

THE MOBILE DIVISION

OF

1950 - 1960

41-74

BY

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Major, Cavalry

PREFACE

"Mobile Ground Troops of the Future"

by

Colonel Hamilton H. Howse¹

(Author's Note: It has been difficult to select a title for this article. What constitutes the future for the branch I call "Mobile Ground Groups" is a highly controversial issue, and opinions on the matter are apt to be expressed with some little heat. The whole subject of the future is linked up--though perhaps not vitally--with the name selected for the branch, and that in turn with the old branch allegiances of officers concerned; I have, therefore, agitated this nest of hornets too, to the best of my ability.)

These are the questions to be answered: What are the new problems facing the fighting vehicle? What organization do we want?

Throughout the last war, all of us whose principal business it was to fight tanks kept up an incessant pleading for bigger tanks and faster guns. My own voice was not one of the quietest. Certainly we were outgunned by the German tanks, and certainly their armor was thicker and stronger than ours. Their motor power appeared to be at least equal to ours, and their flotation was greater. I recall that we were reassured periodically that the greater weight of the German tanks was, all in all, a grave disadvantage to the enemy, what with his difficulties of shipment, crossing bridges, etc. This was all very well; however, if we ran head on into a half a dozen well emplaced Mark Vs

¹July-August, 1947, issue "Armored Cavalry Journal"

or Mark VI's, they had successfully solved their problem, for there they were. The next problem was all ours.

It is difficult, though, not to let our planning for the future become unbalanced by our experience in the last war. I think it is unbalanced: the vehicles and organizations we are now developing seem (with one notable exception) to be designed to continue the last war's fight. I believe that this attitude is wrong, and will lead to trouble.

I contend that the heavy tank, as the basic vehicle of the armored division, has had its day. By "heavy tank," I mean all tanks of weight greater than about 25 tons.

The heavy and medium tanks and self-propelled guns as they are now designed, as well as one or two behemoths that are being produced in experimental form by our Ordnance, are based upon this premise: that a vehicle can carry enough armor to wall itself off from the danger of what goes on outside of it. The very idea of heavy armor is to absorb a hit and deflect it. In the present stage of development of guns and rockets and mines, not to mention what the future may hold for those weapons, the task is unequal. Consider that task: the heavy tank seeks to interpose between its engine and crew, and the enemy weapon, a wide area of metal everywhere so thick and strong that it will deflect, at any point, the projectile which may be thrown at it. The enemy weapon attacks an area perhaps only three inches square.

It is well to recall how our medium tankers managed to stay alive in the last war. Against the German 88 and 75 millimeter tank and

antitank rifles, the principal protection to the tank crew was not in the capacity of the tank to absorb a hit, but rather in the ability of the tank to avoid a hit and to destroy the enemy gun. The number of hits which we took without serious damage were a small proportion of the total.

The result of the concept of heavy defensive armor can only result in relative immobility. Even though it may be acknowledged that motor power will be improved alongside of gun power, it will nevertheless remain true that a heavy vehicle must always be more difficult to move than a light vehicle.

American tanks have not, to this moment, been subjected to a number of weapons which presently exist, and some of which we used against the enemy. One of these weapons is the antitank rocket fired by aircraft; another is the variable time fuse fired by artillery (which will serve effectively to drive infantry away from tanks); a third is the anti-tank rocket, which may be used to saturate an area by the use of multiple barrel projectors massed behind enemy defensive positions; a fourth is the improved bazooka (which in its American 3.5 variety is capable of a long range and an impressive armor penetration); a fifth is the recoilless rifle with a range of upwards of 5,000 yards.

The use of these weapons by the enemy can hardly facilitate the success of our tank onslaught. Taken in addition to the other weapons which were used against us in the recent war, it may appear that the situation is well nigh hopeless.

On the other hand, whatever the arguments which may be presented

against the tank, it is inconceivable that the internal combustion engine will have no function on the battlefield. When we consider that the engine is capable of moving heavy loads and tremendous fire power at speeds far greater than that practicable to the dismounted soldier, it becomes obvious that it will be used by all modern armies on every battlefield of the future. We are left then with the serious task of overcoming the admittedly efficient antitank weapons, many of which are new, so that we may take advantage of the fighting potential of the vehicle.

"Mobile Ground Troops" Requisites

What are the basic requisites for "mobile ground troops"? It is important that we consider this matter without previous mental commitments.

The precise name for the branch is not of paramount importance. But, although no mere name can forever nullify the effectiveness of a major arm, it is inadvisable that the mission and expansion of the branch should be limited by its name. The name "Armor" was entirely applicable and descriptive in World War II, but it was applicable only because the tank of that war was designed and armored to turn an enemy blow. It is impossible for us to prophesy positively, in the light of scientific development, what form of vehicles the mobile branch will utilize in the near or distant future; however, steel armor in its present form is losing its contest with gun power, and until and unless a new type of armor is developed which has perhaps three times the ballistic strength of the present armor, per pound of

weight, armor will continue to hold the dirty end of the stick. It follows then that the main characteristic of this force probably cannot, in the future, be defined by the word "Armor," since defensive plate will be a relatively unimportant feature of it. In such a case, new developments which will assist, perhaps, in the accomplishment of the offensive and exploiting role of the arm may be denied it, or only grudgingly permitted, on the basis of the fact that "it is not armor."

It is infinitely preferable that the branch--of whatever name--should have its mission defined to it in the clearest terms, and then be permitted and encouraged to include the weapons, vehicles, and personnel in an organization which will best serve to accomplish that mission.

Certainly the branch should include all of what may be termed the "assault forces" of the branch division--reconnaissance, fighting vehicles, riflemen--and be supported by the branch known as "Artillery." By the same token, whatever mounted fighting elements that are organic to the Infantry Division should be released to the Infantry branch, for their reason of existence is only to assist the Infantry in the accomplishment of the Infantry's mission.

What To Replace Heavy Tank?

I have previously argued against the "heavy" tank of thick defensive armor; in its stead, what sort of vehicle should we have? Our basic vehicle, and the one around which our organization should develop, should be the light tank, of low silhouette. Its armor should be light,

sufficient only to turn small arms and the fragments of grenades and artillery. Its strength should lie in its great offensive fire power. That fire power should take three forms: that delivered by its main armament, which should be capable of destroying at medium ranges enemy tanks of the heavy variety, as well as delivering a good high explosive accurately at long ranges; secondly that of machine guns; lastly, that which effects blanket destruction close in to the vehicle itself. Attempts are already being made along this line by means of grenades, mines, and white phosphorus which is spewed in all directions alongside the vehicle. These require much more extensive development, but that may be confidently expected if the need is clearly defined. It will be this great offensive power, the ability to kill, and the ability to avoid hits rather than a capacity to absorb hits, which will be the strength of this tank of the future.

~~Additionally, our tank must be capable of very steep hill climbing; it must have excellent traction, and good flotation; it must carry a crew of probably four men. It will be capable of crossing small bridges, including types of self-propelled light bridging which may be carried organic in the tank battalion; the advantages of this are numerous and important. There must be many of these tanks, so that they will travel in companies of 30 or 40 rather than companies of 17; thus the loss of several tanks of the company will be of lesser moment, and we will pass a burning tank with the same relative disregard that we passed the dead infantrymen in the last war.~~

It is obvious that the production difficulties in keeping the

battle forces supplied with these tanks will be tremendously less than those encountered with the medium and heavy tanks; the same may be said for the difficulties of their transport. By utilizing a light tank, the strategic mobility of our divisions will be made greater, and road and matériel damage and wear, lighter. Air transportability of the standard division will become feasible in the very near future.

Additionally, we shall want personnel carriers for our riflemen. They also must be light, fast, and carry light armor. They must be designed to get riflemen, under reasonable conditions of safety, close up behind the tanks on the objective.

Our reconnaissance elements can readily utilize the above-described light tanks and personnel carriers; these need be supplemented only by improved jeeps (equal peeps) to satisfy the demands of reconnaissance missions.

Finally, of course, we must be supported by self-propelled artillery.

Our organization must be built around the characteristics of mobility, lightness, and shock, and should be designed to accomplish our mission, totally without bias. The basis of the division should be the tank battalions, and these should number appreciably more than battalions of any other type in the division. It is the present tendency to increase the proportion of infantry in the armored division; this appears to stem from our experience in the last war, without sufficient anticipation of the problems of the next war. To illustrate my point, I present a small (and certainly typical) tactical problem for the consideration

of the reader.

Assume that you are in command of an armored task force which is engaged in the pursuit of a withdrawing but nevertheless strong and determined enemy, who is confident that he will eventually win the war. To accomplish your mission, it becomes apparent that you must dislodge the enemy from a position where he has established himself (precise location, as usual, unknown) in strength. The enemy is armed with aforementioned long-range bazookas capable of very deep armor penetration, with recoilless rifles capable of effectively engaging your tanks at 5,000 yards if they can be seen, with several rocket launchers of the Nebelwerfer type which can saturate an area with rockets capable of penetrating the top armor of very heavy tanks; he additionally employs a VT fuse in his artillery, and he is supported by aircraft carrying antitank rockets which will go through the top armor of any tank.

Aside from the other difficulties which face you, the problem is: how shall you employ your infantry in order to assist your tanks in their effort to drive the enemy from his position?

Enemy artillery firing VT fuse will tend to disperse infantry which attempts to travel alongside your tanks, but aside from that, how will your infantrymen assist you against the long-range antitank weapons which are carried by individual enemy infantrymen?

