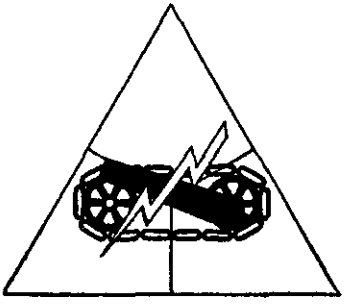
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THE

ARMORED FORCE



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Employment of Armored Units

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The Armored Division

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FM 17

WAR DEPARTMENT

ARMORED FORCE FIELD MANUAL

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EMPLOYMENT OF ARMORED UNITS

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(THE ARMORED DIVISION)

Pending incorporation in the appropriate Armored Force Manual, the following is published for the information and guidance of all concerned.

BY ORDER OF THE SECRETARY OF WAR:

G. C. MARSHALL,
Chief of Staff.

OFFICIAL:

E. S. ADAMS,
Major General,
The Adjutant General.

TABLE OF CONTENTS

CHAPTER 1

GENERAL

	Paragraphs	*Page*
GENERAL PROVISIONS	1	1
TRAINING	2	1
EMPLOYMENT	3	1
CHARTS	4	2
CONTROL	5	2
SURPRISE	6	5
LEADERSHIP	7	5

CHAPTER 2

ASSEMBLY AREAS

GENERAL	8	5
CHARACTERISTICS OF ASSEMBLY AREAS	9	7
ACTION IN ASSEMBLY AREAS	10	7

CHAPTER 3

RECONNAISSANCE AND SECURITY

GENERAL	11	7
THE RECONNAISSANCE BATTALION	12	9
REGIMENTAL RECONNAISSANCE UNITS	13	10
ACTION WHEN CLOSING ON THE RECONNAISSANCE BATTALION	14	10
SECURITY	15	12

CHAPTER 4

MARCHES

GENERAL	16	12
CONTROL	17	13
FRONTAGES	18	16
POSITION OF HEADQUARTERS	19	16
FORMATIONS	20	16
HALTS	21	22

CHAPTER 5

OFFENSIVE COMBAT

	Paragraphs	Page
GENERAL	22	23
ATTACK FROM MARCH COLUMN	23	24
ATTACK FROM ASSEMBLY POSITION	24	33
ATTACK AGAINST A FORTIFIED POSITION	25	36
PURSUIT	26	36
ATTACK AGAINST A RIVER LINE	27	38

CHAPTER 6

DEFENSIVE COMBAT

DEFENSE	28	39
WITHDRAWAL	29	41

CHAPTER 7

SUPPORT AREAS

SUPPORT AREAS	30	43

CHAPTER 8

TRAINS

CLASSES OF TRAINS	31	43
DISPOSITION OF TRAINS	32	44
MAINTENANCE	33	45
SUPPLY	34	45
COMMUNICATION AND WARNING SERVICE	35	46
SECURITY	36	46
ORGANIZATION AND TRAINING OF OVERHEAD IN TRAIN DEFENSE	37	47
LOADING OF TRAINS	38	47

CHAPTER 9

USE OF RADIO

RESPONSIBILITY	39	48
SIGNAL OPERATING INSTRUCTIONS	40	48
RADIO SILENCE	41	50
RADIO PROCEDURE	42	50

ARMORED FORCE FIELD MANUAL

EMPLOYMENT OF ARMORED UNITS

THE ARMORED DIVISION

CHAPTER 1

GENERAL

1. GENERAL PROVISIONS.—*a.* This document is published as a guide for the tactical training and operation of the Armored Division.

b. The tactical procedures and methods set forth herein are not to be followed as arbitrary rules. A departure from the guide lines set forth is a privilege of command, but such departure must be justified by results.

2. TRAINING.—*a.* The Armored Division must be trained and used for offensive operations. Such operations require highly specialized organization and methods to overcome the varied and complex modern fighting means.

b. Every tactical situation now demands special procedures and a special grouping of troops and weapons. This principle applied in the past to a few such groupings as the advance guard and the outpost but has now been extended to include all formations and types of action.

3. EMPLOYMENT.—*a.* The Armored Division may be employed in cooperation with Infantry, Motorized, Cavalry and other Armored Divisions or it may be employed in an independent role. The division must be trained for employment with all such units.

b. Three methods of attack may be used:

(1) Tanks in the initial assault, followed by other troops whose mission will be that of consolidating the position won,

or of holding the breech in the hostile position to permit passage of additional armored or other mounted elements.

(2) Foot troops making the initial assault, followed by armored elements whose mission will be that of exploitation.

(3) Tanks and foot troops together making the initial assault to reduce a hostile position.

c. For all of these types and methods of employment, definite tactical groupings and procedures must be established. By training in the use of these flexible tactical groupings and by following standardized procedures, the powers of the Armored Division can be fully exploited.

4. CHARTS.—*a.* To simplify description, special symbols and colors have been used in charts appearing throughout the book. Chart I shows the key to the symbols and colors used. Chart II presents the organization of the Armored Division. The units of the several Arms and Services are each shown in different colors as indicated on Chart I. The remaining charts shown in the text are devoted to Tactical Groupings. These groupings are organized as Combat Commands. In each such Combat Command, a regimental Headquarters and Service Company, and at least part of the Maintenance Company must be included to provide the necessary supply and administrative facilities.

5. CONTROL.—*a.* Voice radio enables the commander to exercise the force of his personality and to control the actions of his subordinates in considerable detail. In the Armored Division exceptional opportunity is offered for the exercise of this personal and direct command. Voice radio sets, when moving into and during action, must be manned by officers.

b. The missions given to an Armored Division or its component elements must be clear. Commanders must be left free to attack the enemy wherever he is found, from the most favorable direction and to immediately exploit local successes.

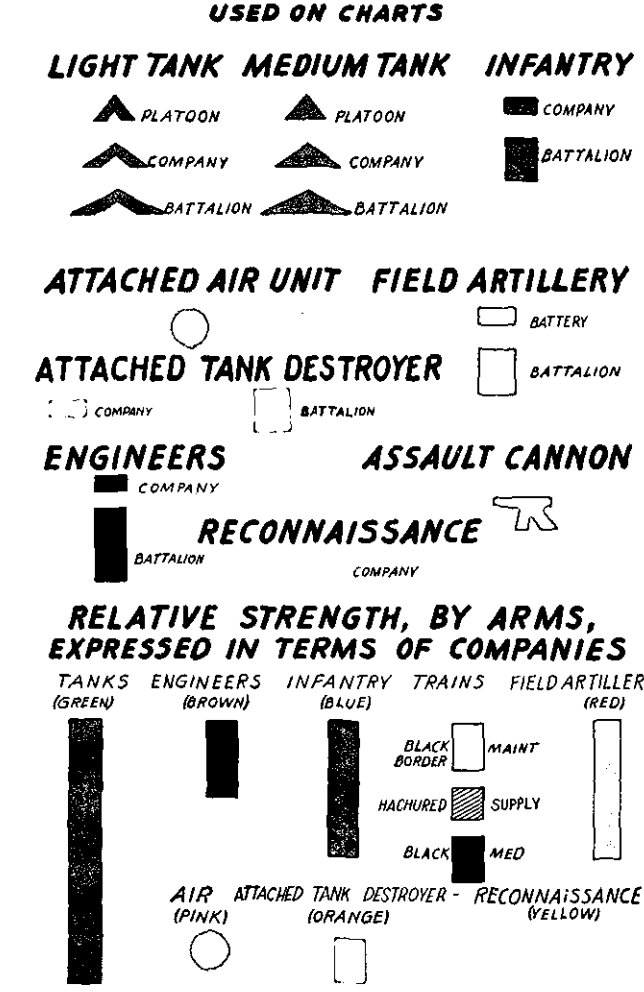
c. The exact area in which units will fight should be defined only if necessitated by the presence of other forces or to coordinate the attack.

d. Orders must be simple and short. The time taken to issue them must be reduced to the minimum.

ARMORED DIVISION

KEY TO SYMBOLS AND COLORS

USED ON CHARTS



RELATIVE STRENGTH, BY ARMS, EXPRESSED IN TERMS OF COMPANIES

CHART I

ARMORED DIVISION
ORGANIZATION

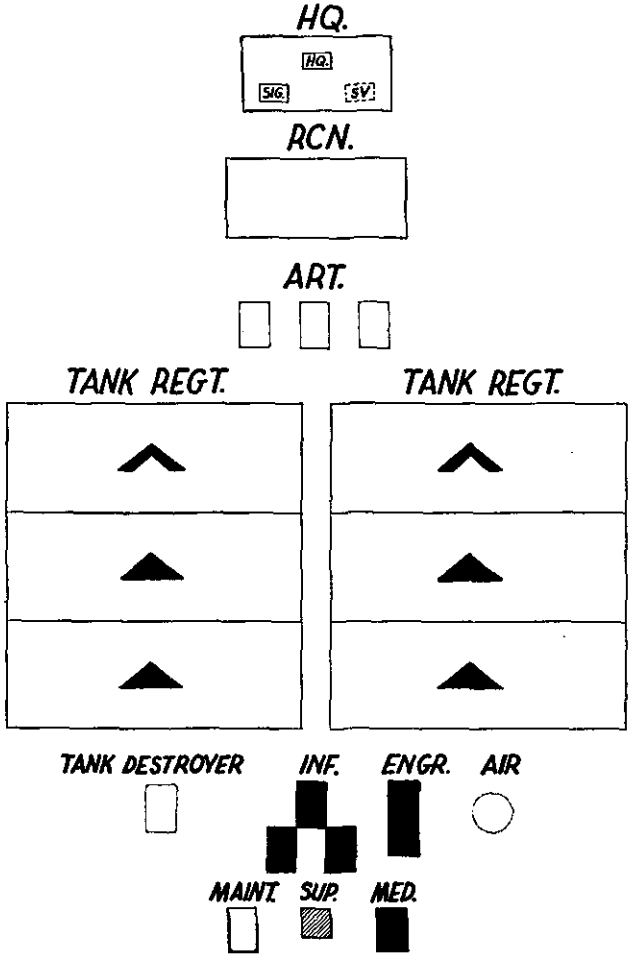


CHART II

e. The Division Commander must inform his subordinate commanders as early as possible as to the situation, the terrain, and his intentions, so as to enable them to act in accordance with his intentions under any emergency situation. The same principle must be followed in all echelons of command.

f. Forces of the division must be kept together so that their action is united and simultaneous in attack. *Dispersion must be avoided.*

6. SURPRISE.—Surprise of the enemy must be assured by constant and careful camouflage, by speed of movement, and powerful attacks. A unit must not allow itself to be surprised.

