so that the enemy is neutralized at all threatening points, and yet the majority of fires are concentrated at the principal point of attack. The timing of the supporting fires and attacking arms is planned so that they complement each other. All troops are given full information of the action of all supporting arms. Arrangements are made for communication and liaison.

c. After receiving his orders, performing his reconnaissance, making his estimate of the situation, forming his plan, and arranging the necessary coordination, the battalion commander issues his orders for the attack and directs his company commanders to make further necessary arrangements for coordination by contact with units with which they are concerned.

d. In a meeting engagement or attack from march column, coordination and control are sacrificed for speed. However as the situation progresses, the battalion commander makes every effort to regain complete control, and to coordinate the efforts of the various elements of his command.

### **63. Supporting Fires** (See fig. 59)

A well coordinated fire plan includes artillery, aviation when available, infantry and tank supporting weapons, weapons of attached chemical troops, tank destroyers, and the fire of the tanks themselves. Details of this plan are agreed upon in the preliminary coordination conferences. Supporting fires move with the advance, lifting at the last possible moment in order to keep enemy personnel pinned down until the assault elements are upon them. These fires must lift soon enough to prevent losses to our troops. Any schedule of supporting fires must be highly flexible as unforeseen incidents always are to be expected. It includes initial fires and supporting fires during the attack and after the objective is taken. All hostile antitank guns located before the attack are engaged by prearranged fires and destroyed or neutralized. Fire is immediately placed on and kept on any anti-tank gun discovered during the attack.

a. ARTILLERY. (1) Normally, one armored artillery forward observer is available to the tank battalion. He travels in his own medium tank (separate tank battalions are authorized one extra tank for the ar-

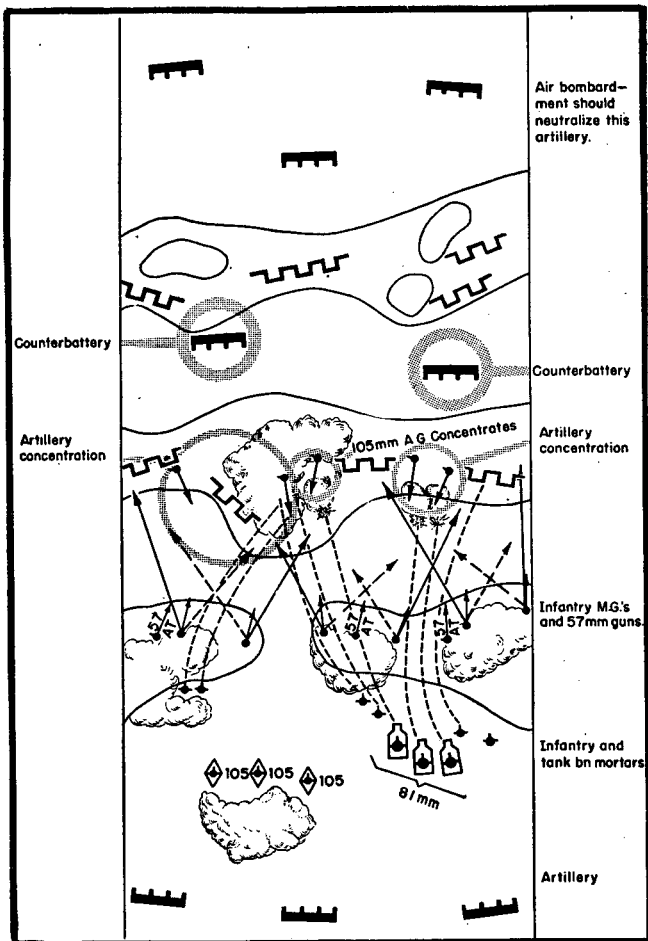


Figure 59. Fire support.



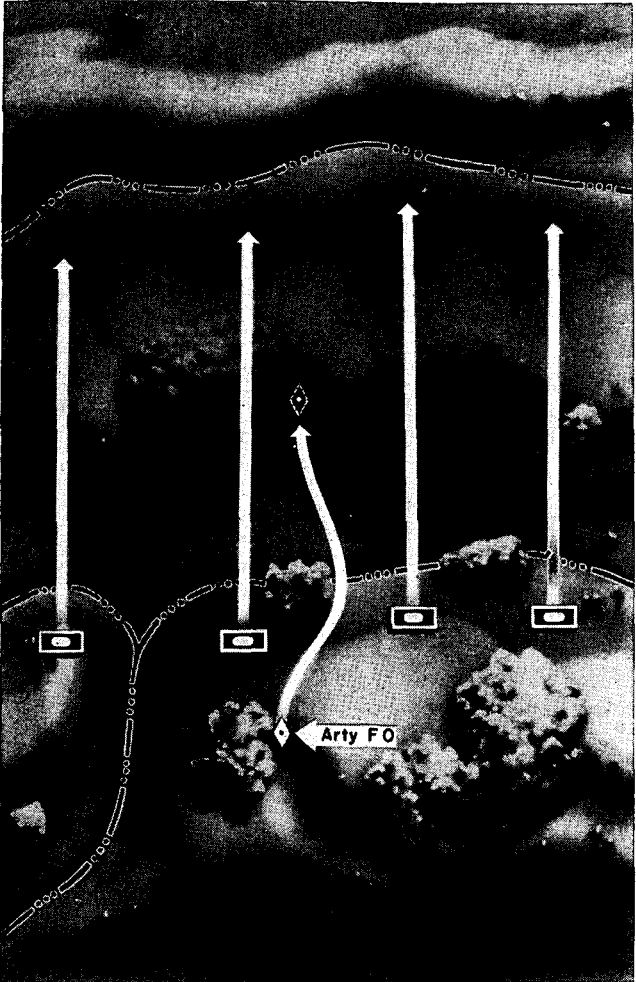
tillery forward observers) and calls for, observes, and adjusts artillery fires within the zone of observation assigned by the artillery battalion commander. He coordinates his efforts and movements with the supported tank battalion. He does **NOT** necessarily remain *with* the tank battalion commander but moves where he can best observe and adjust fires. (See figure 60.) One receiver of the SCR-508 radio set is tuned to the tank battalion command net so that any tank officer in the battalion may request or adjust fire through the battalion commander. Company commanders usually have one of the artillery fire direction channels set on their radios for direct contact with the artillery fire direction center in case the observer is not in position to handle a request for and the adjustment of fire. Tank officers request fires through the tank battalion commander. If communications fail, they request fire through any available channel.

(2) Each officer must know how to call for and adjust fire. The battalion commander in his attack order designates a series of concentrations and check points (easily identifiable terrain features) to be marked on maps and numbered consecutively in the direction of advance. These numbered concentrations and check points are the same as those used by the artillery.

(3) *What the tanks may expect of the artillery.*  
(a) *Support during the move from the bivouac to the assembly position.* Counterbattery fire against hostile artillery is the principal support to be given.

(b) *Support during the move to attack positions.* Although counterbattery fire is still of prime importance, neutralization of advanced antitank weapons and supporting fires for mine removal parties are provided.

(c) *Support during the actual attack.* Here the



*Figure 60. The forward observer moves where he can adjust fire.*

primary targets are antitank weapons, and all available artillery fire is used in a heavy preparation to protect the assault echelon. During the attack, fire is adjusted on observation posts, enemy artillery, targets of opportunity, and, in general, areas of resistance. The artillery usually concentrates on any hostile troops and weapons holding up the attack. (See figs. 61 to 63.) When tanks alone compose the first force to reach the objective, they may be covered by artillery time fire until they can destroy all weapons found there, or until supporting infantry arrives.

(d) *Support against counterattack.* Observed fire is massed in sufficient volume to break up counterattacks, especially armored threats from the flanks. Prearranged interdiction fires may be delivered on routes of approach.

(e) *Support during rally.* Artillery assists in the protection of reorganization by massing fires as needed on threatening hostile elements and by counterbattery.

(f) *Support during recovery of disabled vehicles.* In rare instances artillery may be called upon to furnish smoke to screen recovery of disabled vehicles.

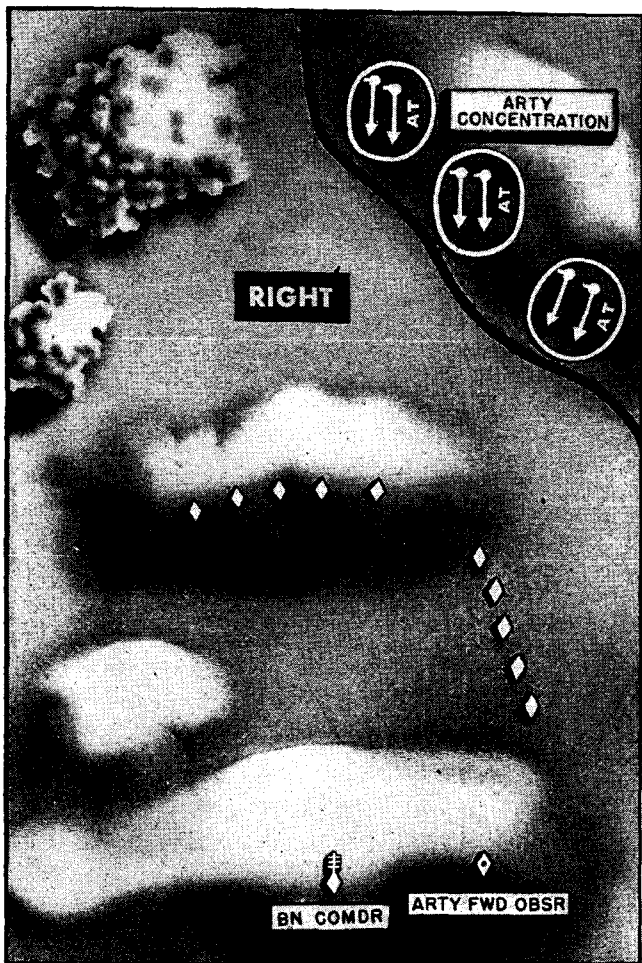
(4) The artillery must *not* be expected to fire missions that can be successfully accomplished by assault guns, mortars, or tank guns. (Figs. 64 and 65.)

(5) *Use of smoke.* The use of smoke by artillery is of utmost importance in all phases of the support of tanks. These uses are fitted into the plan of action (see par. g).

(6) *Liaison.* The presence at the tank battalion CP of an artillery liaison officer, if available, is desirable.

b. AIR SUPPORT. (1) When available, combat aviation is used to supplement artillery and to attack targets beyond the range of artillery.

(2) The battalion makes its air bombardment re-



*Figure 65. Save artillery for important targets such as groups or antitank guns.*

quest through the combat command or division (division to which attached).

*c.* **INFANTRY SUPPORT.** The infantry supports the attack of tanks with machine guns, mortars, howitzers and other organic weapons (fig. 66). The infantry must always be on the alert to neutralize or destroy antitank weapons and defenses holding up the tanks and to attack enemy infantry making close-in attacks on tanks. Infantry units attacking with, or close behind, tank units must attempt to reach the objective at the same time or shortly after the tanks have reached it. Tanks can take an objective, but they should not be required to hold it. See FM 17-36 for coordination of the infantry-tank attack.

*d.* **ENGINEER SUPPORT.** Engineers may be needed in any phase of offensive action to facilitate the movement of tanks by removing or assisting in the passage of obstacles and mine fields, by strengthening bridges, and by constructing, repairing and maintaining river crossings. Combinations of demolitions and natural or artificial obstacles are used to hinder or canalize movements of hostile forces (FM 17-45).

*e.* **MORTAR FIRES (FM 17-27).** The primary mission of mortars is to neutralize enemy antitank guns or observation with HE or smoke shells. The high angle mortar fire is used against reverse slopes and against point targets when the use of flat trajectory weapons is impracticable. The mortars are retained under battalion control when the attack is on a narrow front. When the front becomes so wide that effective support cannot be given the leading companies, individual mortar squads are attached to companies.

*f.* **ASSAULT GUN (FM 17-25).** Assault guns give close support by firing on small area targets, point targets, and by filling gaps in artillery concentrations or smoke screens. The same principles of attachment



*Figure 66. Infantry supports tanks with all available weapons. This figure shows also artillery and air support.*

primary targets are antitank weapons, and all available artillery fire is used in a heavy preparation to protect the assault echelon. During the attack, fire is adjusted on observation posts, enemy artillery, targets of opportunity, and, in general, areas of resistance. The artillery usually concentrates on any hostile troops and weapons holding up the attack. (See figs. 61 to 63.) When tanks alone compose the first force to reach the objective, they may be covered by artillery time fire until they can destroy all weapons found there, or until supporting infantry arrives.

(d) *Support against counterattack.* Observed fire is massed in sufficient volume to break up counterattacks, especially armored threats from the flanks. Prearranged interdiction fires may be delivered on routes of approach.

(e) *Support during rally.* Artillery assists in the protection of reorganization by massing fires as needed on threatening hostile elements and by counterbattery.

(f) *Support during recovery of disabled vehicles.* In rare instances artillery may be called upon to furnish smoke to screen recovery of disabled vehicles.

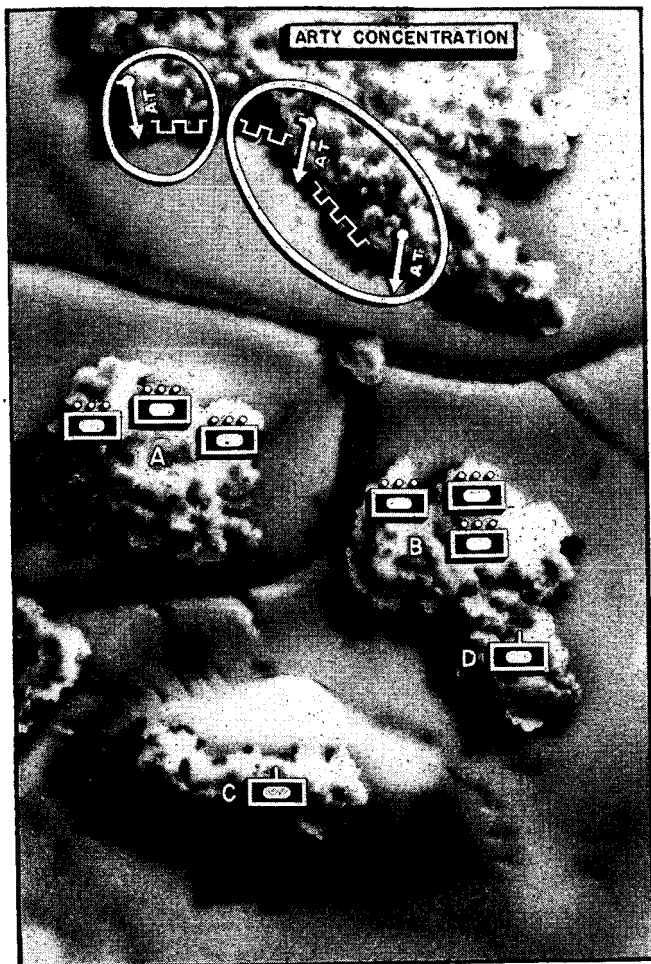
(4) The artillery must *not* be expected to fire missions that can be successfully accomplished by assault guns, mortars, or tank guns. (Figs. 64 and 65.)

(5) *Use of smoke.* The use of smoke by artillery is of utmost importance in all phases of the support of tanks. These uses are fitted into the plan of action (see par. g).

(6) *Liaison.* The presence at the tank battalion CP of an artillery liaison officer, if available, is desirable.

b. AIR SUPPORT. (1) When available, combat aviation is used to supplement artillery and to attack targets beyond the range of artillery.

(2) The battalion makes its air bombardment re-



*Figure 61. Artillery is used to support attack where practicable. Here Companies A and B are held up by antitank fire. Artillery is available and can bring down much more effective fire than can Company C. Company D secures flank.*



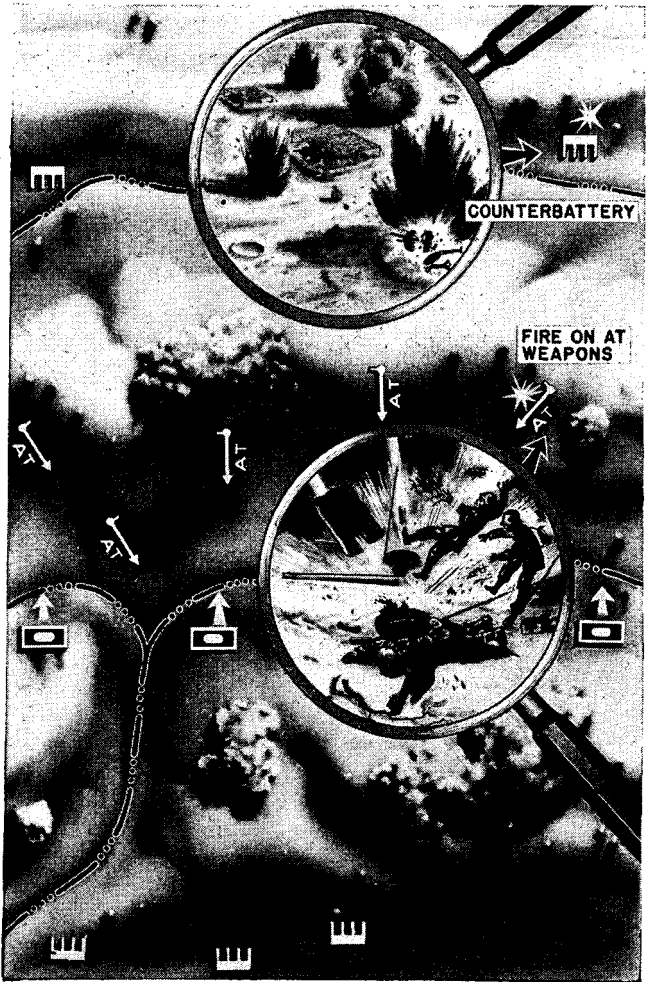


Figure 62. Two missions of prime importance for the artillery are counterbattery and fire upon antitank guns.

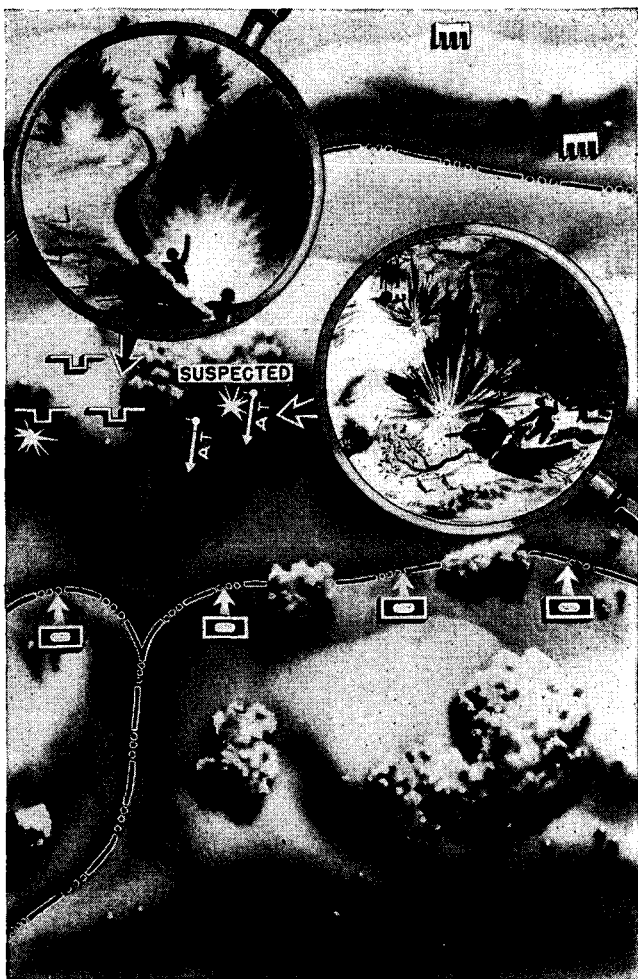
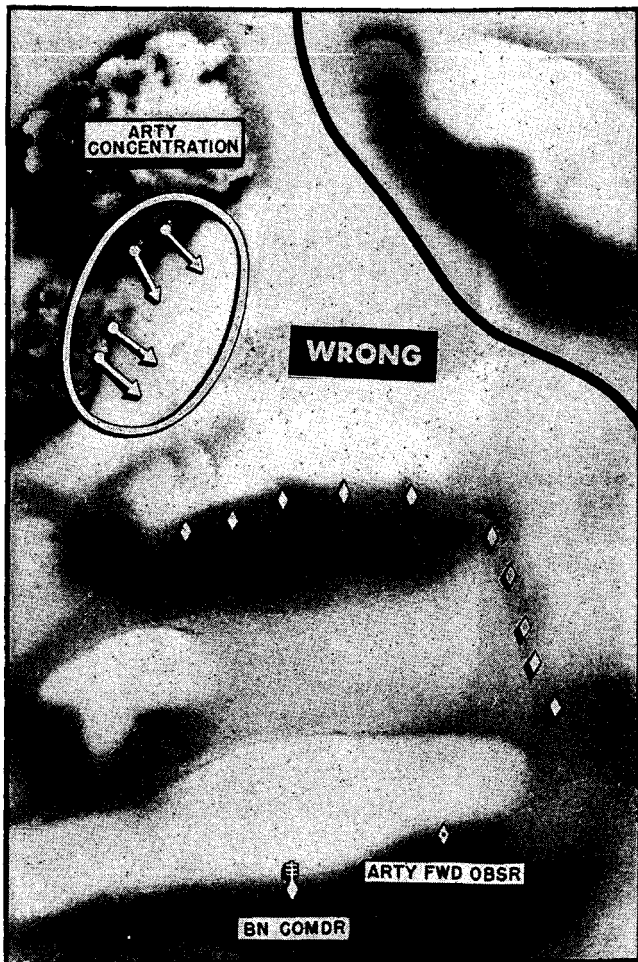


Figure 63. Fire on areas in which antitank guns are suspected. Neutralize hostile organized positions.



*Figure 64. Do not call for artillery fire on unimportant missions. Here valuable ammunition is wasted on machine guns which the tanks themselves can easily overcome.*

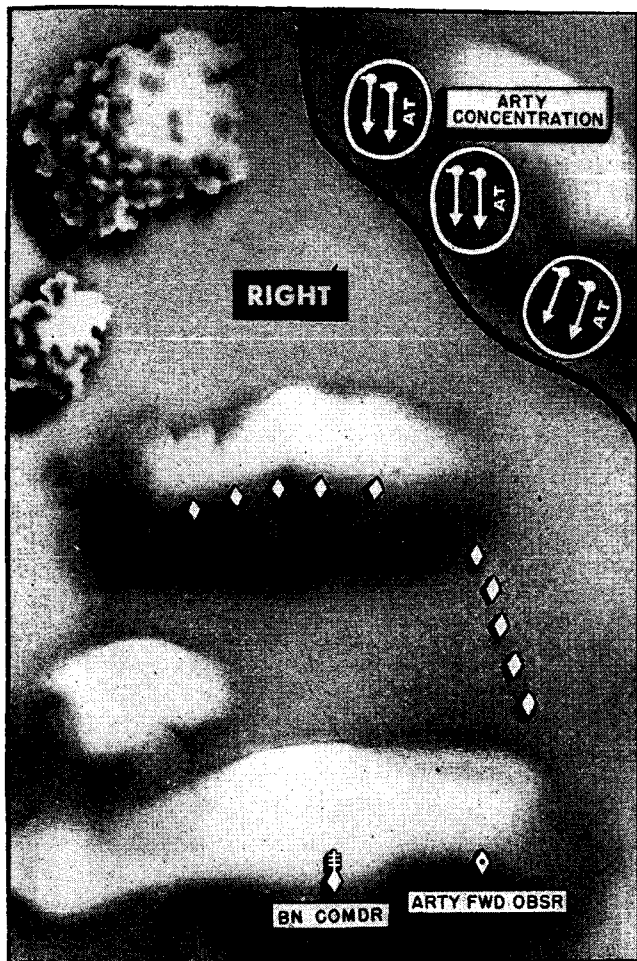


Figure 65. Save artillery for important targets such as groups or antitank guns.

governing the mortar platoon apply to the assault gun platoon.

*g.* USE OF SMOKE. (See fig. 67.) (1) Smoke skillfully used can be of great aid to attacking tanks and infantry (FM 17-36): promiscuous and ill-planned use may be a hindrance. Supporting infantry, artillery and chemical mortars may provide smoke. Smoke projecting means available in the tank battalion are the 81-mm mortar, 75-mm and 105-mm smoke shell, smoke grenades and the 2" smoke mortar in the medium tank.

(2) Use smoke to:

(*a*) Neutralize antitank guns.

(*b*) Disorganize enemy attacks.

(*c*) Indicate targets and mark front lines for air bombardment.

(*d*) Blind hostile observation.

(*e*) Screen mine lifting operations.

(*f*) Screen movements of tanks and infantry.

(*g*) Screen withdrawal from action.

(*h*) Screen reorganization.

(*i*) Screen the escape of crews of disabled tanks.

(*j*) Isolate enemy areas from their supporting fires (fig. 68).

(*k*) Separate attacking enemy elements from their supporting fires.

(3) Often tanks and infantry can follow smoke into the enemy position. However this movement must be timed so that the tanks will not be blinded by smoke. The direction of attack may be decided by the direction of smoke wind.