If you put your infantry 500 yards in front of your vehicles, the tanks are relegated at best to a supporting role of doubtful value and certainly are not functioning in the manner of assaulting tanks. If

you attempt to form your infantry alongside your tanks, they will have little effect on these weapons. The longer that you take in crossing the terrain intervening between you and the enemy, the longer you will be susceptible to the other antitank weapons, including the aircraft carried rockets, the banks of rockets, and the enemy artillery. The speed of attacking infantry is slow indeed.

It is my opinion that the solution lies in making the vehicle more self-sufficient. To the maximum extent which our inventive capacity will carry us, we must develop vehicles with an ability to close on and overrun an enemy without benefit of infantry except in a mopup role. To fall back on the concept of large quantities of accompanying infantry is begging the question, and contributes little towards a realistic solution.

It is not meant to indicate that the problem facing the vehicle is not a very serious one. It is serious whether we adopt the concept of light, fast vehicles and many of them, or a lesser number of ponderous vehicles with heavy armor protection. It does appear evident, however, that our attempts to solve the problem should be directed along the lines which follow:

1. Increase vehicular mobility in order to:
 - a. Reduce the time of exposure and therefore lessen the chance of being hit.
 - b. Make vulnerable to vehicular attack large areas of the enemy position which are not vulnerable to attack by the present cumbersome tank.

- c. Facilitate strategic movements of tanks.
2. Lighten the basic vehicle to:
 - a. Increase cross-country mobility.
 - b. Relieve difficulties of production.
 - c. Reduce shipment difficulties.
 - d. Increase air transportability.
 - e. Lessen the blow of tank loss.
 - f. Ease bridging difficulties.
 - g. Ease difficulties of crossing mine fields.
 3. Increase fire power to:
 - a. Increase shock action and damage to the enemy.
 - b. Provide better protection for the tank.
 4. Lower silhouette to:
 - a. Reduce target area.
 - b. Assist in concealment and deception.
 5. Organize the mobile division in such a manner as to require of the fighting vehicle units the development of matériel and tactics which will reduce the reliance on dismounted men.
 6. Delineate the mission of the branch so that there are no limitations to its development and adoption of vehicles and organization. The branch should not be tied down permanently to the tank; any combination of vehicles and personnel which will serve to accomplish the mission should be permissible without running the risk of having the resulting organization labeled "infantry" and therefore taken away from the branch and placed

in another. An officer assigned to the branch should serve in all type units which compose it.

Above all, let us remember the function of the mobile division. It should be capable of attack of a strong (and partially fortified) enemy position, of deep punishing exploitation, of relentless pursuit, of acting as a mobile reserve as part of a larger force, and of a measure of defense. It must be capable of losing a large number of vehicles, yet retaining operative a considerable battle strength. The wherewithal of the division to accomplish its mission should not be limited by preconceived ideas of branch, nor should the composition of the branch be limited to those vehicles and that personnel which now come under the definition of the word "armor."

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INTRODUCTION

Shortly after the end of the war the Infantry and Armored Conferences were held, attended by many who had served as commanders of combat echelons ranging in size from the company to the army. The results of these two conferences are embodied in the Tables of Organization of the new infantry and armored divisions. These are strong, well-balanced units, more than capable of accomplishing those missions normally assigned.

It is reasonable to expect that they would be suitable for employment at any time within the next five or six years. They are equipped with the best equipment used in the last war, and reinforced to eliminate what appeared to be the weaknesses exposed during the past conflict.

But these divisions are designed to better fight the last war, and the enemy encountered then.

A very noticeable trend appeared, one that might give us pause for reconsideration. This was the tendency to so equip both types of division that they could be used relatively independently of one another. The infantry division received its own tanks in sufficient strength to carry out limited exploitation missions in addition to strengthening its assault power; the armored division was given sufficient infantry to carry out its own assaults and river crossings to a limited extent, in addition to strengthening its exploiting power.

Thus both divisions appear to have gained from this implementation. The only fly in the ointment, so to speak, is the complication of the supply problem for both, in many items doubling the tonnage require-

ments. This, considering the experience of the last war, is not an insoluble problem; we had between 85 and 90 divisions in combat and supplied them all with astonishingly few shortages.

But what if we have to produce 200 or more (including Allied) divisions at some future date? Can we provide the infinite variety of equipment necessary in the outfitting and sustenance of these units as we now have them planned?

The combatant arms are, and have been since Alexander, defined by their missions. "Infantry, the core of the co-operating forces that make up an army; troops the bulk of which fight on foot, with many types of weapons of their own, assisted in combat by troops which operate still other weapons such as aeroplanes and artillery, and by service troops which supply food, equipment and ammunition."¹

Artillery is usually defined as that supporting arm which aids with fire of relatively large calibre. Air, in its tactical role only, may also now be included as a supporting arm for ground units. "Cavalry constitutes one of the three great ground arms of a military force and is the element whose main duties are: to furnish full terrestrial information of the enemy while screening the movements of its own army; to pursue and demoralize a defeated enemy; at all times to threaten and intercept his communications (lines of supply and command); in battle to strike suddenly and swiftly at weakened points or turn exposed flanks."²

¹Encyclopaedia Britannica, Vol. 12, p 324 "Infantry" 1946 ed.
² " " " " 5, p 66 "Cavalry" " "

It is to be noted that nothing is said in this definition of Cavalry about how these missions are to be accomplished, nor of weapons or means of getting about. The word "Armor", on the other hand, definitely limits the branch in its realization of complete and adequate means for the best accomplishment of the missions assigned.

By definition, all types of military combat action, in the tactical sense, have been classified and assigned to specific arms, and units of those arms, for accomplishment. This classification has become, as soldiers have become more literate, all-inclusive. Our field manual "Operations" defines those actions and types of units used for the accomplishment of them.

Mobility, fire power and shock action are still required characteristics of a mobile division, whether it go under the name "Cavalry" or "Armor." The missions of exploitation, counterattack and pursuit are the primary missions of these divisions, whether they use tanks, elephants, horses or flying discs to accomplish them.

It is my intention in this paper to propose, along the line of thought presented by Colonel Howse in "Mobile Troops of the Future", a concrete organization which will better provide these characteristics. This organization, with its complementary required characteristics of equipment, must necessarily be limited by a time factor. I present it, therefore, as "The Mobile Division of 1950 - 1960."

It is recommended that those who do not possess at least a sketchy knowledge of the organization of the present armored division

consult "Armored Division Organizational Charts, Dec 1946 (w/Cl, 11 Mar 1947)," The Armored School.

I gratefully acknowledge permission to use Colonel Howze' article, and the advice and assistance he has given me in the preparation of this paper. A very busy man, he has taken the time to read and criticize this, in addition to writing me at length. However, it must be emphasized that all contained within the body of this work is my own responsibility, and for none of those things with which the reader may disagree may Colonel Howze be held accountable.

T. J. H.

1 May 1948

SECTION 1

VEHICLES

General

In the present armored division we have four types of tanks, each presumably designed to do a different job. We have seven different weights of trucks, although the 2½ ton truck in its many different body styles predominates. There are still six motorcycles in the Tables of Equipment. This division requires 1220 gallons of gasoline to move one mile.¹

Undoubtedly we could provide the gasoline to sustain a large number of these divisions in action over a considerable period of time. Gasoline, however, is a bulky item and requires special handling. If it were possible to cut this consumption nearly in half, and yet have the same or greater mobility and fighting strength, would not that be preferable? There is no need to go into the problems of gasoline supply here, as they are familiar to all as one of the formidable logistical problems that always must be solved before we can undertake an offensive of any sort beyond our own shores. If we can reduce our requirements to a minimum, it will be possible to support just that many more divisions from the same source and capacity of supply.

It should be mentioned now that the scope of this paper is to discuss only those units of the mobile division that are not components of other arms and services. No attempt will be made to discuss in detail medical detachments, the signal company, military police com-

¹FM 101-10 (Draft), C&GSC, 1947, chap 5, p 14

pany, engineer battalion, division artillery, quartermaster or ordnance battalion. This applies equally to the vehicles. Considered in this section are only the vehicles used in the battalions of the main striking elements (reconnaissance, rifle and tank battalions).

Tanks

Colonel Howze has set forth the general requirements for a desirable tank of the future. His arguments are rather complete, and I shall not attempt to add to them, other than to recite a personal experience:

During World War II I had the privilege of serving with a cavalry group that had a good reputation for offensive action. During the early part of its operation the group was equipped with the light tank, M5. Nearly every tank that was lost would have been destroyed had it had the armor protection provided by the medium tank. We considered our tank platoons to be generally timid, as they were usually reluctant to engage in any action where enemy tanks could be expected.

Shortly after the first of 1945 the M5 was replaced by the M24 with its light 75mm gun. It is worthy of note that the M24 had at most one inch of armor plate, either on the hull or the turret. The M5 had up to one and one-half inches on the turret and one inch on the hull.¹

The amazing change in the offensive capabilities of the tank companies was therefore the basis for the conclusion that what the men wanted was a gun, not more armor plate. Our percentage of losses

¹"Development of Armored Vehicles" The Armored School, Pp 123 & 147

with the M24 was lower, but no valid conclusions can be drawn therefrom, as German resistance was very spotty after we received those tanks. However, the aggressive attitude of the tankers materially speeded most small unit actions, and I am certain that had we been able to repeat the actions of 1944 with the M24 we would have been much more successful and less likely to hesitate in committing ourselves to actions involving enemy tanks or a similar threat.