7. LEADERSHIP.—Daring, flexibility and personal example are essential to command.

CHAPTER 2

ASSEMBLY AREAS

8. GENERAL.—*a.* The Armored Division goes into an assembly area to prepare for its attack or to await future use. In either case, the division must be secured against armored, chemical, ground and air attack. Terrain, obstacles, concealment, proper dispositions, communications and an efficient warning system in the assembly area are important factors in this security.

b. In the assignment of units to assembly areas consideration must be given to the movement of trains to join or service their units. Combat units moving into assigned assembly areas must allow sufficient room and facilities for their trains which are later to join.

c. When combat elements of the division are assembled by Tactical Groupings, it is imperative that unit trains of the combat elements be similarly grouped.

d. When closed into assembly areas, distance and interval between vehicles will not be less than 50 yards. In moving into an assembly area, roads will be immediately cleared.

e. Chart III shows the minimum areas in which the vehicles of the division can be assembled, allowing 50 yards interval

ARMORED DIVISION
MINIMUM ASSEMBLY AREAS

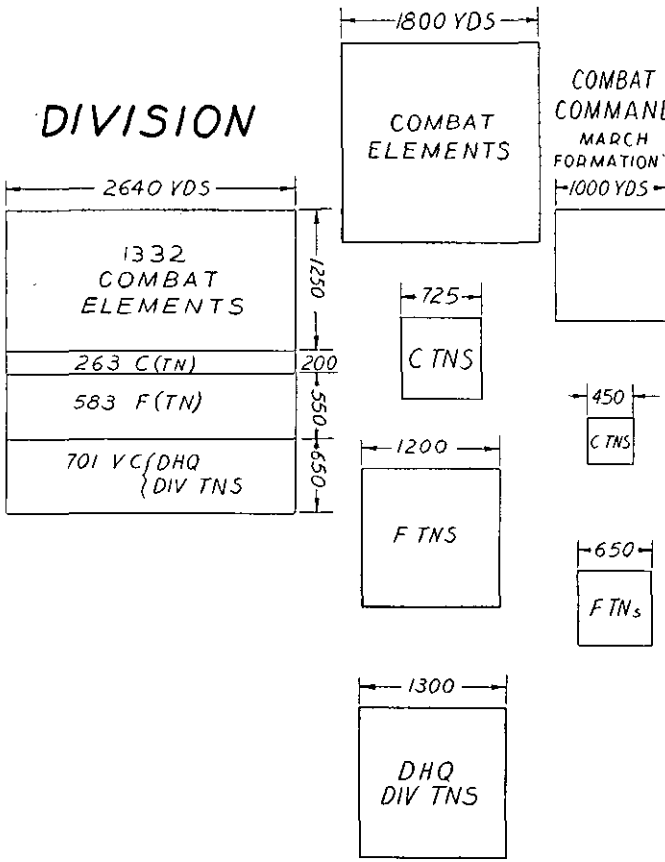


CHART III

and distance between each vehicle. The chart is purely schematic and does not take into consideration the security factors mentioned above.

9. CHARACTERISTICS OF ASSEMBLY AREAS.—*a.* Assembly areas should have the following characteristics:

(1) Out of range of massed enemy artillery.

(2) Afford cover from enemy air reconnaissance.

(3) Suitable entrance and exit roads.

(4) Firm terrain for the standing, and exit of armored vehicles in attack formation to front or flanks.

(5) Sufficient size for disposition of units in depth so that they can move to front or flanks in attack formation.

(6) Utilization of terrain obstacles for security.

b. When the above characteristics are incorporated in an assembly area, its depth and frontage far exceeds the minimum area shown in Chart III as can be seen from Chart IV.

10. ACTION IN ASSEMBLY AREAS.—*a.* A warning system will be established by combat commands and by the division when in an assembly area.

b. Engineers will mark routes to and from the assembly areas and throughout these areas.

c. When units move into an assembly area all weapons and vehicles will be serviced and made ready to operate before troops begin their rest.

CHAPTER 3

RECONNAISSANCE AND SECURITY

11. GENERAL.—*a.* Reconnaissance and security of the Armored Division are furnished by the Division Reconnaissance Battalion, by the Reconnaissance Units of the Armored and Infantry Regiments, by the attached Aviation and by security detachment detailed from the Combat Commands or other troop units.

ARMORED DIVISION ASSEMBLY AREA

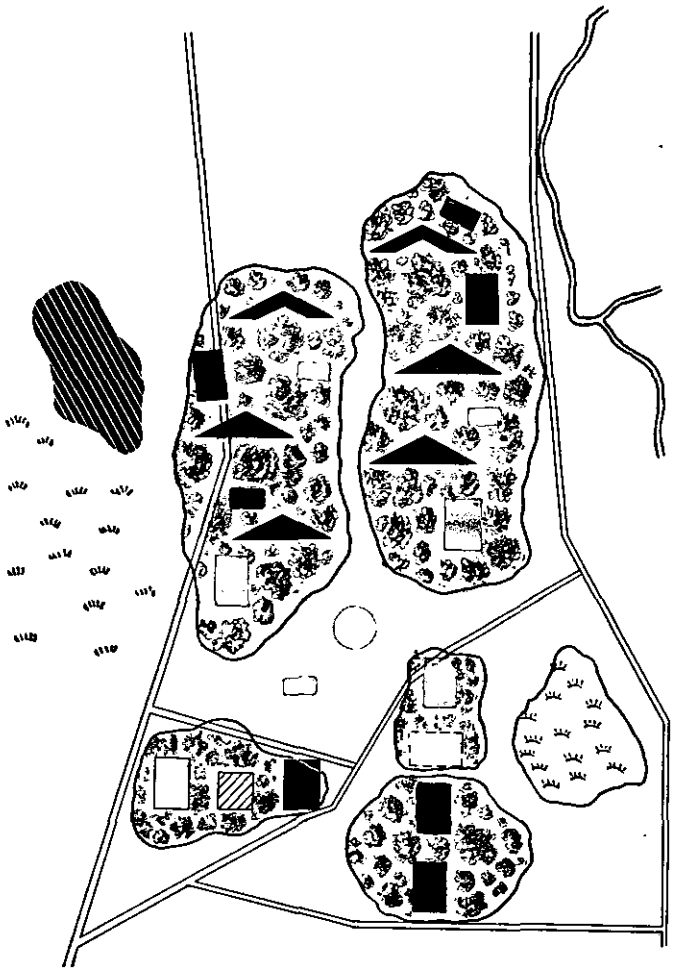


CHART IV

b. The Reconnaissance and Security Agencies may be operated directly under division control, or combat commands may be charged with their operation.

c. The reconnaissance patrols are closely supported. Fighting reconnaissance develops the soft spots in the enemy front which the combat columns must promptly exploit.

d. When hostile resistance is encountered which cannot be overcome, its flanks will be immediately searched for and reported. Terrain obstacles within reconnaissance zones will be reported.

12. THE RECONNAISSANCE BATTALION.—*a.* The Reconnaissance Battalion consists of three reconnaissance companies and one tank company. It furnishes reconnaissance ahead of and on the flanks of the division.

b. Chart V shows a schematic analysis of the reconnaissance possibilities of the division. It shows:

(1) That if one armored car is assigned to a road only 36 roads can be covered.

(2) That for counter-reconnaissance where opposition must be overcome by use of the rifle sections and the assault cannons, a maximum of 9 roads can be guarded.

(3) That the use of the reconnaissance battalion with three companies forward leaves only a tank company in reserve.

c. The Division Reconnaissance Battalion reconnoiters up to a distance of about 60 miles (3 hours) ahead of the division over a front which should not exceed 40 miles.

d. The tasks given to the reconnaissance battalion include the following:

(1) Find the enemy.

(2) Find his flanks.

(3) Test for gaps and weak spots.

(4) Discover the direction of movement of the enemy main body.

(5) Confirm information obtained from the aviation.

(6) Cover the deployment of the combat commands.

(7) Prevent enemy ground reconnaissance (Counter-reconnaissance).

(8) Seize and hold temporarily a terrain objective.

(9) Furnish information of terrain.

(10) Secure definite items of information.

e. The Reconnaissance Battalion will operate with the division observation planes and, when possible, will listen in on these planes. Combat commands will maintain a liaison officer with the reconnaissance battalion operating ahead of them. Combat Commands may pass through the battalion when advancing to attack. The battalion is then used to reconnoiter and protect the flanks.

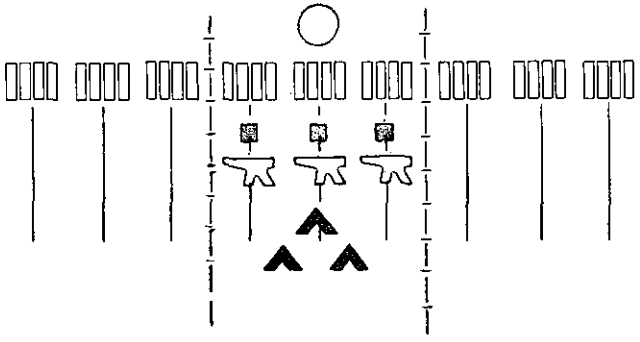
13. REGIMENTAL RECONNAISSANCE UNITS.—*a.* Each of the tank regiments have a reconnaissance company which has the same organization as the reconnaissance company of the Reconnaissance Battalion. The Infantry Regiments and the Armored Battalion each have a reconnaissance platoon. These regimental and battalion reconnaissance units are used by their parent units for local reconnaissance. Zones and objectives are assigned all reconnaissance units. These units gain contact with the enemy as soon as possible by means of patrols. Once contact is gained, it must never be lost. The progress and location of patrols must be constantly reported.

