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MILITARY MONOGRAPH

TITLE: What Vehicle Should Replace the M8 Armored Car in the Mechanized Cavalry Squadron.

SCOPE: 1. A discussion of the desirable characteristics for a vehicle to replace the armored car.

2. A comparison of the M18 Gun Motor Carriage and the M24 Light Tank as regards to these characteristics.

3. A description of the vehicle that could be designed to take advantage of the best features of the M18 and the M24 and the added characteristics that are considered necessary.

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What Vehicle Should Replace the
Armored Car in the Reconnaissance Squadron.

In December 1944 the 14th Armored Division was rapidly moving toward the German Westwall defenses in the vicinity of Wissembourg, France. Plans had been made for the division to strike into the Siegfried Line quickly before the enemy could find time to man his strong positions in that sector and both combat commands were driving hard to accomplish this mission. Leading off in CCB's column was a mechanized cavalry reconnaissance troop equipped with peeps and armored cars, and trained thoroughly in reconnaissance and scouting methods.

Progress had been rapid and resistance light. The column had made few halts. Up front the point was within a few miles of the German border when the corporal in the leading peep sensed trouble. He was approaching a small Alsatian town, and noticed the strange lack of activity in its single street, which usually indicated that the frightened populace was aware of the nearness of the enemy. So the point began to move with caution, alert for the sound of a gun or the sight of a German Soldier. The troop commander and the lead platoon leader moved up to look things over. Then the evidence appeared. There on a road were the unmistakable wide tracks of a Mark V tank. The German wasn't far off because the sound of his engine was soon audible a little way down the street.

The troop continued to move with caution. Before long, they were able to see not one, but two German tanks slowly move out of the far end of town, and withdraw around a bend in the road. Apparently these tanks constituted part of a delaying force which could succeed quite

well in holding off the lightly armed reconnaissance unit. The troop was justly hesitant about attacking the tanks, knowing that they were hardly equipped to even dent their armor.

The column commander began to call for more speed, but his reconnaissance was unable to hurry. It was no joy-ride for them, for, no matter how much they wanted to destroy the enemy, they knew that the only weapons at their command were their wits, and the stealthy methods in which they had been trained.

Finally, after slowly pursuing the withdrawing Germans for two or three miles, the point ran into a determined resistance from anti-tank and small-arms fire at a French border village. The combat command was committed and the fight for the Siegfried Line began. The enemy had gained some precious time in which to get set for our attack.

This was not an uncommon situation in the fighting in Europe. Although the tactics of using reconnaissance troops ahead of armored combat commands may be subject to question, this example represents one of the many times that the cavalry units found themselves, a mere boy, trying to accomplish a man's job without the strength to do so.

On another occasion, troops from the same squadron were given the mission of protecting the flank of CCA, 14th Armored Division, as that combat command attacked the city of Neumarkt, Germany. In order to accomplish this mission, two troops, A and D, were leapfrogged toward a squadron objective, along flank routes. On their routes lay two small villages; Lauterhofen and Pilsach. Poor terrain prevented much cross-country movement and both towns had to be passed through in order to reach the objective. Neither troop had adequate tank destroyer

support, and elements of the 17th SS Panzer Grenadier Division were known to be in the vicinity.

In attempting to enter Lauterhofen, A Troop met four German tanks. A brief fire fight began and the troop was unable to force its way through the town. D Troop had similar trouble at Filsach and, although they employed the fire of all their available weapons, they too were repulsed. The squadron did not reach its objective for the day.

These are but two of the hundreds of small bits of evidence of the inadequacy of the reconnaissance squadrons, that can be found in the records of World War II. These units were continually faced with the problem of how to outshoot and outmaneuver German armor, and they simply could not find an answer with their inadequate equipment.

Fortunately, we have succeeded in defeating the Germans. We now have at our disposal, some time in which to look back over our experiences and to plan our future armies so as to take advantage of the mistakes we made this time. We can draw some important conclusions from the examples cited here.

First; that the reconnaissance units, although it was contrary to their training doctrines in the early part of the war, must accomplish their missions by aggressive combat, and they must expect to fight against enemy armor.

Second; that these units must be equipped to fight against enemy armor and that a tank fighting weapon that is powerful, fast and maneuverable must be an organic part of the reconnaissance platoon.

