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Title: Commanding General's Report on Combat Experiences of 1st Armored Division by Maj. Gen. E.N. Harmon, U.S. Army Commanding

Abstract: Training and experiences of the 1st Armored Division including subordinate units to include training, combat experiences and battle lessons for reports dated 14 June 1943 and 9 July 1944

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HEADQUARTERS FIRST U. S. ARMORED DIVISION
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Major General Alvan C. Gillem, Jr.
Chief of the Armored Force,
Fort Knox, Kentucky

My dear General,

I am attaching herewith a report which I submitted to Allied Force Headquarters relative to training as a result of our battle experiences. I thought you might like to read it over and perhaps find some points of interest which would be worth while to stress in the training of the armored divisions back in the United States.

We are having a helluva time over here to put one armored division into battle. It seems it takes two armored divisions to keep one of them going in battle. When the 1st Armored Division was at the front the 2nd Armored Division was required to send replacements for vehicles and all sorts of specialists to help out, and now that the 2nd Armored Division is about to engage and we are in a rest area, we are being bled to death to help the 2nd Armored Division out. I wish the time would soon come when sufficient equipment and personnel would be available in Africa so that both divisions could operate independently without the other as it is very hard to train a division with people and equipment continually being sent away and no knowing when they will get back.

With kindest personal regards, I am

Sincerely yours,

E. N. Harmon

E. N. HARMON
Major General, U. S. Army
Commanding.

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UNCLASSIFIED

COMMANDING GENERAL'S REPORT

ON COMBAT EXPERIENCES

of

1st ARMORED DIVISION

by

Maj. Gen. E. N. Harmon
U.S. ARMY
COMMANDING

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HEADQUARTERS 1ST ARMORED DIVISION
APO 251 - c/o Postmaster,
New York City, N.Y.

COPY NO. 4

13 June 1943

SUBJECT: Report on Combat Experience and Battle Lessons for Training Purposes.

TO : ALLIED FORCE HEADQUARTERS, APO 512, c/o Postmaster, United States Army.

In compliance with the directive contained in AG 370-6 C-M dated May 14, 1943, the following report is submitted for the First Armored Division.

1. LESSONS AND EXPERIENCE GAINED FROM VARIOUS TYPES OF TACTICAL OPERATIONS.

a. General.

(1) Throughout the greater part of the African campaign, the First Armored Division was never employed as a unit except in the last phase of the battle for Mateur and Bizerte. Previous to this phase, the Division had arrived piecemeal and had been used piecemeal throughout. This piecemeal action was caused in part by lack of appreciation by the higher commanders of the proper and effective employment of armor and in part by the necessities of battle which often forced the dispersion of the Division over a wide front as it was the only unit which had sufficient mobility and power to meet sudden thrusts upon a very thinly held front. In view of the dispersion of the Division there have arisen many erroneous ideas as to changes in organization and command which are not warranted.

(2) In general the doctrines for the employment of an armored division as taught by the Armored Force have proven to be entirely sound. A weakness lies in the fact that during the high tempo of combat and more especially so with green and untried commands, in a great many instances elementary military teaching is forgotten or overlooked with the result that there is an unnecessary great loss in lives and equipment and often at times the tide of battle has turned with disastrous results.

(3) There were two great outstanding weaknesses for which future training and preparation for battle must provide; first, absolute necessity for more thorough and complete basic training for the individual and for small units. This includes not only the elementary basic training of the soldier in all subjects such as discipline, camouflage, dispersion, sanitation, use of cover and concealment, use of slit trenches, etc., but also speed and accuracy of weapon crews such as machine gun, mortar, and with all weapons of combat vehicles. The leadership and responsibility of the small unit leaders such as the squad and platoon, and the perfection of the training of these units must be given greater emphasis and less emphasis placed on the operation of the larger units such as the regiment, brigade and division. The division will succeed only as well as the platoon succeeds. Second, the absolute necessity of inculcating a disciplined fighting spirit with a realization that a price must be paid for success and the willingness on the part of the individual officer and soldier to sacrifice himself to

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gain the objective. This aggressive fighting spirit was decidedly lacking in a great many instances and had to be developed after unsatisfactory early combat experience. Men and officers must be taught that every shell and every bomb is not necessarily directed at them personally, that they all have a good chance to survive regardless of the intensity of hostile fire, and that whether or not they survive some one has to pay a price if success is to be gained. We must build up the dignity, resourcefulness and responsibility of the non-commissioned officer and junior officer in preparation for his duties on the battlefield.

(4) A false picture of speed and aggressivness has been built up in the United States which has unnecessarily cost lives and material by units charging blindly into battle instead of working forward steadily, skillfully, and employing all the means of reconnaissance and fire to cover the advance which are at the disposal of the command involved. Units must be taught that only by advancing can they succeed and that ground once gained must under no circumstances be lost, that to retain captured objectives the most skillful and maximum use must be made of all weapons at their disposal. The fore-going simple fundamental rules were violated many times and resulted in loss and disaster.

(5) The German is skillful, ruthless and a master of deception. He can be beaten. American soldiers have seen him in retreat. The myth of the invincibility of the German army and of its equipment has been exploded. It has been exploded by skillfully led, skillfully fought and determined troops. The German army can be overcome by no other means.

(6) No unit smaller than a division should be employed under the command of an allied nation. Each nationality has its own system of training, employment of units and supply. The attachment of small units to allied commands invariably results in the loss of confidence on both sides as to tactical employment, equipment and supply.

(7) The fundamental conception behind the present organization of the armored division wherein it is strong in armor and artillery and light in infantry was based on the formation of a corps consisting of one or two infantry divisions and one armored division, the infantry divisions furnishing the necessary power to clear the way and to provide for the opportunity for the use of the armor. This conception is considered sound and the great power of the armored division in exploiting a break through was demonstrated at Matour and Bizerte. Means must be available to rapidly transport part of the infantry divisions to hold the ground gained by the armored division. If the European conception that an armored division must be balanced within itself to either attack or defend is adopted then the present organization of the American Armored Division must be changed to include more infantry at the expense of a reduction in tanks. This is not recommended.

(8) Tanks should be regarded as weapons of great opportunity and when sent to assist infantry divisions should be directly under the command and operation of the Division Commander to whom sent. The tank commander should be consulted as to the capabilities of his tanks and a coordinated attack by all the means within the infantry division should be used to gain the objective. The key terrain feature during the final phase in the American sector in Tunisia was captured by adherence to the foregoing principle. On the other hand, one tank battalion was completely frittered away without accomplishing anything worthwhile because no objectivity or coordinated planning was obtained in its employment.

(9) Tank destroyer battalions should be an organic part of the armored division. The practice of continually changing the attachment of Tank Destroyer Battalions results in poor team play and loss of confidence especially in the minds of the infantry. Tank destroyers greatly assisted the advance of friendly tanks by establishing a base of fire and giving close direct fire support from hull down positions. Tank destroyers should not chase tanks. They should reconnoiter actively for the approach of hostile tanks and be prepared to meet them with defensive fires from selected hull down positions. Every effort should be made to establish tank traps into which the hostile tanks may be drawn and destroyed.

(10) Battlefield recovery although improving is still far below the standard set by the Germans. The use of tank transporters for the strategic moving of armored units although well understood and practiced by the British is still in its infancy as far as American troops are concerned. To sustain an armored division in battle there must be a replacement pool of tanks and trained personnel close up behind the front in order to promptly replace casualties on a few hours notice. Regardless of theory, vehicles that cannot be quickly put into shape in a matter of hours by combat troops will be left in place on the battlefield and must be taken care of by service units in rear. Plans for recovery should be based not on theoretical lines and zones in rear of an advancing armored division but rather on the type of maintenance and recovery which forward elements will be able to perform in a given period of time. Time and not distance should be the governing factor that determines the responsibility for maintenance and recovery between the combat unit and the service unit in rear.

b. The Offensive.

(1) The employment of the armored division in mass is the key note to success. The hostile front must be skillfully reconnoitered, in force if necessary, to determine the weak and strong points of the enemy's defense. The mass of tanks and the mass of artillery must be concentrated on the weak point. The strong points must be avoided and only given the minimum amount of attention necessary to protect the attack of the mass against the weak point. Once the weak point is discovered the attack must be pushed with the utmost vigor before it can be reinforced and the leading elements must be prepared to take heavy initial losses in order that the mass behind them may push through and achieve a great success. We are inclined to move too fast; to attack at a given hour or given day without being ready; without the knowledge of the plan thoroughly understood down to the lowest element; without the availability of ammunition and supplies necessary to sustain the effort and without the command concentrated so that once the attack starts all elements can move into their attack missions on time. It is better to delay the attack until later in the day or to a later date and to have the attack thoroughly prepared and understood rather than to be faced with the necessity of stopping the attack once in order to provide enough impetus in troops and supplies to continue to success. Strong infantry forces with transportation to quickly move forward should be on the alert to follow the armored attack in order to quickly secure the advantages gained and release the armor for further exploitation.

(2) Reconnaissance must push in boldly and accept losses in order to obtain information upon which the division commander can base the correct employment of the division, which when once started in any direction is most difficult to stop and re-arrange for battle in another direction.

(3) The concentration of artillery fire is a prerequisite of success. Close supporting weapons must be well forward to supplement the artillery. Timing must be studied for each projected attack to effect coordination of artillery fires; close supporting fires; infantry movement, and tank movement. The artillery should initially emplace as far forward as possible at the beginning of the attack and should be leap-frogged forward to closely cover the advance. The most vital point to the successful support by artillery is having close liaison with the advance elements to be supported through the use of forward observers. All officers must be trained to act as forward observers and to be able to quickly and intelligently adjust artillery fire. A reserve of trained officers capable of replacing casualties among forward observers is imperative.

(4) Engineers must be placed as far forward as possible in the initial assault in order to quickly begin the task of making passages through the minefields and to bridge vehicle obstacles.

(5) Infantry and tanks must follow closely behind artillery concentrations, even to the extent of sustaining losses from their own artillery. Speed by the infantry in digging in and preparing for the inevitable counter-attack must be stressed. Immediately after gaining a position concentrations from supporting weapons should be prepared and arrangements made for their delivery on short notice. Reinforce success rather than redeem failure. All men must be impressed with the fact that there will be far less casualties among units which keep advancing than among those which withdraw. To take a position, hit it with everything you have. If you think you can take it with a tooth pick, use a baseball bat, then you will be sure.

c. The Defensive.

(1) The armored division is not organized for a static defense. It should defend by attacking, thereby upsetting the balance of the hostile attack.

(2) Infantry cannot withstand the attack of tanks and must be protected either by inaccessible terrain or by a heavy concentration of artillery, anti-tank guns and mines. A few tanks can rout a large force of infantry if they get into the battle position. Tanks have maneuvered and got into infantry battle positions over much more difficult ground than commonly thought possible and with great devasting effect.

(3) Good OPs are essential to the infantry. If infantry is attacked while being relieved the unit being relieved must remain in position until the attack is beaten off. Infantry must not become over-extended in the defense. The close support of all available weapons is vital.

(4) Tanks must not be kept on the battle line when not being actively employed. They must be withdrawn from combat at or prior to dark, and be taken back where they can be refitted and re-armed. Holding tanks several days in front line positions materially reduces their effective fighting strength for lack of maintenance. Tank crews must receive more training in protecting their tanks at night by disposing weapons on the ground.

(5) The principal advantage of armored artillery defensively is its ability to displace during daylight hours as it offers a reasonable amount of anti-aircraft defense against enemy strafing and bombing, thus enabling it to move as required. Artillery should avoid deep wadis as they will be lost if hostile tanks break through.

(6) We must learn the principle of being strong at the right spot and avoid trying to hold everywhere. It is better to give ground in order to attack and defeat the enemy in detail than to dissipate our strength by trying to watch every spot that the enemy might slip through. The armored division has great possibilities for use as a mobile reserve to rapidly arrive at a threatened point and force the hostile attack into confusion by counter-attack.

d. Retrograde Movements.

(1) Armored artillery has an advantage over towed artillery for retrograde movements. Due to armor it can remain longer in forward areas thereby covering withdrawal of forward troops. It can reasonably protect itself against infiltration of the enemy during daylight hours and can always serve as protection against enemy armor in an emergency.

(2) Retrograde movements by infantry have proven extremely costly and reorganization is difficult. The success of such movement depends on strict discipline and proper control of squads and sections by their leaders. All supporting weapons must be employed. The maximum use of mines and cratering of roads must be employed. The troops must understand the movement in order that it may be carried out with order and not result in a panic.

(3) Tanks should be employed on the flanks to counter-attack pursuit. Part of the tanks should be established in hull down positions ready to check the advance of hostile tanks by defensive fire.

e. Cooperation by support and observation aviation.

(1) Team play between armored units and aviation would make an invincible combination. This team play has never been obtained due either to the lack of planes or the desire of the high command to keep the air together as a strategic fighting force and not as a close supporting arm to the ground. In the few isolated cases where close air support was available the results were tremendously successful. Reconnaissance by air for the armored division is positively vital and yet was obtainable only in a few isolated cases. At no time were night reconnaissance flights made although requested by this Headquarters.

(2) Each armored division should have attached to it one observation squadron and one fighter bombing squadron. A senior flying officer should be on the staff of each division to advise the division commander on the capabilities and limitations of aircraft available and also on all other air data.

(3) Adequate air support can only be obtained by direct call from the division to the air. Any other system is too slow and will result in loss of opportunities.

(4) The greatest single aid to more effective use of armored formations would be the development of close air support both by reconnaissance and by bombing. Failure of this air support presents the weakest link in our tactical team today.

2. MISCELLANEOUS LESSONS AND EXPERIENCES IN SUBJECTS COMMON TO ALL ARMS.

a. Mine warfare and booby traps.

(1) The antitank mine is one of the greatest menaces to the use

of the armored division. The antitank mine has no present antidote except the slow painful process of picking up the mines by detectors or by charging through the minefields at great loss to tanks.

(2) Standardization of mine field markings, routes and reports is absolutely essential. Our own mine fields have proved to be more disastrous than those of the enemy. It is essential that all troops be trained to recognize standard markings in addition to more strict compliance with orders on mine field reports, sketches and routes. A standard method should be prescribed and taught before troops arrive in the battle zone. The tape method of laying mines was the most successful from every point of view. The technique of laying mines was poorly executed on the battlefield particularly at night. The coordination between the arms selecting sites for mine fields and in guarding and protecting them indicated poor execution throughout. The selection of the proper site for a mine field is of primary importance as once laid it fixes the location of supporting weapons. Ground reconnaissance by representatives of each arm involved is the only solution. This reconnaissance is too important to delegate to low ranking subordinates as a mine field once installed determines to a large degree future movements. The most successful method was for the local commander to decide the general boundaries on the recommendation of his artillery, tank destroyer and infantry commanders, and place the technique in the hands of the engineers assisted by infantry if necessary.

(3) Even though properly marked, mine fields require constant attendance of guards to pass traffic through gaps and keep stock from entering the field. The two methods used by the Germans to broach a mine field were the manual removal of mines or rushing them with a series of tanks. Infantry protection is necessary to combat the first method. In daylight the field can be kept under observation and the entire length of the field under machine gun and observed artillery fire. At night it is necessary to have listening posts in or in front of the field equipped with flares. Machine guns should shift to alternate positions at night to cover the field with fixed bands of fire. To combat breeching by tanks, antitank fire must be available to prevent recovery of disabled tanks. All fire must be held until needed in order not to disclose positions. No mine field has been successful without protection. The coordination of all arms for this mission requires considerable training of combined arms. The bulk of the mines should be laid by the Engineers.

(4) The most effective enemy mining was the sporadic mining of long stretches of roads, road shoulders, craters and areas upon withdrawal. Heavily mined soft sandy fords strown with metal fragements to render detectors useless were also effective delays. In general the enemy's technique and mine equipment were superior to our own.

(5) Instructions and training principles to combat mines are sound. Most accidents can be traced to their violations such as unnecessary movement in suspicious areas, congregating during removal work, improper detector swinging, and the lack of orderly procedure on a clearing project. Drills now taught at mine schools must be followed in every detail as a drill. No devices except concrete rollers attached to tanks have actually been used to remove mines. The division has had no actual experience with special devices to remove mines.

b. Night operations.

Practically all marching is accomplished at night although in several instances tanks moved into position boldly in the day time under air straffing and artillery fire without any great damage. Removal of mines up close to the enemy position was habitually carried out at night by the engineers. The infantry was successful in capturing hostile positions at night. On several occasions the infantry covered open ground under excellent artillery observation at night to avoid casualties. On one occasion tanks attacked with infantry during the night to regain a lost position. While the fire of the tanks was inaffectual the morale affect of the noise and firing was of great assistance to our own infantry and lowered the morale of the enemy. The possibility of using tanks with infantry in a night attack should be carefully considered as it has great advantage if the terrain will permit.

c. Scouting and patrolling.

Reconnaissance must be given definite objectives. There is a general inclination to be too general with the information desired. Patrols must be given specific missions with the time and place of return and what to look for. Liberal time limits must be allowed for all reconnaissance elements. Patrols should habitually come from support or reserve units particularly of the infantry. Armored reconnaissance elements must not be withdrawn once they make contact but must remain out all night in contact. This fundamental principle was often violated.

d. Camouflage, cover and concealment.

Camouflage discipline in general is poor. A few simple expedients well executed were of greater value than many elaborate measures only half executed. Dispersion of vehicles must be insisted upon both in bivouac and on the march. More emphasis must be placed on camouflage and concealment of gun positions. The self-propelled equipment of the armored division makes it mandatory to develop concealment to the utmost in order to avoid the high silhouette. Men in combat for the first time do not dig fox holes deep enough.

e. Communication, including suitability and efficiency of equipment.

(1) There is not enough wire in an armored division. An average of 40 miles of wire a day was consumed during a successful attack. The division's radio equipment proved sufficient with the exception of high power signal centers. At least two more are desirable. It is highly desirable to have two way radios in all tanks.

(2) Radio discipline and procedure were generally good. Radio security, however, was generally very poor. A great deal of training must be given on radio security. All personnel must be taught how to send brief messages and quickly get off the air.

(3) Signal supply in the initial stages was poor. Many tanks and half-tracks were delivered to the division without any radio equipment. Expendable supplies were generally good, but critical items and spare parts were generally not available in sufficient quantities in forward supply depots.

(4) Radio repair doctrine proved sound. It was found very desirable to attach a radio repair section to each lettered company of the Maintenance Battalion.

f. Defense against air attack.

(1) Anti-aircraft equipment should be organically a part of the armored division. Each unit should have anti-aircraft vehicles for protecting itself on the march, in bivouac and when deployed for combat. It is not necessary for a man to wear anti-aircraft insignia to fire an anti-aircraft weapon. The general practice in the division was to immediately split up attached anti-aircraft batteries into platoons and sections and distribute them throughout the division, where they remained until the battle was over. This was the most efficient and effective means of using the equipment made available. The combination anti-aircraft weapon of two .50 caliber machine guns and one 37mm gun was the most efficient anti-aircraft weapon in the division.

(2) Deployed tanks can furnish their own protection, but sufficient anti-aircraft elements should be attached for the protection of headquarters and service units and for assembled tanks. The .50 caliber machine gun proved an excellent anti-aircraft weapon, and its use should be extended within the division. The .30 caliber machine gun is practically worthless as an anti-aircraft weapon.

(3) For truck trains one .50 caliber anti-aircraft gun for each three vehicles is recommended. Important defiles and bridges must be protected by higher headquarters as the limited anti-aircraft weapons available within the division are required for the protection of the vehicles and personnel of the division itself.

g. Defense against tanks.

(1) The 37mm anti-tank gun is inadequate, and little confidence is placed therein by all troops. The 37mm self-propelled gun, mounted on a 3/4 ton truck, is postively worthless. The 37mm towed gun is effective against tanks only when well dug in and the crews disciplined to hold their fire until tanks are within very close range, 600 yards or under. It is useless to place a 37mm gun for anti-tank defense in a position where its field of view is greater than 600 yards. The 37mm gun, however, is very useful to the infantry in knocking out machine gun nests when used with cannister against hostile personnel. Anti-tank guns should be placed in depth and be mutually supporting. The main reliance of the infantry at the present time for protection against tanks rests in their own tanks and on the tank destroyer battalion.

(2) Deep fox holes in hard ground have proven adequate protection against tanks which over-run the infantry position. In the event of an enemy tank attack, infantry must be placed in tank proof locality and tank approaches covered by mines and anti-tank weapons. Tank defense by the artillery was found to be no problem in that the artillery piece organic to the armored division proved a satisfactory anti-tank weapon when properly dispersed.

h. Reconnaissance.

Reconnaissance must be bold and aggressive, and reconnaissance units must be willing to accept severe losses in order to push through hostile resistance and gain vital information. OPs can be established practically within hostile lines by skillful approach. Reconnaissance patrols should be told where to expect to encounter the enemy in order to save time and avoid losses. All reconnaissance must be definitely objective. Daylight reconnaissance prior to any night movement is absolutely essential.

i. Command, leadership and troop leading.