14. ACTION WHEN CLOSING ON THE RECONNAISSANCE BATTALION.—*a.* As the Combat Commands close on the reconnaissance battalion, direct connection will be established, and the latest information will be exchanged.

b. It is extremely important that the units of the division or of the combat commands which follow the reconnaissance do not prematurely close on the reconnaissance unit, thereby losing their power of maneuver. In following or supporting the reconnaissance it is imperative that combat commands and the division maintain an echelonment in depth. This permits freedom of maneuver and concentrated attack against the enemy flanks or points of weakness disclosed by reconnaissance on a

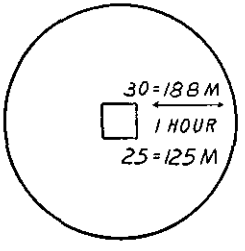
ARMORED DIVISION
RECONNAISSANCE AND SECURITY

RECONNAISSANCE



SECURITY

MUST BE BASED ON THE RELATION OF TIME SPACE & MOBILITY



IF ALL AROUND SECURITY IS NECESSARY - ONE HOURS WARNING AGAINST ENEMY MOVING AT 30 MILES PER HOUR WOULD REQUIRE SECURITY DETACHMENTS OVER A FRONT OF 188 MILES



① AN OBSTACLE CAN BE USED TO REDUCE THE NUMBER AND SIZE OF SECURITY DETACHMENTS

② ANTI-TANK AND INFANTRY UNITS BEHIND AN OBSTACLE CAN AFFORD PROTECTION AGAINST THE MOST POWERFULL TANK ATTACKS.

③ IF OFFENSIVE ACTION IS CONTEMPLATED A BRIDGEHEAD MUST BE HELD.

CHART V

wide front. The gaps and weak spots indicated by reconnaissance will be immediately exploited by the advance guards. Every effort will be made to prevent the creation of a reconnaissance phase, a security phase and a battle phase. The three must be merged rapidly into one operation. Reconnaissance units must transmit reconnaissance information to the combat units which close on it.

15. SECURITY.—*a.* Security must be based on the relationship of time, space and mobility (speed).

b. Security detachments (advance guards, rear guards, flank guards, outposts, and covering detachments) unless specifically ordered by the division will be detailed by the combat commands.

c. Security detachments protect the division and its component units from surprise attack and hostile observation. Under modern battle conditions security against hostile armored attack must cover a command in all directions. Anti-tank guns are deployed for this purpose.

d. Chart V illustrates the time and space factor in security and the value of an obstacle in limiting the area of the security.

e. As an auxiliary means of warning, armored security detachments of the combined arms must be used. Normally such detachments will include infantry, anti-tank weapons, tanks, artillery and aircraft.

CHAPTER 4

MARCHES

16. GENERAL.—*a.* For conduct of marches see FM 25-10 and FM 17-50.

b. The Armored Division marches in one or more columns usually organized into combat commands. Often the march will be covered by other formations but such coverage under modern battle conditions can not assure security. The Armored Division will frequently move in an area in which the situation is vague and fluctuating. It must provide for its own security on all occasions. This security must include anti-tank weapons,

c. Wherever possible the march should be conducted in several columns. Night marches are preferable but it must be remembered that the division is sensitive to night attack. The mission and enemy situation will govern the march formation to be used. In all marches of the division or combat commands in one column, some artillery will be at the head of the main body. In case of air attack the march continues; anti-aircraft guns open fire. When the heads of marching columns halt, and circumstances permit, the columns may be closed into assembly position in order to shorten columns and to facilitate deployment. The advance can be resumed even if the column has not completed its closing into the assembly area.

d. The division must be (1) moved as rapidly as possible, (2) hidden from enemy observation, (3) concentrated in terms of time and (4) ready for immediate deployment for battle.

e. The maximum rate of march for the division as a whole is 20 MPH, governed at the present time by the rate of march of the medium tanks. When vehicles of several types march together the rate of the slower vehicle governs the march rate of the group. It is important that armored vehicle should not be too extended for this will cause them to be late in deploying for combat. The danger of air attack, however, must be taken into consideration. The density of columns must never exceed 40 vehicles to the mile. This density is rarely attained. Usually, densities will be 20 or less vehicles to the mile.

f. The effective employment of the division depends on speed and precision that will enable movement to continue unchecked and upon communication which permits the rapid maneuver of columns.

g. Charts VI and VII show schematic arrangements of the division in one march column, and in march formation (M1) divided into two combat commands. These charts show road spaces and time lengths of organizations and unit trains based on movement at 20 MPM. The charts can be used as a guide for time and space calculations of the tactical groupings shown on charts which follow.

17. CONTROL.—The advance is controlled by phase lines and march objectives. Report lines may be ordered by division and

ARMORED DIVISION
ROAD SPACES AND TIME LENGTHS

SPEED, 20 MPH - ROAD SPACE PER TRUCK
47 YDS — NO DISTANCE BETWEEN UNITS-
DOES NOT INCLUDE MOTORCYCLES & TRAILERS

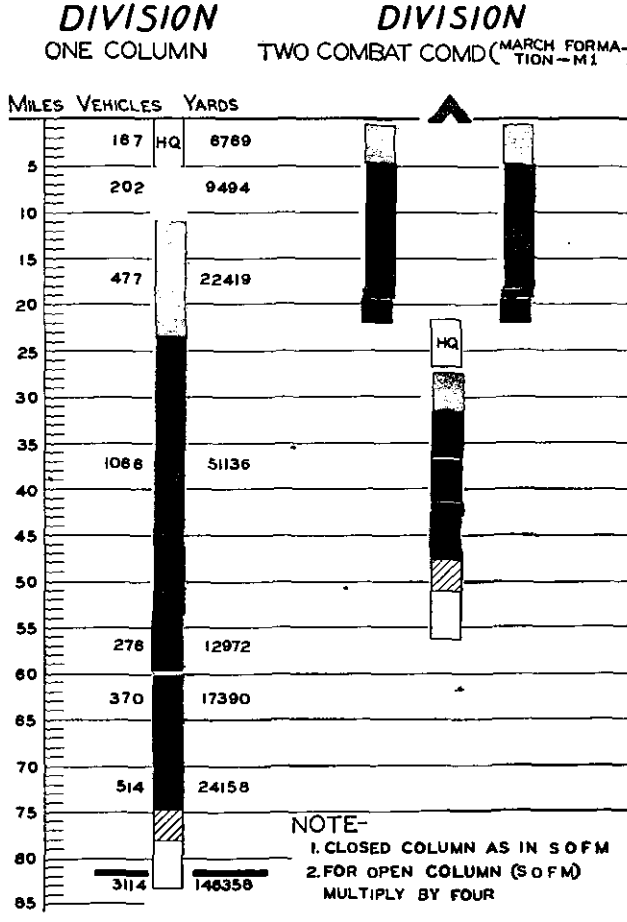


CHART VI

ARMORED DIVISION

ROAD SPACES

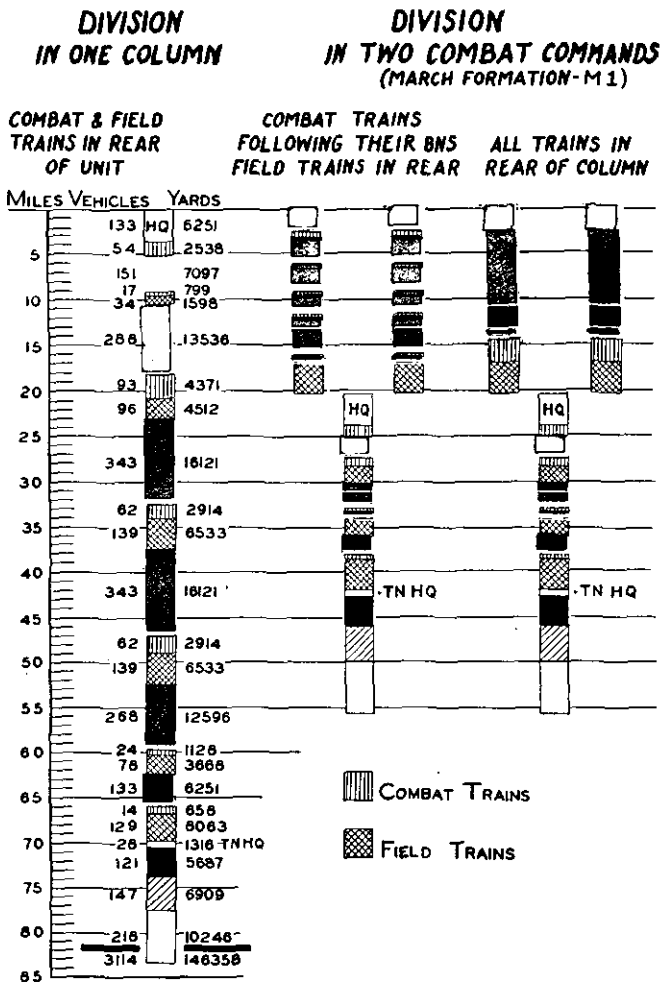


CHART VII

column commanders. March objectives will be ordered only by the division. When objectives (Phase Lines) are used the advance will be halted on these lines and will remain until ordered to go forward therefrom. Code names will be given both phase lines and objectives.

18. FRONTAGES.—*a.* The mobility, together with the radio facilities, enables the Armored Division to march and operate safely on wide frontages. Columns must however be held within time supporting distance. The division can frequently march on a front of 20 miles with all elements within one hour's supporting and closing distances of each other. To facilitate maneuver, considerable distance should be maintained between marching tactical commands.

19. POSITION OF HEADQUARTERS.—Advanced division headquarters will have no fixed place in the columns but will move well forward where it can best obtain information and exercise control. It will always announce its axis of advance so as to facilitate connection and communications. Combat command headquarters will habitually march with their advance guards.