(4) The use of smoke requires a careful estimate. Smoke may be used to hamper the enemy, but must not be permitted to interfere with the tank battalion's operations or those of adjoining friendly units. Carefully consider the plan of maneuver, the direction and velocity of the wind, the atmospheric conditions, and

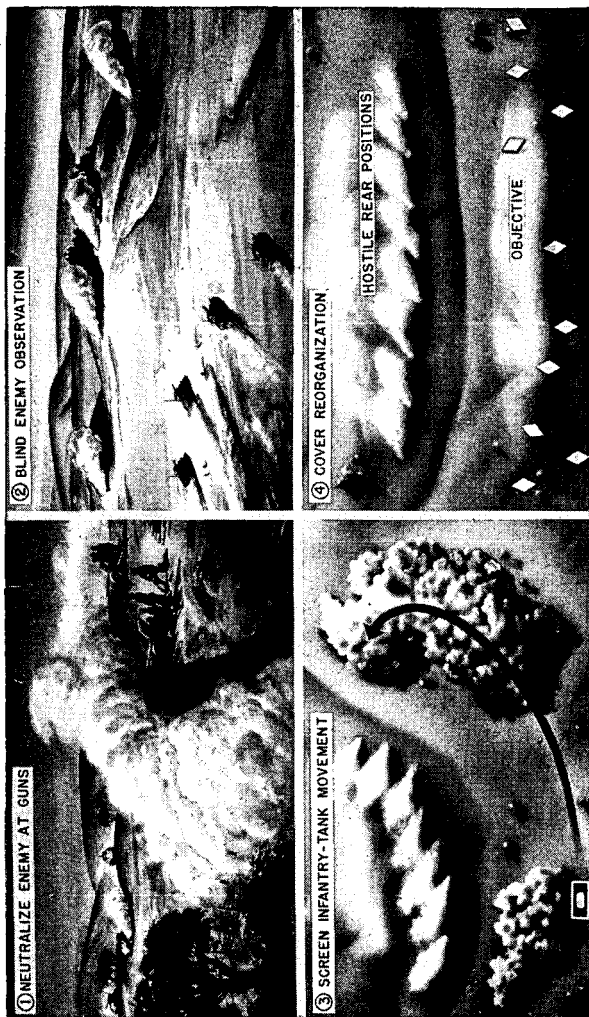


Figure 67. Use of smoke.



*Figure 68. Isolate the objective with smoke and fire.*

the type and amount of smoke-producing agents available.

*h. TANK SUPPORT.* (1) Tanks support a tank attack or a combined infantry and tank attack by fire or by fire and maneuver (fig. 69).

(2) Indirect fire to reinforce artillery is used by tanks which cannot be more profitably employed in direct fire or maneuver missions. The use of tanks as reinforcing artillery requires that extra ammunition be dumped at the firing positions (FM 17-12).

#### **64. Liaison**

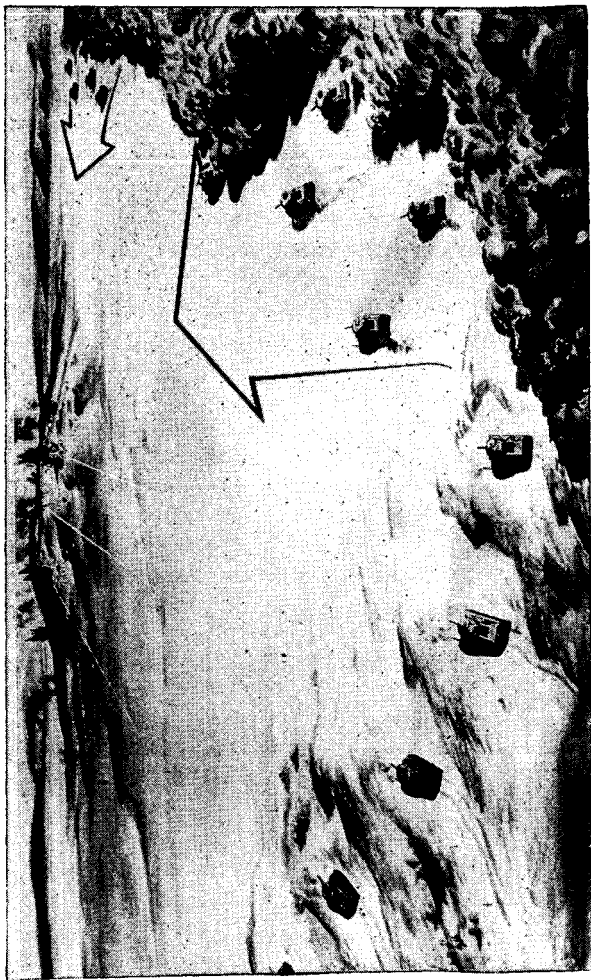
Liaison is the responsibility of the *supporting* unit and must be continuous from the time the unit is alerted or attached until it is relieved. Maintenance of this liaison is a function of the tank unit commander. Liaison may be maintained by radio and messenger, through conferences between the unit commanders themselves, or by the presence of a liaison officer from the supporting unit at the supported unit CP.

*a. TANK BATTALION.* Liaison is performed by the commander and his staff, including the liaison officer.  $\frac{1}{4}$ -ton trucks and  $\frac{1}{2}$ -track vehicles equipped with radio are used for transportation.

(1) *Before combat.* If the battalion is to operate under armored group or combat command control, a liaison officer is kept at the higher unit CP. When attached to another unit the battalion commander, upon receiving orders or warning orders, proceeds with member of his staff to the unit CP, obtains all possible information, and leaves a liaison officer at the CP.

(2) *During combat.* The battalion commander keeps a liaison officer at the CP of the higher unit or the unit to which the battalion is attached. During lulls in combat or when new attacks are being organ-





*Figure 69. Tanks supporting a tank attack by fire.*

ized the battalion commander personally confers with the supported unit commander.

*b. TANK COMPANY.* Liaison is performed by the company commander or his representative. The company has a quarter-ton truck equipped with an SCR-510 radio set that can be used for liaison purposes. In addition, the company commanders', platoon leaders', and platoon sergeants' tanks are equipped with radio sets AN/VRC-3 for liaison with infantry.

(1) *Before combat.* A liaison agent is kept at battalion headquarters.

(2) *During combat.* The company commander maintains liaison with the battalion commander by radio or by personal contact when that is possible. When attached to an infantry unit he keeps the liaison corporal at the infantry unit CP. Full use is made of the liaison radio sets for close coordination with infantry troops.

*c. DUTIES OF LIAISON OFFICER.* (See par. 12 f and FM 101-5.)

## **65. Plans and Orders**

*a. Action prior to the attack.* After receiving the plan of attack and effecting preliminary coordination, the battalion commander:

(1) Makes a map and personal reconnaissance of the routes to the attack position and line of departure. From an observation point he studies the ground over which he is to attack.

(2) Causes company commanders and as many lower unit commanders as practicable to make personal reconnaissance.

(3) Contacts infantry and reconnaissance units in the zone, obtains all information they have concerning the terrain and the enemy, and arranges for fire sup-

port and passage of lines. If infantry attacks first, he arranges for liaison.

(4) Makes an estimate of the situation.

(5) Requests additional fires or changes in the artillery fire plan if desired.

(6) Requests desired air bombardment.

(7) Plans his attack.

(8) Issues his attack order (Appendix II).

*b. Plan of attack.* The plan of attack includes—

(1) *Formation.* The battalion commander prescribes the battalion formation.

(2) *Objective.* The first objective and final objective are designated. Intermediate objectives may be designated. The first objective is usually the enemy second line position or a prominent terrain feature in rear of his front installations. Objectives should be easily discernible terrain features (fig. 70).

(3) *Direction of attack.* The objectives determine the direction of attack. However, an azimuth of attack is given usually. If a change of direction becomes necessary, it should be made on a prominent terrain feature (fig. 71).

(4) *Boundaries.* Boundaries rarely are designated unless two battalions are attacking abreast. The boundary is then designated by a higher commander. Each company is given a frontage. A road or clearly defined terrain feature may be used as an axis of advance with boundaries roughly designated as a given distance to the right or left of the axis. Designation of objective often is sufficient.

(5) *Line of departure.* See paragraph 51d.

(6) *Time of attack.* This is normally set by higher headquarters and is on time or by signal. When infantry attacks before the tanks, the tanks usually attack upon signal.

(7) *Installations.* Locations of these are designated by the battalion commander.

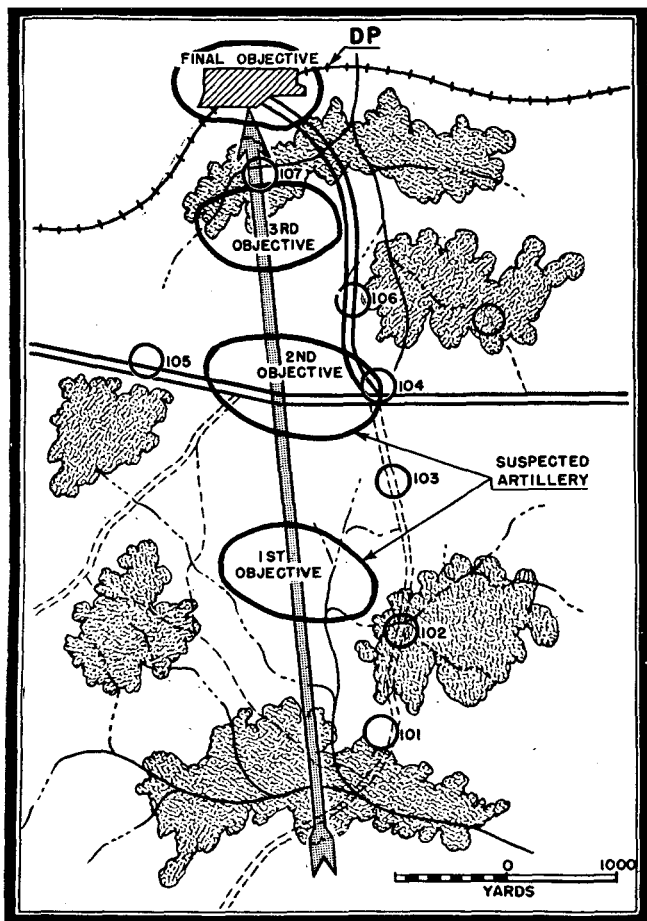
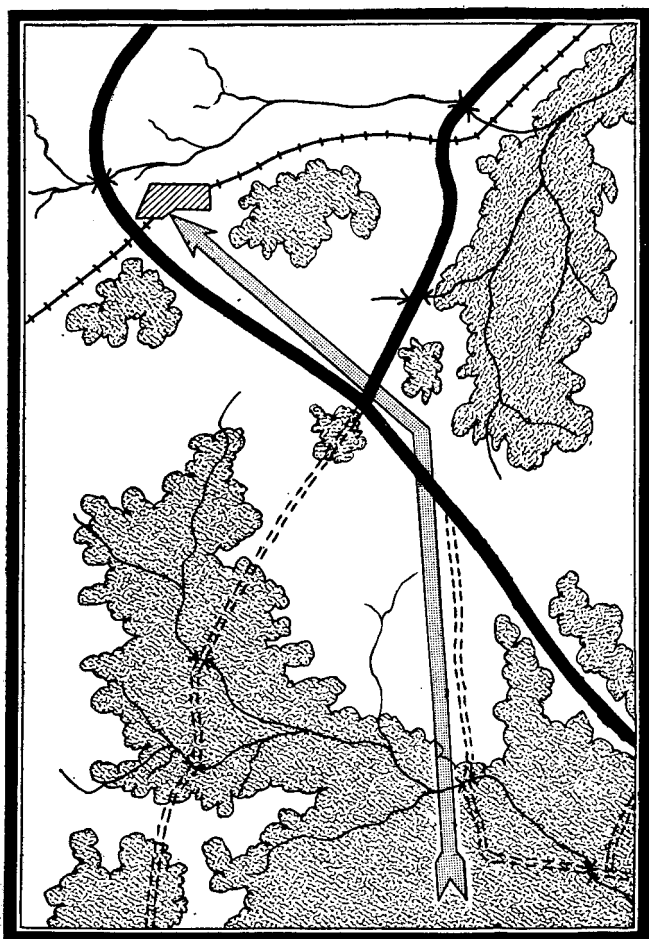


Figure 70. Plan of attack showing objectives. 2d and 3d objectives are tentative only. Note: Numbers designate artillery concentrations.



*Figure 71. Plan of attack. If change of direction is necessary, make it at a well-defined terrain feature, and give a new azimuth to be doubly sure the direction is correct.*

## **66. Attack Through Infantry**

*a.* If the attack is made through infantry, special arrangements are made for passage of lines. The battalion commander contacts the infantry commander in his zone and arranges for this passage. Each company commander contacts the infantry troops in his part of the zone and makes arrangements whereby foot troops indicate their positions so they will not be endangered by tanks. Guides are posted as necessary. Special signals may be needed to indicate when the last tank element has passed. *Special care must be taken to prevent damage to telephone lines.*

*b.* When infantry attacks first to clear a passage through obstacles, liaison with the infantry commander is maintained by the battalion commander. The infantry or engineers post guides to show tanks where to cross the obstacles.

## **67. Battalion Headquarters**

*a.* In the approach to combat and in combat, the battalion has with it only those individuals and vehicles necessary for the control, maintenance and evacuation of the battalion and for the resupply of the battalion in the assembly position. All supply vehicles, fuel, ammunition, and kitchen trucks, if with the column, are left at the assembly position to be moved forward as directed by the next higher commander. The administration and personnel section is with the combat command or division trains.

*b.* The forward echelon of battalion headquarters (app. III) moves with the battalion to the attack position. During combat the battalion commander, the S-3, and the artillery forward observer move forward with the battalion; the executive officer and S-2 remain at the attack position. The battalion medical section, and such other vehicles and personnel as the battalion commander may direct, are prepared to

move forward upon order. The actions of maintenance and medical personnel are covered in Chapter 7. The executive officer moves this group forward as directed by the battalion commander. This group follows the attack by bounds.

### **68. Movement to Attack Positions**

*a.* Guides are posted or routes marked to attack positions. The battalion moves out, protected by a covering detachment, unless preceded by other units. The covering detachment is usually from the reserve company and takes up positions to protect the attack position and support the attack. The mortar platoon and assault gun platoon follow the covering detachment and go into position. The leading companies follow in separate or multiple columns, depending on the terrain. The reserve, battalion headquarters (less the command group), and designated maintenance elements move last. The battalion commander and S-3 move behind the covering detachment. The artillery observer moves with the battalion commander or goes to the attack position where he will be ready to observe and adjust fires.

*b.* In many cases, when the battalion commander, S-3, company commanders, and platoon leaders are in the attack position completing their final orders, reconnaissance, and coordination, the battalion is brought forward by the executive.

*c.* If it is impossible to move in multiple columns from the assembly position to the attack positions, those companies and elements which are to lead the attack, or which take the longest to deploy, lead the march.

### **69. Battalion in Reserve**

*a.* A battalion in reserve is prepared to relieve a depleted assault battalion, to repel a counterattack,

to pursue a defeated enemy, or to move rapidly to a flank to extend an envelopment. The reserve is located in a position from which it can be prepared best to support the main attack and cover the flanks.

*b.* THE BATTALION COMMANDER OF THE RESERVE BATTALION. (1) Keeps himself constantly informed of the situation and of the higher commander's plans, either by personal contact with the commander and his staff or through the battalion liaison officer.

(2) Maintains a liaison officer at the higher unit command post.

(3) Constantly studies the map and plans movements in keeping with the changing situation.

(4) Initiates route reconnaissance for possible movements of the battalion.

(5) Keeps his battalion informed of the situation.

### **Section III. THE ATTACK**

#### **70. Conduct of the Attack**

*a.* The battalion commander goes where he can observe and best influence the action. He is usually immediately in rear of his assault companies. By personal orders or by the use of his staff he directs the companies as necessary.

*b.* As the attack progresses, the battalion commander, or his S-3, designates targets or missions for the assault gun platoon and mortar platoon, if they are not attached to companies. He gradually builds up the fire power of the leading elements as the enemy discloses his plan of defense until a preponderance of force is created in a decisive direction. He personally directs the movement of the reserve to influence the action. He calls upon the artillery observer for fires. When fire superiority has been gained, the leading elements close to assaulting distance.



## 71. Battle Reconnaissance

*a.* Battle reconnaissance begins when the battalion gains contact with hostile forces and continues until the engagement is terminated. It is executed by all elements of the command. In cases it amounts only to a hasty glance at the enemy and terrain by a tank commander. However, all commanders must be alert for information on—

- (1) Location of antitank guns, mines and obstacles.
- (2) Changes in location of our troops.
- (3) Progress of the attack.
- (4) Route to rallying point.
- (5) Changes in enemy disposition.
- (6) Arrival of enemy reinforcements.
- (7) Enemy air and tank attacks.
- (8) Plans for further offensive action.
- (9) Probable direction of the hostile counter-attacks.
- (10) Need for engineer assistance.
- (11) The most suitable avenues of approach to the objectives.

*b.* AIR RECONNAISSANCE. Liaison planes or observation planes of the supporting artillery may be valuable aids to the battalion commander. The air observer reports the progress of the attack, hostile reactions to the attack, location of obstacles and anti-tank weapons, and indications of hostile tank counter-attacks. He is particularly alert for hostile counter-attacks during reorganization. If it is to be initiated, he furnishes information as to the route of hostile withdrawal and performs reconnaissance and liaison missions during pursuit. This information should not be counted upon as the observer's primary mission is artillery observation.

## Section IV. REORGANIZATION AND CONTINUATION OF ATTACK

### 72. Action at Rallying Point

a. SECURITY. Upon reaching the designated rallying point, the first action of the tank unit commander is to post local security. The first unit to reach the position covers the most logical avenues of enemy approach and other units reinforce this security as they arrive. The battalion commander or his representative coordinates these measures and makes any necessary corrections. The mortar and assault gun platoons are placed in positions which enable them to fire against any attempted counterattack. The reconnaissance platoon establishes a series of outposts in commanding ground about the position, connecting these by patrols. Attached troops are likewise used in strengthening the outpost system. Artillery forward observers with the battalion take up positions from which they can adjust fires in defense of the rallying point.

b. FORMATIONS. The formation assumed should expedite reorganization. The battalion may be required to assume its original attack formation, facing in the original direction of the attack. The battalion commander designates a base company on which the rest of the battalion forms. This action makes it much easier for late arrivals to find their respective units and for messengers to find the battalion command post. *However, regularity of formation is to be avoided and full use is made of concealment, cover, and dispersion.*

c. REPORTS. Each commander reports the condition of his unit to his next superior. The battalion commander makes a similar report to the higher commander. These reports are rendered as early as possible. If prior orders do not cover the further employment of the tank battalion, additional orders are requested.

d. REORGANIZATION. During this time, the battalion command post and the aid station are set up and reorganization commences. This includes—

(1) *Redistribution and reassignment of crew members to replace casualties.* If these include unit commanders, new commanders and seconds-in-command are designated.

(2) *Resupply.* Service company trucks bring up fresh supplies of fuel, ammunition, lubricants, water, and other needed supplies. If it is impossible to get supply trucks forward, ammunition—including that in disabled tanks—is redistributed.

(3) *Maintenance.* Unit maintenance elements make such repairs and adjustments as the time available will allow. *Crews begin first echelon maintenance as soon as their vehicles are halted.* Badly damaged tanks are neglected for the time being in order to concentrate on those which can be made ready for combat rapidly. Slightly damaged tanks which have fallen out during the advance rejoin their units and are rechecked.

(4) *Evacuation.* (a) Wounded crew members are removed from tanks and given first aid. Those requiring evacuation are cared for by the medical detachment.

(b) Vehicles which cannot be repaired at the rallying point may be taken to a vehicle collecting point or to the battalion service park by the battalion maintenance platoon.

e. RECONNAISSANCE. While his command is in the process of reorganization, the battalion commander initiates extensive reconnaissance for information needed in making his plans for further action.

f. PLANS AND ORDERS. The battalion commander completes his plans and issues his orders, based upon prior orders received from the higher commander. The procedure followed is generally the same as that

before the attack, though in a more abbreviated form.

g. **SERVICE ELEMENTS.** As the attack advances the battalion service park follows it by bounds. Likely locations for it are former vehicle collecting points and rallying points. It may displace as a whole or by echelons. Recovery, maintenance, and resupply continue day and night until the completion of the offensive or the relief of the tank battalion. Service park personnel provide their own local security.

## **Section V. EXPLOITATION AND PURSUIT**

### **73. General**

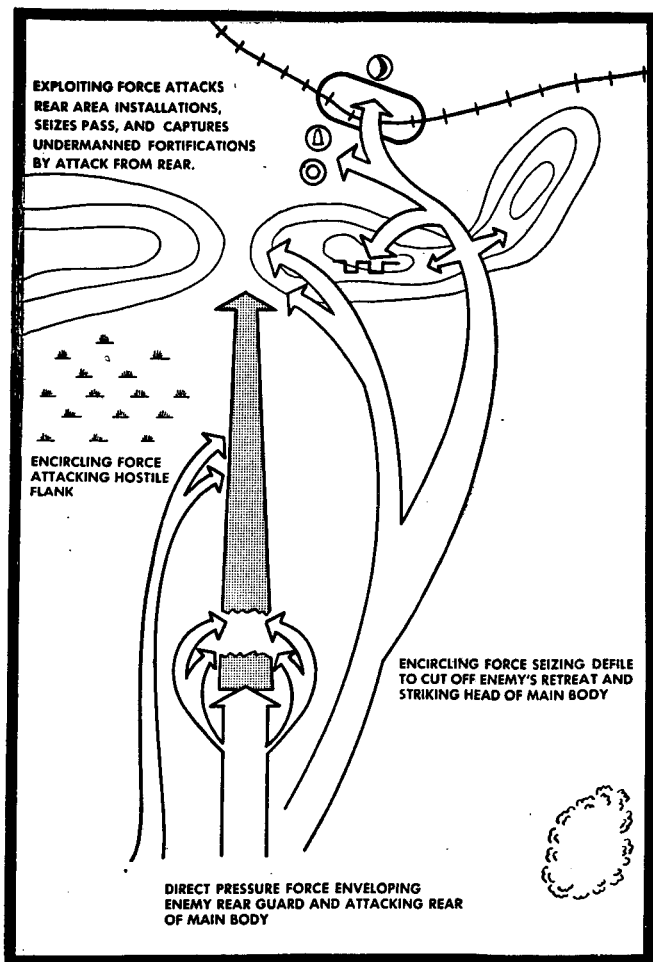
The purpose of pursuit and exploitation is the annihilation of the hostile forces. Men and vehicles are pushed to their utmost endurance to accomplish this end. Pressure is exerted upon the enemy day and night from every side, giving him no chance to rally, to reconstitute his lines, or to rest his personnel.

### **74. Organization of Pursuit (fig. 72)**

Pursuit is accomplished by the use of—

a. A *direct pressure force* which exerts continual, heavy pressure upon the enemy, driving in his covering forces and rear guards, enveloping them, forcing his main body to halt and deploy to defend itself, and so engaging it that it cannot safely continue its withdrawal or interfere with the operations of the encircling force.

b. One or more *encircling forces* may place themselves across the hostile line of retreat. When terrain and tactical conditions permit, these forces advance on roads parallel to the route of withdrawal and block that route at defiles and other critical points. If unable to outdistance the hostile leading elements, they strike the enemy from the flank, pinning him against the direct pressure force. The greatest destruction can be achieved when one or more encircling



*Figure 72. Pursuit and exploitation.*

forces operate simultaneously against each flank of the enemy column. These forces must guard their own flanks against enemy counterattacks.

*c. Other forces* which bypass the defeated force itself to exploit its defeat. Those check and destroy advancing reserves, demolish supply installations, and overrun defensive positions which the enemy is organizing farther to the rear before they can be completed or fully manned. Those forces must protect themselves from ambush by superior hostile reserves.

## **75. Objectives**

*a. The tank battalion* in pursuit is employed either reinforced or as a part of a larger force, in encirclement or exploitation.

*b. Objectives* include: (1) Hostile reserves and artillery, and communications, command, and supply installations.

(2) Vital terrain features or critical points such as defiles, road junctions and the like. Attached infantry, armored or truck mounted, is required on such a mission.

(3) The rear or flank of hostile positions which are still holding out, or the head or flank of a retreating column.

*c. The tank battalion* may be used with the direct *pressure force* to add weight and speed to that force's blows. Its objectives are assigned by the force commander to further the accomplishment of his mission.

## **76. Operations**

*a. Combat* during pursuit and exploitation usually is in the nature of a meeting engagement. Attack from march column will be frequent. Reconnaissance is limited by the speed of the advance, but protects the battalion against surprise. Isolated defense areas are bypassed for more profitable objectives, unless the

enemy is utilizing them to reestablish his line. In that case a prompt, coordinated attack by all available forces is launched, the key points taken, and the pursuit resumed.

*b.* The battalion usually advances in a partially deployed or approach march formation, preceded by reconnaissance elements and a covering detachment (par. 43). Movement across country is used frequently.

*c.* If the battalion is cut off and finds itself unable to proceed either because of enemy pressure or lack of fuel, and is surrounded, it rallies in a favorable defensive position, emplaces its tanks for all-around defense, requests and awaits relief.

*d.* Fuel and ammunition trucks may accompany the tank battalion. Other combat train vehicles follow, escorted by tanks detailed for that service or by attached infantry if small enemy parties are to be expected. In some cases arrangement may be made to supply the most advanced units by air. All combat vehicles commence the pursuit with maximum loads of ammunition and fuel and extra rations and water. Captured or local supplies are used but should not be counted upon; they are always inspected carefully before use.

## **77. Control**

*a.* Control of the tank battalion in exploitation and pursuit is achieved largely by assigning objectives, routes of advance, boundaries, phase lines, and rallying points. A limit of pursuit is sometimes designated in order to achieve some degree of control over pursuing elements. Radio is the chief means of communication, though mounted messengers and liaison planes may be used.

*b.* Rallying points are selected at points favorable for concealment and defense. A perimeter defense

system (par. 41) is established, and the battalion's location and situation are reported to the higher commander. The usual reorganization and resupply is accomplished, the battalion thereafter continuing on its mission.

## **78. Supporting Arms**

*a.* In pursuit the battalion should be reinforced with infantry, reconnaissance troops, and engineers, preferably armored, especially when the pursuit extends through the night. Artillery may be attached if the unit is advancing out of range of supporting artillery. All attachments must have mobility approaching, if not the equal, to that of the tanks themselves.

*b.* Coordination with friendly aviation is extremely important. The confusion incident to a pursuit and exploitation can easily result in mistaken identification and clashes between friendly air and ground forces. Preplanning of the operation includes air-ground liaison, recognition signals, and methods of target designation. The last is of special value in fast-moving situations where artillery cannot get forward far or fast enough and must therefore be supplemented or replaced by aerial bombardment. Air units are also a source of information as to the location of both the enemy and friendly forces and an emergency means of supply.

*c.* Contact with parachute and airborne troops landed earlier deep behind hostile lines is to be expected and necessary steps are taken to insure their recognition when encountered. The tank battalion may utilize a position held by these forces as a base of fire in attacking hostile force in contact with them. Frequently, air borne forces are able to seize key points, defiles and bridges intact, to facilitate the tank battalion's advance.