More stress should be given to the instruction of junior officers and non-commissioned officers concerning their duties and responsibilities as leaders. Officers in general should receive more training in issuing clear and concise orders. Senior officers must have their command post forward and have a small advance command post ready to move to the forward fringe of battle. Excuses that men are tired and that heavy casualties have been sustained must not deter commanders from pushing the attack forward to gain the objective, as slowing down or stopping the attack will prove more costly than to continue when the attack is well under way. When the attack is succeeding everyone must be pushed to the utmost of human endurance to reap the fruits of the momentum already established.

j. Security during movement, at halts, in bivouac, etc.

More training must be given on this subject, particularly to tank crews during hours of darkness. During movement complete radio silence will be necessary or radio reduced to the absolute minimum for control purposes. Air observers and anti-aircraft gunners must be alert at all times. The approaches to bivouacs must be covered by anti-tank guns. There is nothing new in security as taught, but the execution is generally poor throughout the American Army and a great amount of training must be had to improve security technique.

k. Staff procedure and command post operation.

All command posts must be well forward in an attack. Command post personnel must be trained to move promptly on short notice. Command posts should be broken down into forward and rear echelons. Combat command staffs should include an S-4 to coordinate supply functions within the combat command. There should be training in command post operations to improve and develop communication technique and command post operation. The operations section must keep all other appropropriate staff sections advised as to the progress of an operation.

l. Message center procedure.

Present message center methods are satisfactory. An officer should be present 24 hours a day, particularly in combat. This officer must be carefully instructed as to the tactical situation and the disposition of units.

m. Troop movements and marches.

Radio silence should be observed in troop movements except the minimum necessary for column control. In certain cases this control will have to

be by messenger in order to preserve complete radio silence. Routes must be reconnoitered and well marked in advance. Air observers and gunners must be alert on all vehicles. Gunners must be disciplined to stand by their guns and open fire on planes, otherwise there is no use in putting anti-aircraft equipment in the column. 100 yards between vehicles in convoy and 200 yards between vehicles when infiltrating has been the normal procedure.

n. Procurement and distribution of aerial photographs.

Aerial photographs were invaluable if they were received sufficiently in advance of a planned operation to permit their thorough study. Aerial photographs received were nearly always inadequate as to number and too late to be of much use. They should be provided in such quantities as to be distributed down to include company commanders.

3. ORGANIZATION AND EQUIPMENT.

a. The question of the reorganization of armored divisions and changes in equipment has been made the subject of several communications by this Headquarters in connection with the study now being made in the War Department on this subject. Inasmuch as the War Department study and the actual reorganization tables, and tables of equipment, will consume considerable time before the expiration of which the Division may well be in combat again, it is desired to express in this report simply changes in equipment and organization that can be effected immediately and thereby increase the combat effectiveness of the division.

b. Tank Destroyer Battalion.

A tank destroyer battalion should be definitely a part of the pernament organization of the armored division, and pending authority for this there should be attached at once a tank destroyer battalion which will remain permanently with the division in order to develop team play and confidence. The 701st Tank Destroyer Battalion was organized from personnel of the 1st Armored Division and has served most of its time in Africa with the 1st Armored Division. It is urgently recommended that this battalion be attached to the 1st Armored Division permanently throughout the rest of the campaign. This battalion should be equipped with the M-10 vehicles.

c. Anti-Aircraft.

All of the attached anti-aircraft units have been relieved from this Division. This is in error because it is most vital that the units continue to train with their anti-aircraft units. This headquarters has recommended to the War Department that anti-aircraft equipment be an organic part of the division. Pending a decision, there should be an anti-aircraft battalion immediately attached to the division. This will be split up into platoons and sections and distributed throughout the division for protection of the units in march, bivouac and when deployed for combat. A minimum of four batteries is required for this purpose. The most efficient weapon is believed to be the anti-aircraft mount having the twin cal. 50s and the 37mm gun.

d. Antitank Guns.

(1) The division is at present equipped with 120, 37mm anti-tank guns, self propelled, mounted on a 3/4 chassis and approximately 60 towed 37mm

antitank guns. The self propelled 37mm antitank gun is positively worthless and has never been used in this division. It has not fired a shot and has never even had the muzzle cover removed except to clean the gun. It is desired to immediately replace these weapons with 64, 57mm anti-tank guns, the guns to be towed by the 3/4 ton truck with the 37mm anti-tank gun removed. The balance of the 126 trucks not required would be turned in to the Base Section. For the present the 37mm towed gun would be retained as it is a useful weapon for the infantry in firing at machine gun nests and mortars using shell and cannistor, and has some antitank value at very close range. It is most urgent that in case all the 64 - 57mm guns cannot be immediately supplied that at least 50% be supplied for training purposes in order that the personnel of the division may become accustomed to the gun. There is sufficient personnel with the self propelled 37mm gun to furnish the gun crews. It is contemplated that part of the guns would be towed into battle by the light and medium tanks.

e. As a result of the experience it has proved to be essential that the signal company of the division be increased to a signal battalion of two companies each, one to operate the rear echelon of the division and one to operate the forward echelon. Tables are being prepared at this Headquarters and will be forwarded for approval if the recommendation is favorably considered. In connection with the signal communications a much greater increase in wire than was normally set up in the tables of basic allowances has been found necessary for actual operation. An average of 40 miles of wire per day is required by the armored division for adequate communications in an attack.

f. There is a vital necessity that the gun sight on the 75mm tank gun be replaced by a four to six power telescopic sight. This matter has been taken up informally with the Chief of the Armored Force. At the present time the German has approximately four times the sight range of our tank gunners. This is one of the most urgent and necessary changes in equipment of the armored division inasmuch as we have a superior tank and an adequate gun but a very inferior sight. It is also an urgent necessity that every medium tank be equipped with a gunner's quadrant in order that indirect fire may be used. Indirect fire has been found advantageous on many occasions and the division has been unable to take advantage of this method fire because of the lack of a gunner's quadrant, which is a standard item of equipment in the American army. 238 quadrants are required for the division.

g. One of the greatest weaknesses in the present organization of the armored division is its lack of infantry. The present infantry regiment mounted on half tracks is approximately equivalent to a battalion of infantry as contained in an infantry division after the overhead including some 544 drivers have been removed. This situation could be remedied easily and quickly by transporting the infantry in trucks and organizing the infantry regiment of the armored division exactly on the same standard lines as obtains in an infantry division. This would practically double the strength of the infantry available for battle without increasing the road space and would be a great simplification in maintenance. Experience to date has not justified the carrying of the infantry in an expensive armored vehicle which is difficult to maintain, and in which the protection afforded a soldier is practically nill against bombing and artillery.

h. The 1st Armored Division has fought the entire African campaign and has therefore had more combat experience than any other armored division in the United States Army, barring none. Its half-tracks have not had the latest

changes and have been continually subject to the throwing of tracks. Up until the final phase of the battle the bulk of its tanks were the obsolete type M3 mediums and the obsolete type M3 lights. Its artillery was equipped in part with the modern M7, in part with the obsolete T19, and in part with towed guns. The division has gained a wealth of experience. At the present time its morale is high and the division should be immediately equipped with the most modern equipment America has to offer. If this is done promptly, the 1st Armored Division should give the high command every reason to expect an excellent performance in the next campaign to come. The equipping of this division should take priority over the equipping of any other American or Allied division except such units as may be engaged in immediate operations. The foregoing recommendations are not difficult to fullfill and it is hoped that favorable and prompt consideration will be given to this subject.

4. RECOMMENDATIONS AS TO CHANGES IN PRESENT TACTICAL DOCTRINES.

There are no indications but that our present tactical doctrines are sound. No changes are recommended. The only thing that is required is intensive training in the execution of these doctrines and the development of the proper leadership to put them into effect on the battlefield.

5. DETAILED REPORTS.

Attached hereto as Exhibit "A" are detailed reports from the several unit commanders which are submitted inasmuch as they contain in many instances interesting discussions of incidents that occurred on the battlefield which illustrate certain changes in training recommended.

/s/ E. N. HARMON,
E. N. HARMON,
Major General, U.S. Army,
Commanding.

Inclosure (1), Exhibit A

REPRODUCED BY G-3 SECTION, HEADQUARTERS, IST ARMORED DIVISION, 28 JUNE, 1943.

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HEADQUARTERS FIRST U. S. ARMORED DIVISION
APO 251, c/o Postmaster
United States Army

15 June 1943

SUBJECT: Report on Combat Experience and Battle Lessons for Training Purposes.

TO : ALLIED FORCE HEADQUARTERS, APO 512, c/o Postmaster, United States Army.

In compliance with the directive contained in AG 370-6 G-2 dated May 14, 1943, the following report is submitted for the First Armored Division.

1. LESSONS AND EXPERIENCE GAINED FROM VARIOUS TYPES OF TACTICAL OPERATIONS.

a. General.

(1) Throughout the greater part of the African campaign, the First Armored Division was never employed as a unit except in the last phase of the battle for Mateur and Bizerte. Previous to this phase, the Division had arrived piecemeal and had been used piecemeal throughout. This piecemeal action was caused in part by lack of appreciation by the higher commanders of the proper and effective employment of armor and in part by the necessities of battle which often forced the dispersion of the Division over a wide front as it was the only unit which had sufficient mobility and power to meet sudden thrusts upon a very thinly held front. In view of the dispersion of the Division there have arisen many erroneous ideas as to changes in organization and command which are not warranted.

(2) In general the doctrines for the employment of an armored division as taught by the Armored Force have proven to be entirely sound. A weakness lies in the fact that during the high tempo of combat and more especially so with green and untried commands, in a great many instances elementary military teaching is forgotten or overlooked with the result that there is an unnecessary great loss in lives and equipment and often at times the tide of battle has turned with disastrous results.

(3) There were two great outstanding weaknesses for which future training and preparation for battle must provide; first, absolute necessity for more thorough and complete basic training for the individual and for small units. This includes not only the elementary battle training of the soldier in all subjects such as discipline, camouflage, dispersion, sanitation, use of cover and concealment, use of slit

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trenches, etc., but also speed and accuracy of weapon crews such as machine gun, mortar, and with all weapons of combat vehicles. The leadership and responsibility of the small unit leaders such as the squad and platoon, and the perfection of the training of these units must be given greater emphasis and less emphasis placed on the operations of the larger units such as the regiment, brigade and division. The division will succeed only as well as the platoon succeeds. Second, the absolute necessity of inculcating a disciplined fighting spirit with a realization that a price must be paid for success and the willingness on the part of the individual officer and soldier to sacrifice himself to gain the objective. This aggressive fighting spirit was decidedly lacking in a great many instances and had to be developed after unsatisfactory early combat experiences. Men and officers must be taught that every shell and every bomb is not necessarily directed at them personally, that they all have a good chance to survive regardless of the intensity of hostile fire, and that whether or not they survive some one has to pay a price if success is to be gained. We must build up the dignity, resourcefulness and responsibility of the non-commissioned officer and junior officer in preparation for his duties on the battlefield.

(4) A false picture of speed and aggressiveness has been built up in the United States which has unnecessarily cost lives and material by units charging blindly into battle instead of working forward steadily, skillfully, and employing all the means of reconnaissance and fire to cover the advance which are at the disposal of the command involved. Units must be taught that only by advancing can they succeed and that ground once gained must under no circumstances be lost, that to retain captured objectives the most skillful and maximum use must be made of all weapons at their disposal. The foregoing simple fundamental rules were violated many times and resulted in loss and disaster.

(5) The German is skillful, ruthless and a master of deception. He can be beaten. American soldiers have seen him in retreat. The myth of the invincibility of the German army and of its equipment has been exploded. It has been exploded by skillfully led, skillfully fought and determined troops. The German army can be overcome by no other means.

(6) No unit smaller than a division should be employed under the command of an allied nation. Each nationality has its own system of training, employment of units and supply. The attachment of small units to allied commands invariably results in the loss of confidence on both sides as to tactical employment, equipment and supply.

(7) The fundamental conception behind the present organization of the armored division wherein it is strong in armor and artillery and light in infantry was based on the formation of a corps consisting of one or two infantry divisions and one armored division, the infantry divisions furnishing the necessary power to clear the way and to provide for the opportunity for the use of the armor. This conception is considered sound and the great power of the armored division in exploiting a break through was demonstrated at

Enteur and Bizerte. Means must be available to rapidly transport part of the infantry divisions to hold the ground gained by the armored division. If the European conception that an armored division must be balanced within itself to either attack or defend is adopted then the present organization of the American Armored Division must be changed to include more infantry at the expense of a reduction in tanks. This is not recommended.

(8) Tanks should be regarded as weapons of great opportunity and when sent to assist infantry divisions should be directly under the command and operation of the Division Commander to whom sent. The tank commander should be consulted as to the capabilities of his tanks and a coordinated attack by all the means within the infantry division should be used to gain the objective. The key terrain feature during the final phase in the American sector in Tunisia was captured by adherence to the foregoing principle. On the other hand, one tank battalion was completely frittered away without accomplishing anything worthwhile because no objectivity or coordinated planning was obtained in its employment.

(9) Tank destroyer battalions should be an organic part of the armored division. The practice of continually changing the attachment of Tank Destroyer Battalions results in poor team play and loss of confidence especially in the minds of the infantry. Tank destroyers greatly assisted the advance of friendly tanks by establishing a base of fire and giving close direct fire support from hull down positions. Tank destroyers should not chase tanks. They should reconnoiter actively for the approach of hostile tanks and be prepared to meet them with defensive fires from selected hull down positions. Every effort should be made to establish tank traps into which the hostile tanks may be drawn and destroyed.

(10) Battlefield recovery although improving is still far below the standard set by the Germans. The use of tank transporters for the strategic moving of armored units although well understood and practiced by the British is still in its infancy as far as American troops are concerned. To sustain an armored division in battle there must be a replacement pool of tanks and trained personnel close up behind the front in order to promptly replace casualties on a few hours notice. Regardless of theory, vehicles that cannot be quickly put into shape in a matter of hours by combat troops will be left in place on the battlefield and must be taken care of by service units in rear. Plans for recovery should be based not on theoretical lines and zones in rear of an advancing armored division but rather on the type of maintenance and recovery which forward elements will be able to perform in a given period of time. Time and not distance should be the governing factor that determines the responsibility for maintenance and recovery between the combat unit and the service unit in rear.

b. The Offensive.

(1) The employment of the armored division en masse is the key note to success. The hostile front must be skillfully reconnoitered, in force if necessary, to determine the weak and strong points of the

enemy's defenses. The mass of tanks and the mass of artillery must be concentrated on the weak point. The strong points must be avoided and only given the minimum amount of attention necessary to protect the attack of the mass against the weak point. Once the weak point is discovered the attack must be pushed with the utmost vigor before it can be reinforced and the leading elements must be prepared to take heavy initial losses in order that the mass behind them may push through and achieve a great success. We are inclined to move too fast; to attack at a given hour or given day without being ready; without the knowledge of the plan thoroughly understood down to the lowest element; without the availability of ammunition and supplies necessary to sustain the effort and without the command concentrated so that once the attack starts all elements can move into their attack missions on time. It is better to delay the attack until later in the day or to a later date and to have the attack thoroughly prepared and understood rather than to be faced with the necessity of stopping the attack once in order to provide enough impetus in troops and supplies to continue to success. Strong infantry forces with transportation to quickly move forward should be on the alert to follow the armored attack in order to quickly secure the advantages gained and release the armor for further exploitation.

(2) Reconnaissance must push in boldly and accept losses in order to obtain information upon which the division commander can base the correct employment of the division, which when once started in any direction is most difficult to stop and re-arrange for battle in another direction.

(3) The concentration of artillery fire is a prerequisite of success. Close supporting weapons must be well forward to supplement the artillery. Timing must be studied for each projected attack to effect coordination of artillery fires; close supporting fires; infantry movement, and tank movement. The artillery should initially emplace as far forward as possible at the beginning of the attack and should be leap-frogged forward to closely cover the advance. The most vital point to the successful support by artillery is having close liaison with the advance elements to be supported through the use of forward observers. All officers must be trained to act as forward observers and to be able to quickly and intelligently adjust artillery fire. A reserve of trained officers capable of replacing casualties among forward observers is imperative.

(4) Engineers must be placed as far forward as possible in the initial assault in order to quickly begin the task of making passages through the minefields and to bridge vehicle obstacles.

(5) Infantry and tanks must follow closely behind artillery concentrations, even to the extent of sustaining losses from their own artillery. Speed by the infantry in digging in and preparing for the inevitable counter-attack must be stressed. Immediately after gaining a position concentrations from supporting weapons should be prepared and arrangements made for their delivery on short notice. Reinforce success rather than redeem failure. All men must be impressed with the fact that there will be far less casualties among units which keep advancing than among those which withdraw. To take a position, hit it

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with everything you have. If you think you can take it with a tooth pick, use a baseball bat, then you will be sure.

c. The Defensive.

(1) The armored division is not organized for a static defense. It should defend by attacking, thereby upsetting the balance of the hostile attack.

(2) Infantry cannot withstand the attack of tanks and must be protected either by inaccessible terrain or by a heavy concentration of artillery, anti-tank guns and mines. A few tanks can rout a large force of infantry if they get into the battle position. Tanks have maneuvered and got into infantry battle positions over much more difficult ground than commonly thought possible and with great devastating effect.

(3) Good OPs are essential to the infantry. If infantry is attacked while being relieved the unit being relieved must remain in position until the attack is beaten off. Infantry must not become over-extended in the defense. The close support of all available weapons is vital.

(4) Tanks must not be kept on the battle line when not being actively employed. They must be withdrawn from combat at or prior to dark, and be taken back where they can be refitted and re-armed. Holding tanks several days in front line positions materially reduces their effective fighting strength for lack of maintenance. Tank crews must receive more training in protecting their tanks at night by disposing weapons on the ground.

(5) The principal advantage of armored artillery defensively is the ability to displace during daylight hours as it offers a reasonable amount of anti-aircraft defense against enemy strafing and bombing, thus enabling it to move as required. Artillery should avoid deep wadis as they will be lost if hostile tanks break through.

(6) We must learn the principle of being strong at the right spot and avoid trying to hold everywhere. It is better to give ground in order to attack and defeat the enemy in detail than to dissipate our strength by trying to watch every spot that the enemy might slip through. The armored division has great possibilities for use as a mobile reserve to rapidly arrive at a threatened point and force the hostile attack into confusion by counterattack.

d. Retrograde Movements.

(1) Armored artillery has an advantage over towed artillery for retrograde movements. Due to armor it can remain longer in forward areas thereby covering withdrawal of forward troops. It can reasonably protect itself against infiltration of the enemy during daylight hours and can always serve as protection against enemy armor in an emergency.

(2) Retrograde movements by infantry have proven extremely costly and reorganization is difficult. The success of such movement depends on strict discipline and proper control of squads and sections.

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by their leaders. All supporting weapons must be employed. The maximum use of mines and overrunning of roads must be employed. The troops must understand the movement in order that it may be carried out with order and not result in a panic.

(3) Tanks should be employed on the flanks to counter-attack pursuit. Part of the tanks should be established in hull down positions ready to check the advance of hostile tanks by defensive fire.

c. Cooperation by support and observation aviation.

(1) Team play between armored units and aviation would make an invincible combination. This team play has never been obtained due either to the lack of planes or the desire of the high command to keep the air together as a strategic fighting force and not as a close supporting arm to the ground. In the few isolated cases where close air support was available the results were tremendously successful. Reconnaissance by air for the armored division is positively vital and yet was obtainable only in a few isolated cases. At no time were night reconnaissance flights made although requested by this Headquarters.

(2) Each armored division should have attached to it one observation squadron and one fighter bombing squadron. A senior flying officer should be on the staff of each division to advise the division commander on the capabilities and limitations of aircraft available and also on all other air data.

(3) Adequate air support can only be obtained by direct call from the division to the air. Any other system is too slow and will result in loss of opportunities.

(4) The greatest single aid to more effective use of armored formations would be the development of close air support both by reconnaissance and by bombing. Failure of this air support presents the weakest link in our tactical team today.

2. MISCELLANEOUS LESSONS AND EXPERIENCES IN SUBJECTS COMMON TO ALL ARMS.

a. Mine warfare and booby traps.

(1) The antitank mine is one of the greatest assets to the use of the armored division. The antitank mine has no present antidote except the slow painful process of picking up the mines by detectors or by charging through the minefields at great loss to tanks.

(2) Standardization of mine field markings, routes and reports is absolutely essential. Our own mine fields have proved to be more disastrous than those of the enemy. It is essential that all troops be trained to recognize standard markings in addition to more strict compliance with orders on mine field reports, gaps, lanes and routes. A standard method should be prescribed and taught before troops arrive in the battle zone. The tape method of laying mines was the most successful from every point of view. The technique of laying mines was poorly executed on the battlefield particularly at night. The coordination between the

arms selecting sites for mine fields and in guarding and protecting them indicated poor execution throughout. The selection of the proper site for a mine field is of primary importance as once laid it fixes the location of supporting weapons. Ground reconnaissance by representatives of each arm involved is the only solution. This reconnaissance is too important to delegate to low ranking subordinates as a mine field once installed determines to a large degree future movements. The most successful method was for the local commander to decide the general boundaries on the recommendation of his artillery, tank destroyer and infantry commanders, and place the technique in the hands of the engineers assisted by infantry if necessary.