20. FORMATIONS.—*a.* Five march formations, designated as M1—M2—M3—M4 and M7 have been set up. For each of these formations, three *tactical* groupings have been made within the division. Two of these groupings in each formation are combat commands. The third grouping remains under the direct orders of the division commander and may be regarded as a division reserve.

b. In each march formation (M1-M2-M3-M4-M7) the three groupings may march on one road, on two roads or on several roads. The composition and the command responsibility for each grouping is fixed by the designation of the formation (M1-M2-M3-M4-M7). The order of march within groupings can be changed to suit the particular situation.

c. The march formations are shown on Charts VIII A, VIII B, VIII C, VIII D, and VIII G. In the march formations, units are assigned to combat commands. Units not so assigned remain as a separate group under the direct orders of the Division Commander. The essential purpose of the groupings is

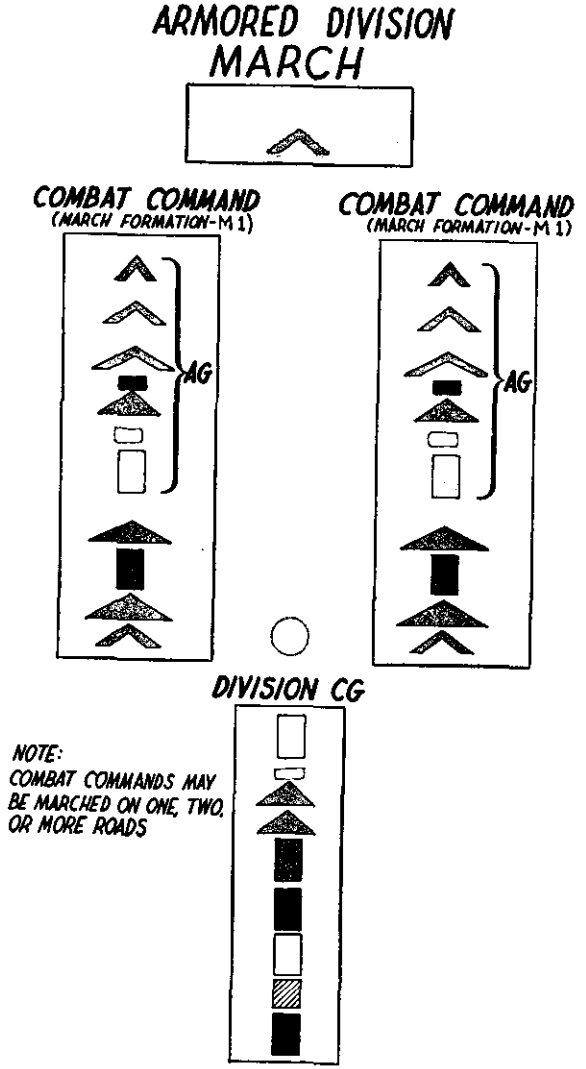

ARMORED DIVISION
MARCH
COMBAT COMMAND
(MARCH FORMATION-M 1)
AG
COMBAT COMMAND
(MARCH FORMATION-M 1)
AG
DIVISION CG
NOTE:
COMBAT COMMANDS MAY
BE MARCHED ON ONE, TWO,
OR MORE ROADS

CHART VIII-A

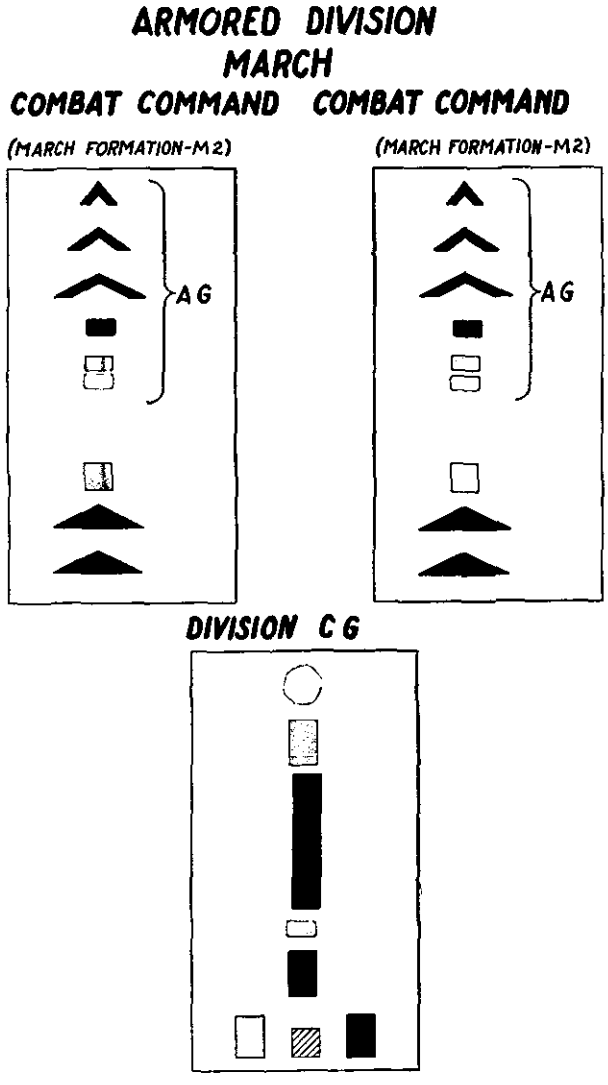

ARMORED DIVISION
MARCH
COMBAT COMMAND
COMBAT COMMAND
(MARCH FORMATION-M2)
(MARCH FORMATION-M2)
AG
AG
DIVISION C G

CHART VIII-B

ARMORED DIVISION
MARCH

COMBAT COMMAND
(MARCH FORMATION-M3)



DIVISION CG



COMBAT COMMAND
(MARCH FORMATION-M3)





CHART VIII-C

ARMORED DIVISION MARCH

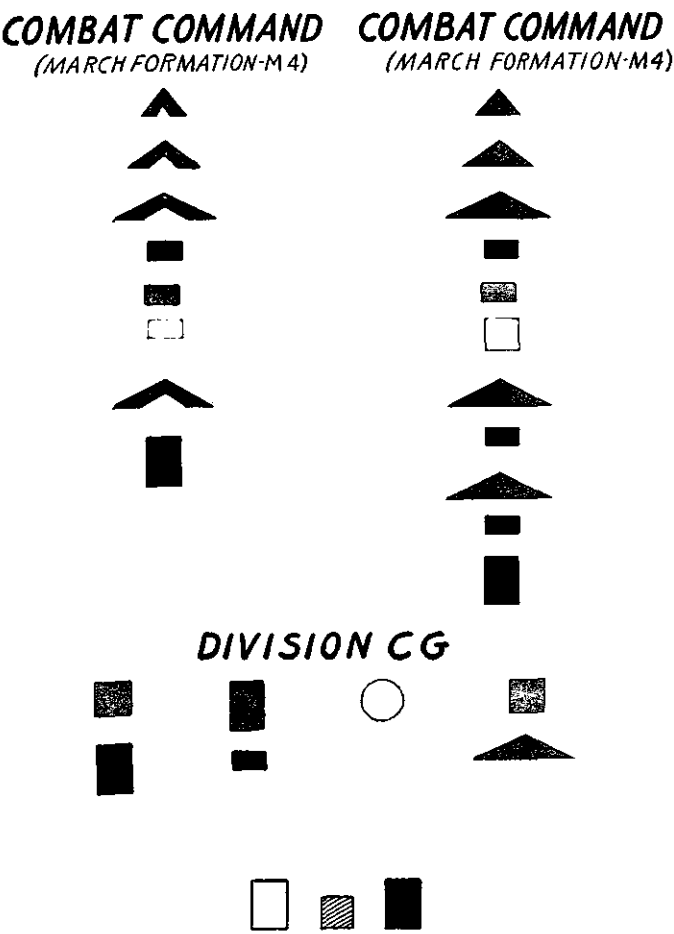


CHART VIII-D

ARMORED DIVISION
MARCH

COMBAT COMMAND
(MARCH FORMATION - M7)





DIVISION CG



COMBAT COMMAND
(MARCH FORMATION - M7)



CHART VIII-G

to form teams which habitually operate together, thus making possible intimate and uniform team training. This tactical grouping also simplifies orders and control. The tactical organizations as set up are suitable for and are easily deployed into attack formations (A1-A2-A3-A4 and A7) which are shown and explained later in this text.

d. Combat commands can be marched in column or abreast. The formation with combat commands in column offers the advantage of enabling the second combat command to be moved as a divisional reserve with little or no protective commitments.

e. The formation with two combat commands abreast permits a wider frontage to be covered. This formation, however, leaves little in division reserve; moreover, a considerable proportion of the armored strength of the division is deployed and may be committed at the outset.

f. Depending upon the formation adopted the infantry regiment may move in rear of the tank elements, in advance of such elements or with these elements. The infantry regiment may be advanced by bounds from obstacle to obstacle or it may be used to guard a flank.

g. Normally, infantry and engineers will be attached to combat commands in order to render prompt assistance in crossing obstacles and in demolitions. The engineers reconnoiter routes, post signs, reinforce bridges, build bridges, improve and maintain fords, provide by-passes around destroyed bridges, and other engineer tasks. Engineer units must be well forward in each column. If large scale bridging operations can be foreseen the majority of the engineers will be held under division control.

21. HALTS.—*a.* Halts will be ordered by column commanders. Usually a halt of 15 minutes is made at the end of the first forty-five minutes of marching. At the first halt, engines will be stopped and inspected. Subsequent halts of 10 minutes are made at the end of an hour and twenty minutes or one hour and fifty minutes. During all halts preventative maintenance will be performed; this is the primary purpose of all halts.