# CHAPTER 5

## DEFENSIVE

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### Section I. GENERAL

#### 79. Purpose

Defensive combat is employed to gain time, to deny the enemy vital areas, and to economize forces at one point so that superior forces may be concentrated for a decisive offensive elsewhere (FM 100-5).

#### 80. Battle Position

In the defense, a battle position is organized and held at all costs. A covering force is utilized to delay and disorganize the enemy's advance and to deceive him as to the actual location of the battle position. This battle position is organized in depth with mutually supporting defense areas. Surprise is sought whenever possible. The fire of all units is closely coordinated and carefully organized.

### Section II. DEFENSE OF A POSITION

#### 81. Tank Missions in Defensive Combat

The tank battalion in defense has the primary mission of counterattack to restore the battle position or to break up enemy attacks from any direction. Other missions are—

- a. Part of the covering force.
- b. Reinforcing artillery.

#### 82. Locations and Positions of Tank Units

- a. Infantry, reinforced by other arms, usually holds

the main line of resistance during the defensive. The tank battalion is ordinarily held in reserve, either as part of the general reserve or as a local reserve for a particular sector (fig. 73). One or more companies, usually medium tank, may be employed as a local reserve for the frontline infantry. These companies should be given proportionate shares of the tank battalion assault guns and mortars.

*b.* **SELECTION OF A RESERVE POSITION.** The following should be considered—

(1) *Accessibility.* The reserve position should allow rapid movement of the tanks by good routes, free from defiles, preferably across country, to any portion of the front, or to the flanks or rear in cases of a hostile envelopment, in time to fulfill their assigned missions.

(2) *Cover and concealment.*

(3) *Fire support.*

(4) *Size.*

(5) *Character.* The reserve position should offer good standings for tanks and be protected by natural obstacles against hostile attack. The battalion commander selects one or more alternate reserve positions which can be occupied without loss of time in case the original one is made untenable by air or artillery bombardment.

### **83. Preparation for Combat—Plans and Actions of Battalion Commander**

The mission and the general location of the reserve position is prescribed by higher authority after providing for the organization and local security of that position. The battalion commander—

*a.* If the battalion is part of a combat or armored group in general reserve, prepares the organization for combat and takes other measures which will facilitate the discharge of the mission.

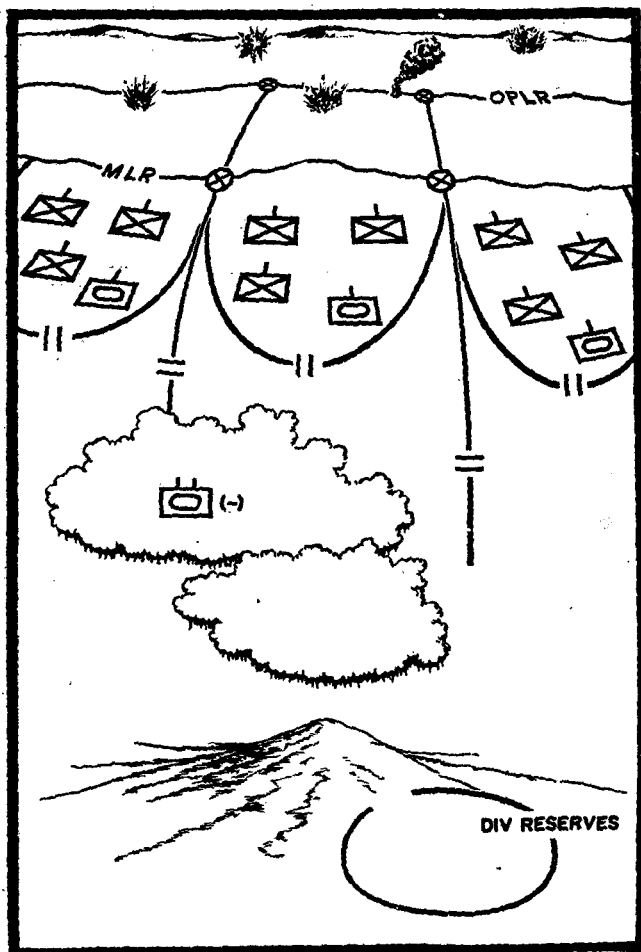


Figure 73. Location of tank units as local and general reserves in an organized defensive position.

*b.* If the battalion is to be employed as a local reserve, in which case it will usually be attached to the infantry battalions by company.

(1) Immediately contacts the infantry commander in his assigned sector, and learns the immediate situation confronting him and his plans for defense.

(2) Recommends plans for the employment of tanks. Ordinarily, he recommends a general plan, based on a map study, and asks for time for reconnaissance necessary to determine the details.

(3) In case the infantry commander has already formed plans for the use of the tanks, he makes a detailed reconnaissance and terrain study, and recommends any necessary changes in the plans.

#### **84. Reconnaissance**

The tank battalion commander, in his reconnaissance determines—

*a.* POSSIBLE OBJECTIVES. These usually are:

(1) Commanding terrain features now occupied by our forces, the loss of which would endanger the battle position and from which the enemy must be driven, should he succeed in occupying them.

(2) Areas in front of the main line of resistance where the enemy is likely to form up for the attack. These may or may not all be within the assigned sector, but they are covered.

(3) Positions blocking logical avenues of enemy approach into the battle position.

(4) Defiles and similar locations where it is possible to strike and destroy a part of the enemy's formations as they attack.

*b.* ATTACK POSITIONS. There is at least one of these for each objective. If possible, each one is located so as to be useful in an attack on any one of several objectives. Some may lie within adjoining sectors. They should, wherever possible, provide cover and concealment and good standings and be easily

accessible. They also are as close to their respective objectives as security considerations permit and should not interfere with infantry positions or installations. In no case should it be necessary to enter or leave them through a defile. If no attack positions are available for a unit the size of the battalion, utilize several of company size, located to make a converging attack feasible.

c. **ROUTES.** These are thoroughly reconnoitered; all possible personnel are made acquainted with them. Preferably, these routes are cross country, covered, and free from defiles. Alternate routes are prepared not only to all of the attack positions, but also to the rear, to expedite resupply and for withdrawal should that become necessary.

## **85. Plans for Counterattack**

a. Careful plans, and alternate plans, are worked out to cover the employment of the tank battalion or of its companies against each objective selected (figs. 74 and 75). These include:

(1) *Fire support for the attack.* The fire of the artillery, of the organic infantry and tank unit supporting weapons, of attached organizations such as tank destroyers or chemical warfare troops, and of available aviation is carefully coordinated to support the counterattack and to cover the rallying of the tanks.

(2) *Infantry cooperation.* The counterattack is usually a combined tank-infantry unit operation (FM 17-36).

(3) *Liaison.* The command post of the tank unit is close to that of the supported infantry, and adequate communications are established between them. Further provisions are made for a high degree of tank-infantry coordination and communication during joint attacks.

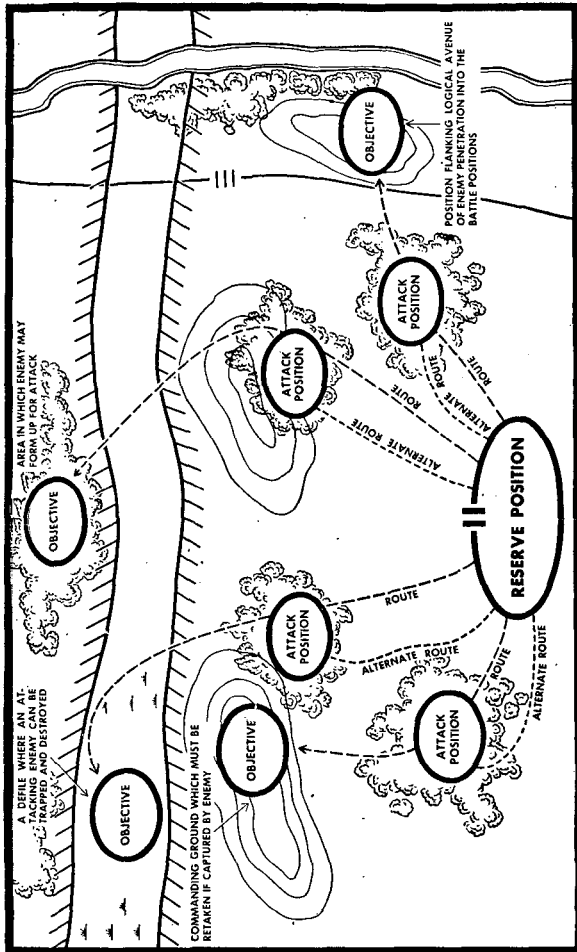


Figure 74. Development of plans for counterattacks by a tank battalion in defense of a battle position.

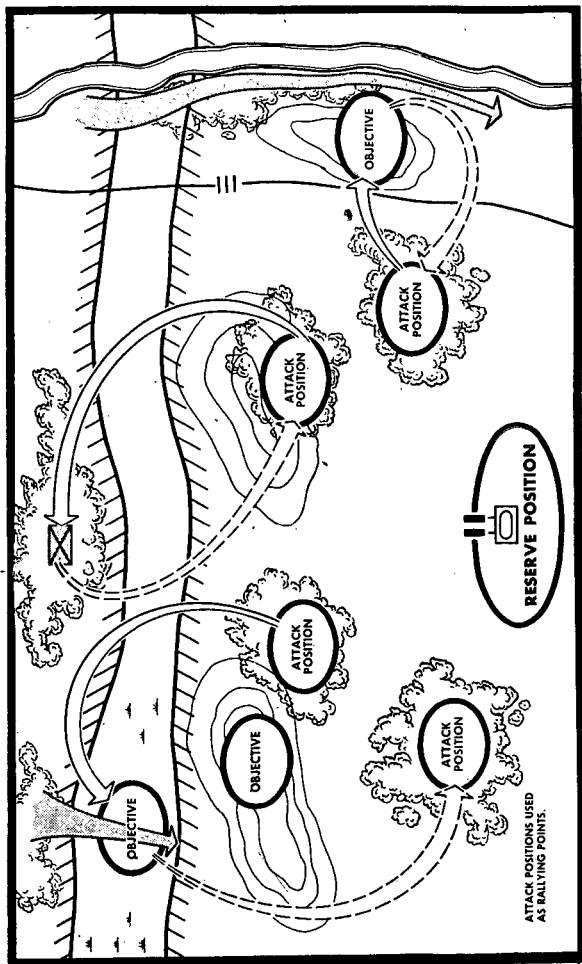


Figure 75. Plans for the delivery of counterattacks by a tank battalion in defense of a battle position.

(4) The passage of the tanks through the infantry position whenever necessary likewise is prearranged. If the main line of resistance is covered by mine fields, gaps are left, or opened and marked, to permit the advance of the tanks. Road priorities are established.

(5) *Use of tanks as artillery.* If the tank battalion, or any part of it, is to be so employed, its position is connected with the artillery survey, communications are established, missions assigned and arrangements made to dump extra ammunition at the tank position area and to maintain this supply so that the tanks can move out with full loads whenever they revert to their primary mission.

(6) *Adjacent units.* Adjacent units and especially adjacent tank battalions are contacted at the earliest practicable time, arrangements made for movement within their sectors when necessary, and plans developed for mutual support. If the tank battalion is attached to the infantry, these arrangements will be made through the infantry commander or at least with his consent.

*b.* When this planning and coordination is completed, orders are issued. These cover, in detail, the plan for attack against each of the chosen objectives and at least one alternate plan for each objective. To simplify their issuance and understanding they are in overlay form or marked maps. Each plan is given a number.

## **86. Before the Counterattack**

Before the delivery of the counterattack, and after all necessary orders are issued, the tank battalion commander—

*a.* Maintains close liaison with the organization which he is supporting or to which he is attached.

*b.* Supervises the reconnaissance by his lower unit commanders.



c. Furnishes indirect or direct fire support, if called upon to do so.

d. Checks maintenance and supply and keeps his battalion ready to execute any assigned mission.

e. Keeps abreast of the situation.

### **87. Conduct of the Counterattack** (fig. 76 and 77)

a. Hostile armor is attacked from the flank. If the enemy tanks are accompanied by infantry, concentrate on separating the infantry from the tanks and then crushing them. That done, the hostile tanks will not be able to exploit any gains they may temporarily achieve and soon will be forced to withdraw or be destroyed (fig. 77).

b. Tank versus tank action is covered in paragraph 88.

c. If hostile infantry attacks with little or no tank support, attack it immediately from the flanks, overrun and destroy it.

d. The counterattack is a limited-objective attack. The battalion should not attack beyond the effective range of the weapons which are supporting its counterattack. However, no chance is lost to destroy enemy reserves as they move up, or to crush supporting weapons which the enemy has pushed forward.

e. The counterattacking force must watch its own *flanks* and *rear*. The light tank company is especially useful for such security missions. Speed in delivering the attack, crushing the enemy, and then withdrawing to rally gives the enemy little chance to concentrate his antitank means against our tanks. Protection against physical attack, if not against hostile fire, can be secured by resting one flank of the counterattack against obstacles such as minefields, antitank ditches, water barriers, or cliffs. Care is taken, however, not to become entangled in these obstacles.

f. If the objective of the counterattack is the re-

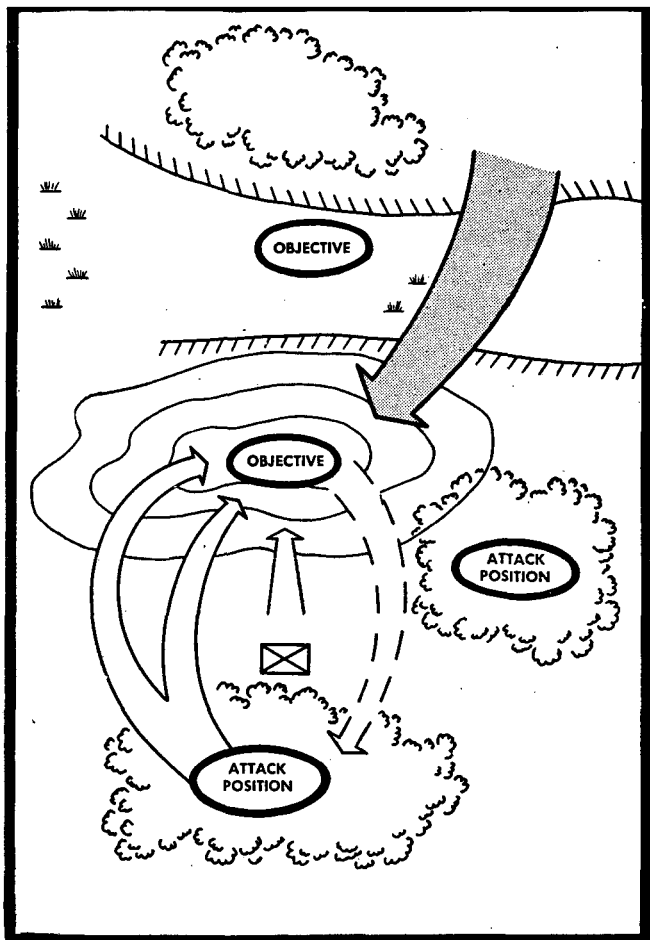
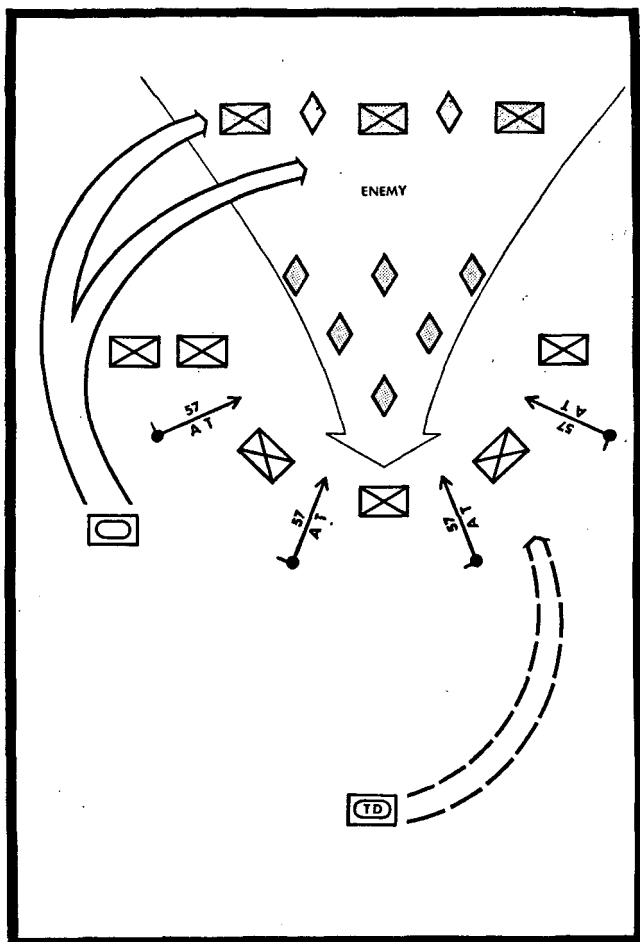


Figure 76. Delivery of a counterattack by a tank battalion to regain commanding ground captured by the enemy.



*Figure 77. If enemy attacks with tanks and infantry, separate the two and crush the infantry.*

covery of some portion of the defensive position which has fallen to the enemy, the counterattack is delivered immediately. The enemy is usually disorganized for a *short period* after he has seized this ground. *Then* he is vulnerable. But the slightest delay will allow him to organize it for defense, reinforce it, and bring up antitank guns.

### **88. Tank Versus Tank Action.** (Figs. 78 to 82)

Attacking tanks frequently encounter hostile tank units unexpectedly. At other times they may be required to attack hostile tanks deliberately in order to break up an attack or a counterattack. It is therefore necessary that all personnel be carefully trained in recognition of hostile and friendly tanks; characteristics and capabilities of hostile tanks as to armor, armament, and speed; vulnerable parts of hostile tanks upon which fire will be effective; range at which each of our weapons is effective against hostile vehicles; enemy methods of tank employment; and methods of combating hostile tanks, such as the use of speed, defilade and cover, and ambush. In tank versus tank action—

a. Artillery concentrates on the hostile tanks.

b. Some tanks (preferably medium tanks) together with assault guns in defiladed or concealed positions fire upon and slow down the hostile attack when enemy tanks come within effective range.

c. Mortars place smoke on the enemy to disorganize his attack. Smoke may also be used to screen the maneuver of friendly tanks.

d. Part of the battalion is maneuvered to one or both hostile flanks where they can attack by fire at close range, preferably from defiladed or concealed position.

e. If defiladed or concealed positions are not available smoke both of mortar and artillery may be used

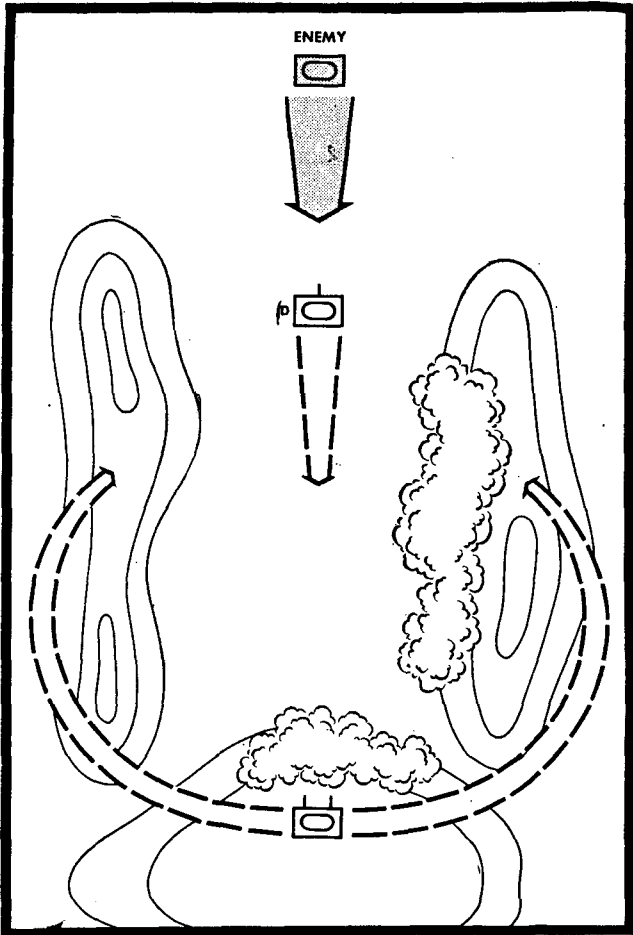


Figure 78. Tanks versus tanks.

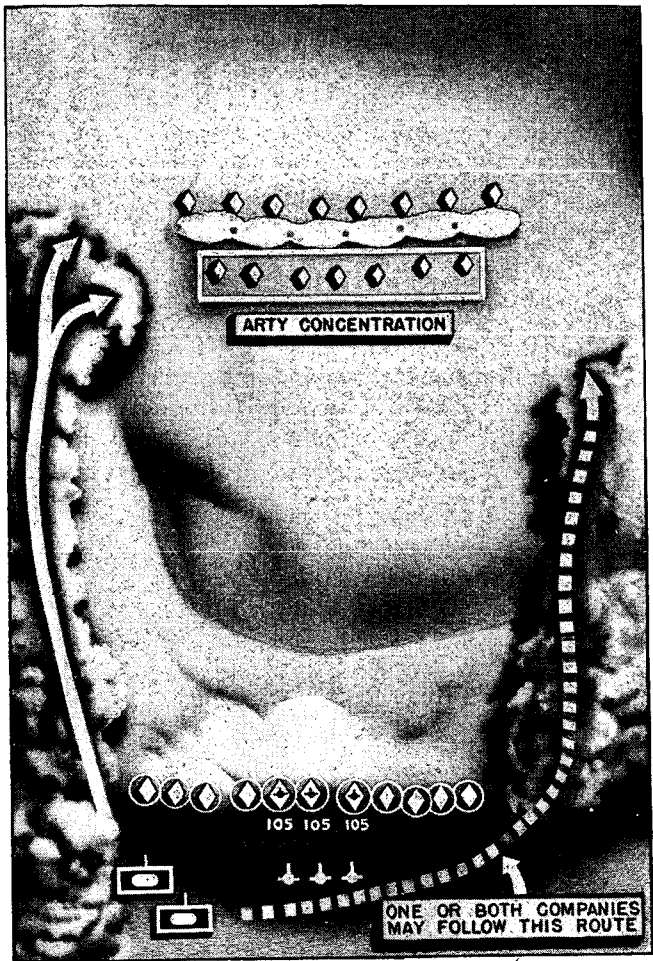


Figure 79. Tank versus tank action. Place some tanks in defilade to fire on and slow down the enemy while other tanks maneuver against one or both flanks. Use artillery and mortars to smoke hostile tanks.

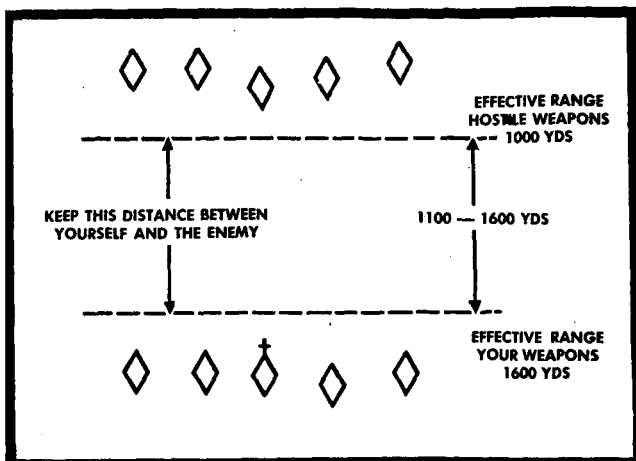


Figure 80. If enemy armament is inferior, advance to effective range and fire. Stay out of effective range of enemy weapons.

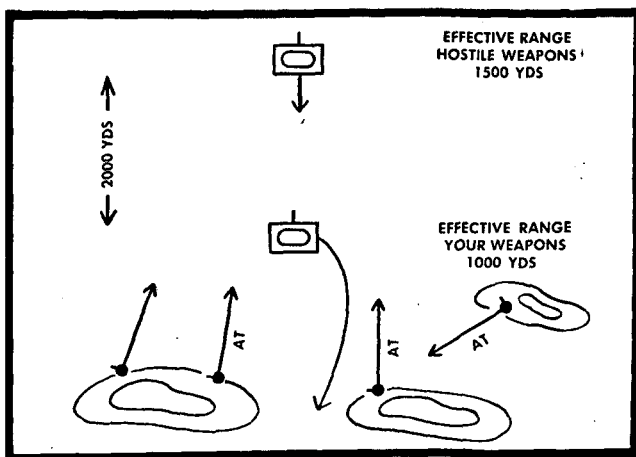


Figure 81. In open country offering no concealment, if weapons are inferior to those of the enemy, withdraw and lead the enemy into fire of friendly supporting antitank guns.

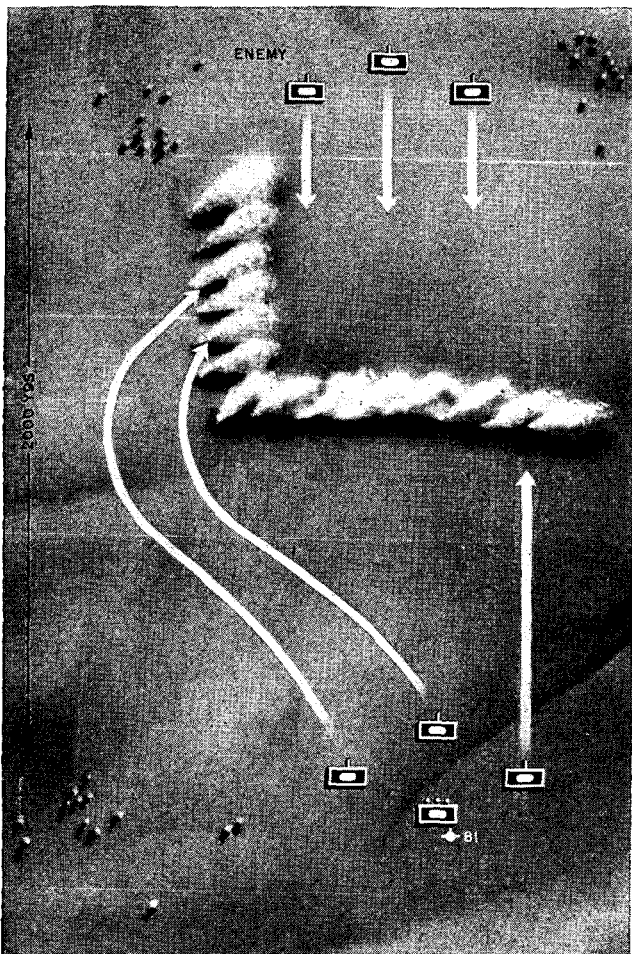


Figure 82. If it is not possible to withdraw to supporting anti-tank weapons, use smoke screen to cover movement to effective range.



to disorganize the enemy and screen the advance of friendly tanks to effective range.