(3) Even though properly marked, mine fields require constant attendance of guards to pass traffic through gaps and keep stock from entering the field. The two methods used by the Germans to breach a mine field were the manual removal of mines or rushing them with a series of tanks. Infantry protection is necessary to combat the first method. In daylight the field can be kept under observation and the entire length of the field under machine gun and observed artillery fire. At night it is necessary to have listening posts in or in front of the field equipped with flares. Machine guns should shift to alternate positions at night to cover the field with fixed bands of fire. To combat breaching by tanks, antitank fire must be available to prevent recovery of disabled tanks. All fire must be held until needed in order not to disclose positions. No mine field has been successful without protection. The coordination of all arms for this mission requires considerable training of combined arms. The bulk of the mines should be laid by the Engineers.

(4) The most effective enemy mining was the sporadic mining of long stretches of roads, road shoulders, craters and areas upon withdrawal. Heavily mined soft sandy fords strewn with metal fragments to render detectors useless were also effective delays. In general the enemy's mine technique and mine equipment were superior to our own.

(5) Instructions and training principles to combat mines are sound. Most accidents can be traced to their violations such as unnecessary movement in suspicious areas, congregating during removal work, improper detector swinging, and the lack of orderly procedure on a clearing project. Drills now taught at mine schools must be followed in every detail as a drill. No devices except concrete rollers attached to tanks have actually been used to remove mines. The division has had no actual experience with special devices to remove mines.

b. Night operations.

(1) Practically all marching is accomplished at night although in several instances tanks moved into position boldly in the day time under air strafing and artillery fire without any great damage. Removal of mines up close to the enemy position was habitually carried out at night by the engineers. The infantry was successful in capturing hostile positions at night. On several occasions the infantry covered open ground under excellent artillery observation at night to avoid

casualties. On one occasion tanks attacked with infantry during the night to regain a lost position. While the fire of the tanks was ineffectual the morale effect of the noise and firing was of great assistance to our own infantry and lowered the morale of the enemy. The possibility of using tanks with infantry in a night attack should be carefully considered as it has great advantage if the terrain will permit.

c. Scouting and patrolling.

(1) Reconnaissance must be given definite objectives. There is a general inclination to be too general with the information desired. Patrols must be given specific missions with the time and place of return and what to look for. Liberal time limits must be allowed for all reconnaissance elements. Patrols should habitually come from support or reserve units particularly of the infantry. Armored reconnaissance elements must not be withdrawn once they make contact but must remain out all night in contact. This fundamental principle was often violated.

d. Camouflage, cover and concealment.

Camouflage discipline in general is poor. A few simple expedients well executed were of greater value than many elaborate measures only half executed. Dispersion of vehicles must be insisted upon both in bivouac and on the march. More emphasis must be placed on camouflage and concealment of gun positions. The self-propelled equipment of the armored division makes it mandatory to develop concealment to the utmost in order to avoid the high silhouettes. Men in combat for the first time do not dig foxholes deep enough.

e. Communication, including suitability and efficiency of equipment.

(1) There is not enough wire in an armored division. An average of 40 miles of wire a day was consumed during a successful attack. The division's radio equipment proved sufficient with the exception of high-power signal centers. At least two more are desirable. It is highly desirable to have two way radios in all tanks.

(2) Radio discipline and procedure were generally good. Radio security, however, was generally very poor. A great deal of training must be given in radio security. All personnel must be taught how to send brief messages and quickly get off the air.

(3) Signal supply in the initial stages was poor. Many tanks and half-tracks were delivered to the division without any radio equipment. Expendable supplies were generally good, but critical items and spare parts were generally not available in sufficient quantities in forward supply depots.

(4) Radio repair doctrine proved sound. It was found very desirable to attach a radio repair section to each lettered company of the Maintenance Battalion.

f. Defense against air attack.

(1) Anti-aircraft equipment should be organically a part of the armored division. Each unit should have anti-aircraft vehicles for protecting itself on the march, in bivouac and when deployed for combat. It is not necessary for a man to wear anti-aircraft insignia to fire an anti-aircraft weapon. The general practice in the division was to immediately split up attached anti-aircraft batteries into platoons and sections and distribute them throughout the division, where they remained until the battle was over. This was the most efficient and effective means of using the equipment made available. The combination anti-aircraft weapon of two .50 caliber machine guns and one 37mm gun was the most efficient anti-aircraft weapon in the division.

(2) Deployed tanks can furnish their own protection, but sufficient anti-aircraft elements should be attached for the protection of headquarters and service units and for assembled tanks. The .50 caliber machine gun proved an excellent anti-aircraft weapon, and its use should be extended within the division. The .30 caliber machine gun is practically worthless as an anti-aircraft weapon.

(3) For truck trains one .50 caliber anti-aircraft gun for each three vehicles is recommended. Important defiles and bridges must be protected by higher headquarters as the limited anti-aircraft weapons available within the division are required for the protection of the vehicles and personnel of the division itself.

g. Defense against tanks.

(1) The 37mm anti-tank gun is inadequate, and little confidence is placed therein by all troops. The 37mm self-propelled gun, mounted on a 3/4 ton truck, is positively worthless. The 37mm towed gun is effective against tanks only when well dug in and the crews disciplined to hold their fire until tanks are within very close range, 600 yards or under. It is useless to place a 37mm gun for anti-tank defense in a position where its field of view is greater than 600 yards. The 37mm gun, however, is very useful to the infantry in knocking out machine gun nests when used with canister against hostile personnel. [illegible] be placed in depth and be mutually supporting. The main reliance of the infantry at the present time for protection against tanks rests in their own tanks and on the tank destroyer battalion.

(2) Deep foxholes in hard ground have proven adequate protection against tanks which over-run the infantry position. In the event of an enemy tank attack, infantry must be placed in tank proof locality and tank approaches covered by mines and anti-tank weapons. Tank defense by the artillery was found to be no problem in that the artillery piece organic to the armored division proved a satisfactory anti-tank weapon when properly dispersed.

h. Reconnaissance.

Reconnaissance must be bold and aggressive, and reconnaissance units must be willing to accept severe losses in order to push through hostile resistance and gain vital information. OPs can be established practically within hostile lines by skillful approach. Reconnaissance

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patrols should be told where to expect to encounter the enemy in order to save time and avoid losses. All reconnaissance must be definitely objective. Daylight reconnaissance prior to any night movement is absolutely essential.

4. Command, leadership and troop leading.

(1) More stress should be given to the instruction of junior officers and non-commissioned officers concerning their duties and responsibilities as leaders. Officers in general should receive more training in issuing clear and concise orders. Senior officers must have their command post forward and have a small advance command post ready to move to the forward fringe of battle. Reasons that men are tired and that heavy casualties have been sustained must not deter commanders from pushing the attack forward to gain the objective, as slowing down or stopping the attack will prove more costly than to continue when the attack is well under way. When the attack is succeeding everyone must be pushed to the utmost of human endurance to reap the fruits of the momentum already established.

5. Security during movement, at halts, in bivouac, etc.

More training must be given on this subject, particularly to tank crews during hours of darkness. During movement complete radio silence will be necessary or radio reduced to the absolute minimum for control purposes. Air observers and anti-aircraft gunners must be alert at all times. The approaches to bivouacs must be covered by anti-tank guns. There is nothing new in security as taught, but the execution is generally poor throughout the American Army and a great amount of training must be had to improve security techniques.

6. Staff procedure and command post operation.

All command posts must be well forward in an attack. Command post personnel must be trained to move promptly on short notice. Command posts should be broken down into forward and rear echelons. Combat command staffs should include an S-4 to coordinate supply functions within the combat command. There should be training in command post operations to improve and develop communication technique and command post operation. The operations section must keep all other appropriate staff sections advised as to the progress of an operation.

7. Message center procedure.

Present message center methods are satisfactory. An officer should be present 24 hours a day, particularly in combat. This officer must be carefully instructed as to the tactical situation and the disposition of units.

8. Troop movements and marches.

Radio silence should be observed in troop movements except the minimum necessary for column control. In certain cases this control will have to be by messenger in order to preserve complete radio silence. Routes must be reconnoitered and well marked in advance. Air observers and gunners must be alert on all vehicles. Gunners must be disciplined to stand by their guns and open fire on planes, otherwise there is no use in putting anti-aircraft equipment in the column. 100 yards between vehicles in convoy

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and 200 yards between vehicles when infiltrating has been the normal procedure.

a. Procurement and distribution of aerial photographs.

Aerial photographs were invaluable if they were received sufficiently in advance of a planned operation to permit their thorough study. Aerial photographs received were nearly always inadequate as to number and too late to be of much use. They should be provided in such quantities as to be distributed down to include company commanders.

2. ORGANIZATION AND EQUIPMENT.

a. The question of the reorganization of armored divisions and changes in equipment has been made the subject of several communications by this Headquarters in connection with the study now being made in the War Department on this subject. Inasmuch as the War Department study and the actual reorganization tables, and tables of equipment, will consume considerable time before the completion of which the Division may well be in combat again, it is desired to express in this report simply changes in equipment and organization that can be effected immediately and thereby increase the combat effectiveness of the divisions.

b. Tank Destroyer Battalion.

(1) A tank destroyer battalion should be definitely a part of the permanent organization of the armored division, and pending authority for this there should be attached at once a tank destroyer battalion which will remain permanently with the division in order to develop team play and confidence. The 701st Tank Destroyer Battalion was organized from personnel of the 1st Armored Division and has served most of its time in Africa with the 1st Armored Division. It is urgently recommended that this battalion be attached to the 1st Armored Division permanently throughout the rest of the campaign. This battalion should be equipped with the M-10 vehicle.

c. Anti-aircraft.

(1) All of the attached anti-aircraft units have been relieved from this division. This is in error because it is most vital that the units continue to train with their anti-aircraft units. This Headquarters has recommended to the War Department that anti-aircraft equipment be an organic part of the division. Pending a decision, there should be an anti-aircraft battalion immediately attached to the division. This will be split up into platoons and sections and distributed throughout the division for protection of the units in march, bivouac and when deployed for combat. A minimum of four batteries is required for this purpose. The most efficient weapon is believed to be the anti-aircraft mount having the twin cal. 50s and the 37mm gun.

d. Antitank guns.

(1) The division is at present equipped with 12, 37mm antitank guns, self propelled, mounted on a 2½ ton chassis and approximately 40 towed 37mm antitank guns. The self propelled 37mm antitank gun is practically worthless and has never been used in this division. It has not fired a shot and has never even had the ammunition issued to it. It is desired to immediately replace these weapons with 57mm antitank guns.

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tank guns, the guns to be towed by the 3/4 ton truck with the 57mm anti-tank gun removed. The balance of the 126 trucks not required would be turned in to the Base section. For the present the 57mm towed gun would be retained as it is a useful weapon for the infantry in firing at machine gun nests and mortars using shell and canister, and has some antitank value at very close range. It is most urgent that in case all of the 64 - 57mm guns cannot be immediately supplied that at least 50% be supplied for training purposes in order that the personnel of the division may become accustomed to the gun. There is sufficient personnel with the self propelled 57mm gun to furnish the gun crews. It is contemplated that part of the guns would be towed into battle by the light and medium tanks.

e. As a result of the experience it has proved to be essential that the signal company of the division be increased to a signal battalion of two companies each, one to operate the rear echelon of the division and one to operate the forward echelon. Tables are being prepared at this Headquarters and will be forwarded for approval if the recommendation is favorably considered. In connection with the signal communications a much greater increase in wire than was normally set up in the tables of basic allowances has been found necessary for actual operation. An average of 40 miles of wire per day is required by the armored division for adequate communications in an attack.

f. There is a vital necessity that the gun sight on the 75mm tank gun be replaced by a four to six power telescopic sight. This matter has been taken up informally with the Chief of the Armored Force. At the present time the German has approximately four times the sight range of our tank gunners. This is one of the most urgent and necessary changes in equipment of the armored division inasmuch as we have a superior tank and an adequate gun but a very inferior sight. It is also an urgent necessity that every medium tank be equipped with a gunner's quadrant in order that indirect fire may be used. Indirect fire has been found advantageous on many occasions and the division has been unable to take advantage of this method of fire because of the lack of a gunner's quadrant, which is a standard item of equipment in the American army. 252 quadrants are required for the division.

g. One of the greatest weaknesses in the present organization of the armored division is its lack of infantry. The present infantry regiment mounted in half tracks is approximately equivalent to a battalion of infantry as contained in an infantry division after the overhead including some 544 drivers have been removed. This situation could be remedied easily and quickly by transporting the infantry in trucks and organizing the infantry regiment of the armored division exactly on the same standard lines as obtains in an infantry division. This would practically double the strength of the infantry available for battle without increasing the road space and would be a great simplification in maintenance. Experience to date has not justified the carrying of the infantry in an expensive armored vehicle which is difficult to maintain, and in which the protection afforded a soldier is practically nil against bombing and artillery.

h. The 1st Armored Division has fought the entire African campaign and has therefore had more combat experience than any other armored division in the United States Army, barring none. The half-tracks have not had the latest changes and have been continually subject to the thrusting of twigs,

By until the final phase of the battle the bulk of its tanks were the obsolete type M3 medium and the obsolete type M5 lights. Its artillery was equipped in part with the modern M7, in part with the obsolete T19, and in part with towed guns. The division has gained a wealth of experience. At the present time its morale is high and the division should be immediately equipped with the most modern equipment America has to offer. If this is done promptly, the 1st Armored Division should give the high command every reason to expect an excellent performance in the next campaign to come. The equipping of this division should take priority over the equipping of any other American or Allied division except such units as may be engaged in immediate operations. The foregoing recommendations are not difficult to fulfill and it is hoped that favorable and prompt consideration will be given to this subject.

4. RECOMMENDATIONS AS TO CHANGES IN PRESENT TACTICAL DOCTRINES.

a. There are no indications but that our present tactical doctrines are sound. No changes are recommended. The only thing that is required is intensive training in the execution of these doctrines and the development of the proper leadership to put them into effect on the battlefield.

5. DETAILED REPORTS.

a. Attached hereto as Exhibit "F" are detailed reports from the several unit commanders which are submitted inasmuch as they contain in many instances interesting discussions of incidents that occurred on the battlefield which illustrate certain changes in training recommended.

E. N. HARMON
Major General, U. S. Army
Commanding.

Inclosure (1), Exhibit A

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SUBORDINATE UNITS REPORTS

EXHIBIT 'A'

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LESSONS LEARNED

Tunisian Campaign

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1st ARMORED DIVISION

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HEADQUARTERS COMPANY COPY NO. 4
FIRST U. S. ARMORED DIVISION
APO 251, c/o Postmaster
New York City - NY

9 June 1943

SUBJECT: Lessons Learned from Past Operations of this Unit.

TO : COMMANDING GENERAL, 1st US Armored Division.

In compliance with verbal orders G-3 Headquarters, 1st US Armored Division, the following report is submitted:

1. When exposed to hostile air attack the vehicles in the Division CP should be no closer to one another than 200 yards. While in column on the road, no closer than 150 yards. Under like conditions the front ends of vehicles should be dug in to protect radiator and motors. Gas cans must be removed and buried in the ground some distance from the vehicle.

2. When the Division CP is moved it must be by infiltration rather than in one large column, and upon arrival in bivouac the Headquarters Commandant must immediately reconnoiter alternate routes as the original entrance might be cut off by the enemy.

3. Every man must dig a slit trench, preferably one GI shovel length in depth and two GI shovel lengths in length, wide enough to admit his body and at right angle to the path of the sun during the day. Men must not sleep in the slit trenches and must occupy them only in case of an actual attack for psycological reasons.

4. Hours of meals must be changed periodically to confuse the enemy and long chow lines must be avoided. Slit trenches must be dug for the men at the messes.

5. Planes must only be fired upon under the following circumstances:

a. The plane is definitely identified as being hostile.
b. The plane has actually attacked.
c. It is in range of the weapon being used.

6. The motor park of the Division CP must be placed at least 400 yards from the CP entrance and moved frequently.

/s/ Myron T. Davis
MYRON T. DAVIS,
Captain, U.S. Army,
Commanding

REPRODUCED BY G-3 SECTION HEADQUARTERS 1ST ARMORED DIVISION JUNE 28, 1943

[redacted] UNCLASSIFIED

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COPY NO. 4

SERVICE COMPANY, FIRST US ARMORED DIVISION
APO 251, New York City

13 June 1943

SUBJECT: Lessons learned in Last Operations.

TO : G-3, First Armored Division, APO 251, New York City.

1. In compliance with telephonic message dated 6 June 1943, requesting report on lessons learned during last operations, the following report is submitted:

a. Tactical Lessons:
Because of the areas occupied by the Service Echelon no new tactical lessons were learned.

b. Administrative Lessons:
A Replacement Center should be built up in this organization, including Administrative personnel, Kitchens and supply.

An average of 500 replacements and men returning from hospitals were serviced by this echelon. Kitchens originally set up for messing 350 men were used to mess 500 to 1100 men at various intervals. Men returned from hospitals with little or no equipment and the Company Supply Section was not able to meet the demands because it showed an overage on our T.B.A. equipment.

Recommandations: (Additional Personnel and Equipment)

Personnel	Number	Equipment
Mess Sergeant	1	8 Field Ranges and accessories for Kitchen equipment.
Cooks	3	
Cooks' Helpers	3	
Basics	6	
Supply Sergeant	1	
Supply Clerk	1	
Basics	2	

/s/ W. E. Gibbons
W. E. GIBBONS,
Captain, USA
Commanding.

REPRODUCED BY G-3 SECTION HEADQUARTERS 1ST ARMORED DIVISION JUNE 28, 1943.

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HEADQUARTERS COMBAT COMMAND "B" COPY NO. 4
1st US Armored Division
APO 251 - U. S. Army

In the Field
10 June 1943

SUBJECT: Reports on Combat Experience and Battle Lessons for Training Purposes.

TO : The Commanding General, 1st US Armored Division.

I TACTICAL DOCTRINE

Generally speaking, the tactical doctrine as laid down by our field manuals has proven to be sound. The weakness lies in the fact that during the high tempo of combat, and more especially so with green and untried commands, a great many times elementary military teaching is forgotten or overlooked with the results that unnecessary lives are lost and often times the tide of battle turns with disastrous results. This weakness is not necessarily confined to the troops actually engaged in combat but runs on up to higher headquarters.

II TACTICAL TEACHING

In the Armored Force Field Manuals one obtains the idea from scanning the cleverly designed sketches of "do's and dont's" of small unit operations that it is desirable and proper for armor to attack anti-tank positions. Many sketches show varied methods of approach toward subduing an AT gun. Experience has proven, at least in the Tunisian Campaign, that the AT gun is to be avoided as much as possible and only attacked as a last resort. While the sketches are for the most part correct in the methods to be used under varied conditions still it should be more strongly emphasized that AT positions should be avoided by armor and only attacked when no other means of overcoming them is available. Instruction, before this command entered into actual combat, usually presented the theoretical tactical situation to the platoon and even company commander with the problem of attacking and destroying an anti-tank position. It was up to him to give a solution for this situation. A false picture was there created and also a feeling of over-confidence. In the initial stages of the operation of this command in November and December, 1942, such over-confidence resulted in the rapid whittling down of a medium tank battalion to less than twenty tanks within a few minutes of actual combat. Another incident: Shortly afterward a platoon of M-4 replacement tanks with new crews, upon being assigned a mission and given warning of the effect of AT fire against the M-3 tank, charged gloriously but vainly up a hill only to lose four out of five tanks from AT fire.

Talking to the platoon leader afterwards he truthfully explained that, one, he was confident that present enemy AT guns were ineffective against the new M-4 and, two, that his method of approach was based on an approved solution given under similar circumstances on maneuvers.

III ORGANIZATION OF A COMBAT COMMAND

Under the present set-up the staff of a combat command of an armored division cannot function properly unless supplemented by additional staff officers. Should only battalions be placed under the command of a combat command without a regimen-

tal headquarters these battalions will suffer in that certain of their staff officers, namely an adjutant, personnel officer, an assistant intelligence officer, a supply officer, a motor officer and a surgeon, will, of a necessity, have to work on the staff of the combat command which has none of these key staff officers. The already small staff of a battalion is thereby weakened by the loss of one or more of its staff personnel and as a result the battalion is handicapped. On the other hand when a regimental headquarters is placed under the command of the combat command along with other units, the regimental headquarters largely ceases to function as such, and the regimental commander and certain members of his staff, namely the intelligence officer, the executive officer, the operations officer, and the air operations officer are without a job except as assistants to the combat command staff or any other job given them by the combat commander.

In the Tunisian Campaign the tank regiment seldom, if ever, operated as such. As the present trend appears to be the use of separate battalions, accordingly it is believed that regiments should be disbanded and regimental staffs be incorporated into the combat commands thus giving the latter a complete working staff.