CHAPTER 5

OFFENSIVE COMBAT

22. GENERAL.—*a.* The objective of armored attack is to destroy the enemy. This is effected by breaking through his defenses and surrounding all or parts of his command. Commanders of all units must be far forward. They must keep themselves informed as to the developing situation and as to the intention of the higher commander. Radio silence is usually maintained prior to an attack. After the attack is launched, commanders exert their influence and control through voice radio supplemented by other means.

b. Objectives and missions are assigned by commanders in keeping with the changing tactical situation and the mission of the next higher command.

c. The Armored Division may attack *directly from march column* or it may attack *from an assembly position.*

d. There are three methods of attack either from march columns, or from assembly position:

(1) Tank units leading

(2) Infantry units leading

(3) Tanks and Infantry operating together

e. Charts IX A-B-C-D-G show schematically, five attack formations, in each of which the tactical grouping is different. The deployment of platoons, companies and battalions within Combat Commands is shown on the charts as a guide in the consideration of frontages and depths. The attack formations shown are not to be regarded as fixed. They merely show one grouping for each formation of the following types:

A1—Two Combat Commands and a division reserve. Each Combat Command employing three echelons of attack; tanks leading, light and medium tank units mixed. Infantry and tanks operating together in third echelon of attack.

A2—Two Combat Commands and a division reserve. Each Combat Command employing three echelons of attack; tanks

leading, light or medium tank battalion in assault echelon. Infantry regiment included in division reserve.

A3—Two Combat Commands, one Combat Command composed primarily of Infantry, the other composed primarily of tanks. Infantry leading. Tanks initially in reserve. All artillery under direct orders of division commander.

A4—Two Combat Commands and a division reserve. Light tank units in one Combat Command. Medium tank units (less one battalion) in the other Combat Command. Infantry a component part of each Combat Command and the division reserve.

A7—Two Combat Commands. One Combat Command employing three echelons of attack, each of which is composed primarily of Infantry and tank units mixed. One Combat Command composed primarily of tank units.

f. Chart IX A shows the division organized into Combat Commands in attack formation A1. The tactical grouping for this attack formation A1 is identical with the grouping for march formation M1. Similarly, Chart IX B-C-D and G have the same tactical grouping as are shown in March Formation M2-M3-M4 and M7 (See Charts VIII B, VIII C, VIII D, and VIII G). There are, of course, countless variant tactical groupings for the combat commands, but the ones presented can be used in standing procedures allowing variation as necessary within the combat command.

g. The use of these formations or variations thereof permits the speedy issuance of orders and a quick formation for attack by units habitually trained as a team.

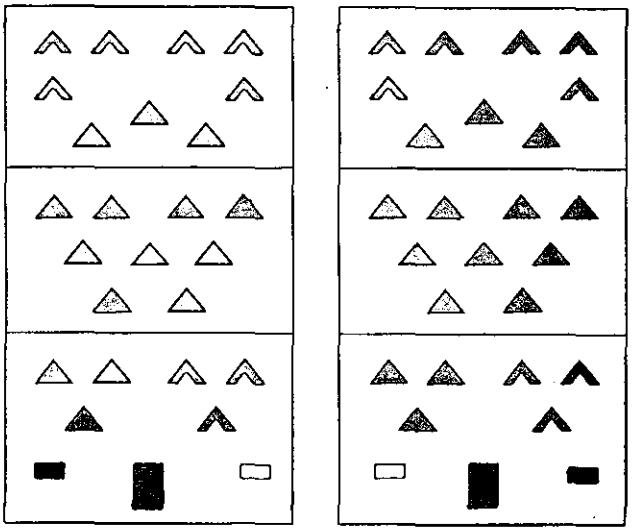
h. In the attack formations shown it is seldom that the tank battalion can strongly attack over a front greater than 1,800 yards. The infantry battalion can seldom strongly attack over a frontage greater than 1,000 yards.

23. ATTACK FROM MARCH COLUMN.—*a.*—(1) When enemy armored units are met, when other enemy formations in march are met or when the enemy has recently deployed, an attack from march column should be made.

ARMORED DIVISION ATTACK

COMBAT COMMAND
(ATTACK FORMATION - A1)

COMBAT COMMAND
(ATTACK FORMATION - A1)



DIVISION CG

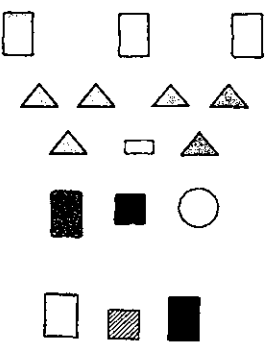


CHART IX-A

ARMORED DIVISION ATTACK

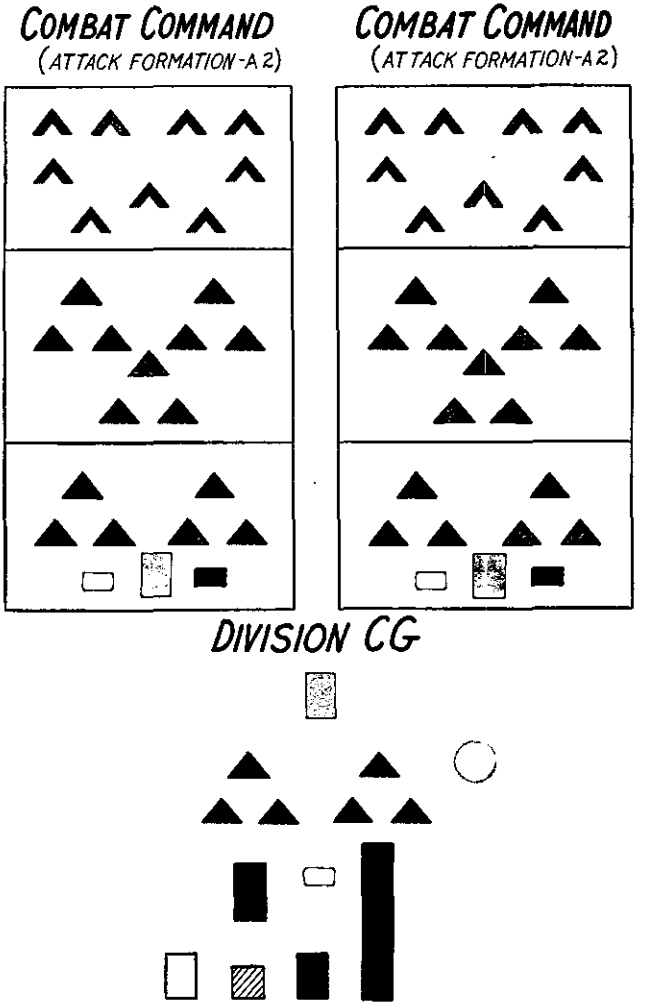
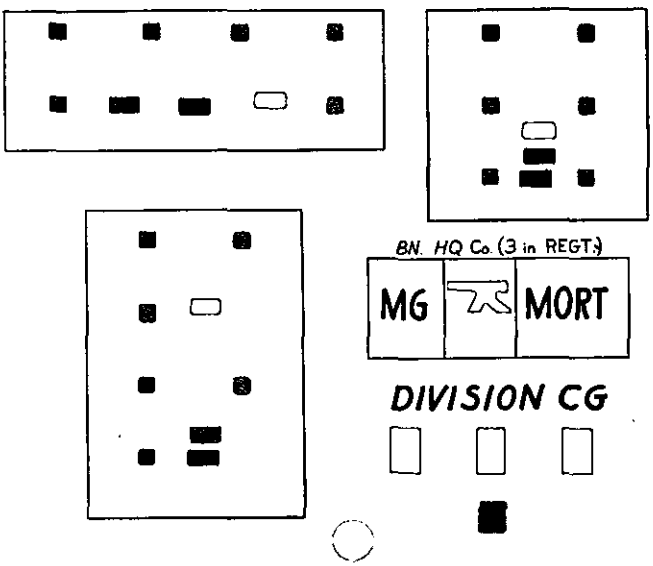


CHART IX-B

ARMORED DIVISION
ATTACK

COMBAT COMMAND
(ATTACK FORMATION - A3)



COMBAT COMMAND
(ATTACK FORMATION - A3)

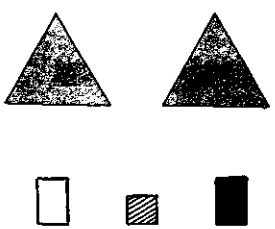
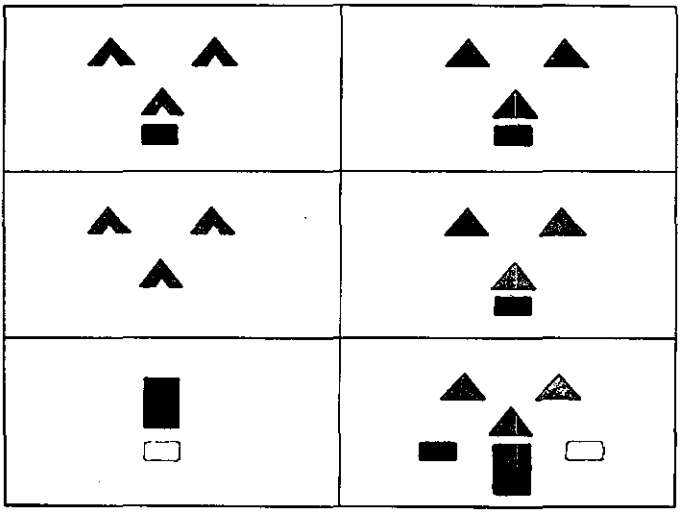


CHART IX-C

ARMORED DIVISION ATTACK

COMBAT COMMAND
(ATTACK FORMATION-A4)

COMBAT COMMAND
(ATTACK FORMATION-A4)



DIVISION CG

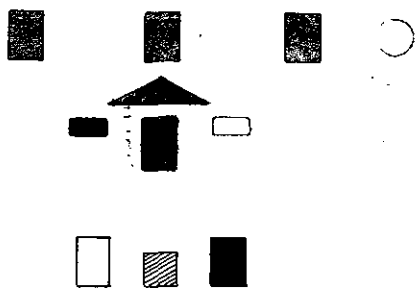
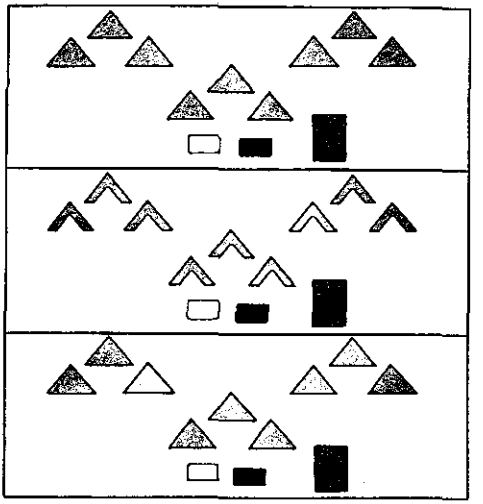


CHART IX-D

ARMORED DIVISION
ATTACK

COMBAT COMMAND
(ATTACK FORMATION-A7



DIVISION CG



COMBAT COMMAND
(ATTACK FORMATION-A7)





CHART IX-G

(2) Attack from march column is characterized by hasty reconnaissance, immediate attack orders, little planned artillery or bombardment support, and successive attacks. It is essential that attack be immediate and that attacking forces are not dispersed.