It is the purpose of this discussion to develop a practical means

of providing the reconnaissance platoon (or its future counterpart) with a suitable vehicle to replace the M8 Armored Car; a vehicle that would possess the necessary characteristics of a fast and mobile reconnaissance vehicle, and pack enough punch to deal with enemy armor. For this purpose, an attempt will be made to outline the desirable characteristics of this vehicle; to compare two vehicles currently in use as to their suitability and then to attempt to combine the best features of each, into a single vehicle that best typifies what reconnaissance men actually want.

The Desirable Characteristics

Fire-power and armament is a primary consideration in our selection of a combat vehicle. In order to preclude the necessity for the attachment of tank destroyers, or other vehicles with unfamiliar logistical and maintenance qualities, it is desirable that a gun of 76mm or larger, with a high muzzle velocity and ammunition capable of stopping most enemy tanks, be mounted on our reconnaissance vehicle.

Armor is the second aspect to be regarded. It is felt that too much added weight of armor plate will be a hinderance rather than a help in design. Sufficient armor is necessary to afford protection against small arms, grenades and artillery fragmentation, and some belly armor must be provided to take up the shock of anti-tank mines. A covered turret must be present on the vehicle.

Provisions must be made for the installation of the proper radio equipment. This vehicle is the base of communications for the reconnaissance platoon and troop, and although it is not the purpose of this discussion to adjudge the type of radios needed, their stowage

and accessibility must be studied.

Any vehicle of a unit whose missions include security and reconnaissance must be fast and mobile. The armored car was fast on hard, level roads, but it did not possess any degree of cross-country mobility or hill climbing power that could be considered adequate. With a forward speed of 50 mph, a reverse of 15 to 20 mph and the low ground pressure and cross-country mobility of a tank, a great improvement could be made over the armored car.

With the qualities of speed and mobility, those of cruisability and low maintenance requirements should exist in our reconnaissance vehicle. It should carry a day's run of fuel in its tanks and should be equipped with an auxilliary generator so that the main power plant will not have to be operated for the sole purpose of running the radio equipment.

There are only three armored cars in the present reconnaissance platoon and this number may be decreased in future organizations. This fact in itself is sufficient reason for the need of a vehicle which will be able to keep going for days at a time without major maintenance failures. Engines must be quickly replaceable and all units must be readily accessible for rapid repair. It should be as foolproof as possible because, since this vehicle is the base of the platoon's operations, its loss will seriously cripple the platoon from the standpoint of communications and fire-power.

Certain characteristics that might be classified as being of a security nature must not be neglected in this study. Quietness of operation has been felt by many, to be a major requirement, and it is

admitted that there are occasions when stealth is important in operations close to enemy lines. The opinion of the writer, however, differs in that he does not believe that speed, mobility and fire-power should be sacrificed for quiet operation.

All around vision, even with the turret hatches closed is a vital security characteristic which must be accomplished by means of adequate optical devices and sights for the crew members and a good vision cupola for the vehicle commander.

Other security factors worthy of mention are low silhouette and a means of close-in protection against enemy foot troops.

The characteristics that have been discussed are considered most desirable for our reconnaissance vehicle. The order in which they were stated indicates to a certain extent, their importance, although it must not be forgotten that none are sufficiently high in the scale of desirability to warrant complete disregard of the others.

Comparison of Two Vehicles Currently in Use as to Their Possible Adaption as Reconnaissance Vehicles

Having noted the basic characteristics needed in our reconnaissance vehicle, let us now consider which feature or features, can be found in the M18 gun motor carriage (tank destroyer) and the M24 light tank.

As far as armament is concerned, the M18 seems to have it. This vehicle mounts a 76mm gun with sufficient muzzle velocity to stop enemy armor, to destroy other vehicles, and to knock out fortifications. The gun proved itself many times in combat as the primary weapon of many tank and tank destroyer units. Its record in the M4 A3E8 speaks for itself, while numerous instances of its value have been recorded in

the reports of tank destroyer units. The 602nd Tank Destroyer Battalion claims to have destroyed 41 German tanks and 8 self-propelled guns with their 76mm guns,¹ while a single platoon of Co. E 609th Tank Destroyer Battalion (also equipped with M18s) reports that they destroyed² 9 88mm guns, 5 20mm guns and 2 pill boxes, in two days action.