IV OFFENSIVE ACTION

Throughout the entire Tunisian Campaign, offensive action by American troops was marked by the dispersal of effort. At no time was a spearhead attack attempted and the general feeling appeared to be one of fear of an enemy counter-attack. It is believed, particularly in the latter stages of the campaign, that a concentration of effort upon a single objective rather than a coordinated drive with all U.S. combat troops in the line would have resulted in the conclusion of the campaign far more rapidly and with less loss of personnel and material. A step in the right direction towards this was the use of the 1st Armored Division, complete, in the final stages of the battle east of Mateur.

On only one occasion, in February at Ousseltia Valley while under the French 19th Corps, did this command have sufficient infantry. But no sooner was the mission of driving the enemy from the valley completed than the infantry was removed from this command by II U.S. Corps order and the golden opportunity of seizing the pass to Kairouan was lost. Furthermore at no time was armor, when successful in making an advance as at Tebourba in December (while under the British V Corps), Ousseltia in February, Kasserine in March, Maknassy in April, followed up closely by infantry and its gains consolidated.

In the employment of armor in the offensive, it is desirable to have the infantry and artillery team develop or detect soft spots in the enemy line and then throw all available armor against these spots for a break-through. Once the break-through is accomplished, motorized infantry and plenty of it should quickly follow up the advance of the armor.

V THE DEFENSIVE

Two-thirds of the Tunisian Campaign was spent by American troops being on the defensive. It is well realized that the number of troops available to adequately hold in strength at all vital places was insufficient, but several weaknesses were noted which, if they had been rapidly corrected, would have improved the defensive strength of our lines immensely.

In moving about a battle-field, after its conclusion, it was always obvious where American troops had their positions due to the fact that the "digging in" differed from that of the enemy. Masters of the art are the Germans and every position held for any length of time whatsoever is pock-marked with dugouts or foxholes for the men and excavations for the 88mm guns and other field pieces. Even the airfields of the enemy show the "digging in" theory. Wherever possible, bomb shelters were built for the planes. No such shelters were ever noticed on our own fields. It is absolutely necessary that all troops be impressed with the "digging in" practice as many lives will be saved and troops, especially infantry and AT personnel may undergo severe artillery fire and even be over-run by tanks without suffering undue losses and still be able to carry on the battle. A shallow slit trench means an early grave, and a poorly dug in AT gun means a weapon and crew lost.

Concealment is neglected in most cases. American troops in particular are prone to use the skyline for a vantage point. In a great many cases officers are even worse offenders than the men and staff officers in particular are prone to "have a look at things" while standing on the crest of a ridge.

Main positions are disclosed to enemy aircraft and even enemy OP's by movement lighting of fire (British and French troops are even worse offenders than Americans on this point), hanging out washing, reflectors (windshields, tin cans, etc.) and all other things basic training insists not be done. In conjunction with the prevention of this, the aim should be to have alternative positions and only move to battle positions when the commanding officer feels the time is right.

Anti-tank mines were not used to their fullest advantage. Counter-attack by enemy tanks is always a chief danger after the capture of a position. The remedy for this is the rapid organization of AT defense and the laying of minefields as quickly as possible.

In connection with an enemy tank attack, there is a general feeling among the troops that the 37mm gun is not a good anti-tank weapon. Due to lack of confidence troops are prone to have a feeling of insecurity which is always bad for those on the defensive. It is most certainly desirable that a heavier caliber, lower silhouette AT weapon be provided.

Under any conditions reconnaissance and observation posts are vital. Throughout the Tunisian Campaign, the front line was, for the most, a loosely held general line and in such a situation OP's play an extremely important role. Unfortunately, reconnaissance by ground troops was usually not aggressive enough and reconnaissance by air almost always valueless. This latter was due to the fact that up until the time the enemy was on the run, all his movements took place at night (we never had any night reconnaissance flights) or if something was spotted during the day, the reports of this failed to reach units that were concerned.

Observation posts were widely used by the French and English and obviously by the enemy. Toward the latter stages of the campaign, their use and advantages began to be more fully realized by us. Even then, however, aside from artillery forward observers, personnel manning OP's were not impressed with the full extent of their duties. It is mandatory that everyone within the command have a knowledg of what to look for, record and report while on OP duty. There should be specially trained men in each outfit for this work. As the German is mostly a creature of habit, invaluable information may be obtained from the proper use of OP's.

VI LIAISON

Liaison between major units was often times lacking. This command, for over half the campaign, acted more or less as an independent unit and in many instances had little, if any, knowledge of exactly what was taking place or the contemplated actions by adjacent commands. Our liaison officers found that the British and the French were most cooperative but in some instances information was difficult to get from American units. Mutual liaison always existed between our own command and the British and French but often times American commands failed to establish it with this command. In the latter stages of the campaign, however, this situation improved enormously. It must be stressed that liaison is not only necessary but vital and there can never be too much of it between units

VII EMPLOYMENT UNDER COMMAND OF A DIFFERENT NATIONALITY

It is recommended that no unit smaller than a division be employed under command of a different nationality. Each army has its own peculiar system of training and employment of units as well as the use of equipment. The result of attaching small units under foreign command results in the feeling of personnel involved that their equipment and organization is being used improperly. The inevitable is that a feeling of mistrust and lack of confidence springs up and naturally every effort must be taken to avoid such a feeling if we are to continue to be successful. It might also be added that communication and supply problems are also yet another difficulty in such a situation.

VIII COOPERATION BY SUPPORT AND OBSERVATION AVIATION

In the initial part of the campaign, close support aviation was completely lacking. Only one instance of close support is known to exist up to the latter part of January 1943. This occurred in the vicinity of Massicault on December 10, 1942. A flight of Spitfires (British) attacked and caused the withdrawal of some fifteen to twenty enemy tanks massing for an attack. The next example of close support occurred in Ousseltia Valley the latter part of January when a prearranged plan with the 12th U.S. Air Support Control of marking a target with smoke for air bombardment proved highly successful. From that time on close support increased and reached its maximum in the battle of the Kasserine Valley (actually the Bahiret Foussane Valley) around February 24, 1943. Here, in conjunction with our artillery, B-25's, B-17's, A-20's and all types of pursuit ships played a major part in stopping and finally routing the enemy. After this, close support missions were most difficult to obtain as apparently the tactical air force had put into being a plan which minimized close support missions requested by ground troops.

Aerial observation, as far as helping this command to know the whereabouts and movements of the enemy, must be considered worthless up until the latter part of April. At this time the enemy, being in full retreat, was moving both day and night and reports as to his whereabouts began to flow in. On the other hand, requests for aerial observation on certain definite localities were, even then, for the most, almost certain to be refused and if granted of little value due, one, the length of time required to get report back to requesting headquarters and, two, the lack of trained observers and observation planes.

At no time were night reconnaissance flights made on request and to the best of the knowledge of this command, were not ever attempted.

It is firmly believed that mutual liaison between ground and air must be improved down to and including a combat command especially when it is acting in a separate capacity.

Cooperation between ground and air increased as the campaign progressed but much greater progress is needed. Among the many improvements, too numerous to mention here, one simple and easily carried out plan could be accomplished. The air support control should send senior officers to visit front line positions and get the version of division and combat commanders actually engaged in fighting as to the improvement of air support in their sector. As each sector presents a different problem, spot solutions could be made and both ground and air would benefit in their relations and the close support rendered would undoubtedly be vastly improved.

Briefly summarizing steps to be taken to improve close support aviation, the following points are mentioned for consideration:

a. Each armored division should have attached one observation squadron and one fighter-bomber squadron.

b. A senior flying officer should be on the staff of each division to advise the division commander on the capabilities and limitations of aircraft available and also on all other air data.

c. Division Headquarters and the two Combat Commands should have pernanently attached air support parties. These parties not only should act as channels for air requests but also a source of all air reconnaissance information.

d. A definite policy (something not in existence in the Tunisian Campaign) of air-ground radio communication and air support requests should be use

e. A system of air to ground and ground to air recognition signals shoul be in effect throughout the combat zone.

IX PYROTECHNICS

Throughout the entire campaign the enemy made extensive use of pyrotechnics and it was only in the late stages that their use came into even partial play by American troops. Both French and British troops, especially the British Eighth Army, also used this means of signalling. It is felt that pyrotechnics should be used in any future operation much more extensively and more emphasis placed on this phase in the training periods. On the occasions this command used this system it was most effective. Its harassing effect, even on seasoned troops, proved very great.

X DEMOLITION KITS

On numerous occasions, especially in the withdrawal from the Sbeitla - Gafsa area, the enemy was able to move rapidly in pursuit as little or no demolition was executed on bridges, culverts, defiles, etc. It is believed that at least one demolition kit of the cavalry type be an integral part of at least one in every three armored vehicles.

In connection with this it is also deemed highly desirable that every vehicle be equipped with some sort of a charge whereby a vehicle can quickly be rendered useless when it becomes necessary to abandon it. At the close of the campaign the enemy had in his possession scores of American vehicles, the majority of which would never have been able to be used had these vehicles been equipped with some sort of a destroying charge.

XI MAPS

Both British and American troops were severely handicapped throughout the campaign by the lack of good maps. The French had only a very limited supply of excellent maps of the country. On the other hand the enemy apparently had an unlimited amount of these good maps and greatly profited by them.

The maps we used were not only faulty in showing existing road nets but the reproduction of the original excellent French map was so poor as to be of very little value. Towards the latter part of the campaign the situation improved and new and better reproductions were finally obtained.

It is felt, however, that in any future campaign an adequate supply of good maps be ready for use upon demand.

For the Commanding Officer:

E. A. RUSSELL, Jr.,
Lt. Col., Cavalry,
Executive.

OFFICIAL:

/s/ D. D. KLOUS,
D. D. KLOUS,
Capt., Cavalry,
S-3.

REPRODUCED BY G-3 SECTION, HEADQUARTERS, 1ST ARMORED DIVISION, 30 JUNE, 1943.

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COPY NO. 4

HEADQUARTERS 141ST ARMORED SIGNAL COMPANY
APO 251 - - - - - - - - - - - - U. S. Army

8 June 1943

SUBJECT: Report on Combat Experience and Battle Lessons for Training Purposes.

TO : Commanding General, First Armored Division, APO 251, U. S. Army.

1. In compliance with letter, subject same as above, 14 May, 1943, Allied Force Headquarters, the following report on this organization is submitted.

2. The participation of this organization in six months of combat with the First Armored Division demonstrated an insufficiency of equipment and personnel required to furnish communications for the division with a maximum degree of efficiency.

3. Recommended changes in T/O and T/BA are covered in inclosures one and two.

4. The soundness or weakness of present tactical doctrine and organization of the following subjects is discussed below in paragraphs 5 to 9 inclusive.

a. Wire Communications.
b. Radio Communications.
c. Signal Supply.
d. Radio Repair.
e. Message Center.

5. WIRE COMMUNICATIONS:

The present doctrine of wire technique was proven sound. The sufficiency of wire equipment was inadequate. A picture of this is given by a comparison of the present T/O and T/BA of an Armored Signal Company and a new T/O outlined in inclosures one and two.

While making a successful attack, an Armored Division will consume 40 miles of wire per day. This includes only the wire handled by Signal Company personnel. Present T/O is insufficient to lay and maintain this amount of wire. Present equipment is insufficient. This organization actually acquired and kept busy a wire section of 38 men and two officers. Two additional 1/4 ton trucks and one additional 3/4 ton weapons carrier were employed.

6. RADIO COMMUNICATIONS:

Radio equipment in the Signal Company proved sufficient with the exception of the high power Signal Centers. One additional high power set was acquired and use extensively. At least two more are desirable.

Changing of radio frequencies and code signs daily proved sound and desirable.

Radio discipline and procedure on CW nets was relatively good. Radio discipline and procedure on FM sets and voice AM sets was extremely poor. This was due to the lack of training of officers particularly and other unskilled radio personnel who often operated the voice sets. Almost

[redacted] UNCLASSIFIED

every rule of Radio Security was violated. Questioning of enemy prisoners revealed that the following information had been given away by voice radio.

a. Time and place of attack.
b. Position of friendly troops.
c. Presence of high ranking officers.
d. Casualties - vehicular and personnel.
e. Status of Supplies.

It was definitely demonstrated that the teaching of Radio Security must be more thorough and must reach everyone who is liable to use the radio in combat. It is further suggested that the training of Radio Operators will not be limited to code table training. It has been the experience of this organization that replacement operators must spend too long a period acclimating themselves to actual combat radio nets. Evidently this has been due to the fact that they were not taught to operate in radio nets, where there was a great deal of interference. Radio nets during operations have a tremendous amount of interference from other stations. It is suggested that a period of the radio operator's training be allotted to having operators work in nets where there is excessive interference.

7. SIGNAL SUPPLY:

Signal Supply was poor in the early stages of combat, but improved as time went on. At first, replacement tanks came with incomplete radio equipment and in some cases none at all. Radio crystals for the FM sets were insufficient. There were no replacement parts for the 500 series radios used by this Division. In many cases a radio could not be used due to the failure of one particular part.

The supply of expendable signal corps items at the forward depots was good. The supply of critical items and spare parts however was poor. It is thought that a method must be worked out, using as a basis the requirements estimated a month in advance for an organization, of supplying these advanced depots with these critical items and spare parts. There is not enough time to send equipment up from the rear depots.

8. RADIO REPAIR:

← Detector Repair

Radio Repair doctrine was proven to be sound. It is not advisable to send Signal Company repair sections further forward than the Rear Echelon of the Division. There should be three Radio Repair Sections instead of two - the present T/O allowance for the Signal Company. It was found desirable to attach a radio repair section to each letter company of the Maintenance Battalion during combat.

9. MESSAGE CENTER:

Message Center methods proved satisfactory as set forth in the present doctrine. Experience demonstrated the desirability of having an officer on duty 24 hours a day during combat. This officer must be acquainted with the tactical situation and must control the message center personnel.

For the Commanding Officer:
/s/George S. Eager, Jr.
GEORGE S. EAGER, Jr.,
1st Lt. Signal Corps,
Executive Officer.

2 Incls -
#1 - T/O Armd Sig Bn
#2 - T/O Armd Sig Bn (chart)

REPRODUCED BY G-3 SECTION HEADQUARTERS 1ST ARMORED DIVISION 30 JUNE 1943

TENTATIVE

CORRECTED 16 June 1943

ARMORED SIGNAL BATTALION
(For An Armored Division)

BN. HEADQUARTERS

Lt. Col.	-	Bn. Commander & Division Signal Officer.
Major	-	Bn. Executive and Assistant Division Signal Officer..
1st Lt.	-	Bn. Adjutant and Bn. Supply Officer.
1st Lt.	-	Bn. Maintenance Officer.
1st Lt.	-	Div. Signal Property Officer.
W.O.	-	Assistant Division Signal Property Officer.
W.O.	-	Radio Repair Technician.
Mr. Sgt.	-	Bn. Sergeant Major.
T/4	-	Clerk, Division Signal Office.
T/4	-	Clerk, Bn. Administration.
T/5	-	Clerk, File
Tech. Sgt.	-	Bn. Supply Sgt. and Division Signal Supply Sgt.
T/4	-	Clerk, Division Signal Supply.
T/5	-	Clerk, Division Signal Supply.
T/5	-	Draftsman
Cpl.	-	Chief Warehouseman, Division Signal Supply.
Pvt.	-	Chauffeur - 2½-ton Division Signal Supply.
Pvt.	-	Chauffeur - 2½-ton Division Signal Supply.
Pvt.	-	Warehouseman - 3/4-ton Carry All-Division Signal Supply.
T/4	-	Radio Repair Technician
Pvt.	-	Clerk, Chauffeur, 3/4-ton C&R.
Pvt.	-	Clerk, Chauffeur, ¼-ton truck
Pvt.	-	Clerk, Chauffeur, ¼-ton truck

COMPANY "A"

ADMINISTRATIVE SECTION

Capt.	-	Commanding Officer.
1st Sgt.	-	First Sergeant.
T/5	-	Company Clerk.
Sgt.	-	Motor Sergeant
T/5	-	Motor Mechanic.
Pvt.	-	Motor Mechanic and Chauffeur 1½-ton panel.
Staff Sgt.	-	Radio Repair Sergeant.
T/4	-	Radio Electrician.
T/5	-	Radio Electrician and Chauffeur 1½-ton panel.
Staff Sgt.	-	Mess Sergeant.
T/4	-	First Cook.
T/4	-	First Cook.
T/5	-	Second Cook.
T/5	-	Second Cook.
Pvt.	-	Chauffeur, 2½-tonKitchen Truck.
Pvt.	-	Chauffeur, 2½-ton Ration Truck.
Sgt.	-	Company Supply Sergeant.
T/5	-	Warehouseman, Company Supply.
Pvt.	-	Company Armorer.
Pvt.	-	Chauffeur, 2½-ton Gas & oil Truck.
Pvt.	-	Chauffeur, 2½-ton Company Supply.
Pvt.	-	Clerk,Chauffeur, ¼-ton truck.
Pvt.	-	Clerk, Chauffeur 3/4 C&R.

WIRE SECTION

1st Lt. – Wire Officer.
Tech. Sgt. – Wire Chief.
Cpl. – Chief Switchboard Operator.
T/5 – Switchboard Operator.
Pvt. – Switchboard Operator.
T/5 – Chief Teletype Operator.
T/5 – Teletype Operator.
Pvt. – Teletype Operator.
T/5 – Installer, Repairman, Telephone and Telegraph.
Sgt. – Crew Chief, 2½-ton w/RL-26
T/4 – Lineman.
T/5 – Lineman.
Pvt. – Lineman.
Pvt. – Lineman.
Pvt. – Lineman and Chauffeur 2½-ton truck
Cpl. – Wire Supply Warehouseman.
Pvt. – Chauffeur, 2½-ton Wire Supply.
Cpl. – Crew Chief 3/4-ton Weapons Carrier w/RL-31
T/5 – Lineman.
Pvt. – Lineman.
Pvt. – Lineman and Chauffeur 3/4-ton W.C.
Cpl. – Crew Chief, 3/4-ton Weapons Carrier w/RL-31
T/5 – Lineman.
Pvt. – Lineman.
Pvt. – Lineman and Chauffeur 3/4-ton W.C.
T/4 – Trouble Crew Chief ¼-ton w/RL-31
Pvt. – Lineman, Chauffeur, ¼-ton C&R
Cpl. – Trouble Crew Chief ¼-ton w/RL-31
Pvt. – Lineman, Chauffeur, ¼-ton truck
Pvt. – Lineman, Chauffeur ¼-ton truck

COMBAT TEAM
COMMUNICATION PLATOON (Total of 3)

Capt. – Signal Officer, Combat Team.
2nd Lt. – Asst Signal Officer, Combat Team.
Mr. Sgt. – Platoon Sergeant.
Sgt. – Crew Chief SCR-299 Div. Comd. Net.
T/4 – Radio Operator.
T/4 – Radio Operator.
T/5 – Radio Operator.
T/5 – Clerk, code.
Pvt. – Messenger, ¼-ton truck
T/5 – Driver, H/T, M-3
Sgt. – Crew Chief. SCR-193
T/4 – Radio Operator Total of Three (3)
T/5 – Radio Operator 1 to work Div. Rcn Net.
T/5 – Clerk, code 1 to work ARU Net.
T/5 – Driver, H/T, M2 1 to work Div. Adm. Net.
Sgt. – Crew Chief, Wire.
T/5 – Lineman.
Pvt. – Lineman.
Pvt. – Lineman, Chauffeur, 3/4-ton W.C. w/RL-31, BD-72.
Cpl. – Lineman, TP&TG Pr.
Pvt. – Lineman, Chauffeur ¼ton truck

COMMUNICATION PLATOON.

T/5 - Messenger, Motorcycle.
Pvt. - Messenger, Motorcycle.
Staff Sgt. - Crew Chief, Radio Repair.
T/4 - Technician, Radio Repair.
T/5 - Technician, Radio Repair.
Pvt. - Driver, 1½-ton Panel.
Cpl. - Chief Switchboard Operator.
T/5 - Telephone Switchboard Operator.
Pvt. - Telephone Switchboard Operator.

MESSAGE CENTER PLATOON

1st Lt. - Message Center Officer.
2nd Lt. - Asst. Message Center Officer.
2nd Lt. - Asst. Message Center Officer.
Mr. Sgt. - Message Center Chief.
Tech. Sgt. - Asst. Message Center Chief.
Tech. Sgt. - Asst Message Center Chief.
Sgt. - Chief Messenger.
T/5 - Driver, Half Track, M 3
Cpl. - Crew Chief.
T/5 - Code Clerk.
Cpl. - Motorcycle Messenger and Dispatcher.
T/5 - Motorcycle Messenger.
Pvt. - Motorcycle Messenger.
Pvt. - Motorcycle Messenger.
T/5 - Messenger, ¼-ton truck
Pvt. - Messenger, ¼-ton truck
Pvt. - Foot Messenger.
Pvt. - Foot Messenger.
Pvt. - Foot Messenger.