*f.* When attacking an enemy inferior in armament, advance is made rapidly to positions beyond the effective range of his weapons, stationary position assumed, and fire begins. If the enemy advances, withdraw and keep beyond range while still able to fire effectively.

*g.* When attacked by an enemy whose armament is superior withdraw and lead him into friendly anti-tank defenses. If there are no such antitank defenses available, place smoke on the enemy and maneuver rapidly to approach within effective range. Smoke may also be used to blind and disorganize a portion of the enemy while friendly tanks close with and overwhelm the remainder. Caution is used in the use of smoke. As a last resort, occupy the best defensive position available, request support, and develop a new scheme of maneuver. Use terrain to aid in maneuver, defilade and concealment.

*h.* Upon occasion it may be possible to overwhelm heavier enemy tanks by superior numbers of lighter tanks, competently handled. However, care must be taken that these hostile tanks do not lead friendly tanks into a trap.

#### **89. Battalion as a Covering Force for a Defensive Position**

*a.* The tank battalion may be employed with the covering force for a defensive position. On such a mission, its tactics are similar to those used in a delaying action.

*b.* When used as a covering force in open and easily traversed terrain, the tank battalion is usually employed well forward of the defense position. It may be strengthened by the attachment of truck mounted or armored infantry, engineers, artillery, and of tank destroyers. The tank battalion operates against the flanks of the hostile force.

*c.* In close and rugged terrain the covering force usually operates much closer to the defense position, frequently within supporting distance of its artillery. Action usually centers around the defense of road blocks, demolitions, villages, defiles, and other points offering possibilities of delay. Tanks may be employed here, usually as attached units, in direct fire support, in counterattacks, or to cover the withdrawal of friendly forces, and in covering friendly flanks.

### **90. Tank Battalion as Reinforcing Artillery (FM 17-12)**

*a.* Employment as reinforcing artillery is a secondary mission, when so employed tanks are under the temporary control of the field artillery. The field artillery assigns general missions and coordinates the fires of the tank battalion with those of the artillery.

*b.* The use of tanks on this secondary mission should not be allowed to hinder their return to their primary one. Fire positions, if not located in or near the reserve positions, are selected to provide swift and easy movement by the tanks to attack positions. Extra ammunition is dumped in the position area so that tanks are ready at all times to move without delay with full loads.

## **Section III. WITHDRAWAL**

### **91. Mission**

*a.* **PURPOSE.** The purpose of a withdrawal is to break off combat with a hostile force in order to preserve or regain freedom of action. It usually follows an unsuccessful engagement, but may be employed by a force whose mission does not permit it to bring on a general engagement.

*b.* The primary mission of tanks in withdrawal is the counterattack to disrupt the enemy attack thus giving the withdrawing force time to withdraw. This

counterattack is launched rapidly, usually on a broad front, preferably against the hostile flanks, and with a limited objective. All possible damage and disorganization are inflicted, and the tanks then withdraw to the rear to prepare to counterattack again. The counterattack and subsequent withdrawal are supported by all available artillery.

*c.* Whenever the terrain permits, tanks are employed as a battalion. Otherwise companies, or even platoons, may be used. When the terrain makes tank action unfeasible, tanks are withdrawn early to positions from which they can be more profitably employed or are used to reinforce artillery fires in support of the covering force. Alternatively, tanks may employ direct fire against an enemy they cannot attack due to natural obstacles. This is usually done at medium ranges and from positions on the enemy's flanks. The light tank company can be employed as local security for other tanks or armored artillery so engaged.

*d.* (1) Tanks may be effectively employed during a daylight withdrawal (See figure 83). A successful counterattack in the late afternoon often so disorganizes the enemy that he is unable to maintain effective contact and pursuit during the night.

(2) At night, except in bright moonlight, the effectiveness of tanks is greatly diminished. Usually they are withdrawn to assembly positions, and prepared for the next day's fighting. However, given thorough planning and favorable conditions, a night counterattack by small units has a demoralizing effect out of all proportion to the number of tanks actually involved.

*e.* The tactics employed by tank units during a withdrawal are those of a delaying action (par. 96). The battalion commander is alert to discover and counter enemy advances from any direction. Counterattacks are against limited objectives. He does not

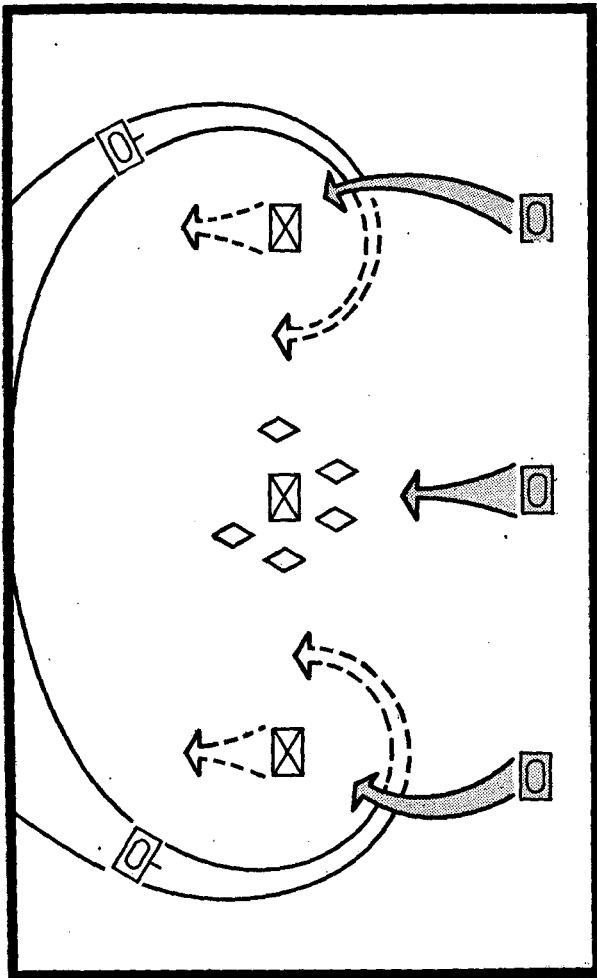


Figure 83. Counterattack to cover withdrawal.

allow himself to be surprised because of faulty reconnaissance or expose himself to being cut off by counterattacking too deeply. He loses no chance to mislead, trap, and destroy his pursuers. Small units of tanks may be used to decoy enemy armor within easy range of concealed infantry antitank guns, tank destroyers, or other tanks in ambush.

f. Since all possible use of mine fields, demolitions, and other obstacles is made during a withdrawal, it is essential that the tank and engineer units covering the withdrawal coordinate their activities as closely as possible.

## **92. Preparation for a Withdrawal**

Before a withdrawal, all trains, except essential medical and maintenance vehicles are sent to the rear. Reconnaissance to the rear for suitable routes and alternate routes of withdrawal, assembly areas and attack positions is made energetically. Necessary straggler posts are set up. This duty is assigned one or more staff officers. During the withdrawal, disabled tanks are recovered and towed off or repaired on the spot whenever possible. If no chance for their recovery exists, they are destroyed. *No vehicle ever is abandoned intact to the enemy.*

## **Section IV. DELAYING ACTION**

### **93. Purpose**

The purpose of delaying action is to gain time while avoiding decisive action. It may be used in the opening phases of battle to gain time for the unified employment of the entire command. It may also be called for in later phases pending completion of preparation for a counteroffensive action. *It finds special application in operations of covering forces and other security detachments.* In offensive operations, action by a portion of the command to delay

the arrival of reinforcements may be of decisive importance (FM 100-5).

#### **94. Methods**

Delay may be accomplished by attack, by defensive action in one position, by delaying action in successive positions, or by a combination of these methods (FM 100-5).

#### **95. Use of Terrain**

Delaying action is facilitated by a series of parallel ridges across the line of hostile advance, unfordable streams, swamps, lakes, and other obstacles, on the front and flanks, high ground with good observation and good fields of fire at long range, concealed routes of withdrawal immediately behind the positions, and a good road net. Skillful use of the terrain has a deciding influence on the action. Little reliance must be placed on defensive strength of apparently impassable terrain. If such terrain is undefended the enemy may penetrate it or land airborne troops beyond it.

#### **96. Tank Battalion in Delaying Action** (See fig. 84)

The tank battalion may be part of a delaying force or may itself, when reinforced, be a delaying force. Reinforcements consist of infantry and in some cases artillery, engineers, and tank destroyers.

*a.* As part of a larger force the tank battalion is used as in the defensive, to make limited objective counterattacks to delay the enemy and to assist in withdrawal. When terrain is not suitable for mass action, tank companies may be attached to infantry battalions and platoons to infantry companies. Tanks may assist in delay by long range and close supporting fires.

*b.* When a reinforced battalion acts as a delaying force—such as in advance, flank, or rear guard action

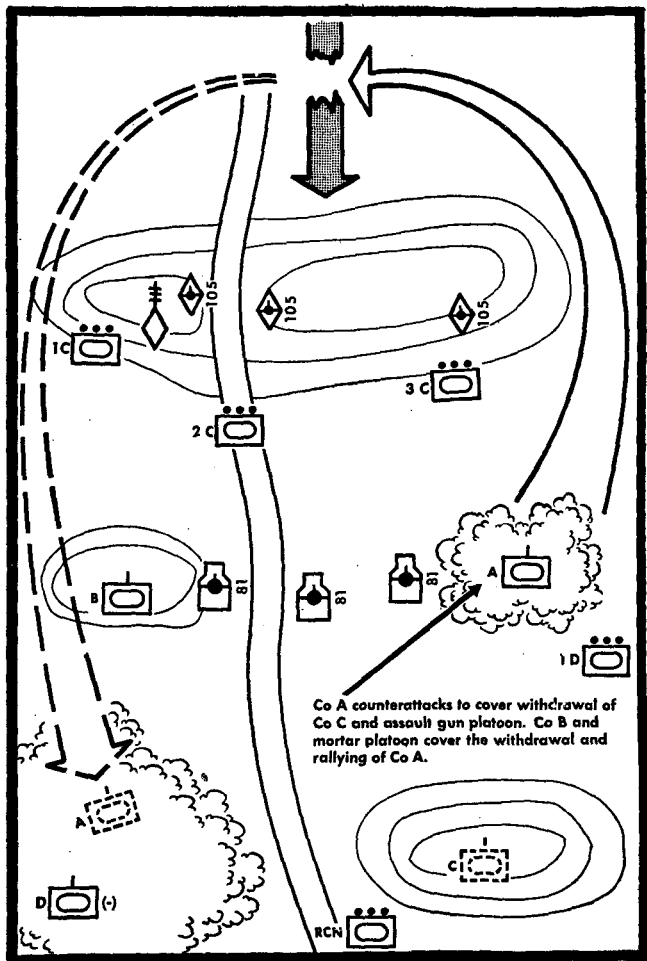


Figure 84. Tank battalion in withdrawal, acting alone.

—it uses the attached infantry supported by the fires of artillery, tank destroyers, and some tanks if necessary, to occupy the delaying position while the bulk of the tanks are held in reserve for counterattack purposes.

*c.* When acting alone in delaying action the tank battalion uses its reconnaissance platoon and light tank company if necessary for reconnaissance purposes, occupies a defense position with some tanks, and uses the rest of the battalion as a reserve.

## **97. Procedure**

*a.* In preparation for delaying action procedure is similar to that for defensive action. In addition routes for withdrawal and rear positions must be carefully reconnoitered. Definite orders are given for withdrawal.

*b.* Constant reconnaissance is made to the front and flanks.

*c.* Every opportunity is taken to draw the enemy into a position where he can be struck on the flanks.

*d.* Long range fire is used to force early hostile deployment.

*e.* Demolitions are executed and obstacles erected.

*f.* As the enemy approaches the position he is attacked by tanks if terrain is suitable, or brought under intense fire while the next delaying position is being occupied.



## CHAPTER 6

# SPECIAL OPERATIONS

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### Section I. AMPHIBIOUS OPERATIONS

#### 98. General

Tanks are normally landed from specialized landing craft *after* assault infantry and engineers have secured a beach. However, when heavy small arms fire is expected at the beach line, tanks may land from LCT or LCM with the initial assault.

#### 99. Preparation

Preparation for amphibious operations includes the following steps:

*a.* ORGANIZATION INTO LANDING TEAMS. Tanks, along with artillery, engineers, chemical troops and other supporting weapons, are normally attached to infantry combat teams. Usually only combat vehicles are taken with the assault units.

*b.* TRAINING IN WATERPROOFING AND LANDING VEHICLES FROM LANDING CRAFT OR MOCK-UPS.

*c.* REHEARSALS IN LANDING AS A TEAM and in maneuver ashore which approximate as closely as possible the expected first day's operation.

*d.* DETAILED TERRAIN STUDY by authorized officers. Maps, aerial photos and terrain tables are used. Careful study is made of landmarks to be used in locating assembly positions and other installations and in recognizing known enemy installations.

*e.* ARRANGEMENTS FOR LIAISON with unit to which attached.

## 100. Orientation (At sea)

*a.* After the landing craft have put to sea, maps are issued and all men are given a detailed explanation of the operation, including specific duties and alternate actions to take in the event of failures of parts of the plan.

*b.* Methods of control and communications are published.

(1) Special check points are marked on maps to aid in control.

(2) When radio silence is lifted, tank radios are checked. They may be used for boat to boat communication and for control of small landing craft if necessary.

*c.* Emergency provisions are published regarding the jettisoning of vehicles and equipment which becomes disabled on ramps or at the front of landing craft.

*d.* Maintenance of vehicles and equipment is continuous during the voyage.

*e.* Plans are made for the tactical use of tanks which are disabled in the water by mines or other obstacles:

(1) Direct support of landing operations.

(2) Indirect fire missions.

*f.* FINAL WATERPROOFING of vehicles and equipment.

*g.* FINAL TUNING OF RADIOS before radio silence is imposed for the voyage.

*h.* TACTICAL LOADING OF VEHICLES. (1) Loading of those vehicles needed first so that they can be the first off the landing craft or ship.

(2) Loading to permit all possible vehicles to use their anti-aircraft weapons and to fire shoreward from the decks of landing craft to be beached. Tanks on decks may utilize gyrostabilizers to good advantage.

*i.* SPECIAL PROVISIONS FOR MAINTENANCE AND

**SUPPLY.** (1) The need for the company tank recovery vehicle in landing operations is great enough to warrant its being taken in place of a tank.

(2) Mechanics and radio electricians with tools may take the places of tank crew members. Mechanics can replace bow gunners, and radio electricians can serve as loaders.

(3) Precautions are taken against corrosion of weapons, ammunition, batteries, and radios. Plan for unloading supplies in order of their importance are—

(a) Ammunition.

(b) Fuel.

(c) Rations.

### **101. Landing** (fig. 85)

a. Tanks in the initial assault are prepared to fire their weapons shoreward before landing. In the absence of supporting weapons, several tanks together may effectively use smoke shells for screening.

b. If heavy resistance is met on the beach or if tanks are immobilized in the water, the crews continue to fire their weapons from hull down positions in the water. After the assault moves inland, disabled tanks in the water or on the beach, which cannot be recovered or repaired at once, parallel their guns and prepare for indirect fire missions. (If impractical to parallel guns, lay guns on a common distant aiming point to form a converging sheaf FM 17-12.)

c. Immediately upon landing, all tanks not employed at the waterline are moved to the assembly area, reorganized, and prepared to continue the attack. All tanks are dewaterproofed as soon as possible after reaching the beach. Care is taken not to jettison shrouds where they will impede progress of following units.

d. Provisions are made for marking under water obstructions or shell holes left by the initial naval

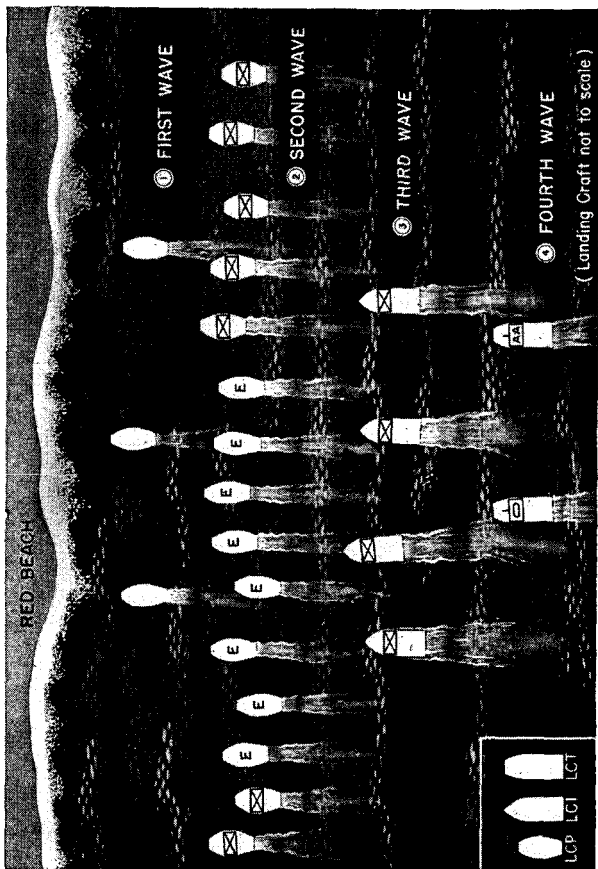


Figure 85. Amphibious operations.

bombardment so that vehicles may avoid them. This may be done by arrangement for guides, preferably from the tank unit, or markers at the waterline, or possibly the placing of buoys by small craft.

## **Section II. ATTACK OF FORTIFICATIONS**

### **102. Attack of a Fortified Position**

*a.* FM 31-50 covers the details of attack of fortifications. Tanks are not used alone to attack a fortified position. They are part of special assault teams composed of infantry, engineer, artillery, tank and air units. In the assault the principal use of the tanks is—

(1) Direct fire support of the assaulting infantry and engineers.

(2) Employment of special assault equipment, such as snakes and tank dozers.

(3) Reinforcing of artillery fires against the enemy positions.

(4) Pursuit and exploitation.

*b.* In no type of offensive action is an estimate of the situation more important. This estimate is based on preliminary map and aerial photo study and extensive personal reconnaissance by all commanders.

*c.* After a plan has been formulated, rehearsals, familiarization of all troops with the whole plan, and administrative preparation are completed.

*d.* Plans for exploitation and pursuit are made well in advance.

*e.* One method of attack is as follows (Figs. 86 and 87):

(1) Make a careful reconnaissance of the area, locate mine fields, wire, tank obstacles, pill boxes, and trenches.

(2) Detail a platoon of medium tanks to assist each infantry assault team.

(3) Use other tanks to cover the operation by fire.

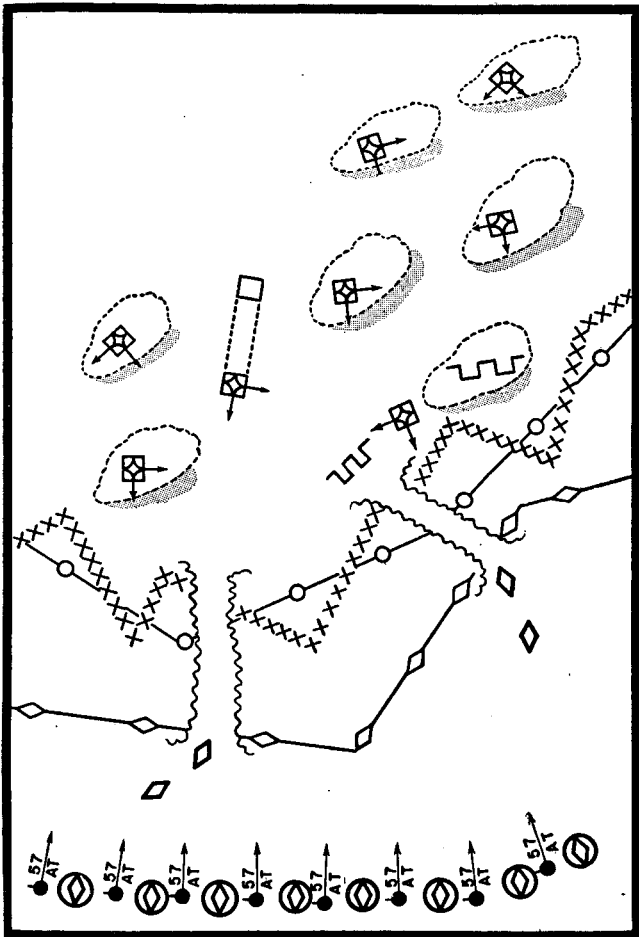
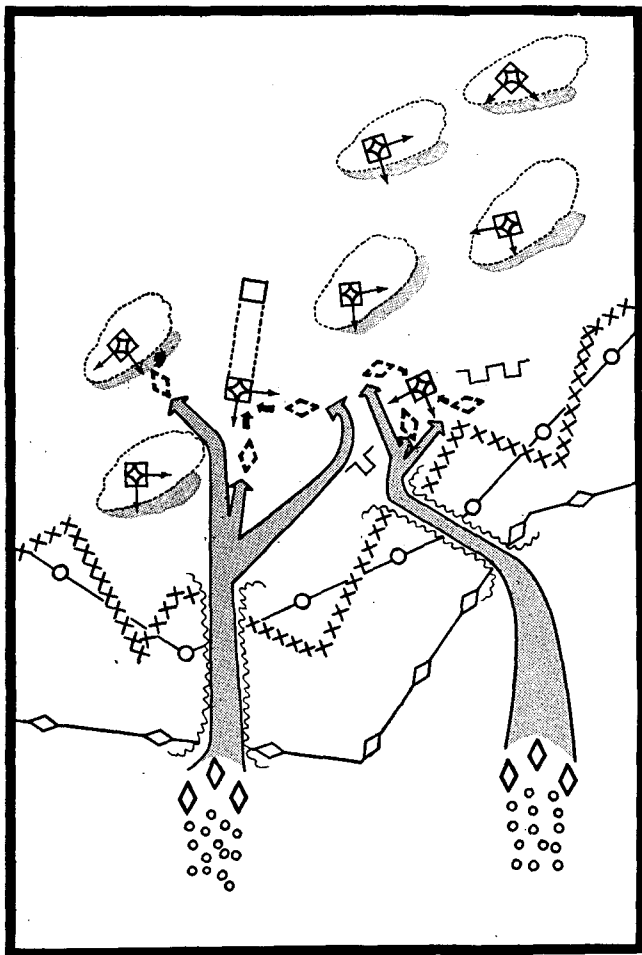


Figure 86. Attack of a fortified position. During preparation, medium tanks breach barrier with snakes.



*Figure 87. Attack of a fortified position. Remainder of the tank platoon and the infantry assault detachment pass through breach and capture pill boxes.*

(4) Precede the attack with a heavy artillery preparation. Blind with smoke the enemy pill boxes supporting those being attacked.

(5) While the artillery preparation is still being fired, send medium tanks forward to push "snakes" through selected points in the obstacles.

(6) Use support tanks to fire armor-piercing ammunition at pill boxes not concealed by smoke. Fire HE through the holes made or through apertures.

(7) When paths have been blasted in the obstacles, move the remainder of the tanks forward as far as possible, followed by infantry assault detachments. Tanks fire on pill boxes.

(8) While tanks fire on such targets, the assault detachments move forward and continue with their mission of penetrating the position.

(9) That completed, fresh tank units, reinforced with armored infantry, move forward to exploit the penetration.

(10) The tanks and assault detachments continue to widen the penetration and hold it against enemy counterattacks.

### **Section III. ATTACK OF A RIVER LINE**

#### **103. General**

The restrictions which unfordable rivers exert on movements make them a decisive influence in military operations. Such rivers are obstacles to an attack; they are natural lines for defense. They screen against hostile ground reconnaissance and provide security against hostile mechanized attack. The same holds true even when possible crossings exist. Any river operation requires thorough reconnaissance, surprise, and special preparations, both tactical and technical.

#### **104. Reconnaissance**

Reconnaissance provides detailed information as a



basis for the selection of crossing points and for the execution of preparatory measures.

*a.* Tactically the commander seeks:

- (1) Concealment for the movement to the river.
- (2) A concealed assembly area.
- (3) A stretch of river bordered by trees or low hills.
- (4) undefended crossing points.
- (5) Good avenues for advance on both sides of the river.
- (6) Dominating ground on the attacker's side.
- (7) A salient in the river line toward the attacker.
- (8) An assembly area on the other side.

*b.* Technically the attacker seeks:

- (1) A moderate current.
- (2) Absence of islands, bars and reefs.
- (3) Suitable shores.
- (4) Good approaches on both banks.
- (5) Easy connections to road net.
- (6) Old bridge sites and approaches if these are favorably located.

### **105. Employment of Tanks**

The tank battalion usually participates in the attack of a river line as a part of a larger force. However, the battalion when acting alone may seize bridges over unfordable streams, force the crossing of streams at bridges or fords, or with the aid of attached engineers cross small, unfordable streams. However, such employment is exceptional and the battalion, when on such a mission, is reinforced by engineer, infantry, reconnaissance, and artillery elements. The possibilities of deep water fording and the use of "under-water bridging" are not overlooked.

### **106. Deception**

The enemy is kept in doubt as to the point of the

actual crossing until the last moment. Feints at other logical crossing sites are made to distract him.

### 107. The Action (Figs. 88 and 89)

a. The crossing is covered by the fire of all available artillery, reinforced by medium tank companies. Chemical troops lay smoke to conceal the crossing and blind hostile observation. Tank destroyers and some medium tanks provide direct fire support from concealed, dug-in positions.

b. Infantry units cross first in engineer assault boats. This wave takes the first objective and all those positions from which the enemy can bring direct, effective small arms fire on the crossing front. Some tanks may then be ferried across.

c. As soon as the treadway bridge is completed, the tank units cross, go into an assembly position, and attack as usual (chap. 4).