Let us now, without further ado, set down the specific desired characteristics for our tank of 1950-60. All those set forth below have been discussed with people who should know and are deemed feasible for production by 1950.

General

- Weight - Not over 50,000 pounds.
- Height - Not over 80 inches.
- Ground Clearance - At least 17 inches.
- Ground Pressure - Not over 9 pounds per square inch.

Performance

- Sustained Speed - At least 35 miles per hour.
- Fuel Consumption - Not over .7 gallons per mile, preferably
low grade fuel.
- Grade - At least 60%, both ascending and descending.
- Horsepower to Weight Ratio - At least 20 hp/ton.

Armament

- Main - Capable of penetration of 10 inches of homogeneous armor plate at a range of 2000 yards at 30° obliquity

(this implies use of specialized projectile and ammunition); also capable of delivering effective high explosive fire to maximum sight range; improved fire control and automatic loading.

Machine Guns - Two of possibly .50 calibre mounted coaxially; one in bow, fired remotely; one anti-aircraft gun on outside of turret.

Vehicle Defense - Capable of masking the vehicle or keeping enemy personnel beyond destructive distance (white phosphorus?).

Communications

Non-command Tanks - Two or three preset frequency FM equipment of standard now embodied in the AN/VRC 5 - 8 series.

Command Tanks - At least ten preset frequency equipment of same standard.

(Interphone to be available on both tanks).

Armor - Capable of protection from small arms and indirect artillery fire except direct hits; such additional as will not interfere with other desired characteristics. All designed with best possible slope.

We will now christen this vehicle the MX1.

Personnel Carriers

The half-track has long been considered unsatisfactory as a personnel carrier for several reasons, the most important of which are

lack of cross-country mobility and lack of overhead cover. At the same time, the full track carrier has suffered in reputation from a seemingly too expensive method of transportation of personnel, in weight and gas consumption factors.

Our standards for a personnel carrier should include the following factors: mobility equal to that of the tank; protection from small arms and artillery fire, including overhead cover; economy in fuel consumption; interchangeability of parts with the basic tank being used (in this case the MX1); appreciable reduction of inside noise; communication facilities that tie into unit to which the vehicle is assigned and including components that can be easily dismounted and carried by the dismounted squad; provision for easy conversion into convenient command post vehicles.

The characteristics have been given as generalities, as it is felt that the development of the personnel carrier must go hand in hand with that of the basic tank. It follows, then, that whenever work is going forward on the basic tank, the personnel carrier must be undergoing similar development, in all cases a companion of the tank. Let us call this generalization the MX2.

Tank Recovery Vehicles

Again we have a vehicle which must follow the development of the basic tank. Its capabilities are contained in its name, and in addition it must have communication and defensive weapons. It must fall within the general weight limitation of 25 tons, as must all vehicles in the division. We will call this the MX3.

Trucks

There are requirements within the battalions for four types of trucks, including ambulances. The presently available wheeled vehicles would satisfy our requirements if it were not for the fact that new power train developments give great promise in simplification and reduction of fuel consumption. Our Field Force boards are exploring all possibilities, and undoubtedly will present us with much improved vehicles within the next few years. Those trucks considered in this category in addition to the ambulance are the $\frac{1}{4}$ ton truck, $2\frac{1}{2}$ ton truck and the heavy wrecker, M1A1. For the purposes of further comparison and data the present fuel consumption and load capacities of these vehicles should be used.

SECTION 2

PLATOONS

General

In organizing this material, it has been difficult to find an easy approach to the proper discussion of the organization and at the same time show good reason for each innovation. Therefore, to better illustrate the standardization that exists in the mobile division, it was decided to discuss it on the various command levels, putting the basic organizations together to form the units and organizations of the division. Subsequent sections will be devoted to the successive command levels. Not considered in this section are those platoons not basic, but normally contained in the headquarters of companies and battalions.

It is intended to arrive at a striking element of six tank battalions, one rifle battalion and a reconnaissance battalion, to replace the four tank battalions, four armored infantry battalions and one reconnaissance battalion as found in the present armored division. These new battalions will use commonly the same tank, rifle and reconnaissance platoons and companies throughout. A comparison of these elements appears in Section 6.

The Tank Platoon (See Figure 1)

There are two innovations here: the larger number of tanks in the platoon, and the section of three tanks. There is very little reason why this could not be divided into three sections of two tanks each, but it looks a little easier from the control point of view to

divide it in two, using the same tactics as with two sections of two tanks each.

A third "innovation" is the return to the four-man crew. It is realized that a five-man crew handles the work with much more ease, and that when one man out of each of several crews is absent the tanks are still operative. Again it is a matter of choice, but with the development of control within the vehicle to the point where it can be handled by three men, it is a preferred solution.

A further justification of the seven-tank platoon to be offered in passing is the experience of many of us that very seldom during combat are platoons complete. There are usually shortages within every company that are filled for only a short time before losses occur again. Seven tanks offer the platoon leader the opportunity of employing fire and maneuver when he has lost over half his strength.

The Rifle Platoon
(See Figure 2)

The rifle platoon presented here differs little from the rifle platoon of the armored infantry battalion as it is now in the armored division. There are three less riflemen in the machine gun squad, and necessarily the communication arrangement is different.

It is contemplated that in addition to the normal vehicular communication tied into whatever unit this platoon may be assigned, a dismounted set which will communicate with the "B" set of the interim AN/VRC 5 - 8 will be carried from two of the personnel carriers. These sets have reached the development stage where reduction of weight is the primary consideration. These sets will relay through

the vehicular sets when necessary, so that dismounted and mounted units may be netted together with little trouble. There is also being developed a fine small set called the AN/PRC 6 to replace the SCR 536.

The employment of the rifle platoon in mobile units differs a great deal from the employment of the rifle platoon of the infantry division. The two have entirely different missions, and must be trained accordingly. True, they both work with tanks, but there the similarity ends. The one supports the tanks, and the other is supported by the tanks.

A recognition of this fact is implicit in the methods of employment of the tank company of the infantry regiment as advocated by the Infantry School. Those tank companies should be trained and used as infantry units. It follows, then, that any rifle support in mobile units should by the same token be trained and used by commanders of the mobile units.

The Reconnaissance Platoon (See Figure 3)

Here appears the first basic organization with its own base of fire, maneuvering element and sufficient rifle strength. Here first appear the training problems of combined mounted and dismounted units.

The reconnaissance platoon used here is almost identical with the one now used in the armored division. The only differences are in the tracklaying vehicular equipment and consequent reduction of one man per tank crew.

The attention of the reader is invited to the support squad and its 81mm mortar. This may be contrasted to the mortar platoon in the

armored infantry company of the present division, where one officer and 24 enlisted men, three carriers and one $\frac{1}{4}$ ton truck are utilized to handle three 60mm mortars. Of course, it is intended that these mortars be hand carried some distance when the battalion or company is employed in dismounted action. It is still implied by the organization of the support squad, however, that the dismounted part of the platoon will never be employed beyond any point of support where a $\frac{1}{4}$ ton truck could not take the mortar. More of this in the next section.

This platoon is organized to make it flexible and useful under rather independent conditions. It contains those elements considered necessary to fight for information, perform security missions, and on occasion fight limited defensive missions. It embodies all that is best in our present-day organizational doctrine, with none of the disadvantages of mixed command that result when habitual reinforcements must be given to small mechanized units to give them strength.

These basic units presented in this section in this brief form will provide the background of the subsequent sections. They will be used in several combinations as the successive levels of command are discussed. These combinations have been considered primarily from the point of view: "What is the mission?"

There has been little attempt to defend these formations, other than to conform to the basic ideas of Colonel Howse. The simplicity and versatility of the organization will become more apparent as the framework is built upon.

SECTION 3

COMPANIES

The Tank Company
(See Figure 4)

Here is the first major departure from present accepted doctrine-- rifleman within the tank company. It is not without precedent, vis the reconnaissance platoon. This company does not have the number of tanks desired by Colonel Howze, but the addition of the rifle platoon was considered as a balance.

The objections voiced most frequently against the use of a rifle platoon within the tank company were the difficulty of training and the possible prejudice of the company commander in favoring his tank platoons in choice of personnel. Experience seems to answer these arguments with numerous examples, notably the infantry rifle company, where the mortar and machine gun platoons have been used successfully for many years.

Certainly a more difficult, but not insurmountable, training problem is presented. But here on the company level the commander can make sure of the state of cooperative training, where before he could only hope for the best from whatever infantry unit attached. These men now will have an undivided allegiance to the tank unit, which before was nebulous at best. True, there is not sufficient rifle strength in this tank company for all missions assigned, but the nucleus for most routine missions is established. Perhaps it would be better to have a company of two tank platoons and two rifle platoons, and certainly that would serve better for the heavier

assault missions. But here we must strike a minimum balance; therefore, it was felt that the one platoon was sufficient. The argument that a company commander would discriminate against the dismounted element in selection of personnel needs little rebuttal.

The tank strength of this company is one more than that of the present heavy tank company of four platoons. With the tank of the characteristics described in Section 1, this company will have more mobility than the medium company, as good defense against enemy armor as the heavy company, and much more inherent flexibility than either one. Certainly this company will be capable of limited independent missions, but its main role is that of part of a larger force.