RADIO PLATOON

1st Lt. - Radio Officer.
Mr. Sgt. - Radio Platoon Sergeant.
Sgt. - Crew Chief Radio Set SCR-299
T/4 - Radio Operator.
T/4 - Radio Operator.
T/5 - Radio Operator
Pvt. - Code Clerk.
Pvt. - Messenger, ¼-ton truck
T/5 - Driver, H/T
Sgt. - Crew Chief.
T/4 - Radio Operator.
T/5 - Radio Operator.
T/5 - Code Clerk.
T/5 - Driver, H/T, M 3

(5 Crews in Div. Hq.
1 NCS Div. Comd Net.
1 NCS Div. Rcn. Net.
1 NCS Div. Adm. Net.
1 NCS Air Req. Unit Net
1 to work Corps Comd Net.)
(3 Crews, Fwd. Echelon)

COMPANY "B"

ADMINISTRATION PLATOON

Capt. - Company Commander.
1st Sgt. - First Sergeant.
T/5 - Company Clerk.
Pvt. - Clerk, Chauffeur, 3/4-ton C & R.
Pvt. - Clerk, Chauffeur, ¼-ton C & R.
Sgt. - Company Supply Sergeant.
T/5 - Warehouseman, Company Supply.
Pvt. - Company Armorer.
Pvt. - Chauffeur, 2½-ton Truck Company Supply Truck.
Pvt. - Chauffeur, 2½-ton truck Company Supply Truck.
Pvt. - Chauffeur, 2½-ton Truck Bn. Adm. Truck.
Staff Sgt. - Mess Sergeant.
T/4 - First Cook.
T/4 - First Cook.
T/5 - Second Cook.
T/5 - Second Cook.
Pvt. - Chauffeur, 2½-ton Kitchen Truck.
Pvt. - Chauffeur, 2½-ton Ration Truck.

WIRE PLATOON

2nd Lt. - Wire Officer.
Staff Sgt. - Wire Chief.
Cpl. - Chief Switchboard Operator.
T/5 - Switchboard Operator.
Pvt. - Switchboard Operator.
T/5 - Chief Teletype Operator.
T/5 - Teletype Operator.
Pvt. - Teletype Operator.
T/4 - Installer, Repairman, TP, TG, & TGP.
T/5 - Installer, Repairman, TP, TG. & TGP.
Sgt. - Asst. Wire Chief & Crew Chief 2 ½-Ton W/RL-26. (2 Identical Crews
T/4 - Lineman.
T/5 - Lineman.
Pvt. - Lineman.
Pvt. - Lineman.
Pvt. - Lineman, and Chauffeur 2½-ton.
Cpl. - Wire Supply & Equipment.
Pvt. - Chauffeur, 2½-ton Wire Supply.
Cpl. - Trouble Crew Chief ¼-ton W/RL-31 (2 Identical Crews)
Pvt. - Lineman, Chauffeur, ¼-ton C & R.

MESSAGE CENTER PLATOON

1st Lt. - Message Center Officer.
Staff Sgt. - Message Center Chief and Crew Chief.
T/5 - Counter Clerk.
T/5 - Code Clerk.
Pvt. - Foot Messenger.
Pvt. - Motorcycle Messenger.
T/5 - Messenger, ¼-ton C & R.
T/5 - Driver, Half Track.

MESSAGE CENTER PLATOON CONTINUED

Sgt. - Crew Chief (2 Crews)
T/5 - Code Clerk
Pvt. - Foot Messenger
Pvt. - Motorcycle Messenger
T/5 - Messenger, ¼-ton, C & R

RADIO REPAIR PLATOON

2nd Lt. - Radio Repair Officer.
Tech. Sgt - Radio Repair Section Chief
Sgt. - Radio Electrician and Installation Chief
T/3 - Radio Technician
T/3 - Radio Technician
T/4 - Supply Clerk
T/5 - Radio Technician
Pvt. - Chauffeur, 2½ ton Signal Repair Truck
Pvt. - Chauffeur, 2½-ton Radio Supply Truck
Pvt. - Chauffeur, 3/4-ton, C & R Car

MOTOR MAINTENANCE SECTION

Staff Sgt - Motor Sergeant
(2 Identical Crews)
Sgt. - Mechanic and Crew Chief
T/4 - Mechanic and Welder
T/5 - Mechanic
T/5 - Mechanic
T/5 - Auto Electrician
Pvt. - Chauffeur, 2½-ton Wrecker, Parts, W/Winch
Cpl. - Parts Supply
Pvt. - Mechanic, Chauffeur, 3/4-ton Weapons Carrier

RADIO SECTION

Sgt. - Crew Chief (SCR-299)
T/4 - Radio Operator
T/4 - Radio Operator
T/5 - Radio Operator
Pvt. - Messenger, ¼-ton, C & R
T/5 - Driver, H/T
Pvt. - Code Clerk

TENTATIVE
ARMORED SIGNAL BATTALION
(For An Armored Division)

1	UNIT	Technician grade	Bn Hq	Company "A" Adm Section	Wire Platoon	Comm Plat (3)	Msg. Cen. Plat.	Radio Plat.	Total Company	Company "B" Adm Sect.	Wire Plat.	Msg. Cen. Plat.	Radio Repair Plat. (3)	Radio Sect.	Motor Maint Sect.	Total Co.	Total Bn.	Remarks
2	Lieutenant Colonel		1														1	
3	Major		1a														1	All Officers and Noncommissioned Officers of first 3 grades will be armed w/ pistols and all others armed w/ carbine
4	Captain			1		1b			4	1						1	5	
5	1st Lieutenant		3		1		1	1	3			1				1	7	
6	2nd Lieutenant					1	2		5		1		1			4	9	
7	Total Commissioned		5	1	1	2	3	1	12	1	1	1	1			6	23	
8	Warrant Officer		2c														2	
9	Master Sergeant, including		1d			1	1	1	6								6	
10	Bn Sergeant Major (585)		(1)						(1)								(1)	
11	Chief Radio Operator (766)							(1)	(1)								(1)	
12	Communication Plat. Chief (766)					(1)			(3)								(3)	
13	Message Center Chief (674)						(1)		(1)								(1)	
14	First Sergeant (585)		1						1	1						1	2	
15	Technical Sergeant Including		1		1		2		3				1			3	7	
16	Supply (821)		(1)														(1)	
17	Message Center Chief (674)						(2)		(2)								(2)	
18	Radio Repair (174)												(1)			(3)	(3)	
19	Wire (238)				(1)				(1)								(1)	
20	Staff Sergeant including			2		1			5	1	1	1			1	4	9	
21	Maintenance (337)														(1)	(1)	(1)	
22	Supply (824)				(1)				(1)	(1)						(1)	(2)	
23	Message Center Chief (674)											1				(1)	(1)	
24	Radio Repair (174)				(1)		(1)		(4)								(4)	c. One is Asst Div. Sig. Property Officer. Other is Radio Repair Technician who is atchd to Hq Maint Bn during combat
25	Wire (238)										(1)					(1)	(1)	
26	Sergeant, including			2	1	5	1	8	27	1	2	2	1	1	2	11	38	
27	Maintenance (337)			(1)					(1)						(2)	(2)	(3)	
28	Supply (821)			(1)					(1)	(1)						(1)	(2)	
29	Radio Operator (766)					(4)		(8)	(20)					(1)		(1)	(21)	
30	Radio Repair (174)												(1)			(3)	(3)	
31	Wire (238)				(1)	(1)			(4)		(2)					(2)	(6)	
32	Messenger (675)						(1)		(1)								(1)	
33	Message Center Chief (674)											(2)				(2)	(2)	d. Bn Sgt Maj
34	[illegible], including		1	3	2	6			17		4				2	6	24	e. Mounted on motorcycle
35	Asst. Message Chief (674)					(3)			(3)								(3)	
36	Chief Tp. & Tg. Swbd Opr (309)				(1)	(1)			(4)		(1)					(1)	(5)	f. Special vehicle housing complete SCR-299 w/trailer
37	Messenger, Agent (716)						(3)		(3)								(3)	
38	Maintenance (337)														(2)	(2)	(2)	
39	Supply (821)			(1)		(1)			(1)		(1)					(1)	(3)	
40	Linemen, Tp. & Tg. (238)					(3)	(1)		(6)		(2)					(2)	(8)	g. Special vehicle housing complete Msg. Cen including M-134-C, EE-8 & TG-7A or equivalents
41	Technician, Grade 3																	
42	Technician, Grade 4																	
43	Technician, Grade 5 including		13	17	22	29	28	42	196	14	20	14	7	6	12	87	296	
44	Private First Class																	
45	Private																	
46	Agent Messenger (716)		5			(1)e	(3)e		(6)								(6)	
47	Agent Messenger (716)					(1)e	(6)e		(9)			(3)e				(3)	(12)	
48	Armorer (511)				(1)				(1)	(1)						(1)	(2)	
49	Chauffeur, 2½ ton Tk (345)			(2)	(4)	(2)			(6)	(5)	(3)		(2)		(2)	(16)	(24)	
50	Clerk, (405)		4	(3)									(1)			(3)	(6)	
51	Clerk, (405)		5	(2)	(1)				(1)	(1)						(1)	(4)	
52	Clerk, (405)			(3)	(2)				(2)	(2)						(2)	(7)	
53	Clerk, Code (721)		5			(4)	(3)	(3)	(18)			(3)				(3)	(21)	
54	Clerk, Code (721)							(5)	(5)					(1)		(1)	(6)	
55	Clerk, Msg. Cen. (405)		5									(1)				(1)	(1)	
56	Cook (060)		4		(2)				(2)	(2)						(2)	(4)	
57	Cook (060)		5		(2)				(2)	(2)						(2)	(4)	
58	Draftsman (070)		5	(1)													(1)	
59	Driver, Half Track (745)		5			(4)	(1)	(8)	(21)			(1)		(1)		(2)	(23)	
60	Electrician, Auto (012)		5												(2)	(2)	(2)	
61	Inst., repairman, Tp & Tg		4		(2)				(2)		(3)					(3)	(5)	
62	Lineman, Tg & Tp (238)		5		(4)	(1)			(7)		(3)					(3)	(10)	
63	Lineman, Tg & Tp (238)				(9)	(3)			(18)		(6)					(6)	(24)	
64	Mechanic (014)		4												(2)	(2)	(2)	
65	Mechanic (014)		5	(1)					(1)						(4)	(4)	(5)	
66	Mechanic (014)			(1)					(1)						(2)	(2)	(3)	
67	Messenger (675)		5				(3)		(3)			(3)				(3)	(6)	
68	Messenger (675)					(1)	(12)	(5)	(20)			(3)		(1)		(4)	(24)	
69	Operator, Tg. Printer (237)		5						(2)		(2)					(2)	(4)	
70	Operator, Tg. Printer (237)								(1)		(1)					(1)	(2)	
71	Operator, Tp & Swbd (309)		5			(1)	(1)		(4)		(1)					(1)	(5)	
72	Operator, Tp & Swbd (309)					(1)	(1)		(4)		(1)					(1)	(5)	
73	Radio Electrician (174)		3										(2)			(6)	(6)	
74	Radio Electrician (174)		4	(1)	(1)		(1)		(4)								(5)	
75	Radio Electrician (174)		5		(1)		(1)		(4)				(1)			(3)	(7)	
76	Radio Operator (766)		4				(5)	(13)	(26)					(2)		(2)	(20)	
77	Radio Operator (766)		5				(4)	(8)	(20)					(1)		(1)	(21)	
78	Storehouseman (252)		5	(1)	(1)				(1)	(1)						(1)	(3)	
79	Driver, 1½ ton Panel (345)						(1)		(3)				(1)			(3)	(6)	
80	TOTAL ENLISTED		13	22	29	38	38	51	254	17	27	17	9	7	17	112	382	
81	AGGREGATE		23	23	30	40	41	52	266	18	28	18	10	7	17	118	407	
82																		

83	O	Car, H/T	W/Winch				(1)		3	(2)									12
84	O	Carbine, Cal. .30		14	19	28	36	35	50	210	15	26	16	8	7	16	104	358
85	O	Gun, machine .50 H B															2	2
86	O	Gun, machine .30 Light															4	4
87	O	Gun, Sub-mach. (on ¼ ton Truck)		2	1	3	2	5	7	20	1	2	3		1		7	30
88	O	Gun, Sub-mach Incld on Ord Veh					4	1	8	21			1		1		2	23
89	O	Pistol (cal. .45		9	4	9	4	6	2	34	3	2	2	2		1	14	49
90	O	Personnel Carrier M-3 Spec (SCR-299)					1f		5f	8					1f			9
91	O	Personnel Carrier M-3 Mod Con						1c		1			1c				1	2
92	O	Motorcycle, solo					2	12		8			3					21
93	O	Sedan, 4 Dr		2	1	2	2	6	5	21	1	2	3			1	7	30
94	O	Truck, ¼ Ton Command		1														1
95	O	Truck, ¼ Ton GP				2	1			5						2	2	7
96	O	Truck, 2½ Ton		2	4	2				6	5	2		2		2	15	23
97		Bus or Panel body (Rad Repr)											(1)				(3)	(3)
98		Equipment		(2)	(2)	(1)				(3)	(3)			(1)			(6)	(11)
99		Kitchen			(2)					(2)	(2)						(2)	(4)
100		Maint. Trailer w/winch														(2)	(2)	(2)
101		Wrec. w/winch				(1)				(1)		(2)					(2)	(3)
102	O	Trailer, 1 Ton Cargo			2		1	1	5	1			1	1	1		5	16
103	O	Truck, ¾ Ton C & S		1	1					1	1			1			4	6
104	S	Person Unit PE-92												1			3	3
105	S	Radio Set		1			8	1	25	13					2		2	44
106	S	Read Unit. RL-26				1				1		2					2	3
107	S	Switchboard BD-72				1	1			4		1					1	5
108	S	Telephone TE-33				25				25		25					25	50

PREPARED BY
DIVISION SIGNAL OFFICE
HEADQUARTERS FIRST US ARMORED DIVISION
1 May, 1943.

CORRECTED: 16 June, 1943

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HEADQUARTERS, 1ST U.S. ARMORED DIVISION TRAINS. COPY NO. 4
APO 251, c/o Postmaster, New York, N.Y.

10 June 1943

SUBJECT: Battle Lessons.

TO : Commanding General, 1st U.S. Armored Division, APO 251, c/o Postmaster, New York City, New York.

The following comments relative to Battle Lessons, required by Letter AFHQ, 14 May, 1943, are submitted in compliance with verbal instructions from your Headquarters:

1. ORGANIZATION. Present T/O should be changed to:

a. Provide two Reconnaissance Sections, each with an officer, to work in front of two columns, which will be the normal marching formation whenever conditions permit.

b. Provide additional anti-aircraft guns for truck columns.

c. Place the anti-tank platoon, now in the Maintenance Battalion in Train Headquarters Company, since it will function for the entire Division Train.

d. Provide an Infantry Platoon for security purposes.

e. Provide pernament crews for anti-tank guns now assigned to Administrative and Supply Sections.

2. TRAINING.

a. Mine Warfare.
A definite program of training for Train Headquarters Company, and for other units of the Trains, should be carried out, with a view to developing sufficient trained men capable of checking bivouacs, roads, dumps, etc., for the presence of mines and booby traps. Mine detectors should be provided.

b. Defense against air attack.
(1) Comprehensive training should be conducted against fast moving aerial targets.
(2) More training is needed in identification of aircraft.
(3) In the defense of bivouacs, gun crews should be trained in dispersal of gun positions, so as to prevent more than one gun being silenced at one time by the attack of a single plane.

/s/ W. T. Hamilton
W. T. HAMILTON,
Colonel, Cavalry,
Commanding

REPRODUCED BY G-3 SECTION HEADQUARTERS 1ST ARMORED DIVISION JUNE 28, 1943.

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HEADQUARTERS FIRST ARMORED REGIMENT
A.P.O. 251, New York City N.Y.

COPY NO. 4

9 June 1943.

SUBJECT: Reports on Combat Experience and Battle Lessons for Training Purposes.

TO : Commanding General, 1st Armored Division.

1. The Offensive.

a. Tank operations must be conducted on a perfected plan to be successful. It is better to delay the attack rather than rush into an attack to reach a certain objective by a certain time, without sufficient orders to subordinates, or sufficient reconnaissance. Enough time should be granted to make certain that each subordinate commander knows the plan, the mission, adjacent troops, and rally points. One of the most successful attacks made by an organization of this regiment was at Hill 609 and achieved it's high degree of success primarily because all commanders concerned appreciated the fact that the GERMAN and not TIME was the enemy.

b. Infantry should habitually be attached to a tank battalion operating on a separate mission. They are needed to outflank, or "stalk" AT guns whose general area is known or suspected, to reduce road blocks, to outpost bivouacs, and to handle prisoners. These needs are urgent in addition to others described in current Field Manuals.

c. In operations requiring an attack by a battalion the battalion commander should be given all of his tank companies in order that he may have a support company, and a reserve. Normally the sector assigned requires two companies deployed in line. A tank reserve should be held out by the battlefield commander under his control. Therefore he should have a sufficiently strong force to enable him to do so.

d. The assembly area for an attack should provide concealment from hostile ground observation. The commander should arrive in the assembly area with or just behind his reconnaissance and ahead of his troops. Where the assembly must be made subject to hostile ground observation the delay in the assembly area must be brief.

e. The CP must be well forward in an attack and further back in defense. When ordered to move the CP must move promptly and the decision to move must be made early so there is a minimum of confusion during the move. All units should be informed of a probable location should a move be made. An axis is not sufficient for the CP of combat elements that are engaged. A breakdown of a forward and rear CP will solve the problem to some extent.

2. The Defensive.

a. We must learn the principle of being strong at the right spot and avoid trying to hold everywhere. It is far better to give ground in order to attack and defeat the enemy in detail, than to watch every mouse hole that he might slip through, and thereby dissipate our strength.

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b. Terrain which is valuable on offense may become worthless on defense and we should not hesitate to abandon same when the mission is changed.

c. Higher commands must inform lower echelon commanders of the general plan for offense or defense in order to get intelligent cooperation. A mission "you will prevent debauchment of enemy through such and such place" is incomplete in that there is no limiting time factor. If the defender knows that it is "hold at all costs" his plan will be different from that which contemplates holding until reinforced or until some other action is ordered.

d. A defensive position must be on terrain that the enemy must attack or lose considerable time in by-passing.

3. Retrograde Movements.

a. Tanks must never be kept in the battle zone when not being actively employed, especially during lulls or quiet periods. They must withdraw from combat at or prior to dark and be taken well back to refit and rearm. Unnecessarily holding tanks for several days in front line position materially reduces their effective fighting strength through lack of maintenance.

b. When being held for counter attack purposes they must be far enough back to permit freedom of choice of action, even at the expense of loss of terrain. They must be kept concealed and should disappear until they are needed for action. Their movement must be as secret as possible. To do otherwise permits the enemy to count our strength and match it.

4. Special Operations.

a. Any mission requiring the detachment of a tank company from it's battalion to another unit not only robs the battalion of its flexibility, but also acts to preconceive the maneuver for the company commander. Upon one particular instance however the General commanding an infantry division told the tank officers that since he was not accustomed to operating with tank support, he would simply give them a mission to accomplish, let them present their own solution, and would use his infantry to support them. The tank officers were given sufficient time to make a deliberate and thorough terrain study and to formulate a plan. This plan was then turned over to the Commanding General who had assembled his artillery and infantry commanders to coordinate the details. This attack was very successful and considering the enemy opposition losses were few.

5. Cooperation by support and observation aviation.

a. Tank units should be accurately informed as to whether they may expect support aviation. If so that amount should be definitely marked for use of the units and be ready on call.

b. Air observation must keep track of hostile tank moves. It is inexcusable to permit the assembly of over 100 tanks in an area without some warning to our own troops facing them. Ground, not air observers discovered the German movement behind Dj. Kretchem on 13 February and reported it to the air. Even with this lead, elements of a division were able to assemble behind Faid with absolutely no warning from our air observation. That this was taking place was also reported during the night by listening patrols. Certainly these

and calcium lights over this area would have been worth a try.

6. Miscellaneous.

a. Night operations can be carried out with a reasonable degree of success. More flares and Very pistols are needed for night action as their effect is demoralizing.

b. All mortar and assault gun half tracks should be equipped with SCR 528's (instead of SCR 510's) so that, when one or more guns are attached to a letter company, communication can be quickly established by switching to the channel assigned to the letter company. Under the present set up, of course, the mortars and assault guns have only 2 pre set channels available - Battalion or Battalion Headquarters Company. This has been found to be an awkward arrangement for letter company commanders to whom guns have been attached. If they communicate with the attached guns over the Battalion net, the result is an excessive cluttering up of the Battalion net. If the Battalion Headquarters Company net is selected, it then means that the letter company commanders concerned must operate their radios over 3 different nets - letter company net, battalion net and Battalion Headquarters net.
All tanks should have transmitters as a reserve in case company commander, platoon leader or platoon sergeant tanks (or their radios) become casualties. In a recent case for example the radio of a company commander - commanding the advance guard of the battalion at the time - went out due to mechanical difficulties. There were other tanks available to him nearby, but none of them had transmitters. The result was a considerable delay through loss of control, that affected the operations of the entire battalion. Assault gun tracks should be equipped with the portable SCR 509's as in the case of the mortar tracks. This would facilitate control of indirect fire by an observer sent out a short distance from the gun track on foot - the gun tracks being in complete defilade. It has been found that the assault gun is best used from complete defilade. If it fires direct fire, it has to change positions so frequently that it's effectiveness is considerably reduced.

c. Combat Command staffs should have an S-4 to coordinate the functioning of all S-4's of the units comprising the combat command.

d. The elimination of the 37mm SP, AT gun and replacing of same with truck 3/4 ton is recommended. This is a very suitable piece of equipment for the transporting of rations, small amounts of ammunition, vehicular parts and miscellaneous equipment to troops in forward harbors.