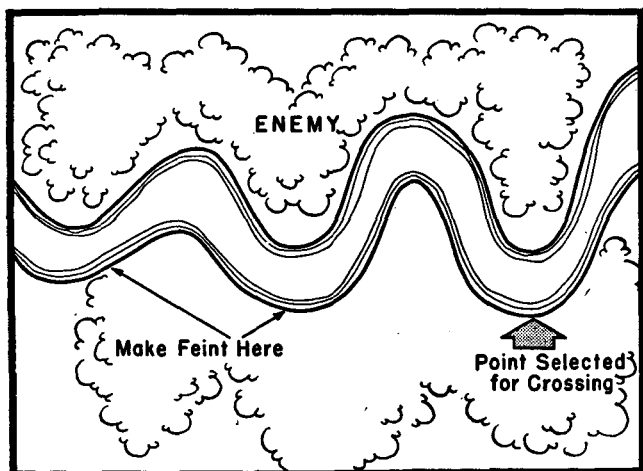


Figure 88. River crossing. Make feints to deceive the enemy.

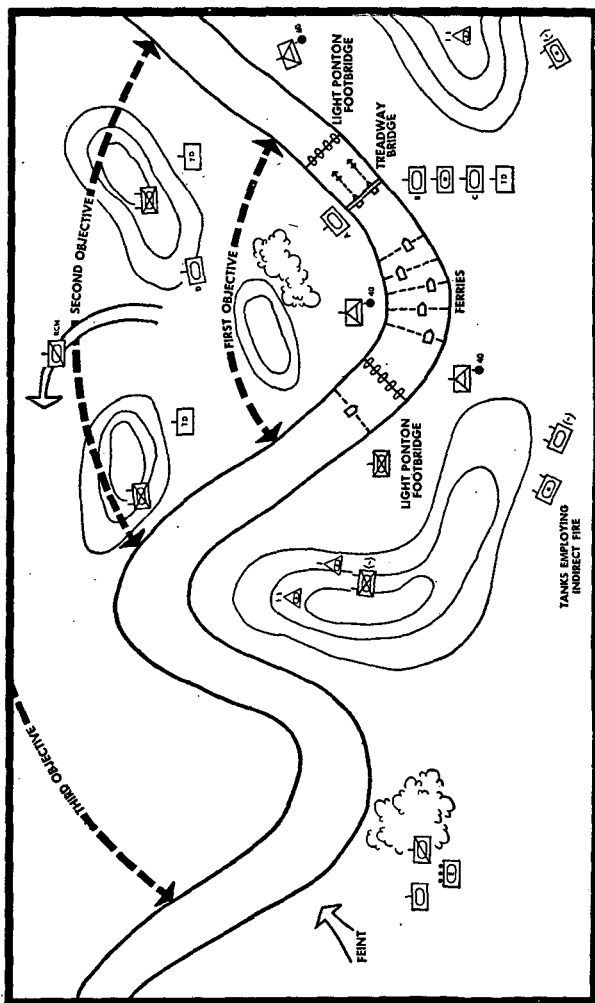


Figure 89. Tank battalion in attack of a river line—as part of a combat command.

## **108. Attack of a Bridge (fig. 90)**

During a rapid advance, particularly in pursuit, the tank battalion attempts to seize fords and bridges before the enemy can fortify or destroy them. This is usually accomplished by an attack from march column without time for complete coordination. The plan of action and the method of attack vary with the situation. The following general rules, however, will apply:

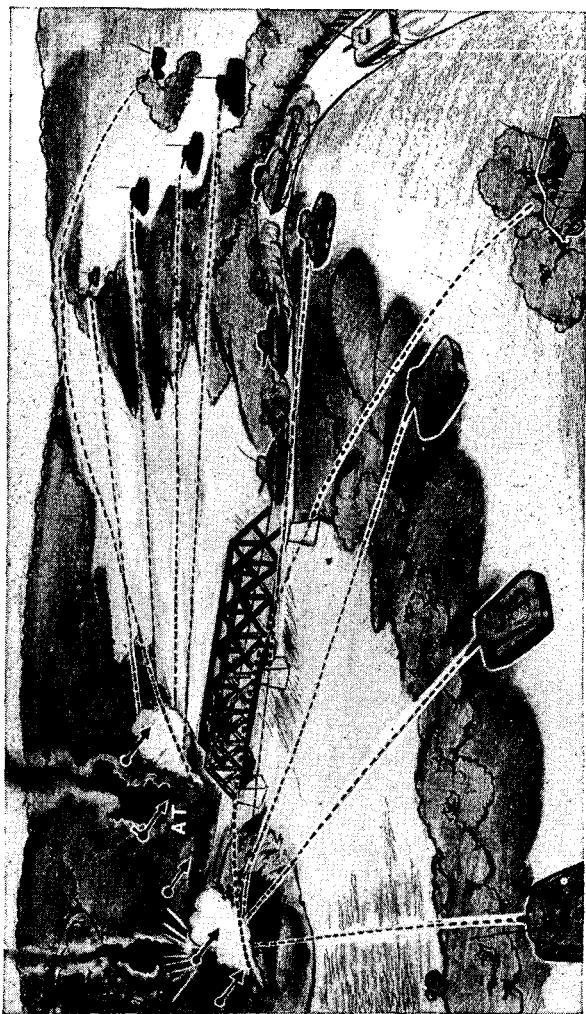
*a.* Reconnaissance elements push energetically forward. When they find bridges undefended, they occupy positions to defend them and request support. If the bridge is lightly or carelessly defended, the reconnaissance elements attack suddenly, surprising and overrunning the defenders. If the bridge is well defended, reconnaissance personnel observe by stealth and report their findings as to the type and capacity of the bridge, its approaches, and the extent and character of its defenses.

*b.* The tank battalion commander receives this information, passes it on to the lower unit commander, and issues his orders. The approach march is made under cover until the desired positions are reached or the tanks are discovered.

## **109. Improvised Crossings**

*a.* In case reconnaissance patrols are able to discover undefended sections of the stream where the bottom is firm enough and the water shallow enough to permit fording, but where steep or marshy banks prevent it, the tank dozer, if available, can be used to construct adequate approaches.

*b.* Members of the tank battalion may make repairs independently of the engineers. They must know the capabilities of their various vehicles and pioneer tools for such work. This training vastly increases their mobility, their self reliance, and their value as a striking force.



*Figure 90. Attack to seize a bridge.*

c. Figure 91 shows one method of attacking a ford.

#### **Section IV. DEFENSE OF A RIVER LINE**

##### **110. Employment of Tanks**

The primary mission of a tank battalion in the defense of a river line is to counterattack any hostile units which have succeeded in crossing. For this purpose it is held in mobile reserve at a central position which gives easy access to any point where a crossing is feasible for the enemy.

a. The counterattack is most effective, *if it comes as a surprise*, when the enemy is caught in the midst of crossing and before he has had time to bring over sufficient antitank guns and tank destroyers to protect his position.

b. The method of defending a river line is similar to that employed in any other position defense (ch. 5). One notable exception is that counterattacks against the enemy before he has penetrated the defensive position are usually impossible, except when friendly forces still hold a secure bridgehead on the enemy's side of the river.

##### **111. Use of Tanks as Reinforcing Artillery**

The tank battalion may be assigned its secondary mission of reinforcing artillery until the advance of the enemy forces causes it to revert to its primary mission.

##### **112. Tanks in Direct Fire Support**

Tank units may furnish defending infantry with direct fire support against crossing troops, especially when the infantry forces are insufficient in number and must be spread thinly. For this duty, tanks are dug-in in mutually supporting hull-defilade positions. Alternate positions are prepared. The tanks are emplaced so they can be concentrated readily for counterattack missions. This use is exceptional as it de-

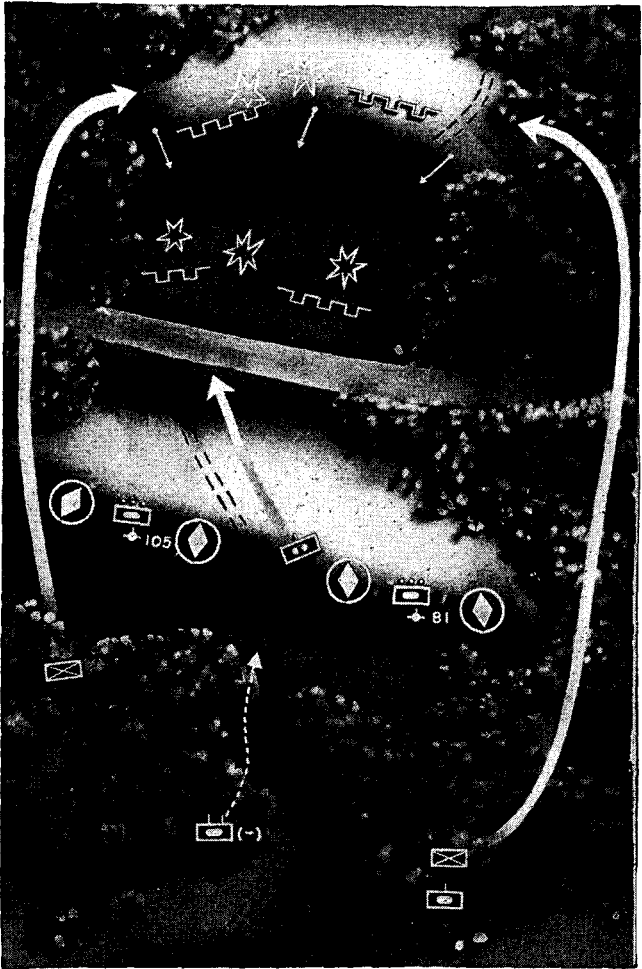


Figure 91. Attack of a ford.

creases the mobility and striking power of the tank unit, but it can be highly effective under some conditions.

### **113. Tank Battalion Acting Alone (Fig. 92)**

The tank battalion is seldom employed alone to defend a river line, but may be so used when no other troops are available to meet a surprise crossing attempt. It should be reinforced with mobile infantry and engineers, and with artillery if available. When assigned such a mission, the tank battalion commander:

*a.* Establishes reconnaissance patrols along both banks, utilizing the reconnaissance platoon and light tank company, plus any attached reconnaissance elements. If possible, these elements delay the enemy's approach to the river.

*b.* Organizes defense areas to cover the most likely sites for crossings, and makes plans to meet all contingencies. No attempt is made to hold the river line in force.

*c.* Holds back the greater part of the battalion and attached units in a concealed reserve position.

*d.* Uses attached engineer units to prepare fords and bridges for destruction, demolishing those not being used by the reconnaissance units operating on the far bank. Routes of approach to attack positions and to possible objectives for the tanks are prepared, mine fields are laid, and all possible obstacles constructed. Fire rafts, floating mines, and like materials are prepared for use against enemy bridges. If no engineers are present, this work is done by other attached troops present, or, lacking these, by the tank battalion.

*e.* Insures that all boats, ferries and other craft along both banks of the river within the assigned sector are located and destroyed, except for some used for local security. All buildings on the far bank capa-



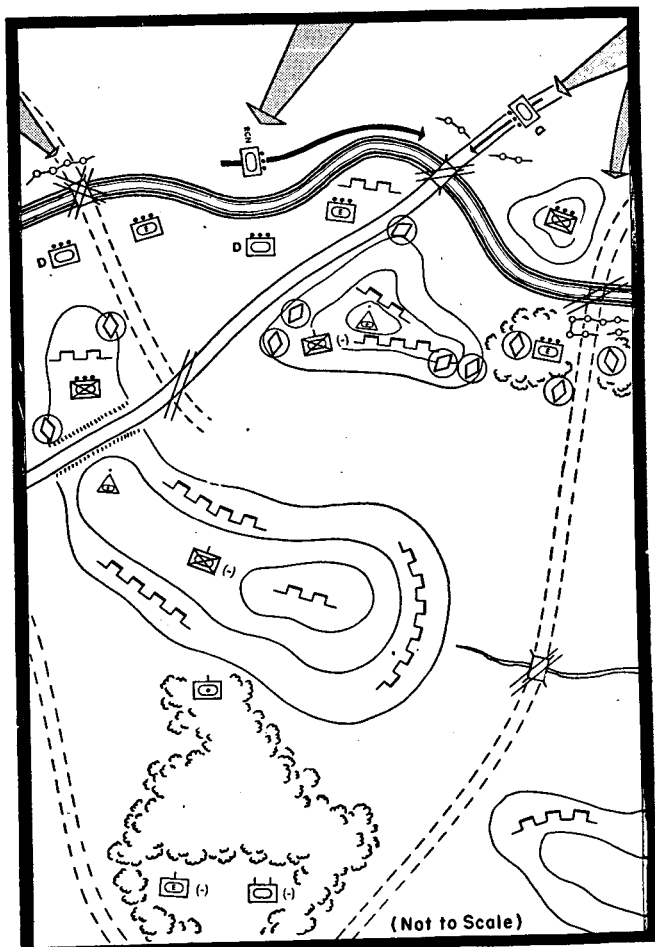


Figure 92. Reinforced tank battalion, acting alone in defense of a river line.

ble of furnishing the enemy with material for bridge construction are burned or otherwise destroyed.

f. Covers with security detachments all bridges and fords that have not been destroyed. When the reconnaissance units on the far bank are driven in, these last crossings are demolished. A responsible officer is stationed at each of these. He constantly checks to make sure the prepared demolition charges are ready and detonates them without fail if the crossing is in danger of capture. The duty is one of great responsibility. The officer gives friendly reconnaissance elements every chance to escape, but cannot allow a pursuing enemy to enter his defense on their heels. *He acts upon his own initiative in meeting the emergency and does not wait for instructions from higher authority.*

g. Uses reconnaissance elements driven back across the river to reinforce and extend the local patrols on the near bank. Units that have been cut off by a rapidly advancing enemy may be withdrawn by boat. They should destroy any vehicles they cannot evacuate.

h. Employs standard defensive tactics (ch. 5) against an attempted crossing.

## **Section V. TANKS IN JUNGLE WARFARE**

**114. Characteristics of Jungle Warfare (FM 72-20)**  
Operation in jungle warfare is characterized by difficult terrain and greatly reduced visibility. Some open patches of grassland may be found, but the grass often is so high as to impede the driver's vision. Accurate maps usually are lacking. Heavy jungle growth limits the effectiveness of air photography. The enemy is hard to locate definitely, even when the general area he has organized is known. Supporting fires are frequently difficult to adjust.

### **115. Use of Tanks**

Tanks can be successfully employed even under these conditions. *They are an effective weapon against the pill box.* The armor protection and fire power of the medium tank make it very satisfactory whenever the terrain is passable.

### **116. Definitely Located Enemy**

Tanks are employed in jungle fighting against a *definitely located* enemy, whose destruction will have an important bearing on the operation as a whole.

### **117. Preparation for Use of Tanks**

Use of tanks is preceded by a careful personal terrain reconnaissance by the tank officers and noncommissioned officers concerned. This will include—

a. Routes available, to include any existing roads and bridges.

b. Improvements needed on available routes and new route construction needed.

c. Slopes and density of vegetation.

d. Areas with good tank standings suitable for attack positions, rallying points, and service parks.

e. Areas suitable for tank employment.

f. Locations of swamps, impassible ground, and defiles.

g. Enemy mine fields and other obstacles.

### **118. Planning**

Detailed planning and the careful coordination of all the arms and services involved extends downward to every member of the individual tank crews and of the infantry squads which support them. (See FM 17-36.) Methods of communication and target designation are especially important. It is necessary also to develop a plan of supporting fires from artillery and infantry weapons and to make arrangements with the engineers for route clearance or improvement.

### **119. Approach March**

Tanks are moved up to an attack position directly behind the infantry lines. It may be necessary for the engineers to build trails for the final part of this advance and to have heavy bulldozers spotted at difficult places to assist the tanks. Both bulldozers and tank dozers are invaluable in all stages of this work. Since sounds are muffled in the jungle during the day, it is possible to bring tanks well forward without sacrificing surprise. If necessary, the artillery or air force furnish noise to drown tank noises. Once in the attack position, the tanks are guided into their assigned stations in the attack formation by dismounted personnel. During the short pause here, last minute coordination with the infantry is effected and all commanders and drivers observe the ground to their front.

### **120. The Attack**

*a.* The tanks normally attack in two or more waves, advancing in rough line formation. Company and platoon commanders are usually in the front wave to facilitate control. Tank dozers are in the rear waves, to aid in extricating bogged or crippled tanks and to complete the destruction of bunkers overrun by the first waves. Each wave covers the one preceding it.

*b.* Typical formations for a tank company are (fig. 93):

(1) Two platoons in assault, one platoon in support.

(2) Column of platoons.

*c.* The distance between waves of tanks is seldom more than 25 yards. The interval between adjacent tanks is from 5 to 15 yards.

*d.* The rate of advance in the jungle is very slow, due to the terrain and the type of resistance. Tanks pick their way and move frequently in first gear. The day's progress may be measured in yards. There are

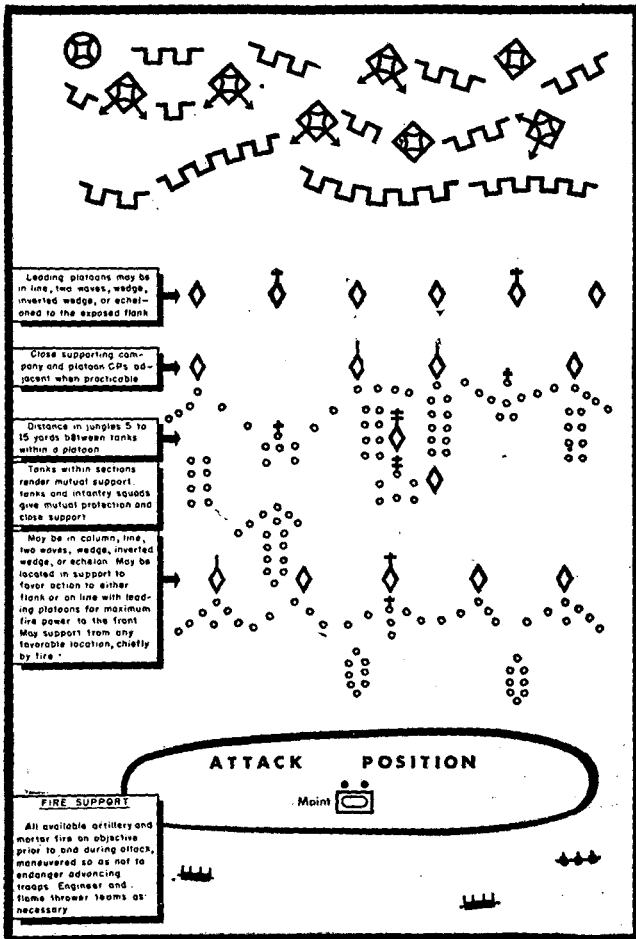


Figure 93. Type formations, operations in jungles.

frequent halts for reorganization, reorientation, and resupply. In very dense jungle, tanks may attack by fire alone with practically no movement. Even when advancing in column, tanks carefully avoid tracking one another, if only by the width of their tracks.

### **121. Infantry Support**

The infantry advances among the leading tanks or with the second wave of them. It must never let the leading tanks advance out of eyesight. If this happens, the tanks may be knocked out by enemy tank hunters and antitank guns and the infantry subsequently halted by machine gun fire. *Proper coordination of effort will prevent the enemy from separating tanks and infantry.* It is occasionally necessary for the infantry to place fire on their own tanks in order to keep enemy tank hunters with magnetic mines and hand charges off them.

### **122. Target Indication**

Targets are indicated by the infantry by means of tracer ammunition, incendiary or smoke grenades, rocket launchers, or other prearranged signals.

### **123. Weapons and Ammunition**

a. As the natural growth and enemy camouflage frequently obscure the entire sector, it may be necessary literally to mow this down with machine-gun, canister, and high explosive fire. Once the enemy positions are located, high explosive or white phosphorous rounds can be fired into them through loopholes and fleeing enemy personnel machine-gunned. If no loophole or entrance is visible, armor piercing ammunition is used to create one. Expenditure of all classes of ammunition is heavy and resupply must be correspondingly prompt and efficient.

b. Tank-mounted flame-throwers are highly effective in reducing bunkers and other fortifications.

#### **124. Maneuver**

Though jungle terrain severely limits maneuver, the possibility of flanking action or flanking fire by a portion of the tanks is always to be considered. The more difficult the terrain, the greater the surprise obtained if a tank attack can be launched successfully across it.

#### **125. Supporting Fires**

All available artillery and mortar fire is placed on the objective prior to the attack. When the attack begins, this supporting fire lifts to the hostile rear areas or is otherwise shifted so as not to endanger our advancing troops. Forward observers move with the attack and adjust fire on stubborn areas of resistance.

#### **126. Installations**

Tank installations for jungle warfare include—

*a.* A SERVICE PARK, located near the beach head or corresponding supply points. It is protected against enemy raids.

*b.* AN ADVANCE SERVICE PARK, located as far forward as possible without exposing the operating personnel to hostile small arms fire. It is stocked with ammunition, gasoline, and other supplies. Battalion maintenance personnel operate out of this location. A perimeter defense is established to guard it.

*c.* THE ATTACK POSITION, located as a rule directly behind the infantry line. A minimum of time is spent here.

*d.* A RALLYING POINT, which is normally the attack position. Company maintenance crews are located here. Local security is maintained.

*e.* THE BIVOUAC, the location of which is determined largely by the plan for the employment of the tanks during the following day. Tank units normally establish a perimeter defense system covered by an

outer ring of infantry behind barbed wire, mines, and booby traps.

### **127. Security**

Security is of the utmost importance in the jungle where surprise, ambush, sniping, and infiltration tactics are employed constantly. Enemy groups may attack at any time from any direction. Security demands constant vigilance, constant and painstaking reconnaissance, and an intimate knowledge of the minor tactics and characteristics of the enemy.

## **Section VI. COMBAT IN TOWNS**

### **128. General (FM 31-50)**

*a.* When employed in combat in large towns, tanks are handicapped by limited maneuverability, vision, and fields of fire. There is always danger of ambush. Hostile troops are able to make effective use of anti-tank weapons, barricades, demolitions, and mines. Heavy masonry reduces the effect of shell fire. Coordination and control become difficult. The combat tends to deteriorate into clashes between small groups. Nevertheless, there should be no hesitation in employing tanks in support of infantry, under such circumstances. The armor-protected fire power of the tank makes it a most effective weapon if properly handled.

*b.* Small villages are less of an obstacle to armored troops, especially if their buildings are of frame construction. In this case, full use should be made of the incendiary effect of WP and HE ammunition.

### **129. Method of Attack**

*a.* The most effective method of attacking a town usually is to encircle it (fig. 94). A direct frontal attack results in heavier casualties and is resorted to only when the existing situation requires such action or unless complete surprise is possible. If the town is



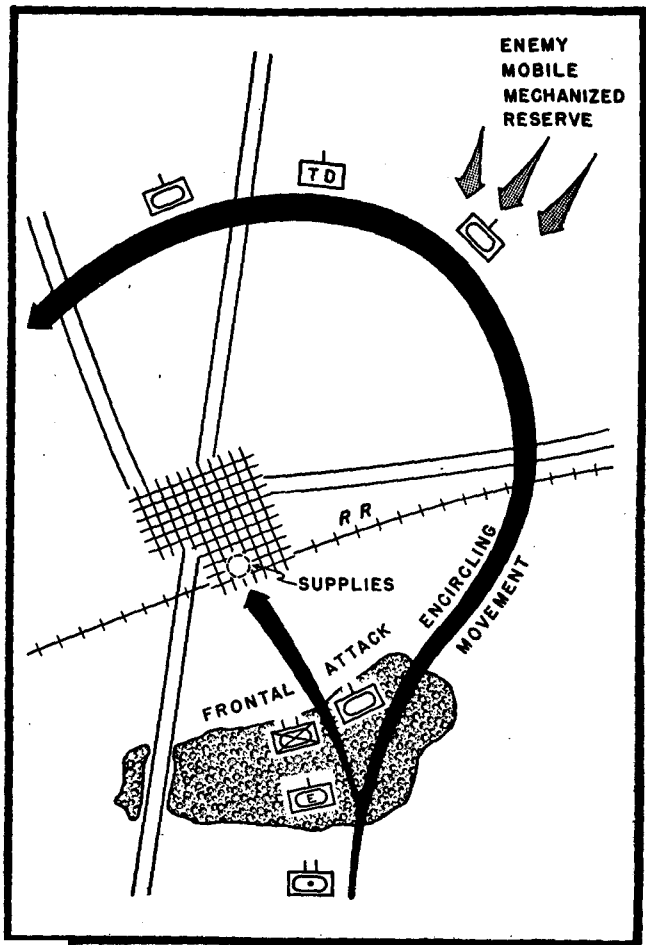


Figure 94. Attack of a small town.

quite small, a combined envelopment and direct attack may give quick success.

*b.* Tanks attack slowly and methodically in coordination with other troops. Control is centralized, objectives are limited, the complete reduction of one sector of the enemy's defenses being achieved before another is assaulted. Supporting fires must be intense and carefully coordinated. The attack on each sector is conducted generally in the same fashion as an attack upon a fortified position.

*c.* Tanks employ HE against street barricades and houses containing snipers. Steeples, tall chimneys, and other structures likely to contain enemy artillery observers are promptly destroyed. Crew members must be alert to detect pillboxes which may be built into houses along the street and camouflaged to resemble ordinary business establishments.

*d.* Tanks should not halt, or move slowly, too close to buildings not held by friendly troops in order to prevent the dropping of explosives or inflammables upon them. When shock action is employed against buildings, care is taken not to penetrate too deeply because of the danger of falling into a basement. All bridges and overpasses should be checked for mines and weight-carrying capacity. Booby traps of all varieties are to be expected. Tanks should not move singly.

*e.* Infantry should accompany the tanks closely to prevent enemy tank hunters from overwhelming them and to designate targets. Tank units, in turn, give the infantry unhesitating and effective support.

## SECTION VII. NIGHT OPERATIONS

### 130. General

*a.* Despite the fact that movement of tanks and accurate fire of their weapons is difficult at night, even over known terrain, tanks can be used success-

fully in night attacks. The greatest value of tanks in night attack lies in their surprise effect on enemy personnel and their ability to neutralize enemy positions by direct cannon and machine gun fire during the period between the lifting of the supporting artillery fire and the arrival of the infantry upon the objective.