For those missions where the present tank company is reinforced by a platoon of armored infantry, we already have provided the rifle strength. The necessity of reorganizing communications, supply and maintenance for the bulk of combat operations has been eliminated. It is not proposed to discuss details of operations here, but one should understand the implication of this rifle strength in the simplification of organization for combat plus the certainty of availability of this strength.

The Rifle Company
(See Figure 5)

Here is an orthodox organization, with only one major difference between it and the rifle company of the armored infantry battalion-- a substitution of 81mm for 60mm mortars. The 60mm mortar platoon was devised to move the mortar almost any distance by hand carry, with sufficient ammunition to last for some time without replacement.

The support squad of the reconnaissance platoon, on the other hand, is manned by only enough people to get the mortar in and out of action short distances from the vehicles, with sufficient ammunition in the trailer and body of the second vehicle to provide sustained fire for some length of time. The $\frac{1}{4}$ ton truck can go almost anywhere foot troops can, and only if the reconnaissance platoon were employed in an extended dismounted action would there be difficulty in providing for the mortar.

Based on this premise, the mortar squads of the mortar platoon of this rifle company were mounted similarly. Placing them in personnel carriers, where they must always move dismounted when the troops move out on foot, meant using the lighter mortar and ammunition. It is felt that normally the mortars can be moved close to supporting positions for the riflemen or tanks by use of the $\frac{1}{4}$ ton truck.

There will be many who consider it unwise to do this, as they feel that the mortars must be able to go anywhere the foot troops are able to go. That can be done by the use of one or two mortars from the mortar platoon to support a river crossing, for example, the third mortar and additional ammunition coming across later.

The 81mm mortar is much the preferred weapon of the two as far as the troops are concerned, and in the proper hands is one of the most potent offensive or defensive weapons. The advantage of being able to carry the heavier mortar for 95% of your actions far outweighs the loss of one of them where all three cannot be taken into action by the mortar platoon.

The use of the half-track or similar vehicle as is done in the headquarters of the armored infantry battalion for the 51st was considered. Although a fast method of getting mortars into action, it has rather an inflexible tie to the vehicle. The $\frac{1}{4}$ ton truck has several advantages, even if the mortar must always be set up on the ground.

Other than the exclusion of the filler personnel from company headquarters, the remainder of the organization is much the same as the rifle company of the armored infantry battalion.

The Reconnaissance Company
(See Figure 6)

This company is again much the same as the one found in the present armored division. Again we have excluded the fillers, to be discussed briefly in Section 6. It will be noted that one type of vehicle has been eliminated, the $1\frac{1}{2}$ ton truck. The advantage of having this particular size of vehicle is outweighed by the elimination of a type.

The employment of this company is envisioned much as that set down by current doctrine of the Armored School, except that it is felt that less emphasis need be placed on its limited defensive capabilities. Rifle strength was added to the platoon to give it that defensive strength, and the use of the standard tank within the platoon will give it infinitely more defensive ability against tanks. This weakness during World War II led to reinforcement or relegation to roles which were unsuited to such an expensive organization.

SECTION 4

BATTALIONS

The Tank Battalion (See Figure 7)

Here is the basic tactical striking element of the division, the one around which all other units are organized. It must inherently possess all the qualities which characterize the mobile unit--mobility, fire power and shock action. It must have sustained offensive power and the ability to defend itself under all circumstances except a sustained defense.

Therefore a battalion of 75 tanks accompanied by sufficient rifle strength to provide two platoons of riflemen for each tank company was deemed best to fit the requirements. The minimum rifle strength is provided in the tank company, where it is agreed by most that it is needed nearly all the time. That strength, however, is not sufficient for some of the normal missions of the battalion, so the additional company was provided the battalion commander for use as needed.

The advantages of the organic rifle company are obvious: continuous control, intimacy and confidence of company and platoon commanders, and better continuity of unit training are among the many. Not to be ignored is the advantage of the battalion commander in having his normal support always at hand, tied into his administrative, communications and supply systems.

The four-company battalion is not new, and should require little discussion. In this case the familiar three-element force is supported by the fourth. In a support-type battalion, the four-company concept

assumes a different meaning.

Headquarters and service company is organized along conventional lines, with the current trend of increasing cargo truck support accepted. The reconnaissance platoon is continued as in the present tank battalion, with the presentiment that perhaps two of them would not be amiss.

A point to be remembered is that the 81mm mortars of the rifle company are available to the commander even if he is not employing the company, or when it is parcelled out to the tank companies. Too often in the past have we ignored or failed to exploit the potentialities of these potent "small unit artillery" pieces.

The medical detachment is no different from those found in present organizations. It is manned and equipped to provide an aid station and an evacuation system for the battalion, in addition to one vehicle for each of three tank companies.

The reader may note the lack of assault guns in the battalion. This was a deliberate omission in favor of simplification and standardization. The desire of the battalion commander to have his own artillery is understandable, but it is contended that the employment of the assault gun in direct fire has no advantage over direct tank fire; when used in indirect fire the assault gun becomes an artillery piece. If there is insufficient artillery in the division, that should be remedied. As things stand with our present methods of fire control, it is felt that sufficient fires can be massed in support of the tank battalion without the addition of assault guns.

The Rifle Battalion
(See Figure 8)

This is not an infantry unit, much as it resembles one. It is organized for the purpose of supporting the striking elements of the division, and may be employed in any manner which will best provide that support.

In river crossings, sustained defense and in the penetration, this battalion will probably be employed organically. In most other situations it could be apportioned out as seen fit by the division commander. With the organic rifle strength of the tank battalion as heavy as it is, the rifle battalion could be held in reserve a good deal of the time. This would prevent unnecessary dissipation of the rifle strength of the division, materially affecting the sustaining power of the striking elements.

There is no heavy weapons unit in this battalion for two reasons: it normally will be employed in support of a unit of heavy fire power, and the 81mm mortars within the companies provide the medium mortar support. It is possible that the addition of perhaps eight 4.2 inch heavy mortars within the battalion headquarters and service company might be advantageous.

This battalion is the only one to have a counterfire section, for the reason that the tank units are not as vulnerable to mortar fire, and to provide them with this defense seems to be unnecessary. If it proves to be an effective measure against enemy high trajectory fire, let us by all means put it wherever it can be of value.

The four-company organization used here is a different concept.

from that of the tank battalion. Here we may attach one company to another unit and still have available the triangular organization for organic employment. Assuming six tank battalions and one rifle battalion in the division, the number of other possible combinations is great.

The Reconnaissance Battalion
(See Figure 9)

As with the other reconnaissance elements, this one differs little from that of the present division. The four-company concept was retained, and the headquarters and service company is little changed.

There are many who feel that the reconnaissance battalion, particularly, needs assault guns, as it is employed so often beyond the range of division artillery.

This is a sound argument, and those same people then advance the argument that it is not normal to attach a battery of artillery to provide close support. Perhaps it would be feasible to provide an additional battalion of artillery in the division just for such purposes, with the batteries organized to provide complete fire control and ammunition supply when continuously employed on missions away from the battalion.

There has also been advanced the argument that the present reconnaissance battalion should be reinforced by a medium tank company, as is the battalion of the armored regiment (light). This argument is met by providing the battalion with the same tank as the tank battalion. This is one more argument in favor of the standard tank.

The service facilities of the headquarters and service company have been improved by increasing the number of trucks in the supply and transportation platoon. This was considered reasonable by comparison with the number of men and vehicles in the tank and rifle battalions.

The differences in totals of men of the companies and battalion are mostly accounted for in the four-man tank crew and the elimination of fillers. This will be taken into account when making comparisons with the present division.

General

The similarity of organization in the headquarters and service company of each of these battalions is to be noted. This is in line with the organization of the headquarters of each of the three types of companies. It was felt that the greater standardization on all levels demanded a similar consistency in the organization of the various headquarters.

There have been presented three different battalions, built of three different companies, using three different platoons. Basically within the combat elements of this division we now have only three platoons, three companies and three battalions integrated so that there can be a common understanding of problems and missions within the division. There will no longer be the strain that sometimes existed between infantry and tank commanders because someone accused someone else of using his people improperly. Eliminated will be the tendency to load the attached unit with the undesirable jobs, just because he is attached. There will be no need for the combat commander

or battalion commander to use the excuse "I had no infantry."

All these units will be manned by officers and men of one arm, taught in the same school, all using the same tools of the trade to accomplish the same mission. There is no necessity here to use the committee to iron out differences of doctrine that affect either of two arms, as has been the case in the past. The gallant and dashing traditions of the mobile troops of the past will have noble succession.

SECTION 5

OTHER ELEMENTS

General

It is not intended to discuss those elements of the division which come under the supervision of other arms and services, other than to comment briefly on some desired characteristics and capabilities. Detailed tables of organization of those elements should be written by the arm or service concerned.

In general, it seems that the present supporting elements with minor changes to encompass the different striking elements would be sufficient.

Artillery

The present artillery support of the division would seem to be adequate, with three light battalions, one medium and an antiaircraft battalion. All of the self-propelled guns come within the weight limitations desired in the division, and there are sufficient forward observers to cover the division front at any one time.

Some feel that with the weight of the 155mm howitzer self-propelled carriage down to that of the 105mm, it might be better to use all 155mm instead of the present 105mm and 155mm combination. Artillerymen state that they cannot fire a rolling barrage close enough to the supported troops with this projectile, but this does not seem to be an insurmountable obstacle. There is the problem of much heavier ammunition supply, although undoubtedly the 155mm battery need not fire nearly the number of rounds for the same effect on any target.