The 75mm M6 gun in the M24 tank, while its combat record in ground force units is short and inconclusive, hardly seems heavy enough to handle the anti-tank work that will be required, although, with HEAT or similar ammunition, its destructive properties are not to be overlooked. Reports of the 774th Tank Battalion, which was equipped with M24s during the Spring of 1945, show a total of 2 Mark VI tanks, 2 Mark IVs, 2 self-propelled guns and 8 enemy half-tracks, destroyed during one month's operations.³ The tank company of the 94th Cav. Reg. Sq. Mecz. on 30 April, '45, with four newly received M24s, found excellent results in their firing on a German Kaserne in Landshut, Germany, where substantial brick buildings were easily penetrated with HE and armor piercing ammunition.

The M24's 75mm gun can be said to have some value but it is definitely not as suitable as the 76 mm.

Armor is the second characteristic to be compared and it is readily found that the M24 has an obvious advantage in that it has a covered turret. Attempts have been made to correct this difficulty in the

1. USFET WD Observers Board Report #C-808 Sect. III 602nd TD Bn

2. Ibid. Sect. III 609th TD Bn.

3. Hq. 744th Tk Bn. (1) Report on M24

M18 by various modifications of the turret armor, but none are as successful as the turret of the M24. Since we have already noted that armor plate need be only heavy enough to afford protection against small-arms, fragmentation, etc., it would appear that the armor of the M24 could be considered adequate.

Neither the M24 nor the M18 are satisfactory from the standpoint of radio stowage and accessibility. Their turrets are designed to carry one radio. Some M24s were modified during the war, to carry an SCR 506 as well as an SCR 508, the latter being mounted in its normal place in the rear of the turret, while the former was placed behind the assistant driver on the floor of the tank. This was not a satisfactory arrangement since the SCR 506 occupied space needed for ammunition, and was not very convenient to operate. The CW operator in the crew should occupy the place of the bow-gunner or assistant driver, and the most convenient place for his radio is in the right sponson. It can therefore be reiterated that neither the M24 nor the M18 are the solution as far as radio stowage is concerned.

Speed is a desirable characteristic that is found in both vehicles. Both can be considered satisfactory in this respect, except for the fact that the M18 has more power on the pick-up and in hill climbing, which gives it a decided advantage. Tank Destroyer personnel are high in their praise of the M18's speed, a typical statement being recorded by the 602nd Tank Destroyer Battalion: "The unit suffered low losses due to tremendous speed. On countless occasions enemy gunners have registered behind us with 88's because of the speed of our movement!"⁴

4. Brig.Gen. K.G. Althaus Notes on Tank Destroyers Sect.II 602nd TD Bn.

The subject of cross-country mobility bears some comment. Since the track vehicle is the answer to the mobility problem, it is quite obvious that the tank is the ideal reconnaissance vehicle. Any disadvantages in speed, noisy operation, etc., are quickly nullified by the fact that tanks can go almost anywhere and can certainly negotiate terrain that no heavy wheeled vehicle could cover. The M24 and the M18 are both track vehicles of relatively light weight and have ground pressures of approximately 9.5 pounds per square inch which makes them quite suitable on the mobility score.

Examples of excellent low maintenance characteristics can be found in both the M18 and the M 24. A report of the 38th Cav. Rcn. Sq. Mecz., cites a march of about 1000 miles, made by the M24s of their light tank company, which revealed some of the maintenance features of this vehicle. The first leg of the march from Allenahr, Germany, to Saverne, France, a distance of 422 miles, was made at a rate of march of 18 mph. Seven tanks fell out for various maintenance reasons which included overheating, leaking gaskets, and wear in track blocks. The second leg covered a distance of over 500 miles, from Wissembourg, France, to Lohne, Germany and was made at a rate of 25mph. Only five tanks fell out and their troubles were chiefly in frozen and improperly adjusted transmission bands and clutches. The fuel consumption for the entire march was approximately 1 3/4 gallons per mile.

5. 38th Cav Rcn Sq Mecz Report on Performance of M24 6 Apr 45.