*b.* Because of the difficulty of control, night tank attacks usually are undertaken only on a limited scale and with limited objectives.

*c.* Simplicity of plan, careful preparation, detailed reconnaissance by day and night, secrecy, surprise, rehearsals in rear areas, and coordination of execution are prerequisites to a successful night attack.

### **131. Plans**

The attack must be very carefully planned. The plans include:

*a.* A detailed day and night reconnaissance of the area over which the attack is to take place. This reconnaissance is made, from a position from which the area up to the objective can be seen, by everyone down to and including tank crew members. If it is possible for the commander to fly over the area, this should be done; if not, air photographs of the area are obtained.

*b.* Rehearsals in rear areas if time is available. All troops participating in the attack are trained as a team prior to the attack. This training is done at night to accustom the troops to night conditions.

*c.* The use of observation posts by all personnel to study the terrain, routes, and the routine actions of the enemy in the vicinity of the objective. These posts are manned continuously up to the time of the attack.

*d.* Choosing the time for the attack. The time is dependent upon the actions which are to follow the seizure of the objective. If the objective is to be organized and held, the attack takes place early in the

night. If the attack is to precede a main attack at daybreak, it is initiated usually late in the night.

### **132. Orders**

Orders are prepared in great detail. Forward assembly areas, attack positions, lines of departure, and objectives are designated exactly. Orders include the time of attack, formation, route and zone markings, methods of identification, width of the zone of attack, rate of advance, the courses of action to be followed if the attack is successful, and rallying points for each subordinate unit.

### **133. Signals and Identification**

*a.* Signals are prepared for the control of supporting fires, for the seizing of objectives, for control of the elements of the attacking force, and for a withdrawal should one be necessary. All these signals can be arranged with pyrotechnics and colored flashlights. They should be simple, easily remembered and identified.

*b.* Methods of mutual identification of troops are prepared in advance. In a tank-infantry attack, the simplest means is to paint white or luminous markings on the rear of the tank hulls and on the backs of the helmets and uniforms of the infantry.

### **134. Control of Direction and Movement**

*a.* In general, changes in direction are avoided. However, a change of direction may be made if the attack is over terrain which has easily identified features and if troops have made a complete terrain study in both daylight and darkness prior to the attack.

*b.* Direction may be maintained by use of the compass.

*c.* One method is to site flat trajectory weapons to fire tracers to mark boundaries, give direction of movement, and to mark the objectives. WP shell fire

can be used to mark the objective, either alone or in conjunction with star shells. Before the attack, ground mounts are sited for this fire and data is computed carefully. Smoke shells may be used to extend the line of fire beyond the range of tracers, and parachute flares or star shells to illuminate the enemy position.

(1) If star shells are used to illuminate the objective, tanks may advance to within 750 yards of the point of detonation of the star shells without being illuminated and fire direct fire upon the objective. The infantry can advance to within 600 yards of the objective in relatively close formations and to within closer ranges in a deployed formation. The illumination is then lifted until the objective is seized. Tanks move forward with or just ahead of the infantry.

(2) After the objective has been seized, star shells are fired beyond the objective to enable tanks and infantry to fire against any enemy counterattacks.

(3) Adjustment with star shell begins at a range known to be safely over the objective. Rounds detonating short reveal the attackers.

*d.* Until contact with the enemy is gained, direction may be kept by the use of dismounted guides to precede the tanks. Dismounted guides and markers also may be placed at intervals along the route of approach. If markers are used they are distinguished by white or luminous paint, dimmed flashlights, or burning candles in tin cans. Any illumination used is shielded so that it is visible only on the friendly side.

*e.* Forward movement is usually controlled by a time schedule or by moving only under cover of artillery concentrations. In the latter case, the artillery fires successive concentrations for short periods of time during which the tanks move. When the artillery is not firing, the tanks remain halted.

### **135. Secrecy**

Surprise is one of the most essential features of a night

attack. In order to assure surprise, the exact hour of the attack is kept secret as long as possible. All preparations for the attack are made in concealed areas in order not to betray the locations or intentions of the force to the enemy.

### **136. Attack with Infantry**

*a.* The following points apply in particular to a combined tank-infantry attack:

(1) One tank and one rifle squad are assigned to work together. The tank commander and the infantry squad leader make a personal reconnaissance together prior to the attack.

(2) In the approach march the infantry squad may ride on the tank, precede and guide the tank, follow the tank, or advance on either flank of it.

(3) In the attack the infantry squad usually advances abreast of or just behind the tank. If the terrain does not permit the tank to move with the infantry, the tank supports them as closely as possible from favorable positions to their flank or rear. When hostile machine guns open fire, the infantry takes cover and the tank engages the enemy, whose position is indicated by tracer or muzzle flash.

(4) At the rallying point the tanks take covered positions with their weapons sited to cover possible avenues of approach for an enemy counterattack, and the infantry provides close in security for the tanks.

*b.* Tank liaison personnel is with each infantry unit.

## **Section VIII. ACTION ON ENCOUNTERING MINE FIELDS**

### **137. Locating Mine Fields**

*a.* FM 5-31 covers methods of detecting mine fields.

*b.* Mine fields should be expected in the following locations:

(1) In an area where there are prepared enemy defenses.

(2) Avenues of approach to enemy positions.

(3) Near enemy antitank guns.

(4) On beaches and under water.

*c.* Nuisance mines may be expected in the following locations:

(1) On roads.

(2) On the shoulders of roads especially at turn-outs, turns, and defiles.

(3) Parking areas.

(4) Culverts.

(5) Cross roads and road junctions.

(6) In any area favorable for troop concentrations.

### **138. Immediate Action on Encountering a Mine Field During an Attack**

*a.* If the mine field is detected before a vehicle is disabled.

(1) Reconnoiter possible positions for enemy anti-tank guns and machine guns which may be covering the mine fields.

(2) If attacking with infantry, support their advance and reconnaissance of the suspected area by fire of tank weapons.

(3) Use one of the methods described in paragraph 139 to breach the field.

*b.* If a tank is disabled by the mine field:

(1) Nearby maneuvering tanks stop and fire two inch smoke mortars to screen the disabled tank and themselves, if necessary. All observe for antitank guns which may be covering the mine field, and reconnoiter by fire.

(2) Behind this smoke, the crew of the disabled tank usually evacuate from their vehicle. When the

surrounding terrain provides some cover or concealment and the tank's weapons are still usable, the crew may continue to fight it. Evacuating crew members take cover promptly, as the mine field is probably covered by machine guns sighted so as to fire effectively through smoke, and mortars. Crew members must also beware of antipersonnel mines.

(3) The maneuvering force backs to cover, following the same route that was used to move forward.

(4) Neutralizing fire is placed on any enemy anti-tank guns located. This may be supplied by the tanks themselves, by the tank battalion supporting weapons, or by supporting artillery.

(5) Smoke is fired to screen the disabled tank. The order of priority for obtaining this smoke is—

(a) 2" smoke mortar in tank.

(b) Mortars (81-mm).

(c) Assault guns.

(d) Tank recovery vehicle's 81-mm mortar.

(e) Tank guns.

(6) If the disabled tank is not under too heavy enemy fire, it is withdrawn by a tank recovery vehicle, using a tow bar, or by a tank if no recovery vehicle is available. Tank crews members reconnoiter the terrain for mines before the advance of the recovery vehicle.

(7) Under the cover of smoke, reconnaissance immediately begins for the edge, the depth, and the width, of the mine field.

### **139. Breaching of Mine Fields**

After a mine field has been discovered and carefully reconnoitered for width, depth, additional obstacles, forward edge, antitank guns, and antipersonnel mines, it may be breached in a number of ways.

*a.* **PROBING.** Accompanying infantry with engineer personnel, and occasionally tank personnel alone may breach a mine field in the following manner:



(1) Under cover of darkness, smoke or heavy fire, infantry moves through a mine field and establishes a bridgehead.

(2) Mines are removed by probing parties using the methods prescribed in FM 5-31.

(3) Antitank weapons and tank destroyers are moved through the gap to help in holding the bridgehead.

(4) Tanks move through the gap to an assembly area within the bridgehead.

(5) Tanks reorganize and continue the attack.

*b. USE OF SNAKE (FM 5-31).* A mine field may be breached by use of snakes. FM 5-31 gives a full description of the operation.

*c. USE OF TANKS.* In emergencies, tanks may be used to breach mine fields. This method is costly and unreliable, but may be necessary. The procedure is as follows:

(1) Tanks are attached in pairs by means of tow cables.

(2) The lead tank moves into the mine field and continues to move forward until it detonates a mine. The second tank, following in its tracks, backs up and pulls the first tank clear of the field.

(3) After the two tanks are clear, the next pair moves forward, using the same tracks, and this process is continued until a path is cleared through the field.

*d. USE OF LIVESTOCK.* In unusual cases, herds of the larger livestock may be driven across suspected areas.

*e. MECHANICAL MEANS.* Flails, ploughs, and rollers, may be used to clear paths, but these devices are rarely available to small unit commanders.

*f. BURNING.* Antitank mines placed on top of the ground or hastily buried, may be detonated by burning standing crops or long grass.

## Section IX. ATTACK OF A DEFILE

### 140. General

The methods of attacking a defile are similar to those used in the attack of any fortified position. All arms are utilized, and the tanks' principal mission is one of supporting by *fire*.

*a.* The defile, itself, is the logical avenue of approach, but in order to attack a defile, the defenses first must be reduced. These defenses are normally not in the defile itself, but on the high ground nearby. The seizure of this high ground usually forces the enemy to evacuate the defile.

*b.* In some cases a defile which is poorly defended can be rushed. If this is the case, supporting tanks are used to cover the advance of the assaulting tanks. The advance through a short defile is by a single bound, and should be completed by the assaulting element before the advance of any other unit. If a long defile is being rushed, units may have to advance by bounds through the defile. Special care is taken to protect against surprise in such a case. The far side of the defile is rapidly organized for defense.

*c.* A bridgehead is held at the far side of the defile to protect the debouchment of friendly elements from the rear. Tanks are placed in a reserve position ready to counterattack to protect this bridgehead. This position also is a rallying point for the tanks where they can reorganize after passing through the defile.

*d.* The manner of forcing a defile depends largely upon the manner in which it is held and the accessibility of the enemy's flanks. By moving small forces through or around the obstacles creating the defile, the advance is made on a broad front to outflank defended areas.

*e.* Tanks are normally employed in mass. However, the situation and terrain are the deciding factors.

There are circumstances where a single platoon is all that can be employed usefully, and occasions may arise where even one or two tanks may be of powerless assistance.

## **Section X. OPERATIONS IN MOUNTAINS**

### **141. General**

Mountainous terrain limits the use of tanks to roads and trails. Sometimes there are small areas where tanks can get off roads and fight cross country; these are ordinarily few in number and heavily mined. Tank battalions are usually attached to infantry divisions or regiments, and most of the employment is in giving support, either by counterattack, by fire support, or by antitank defense.

### **142. Organization**

*a.* Tank battalions may be broken down into small reinforced task forces, each consisting of a tank company with a mortar squad and an assault gun from the battalion assault gun platoon, a third of the battalion maintenance, a third of the battalion medical detachment, and at times, a third of the battalion supply and transportation platoon attached. This enables commanders to attach small tank task forces to regiments, and permits the regimental commanders to attach such forces to battalions. Battalion commanders can, when necessary, attach a portion of this tank task force to companies.

*b.* Tank company task forces, when attached to battalions or regiments may be further broken down to platoons or sections. Very often only a section can operate in close support of attacking infantry, while the other section of the platoon provides fire support from hull down positions.

### **143. Tanks in Attack**

If decisive tank action becomes possible, either through the enemy's failure to guard some portion of his front sufficiently, or through enemy disorganization, tank forces are committed in mass, closely supported by mobile infantry and engineers. Objectives are critical points on the hostile routes of supply and withdrawal, the capture of which—due to the meagerness of the typical mountain road net—would isolate the enemy forward positions. Once launched, the attack is pushed with speed and vigor.

## **Section XI. OPERATIONS IN WOODS**

### **144. General**

Tank operation in woods and forest are conducted as in jungles, with modifications indicated by the terrain, cover and climate.

## **Section XII. COLD WEATHER OPERATIONS**

### **145. Employment of Tanks in Cold Weather**

*a.* Operation in snow and extreme cold are covered in detail in FM 70-15. Special equipment and training are needed for effective cold weather operations.

(1) Mobility is restricted by deep snow, which makes it impossible to use quarter-ton trucks and may eventually block the cross-country movement of all vehicles. For this reason, advance guards and other leading elements should be equipped with snow plows and bulldozers. A portion of the battalion personnel should be issued snowshoes or skis and trained in their use. Reconnaissance personnel especially must be able to use this equipment.

(2) When the weather is very cold with only a light snow fall, the mobility of tank units frequently is improved by the freezing of swamps, streams, and lakes. New, sound ice, a foot and a half thick and in

floating contact with water, will support light tanks at distances of a hundred yards. The thickness of ice at a selected crossing can be increased by placing a layer of brush upon it, pouring water over the brush, giving the water time to freeze, and then repeating the process until the desired thickness is achieved. The surface of the ice is covered with brush or dirt to improve traction, and traffic is carefully controlled.

(3) Supply problems are intensified because of the weather, road conditions and the need for special equipment. Vehicular fuel consumption is relatively higher. Special fuels and lubricants are frequently required. Heaters are necessary for warming engines before they are started, for drying clothing and equipment, and—if necessary—to warm maintenance tents and shelters.

*b.* (1) Tank employment in cold weather generally follows the doctrine laid down elsewhere in this manual. Objectives are usually limited. Tanks may tow ski troops or infantry in sleds.

(2) Provisions are made for enclosed maintenance shops in bivouacs and assembly positions wherever possible. All installations should be located on terrain not subject to flooding by sudden thaws. Camouflage is easy during periods of heavy snow falls, more difficult during clear and warmer weather.

(3) Enemy mine fields can be easily laid and hidden in all but the deepest drifts. Tank traps are easily concealed, especially in the ice over frozen streams and swamps. Ice walls make effective anti-tank barriers, are easily constructed and resist heavy shelling.

### **Section XIII. DESERT OPERATIONS**

#### **146. Desert Operations**

This subject is covered in FM 31-25.

## Section XIV. ACTION AGAINST AIRBORNE TROOPS

### 147. General

*a.* Parachute and air-borne troops are most helpless at the moment of landing. The paratroopers are still entangled in their chutes and have not yet reached their weapons and equipment containers; glider or airplane transported troops are disembarking from very vulnerable craft. At the same time, their presence on the ground renders close and effective support from their accompanying fighter and bomber aircraft no longer possible. A swift and savage attack by tanks, supported by artillery time fire and infantry mop-up parties, is most effective. The tanks are held under cover, if possible, until the crucial moment, then committed in mass, using all available fire power. Planes and gliders are destroyed by fire or run down and crushed. Every effort is made to encircle the hostile force and to annihilate it before it can establish a foothold.

*b.* If the force succeeds in landing and establishing itself, a coordinated attack is launched against it before it can be resupplied and reinforced.

## CHAPTER 7

# SUPPLY, MAINTENANCE, AND EVACUATION

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### Section I. SUPPLY

#### 148. General

Supply is a command responsibility, the supervision of which is delegated by the battalion commander to his S-4 (FM 101-5 and 101-10). Since the battalion frequently operates beyond road and rail facilities, efficient logistical support requires much preplanning. Principal plans are always supplemented by alternate plans.

#### 149. Battalion Supply Officer

*a.* The S-4 of the tank battalion keeps the battalion commander advised as to the status of supply in the battalion. He coordinates closely with the G-4 or S-4 of the higher unit. He is conversant with the classes of supply, the items which each comprises and with the responsibilities of each of the general and special staff officers who control the sources of certain type of equipment and supply. He exercises, through subordinates, control and coordination of available transportation. He keeps himself accurately informed as to the status of supply within the battalion and is aware at all times of locations and types of all the division and army supply installations upon which he can depend to meet the needs of his unit.

*b.* In the discharge of his duties the S-4 deals with:

- (1) G-4 of the division staff.

(2) S-4 of the combat command or combat team to which the battalion may be assigned or attached.

(3) The division quartermaster.

(4) The division ordnance officer.

(5) The division engineer.

(6) The division chemical officer.

(7) The division signal officer.

(8) The division surgeon.

*c.* In performing his duties the S-4, and his assistants, frequently move independently of the rest of the staff in order to maintain personal contact with the supply officers of the higher units and the various supply installations serving the battalion. When with battalion headquarters, the S-4 operates from the administrative half-track, which has a radio in the higher headquarters administrative net and another in the battalion net.

### **150. Supply Personnel**

The S-4 has the following assistants:

*a.* The commanding officer of the service company who is assistant S-4 in addition to his other duties. This officer controls and coordinates the activity of the supply personnel and takes care of their administration, mess, supply and maintenance. He commands the combat trains of the battalion in combat.

*b.* The commander of the battalion supply and transportation platoon, the battalion transportation officer, assists the service company commander and usually is battalion ammunition officer. Under the supervision of the service company commander he controls the activities of his platoon, moving forward with it on its resupply missions.

*c.* The warrant officer in the service company is an assistant S-4 in charge of the small battalion supply section of the supply and transportation platoon.



His duties are largely clerical and administrative and, with his assistants, he takes care of the field trains in the absence of the service company commander and transportation platoon leader.

### **151. Battalion Supply and Transportation Platoon**

The personnel and vehicles of the battalion supply and transportation platoon are divided into several sections, each of which has a specific supply duty. These are—

*a.* THE FUEL AND LUBRICANTS SECTION handles fuel, oil, and grease and is capable of hauling at one time enough of each to move the battalion for approximately 60 miles.

*b.* THE AMMUNITION SECTION can haul in one trip about half of the battalion combat vehicles' basic loads of ammunition of calibers greater than 37-mm, and one-quarter of their basic load of small arms ammunition.

*c.* THE RATION SECTION.

*d.* THE WATER SECTION. There is an extra 1-ton trailer in the platoon which may be used by either this section or the ration section, whichever has the greater need of it.

*e.* THE BATTALION SUPPLY SECTION.

### **152. Ration Supply**

*a.* Rations are drawn on Army Class I supply point announced by the division. The ration section usually receives the rations in bulk, breaks them down into company lots, and issues them to the companies. Depending on the existing situation, it may deliver them to the kitchens or distribute them to the companies from some central location.

*b.* The number of rations issued to the battalion is based on its daily strength report, which is included in the division's daily telegrams. However, the time intervening between the dispatch of any one daily

strength report by the battalion and the receipt of the rations issued in accordance with the report is from two to five days. Adjustments are made at time of issue. Whenever troops are attached to the battalion without prior notice, the S-4 makes special arrangements to obtain rations for them for the first few days of their attachment.

c. Ration resupply is usually accomplished at night.

d. Messing may be accomplished in any of the following ways:

(1) Whenever possible, the kitchen trucks move with their respective companies, serving three hot meals daily. This is seldom feasible in combat.

(2) The kitchen trucks may move with service company, coming forward at night to serve a hot supper. Under favorable conditions, breakfast also can be served and cold lunches left with the company personnel, the kitchen trucks returning to bivouac before daylight. Any meals which cannot be furnished under this system are served from the emergency rations carried in the combat vehicles.

(3) When it is impossible to get the kitchen trucks forward from the service company area, hot food may be sent forward in cans by any suitable vehicles.

(4) When none of the foregoing methods are possible, crews prepare their own meals from the emergency ration reserve carried on the vehicle. These are replenished as required through normal supply channels. The ration section makes deliveries directly to the tank companies.

### **153. Water Supply**

Water is obtained from water distributing points operated by the engineers. Other sources of water supply are to be avoided, unless approved by a surgeon or adequate measures have been taken to purify it (FM 100-10).

#### **154. Fuel and Lubricant Supply**

Fuel is ordinarily drawn at the Class III supply point, operated by the army quartermaster. The commonest method of resupply is to exchange empty 5-gallon drums for full ones. Motor oils and greases normally are secured at the same place.

#### **155. Ammunition Supply**

*a.* Ammunition resupply is accomplished as follows:

(1) An officer, usually the battalion ammunition officer, prepares and presents a transportation order (a written order authorizing the movement of a given amount of ammunition between two points) to the division ammunition officer (DAO) at the ammunition control point. There one authenticated copy is returned him as authority to draw that amount of ammunition.

(2) Meanwhile the battalion ammunition section has proceeded directly to the division ammunition supply point (ASP).

(3) The officer meets the section there and draws the required ammunition.

*b.* If at all possible, each ammunition vehicle carries a proportionate amount of all the different types and calibers of ammunition used by the battalion. This limits the total loss of one type of ammunition.

#### **156. Spare Parts**

Class II (allowances established by Tables of Organization and Equipment) and Class IV (no allowances prescribed, specially controlled) items are normally resupplied only during refitting and rest periods. Important exceptions are such Class IV items as vehicular spare parts, prompt resupplies of which are essential to the continued combat efficiency of the battalion. These items are generally obtained by direct exchange from the ordnance maintenance battalion, if

the worn or damaged parts are available. Otherwise they are obtained by requisition. The battalion motor officer assists the S-4 in the procurement of these items.

### **157. Trains**

*a.* The battalion trains are that portion of its transportation and personnel employed primarily for supply, evacuation and maintenance. They are divided into:

(1) *Combat trains*, which are required for the immediate mission of the combat elements. They normally include the company and battalion maintenance sections, the ammunition section, the fuel and lubricant section, and the medical detachment. On occasion, the kitchen trucks and the ration and water sections may be included.

(2) *The field trains*, which are not needed for the immediate mission of the combat elements, include service company headquarters, the battalion supply section, the battalion administrative and personnel section, (including the company clerks), and usually the ration, water and kitchen trucks.

*b.* These divisions are given as guides only. A high degree of flexibility is required in all operations involving armored troops. The disposition and duties of train vehicles may change rapidly.

*c.* The battalion field trains are usually attached to the combat command or division trains when the battalion goes into combat, being released when the battalion comes out to rest and refit.

### **158. Coordination**

*a.* Supplies are pushed forward aggressively, despite bad roads, inclement weather, shell fire, distance, scattered enemy opposition, and fatigue. The tank battalion can function only so long as the battalion service elements keep it resupplied.

*b.* The tank companies cooperate fully with the

service elements. Information from them as to routes and road conditions and their exact locations is essential. They can post guides to meet supply trucks and speed up the unloading and release of supply vehicles which reach them. At all times they keep the S-4 advised as to the current status of their supplies.

## **Section II. VEHICULAR MAINTENANCE AND EVACUATION**

### **159. Organization and Function**

The tank battalion is equipped and trained to perform maintenance to include second echelon, and to accomplish the battlefield recovery of its own disabled vehicles. The battalion maintenance platoon, however must be prepared to do third echelon maintenance, especially during combat. The performance of third echelon repairs at the expense of first and second echelon maintenance and replacement of parts must be avoided. Preventive maintenance is the primary mission of all maintenance elements within the battalion.

### **160. Battalion Motor Officer**

The tank battalion motor officer is a member of the battalion commander's special staff. He is directly responsible to the battalion commander for the recovery and repair of disabled vehicles. As a special staff officer he is an adviser and supervisor to the company maintenance officers. He should develop a high standard of operation and maintenance throughout the battalion by exercising close technical supervision.

### **161. Maintenance Operations**

- a.* See TM 9-2810.
- b.* On the march, company maintenance sections follow their respective companies. The battalion

maintenance platoon marches in the rear of the column, just ahead of the rear guard. It recovers and brings with it any disabled vehicle which is beyond the capabilities of the company maintenance section but within its own power to repair. If the damage is too great, the vehicle is turned over to the ordnance maintenance battalion.

*c.* IN COMBAT. Because of the great mobility and long range operations of armored elements prior planning is necessary to insure efficient maintenance support for the combat troops.

(1) In planning an operation consideration must be given to the location of the battalion service park. Whenever possible it is located to permit the maintenance platoon to make rapid battlefield recovery to a centralized location. The location of the operating establishment and proposed service parks are designated by the battalion commander and announced in battalion orders.

(2) In the early stages of an operation, vehicles are recovered to the operating service park. As the operation progresses and the distance to the service park becomes so great that the recovery elements are unduly hampered, they are notified to move and recovery is effected to the next proposed location farther forward on the axis of evacuation (fig. 95).

*d.* To insure maintenance support, second echelon maintenance and recovery plans must be coordinated with the plans of third echelon maintenance, recovery and evacuation.

(1) Vehicles beyond the scope and facilities of second echelon maintenance are handled in the following order of preference:

(*a*) Recovered to the vehicle collecting point established by the ordnance maintenance battalion, the location of which is announced in division orders, and operated by the ordnance maintenance company (detachment) in support of the combat command.

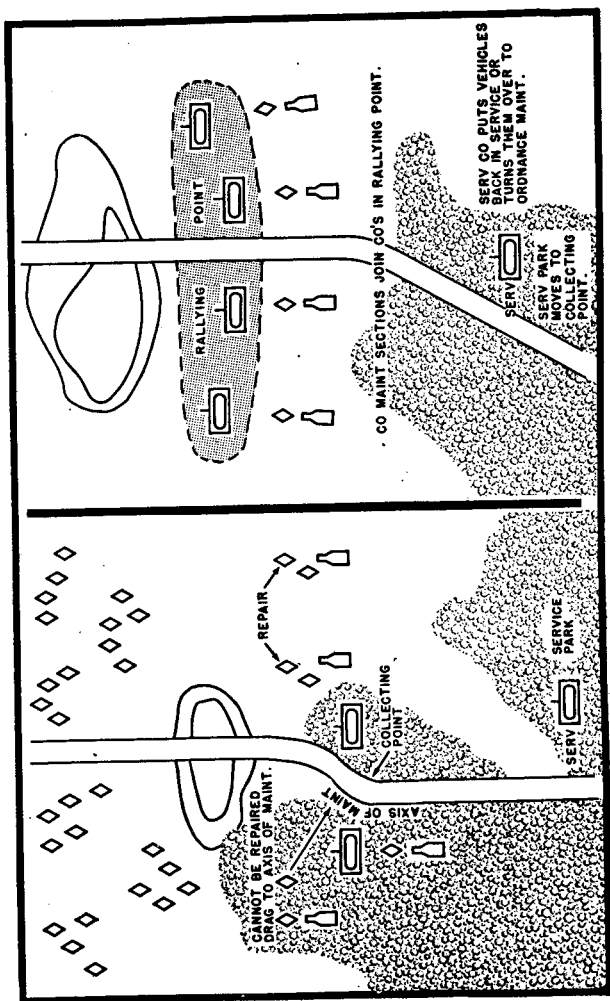


Figure 95. Maintenance during combat.