However, it usually takes just as many rounds to adjust and register, so the weight consideration is valid to a certain extent. The gain in range and effect of the 155mm over the 105mm is certainly an advantage.

Certainly worth considering is the addition of another battalion of artillery organized so that it might be broken down into close-support batteries for extended missions with the reconnaissance battalion or any other unit used similarly. The elimination of the assault gun platoon would ensure the popularity of such a measure.

Engineers

Without adequate engineer support, the mobile division is no longer mobile. Certainly a magnificent job of support has been provided in the present division. One of the main considerations in limiting the weight of vehicles within the division is to relieve the engineers of the necessity of much of the heavy bridging and road repair equipment. With a 30 ton maximum bridge requirement, it is believed that the weight of bridging material can be materially reduced. It is felt that the present personnel strength of the engineer elements should not be reduced, however, as these additional people can be used to handle the self-propelled bridging advocated by Colonel Howe. It is felt that this bridging is essential to rapid movement.

Division Trains

The quartermaster battalion, as now organized, is equipped to support a division with a gasoline requirement of 1220 gallons per mile. If this could be materially reduced, the quartermaster battalion would be able to support over greater distances, freeing the division

for more extended employment. The facilities provided by this excellent small battalion should be retained, for they are not an appreciable drain on the manpower supply.

The ordnance battalion, of course, is organized to support the vehicles and guns of the unit. Whatever changes are made in the unit must be met by changes in the ordnance battalion, although its basic structure would probably remain the same.

The medical battalion is another of those units that war experience has so improved that there can be no change suggested by the lay soldier. This is purely a medical problem, and from past experience the author is more than willing to leave it in the very competent medical hands.

The replacement company is an experiment to attempt to provide a solution to a very perplexing personnel problem. The principles used as a basis for this organization are known to all who participated in the last war, and this organization should be retained until the experiment has been completed.

Signal

The signal company has the mission of providing the division commander communication with his combat commands, and the maintenance and supply of signal equipment for the division. There is much being done in the way of development of new equipment. It is hoped that in the near future a "common signal center" can be provided each headquarters, from battalion up, to handle that great bulk of administrative traffic that is now so laboriously transmitted over the CW nets of the division.

If a portable radioteletype with a built-in automatic security device (the electronic application of the 209 converter?) is provided, with provision to hook it into a wire circuit when established, the heavy traffic problem would probably be licked.

Combat Command

A slight revision of combat command headquarters could have been made, with proper organizational chart, but it was not felt necessary as the present one is adequate for a purely tactical command. It is felt, however, that the term "Reserve Command" should be eliminated, and that the third command be called merely "Combat Command X." If sufficient units are present in the division to necessitate three subordinate headquarters to control them, they should be equal and used equally.

Division Headquarters

Division headquarters is always faced with the problem of operating in several echelons, and therefore requires administrative support not required by other commands of the division. This is taken into account in the present organization. Somewhere on division level must be found a place to put at least 12 light aircraft earmarked for the use of the lower units. It is not feasible to have them in the units because of the problems of selection of air strips and maintenance and control of air crews. But provision must be made so that these aircraft are available to the units when the units want them.

Therefore the only changes recommended in the present division headquarters are the substitution of the vehicles discussed in Section

1 for those now in the headquarters, and provision for the light aircraft of the lower units.

Military Police

No change is recommended in the military police company other than the elimination of the motorcycle from the table of equipment.

SECTION 6

COMPARISONS

For the purpose of comparison, let us form our battalions into the striking element of the division. It is believed that a proportion of six tank battalions, one rifle battalion and one reconnaissance battalion will serve the desired purpose. The present division has four tank battalions (three medium and one heavy), four armored infantry battalions and a reconnaissance battalion.

			<u>Nine Battalions Present Division</u>	<u>Eight Battalions Mobile Division</u>
Total Officers			355	307
Total Warrant Officers			27	24
Total Enlisted Men			7483	6778*
Tanks	Light	46	<u>349</u>	<u>482</u> (MX1 only)
	Med M4	216		
	Med M45	24		
	Med M26	63		
Mortars	60mm	48	80	49 (81mm only)
	81mm	32		
Battalion Headquarters			9	8
Company Headquarters			44	40
Tank Platoons			48 (5 tanks)	54 (7 tanks)
Rifle Platoons			48	48
Reconnaissance Platoons			20	19

*Part of this difference is in filler strength. Add 378 fillers for purposes of comparison (rifle companies 10%, reconnaissance companies 5% and tank companies 6%).

Some of these differences deserve explanation. It might be noted that officers have been left out of the supply and transportation platoon, battalion maintenance platoon and the eliminated assault gun platoon. It is felt that warrant officers should be used exclusively for all the lower level specialist positions.

The difference in enlisted men can be accounted for by one less man in each tank crew and the filler personnel, plus a little gain from eliminated headquarters.

The difference in tank strength, of course, was one of the main objects of this paper. To increase the striking ability of the division and at the same time increasing its mobility without sacrifice of rifle strength was more or less the complete objective. It is anticipated that this type of division might at times take higher tank losses than would a heavier (in weight of iron) division, and that is taken into account on all levels.

The mortar comparison, although seeming to be unfavorable to the mobile division, places all those mortars at company or lower level, whereas all the 81mm mortars in the present division except in the reconnaissance units are on battalion level. The loss of mortars was caused by the elimination of the armored infantry battalion headquarters.

The comparison of headquarters, although not material, is interesting and was used to show the lesser number used to control more tanks and as many rifle platoons.

And therein lies the crux of the comparison. With 133 more

tanks and the same number of rifle platoons, this division will have over 300 less men. If a four-man tank were used in the present division, the total would be 7134 against 7356 for the mobile division (with fillers).

In conclusion, let it be stated that I have tried as conscientiously as possible to follow the principles set down by Colonel Howe. At the same time I have gone beyond him in rifle strength within the tank battalions. I have not gone as thoroughly into some of the allied subjects as was possible, but I felt them outside the scope of this paper. In this category fall artillery calibers, self-propelled bridging, armor-piercing projectiles and allied subjects.

But if the idea of integrated rifle and tank strength, used in the lightest and fastest equipment, employed en masse with speed, surprise and shock, is accepted, then our purpose is achieved.

"The evolution of tactics is continuous. Formalism and traditionalism in most armies resist the evolution of tactics. The evolution goes on in spite of the professional soldier, instead of with his aid and encouragement....."¹

¹Encyclopaedia Britannica, Vol. 21, p 750, 1946 edition.

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"	"	17-45, "The Armored Engineer Battalion"
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ERRATA

Figure 7, in totals for Headquarters and Service Company, should
read "17 $\frac{1}{4}$ -T TRKS(12 W/TRAILERS)"

Figure 7, in totals for the Tank Battalion, should read "39 $\frac{1}{4}$ -T TRKS
(33 W/TRAILERS)"

Figure 9, in totals for the Reconnaissance Battalion, should read
"122 $\frac{1}{4}$ -T TRKS (62 W/TRAILERS)"

Also add "2 AMB"