(3) A short halt by units forming for attack may be necessary. This halt must be under best possible cover from enemy observation and weapons. It must be carried out quickly so as to leave the enemy no time to prepare his anti-tank defenses.

(4) Unexpected encounters with the enemy or ground conditions may necessitate an initial attack on a very narrow front, such as fighting out of a defile. As soon as the leading echelon has cleared the defile, normal battle frontages should be taken.

(5) Close reconnaissance by regimental reconnaissance sections must give commanders of combat commands the necessary information for the plan of action and battle formations. Specifically, *reconnaissance must determine the suitability of the ground for tank attack or whether it is necessary to use infantry as assaulting troops to clear the way for tank attack.*

(6) If the division or the combat commands have open flanks these must be reconnoitered and protected by the rear battalions. Liaison must be immediately established between artillery and bombardment aviation and the assault echelon.

(7) Engineer units must be promptly used to remove or place obstacles, provide demolitions or by-passes and to lay or remove mine fields.

(8) When the division is moving to meet the enemy with two combat commands abreast, the reserves of the combat commands must move with such distance that deployment to a flank can be easily effected. Two or three miles distance in open country is reasonable. When strong terrain features are encountered, reserve units should maintain a depth which will assure that the feature immediately in front is in process of occupation before the position already secured is given up. Reserve battalions should usually move in column of companies to facilitate deployment.

(9)—(a) From march formation, attack is usually made in several echelons. The first echelon of attack penetrates deeply into the enemy position. Its mission is first the destruction of the enemy anti-tank guns and second the destruction of hostile artillery. It fights enemy infantry when hindered by the infantry in the fulfillment of its mission.

(b) The second echelon of attack, supporting the first echelon, must be brought forward in such a way that it can attack in any direction in deep formation. The battle objectives of this echelon will often only become clear during the course of the attack of the first echelon. The mission of the second echelon is to overcome infantry targets, especially heavy weapons and machine gun nests. This echelon also protects the advance of the third echelon by destruction of enemy anti-tank guns which are left by the first echelon.

(c) The third echelon of attack is usually composed of both infantry and tanks. Its mission is the destruction of enemy machine guns and infantry not destroyed by the first two echelons. This echelon must move rapidly deep into the enemy position and destroy enemy guns and personnel.

(d) Close liaison during the attack between the assault battalions and the supporting artillery is of supreme importance. When attacking from march formation there will be little information of the enemy before the start of the attack and there will be little time for detailed arrangements. The artillery battalion commanders must accompany the commanders of combat commands to assure proper artillery support. The artillery must be informed of the attack orders, the zones, direction and objectives of attack. Artillery engages enemy counter-attacking tanks with high explosives and armor-piercing shells at the longest effective ranges. Anti-tank guns, tank destroyer units, must be used to protect the flanks and rear against enemy counter-attack. Engineers may be attached to the first echelon of assault. Immediate reports of objectives reached are made by leading battalions through command channels to the Division CP.

b. AGAINST ARMORED UNITS.—(1) When enemy armored units are met during a march, attack will be made from march

column. The tank units lead the attack. Missions and objectives for subordinate units will be immediately ordered by the division and column commanders. The tank destroyer units well forward in the column may be used to attack and delay the enemy.

(2) Once an enemy armored force is in position to intervene in the battle, its destruction is the main task of our own armored units. The enemy armored units must be attacked and destroyed by all available anti-tank weapons, and by the tank destroyer battalion, even if this entails the abandoning of a previously assigned mission. Although air reconnaissance may give warning of the proximity of enemy armored forces, there will often be little time for a deliberate plan or for detailed orders. Aggressive close reconnaissance must locate the enemy flanks as early as possible.

(3) The following are decisive elements in a tank attack against enemy tanks—

(a) Immediate and correct estimate of the situation and terrain.

(b) Immediate action and orders by commanders of every rank.

(c) Timely estimate of enemy strength and the direction of his attack.

(d) Knowledge of capabilities and limitations of enemy tanks.

(e) Prompt and vigorous artillery support.

(4) In case the enemy armored force attacks first, strong artillery fire must immediately be laid down to halt him. Tank destroyer units may be used to halt his attack while tank units maneuver to attack his flank or rear. Smoke is used to blind hostile observation and to screen the movements of air units.

(5) Should the enemy armored forces retreat they are pursued vigorously. However, care must be taken that the enemy does not draw the pursuing force into an ambush of anti-tank weapons. Artillery must move close up behind the pursuing elements so as to immediately bring fire on such weapons. Division aviation must maintain observation and constantly report hostile movements.

(6) Attack of the hostile force is usually made by the first echelon attacking frontally and rear echelons moving to the flank to attack the enemy in flank or rear.

(7) After action between armored forces, small parties of enemy, usually in tank-proof localities will remain in position. These points of resistance must be immediately mopped up before they are reinforced or can be reorganized. The mopping up is primarily the task of the infantry regiment supported by artillery and where necessary, bombardment aviation. The infantry should follow the assaulting tank echelons of attack with minimum delay. Mopping up should be directed initially to clearing the roads forward to the position of the tanks, so that refill of ammunition and fuel can be promptly made.

c. Against infantry units.—(1) In attacking infantry from march column, tanks, when terrain is suitable, lead the attack. If terrain is not suitable, infantry, supported by artillery attacks to secure terrain from which a tank attack may be launched.

(2) Anti-tank guns are the chief targets of the artillery and leading tank echelons. Leading tank echelons move rapidly through the infantry position and attack hostile artillery. Rear echelons attack and destroy hostile personnel and anti-tank guns passed over by the leading echelon.

(3) Artillery places fire on anti-tank guns and on targets on the flank of the attack. No time will be available for scheduled artillery fires. Forward observers must be with the leading waves of the attack.

(4) Assault guns provide close support for tank and infantry units. Mortars are used to screen hostile observation points and probable anti-tank gun locations. They may be used to destroy hostile anti-tank guns.

(5) Combat commands will usually be deployed abreast and move across country to attack hostile weak spots.

(6) Tank destroyer units are held mobile, prepared to repel a hostile armored attack from the flanks or rear.

24. ATTACK FROM ASSEMBLY POSITION.—*a.* Attack from assembly position is characterized by massed artillery and aviation

support, thorough reconnaissance, co-ordinated and powerful attack, with main effort towards a previously selected objective.

b. Before moving to the assembly position the approach roads and the assembly area must be reconnoitered. The position should provide cover from enemy ground and air observation.

c. In the assembly position the division and combat commands organize the attack formation. All preparations necessary for the attack must be made. Some of these are:

(1) Thorough reconnaissance of ground over which the attack is to be made.

(2) Removal of obstacles and mines in front of enemy battle position.

(3) Collection of information of enemy by close reconnaissance.

(4) Establishment of liaison with supporting units.

(5) Establishment of liaison with units already in contact with enemy in the area of attack.

(6) If tank attack is to follow, pass through, or accompany an infantry attack, liaison between infantry units and tank units must be established.

d. (1) *Enemy weapons and centers of resistance, especially anti-tank guns and artillery, located as a result of reconnaissance of all arms must be known to all attacking troops.*

(2) All unit commanders must be given full information of the terrain over which they are to attack.

(3) Radio is silent in the assembly area prior to attack.

(4) Armored formations move from assembly area in battle formation.

(5) Attack is made with echelons of attack in depth as previously described in this text. After successful penetration the attack must be carried deep into the enemy position in order to disrupt his defensive dispositions, and crush his weapons and personnel.

(6) The greatest possible concentration of artillery fires will be used. These concentrations are used against targets which cannot be attacked by tanks, and to destroy the anti-tank defense. If the ground is suitable for tank attack, or if there are tank obstacles in front of the enemy position, the infantry leads the attack, the tank units being held back until suitable terrain is gained or obstacles have been reduced. The armored infantry vehicles are so placed as not to hinder the subsequent advance of the tanks.

(7) The initial objective of the attack is the enemy artillery positions. The ultimate objective will be announced by orders only after the infantry breakthrough. In other cases where attack is made against strongly organized enemy positions, the infantry and tanks will attack simultaneously or where the ground is favorable the tank units may lead.

(8) If the infantry leads the attack the artillery will engage the enemy front line infantry. If the tanks lead the attack the artillery first engages the anti-tank weapons. In attack against a prepared position a careful reconnaissance is made prior to the artillery preparation. In case of surprise attack, artillery opens fire only when enemy resistance is encountered.

(9) The attached tank destroyer units follow in waves immediately behind the first echelon of attack so as to assist it in overcoming enemy counter attacks. After the penetration, the tank destroyer units are brought up behind the exposed flanks of the first echelon of attack in such a way that they can support it against enemy tank counterattack and can also cover the flanks and rear of the combat command.

(10) Engineers will be attached to the first echelon of attack and will assure the quick removal of obstacles and mines. During the removal of obstacles the engineers will be protected by tanks or infantry.

(11) Following all attacks, *it is imperative that immediate recovery of disabled tanks be made.* If recovery is delayed, enemy night patrols will destroy the tanks thereby causing needless losses.