(b). Recovered to the battalion service park or, the proposed location if the distance to the operating establishment becomes too great.

(2) The ordnance maintenance liaison party, operating out of combat command headquarters or the ordnance maintenance company located at the collecting point are notified of—

(a) Type of vehicle.

(b) Exact location.

(c) Extent of damage.

(d) Pertinent phases of the tactical situation.

## **162. Evacuation**

a. Evacuation is the function of the ordnance maintenance battalion, or the maintenance company supporting a separate tank battalion.

b. The ordnance maintenance battalion evacuates those vehicles which the battalion maintenance platoon cannot readily repair. These vehicles are usually evacuated from the unit service park or collecting point, but in emergencies may be picked up farther forward if the battalion maintenance elements are unable to recover them.

c. Continuous liaison between the ordnance maintenance battalion and the tank battalion maintenance platoon is necessary. This is accomplished through the liaison parties sent out by the former and through the efforts of the tank battalion motor officer.

## **Section III. TREATMENT AND EVACUATION OF PERSONNEL CASUALTIES**

### **163. Employment of Medical Detachment**

See FM 17-80 and FM 8-10.

a. The medical detachment furnishes mobile medical support to the tank battalion.

b. ORGANIZATION AND EMPLOYMENT. (1) The detachment is equipped with a  $\frac{3}{4}$ -ton truck, and



four  $\frac{1}{4}$ -ton trucks. It also has a radio set SCR-510, netted with the battalion command and administrative nets.

(2) The  $\frac{1}{4}$ -ton trucks may be utilized for service as ambulances. Each carries a crew of medical technicians, equipped to administer emergency treatment.

*c.* During marches the detachment moves in the rear of the battalion column, just in front of the battalion maintenance platoon. Upon occasion, one or more of its  $\frac{1}{4}$ -ton trucks may be distributed among the tank companies if the situation requires.

*d.* Before combat, the medical detachment establishes an aid station at the assembly position.

*e.* As the tank battalion advances into combat, the medical detachment closes the aid station and follows in its rear with the company maintenance sections.

(1) During the advance, the medical personnel may be able to locate disabled tanks by direct observation. The presence of others is reported by radio to the battalion surgeon. A  $\frac{1}{4}$ -ton truck visits each disabled tank. In case a tank with wounded has been by-passed, one of the  $\frac{1}{4}$ -ton trucks returns and collects them.

(2) Tank crew members are thoroughly trained in first aid and the evacuation of wounded personnel from tanks. Under normal circumstances they remove the injured and administer first aid before the arrival of the medical personnel who administer emergency treatment.

(3) Casualties suffered during an advance may be evacuated by the  $\frac{1}{4}$ -ton trucks:

(*a*) To the previously designated axis of maintenance and evacuation where they are picked up by the battalion ambulance.

(*b*) To a predesignated collecting point, established either by the medical detachment or by the supporting medical battalion.

(c) To the rallying point, in cases where the advance is rapid or the casualties have occurred near that point.

(4) The battalion surgeon coordinates the movement of the  $\frac{1}{4}$ -ton trucks with the advance of the battalion. The medical officer attends the more seriously wounded, the minor cases being cared for by the medical assistant, MAC, and the medical technicians. Speed and thoroughness are essential. The medical detachment should not fall far behind.

(5) The aid station is set up again at the rallying point. All wounded personnel there are collected and given necessary treatment. These may include wounded collected by the  $\frac{1}{4}$ -ton trucks during the advance and other wounded whose tanks were not disabled and therefore continued on to the objective with them.

(6) Evacuation from the aid station at the rallying point is—

(a) By ambulances of the medical battalion, directly to one of the division clearing stations, from which further evacuation is handled by army medical units.

(b) By the ambulance of the tank battalion medical detachment to a collecting point on the axis of evacuation, from which the medical battalion continues the evacuation as in (a) above.

(7) The battalion surgeon maintains continuous contact with the medical battalion. He is aided in this by an agent from that battalion who usually moves with him.

## APPENDIX I

### TANK BATTALION RADIO SETS

---

#### 1. Amplitude Modulated Set

SCR-506.

- (1) Medium power, code and voice.
- (2) Range, code 5-100 miles, voice 25-50.
- (3) Has replaced SCR-193.
- (4) Does not net with SCR-508 or SCR-510.
- (5) Requires a trained operator.
- (6) Five frequency settings available, four of which are pre-set and one continuously tunable.

#### 2. Frequency Modulated Sets (Operate in frequency range 20.0-27.9 mc)

a. SCR-508.

- (1) Voice set.
- (2) Range, 5—8 miles.
- (3) Transmits on any one of ten pre-set channels selected by pushbuttons.
- (4) Two BC-603 receivers, each with ten pre-set channels selected by pushbuttons.
- (5) Operator may receive on any channel by manual tuning.
- (6) Powered by vehicle battery (12 or 24 volts).
- (7) Transmitter BC-604 includes interphone amplifier.
- (8) Storage space for 70 spare crystals in transmitter.
- (9) Crystals may be changed in the field by technician.

b. SCR-528. Same as SCR-508, except that it has only one BC-603 receiver.

c. SCR-510.

(1) Voice set.

(2) Range, 5 miles.

(3) Consists of transmitter-receiver BC-620 and power supply PE-97.

(4) Transmits and receives on one of two pre-set channels.

(5) Pre-set channels are changed by technicians.

(6) Powered by vehicle battery (6 or 12 volts).

(7) Convertible to SCR-509 disconnecting power-supply and connecting battery case CS-79-A.

d. SCR-509. (1) Portable voice set.

(2) Range, 5 miles.

(3) Consists of transmitter-receiver BC-620 and battery case CS-79-( ).

(4) Transmits and receives on two pre-set channels.

(5) Two pre-set channels are changed by technicians.

(6) Powered by dry batteries.

e. AN/VRC-3.

(1) FM voice set, nets with SCR-300 used within the Infantry Regiment.

(2) Range, 3 miles.

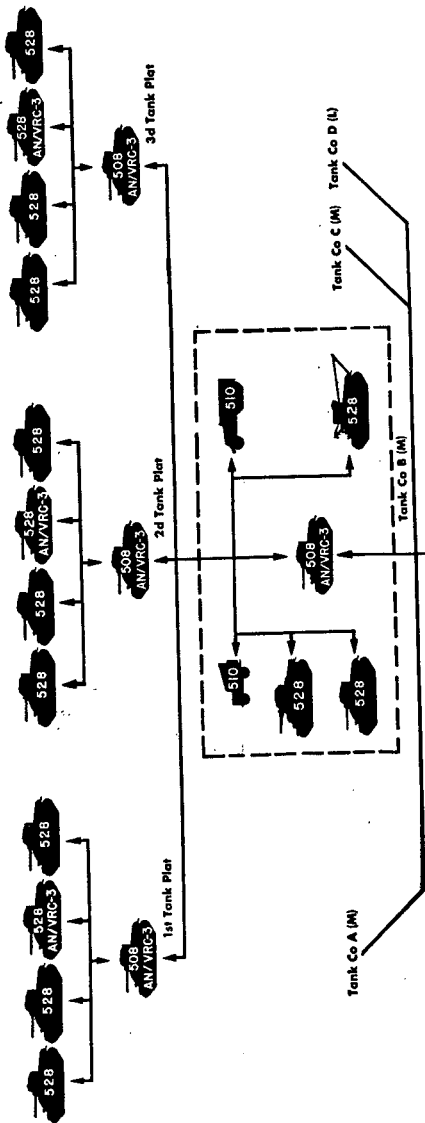
(3) Transceiver, BC-1000-( ).

(4) Operates on one of 40 channels manually set by the operator.

(5) Powered vehicular battery; uses vehicular antenna.

(6) May be dismantled from vehicle and converted into SCR-300 for portable operation.

**COMPANY NET**



*Figure 96. Medium tank company radio net.*

**BATTALION COMMAND NET**  
SUGGESTED TANK BATTALION RADIO NETS SHOWING COMMUNICATION CHANNELS.

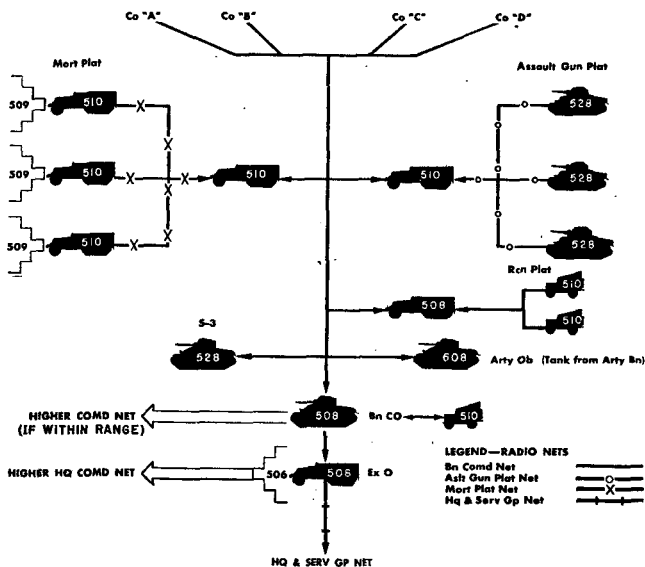
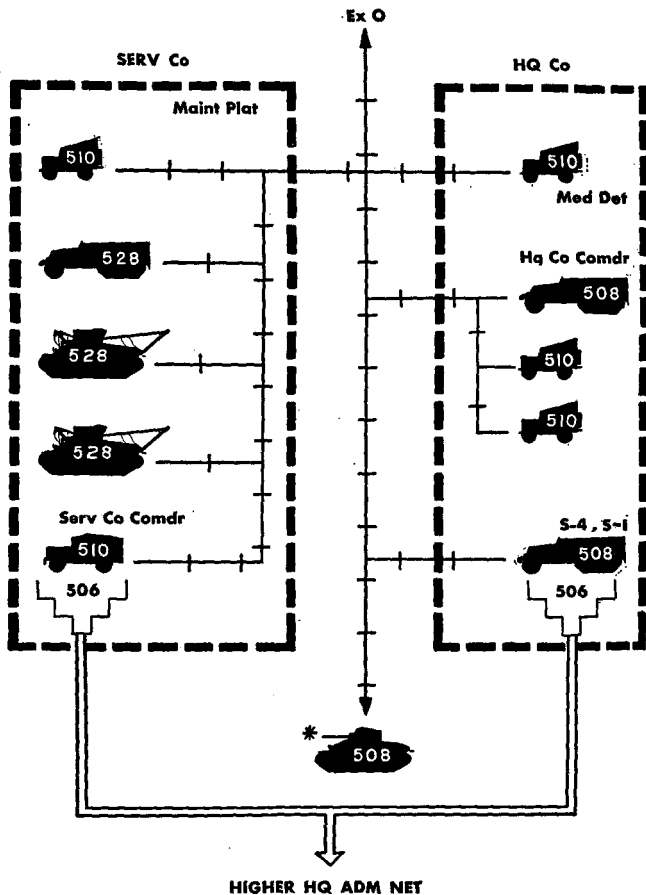


Figure 97. Radio nets, standard tank battalion. Artillery observer in tank battalion in armored division has SCR-508. Separate tank battalion has tank with SCR-608 for artillery observer.

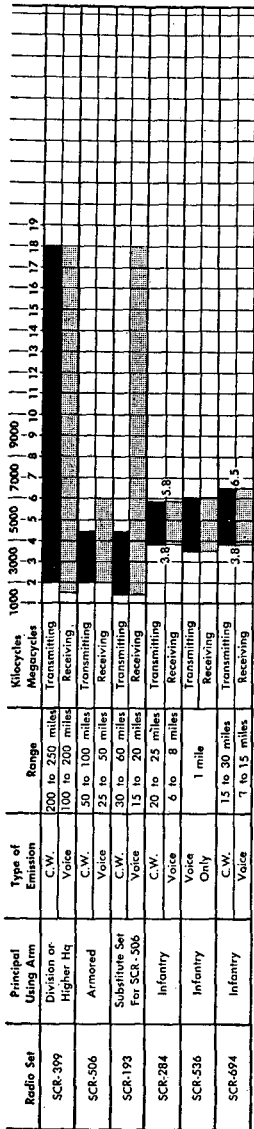
## HEADQUARTERS and SERVICE GROUP NET



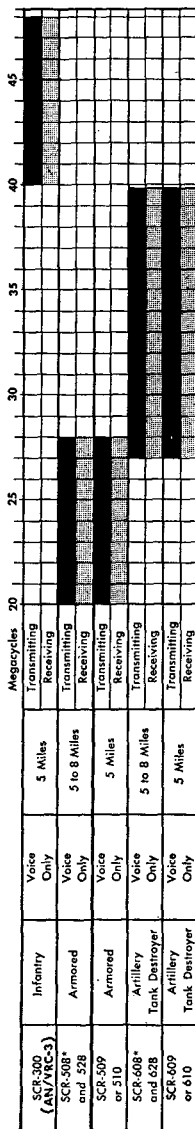
\* **NOTE:** When Tk Co or any other unit in Bn Comd Net is not engaged, it operates on Hq Net. When committed, it switches to Bn Comd Net.  
 Ex O is tuned on Bn Comd Net, but is able to switch to Hq Net.

*Figure 98. Headquarters and service group net.*

### INTER-NETTING CHART FOR RADIO SETS AM — SETS



### FM — SETS



\* Note: These Sets Have Two Receivers.

*Figure 99. Internetting chart for radio sets.*



## APPENDIX II

### FORM FOR ORAL FIELD ORDER

---

The following is an outline of the form for an oral field order (FM 101-5). It may be fragmentary, but all the items of information listed must be made known to the battalion before combat, either by explicit instructions or by reference to standing operating procedure. It is amplified by maps or overlays when available and by reference to the actual terrain when practicable.

1. *a.* (Pertinent information of enemy)  
*b.* (Pertinent information of friendly troops, such as higher, adjacent, supporting, and covering forces)
2. This battalion will (attack) (defend) (withdraw) (as applicable) at (time)  
(Formation)  
(Direction)  
(Objective)  
(ID) (MLR) (Route) (as applicable)  
(Zone) (sector) (as applicable)
3. (Missions of subordinate units)  
.....will . . .  
.....will . . .  
.....will . . .  
Employment, disposition, of heavy, special or chemical weapons.
- (X) Special instructions applicable to two or more units.  
Rallying point

4. Battalion Ammunition distributing point at . . .  
Aid Station . . .

Axis of Maintenance and axis of personnel casualty evacuation.

5. Command Posts:

(Own unit) (or "I will be at . . .")

(Subordinate units)

--- -- -- -- -- -- -- --

"It is now . . . . . hours

"Are there any questions?"

## APPENDIX III

### TROOP LEADING

(to be used as guide only)

#### SITUATION (CHRONOLOGICALLY)

Bn in bivouac, order received attaching Bn to supported unit and including—

- (1) Hour and place at which attachment is effective.
- (2) Area within which assembly positions will be established.
- (3) Route and hours during which priority allotted to Bn for movement to assembly position.

#### ACTION OF BATTALION COMMANDER

##### I

1. Issues march order for movement to assembly position and such warning order as to possible future employment of the battalion.
2. Initiates route rcn to area of assembly position, to include the designation of Co areas and posting of guides.
3. Instructs Ex O to have company commanders and assault gun and mortar platoon leaders meet him at a specified time and place (dependent on location of CO and supported troops).

#### ACTIONS OF STAFF

##### I

- Ex:* Supervises staff operations and executes march order of Bn CO. *CO Hq Co:* Supervises preparation of Bn Hq & Hq for combat.
- S-4:* Assisted by Maint O and TO, carries out supply and Maint preparations.
- Maint O:* In addition to foregoing, assists Co's in preparation for combat.
- S-1:* Proceeds on route rcn with rcn detail and Co billeting details to assembly area; post guides and selects Co bivouacs.

4. Departs with party for CP of supported unit.

*S-3, Ln O:* Accompany battalion commander who may have other members of his staff accompany him but should keep his party to bare minimum. However, he may arrange to have other members of his staff meet him in vicinity of the CP.

*S-2 Com O, Bn Surg:* Normal staff duties or as ordered by Comdr.

*CO Serv Co:* Receives reports on supplies and Maint operations for S-4.

*Rcn O:* Accompanies S-1.

## II

Bn CO and party report to CP of supported unit.

BN moves to assembly area.

## II

1. Reports to CO of supported unit.

2. Learns situation and mission of supported unit and information on terrain.

3. Obtains plan of supported unit, commander, including tank mission, or discusses tentative plans with commander.

## II

*At assembly area.*

*S-1:* Supervises preparation and posting of guides in assembly area.

*Bn Comdr's party.*

S-3 or corresponding staff officer if additional members accompany *Bn CO:*

4. Obtain Arty plan from Arty CO to include check points, base points, etc.
  5. Learns time available for rcn preliminary to recommendations for final plan.
  6. Allots rcn tasks to subordinates and directs report at specified time and place (time and place is dependent on location of CO of supported unit).
  7. Arranges for routes, route rcn, and road priorities forward from assembly position to attack position.
  8. Makes general reconnaissance.
- (1) Obtains available information on situation from supported unit S-2; obtains maps and air photos for later distribution to units.
  - (2) Consults with S-3, supported unit for complete details of plans; posts situation map.
  - (3) Consults S-4, supported unit and arranges for supply and maint of Bn.
  - (4) Consults Engr O of supported unit for information on terrain, bridges, etc., and Engr assistance available to Bn. When ordered, carries out rcn plan of Bn CO.
  - (5) Consults S-3 (Air), supported unit for all information on air support including:
    - (a) Plan for uses of air support and procedure for transmitting requests.
    - (b) Special instructions on identification of friendly planes and troops, and target identification.

(c) Types of air support to include capabilities and limitations.

(6) Consults Com O, supported unit, for information on special signals and pyrotechnics, special signal instructions, locations of all CP's and special arrangements for radio and wire communication.

(7) Consults Surg, supported unit, for locations of all Med installations and arranges for collection and evacuation of Bn casualties.

*Ln O*: Reports to S-3, supported unit, for Ln duty.

*The battalion staff.*

*Ex*: Conducts march to assembly area.

*CO Hq Co*: Assists *Ex* in conduct of march.

<i>CO Serv Co</i>	} Routine duties
<i>Maint O</i>	
<i>TO</i>	

during march.

III

Bn CO and subordinates on general rcn, then meet CO, supporting Bn at assembly position.

III

1. Meets staff officers and BN unit comdrs and receives reports.
2. Makes recommendations to CO of supported unit for tank portion of order. Any or all of the following may be required:

Tank objectives.

Special missions (when applicable).

Hour of tk attacks.

Attack position.

Tk routes and boundaries.

III

S-1: Remains in assembly area to supervise bivouacking.

Ln O: Ln duties with supported unit CP.

Rcn O: Conducts rcn as directed by CO and/or accompanies Bn CO.

S-2

S-3

S-3 Air

S-4

Com O

Bn Surg

Accompany Bn CO or perform rcn as directed.

Ex: Supervise preparations for combat.

CC Hq Co

Co Serv Co

Maint O

TO

Routine duties.

Rallying points.

Alternate rallying points.

3. Requests such of the following as appear necessary or desirable:

Fire support to be rendered tanks.

Coordination with other arms and elements of the command.

4. As soon as practicable, sends word to company commanders, assault gun and mortar platoon leaders to meet him at a specified time and place in forward area. (This action depends on the time and place of issue of the order by the CO, supported unit.)

#### IV

CO of supported unit approves or amends the recommendations of BN CO, and issues his order.

#### IV

Issues his order, preferably on the ground from which salient terrain features may be pointed out. Order includes as much of the following as is applicable.

(1) Information of the situation. Support arranged with other arms or weapons.

(2) Decision of Bn CO. Attack positions, routes, and rallying points.

#### IV

*The Battalion Staff*

EX: Supervises preparation for attack.

CO Hq Co

CO Serv Co

Maint O

TO

Supervises final preparation for combat.

Ln O: Ln duties at supported unit CP.



(3) Definite tasks to each combatant element.

(4) Administrative matters, including instructions to Bn Med Sec and the Maint Plat.

(5) Provisions for Maint of Sig Com with supported unit and in the Bn.

Sends warning order to Ex O for movement of Bn to point of deployment or attack position.

V

Preparation for the attack by Bn CO and staff.

By personal contact and by employment of his staff arranges details of:

(1) Cooperation of Tks and Arty.

(2) Cooperation of Tks and Air.

V

Ex: Leads Bn forward to attack\* position.

CO Hq Co: Assists Ex in movement of Bn.

S-1: Routine duties at assembly area.

Bn CO's party:

S-2

S-3

S-3 (Air)

S-4

Rcn O

Bn Surg

Make recommendations to CO and take notes on Bn order.

Com O: Makes recommendations, takes notes on order and supervises setting up of forward CP.

S-4: Returns to rear echelon to supervise execution of supply and maint plan.

V

Ex: Leads Bn forward to attack\* position.

CO Hq Co: Assists Ex in movement of Bn.

S-1: Routine duties at assembly area.

\*See FM 17-36 for duties of the members of a staff of a tank battalion, when attached to an infantry regiment, during combat.

- (3) Cooperation of Tks and CWS.
- (4) Cooperation of Tks and Engrs.
- (5) Cooperation of Tks and Inf to include supporting weapons (MG's Mortars and AT weapons) and TD units.
- (6) Passage of Tks through foot troops.
- (7) Evac wounded from Bn aid station.
- (8) Special arrangements for radio and radio and wire communication between battalion and supported unit.

## VI

Movement of Bn to attack position: or through point of deployment to Co attack positions.

## VI

Accompanied by staff, joins the Bn at point of deployment or attack position.

*S-4:* In assembly area, assisted by TO, makes plans for replenishment of supplies and during and after operation. Plans for replenishment of ammunition, fuel, lubricants, water at rallying point or when directed.

*Rcn Plat:* Post guides on route to attack position.

## VI

*Ex:* Supervises staff operations

<i>CO Hq Co</i> <i>S-1</i>	}	Routine duties in intermediate or attack position as directed by BN CO until time to rejoin Bn at rallying point.
Bn Hq Sec (Less Comd Tk Pers)		

S-4	}	Carry out plan for Maint, Sup, and Med Serv. Arrange for forward dis- placement of Maint and Med Serv as action de- velops and for re- supply as required.
Co Serv Co		
Maint O		
TO		
Bn Surg		

*Hq Sec:* Moves CP to attack position.

*Com O:* Supervises installation of CP at attack position.

*Ln O:* Ln duties.

*Rcn O:* Duties as previously prescribed by Bn CO.

## VII

During combat.

## VII

Reports to CO, supported unit by radio and msgr (written message) when Bn attacks.  
Observes conduct of attack from his tk, maintaining contact with assault Cos.

## VII

*Ex:* On receipt of information from Bn. CO that objective has been seized, moves to rallying point; assists Bn CO as directed or indicated by the situation: supervises staff operations.

Observes supporting fires, requesting changes or additional support needed. Keeps CO, supported unit, informed of progress of tk attack, promptly reporting opportunities for exploitation and discovered weakness of hostile defense.

Reports to the CO, supported unit, arrival of the Bn on the objective. Issues orders covering action of Bn until arrival of infantry.

S-1  
CO Serv Co  
TO

Duties as directed  
by Bn CO.

S-4: Takes action to satisfy the ammunition, fuel, and water requirements of the Bn. Only necessary vehicles of Bn trains will be moved forward at this time.

Bn Surg: Follows the attack; supervises treatment and evacuation of casualties.

CO Hq Co: With Bn at rallying point and assists in reorganization as follows:

- (1) Confers with S-4.
- (2) Reports on need for additional assistance, requirements for fuel, ammunition, replacements of weapons, radios, tks, and pers by categories, for Hq Co.
- (3) Insures that the Bn Hq & Hq Co rapidly regains readiness for combat, has adequate security and is ready for prompt reemployment.

<p>S-2</p> <p>S-3 (<i>Air</i>)</p>	}	<p>Assist Bn CO in obtaining information on situation and prepare plans for future action. Supervise posting of situation map.</p>
------------------------------------	---	--

S-3 Moves near Bn CO in tk; is responsible for details of coordinating fire; checks units in attack position locations and employment of companies etc.; reorganizes disorganized companies.

*Rcn O*: Carries out rcn tasks as directed by Bn CO.

*Com O*: Organizes CP at rallying point with Hq. Sec. and supervises reorganization of communication personnel and equipment within Bn.

*Ln O*: Rejoins Bn with information and instructions from supported unit CO.

At the rallying point.

## VIII

Establishes Bn CP, provides for local security, and supervises the reorganization of the Bn. Prepares to meet any counterattack.

(1) Reports by radio or messenger to CO, supported unit, as to the combat condition of his Bn, and to obtain instructions regarding further tk action.

(2) Initiates rcn to plan for further action to include:

Orientation.

Progress of friendly troops.

Probable direction of hostile counterattacks.

Need for further assistance from other arms:

(3) In conformity with the plan of the CO, supported unit, he issues orders for further tk action.

Ex: } Routine duties at  
S-1 } CP.  
CO HQ Co }

*Maint O:* Supervises execution of maint plan.

*CO Serv Co:* Assisted by TO, aids S-4 in supervising replenishment of fuel, lubricants, rations, and replacement of supplies and equipment from division depots.

*Bn Surg:* Supervises aid station and evacuation of casualties.

*Rcn Plat:* As directed by Bn CO.

*Ln O:* Ln duties at CP, supported unit.

S-2 } Perform such du-  
S-3 } ties as directed by  
S-3 (Air) } Bn Co.  
S-4 }  
Rcn O }

IX

Reservicing.

IX

At the end of the day's operation directs Bn to report to previously designated bivouac or rally point. Reports to CO, supported unit, to obtain plan for following day's operation.