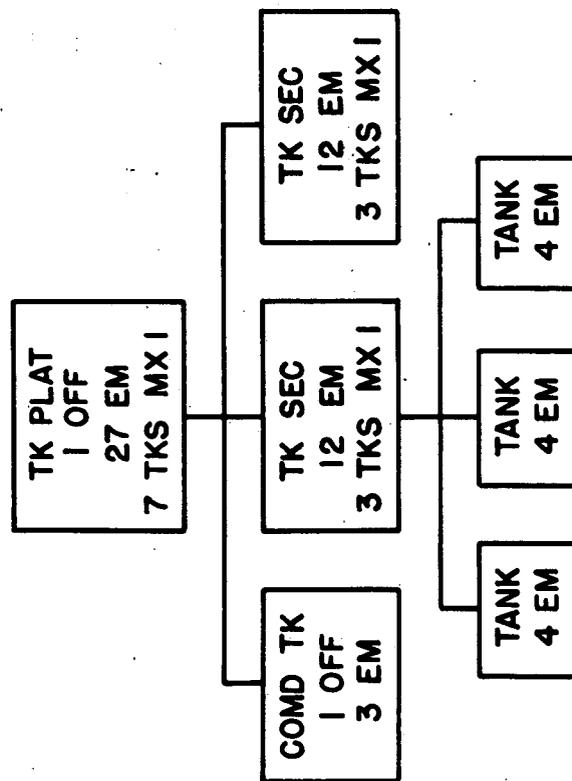


FIGURE I THE TANK PLATOON

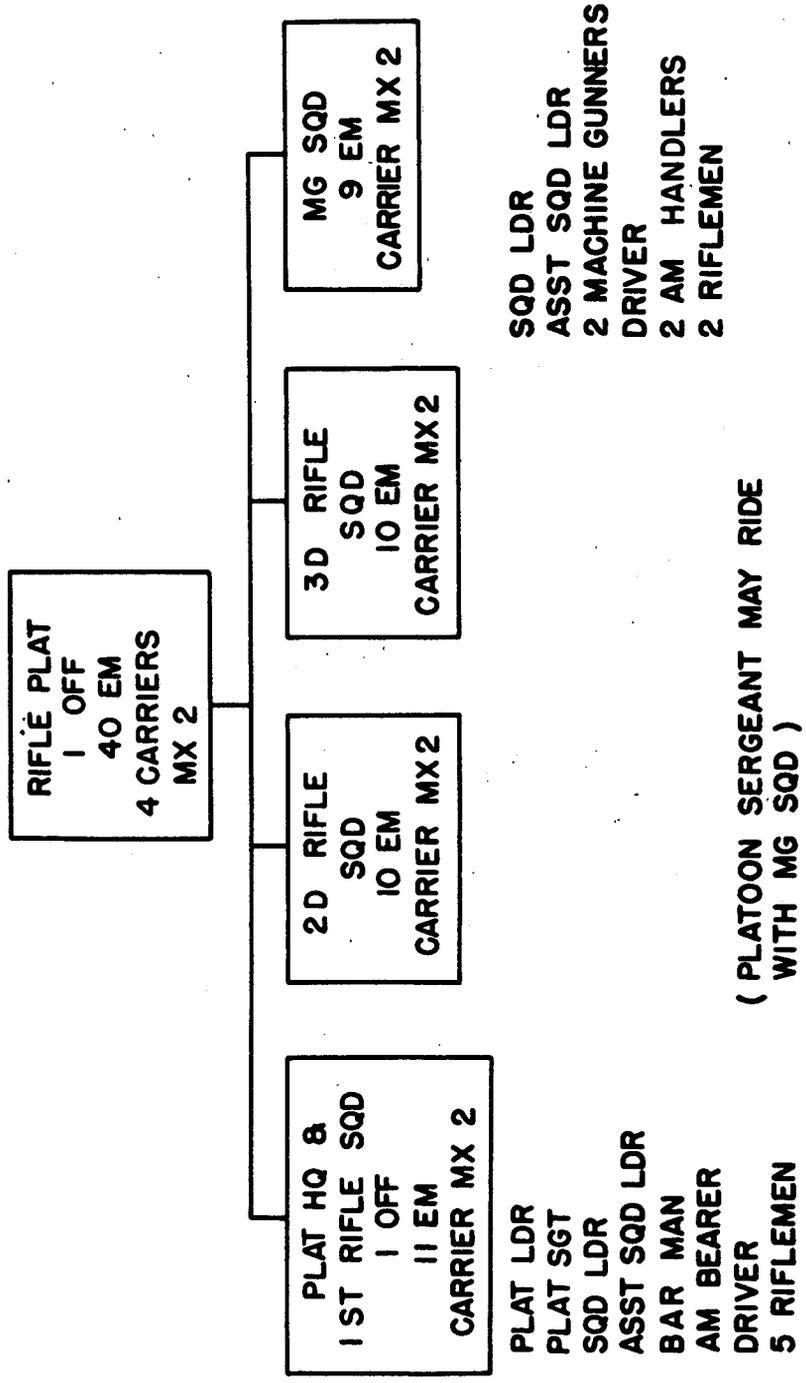


FIGURE 2 THE RIFLE PLATOON

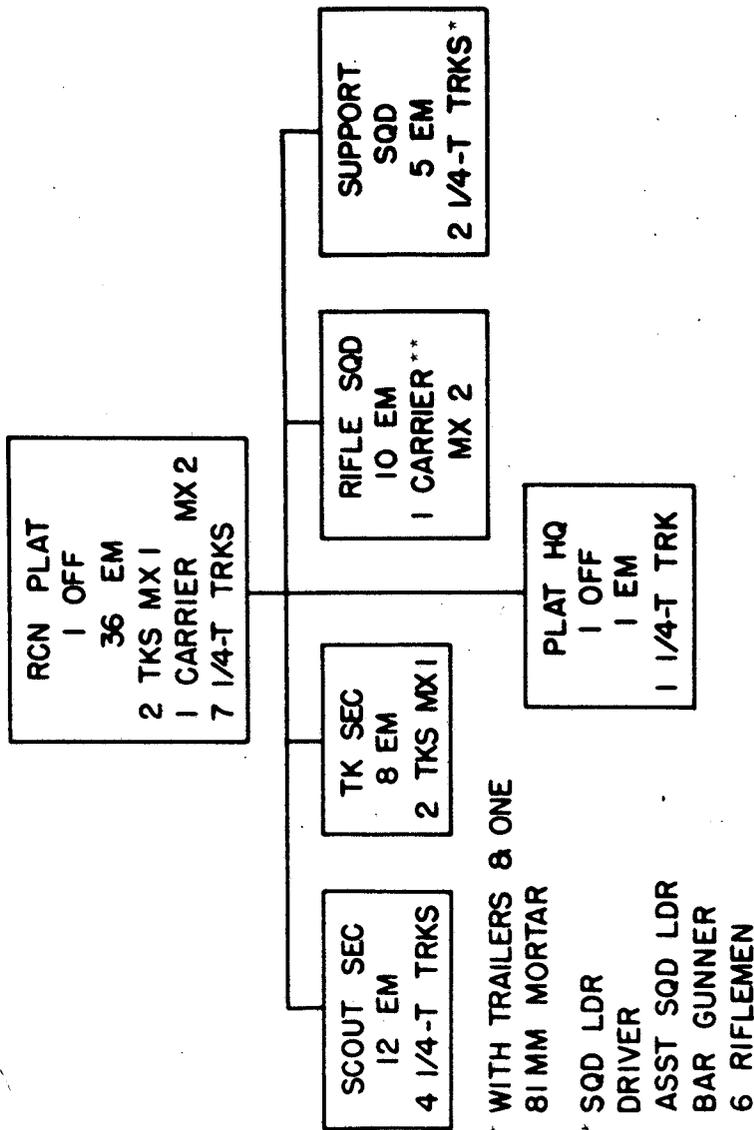


FIGURE 3 THE RECONNAISSANCE PLATOON

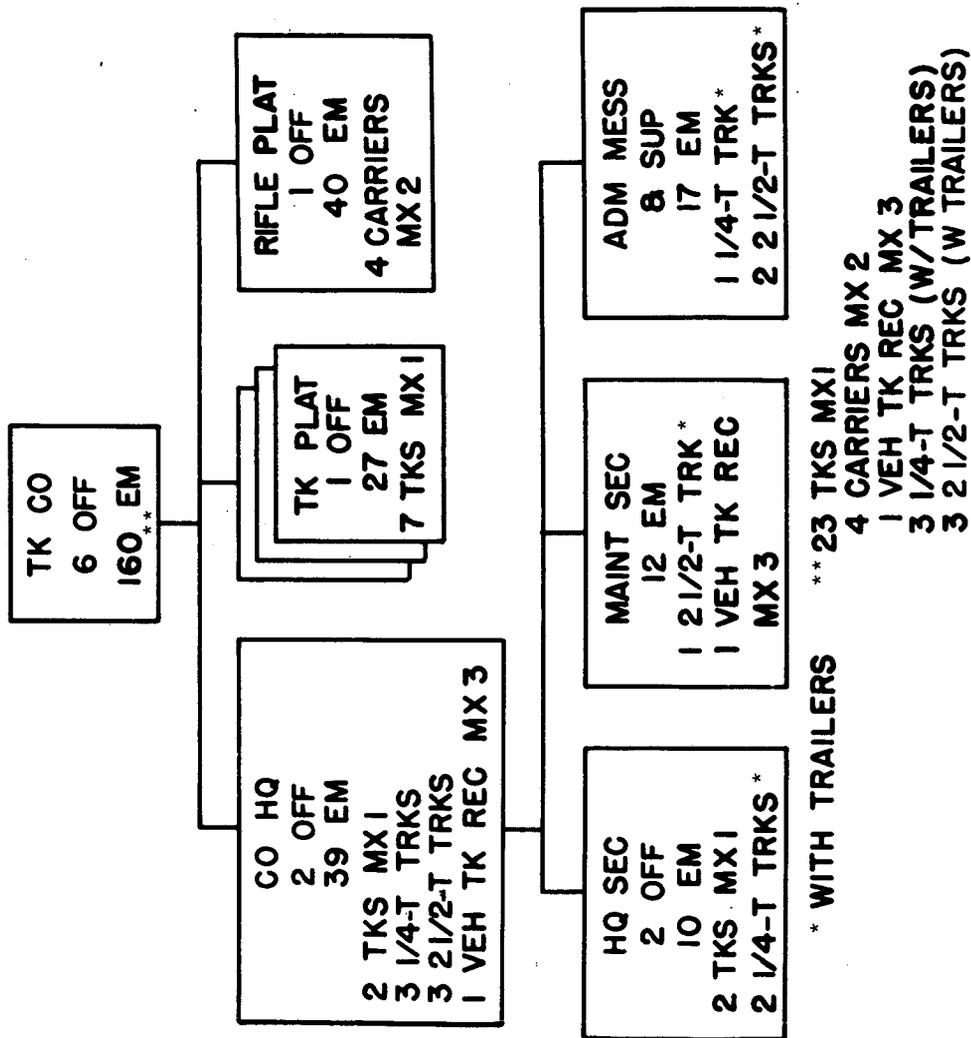
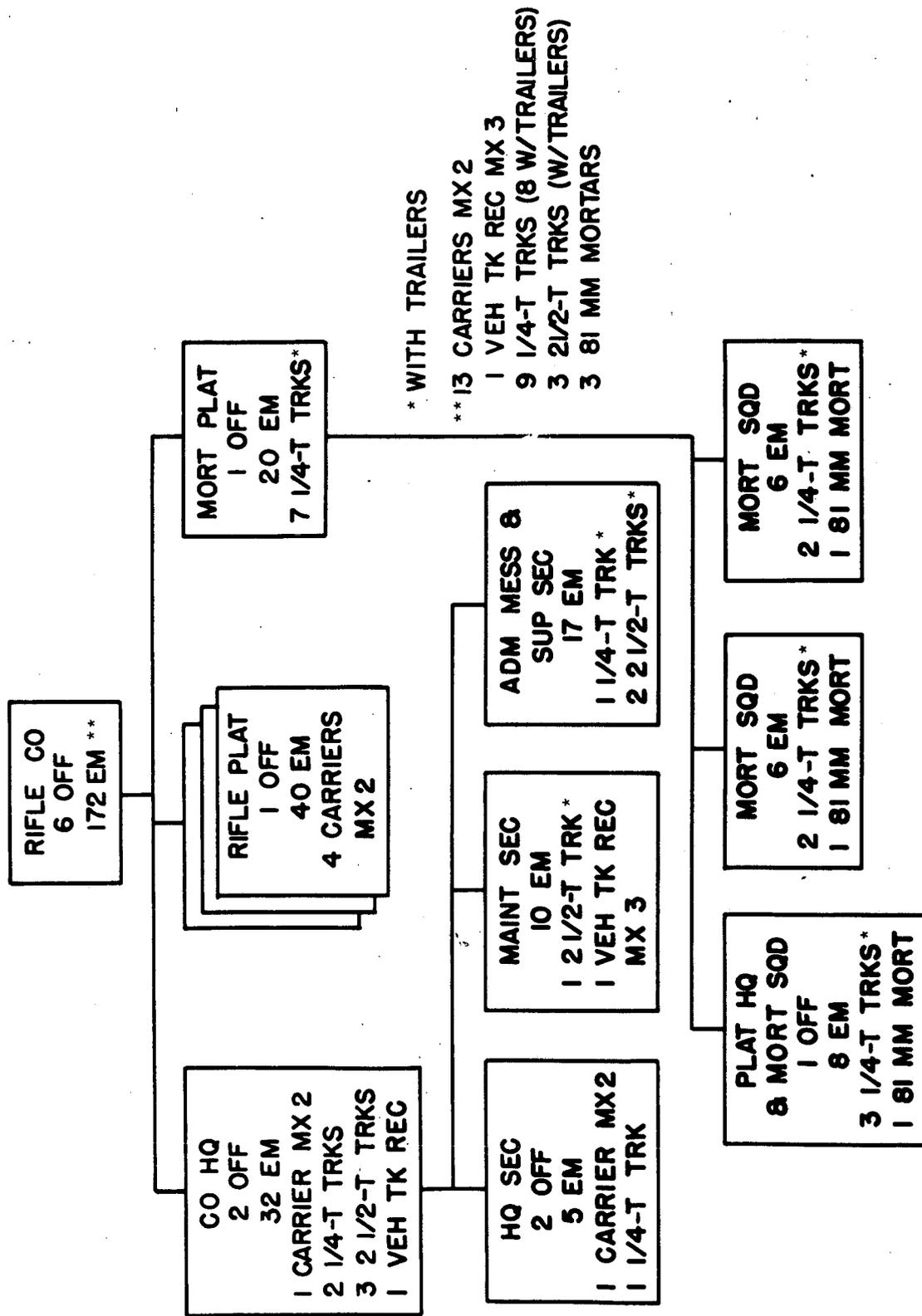