25. ATTACK AGAINST A FORTIFIED POSITION.—*a.* Armored attack against a fortified enemy position will be exceptional. In such case, specially organized assault detachments, engineers, massed artillery support and bombardment aviation are necessary.

b. Armored units are unsuitable for battle within a city or forest. In case of attack against such objectives, infantry will lead the assault. The bulk of the tank units are held back under cover from enemy fire until gaps in the anti-tank obstacles are made.

c. Close reconnaissance is used to prevent the armored units meeting with unexpected obstacles, particularly mines inside the enemy battle position. Engineers must be placed far forward to locate and remove such obstacles.

d. Massed artillery fire must cover the tank units when passing through the gaps in the anti-tank defenses and during the subsequent forming for attack. Screening of the flanks with smoke may be necessary. Enemy artillery must be neutralized by counter-battery fires.

e. The objective of the attacking tanks is the enemy artillery.

f. Against an enemy in a prepared defensive position or behind an obstacle, attack from assembly position must be made. *Air and ground reconnaissance must assure this vital information to combat commands.*

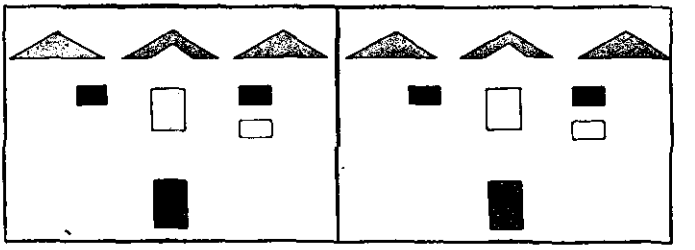
26. PURSUIT.—*a.* Pursuit must be pushed to the limit of endurance of the command even into the night. Only lack of fuel or ammunition will be permitted to halt a pursuit even temporarily.

b. When the armored division pursues an enemy that has been defeated by other troops, it may if terrain is suitable pass directly through the friendly formations. This especially obtains in pursuit after a breakthrough. In such case tank battalions lead and are closely followed by artillery and supported by air bombardment. Combat commands are formed to pursue on a wide front. Infantry follows behind the tanks to mop up hostile resistance. Tank units avoid heavily defended areas when possible. If such areas cannot be avoided they are im-

ARMORED DIVISION
PURSUIT

COMBAT COMMAND (PURSUIT FORMATION)

COMBAT COMMAND (PURSUIT FORMATION)



DIVISION C G

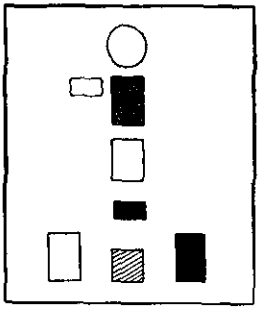


CHART XII

mediately attacked by tanks, infantry, and artillery and rapidly reduced. Chart XII shows one formation for pursuit.

c. When tanks pursue by encirclement a combat command consisting of highly mobile troops, i. e., light tanks, engineers, tank destroyer units, infantry, and artillery usually leads while medium tank units follow as rapidly as practicable.

27. ATTACK AGAINST A RIVER LINE.—*a.* In attack against a river line, the infantry usually leads the attack. The tanks follow only after a bridge-head has been established. The bridge-head must not be wide at first, otherwise it cannot be strongly held until the tank elements arrive. In exceptional cases tanks may attack and establish a bridge-head.

b. Coordinated fire support will be furnished the crossing infantry by all available artillery and medium tank companies from concealed and frequently changed firing positions.

c. The tasks of tank units when attack against a river line is made are as follows:

(1) Clear the near bank of enemy.

(2) Provide covering fire for the moving up of bridging material.

(3) Provide covering fire for assembly of assaulting infantry.

(4) Towing bridge material.

(5) Support of crossing units by fire against enemy centers of resistance.

(6) Extending the bridge-head formed by the infantry.

d. Tank units detailed to support a river crossing will be placed in widely extended formations so as not to interfere with the movement of crossing or bridging troops. All other units not engaged in the crossing operations will be held far back.

e. After a small bridge-head is made by the infantry it will usually be necessary to quickly ferry tank and tank destroyer units so as to support and extend the operations of the infantry bridge-head units.

f. Engineers carrying out initial ferrying and bridging operations will usually be attached to the infantry units making the crossing.

CHAPTER 6

DEFENSIVE COMBAT

28. DEFENSE.—*a.* While the role of the armored division is essentially offensive, circumstances may, at times, force the division to fight defensively. Such as when the objective of attack has been reached, after an indecisive engagement, or in the presence of a greatly superior enemy armored force, the division mission may force a purely defensive attitude. During such defensive operations, which may also include delaying action and withdrawals, commanders of all grades must be constantly alert for opportunities for offensive action. When such opportunities occur, armored units must act with the utmost energy and boldness.

b. When it becomes necessary for the division to take a defensive attitude, the infantry, supported by artillery and engineers, will ordinarily be deployed behind tank obstacles. The reconnaissance battalion maintains contact with the enemy in order to report progress and direction of enemy attack. Artillery fire is opened at the longest effective ranges.

c. The tank elements of the division will be used to support the defense by counterattack. The object will be to deploy the defensive portion of the division behind a succession of obstacles while the tank units of the division are used for harrassing attacks in front of the obstacles and for counterattacks.

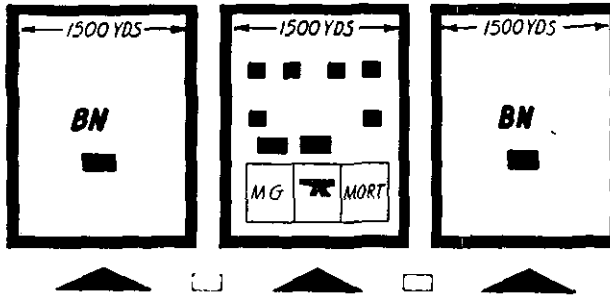
d. In a defensive position the tank units must be protected from enemy artillery and air attack by dispersion and covered positions. The division must protect itself against enemy surprise attack by careful close reconnaissance especially in country with limited visibility. The reconnaissance units may require reinforcement by tanks and infantry units.

e. Enemy reconnaissance is hindered by the fire of tanks with long range weapons. The position of such tanks must be frequently changed. Enemy attacks are met by the massed fire of artillery, anti-tank weapons, and tank destroyer units. The tank units counterattack preferably against the flank of the enemy attack.

ARMORED DIVISION DEFENSE

COMBAT COMMAND

(DEFENSE FORMATION-D1)



DIVISION CG



COMBAT COMMAND

(DEFENSE FORMATION-D1)





CHART X

f. When the division is on the defensive, the trains should be moved back to a secure locality; fuel, ammunition and other supplies being dumped at selected points on the line of probable withdrawal. Every effort will be made to recover disabled tanks.

g. Chart X shows a Defense Formation. In this formation the defensive elements of the division have been grouped in one combat command while counterattack units have been grouped in the other combat commands. In the formation shown, the infantry battalion can seldom cover defensively a front greater than 1,500 yards. It can strongly defend a front of 600 yards.

29. WITHDRAWAL.—*a.* (1) If the Armored Division must *withdraw its tank units* from action against a *non-armored enemy* it will withdraw under cover of the medium tank units supported by the artillery of the division. As soon as the withdrawing units are out of range of enemy anti-tank weapons the tank units will withdraw by bounds.

(2) Engineers and infantry attached to the tank battalions prevent pursuit by motorized enemy forces, by use of demolitions, obstructions, and mines.

b. If the Armored Division must *withdraw its infantry units* from action against a *non-armored enemy,* the tank units will be used to repeatedly counterattack the enemy from unexpected directions until our own troops have been disengaged and withdrawn. In such cases attacks on a wide front are the rule.

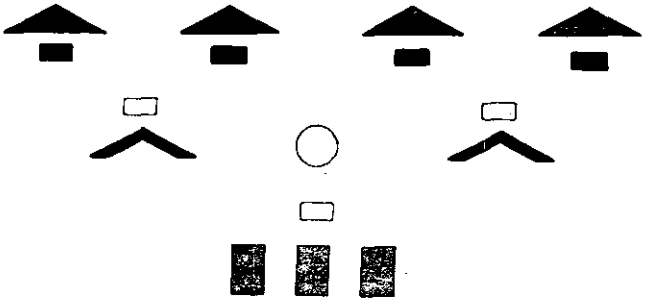
c. If the Armored Division must withdraw from action against enemy armored force, tank-proof areas in the rear will be selected from which strong covering fires can be used. Active reconnaissance to the flanks and flank guards utilizing engineers, infantry and attached tank destroyer units are necessary to prevent enemy outflanking pursuit. If not possible to break contact with the enemy, tank units taking advantage of the ground must attack advance elements of the pursuing enemy.

d. The use of smoke facilitates disengagement from the enemy and conceals the direction of withdrawal.

e. Chart XI shows a formation in which the tactical organization of the combat commands facilitates their use in withdrawal.

ARMORED DIVISION
WITHDRAWAL

COMBAT COMMAND
(WITHDRAWAL FORMATION)



COMBAT COMMAND
(WITHDRAWAL FORMATION)







CHART XI

CHAPTER 7

SUPPORT AREAS

30. SUPPORT AREAS.—*a.* These are in fact bivouac areas in the combat area.

b. In many situations it will be necessary for the armored division to establish a support area where it can adequately protect itself with the minimum of troops against surprise attack or harrassment. In the support area, the division or its major units carry out maintenance, refueling, feeding or rest. Such support areas may be necessary when the division is operating behind the enemy front, when the division is unprotected by other troops, and at night when the division is exposed to surprise all around attack. Infantry, artillery and tank destroyer units must protect the support areas.

c. Night halts during pursuit, if made, will be in tank-proof areas. The artillery and tank destroyer units will be so placed as to support in all directions. Cover, camouflage and dispersion against enemy air attack must be used. Infantry and dismounted outposts supported by defensive fires of tanks must cover the support areas.