IX

S-1 CO Hq Co CO Serv Co	}	Routine duties at bivouac area or rallying point.
-------------------------------	---	---

S-4: Supervises replenishment of gasoline and oil, distribution of rations, and replacement of supplies and equipment from appropriate establishments.

*Maint O*: Supervises maint in the Bn.

*Bn Surg*: Moves aid station to conform to movement of the Bn. Checks on prearranged evac of casualties.

*Hq Sec and Rcn Plat*: Establishes CP. Routine duties as directed by Bn Comdr.

*Ln O*: Ln duties at CP, supported unit.

## APPENDIX IV

# DISPOSITION OF TANK BATTALION HEADQUARTERS ON MARCH AND IN THE ATTACK

---

1. On the march, in order to obtain the maximum efficiency from the members of his staff the battalion commander organizes them in certain groups.

*a.* The command half-track contains the operations and intelligence personnel of the battalion and can function as a mobile CP for the battalion headquarters during the march.

*b.* The administrative half-track contains the S-1 and S-4 and their assistants and clerks.

*c.* The battalion commander and S-3 ride in a 1/4-ton truck. In this vehicle, the battalion commander can either move with the higher unit commander or "ride" the column.

*d.* When he is not in the administrative half-track, the S-4 moves independently in the administrative 1/4-ton truck and is not in the column.

2. During the attack the vehicles are distributed throughout several of the attack installations.

*a.* The command tank and S-3 tank are where they are most needed during the attack. They are either at an OP from which the field of battle can be observed or near the head of the support echelon of the battalion.

*b.* The command half-track follows the attack from the attack position after enemy resistance has been overcome. It follows the attack by bounds.

*c.* The liaison officer is with the higher unit. He



visits the battalion command post as often as necessary to maintain the proper liaison.

*d.* The executive officer and S-2 are prepared to move forward and relieve the battalion commander and S-3 during lulls or when one or both become casualties. For this reason they must always be abreast of the situation.

# APPENDIX V

## FIELD INSPECTION OF A TANK BATTALION

---

### Section I. GENERAL

#### 1. General

*a. DEFINITION.* A field inspection is a detailed inspection to ascertain the adequacy and condition of individual and organizational equipment including weapons, communication equipment, vehicles and stowage.

*b. PURPOSE OF FIELD INSPECTION.* The field inspection is the means whereby a commander determines the physical readiness of an organization for combat. It is held frequently during training to familiarize all personnel with the procedure and standards required, and to assess the current condition of the organization. It is held before moving to the theater of operations, before combat, after combat.

*c. CORRECTIVE ACTION.* A field inspection is of little value unless prompt action is taken to correct deficiencies found during preparation for and conduct of the inspection.

#### 2. Purpose and Scope

This appendix has been prepared as a guide for organization commanders and inspecting parties in preparing and conducting field inspections. It is written to apply to all conditions under which inspections are held, from formal ceremonies to tactical situations where expediency is paramount.

### 3. Categories of Equipment

*a.* A field inspection is conducted most efficiently when equipment is divided for this purpose into three categories:

- (1) Individual equipment, including arms.
- (2) Vehicles and vehicular equipment.
- (3) Organizational equipment (less (2) above).

*b.* **INDIVIDUAL EQUIPMENT.** This category may be inspected before or after the vehicular inspection. Shelter tents are pitched, and equipment, including the contents of canvas field bags, laid out as prescribed in FM 21-15.

*c.* **VEHICLES AND VEHICULAR EQUIPMENT.** This phase of the inspection may be a command inspection by the organization commander and staff or by a higher headquarters inspecting party. Or it may be a technical inspection made by personnel from within the organization to be inspected or by an inspection team from higher echelons of maintenance. In any case, a technical inspection should be made in the preparation for or during the field inspection. (See TM 9-2810 and AR 850-15.)

*d.* **ORGANIZATIONAL EQUIPMENT.** In the theater of operations the inspection of organizational equipment (except vehicles and vehicular equipment) may be held in one or more places, depending on the tactical situation. Thus, maintenance, medical, mess and some administrative equipment may be inspected at the battalion bivouac. Some equipment may be at the trains bivouac and the inspection is then conducted at its location. In any case, the inspection must reflect the exact physical condition of the organization.

### 4. Directive

The order for the field inspection usually is issued by the organization commander. However, it may be issued by higher authority. In the early stages of training it may be preceded by a warning order two

or three days in advance. In combat, or after a high state of training has been reached, it may be ordered on a few hours' notice. In order that the inspection may reflect accurately the physical status of the organization, sufficient time must be allowed for the preparation of shortage lists. The order for the field inspection of a company usually is oral. For a battalion it may be oral or written. It includes as much of the following as may be necessary:

- a.* Time of inspection.
- b.* Special preparations.
- c.* March order for movement to the inspection area.
- d.* Formation of vehicles and personnel.
- e.* Methods and phases of inspection.
- f.* Reports to be submitted by unit commanders.
- g.* Special instructions to the inspecting party.

## **Section II. PROCEDURE**

### **5. General**

*a.* Prior to the field inspection, all equipment—organizational, individual, vehicles, and vehicular equipment—should be carefully inspected for cleanliness, serviceability and shortages. This inspection is performed by the using personnel, supervised by the appropriate officer. Lists of shortages including un-serviceable items are prepared. These lists are consolidated by the company property officer who takes immediate action to obtain replacements. In the theater of operations the replacement of items is dependent upon the supply procedure in the theater. The objective sought is the speedy replacement of items.

*b.* **STOWING OF VEHICLES.** Storage of vehicles is as prescribed in technical manuals for the vehicles.

*c.* **PLACE OF INSPECTION.** In the theater of operations a field inspection usually is held in the bivouac of the battalion or smaller unit. Battalion and higher

unit commanders inspect each company in its own area or have each company march to a designated place at a specified time for the inspection. When desired, the battalion may be formed and inspected in one place.

*d. FORMATIONS OF VEHICLES.* FM 17-5 gives formations of vehicles for inspection. Under tactical conditions vehicles are located as required for security.

*e. FORMATION OF PERSONNEL.* Personnel is formed for inspection as prescribed in appropriate field manuals covering crew drill of the vehicle or as prescribed in FM 21-15. Under tactical conditions they form as the situation requires.

## **6. Vehicles and Vehicular Equipment Display**

*a. PURPOSE.* The primary purpose of the display of vehicles and vehicular equipment is to facilitate a check of the presence and serviceability of vehicles and accessories by the vehicle crews and the inspecting parties. In training, it teaches an orderly, uniform system of checking these items and has high disciplinary value. Figures 100 to 103 are intended to suggest uniform displays. Frequent inspections during training, using uniform arrangements of tools and accessories, will familiarize all personnel with the equipment. As a general rule, armament, radio sets, decontaminating equipment, pioneer tools, and fire extinguishers, are left in place in the vehicle. Ammunition is inspected in its stowage position.

*b. SIGNAL COMMUNICATION EQUIPMENT.* (1) General. All miscellaneous signal communication equipment is displayed along with vehicle accessories. Vehicular batteries are exposed and FM sets are aligned on the correct preset channels as prescribed in the Unit Radio Telephone Directory. AM sets are pretuned to frequencies prescribed in Signal Operation Instructions.

(2) *Types of display.* The details of each display

of signal communication equipment depend on the type of radio installation. Signal communication accessories are always displayed on the same side of the portion of the display panel allocated to them and in the same relative location. (See figures 100 to 103.)

*c. ARMAMENT AND ACCESSORIES.* (1) Vehicular armament. All vehicular armament is mounted with telescopic and periscopic sights in place. Ammunition boxes, empty cartridge chutes and bags, binoculars and quadrants, are installed or placed in their proper locations. Ammunition is carefully cleaned and stowed. The solenoid and mechanical firing devices of coaxial machine guns are properly adjusted, and mounting pins and bolts are made readily removable. The coaxial machine gun is adjusted so that it is parallel with the tank cannon. Spare parts for arms and accessories, cleaning equipment, spare periscopes and telescopes, gun covers, tools, rammers and brushes, are displayed with vehicular equipment. (See figs. 100 to 103.)

(2) *Individual arms.* Individual arms may be inspected at the time of the vehicular equipment inspection as prescribed in crew drill or they may be inspected with individual equipment.

*d. VEHICLES AND VEHICULAR EQUIPMENT.* In figures 100 to 103 are shown suggested displays of vehicular tools, equipment, and spare parts. In arranging tools and spare parts the primary object of the display is to facilitate the determination of the presence and serviceability of the item. Avoid fancy displays which will confuse the inspecting party.

*e. CHEMICAL WARFARE EQUIPMENT.* Decontaminating apparatus is inspected in place in the tank. Gas masks of individuals are inspected with individual equipment. (See paragraph 7.)

*f. MEDICAL EQUIPMENT.* The 12- and 24-unit first

aid kits are opened and displayed as prescribed in the outline on the bottom of the lid. All dressings which have been opened are unserviceable and are not presented. Individual first aid kits are displayed with individual equipment.

*g. CAMOUFLAGE EQUIPMENT.* Camouflage nets if not in use are left on the vehicles. They are unrolled as the inspecting officer prescribes.

## **7. Clothing and Individual Equipment**

Shelter tents are pitched and each man displays his equipment directly in front of his half of the tent (FM 21-15).

## **8. Organizational Equipment**

*a. HEADQUARTERS.* Headquarters equipment is displayed by setting up the command post of the organization (battalion or company) and displaying the contents of all chests and desks. When the personnel section is in the rear echelon of the higher headquarters, it may be necessary to conduct the inspection of this personnel and equipment at a separate time and place.

*b. MESS.* The kitchen is set up complete on the ground as prescribed in TM 10-405, FM 17-5 and special instructions issued by the organization commander.

*c. MEDICAL.* The aid station is set up for operation and all equipment displayed. In the tent are displayed all medical chests with component parts laid out on shelves, drawers and the operating table. Litters, blanket sets and dressing sets are displayed in front of the tent. (Figure 104.)

*d. MAINTENANCE.* The tools, equipment and spare parts of the company and battalion maintenance sections are displayed as directed. This display may include only a small portion of this material laid out on canvas or on the ground with the remainder neatly

arranged in the appropriate chests. The complete display of company and battalion maintenance equipment requires an area and time of preparation which must be justified by the necessity for such an inspection. It is more practicable to inspect this equipment by chest or set, using the contents list pasted on the lid or by the SNL.

## **9. Inspecting Parties**

*a. GENERAL.* (1) The inspecting party for a company field inspection may consist of the officers of the company supplemented by skilled enlisted personnel. For a battalion, the battalion commander and his staff are supplemented by company officers and enlisted technicians. If the inspection be directed by higher authority, the scope may approach a technical inspection with the higher headquarters furnishing the specialist personnel necessary. In any case, the inspecting party is divided into teams for each category of equipment. The several teams may be designated to inspect each of the following:

Signal communications.

Arms and armament.

Track vehicles.

Wheeled vehicles.

Organizational equipment (less vehicle and vehicular equipment).

Individual clothing and equipment.

(2) Each inspecting team consists of one or more officers and enlisted technicians with a recorder to note the results of the inspection. Inspectors use checks sheets where necessary, but immediately furnish the recorder data on discrepancies found. Check sheets are not used as reports but may be used as inclosures to the report. The standards are as prescribed in the directive and may vary according to the situation. Thus, equipment may be "training serviceable" but not "combat serviceable" (See



POM.) "Combat serviceability" is directed for signal equipment. The decision as to further use requires careful judgment by the inspecting party. The work of the inspecting officers is facilitated by the presentation of reports of shortages and deficiencies prepared beforehand by designated individuals in the unit (paragraph 5).

(3) *Coordination.* The movements of the various inspecting teams are coordinated to avoid interference with each other and to keep the senior inspecting officer aware of the progress of the inspection.

*b. SIGNAL COMMUNICATION EQUIPMENT.* (1) Sufficient personnel is available in the battalion to organize four teams each consisting of three men, technically qualified and experienced, and one non-technical recorder. The following personnel is usually sufficient.

- 1 battalion communication officer.
- 1 battalion communication chief.
- 6 company communication sergeants.
- 5 company radio repair men.

(2) Conduct of inspection. (*a*) Time available during the field inspection does not permit a complete check of such items as spare vacuum tubes and dry batteries. Therefore, provision should be made for qualified personnel to conduct a detailed check of such items as a normal procedure prior to the field inspection. Tubes and batteries are sealed, dated and initialed at the time of the check. Unbroken seals are accepted by inspectors as proof of serviceability. Actual serviceability of each radio is established by entry into an appropriate net before departure from the service park or during the inspection.

(*b*) The physical check of equipment may be conducted by two or more teams. A plan for check by two teams follows:

1st Team Com O	2d Team Bn Com Chief	Duties
		General check of articles laid out for display (see paragraph 6a), to include: Completeness, serviceability (as indicated by general appearance) and conformity to established standards.
Co Com Sgt	Co Com Sgt	1. Enters each vehicle and checks all installed signal communications equipment, such as: receivers, transmitters, antenna and interphone. This is a complete first echelon check, less the operational check.
		2. The inspection will include a physical check of all authorized crystals and spare fuses.
Co Radio Repairman	Co Radio Repairman	Checks each cell of the vehicular battery, using a high discharge rate voltmeter and hydrometer. General condition, cleanliness, indication of leakage and height and specific gravity of electrolyte are noted.
Recorder	Recorder	Records data on prepared forms.

(3) *Standards.* The standard for all signal communication equipment is "combat serviceability."

c. ARMS AND ARMAMENT. (1) Each inspecting

team should include an officer, an armorer and a recorder. Inspection of a tank battalion requires five teams, one for each tank company and one for the remaining weapons.

(2) *Conduct of inspection.* Each inspecting team conducts a systematic inspection of vehicular armament, accessories, spare parts and ammunition.

(3) *Standards.* The serviceability of armament is classified as follows:

(a) Serviceable for immediate use.

(b) Serviceable with immediate minor repair or replacement.

(c) Unserviceable or requiring major repair.

d. **FULL-TRACK VEHICLES.** (1) The inspecting teams for full-track vehicles are responsible for all tanks, full-track motor carriages and tank recovery vehicles, less signal communication equipment and vehicular armament. They are composed of qualified officers with technicians from the battalion maintenance platoon. Four teams are desirable.

(2) *Conduct of inspection.* Team No. 1 inspects tank chassis. Team No. 2 inspects tank engines. Team No. 3 tests engine and electrical circuits. Team No. 4 inspects general maintenance of the vehicle including tools and spare parts.

(3) *Standard.* The standards must be governed by the serviceability required. The results of the inspection are based on:

(a) Vehicle appearance and mechanical condition.

(b) Completeness of tool and accessory sets and equipment.

(c) Adequate maintenance and lubrication.

(d) All parts and units secure.

(e) Parts not excessively worn.

(f) No leaks.

*e.* WHEELED VEHICLES. (1) Wheeled vehicle inspecting teams are responsible for the inspection of all wheeled and half-track vehicles, less signal communication equipment and armament. Four inspectors are desirable, with duties of inspectors allocated as follows: Inspector No. 1 inspects chassis. Inspector No. 2 inspects engines, Inspector No. 3 tests engines and electrical circuits. Inspector No. 4 inspects general maintenance, tools and spare parts. The standards for wheeled vehicles are the same as for full-track vehicles. Have as many teams as necessary to inspect the unit in the time allowed. An experienced team with a recorder can inspect about six vehicles in an hour.

*f.* ORGANIZATIONAL EQUIPMENT (less vehicles and vehicular equipment). (1) Inspection teams for this equipment are designated as follows:

(*a*) Headquarters equipment.

S-1 and S-4.

Personnel adjutant.

Sergeant major.

(*b*) Mess equipment.

One officer.

One medical officer.

(*c*) Medical equipment.

Battalion surgeon.

Sergeant surgical technician.

(*d*) Battalion maintenance equipment.

Battalion motor officer.

Battalion motor sergeant.

Battalion motor supply sergeant.

(*e*) The battalion commander, executive officer and battalion motor officer supervise the entire inspection. The S-2 inspects all maps. The S-3 supervises the inspection of the operations equipment. In addition to the specific duties in this paragraph, all members of the battalion commander's staff assist

in the inspection as the battalion commander desires.

(2) *Conduct of inspection.* All of the inspections prescribed in (1) are made simultaneously. After inspecting the medical equipment, the battalion surgeon and assistants go to each company to determine the general physical condition of the men.

(3) *Standards.* See paragraph 9a.

g. INDIVIDUAL CLOTHING AND EQUIPMENT. (1) Organization of teams. Teams are organized of the following personnel:

Company commander.

Platoon leaders.

Company supply officers.

Company supply sergeants.

Platoon sergeants.

(2) *Conduct of inspection.* This inspection is held before or after the vehicular inspection. The company commander, supply officer and supply sergeant, assisted by each platoon leader, inspect the individual equipment laid out as prescribed in paragraph 7.

(3) *Standards.* See paragraph 9a.

h. STOWAGE INSPECTION. (1) *Preparation.* When the equipment inspection of a platoon is completed, the platoon leader reports this fact to the company commander who directs that vehicles be stowed. When stowage is complete, the platoon leader reports that fact to the company commander.

(2) *Allocation of teams.* As soon as each inspecting team finishes its part of the equipment inspection, it starts the stowage phase of the inspection on any units which may be ready. Teams are allocated to platoons or companies by the senior inspector.

(3) *Conduct of inspection.* The stowage of each vehicle is inspected to see that it is correct and secure. Special care is taken to see that there is no interference with the rotation of turrets, access to weapons and use of controls. Straps and lashings are checked

for arrangement and tightness. Towed loads must be securely stowed with lunettes secure in pintles. Deficiencies in stowage are noted as for the equipment inspection.

### **Section III. REPORTS**

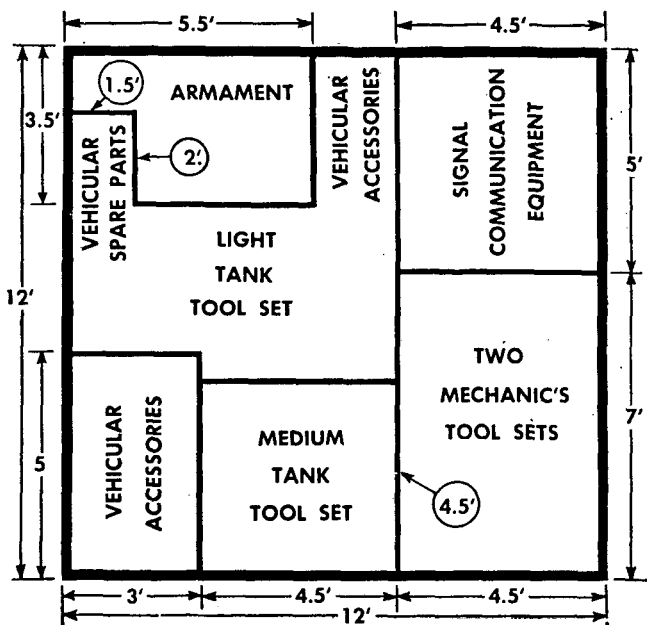
#### **10. Reports**

*a.* Each squad or section leader should have in his possession an individual list pertaining to his vehicle or activity. Units being inspected furnish reports to inspecting teams showing all shortages of equipment and deficiencies which affect combat efficiency. In the zone of the interior these reports are consolidated by companies according to class, such as Ord. QM. They show such shortages as are covered by validated requisitions and that corrective action has been taken for all other deficiencies. In the theater of operations they may be pencil memoranda.

*b.* Inspecting teams note all deficiencies and also conditions indicating commendable efficiency in the organization.

*c.* A written report is made by the senior inspecting officer to the appointing authority, stating the condition of the organization, and noting general deficiencies and commendations, if any. It may be amplified by inclosures.

## TANK RECOVERY VEHICLE, M32 SERIES



### FRONT

Figure 100. Suggested layout for display of vehicular equipment.

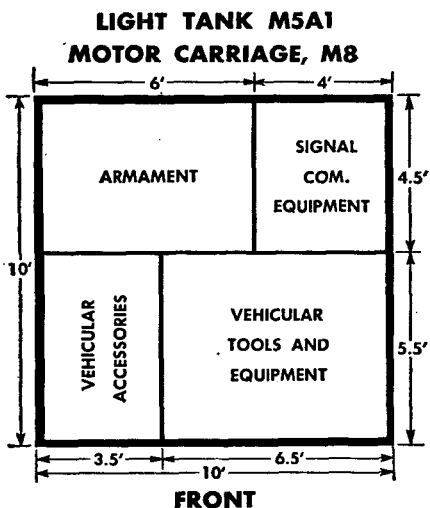
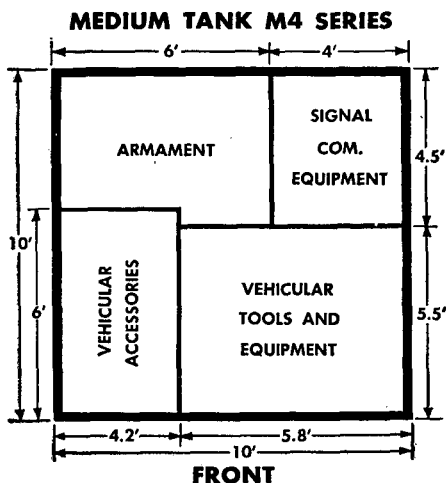
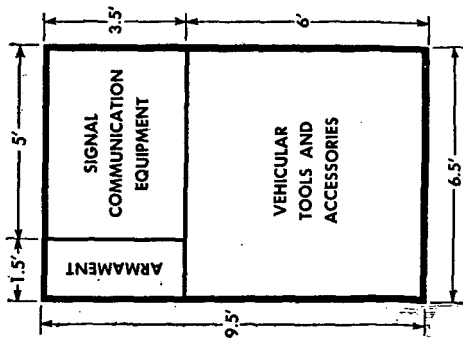


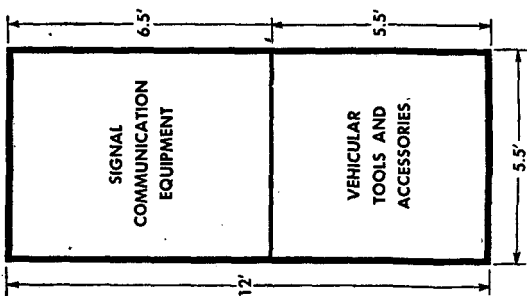
Figure 101. Suggested layout for display of vehicular equipment.



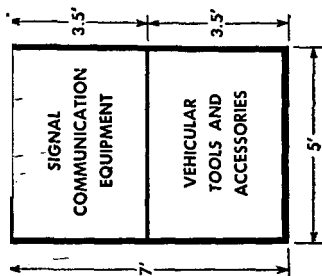
**HALF TRACK**



**3/4-TON C AND R CAR**



**1/4-TON TRUCK**



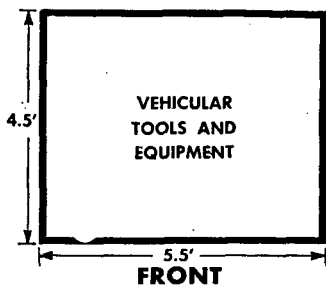
**FRONT**

**FRONT**

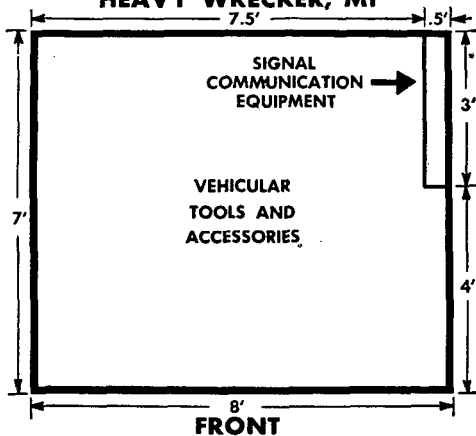
**FRONT**

*Figure 102. Suggested layout for display of vehicular equipment.*

### ¾-TON TRUCK, WEAPONS CARRIER



### HEAVY WRECKER, M1



### 2½-TON TRUCK, 6 x 6

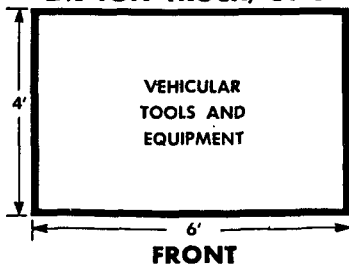
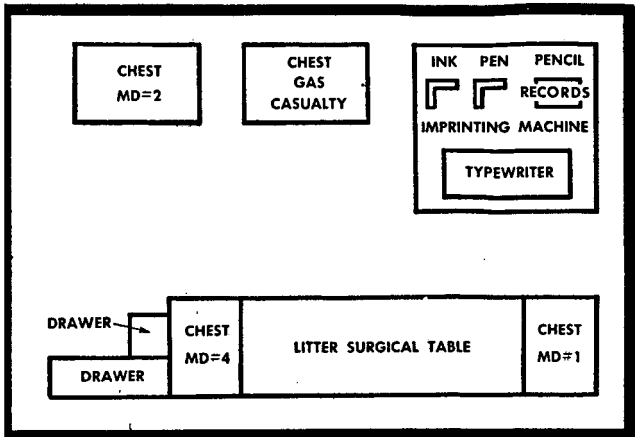


Figure 103. Suggested layout for display of vehicular equipment.

## MEDICAL TENT



## MEDICAL DISPLAY IN FRONT OF TENT

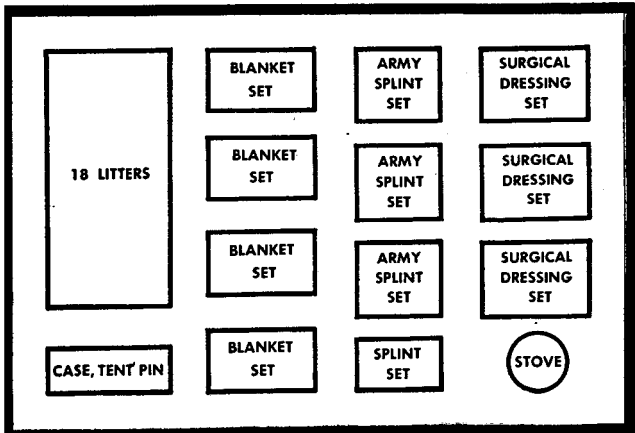


Figure 104. Suggested layout of equipment for the medical detachment.

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