/s/ LOUIS V. HIGHTOWER,
LOUIS V. HIGHTOWER,
Lt. Col., 1st Armored Regiment,
Commanding.

REPRODUCED BY G-3 SECTION, HEADQUARTERS 1ST ARMORED DIVISION 30 JUNE, 1943.

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HEADQUARTERS THIRTEENTH ARMORED REGIMENT
OFFICE OF THE REGIMENTAL COMMANDER COPY NO. 4

In the Field
8 June 1943

SUBJECT: Lessons Learned In Tunisian Campaign.

TO : Commanding General, 1st Armored Division.

1. Concentration and Coordination of Effort. To restate these principles in detail is needless; it is intended, however, to suggest the method of application. If, in the noncentrated fighting that lies ahead in Europe, an Armored Division is successful in effecting one penetration, or of winning one defensive victory, it shall have made an entirely sufficient accomplishment. Much thought should therefore be given to the concentration and coordination necessary to affect this.

a. Tank (or combined tank and infantry) attacks should be made with the fordes aligned in great depth, for the specific purpose of permitting rear echelons to pass through the leading ones to take advantage of their success and to carry the blow forward. The habit of attacking all along the front should be avoided; there is no necessity, normally, of permitting every enemy soldier to fire his weapon at us when his position can be made untenable by an attack on a narrow front. The principal advantage that accrues to the attacker is the privilege of concentration to afford overwhelming local superiority. However, the tank battalion forming the leading echelon should be priviledged to attack on a front as wide as it desires, to bring maximum weight to bear on the local position.

b. Tanks should be assigned a specific job, to be accomplished by all available tanks. To attach tanks in small groups to infantry, to help the infantry take a number of objectives simultaneously, is very expensive and essentially futile. Such use should be avoided like the plague.

c. The concentration of artillery fire is a prerequisite of success. If a battalion of tanks forms the leading element of an attack, no less than three full battalions of artillery should support that attack, with a normal disposition of one battalion assigned to smoke an adjacent area to nullify enemy flanking fire, and two battalions assigned to place a heavy concentration of HE on the objective itself. Our tanks can run very close behind the artillery fire -- hits are improbable, and the damage of a hit will be less than the enemy AT gun will inflict if the enemy is permitted to man the gun through the absence of our fire. Preparatory fire should be air-bursts, dropping to ground burst as our tanks jump off.

d. Close support weapons should be mustered in quantity to supplement the artillery. Assault guns and mortars search out small ravines and reverse slopes. Overwatching TD's (or tanks) should always be available to be placed, gun by gun, on actual or suspected AT gun positions; each of our guns should adjust on a single target, and never leave that target (although fire may be lifted after adjustment) until our attacking tanks have overrun the position. This is vital support.

e. Surprise: In addition to camouflage, surprise may be gained by feints (usually a good practice) but primarily by careful choice of con-

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centration areas and excellent timing. Thus a tank concentration preparatory to an attack should be far enough to the rear to threaten three or four points on the enemy front. When the thrust point is determined, the tank commanders must be permitted to make detailed reconnaissance and detailed plans; the actual attack movement should be started from the rear concentration point, and must proceed like a drill, with the minimum necessary pause to form up behind the line of departure. This will require drill, and lots of it.

f. Timing must be studied, for each projected attack, to effect coordination of the artillery fires, close support fires, infantry movement, and tanks movement and jump off. Admittedly a day goes quickly, but the final adjustments (particularly of artillery) must be made in good daylight, and the tanks must have good visibility in order to permit coordination and to see the enemy AT gun. We must provide an artificial bad visibility for the enemy by the proper placing of smoke.

g. The support by air is almost an essential to the taking of a difficult objective. A TM published by the Division in Ireland suggests the methods by which it may be accomplished; its principles, in our opinion, still hold. It does, however, call for effective close support, which has never been forthcoming in spite of the efforts made to obtain it. Under the circumstances, it may be as much as we can hope for to get a prelininary bombing of the successive enemy positions on a time schedule, which schedule will assure that the bombing is accomplished on each target before our tanks can possibly get there. There will be a long interval of time between bombing and attack, but close coordination appears to be out of the question.

h. Tank commanders, to include the regimental, must be in tanks and well up in the battle, except in exceptional circumstances. The combat commander should, in our belief, direct the battle from a tank or an OP from which he can personally watch the progress of the attack and the effect of our fire and the enemy's.

i. The anti-aircraft defenses of the armored regiment are not regarded as adequate. While the tanks when deployed do not offer a particularly remunerative target most command vehicles are very vulnerable to attack from the air. There should be attached to each regiment, sufficient anti-aircraft elements for the protection of the headquarters and service units and for the defense of the tanks when they are assembled or forced to take positions or move in formations that make them likely to receive attention from the enemy air.

2. The basic purpose of close order drill of course is to teach discipline and to provide for an automatic response to certain orders which may be issued during the excitement and confusion of battle. There is probably no organization in modern warfare more susceptible to confusion and disorder because of improper and inadequate training or a breakdown in communications than a tank regiment. In an armored unit you have all of the elements that go to complicate control such as reduced visibility, dispersion, and noise. Drill is therefore more important for tank units than it is for the infantry. Any simple means for supplementing radio communication should be used. Flag signals have been adopted by British tank units which have had by far more experience in the use of that arm than we have in order to supplement their communications. It is believed that such action is sound and should be adopted by our forces. A practical system of tank marking and flag signals is now being practiced by this regiment.

3. The proper establishment of an outpost, and the proper set-up and conduct of an OP, must be subject of instruction. Many units of the Division are amateurish in those matters.

4. Good reconnaissance practice is a matter for careful study. Three points were illustrated in battle as being particularly true: (1) An OP can sometimes be established, by stealth, practically within the enemy lines. This was of course more applicable in the wide terrain of Tunisia. (2) Reconnaissance patrols must invariably be told about where enemy may be encountered. Failure to do this will result in over-caution, with consequent slow progress, or, in the opposite case, needless loss. The commander seldom understands how little his subordinate commanders know of the big picture. (3) Reconnaissance must retain a reserve, frequently a large one. It is a tiresome job, and it almost invariably occurs that the commander will need to have unanticipated reconnaissance missions performed.

5. The AT mine is the biggest problem still unlicked. Various solutions have been propounded -- none of which are quite satisfactory. A real solution would speed the end of the war by six months, for it would double the use of the tank as an effective weapon.

6. a. Communication channels must be improved by prohibiting transmittal of long coded administrative orders over command channels. In Ousseltia Valley, although there were three channels of radio communication between CC "B" and II Corps, it was impossible to keep II Corps informed of the situation because II Corps used all three channels to transmit the same message which often turned out to be an administrative message when decoded. In several instances CC "B" got 24 or more hours behind in trying to clear tactical messages through to II Corps because of this abuse.

b. Radio security must be improved. Frequently radio security is violated by higher commanders.

c. Radio crystals in FM sets must be changed within the Division so that the Bn and its company frequencies do not overlap.

/s/ HAMILTON H. HOWZE,
HAMILTON H. HOWZE,
Lt. Col., Cavalry,
Commanding.

REPRODUCED BY G-3 SECTION, HEADQUARTERS 1ST ARMORED DIVISION, 30 JUNE, 1943.

COPY SECRET COPY

HEADQUARTERS SIXTH ARMORED INFANTRY
APO 251, U. S. Army COPY NO. 4

10 June 1943

SUBJECT: Combat Experience and Battle Lessons For Training Purposes.

TO : Commanding General, 1st Arm'd. Division.

In compliance with Letter, Allied Force Headquarters "Combat Experience and Battle Lessons For Training Purposes", dated 14 May 1943, the following report is submitted:

A. Armored Infantry:

1. Offensive — Present tactical doctrine believed to be sound, but more training and application of certain basic principles is necessary.

a. Cover and concealment and fire and movement. Properly trained troops can work into every position without being observed. Prisoners stated that they saw our troops at a distance and then not again until they came right on top of them.

b. Men must be trained to follow closely behind artillery barrages and through smoke.

c. Exhaustive training in maintaining contact with adjacent units in a night attack is needed.

d. Speed in digging in and preparing for inevitable counterattack must be stressed. The Germans always lay heavy artillery fire on a lost position and then counterattack. Immediately after gaining a position, concentrations from supporting weapons should be laid down and arrangements made for their deliverance on short notice.

e. After commitment to battle, direct control of the fighting elements must pass directly to the individual squad leaders. Squad leaders must be impressed with the fact that they are largely responsible for the control and coordination of the entire advance and must directly control and coordinate their squads.

f. In a dismounted attack men must stop at frequent intervals along a route of advance to rest and reorganize before proceeding on.

g. For an attack to be successful it must be well planned and time must be taken to acquaint every man with the situation and his job. Sacrifice speed, if necessary, to insure a fully coordinated attack.

h. If you want to take a position hit it with everything you have. If you think you can knock it off with a toothpick, then use a baseball bat and make sure — use every weapon you have and go in with everything firing. Mortars used in battery are very effective. Every Officer and man must consider himself an F O for supporting weapons.

i. Reinforce success rather then redeem failure. Use support of reserve units to widen or deepen a success of an advancing unit rather than reinforcing a unit that has failed to reach its objective.

j. The Germans are static in their system of warfare and they expect us to be the same. Any variation from the conventional system is an element of surprise.

k. Limited objectives should be set for a Battalion, Company, Platoon, Squad, and even Individuals.

l. A few sub-machine guns in the assault wave are very helpful since the sound of their fire bothers a jittery enemy on the defensive.

m. All men should be thoroughly trained in locating and destroying machine guns and determining the location of and crossing every final protective line in a night attack. At least all key men should view the ground in daylight and thoroughly understand the plan. Use flares in night attack to confuse the enemy

n. When following tanks, mounted in vehicles, officers and NCO's must insure that every man is fully equipped and prepared to dismount for action on a moment's notice.

o. All men must be impressed with the fact that there will be far less casualties among units which stick it out and keep advancing than among those who withdraw.

p. Troops are too inclined to discard heavy equipment when fatigued, specifically machine guns and 60mm mortars.

q. The importance of wearing the steel helmet at all times must be stressed.

r. More extensive use should be made of tanks to assist infantry attacks even in hilly terrain. A few tanks advancing with Infantry has a tremendous effect on the morale of our troops and is extensively demoralizing to the enemy. This has been proven on at least three separate occasions.

s. Heavy MG's and mortars must be employed well forward where they can cover the advance by fire.

t. A reserve, if but a squad, should be held out. Fresh troops are needed to do patrolling and reconnaissance.

2. Defensive:

a. Good OP's are essential. Their importance must be impressed on the personnel designated to man them.

b. If attacked while being relieved, the unit being relieved must remain in position until attack is beaten off.

c. Concentrations must be prepared for all suitable weapons, covering all avenues of approach and assembly areas.

d. Outposts and listening posts must be well in advance of the position and constant patrolling is necessary.

e. Men must be trained to prepare a defensive position in a hurry with the close support of all available weapons.

f. Do not become over extended in the defense. Constantly work to improve the position.

g. The 60mm mortar is not effective on the defense. Fire the MG in short bursts to avoid detection.

h. A definite "tie-in" must be made between units by patrols and defensive fires.

i. Constant patrols at night must be maintained in order to prevent infiltration by German patrols.

j. Our men must be trained to hold their fire, and not fire on the first enemy soldier sighted.

3. Retrograde Movements:

a. Retrograde movements have proven extremely costly and reorganization difficult. The success of such a movement depends on strict discipline and proper control of squads and platoons by their leaders.

b. All supporting weapons must be employed, especially artillery and assault guns.

c. Small units should be taught to reorganize more rapidly.

d. During a retrograde movement it is essential that all commanders strive to prevent troops from forming a defeatist attitude.

4. Cooperation By Support and Observation Aviation:

a. The use of aerial photos was found to be invaluable to ground troops.

b. The mere sight of friendly planes over head has a tremendous effect on the morale of our own men.

c. Closer cooperation between air and ground forces must be worked out.

5. Miscellaneous:

a. Mine warfare and booby traps:

(1) All infantry personnel must be instructed in the laying and lifting of minefields and the operation and characteristics of all enemy booby traps and anti-personnel minefields. All men should carry wire (or rope) and nails for use in lifting minefields.

(2) The Germans did not lay either anti-tank or anti-personnel minefields in rear of their position. On every occasion the Germans placed booby traps and anti-personnel minefields in front of their defensive positions.

(3) All men must be acquainted with every mine before entering combat.

b. Scouting and Patrolling:

(1) Scouting and patrolling must be constant. On one occasion a battalion was warned of a forthcoming dawn attack on our position. On another occasion failure to send out adequate patrols caused us to temporarily lose contact with a retreating unit and delay in the pursuit.

(2) Patrols should be armed with sub-machine guns and grenades.

(3) Forward artillery observers must be informed of the operations of all friendly patrols.

(4) The Germans will not fire on a small patrol unless it approaches quite close to their position and then only with sufficient weapons to drive off the patrol.

(5) Before sending out a patrol (mounted or dismounted) a prearranged signal should be prescribed to be used by the patrol to indicate localities free of enemy. If it is the intention of the commander to occupy any localities free of enemy, it should be done while the patrol remains in that locality. The Germans will permit a patrol to cover an area and return to report the area clear, and when a stronger infantry force moves forward to occupy the area it is met with heavy machine and mortar fire from a strong German force which has moved up to occupy the locality which the patrol left and reported clear of enemy.

(6) Patrols must be given specific missions, a time and place of return, and what to look for. Liberal time limits must be allowed for all reconnaissance elements.

(7) Patrols should habitually come from the reserve or support unit.

(8) Reconnaissance and patrol parties should habitually have first aid men with them.

c. Camouflage, Concealment, and Cover:

(1) In training more emphasis must be placed on the camouflage and concealment of gun positions.

(2) Men first in combat do not dig fox holes deep enough.

(3) Camouflage nets do not keep helmets from shining but do facilitate the fastening of natural foliage on to the helmets.

b. Communications:

(1) It was found that more wire was needed. Wire should be organic in mortar platoons.

(2) Radio communication within the Infantry Battalion is adequate; however, the same cannot be said of communication between the Infantry Battalion and units to which it is attached, or which are attached to it. Sufficient time must be allowed to obtain and change crystals in 508 radios. Usually

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the crystals aren't available.

e. Defense against Air Attack:

(1) The .50 cal. MG is an excellent AA weapon.

(2) Men will dig and dig deep after the first air attack.

(3) Front line units should not fire on enemy aircraft unless attacked.

f. Defense Against Tanks:

(1) Crews on 37mm AT guns must be taught to hold their fire until tanks are within range. AT guns should be placed in depth and be mutually supporting.

(2) Deep fox holes in hard ground have proven adequate protection against tanks which over-run the infantry position.

(3) In the event of an enemy tank attack, dismounted Infantry must be placed in tank proof localities and tank approaches covered by AT weapons.

g. Command Leadership and Troop Leading:

(1) More stress must be given to instructing Junior Officers and NCO's in their duties and responsibilities as leaders.

(2) More training must be given Officers in issuing short, concise and clear orders.

h. Combat Intelligence and Observation:

(1) Teach men proper things to look for from an observation post:

(a) Gun flashes.

(b) Movement of Vehicles.

(c) Location of Infantry fox holes and weapons pits.

(d) Vehicular movement which indicates locations of dumps, assembly areas, and command posts.

(e) Areas which appear to be clear of enemy.

(f) Any indications of enemy minefields and AT gun emplacements.

(2) Impress all lower commanders with the importance of passing back enemy information rapidly. Any enemy observed should be reported. The importance of reporting information accurately cannot be over emphasized. Every man must be taught that he is an observer and should not keep anything he sees a secret.

i. Staff Procedure and Command Post Operation:

(1) The staff of Armored Infantry Regiment is adequate. The Armored Infantry Battalion staff should include an S-4. One more liaison officer (making a total of 3) should be placed in the staff of the Armored Infantry Regiment.

(2) Staff Officers must alternate so that all get an adequate amount of sleep.

j. Procurement and Distribution of Aerial Photographs:

The quantities of aerial photos received was practically always inadequate. Aerial photos proved to be very valuable and especially if they were received sufficiently in advance of the planned operation to permit their thorough study. Aerial photos should be issued in such quantities as to provide distribution for all company commanders.

6. Changes Or Additions In Equipment:

a. The cannon and mortar platoons need telephone and wire.

b. Each vehicle should have a small cooking stove and at least three

additional pick and shovel sets.

c. Each Reconnaissance Platoon needs both small "Walkie-Talkie" radios and telephones with about 300 yards of combat wire.

d. Each reconnaissance platoon must be equipped with a mine detector.

e. Officers and non-commissioned officers should be armed with a sub-machine gun or carbine for front line duty.

f. A single, strong combination pick-shovel entrenching tool similar to the German type is needed. Each man should have one.

g. Good field glasses are especially needed by all gun commanders and reconnaissance platoons; there should be at least two pairs in every rifle squad.

h. All machine gun mounts on vehicles should permit 90 degrees elevation from horizontal, for AA fire.

i. The 509 Radio is too big, too heavy, and too delicate for extended dismounted action.

j. Radio communication provided for reconnaissance platoons of the Armored Infantry Regiment and Battalions is inadequate. The SCR 293 now supplied for their use is utterly worthless. Its range is too short and it is impossible to keep it in repair. Both the SCR 293 and SCR 510 radios in many instances were too weak to reach their headquarters.

k. Every half-track should have a .50 cal. machine gun for AA protection.

l. Every squad should have at least one Very Pistol. Reconnaissance Platoons could have used Very Pistols on numberous occasions.

m. Half-tracks, M-2 are not suitable because of the difficulty in mounting and dismounting and limited seating space. The M-3 should be substituted for this model.

n. The 37mm Self Propelled Gun is a valuable weapon for certain types of work; it is not considered an adequate anti-tank weapon and a gun of larger caliber with a longer effective range should be provided. The use of Cannister Ammunition in the 37mm has proved very effective against personnel and machine gun nests. The vehicle itself has one very weak spot, namely; the differential is too light and will not stand up in mountainous country.

7. a. The mounted action of Armored Infantry has been practically nil, therefore our actions have been much like that of a regular Infantry Regiment. Actually the Armored Infantry Company has far too much overhead to push enough fighting men on the battlefield to compare with the regular Infantry Company. Compared strengths are: Armored Infantry Company -- 120 Overhead 53
Regular Infantry Company -- 175 Overhead 18

b. Too much stress cannot be placed on the training of the individual soldier. Training must be as near to combat conditions as is possible. The first impulse of an individual is to run when shell burst is close. Combat firing in training should be so managed as to give the real battlefield atmosphere. A few men killed or wounded in training will save many lives in actual combat. Much training is needed in bayonet and assault fighting.

c. Physical conditioning of men is of utmost importance. Any strenuous campaigns call for a high physical standard and a mental attitude of being able to accept punishment even beyond expectation.

For the Regimental Commander.

JAMES W. SUTHERLAND, JR.,
Captain, 6th Armored Infantry,
S-3.

COPY SECRET COPY

COPY NO. 4

HEADQUARTERS
81ST ARMORED RECONNAISSANCE BATTALION
A.P.O. 251, New York, N.Y.

9 June 1943

SUBJECT: Report on Combat Experience and Battle Lessons for Training Purposes.

TO : Commanding General, First U. S. Armored Division.

1. In compliance with letter, Allied Force Headquarters, dated 14 May 1943, Subject: "Reports on Combat Experience and Battle Lessons for Training Purposes", file # AG 370.6 C-M, the following report is submitted.

The following lessons learned through experience in recent combat pertain mainly to Reconnaissance.

The present tactical doctrine on reconnaissance is sound. The application is not particularly difficult when trained personnel are available. Of course battle trained personnel are the best.

MISSIONS: Missions given to the Reconnaissance Battalion in general were suitable. The execution of the missions sometimes were not satisfactory because of the following reasons:

(a) Orders were not clear and concise.
(b) Misinterpretation of orders.
(c) Because of terrain obstacles.
(d) Because of lack of drive.
(e) Not keeping mission foremost in mind.
(f) Abandoning mission when light opposition was encountered.

G-2 and G-3, both should have had a hand in assigning missions to the reconnaissance battalion.