FIGURE 4 THE TANK COMPANY



* WITH TRAILERS

** 13 CARRIERS MX 2

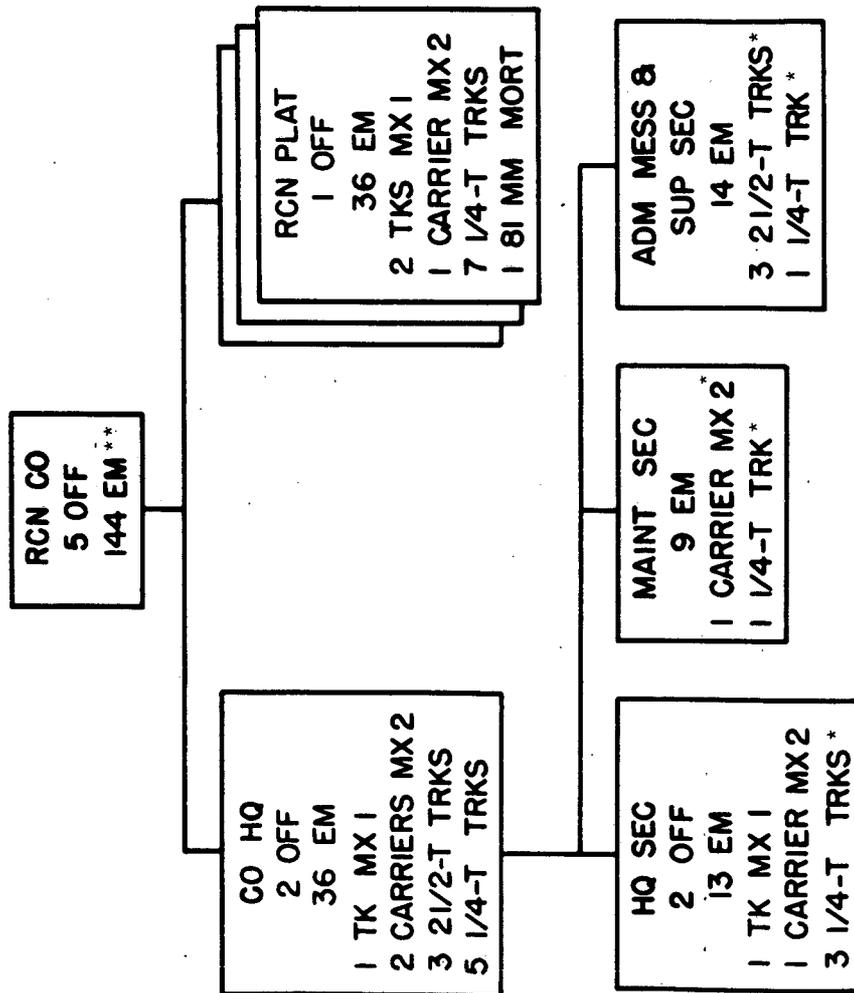
1 VEH TK REC MX 3

9 1/4-T TRKS (8 W/TRAILERS)

3 2 1/2-T TRKS (W/TRAILERS)