CHAPTER 8

TRAINS

31. CLASSES OF TRAINS.—*a.* The vehicles of the Armored Division are habitually divided into two general classes: i. e. (1) vehicles which are primarily used for combat purposes and (2) vehicles which are primarily used for supply purposes. First class of these vehicles will be termed "Fighting Vehicles" and the other will be termed "Train Vehicles" and will be so indicated in Tables of Organization.

b. Train Vehicles are divided into Unit Trains (organic trains of each regiment, separate battalion or company) and Service Trains. Unit Trains are subdivided into Combat (Echelon A) and Field Trains (Echelon B), and must be adapted to the requirement of the tactical situation.

c. Combat Trains usually consist of:

(1) Essential fuel, lubricant and ammunition vehicles.

(2) Light repair vehicles.

(3) Medical vehicles attached to and operating directly with combat units.

d. Field Trains consist of the remaining vehicles of the Unit Trains, usually:

(1) Company Trains (Kitchen and company equipment vehicles).

(2) Heavy repair vehicles.

(3) Unit supply and equipment vehicles.

e. The Service Trains are composed of the vehicles of the division services, less vehicles detached to the Combat Trains. When Field Trains and Service Trains are grouped together they constitute the Division Train.

32. DISPOSITION OF TRAINS.—*a.* During the march, Combat Trains normally follow the combat elements of the column as a single march unit *and in the same order of march* as their respective parent units.

b. When deployment begins the Combat Trains are consolidated and follow their respective regiments or combat commands, or they may be directed to follow their parent organizations.

c. Field Trains are moved under control of the Division Train Commander by bounds, usually at night. When the march or tactical situation permits, the Division Train Commander releases them to their units and they are then lead by guides, sent back to designated points by parent units, to the bivouac of the parent unit. It is vital that supplies, including ammunition and fuel be kept immediately available for combat units.

d. Division Trains are disposed as provided in the Administrative Order or such supplementary fragmentary administrative orders as may be issued by G-4. Their movement in compliance

with these administrative orders is controlled by the Division Train Commander who must, in such control, provide primarily for the execution of the Division Trains' supply, maintenance, and evacuation functions in furtherance of the tactical mission of the Division.

e. Division Trains should be so disposed, where possible without conflict with their supply functions, that the better armed vehicles can give protection to vehicles not so well armed.

f. During action, light repair crews from regiments or separate battalions will form part of the fighting units. Their role is determined by regimental or combat group commanders. Immediate recovery of damaged vehicles is imperative.

g. Quick medical assistance in battle must be provided by a medical officer accompanying the attack in an armored vehicle.

h. Aid stations and evacuation of wounded is the responsibility of the Division Medical Battalion.

33. MAINTENANCE.—The main task of the maintenance battalion is the repair and evacuation of motor vehicles and armament. Liaison agents or detachments normally accompany a combat command. These detachments may be attached to combat commands. In order to work effectively certain repair activities must be stationary. Movement by bounds and leapfrogging of elements of the maintenance battalion is, therefore, a necessity to permit accomplishment of its functions. Its timely and appropriate employment is decisive in the maintenance of the fighting strength of the Division.

34. SUPPLY.—*a.* Regimental, separate battalion and company commanders are responsible for the supply of their respective commands. Before going into action, the complete supply of fighting organizations must be provided for. Combat Trains must be divided accordingly. Refueling of fighting vehicles must take place before going into action.

b. At the end of or during pauses in battle, troops must be freshly supplied. Rations, ammunition and fuel are brought up by Field Trains, the wounded are cared for and evacuated and fighting vehicle maintenance accomplished.

35. COMMUNICATION AND WARNING SERVICE.—*a.* The Division Train Commander is responsible for the tactical movement of all elements of the Division Train. The furtherance of the tactical mission of the division is primarily accomplished by the Division Trains through the efficient execution of their supply, maintenance and evacuation functions. The Division Train Commander uses the radio communication net to control the Division Train and through it he must receive ample warning of hostile attack.

b. The division signal operating instructions will include a suitable radio plan for grouping and employing to the best advantage the radios carried in all elements of the Division Train.

c. In addition to the foregoing, the train commander must send out radio equipped elements of his available train defense, well to the front, flanks and rear as security detachments.

36. SECURITY.—*a.* The sometimes conflicting requirements of tactical considerations and logistical considerations demand that the Division Train Commander be an officer of highest qualifications. The commanders of the elements of the Division Train are responsible for the supply, maintenance and evacuation functions and local security of their respective commands.

b. In order to attain security for trains, road nets for the movement of trains should be carefully studied. Assembly areas and bivouacs for trains when separated from combat units will be selected with a view to movement to the front, flanks and rear. Since freedom of movement in a number of directions is so dependent on the road net, this consideration should govern in the selection of assembly areas and bivouacs, rather than rule of thumb distances for the location of trains in rear of the combat elements.

c. Security of service trains is a prime consideration but the ideal disposition from a security standpoint must often be sacrificed to permit the execution of their supply, maintenance and evacuation functions. Where the execution of these functions demands dispersion of elements of the Service Trains, provision must be made for their defense.

37. ORGANIZATION AND TRAINING OF OVERHEAD IN TRAIN DEFENSE.—The tables of organization for armored units provide not only armament on certain trucks for train defense, but in the companies, certain overhead personnel not employed in battle and who normally march with the Field Trains, are mounted in vehicles equipped for train defense. The Division Train Commander is responsible for the proper defensive use of this personnel and equipment. Similarly there are train defense weapons organically assigned to the various elements of the Service Train. The latter weapons may be used by the Division Train Commander for coordinated division train defense provided they are not withdrawn from control of Service Train elements when these are removed from the immediate vicinity of the grouped Division Train.

38. LOADING OF TRAINS.—*a.* Since the most vital items of supply of the armored division are gas, oil and ammunition, special attention will be devoted to the loading and grouping of these items.

b. A "Day of operation" has been set at 100 miles movement of all vehicles. Fuel capacity is being calculated on this basis. Two "days" fuel, including that in vehicle tanks and that carried in unit trains, are required within Regiments and separate Units. Regimental and separate Unit *Trains* must have capacity to transport fuel for 100 miles of operation for all vehicles of the unit.

c. No division rolling reserve of gasoline is prescribed as the normal load of the supply battalion. Only sufficient gasoline is normally carried in the Supply Battalion to provide fuel for organic vehicles of this battalion as above prescribed. Where a rolling reserve is to be provided to the division, attachment of truck companies carrying gasoline in 5-gallon drums must be made by higher headquarters or the normal organic load of the truck companies of the Supply Battalion must be displaced by gasoline in 5-gallon drums.

d. The unit ammunition sections will be loaded according to requirements of the various companies and battalions of the unit.

e. Careful consideration will be given to the use of all available space in kitchen trucks of the company in determining the organization and loading of the kitchen section.

CHAPTER 9

USE OF RADIO

39. RESPONSIBILITY.—*a.* The tactical mobility of an armored division is largely dependent on speedy inter-communication. The extensive supply of radio sets within the division gives the commander a flexible means of control over his formations.

b. The commander is responsible that strict radio discipline is maintained. Only by strict discipline can use of radio be efficient. If discipline is lax radio communication will break down.

40. SIGNAL OPERATING INSTRUCTIONS.—*a.* The division signal officer issues signal operating instructions (SOI). In this is prescribed:

(1) Frequencies for each unit.

(2) Call letters and code names.

(3) Map code.

(4) Code names for localities.

(5) Brevity codes.

(6) Such other instructions as are necessary for efficient radio operation.

b. Lower units do not issue signal operation instructions. However, units may improvise codes for their immediate use. Improvised and brevity codes must not contain so many different items that memorizing will be impracticable.

c. Code names are used both for secrecy and brevity. They may be used for:

Map references.

Cardinal point.

ARMORED DIVISION
RADIO NET A

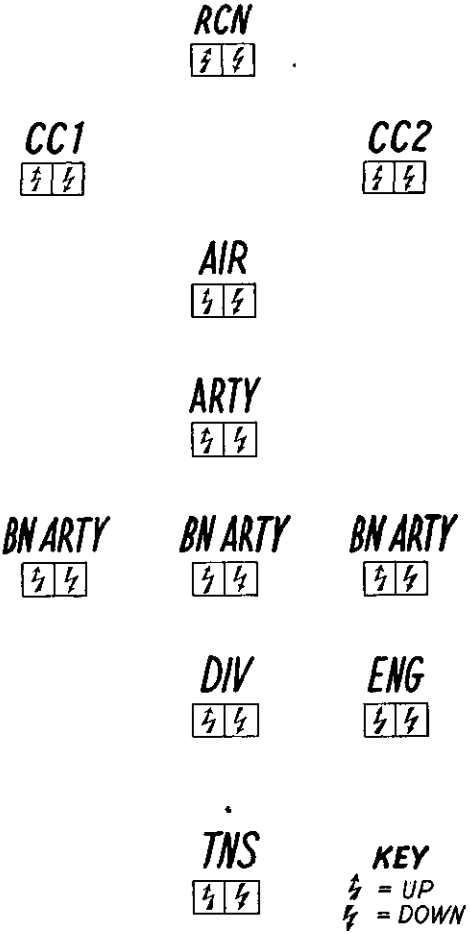


CHART XIII

Time.

Special places or purposes.

Station identification.

d. The signal operation instructors designate radio nets or channels for each unit. Chart XIII shows a division command net.

41. RADIO SILENCE.—*a.* In bivouac and assembly areas radio is silent.

b. In the advance radio is silent except for reconnaissance units, until contact is gained. Messages are transmitted by motor messenger.

c. During radio silence receivers are kept on either continuously or for a certain prearranged time such as for ten minutes per hour on the hour.

42. RADIO PROCEDURE.—*a.* There must be strict adherence to the rules of radio procedure. In using radio the following will obtain:

(1) Before turning on the transmitter be sure no one else is speaking.

(2) Radio procedure as prescribed in current regulations will be used.

b. Transmission of messages must be kept to the minimum. Messages must be clear and concise. Radio commands are repeated twice as also are reports. Before repeating warn "I repeat."

c. If a company has only one frequency platoon leaders must be brief in their commands in order not to keep others from using the radio.

d. In armored command cars one receiver is tuned to the command net of the next higher unit and the other is tuned on the unit's own command net.

e. Additional radio sets when available listen on the airground net and reconnaissance nets.

f. Radio tenders copy messages and keep a log of in-coming and out-going messages.