MAP READING: This subject is very important and cannot be stressed enough especially in the training of reconnaissance troops. Platoon and Section leaders must know where they are at all times and it has been discovered that during action some officers have located themselves as much as four (4) miles away from where they actually were and even sometimes did not know where they were — This is very serious and training in Map Reading should be stressed very much. In this same connection, the theory of Map Reading, that is classroom theory, is not as important as the training on the ground. On all tactical walks, on problems, and every bit of outdoor training, maps should be taken so as to make this phase second nature to all. Also the use of compass for night work. In some cases officers were sent out to certain points at night and were lost because they did not take compass readings and even if they did reach their objectives they did not take back readings and got lost on their way back. Reconnaissance troops should be well versed in the compass.

ORGANIZATION WITHIN THE SMALLER UNITS AND THE DEVELOPMENT OF ALL NON-COMMISSIONED OFFICERS: Officers and key NCO's did most of the work, working night and day when an operation that needed quick thinking, action and stamina came up, these officers and NCO's were so punchy that they could not do their job efficiently. Development of all NCO's is important.

[redacted]

RESERVE: In many cases a reserve was not kept out when it could have been done easily.

NIGHT RECONNAISSANCE: This is both difficult and dangerous. Reports are inaccurate, however, certain jobs can only be done at night. Vehicular reconnaissance should not be done at night because the vehicular crew is both deaf and blind and a small dismounted enemy patrol can easily dispose of vehicles at night. Listening posts are very important however and should be used.

MINES AND BOOBY TRAPS: Through costly experience it was learned that Reconnaissance had to know all about all known mines and booby traps. That minefields were hard to discover but once they were, that they should be marked and reported and path cleared for themselves leaving the field for the attached engineers to clear for the rest of the divisions. Removing mines at night does not accomplish anything unless either the area cleared is taken and held or it is expected to use the terrain immediately, if not the enemy can again mine the same area and nothing is gained.

RADIO SECURITY: Security in general was bad, our expenditure reports were given in the clear, even positions were given in the clear, training in radio procedure and radio security is important. The enemy learned most just by monitoring our nets. In this connection, before the actual battle codes should be used and even in battle, there should be simple codes for locations of friendly units and everything carried out with as much secrecy as possible.

ALTERNATE POSITIONS: For guns, etc., this practice was not used enough and can well be stressed.

DIGGING IN: Casualties have resulted from carelessness in digging in and from not digging in deep enough.

AIR-GROUND: It is very important that some system of air-ground coordination be established because lots of times the air seen things that the men on the ground did not see.

RECONNAISSANCE INFORMATION: Information from Reconnaissance should be passed on quickly to the subordinate units — to get the information to the man fighting is very important, lots of times it is drowned in the busy intelligence sections.

USE OF HIGH GROUND: The German always appears on the high ground and we must always work for the high ground, as far as reconnaissance is concerned it affords good observation as well as tactical importance.

AERIAL PHOTOS: These have been very helpful although there have not been as many as reconnaissance would like. Sufficient photos should be issued to reconnaissance. Much terrain information can be derived from these photos if a little study is devoted to them.

CAMOUFLAGE: In some cases this was done haphazardly and might as well not have been done at all — great pains should be taken and to do the job you must do it well, spending time on it.

RECONNAISSANCE REPORTS: Hourly reports are important even if there is nothing to report — Last night or dusk reports are necessary because the commanders can have an idea just what was happening when it got dark and of

course the first light or dawn reports are just as necessary for the information at the beginning of the day. Reconnaissance Officers should report on areas where no movement is seen, this gives higher officers an idea where trouble can be expected. Exaggerated reports along with untrue and inaccurate reports have no place in Reconnaissance, the Reconnaissance Battalion should have the reputation for supplying the correct information, the true facts should be reported unembellished, just the simple What, Where and When and Movement if any. There have been cases where olive trees were reported as tanks and unidentified vehicles reported as tanks and every gun reported as 88MM, this is definitely wrong: the bare facts are all that is necessary and let the intelligence sections do all the thinking.

WEAPONS: At present the Battalion does not possess a suitable Anti-tank gun outside of the 75mm Howitzer. It could have protected itself more efficiently and could have helped out considerably if on certain occasions, it possessed such a weapon (the new Armored Car with the 37mm, however, would prove satisfactory).. Our .50 Cal. Machine Gun is very effective against Aircraft and no armored vehicle should be without one. It is also suggested that the .30 Cal. Watercooled Machine Gun, except for the Infantry, be replaced by the Aircooled for many reasons, some of them being: that it is much lighter, it is much simpler, there are not as many parts to haul around and worry about, and of course then there's the water also that has to be considered. In connection with weapons, no Reconnaissance should be without the 75mm Howitzer.

ARTILLERY FORWARD OBSERVERS: In my opinion, the F.O.'s should habitually travel with the Reconnaissance so that at all times they are well forward and this gives them plenty of time to prepare all the necessary data and be ready when artillery finally gets there. Also, this cuts out the possibility of the artillery firing on their own Reconnaissance. In this connection, it is suggested that some distinctive flare be issued all forward troops to raise artillery, that is friendly artillery. Artillery Reconnaissance Officers might also find it well to travel with the Reconnaissance. In line with artillery, some study should be given for a definite link between the Division Artillery and Reconnaissance because all reconnaissance Officers are trained to direct fire and it has been proved that this has been very effective during the last operations in TUNISIA.

TRAINING: It is suggested that there be incorporated in the training of all officers and platoon NCO's a TEN COMMANDMENTS which would be some-thing on the order of the General Guard Orders and all the people concerned would know them backwards and forwards. To further explain this point, a platoon halts, the commander immediately applies those COMMANDMENTS: (1) Know where I am (2) Always take care of my security (3) Dig in if I am to be here for any length of time (4) My men know my mission (5) What will I do if I am attacked right now — etc., etc.

CONDUCT UNDER FIRE: Soldiers that come up for the first time should be impressed with the fact that every shell, every bullet and every bomb that goes off is not meant especially for them. That Artillery is not as effective as the field manual states. That to get into a slit trench when planes are bombing a mile away is foolish and on the other hand not to get into a slit trench when it is close is just as foolish. They must be told that casualties will happen and to minimize those that their fundamental training should be applied.

REPLACEMENTS: Replacements sent up to the front have not always been of the highest caliber, in fact, for many their training begins there and that is wrong. It is realized what was undergone in getting men up to the TUNISIAN front without depleting other battle troops, however, this is a servious problem and should be considered in the planning of the operation.

SUPPLY AND SERVICE: No criticism.

MISCELLANEOUS: It is my opinion that during the last campaign, horse cavalry could have been used and this could have been done in patrolling flanks that are anchored on mountain chains and rough ground that is unsuitable for vehicular reconnaissance—such a case would be the flank protection around CHERIA during the KASSERINE affair.

VIEWS ON REORGANIZATION: If reorganization is contemplated, I recommend the following for a reconnaissance platoon over the present set up. The platoon to be organized as follows:

1st Section: (Commanded by 1st Lt.)	2d Section: (Commanded by 2d Lt.)
2 Armored Cars, six wheel, both with 193 radios.	2 Armored Cars (same as 1st Section).
3 Peeps, one with 193 radio or equiv.	3 Peeps (same as 1st Section).
1 75mm Assault Gun mounted on M-5 tank chassis.	

The reasons for this recommendation are many, here are a few:

(1) It gives the 2nd Officer in the platoon a command.
(2) It gives the Commanding Officer of the Battalion more Reconnaissance Power.
(3) The Section can be handled with much more ease than the present bulky platoon.
(4) There are many jobs where one of these sections can go and the present platoon cannot.
(5) If the job is too big for one section, there is always the other section and both can be combined.

Also under suggestions for reorganization, it is suggested that the two reconnaissance companies of the Armored Regiments become part of the Reconnaissance Battalion. These two companies would be definitely earmarked for the Combat Commands. Their training at present is not the same as that in the Reconnaissance Battalion and the Battalion is more fitted to train these companies than the Armored Regiment.

/s/ Michael Popowski, Jr.,
MICHAEL POPOWSKI, JR.,
Major, 81st Armd. Rcn. Bn.,
Executive Officer.

REPRODUCED BY G-3 SECTION HEADQUARTERS 1ST ARMORED DIVISION 30 JUNE 1943.

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COPY NO 4

HEADQUARTERS
16TH ARMORED ENGINEER BATTALION
APO 251, c/o Postmaster, New York, N.Y.

9 June 1943

SUBJECT: Combat Engineer and Battle Lessons for Training Purposes of an Armored Engineer Battalion.

TO : Commanding General, 1st US Armored Division.

1. Doctrine.

It is believed that the present doctrines are a sound basis for training purposes. The lack of opportunity to operate in situations approaching the hypotheses of the doctrines makes any change unnecessary. This will probably be normal.

2. Employment.

(1) a. There was a tendency to disperse engineers by company or platoon to independent tactical commands. The attaching of engineer units to tactical commands, as a routine or SOP is inefficient and ineffective. Reconnaissance and other sources of information available when orders are issued indicate the probable need for engineers which may be none or several companies. The more often the engineer missions can be accomplished under the control of the Division Engineer, the more efficient the operation. Dispersion of engineers that left no reserve under Battalion control was never successful. There are several reasons why this was true.

b. Commanders and Staff of the commands were not familiar with the capabilities and limitations of the engineers. There being insufficient officers in a company to furnish a commander an engineer staff officer or failure to consult the company commander before issuing orders results in poor assignment of missions and coordination with other arms.

c. The distribution of engineer equipment to the companies means that a proportionate share of it goes with the company when detached from battalion. In many instances this resulted in equipment being placed where it was idle and not needed while another company would be short on equipment or have more work than it could accomplish quickly. The same is true of personnel when dispersed, while some are idle others have difficulty in accomplishing their missions.

d. Commanders would use engineers for non-essential missions, apparently because they were present. While engineers were being employed in this way, strictly engineer tasks could not be accomplished in divisional or other areas.

[redacted]

e. A solution is to attach engineers only on recommendation of the Division Engineer whose decision is based on reconnaissance map study, the tactical situation, the mission and location of the command.

f. At the beginning of operations there was a lack of efficient administration and service to small units not separate organizations when attached to Combat Commands. This situation improved after several operations but show that units that may be parent organizations of combat commands must be prepared. S-1, S-4 Sections, Medical and Maintenance Detachments through exercises and maneuvers should absorb attachments for a period sufficient to realize the problems incident to proper functioning of these organizations when they do not receive support from their own units. In this campaign Combat Commands held one organization for months whereas on maneuvers they seldom lasted more than a few days and responsibilities were not evident.

(2) Division Engineer. The Division Engineer, being both Battalion Commander and Staff Officer did not function efficiently as both unless the Engineer Battalion was located adjacent to Division Headquarters. Engineer consultation was essential to planning, but due to haste and negligence, this seldom happened. Particularly his reconnaissance information, recommendations on disposition of Engineers and possible missions, and engineer knowledge were not utilized in planning.

(3) Location.

a. In nearly all situations engineers must be well forward. Engineer reconnaissance must be with the most advanced tactical reconnaissance. This was true whether or not the movement was against a position or administrative.

b. The engineer reconnaissance gathers information on the entire front in priority. (1) Obstacles to movement (2) Water (3) Engineer supplies (4) terrain. The engineer troops must be close behind to take action. Experience showed that up to the position of actual attack various engineer missions such as clearing mines on roads, areas and turnouts, filling craters, constructing culverts, opening water points and reconnaissance for any obstacles have to be accomplished before operations can continue.

c. Engineer Battalion reconnaissance working forward with Division tactical reconnaissance elements was satisfactory except for communications. The engineer reconnaissance platoon attached to the reconnaissance battalion along with the technical reconnaissance sections is a satisfactory arrangement, provided this platoon has communications direct to battalion and the technical sections.

3. Maps.

a. Map procurement and distribution within the Division by the Division Engineer section on recommendation of G-2, was satisfactory. Maps in sufficient quantity were allotted by the Corps Engineer to the Division Engineer. Early experience led to the procedure of Corps furnishing maps to small units entering their zone at the earliest opportunity rather than through the Division to which they were attached. This procedure arose from an incident

of a RCT being attached to this Division while in combat, expecting to draw maps from the Division Engineer who had already distributed the Division allotment. The original distribution to the Division though ample, allowed only a small reserve.

b. The scale of the maps most used in Southern Tunisia was 1/200,000, in Northern Tunisia was 1/100,000. The latter was more satisfactory. However both of these scales were unsatisfactory. I am convinced that the habitial use of the 1/63,360 as a tactical map leads to habits and conceptions that are not realized when the scale of maps is different. The engineers had missions assigned on road work and mine laying that were physically impossible or tactically impractical as they were selected from map study rather than reconnaissance on the ground. Officers continue to think in terms of scales with which they are familiar.

c. Satisfactory maps or map substitutes for artillery fire were not readily available in some sectors. Air photographs could have solved this problem.

4. Mine Warfare and Booby Traps.

a. Friendly - (1) Standardization of mine field marking, records and reports is absolutely essential. This was accomplished between II Corps and its Divisions but not in lower echelons outside of Engineer Troops nor between Allied Nations. Since our minefields were more disasterous to friendly, than enemy troops and vehicles, it is necessary to train all troops to recognize all standard markings in addition to more strict compliance with orders on mine field reports, sketches and records. This training applies to all personnel who are permitted to handle mines. The standardizing should be prescribed and taught before troops arrive in the battle zone. Therefore it is necessary to prescribe the rules by a higher echelon than Corps. (2) The tape method of laying mines was the most successful from every point of view. It requires more training to attain speed by this method. Technique of laying fields was poorly executed on the battlefield particularly at night. This appeared to be the fault of application during training rather than a lack of knowledge. (3) The coordination between arms on selecting sites for mine field and in guarding and protecting them is in the same category i.e., poor execution. Extensive minefields planned to deny tank approaches to the enemy were thought of as a panacea against tanks rather than another auxilary weapon. (4) Selection of site: The selection of the proper site for a mine field is of primary importance as once laid it fixes all supporting weapons. Ground reconnaissance by representatives of each arm involved (engineers, infantry, tank destroyers and artillery) is the only solution. This reconnaissance is too important to delegate to low ranking subordinates as the mine field, once installed, determines future movements to a large degree. The most successful method was for the local commander to decide the general boundaries on the recommendation of his artillery, tank destroyers and infantry commanders and place the technique in the hands of the engineers assisted by infantry if necessary. (5) Guarding: Even though properly marked, minefields need constant attendance of guards to pass traffic through gaps and keep stock from entering the field. Many fields were located by observing dead stock in the field. The guards must be trained to handle mines in order to mine the gaps in an emergency. Removal of minefields is difficult if they have been tampered with in any way. (6) Protection: Only two methods were used by the Germans to breech a minefield, manual removal or rushing with a series of tanks. Infantry

protection is necessary to combat the former. In the daylight the field can be kept under observation and the entire length of the field under machine gun fire and observed artillery fire. At night it is necessary to have listening posts in or in front of the field equipped with illuminating flares. Machine guns shift to alternate positions at night to cover the field with fixed bands of fire. To combat breaching by tanks anti-tank fire must be available to prevent recovery of disabled tanks. All fire must be held until absolutely needed in order not to disclose positions. No mine field was successful without protection. The coordination of all arms for this mission requires considerable training of combined arms.

b. Enemy - (1) The most effective enemy mining was the sparodic mining of long stretches of roads, road shoulders, craters and areas upon withdrawal. This type of mining caused most effective delays and lowering of morale. The ideal locations for delay were the mining of natural or unique by-passes of craters or demolitions. Heavily mined soft sandy fords strewn with metal fragments to render detectors useless were also effective delays. In general the enemy mine technique was superior as was the mine equipment. The many ingenious devices available and the originality of their employment have been reported in intelligence bulletins. Toward the end of the campaign cheaper equipment and improvised charges were found. (2) The instructions and training principles to combat mines are sound. Most accidents can be traced to their violations such as unnecessary movement in suspicious areas, congregating during removal work, improper detector swinging and an orderly procedure on a clearing project. Drills now taught at mine schools must be followed in every detail as a drill.

c. No devices except concrete rollers attached to tanks were actually used by this battalion to remove the mines. The roller did not encounter any mines on the one trial but did speed up movement as hand detecting was not necessary. The battalion carried 600' of snake, several primacord nets and carrots. None were employed in combat.

d. (1) All personnel need more training in various phases of mine problems. Commanders and staffs must know the capabilities and limitations of both friendly and enemy mines and minefields, their laying and removal, and protection. (2) All elements down to companies should have one officer designated as mine and booby trap officer capable of instructing his element in mine warfare. This officer should be responsible for solving mine problems that do not justify awaiting engineers. Instances of spreading engineers all over a command to investigate a suspicion is not justified. Training should teach caution but not fear. (3) The use of sandbags in vehicles in mined areas has proved invaluable. (4) All combat personnel should be instructed in probing for mines.

5. Craters.

Enemy cratering was very effective. Locations were carefully selected so that no by-pass was readily available or it was mined. Locations where working space was restricted and no fill available such as a built up road through a swamp were favorite sites. Craters were frequently mined to slow up work and prevent use of dozers. When craters are expected material should be carried well forward by the engineers to speed up work. Sandbags for fill, loaded dump trucks, expanded metal mats, track, bulldozers and treadway bridge were useful.

6. Night Operations.

Engineer units did more work at night than in daylight for reasons of security and secrecy. Night training is most essential for every type of engineer mission. Many weaknesses in night work become evident because training had not imposed strict battle conditions and work from beginning to completion under the cover of darkness. As an example, in laying a mine field, the problems from reconnaissance to the last detail of data for the sketch should be done under the cover of darkness.

7. Bridging.

a. The bridge company was attached to Division trains or with the Division Reserve depending on expected use. Half the treadway bridge (540') floating or trestle, and 120' of Bailey Bridge was carried on the Autocar semi trailers. The unique employment of the modified treadway, floating bridge at the Oran landing justified its existence as equipment of the Armored Engineer Battalion. The bridge carried by this battalion was the only bridge in the Corps. Its availability attributed immeasureably to the success of the final operation where all of the Bailey and 230' of the treadway were installed. Some remarks on this operation follow:

(1) The combination loads of Bailey and treadway add greatly to the flexibility of bridging possibilities. This combination is recommended.
(2) Alternate crossings should be constructed simultaneously.
(3) Two way, all load culvert type crossings are the best type. They should be constructed where possible as soon as possible to supplement the bridges.
(4) Air attack and artillery fire are relatively ineffective for bridge destruction.
(5) Use of existing roads and bridge sites is most efficient.
(6) Night construction is necessary in forward areas.
(7) Infantry bridge heads are essential.
(8) AA protection is necessary to keep the flow of traffic at bridge.
(9) Armored engineers need more training in trestle treadway bridge construction.
(10) All engineers need more training on Bailey Bridge construction.

8. Defense Against Air Attack.

More air cooled Cal. .50 machine guns on suitable AA mounts are needed throughout the battalion. One for each half track and 50% of the 2½ ton cargo trucks. 40MM BOFORS AA were the most effective protection against low flying planes trying to bomb engineer works.

9. Communications.

The battalion operated with substitute radios for the SCR 508 and 528. The authorized communications are inadequate due to the work dispersion of engineers. Additional and longer range sets are needed in the lower echelons, particularly reconnaissance elements. The platoons which are frequently

attached to independent commands need an SCR 528 and the Companies an SCR 508. This critical shortage was evident to all higher headquarters.

10. Maintenance.

Parts for special engineer equipment were unobtainable in forward areas.

The electric welder was the most useful piece of equipment in the maintenance section.

Some difficulty was experienced in obtaining higher echelon maintenance by detached companies when the detachment could not be supported by battalion maintenance.

Corps Heavy Engineer Maintenance support is necessary to keep engineer equipment in serviceable condition.

11. Reconnaissance.

The reconnaissance sections of Headquarters Company were most successfully employed when under battalion control. When attached to other units there was a tendency to use the section as a work squad. Training of these officers to reconnoiter independently and aggressively in order to seek engineer information without specific instructions is necessary.

12. Camouflage.

Camouflage discipline was poor. The only criticism of training is that the instructions becomes involved in detail and niceties that are not practiced in the field when much improved is required. A few simple expedients well executed was of greater value than many half measures. Care and use of nets should be pounded until it is a habit. It is believed that the use of nets in open fields is of particular value to armored units in that they conceal the identity of types of vehicles. Nets deteriorated rapidly without proper care. Nets carried on closed vehicles were fire hazards and have to be dropped when the vehicle is exposed to fire. The supply of garnished nets was inadequate on the front. A replacement of 20% a month is necessary for units in combat.

14. Replacements.

Expecting transfer from a like organization nearly all specialist replacements were unqualified privates regardless of classification. This was undesirable as many replacements arrived when the battalion was in combat.

15. Road Construction.

About 30% of the division engineer tasks was road work. Heavy road building, repair and maintenance equipment is essential.

16. Recommended Changes in Equipment.

1. Replace cable operated R-4 bulldozers with D-4 hydraulic controls.
2. Add one D-7 bulldozer.
3. Add one road patrol.
4. Add one pull grader.