3 81 MM MORTARS

FIGURE 5 THE RIFLE COMPANY



* WITH TRAILERS

** 7 TANKS MX 1
 5 CARRIERS MX 2
 26 1/4-T TRKS (11 W/TRAILERS)
 3 2 1/2-T TRKS (W/TRAILERS)
 3 81 MM MORTARS

FIGURE 6 THE RECONNAISSANCE COMPANY

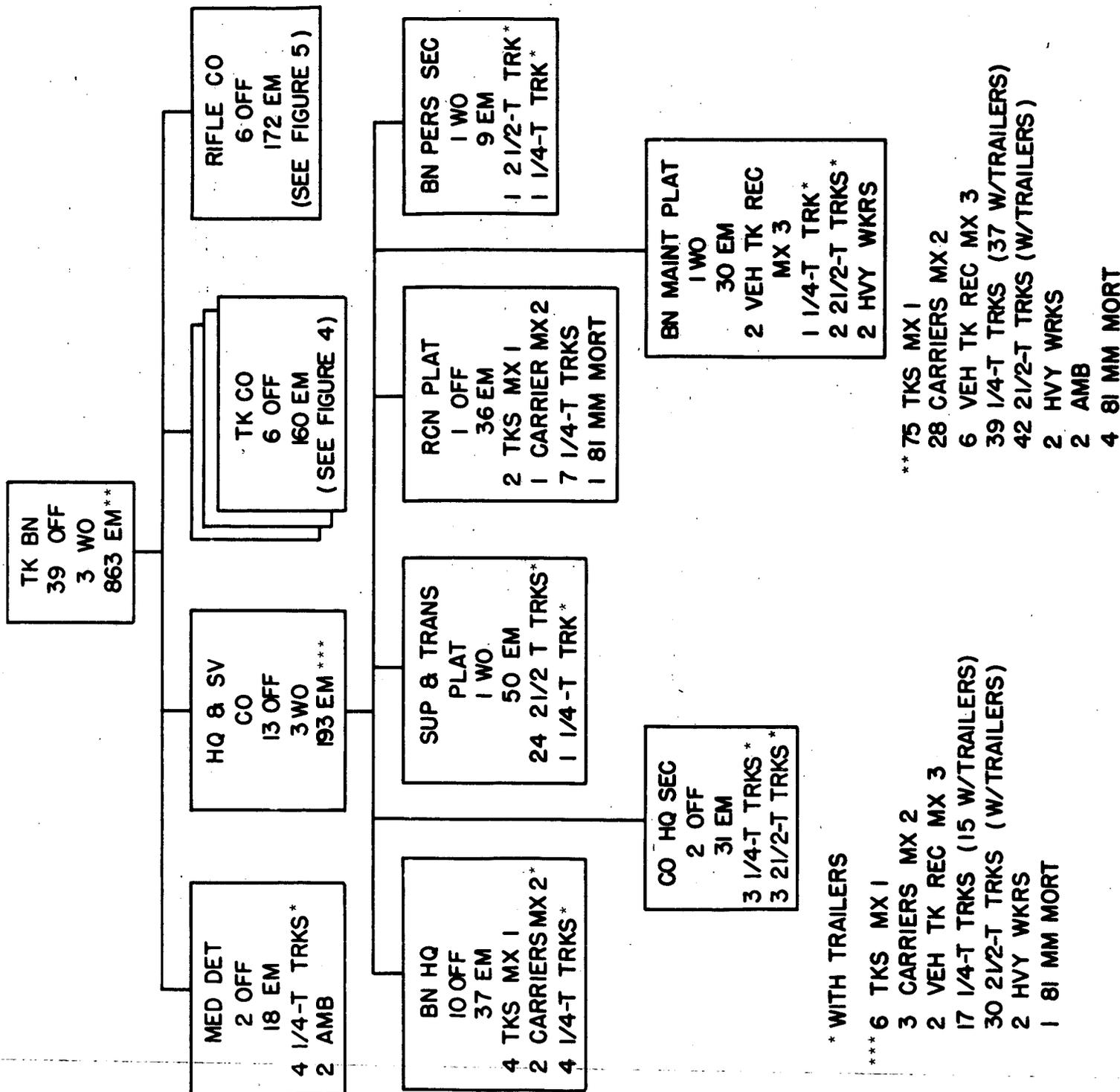
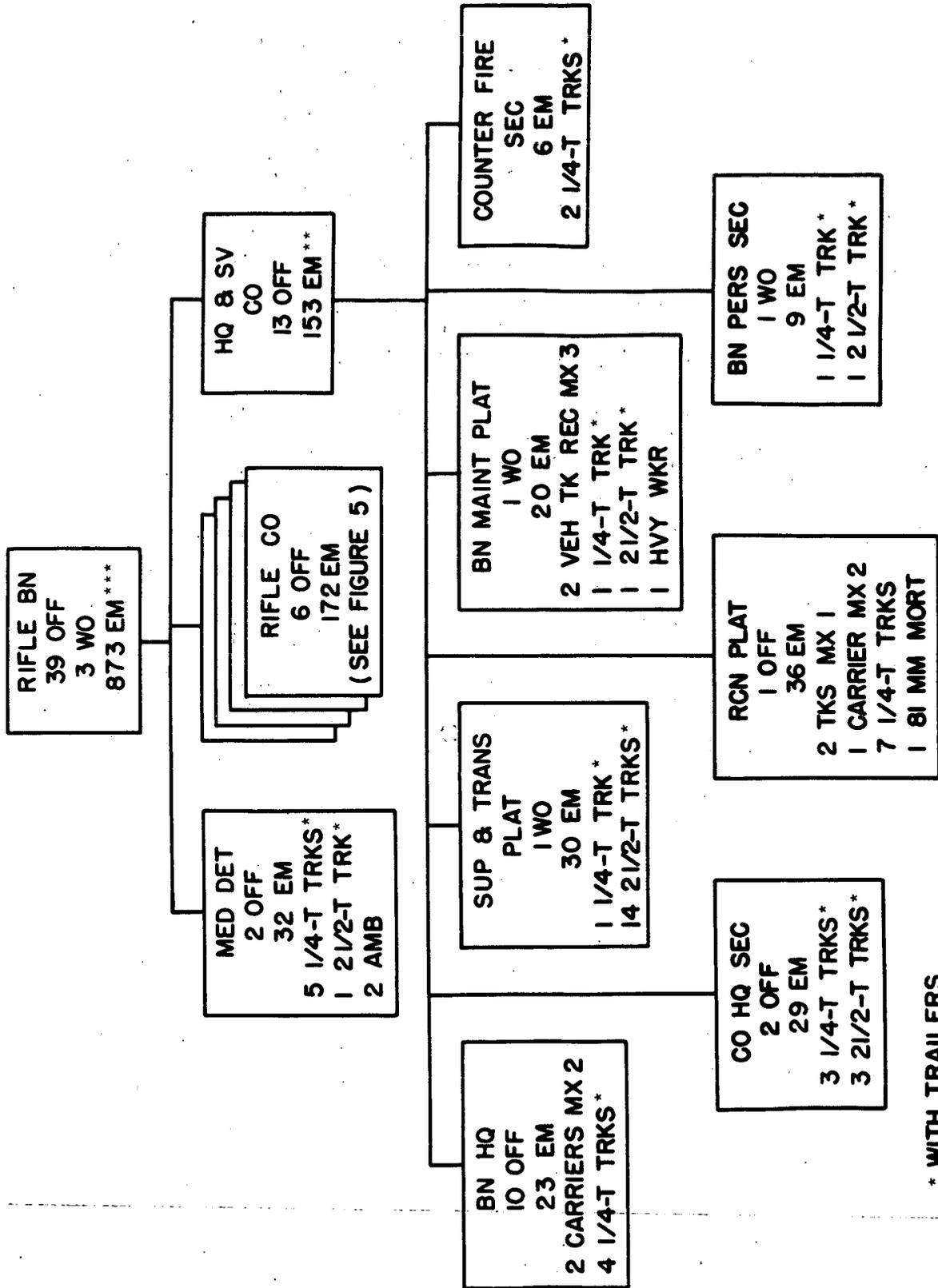


FIGURE 7 THE TANK BATTALION



* WITH TRAILERS

** 2 TKS MX 1
3 CARRIERS MX 2
2 VEH TK REC MX 3
19 1/4-T TRKS (14 W/TRAILERS)
19 2 1/2-T TRKS (W/TRAILERS)
1 HVY WKR
1 81 MM MORT

*** 2 TKS MX 1
55 CARRIERS MX 2
6 VEH TK REC MX 3
60 1/4-T TRKS (51 W/TRAILERS)
32 2 1/2-T TRKS (W/TRAILERS)
1 HVY WKR
2 AMB
13 81 MM MORT

FIGURE 8 THE RIFLE BATTALION

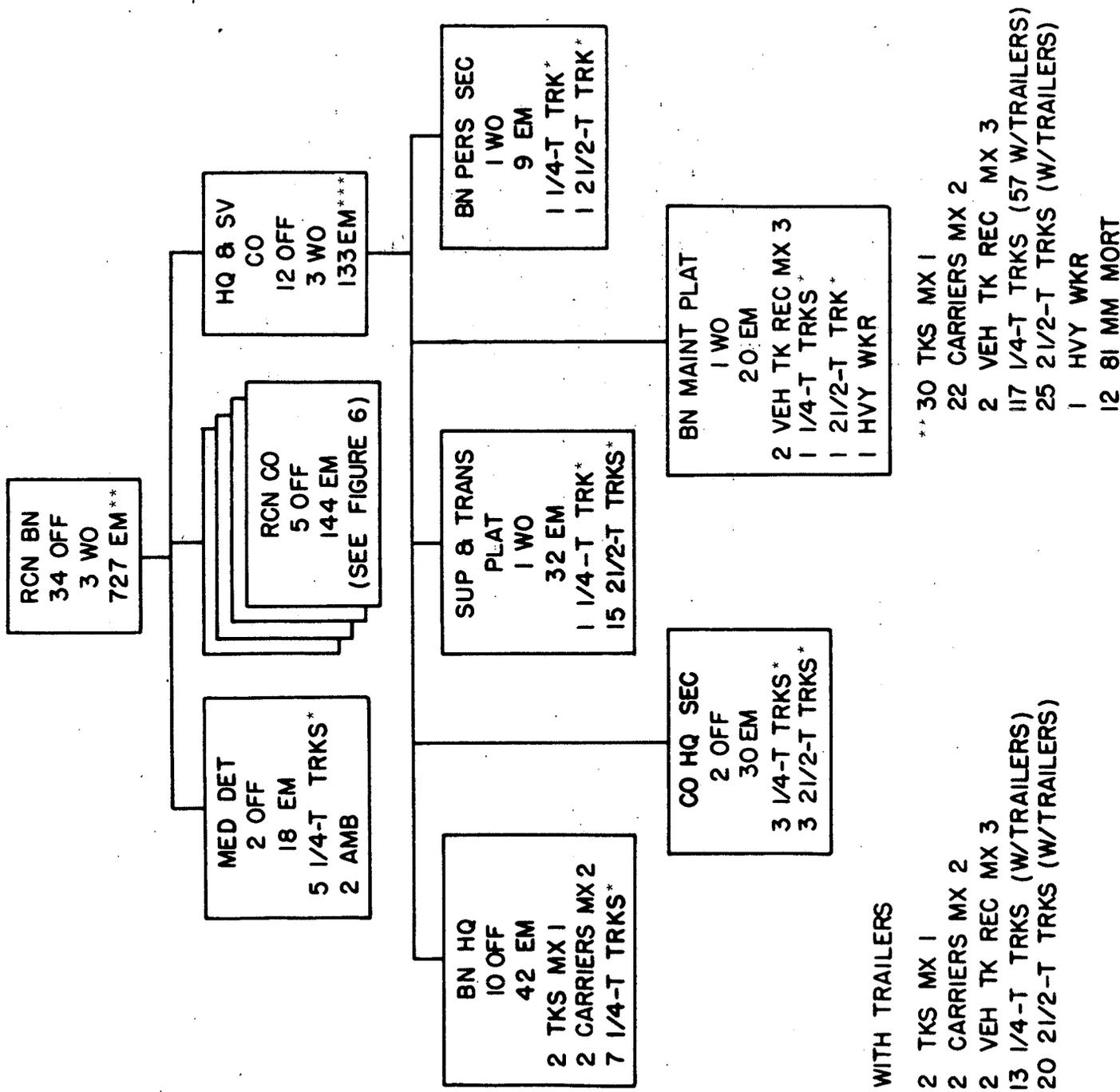


FIGURE 9 THE RECONNAISSANCE BATTALION