Concerning the M18, reports of favorable maintenance characteristics can also be found. One from the 603rd Tank Destroyer Battalion reads as follows: ".....Cannot speak too highly for the battle performance of the M18. Speed, endurance, striking power and mobility have made it the finest combat vehicle in the Army. We have brought these vehicles 2500 miles on the original tracks and engines."⁶

Speedy engine replacement is a point in favor of the M18. This feature deserves comment, and it is felt that under our system of unit replacement in the lower echelons of maintenance, it must be stressed that parts must be quickly and easily replaceable.

The M24 can make approximately 175 highway miles and 120 cross-country miles, on its full fuel load. It is not too important that the reconnaissance vehicle be able to carry a much greater fuel load if proper resupply measures are taken. With this in view it hardly seems necessary to carry the comparison of the cruisability point any further.

Since noisy operation seems to be a factor that is frequently held against tanks, as reconnaissance vehicles, it will be taken up in this discussion. It is granted that tanks are noisy, but it can be stated that, by proper driver training and by the use of rubber tracks, much noise can be eliminated. One report on the M18 states that it was well liked by the infantry since, because of its quiet operation, it did not draw artillery fire as did some other tanks.⁷ In the writer's

6. Brig Gen K.G. Althaus Op. Cit. Sect. II 603rd T D Bn.

7. Ibid. 1 56-61

own experience around Bitche, France, an example of quiet tank operation in the close proximity of the enemy can be found. In this case, a light tank was employed on an outpost position. An enemy night patrol was known to be operating within 20 yards of the tank, and it was later discovered that this patrol was really a part of a large scale attack. The officer in charge of the outpost was forced to withdraw to a secondary position in order to conform to the movements of units on his flanks, and in doing so ordered the tank to move back as quietly as possible. He fully expected the tank to draw fire, but not only did it draw no fire, but the officer himself, who was only a few yards from it, did not notice it moving out of the position.

These examples do not attempt to deny the fact that tanks are noisy, but they do indicate that skillful driving can bring about comparatively quiet operation when it becomes necessary.

Vision is the next security factor to be studied. Since the M18 has an open turret, and since this has already been considered a distinct disadvantage, it will not be discussed further. The M24, on the other hand, has a fair vision cupola which, in the absence of any future improvement would be suitable. Sights and periscopes in both vehicles can be improved.

Other security items, such as low silhouette, are present in both vehicles, but both lack an adequate means of close-in protection.

Conclusions

Both the M18 gun motor carriage and the M24 light tank present many desirable characteristics that are greatly needed in our new reconnaissance

vehicle. The M18 has the gun, the speed, the extra power in its engine, and the ease of maintenance. The M24 has the armor and some of the desirable security measures, as well as fairly low maintenance requirements. Both have mobility. Both lack adequate radio space, and proper logistics must be employed in order to keep them refueled. Our first conclusion therefore, can be that a combination of the good features of each vehicle and improvement of the items in which both are lacking, or unsatisfactory, would give us a basis upon which to design a new reconnaissance vehicle that would fulfill our present needs.

Such a vehicle might look something like this: An M24 chassis with a large covered turret carrying one or two radios (the second radio might be carried in the right sponson) and a 76mm gun. The 76mm might be the present gun or a lighter version having a higher muzzle velocity or ammunition with greater penetrating qualities. The engine would be more powerful than that of the M24 and would be easily replaced as is the M18 engine. There would be an auxiliary generator. A good vision cupola would be mounted over the tank commander's hatch, and the tank would be provided with all around close-in protection by means of some sort of grenade projectors mounted of the outside.

The speed and power of the vehicle would be comparable to that of the M18 and, being a tank, it would be able to negotiate almost any terrain. It would probably have rubber tracks.

In conclusion, it can be stated that there is a definite and pressing need for a vehicle to replace the M8 Armored Car in the cavalry units or their future counterparts. Many of the characteristics desired in this vehicle can be found in the M18 gun motor carriage and many others can be found in the M24 light tank, some of the most important of which

have been covered in this discussion. With the lessons in tactical use of cavalry as a security element, always in mind, future development of its vehicles must include many of these characteristics. The M18 or the M24 could be used as a substitute until the new vehicle is produced, but eventually a new vehicle must be adopted and the M18 and the M24 should constitute the basis for its design.

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