5. Drop 26 - 2½ ton platoon cargo trucks and replace with 13 half track carriers and 13 - 2½ ton dump trucks.
6. Reduce carpenter equipment in platoons.
7. Drop Barco hammers, gasoline saws, mauls, pole climbers and belts.
8. Replace 37MM SP's with 3/4 ton trucks.
9. Add 13 SCR 528 and 5 - SCR 508.
10. Add water trailers to kitchens.
11. Add one mobile water unit.
12. Provide luminous dial compasses.
13. Provide probing rods.
14. Provide mine detectors at rate of 1 per squad with 100% replacement in this battalion.
15. Provide colored marking lights.
16. Improved sign painting kits for all squads.
17. Provide ready made material for mine field marking, booby trap markers.
18. The half-track is not a suitable vehicle for the present size engineer squad and load carried.
19. Replace half of treadway with Bailey Bridge.

17. Recommendations for Changes in T/O.

1. The bridge company is understrength. Drivers and assistant drivers should be provided not counting specialists.
2. Transportation for shower units should be provided in Headquarters Company.
3. A heavy equipment section added to Headquarters Company Engineer Section for road equipment.
4. Drop 2 men per squad.
5. Drop second 1/4 ton in each reconnaissance section.
6. Add Communications Officer.
7. Drop S-3 Air.
8. Add one officer, division drafting, reproduction and maps.
9. Add Assistant Maintenance Officer.

/s/ John L. Inskeep,
JOHN L. INSKEEP,
Lt. Col., 16th Armd. Engr. Bn.,
Commanding.

REPRODUCED BY G-3 SECTION, HEADQUARTERS 1ST ARMORED DIVISION 30 JUNE 1943.

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HEADQUARTERS
27TH ARMORED FIELD ARTILLERY BATTALION
APO #251, U. S. Army

COPY NO. 4

/whm
16th June 1943

SUBJECT: Report On Combat Experiences and Battle Lessons for Training Purposes.

TO : Commanding General, 1st U. S. Armored Division, APO #251, U. S. Army.

In compliance with letter, Allied Force Headquarters, dated 14th May 1943, subject same as above, the following recommendations are submitted:

ORGANIZATION:

1. That at least two more radio technicians be added to each Headquarters Battery of a Field Artillery Battalion.

2. That each Field Artillery Battalion have three Liaison Officers instead of two as the present Table of Organization provides. Two Liaison Officers with supported units and one to higher command are needed so that Forward Observers may be relieved of liaison duties and better adjust the fire of the Battalion.

3. That each Headquarters Battery Wire Section be increased from two men to five men as present Table of Organization provides. This wire section has as a means of laying wire 1 - 3/4 ton truck with power reel.

4. That at least three men instead of two be provided for Battalion Message Center as provided by present Table of Organization.

NOTE: Additional men mentioned in 3 and 4 above can be procured from S-3 and Survey Sections without increasing total strength of Headquarters Battery.

EQUIPMENT:

1. That the S-3 and Assistant S-3 vehicles be M-3 Half-tracks with light proof metal tops so that the Fire Direction Center can run continuously, night or day, moving or stationary. These vehicles would then house the communication center and also the actual drafting boards.

2. That a forty second fuse be provided for the 105mm time shell. This fuse would provide for time fire to be employed at maximum ranges. At present the maximum range of time shell is 8400 yards.

SECRET

3. That Aiming Circles be provided with a light reflector which could be seen by all sections simultaneously. At present only one gun can be laid at a time when laying the battery at night. With the reflectors, guns can be laid with same speed as during day occupation of position.

4. Additional recommendations for changes in Table of Basic Allowances are attached as Appendix I.

TACTICS:

1. That the Fire Direction Center of an Armored Field Artillery Battalion be normally placed near the firing batteries.

   (a) That the Fire Direction Center consist of the S-3, Assistant S-3, Executive or Commanding Officers and Communications Officer Half-tracks only.

   (b) That the remainder of Headquarters Battery be from two to four miles in rear of the Fire Direction Center.

2. That the Battalion Aid Station be within 500 yards of the Fire Direction Center at all times.

3. That Field Artillery Batteries be habitually employed as a Battalion and not as separate batteries. Massed fire has been proven on the battlefield.

4. That the three Field Artillery Battalions of a Division be in mutual support.

5. That more thorough and continued reconnaissance be made by battery personnel for:

   (a) Alternate gun positions.
   (b) At least two avenues of displacement. (Forward and Rear).
   (c) Position of each gun in case of enemy tank attack.
   (d) Rallying areas for personnel and equipment in event gun sections are employed individually in either an attack or defensive situation.

   NOTE: It has been found that in many instances in case of direct assault by tanks on an Artillery position the better direction to move is forward and not to rear.

6. That each battery set up security observation posts near battery position to be used as firing observation posts if necessary.

7. That firing data be computed immediately upon occupation of position to all avenues of approach to the position.

8. That the battery front in all cases approach 250 yards. (Width of open sheaf).

9. That suitable separate anti-aircraft support be attached to a Field Artillery Battalion.

10. That the Artillery of an Armored Division is essentially support Artillery and therefore should be used as direct fire weapons only on enemy attack of battery position.

Support for tank or infantry attacks can only be adequately produced through massed fire which in turn can only be delivered from organized Battalion positions.

TRAINING:

1. That constant training by communication exercises of fire control nets be employed in Field Artillery Battalions. These exercises should have as an aim the rapid delivery of fire with a minimum of radio or wire transmission.

2. That more service ammunition be provided for training purposes before troops enter the combat zone.

3. That every effort should be made for all crews of gun sections to be trained in all jobs in the section from Chief of Section to the Ammunition handler.

4. That concentrated training in night driving, night occupation of position, night firing, and sustained operations be conducted throughout training period.

5. That many two and three day field exercises be incorporated in each week's training program.

6. That Field Artillery Battalions be trained more in infantry tactics as to proper placing and employment of weapons for position defense.

(a) Night maneuvers pitting infantry against artillery would test training both for the artillery on defense and the infantry on attack by infiltration methods.

7. That more anti-aircraft firing be incorporated on all training programs.

8. That more aircraft identification be incorporated in training programs. This is best accomplished by actual work with the planes at various altitudes and in various positions.

(a) That relative elevations and effective ranges of weapons against aircraft be included in training programs.

9. That Field Artillery be brought under safe (200 yards) counter-battery fire so that slit trenches would be dug and used.

10. That tanks be employed against a Field Artillery Battalion position so that gun crews will get experience in observing approaching tanks and tactics employed. Gun crews will then appreciate the fact that their position might be over run.

11. That more C. W. operators be trained within a Field Artillery Battalion. When radios operate twenty-four hours a day for periods as long as two or three months, the one operator as set up by the Table of Organization cannot adequately produce.

12. That training in reconnaissance, selection and occupation of positions be used that terrain features are used rather than any geometrical pattern.

13. That as many of all ranks of the personnel of an Armored Division as possible be taught to and fully appreciate the capabilities and limitations of Field Artillery. Further that all personnel of the Field Artillery be taught to and fully appreciate the capabilities and limitations of the weapons of the supported arms which instills the highest degree of confidence between the arms and fosters a more efficient and confident task force on an operation.

14. That all personnel be trained in terrain appreciation, map study (to include aerial photos), possible enemy positions, and range estimations.

15. That closer liaison between ground troops and the Air Corps be established during field exercises.

16. That aircraft should simulate attacks on ground troops to the extent of dropping bombs at a safe distance.

/s/ CARL N. DEVANEY,
CARL N. DEVANEY,
Major, 27th Armored F.A. Bn.,
Commanding.

REPRODUCED BY G-3 SECTION, HEADQUARTERS 1ST ARMORED DIVISION 30 JUNE, 1943.

APPENDIX I

ENGINEERING EQUIPMENT:

1. Drafting Equipment, Battalion item 6, page 11, be listed as "Not to be taken into Combat", but should be retained for garrison duty.

2. Authorization for camouflage nets, page 12, be increased to include one per vehicle and trailer and that sizes be increased. Suggested changes in sizes. 1 Ton Trailers and Trucks 1/4 Ton — 12' x 12'; half-tracks — 30' x 30', trucks 2-1/2 ton 6x6 — 45' x 45'.

3. A mine detector should be added to the Headquarters Battery of each unit to be used for the mutual benefit of the Battalion to determine the safety of prospective battery positions when an engineer platoon is not available.

ORDNANCE:

1. Motor Vehicles:

(a) Trailer, 1 Ton, 2 wheel cargo, item No. 20, page 50, be increased to 5 to allow a trailer for Service Battery since their kitchen facilities are no more adequate than those of other organizations and their mess requirements are larger tha those of the firing batteries.

(b) Truck 1/4, 4x4, item 11, page 51, be increased to give 4 vehicles to each firing battery and 6 to Service Battery. Experience has shown a definite need for these vehicles. In firing batteries they are to be used by:

(1) Battery Agent.
(2) Reconnaissance Officer.
(3) Wire detail.
(4) Battery Maintenance.

To deprive the Battery Maintenance Section of this vehicle would be most disadvantageous for not only is it used to do quick, small repair jobs and to contact Battalion Maintenance Section, but it is often the only means of transportation available to the Battery Commander as the other vehicles are not usually present at the battery position with the exception of the wire truck which must be ready to handle wire extensions or pick ups at all times. The vehicles in Service Battery are requested for the Battery Maintenance and for the Ammunition Officer. It is also requested that Headquarters Battery be allowed 4 trucks 1/4 ton 4x4 and that trucks 1/4-ton 4x4 amphibian, item 12, page 31, be deleted.

(c) Addition of trucks 3/4 ton, 4x4 to be issued one to Headquarters Battery and one to Service Battery, latter vehicle to replace an M-2 Half-track in Battalion Maintenance Section as will be explained in paragraph 4. Vehicle in Headquarters Battery to be used as a wire truck to carry RL 26A.

(d) All M-2 half-tracks be eliminated except 4 which are to remain in Headquarters Battery and that M-3 half-tracks be substituted. An additional half-track should be given to Headquarters Battery for Battery Maintenance Section which is absolutely essential for proper maintenance and to carry prescribed personnel; and one to each firing battery for an assistant executive car which is needed to furnish an alternate car for communications and for carrying personnel. One half-track, now shown as M-2, should be dropped from Battalion Maintenance if the 3/4 ton 4x4 is obtained. The half-track provided for air corps use should be deleted and a truck 2-1/2 ton 6x6 substituted leaving the total number of trucks in Headquarters Battery as now shown.

(e) The ammunition section of Service Battery should be changed to provide 8 trucks 2-1/2 ton 6x6 and 5 half-tracks M-3, in place of 1 half-track M-2, and 12 half-tracks M-3. This will allow for increase in road speed in the handling of ammunition and permit an interchangeability of trucks. The 4 half-tracks M-3, are to be retained for emergency purposes.

(f) One ambulance 3/4 ton 4x4 to be substituted for one half-track M-3 ambulance. This would give one half-track ambulance for battlefield casualties and the ambulance 3/4 ton could be used to take casualties from the Battalion Aid Station to the Medical Battalion.

(g) Transportation is required for attached Chaplain. Suggest that truck 3/4 ton 4x4 be provided which will give him space necessary to carry his equipment. No transportation is now allotted to him.

(h) Experience has shown that it is essential for an Artillery Unit to have some means of water conveyance beside 5 gallon cans. Each battery should be equipped with a trailer, 1 ton 2 wheel water tank, 250 gallon for this purpose.

2. Weapons:

(a) Recent battle experience has shown that the 37/mm S.P. should be replaced by the gun 3" towed. The truck 3/4 ton 4x4 should be retained as the prime mover for the towed gun and should carry a removable pedestal mount with twin Cal. 50 machine guns.

(b) Projector signal ground item 7, page 38, should be reduced from 21 to 6. Basis of issue to be one to each firing battery and three to Headquarters Battery.

(c) No use has been found for the Rifle Grenade so it is recommended that the launcher be deleted from the TBA.

(d) Suggest the Rifle M1903 be retained as a substitute for the gun sub-machine using allowance as authorized in TBA 17 dated January 26, 1942. In an Armored Field Artillery the individual arm must be sturdy to stand the abuse they receive in the Armored Vehicles, and also be of a simple and easily maintained construction. The rifle M1903 seeming to be best suited to these requirements. Guns sub-machine to be provided for the drivers of each vehicle only.

(e) The mount tripod caliber 50 M3 should be modified or replaced by a tripod which could be used for anti-aircraft defense, a dual purpose ground and air mount if possible.

(f) If recommendations Ordnance (d) were given, 50 percent of the machine guns were air cooled caliber 30 should be replaced by machine guns caliber 50 to provide a more balanced fire power. This type fire power is essential when we do not have attached anti-aircraft with us.

3. Fire Control Equipment:

(a) It is essential that the observers in a Field Artillery Unit be equipped with an observation instrument more powerful than Binoculars and would suggest 3 telescope observation M4 complete with tripod and case be provided in Headquarters Battery for the use of the Forward Observer.

(b) Finder range 1-meter base item No. 5, page 17, be reduced from 4 to 1, keeping the 1 in Headquarters Battery with the Fire Direction Center.

(c) Every vehicle should be equipped with a small stove, gasoline, ski-troop. This is necessary for heating food and water when kitchen facilities are not available.

QUARTERMASTER:

1. Drum, inflammable liquid (gasoline), steel with carrying handle, capacity 5 gallon should be issued in sufficient number so as to provide Service Battery with an additional 500 drums for the gasoline trucks. The 6x6 can carry 200 cans per vehicle and when the drums carried on the individual vehicle are deducted from the tota now authorized the Battalion, this does not leave enough drums for 200 per 6x6 of the gas section: allowance is not sufficient.

2. Field experience indicates that it is necessary to double the allowance for water cans providing trailers, water are not provided. (See above Ordnance A-h).

[redacted]

3. Pickmattock and shovels intrenching should be deleted and replaced by shovels, D-handled round point and pickmattocks 5 pounds. Basis of issue same as pickmattock and shovel intrenching under TBA 17 plus additional set per half-track, truck 2-1/2 ton and 105/mm on motor carriage M7. These are required for hasty digging in of personnel and vehicle.

4. Two tents, wall large are required by the Personnel Section in Battalion Headquarters to provide necessary tentage for the Battalion Clerks and the records and equipment of the section. It is suggested that the tent Command Post now authorized be retained in Headquarters Battery for Battery Headquarters and Message Center.

5. One tent small wall be provided each battery to be used by Battery Supply. Additional 2 tents, small wall be given Headquarters Battery for Officers of Field Grade.

6. Three cots, canvas, folding be given Headquarters Battery to be used by unit commander Officer of Field Grade.

7. One tent, large wall is required by Service Battery to be used by in the Battalion Supply Section for storage and administration.

8. Experience has shown that typewriters standard should be issued on the allowances provided in TBA 17, dated January 26, 1943.

SIGNAL RADIO EQUIPMENT:

1. Total number of SCR 193 radios be increased from ten (10) to fourteen (14). One set for each of the Artillery Forward Observers and one SCR 193 for the Ammunition Officer in Service Battery who in many cases is the Combat Trains Commander.

2. Increase the number of SCR 508 to five (5) instead of three (3). The recommended allocation is for each firing battery (executive to have a SCR 508 and the S-3 and Assistant S-3 each have a SCR 528). This would enable the Fire Direction Center to be interchangeable and operate two fire direction nets simultaneously.

3. Decrease the total number of SCR 528's from nineteen (19) to seventeen (17) to compensate for the increase in the SCR 508's.

4. One remote control unit (SCR 193) for the Fire Direction Center and one for the Battalion Commander.

5. For the SCR 528's, a remote control unit for each Firing Battery Executive, for each Forward Observer, and two for the Fire Direction Center which makes a total of eight.

6. Two code oscillators for the Battalion, for the purpose of training new operators and code practice in the field.

7. Recommend that the telegraph set, TG-5 be deleted in that its use is not needed for an Armored Artillery unit.

8. In addition to the wire W110 that is authorized suggest that 25 miles of light expendable wire W130 be issued, 5 miles to each firing battery and 10 miles to Headquarters Battery.

9. Providing truck 3/4 ton is given to Headquarters Battery for wire; suggest that Reel Unit RL 26A be issued.

REPRODUCED BY G-3 SECTION, HEADQUARTERS 1ST ARMORED DIVISION, 30 JUNE, 1943.

Training

HEADQUARTERS
16TH ARMORED ENGINEER BATTALION
APO 251, c/o Postmaster, New York, N.Y.

15 March 1943

MEMORANDUM :

TO : G-3, 1st Armored Division.

It is believed that the Engineer Battalion of this Division can be more efficiently utilized if a larger portion of the battalion was held in reserve under Division control - thru the Division Engineer.

The procedure of having engineers attached to CC's while working on Corps and Division assignments has been unsatisfactory.

1. Both the CC and Bn Hq become confused as to proper responsibility and administration. Specific problems such as maintenance, availability for training and instruction, and dissemination of orders and information become more complicated during training and rehabilitation periods than during operations.

a. The maintenance of attached units is not properly handled during these periods as the parent units of CC's have a full work schedule for their own units.

b. Engineers having work assignments from higher Hq cannot engage in combined exercises with CC's, or conduct instruction in the CC's, or receive tactical training unless coordinated by Bn Hq where types of assignments can be equalized among the companies. Duplication and inefficiency has resulted from the divided responsibility.

c. Transmission of instructions and orders has taken or been retarded due to lack of communications and fixed responsibility.

2. The geographical detachment from the responsible Hq or work project adds to inefficiency.

3. The lack of an Engineer reserve obviates concentrating a large force on any major project.

4. Engineer squads with Division Reconnaissance, the Engineers with an active CC, or the technical reconnaissance sections may report the need for engineering work beyond the capabilities of the engineers on hand. It is the duty of the engineer squads with Div Recn not to get involved in work that will be beyond getting the recn. forward. Similarly the tech. recn. sections seek the work but can not perform any major projects.

5. There is a tendency by CC's to employ Engineers on non-engineer tasks just because they are present while in another sector engineer tasks are behind in progress or untouched.

6. Two of the outstanding engineer missions; road work and mine removal, are continuous and widely separated within the Division or even Corps Sector and not coincidental with CC sectors or missions.

4. Eight Army information substantiates that the best solution to the employment of Armored Engineers was to make small initial attachments and then dispatch the Reserve Engineers when and where and in the quantity needed under Div control.

DEMOLITION OF ENEMY VEHICLES

It is recommended that par. 30, TACTICAL and TRAINING NOTES, March, 1943, be vigorously enforced. Demolition parties should be set-up formally in orders and assigned this specific mission and not let it fade to haphazard initiative of spare personnel. It is a well known fact that superior enemy recovery nullifies many of our counts on losses inflicted.

MINE FIELDS

Ref. par. 46 TACTICAL and TRAINING NOTES, March, 1943. It has been the order in this Division that, except for mines placed for local defense which are removed by those placing them, mine fields will be laid only on orders from higher headquarters (which was not defined) and then under the supervision of an engineer officer. It is recommended that this policy be re-emphasized and clarified.

PARKS

The attached "parks system" is in effect in this battalion for first echelon parks during operations. The system has proved practical and simple enough to enforce daily in most any situation. It has met with enthusiasm with maintenance personnel as it covers the necessary maintenance and is not too elaborate to be executed.

JOHN L. INSKEEP,
Lt. Colonel, 16th Armored Engineer Battalion,
Commanding.

Training (Incl TBA changes)

HEADQUARTERS
[illegible] ARMORED ENGINEER BATTALION
APO 251, c/o Postmaster, New York, N.Y.

20 June 1943

SUBJECT : Conduct Engineer and Mobile Reserves for Training Purposes of an Armored Engineer Battalion.

TO : Commanding General, 1st [illegible] Armored Division.

1. Decision.

It is believed that the present doctrines are a sound basis for training purposes. The lack of opportunity to operate in situations approaching the hypothesis of the doctrines makes any change unnecessary. This will probably be normal.

2. Background.

(1) a. There was a tendency to disperse engineers by company or platoon to independent tactical commands. The attaching of engineer units to tactical commands, as a routine or SOP is inefficient and ineffective. Reconnaissance and other sources of information available when orders are issued indicate the probable need for engineers which may be more or several companies. The more often the engineer missions can be accomplished under the control of the Division Engineer, the more efficient the operation. Dispersion of engineers that left no reserve under Battalion control was never successful. There are several reasons why this was true.

b. Commanders and Staff of the commands were not familiar with the capabilities and limitations of the engineers. There being insufficient officers in a company to furnish a commander an engineer staff officer or failure to consult the company commander before issuing orders results in poor assignment of missions and coordination with other arms.

c. The distribution of engineer equipment to the companies means that a proportionate share of it goes with the company when detached from battalion. In many instances this resulted in equipment being placed where it was idle and not needed while another company would be short on equipment or have more work than it could accomplish quickly. The same is true of personnel when discussed, while some are idle others have difficulty in accomplishing their mission.

d. Commanders would use engineers for non-essential missions, apparently because they were present. While engineers were being employed in this way, strictly engineer tasks could not be accomplished in divisional or other areas.

e. A solution is to attach engineers only on recommendation of the Division Engineer whose decision is based on reconnaissance and study, the tactical situation, the mission and location of the command.

f. In the beginning of operations there was a lack of efficient administration and service to small units not operating organizations when attached to Combat Commands. This situation improved after several operations but there that units that may be present organizations of combat commands must be prepared. Daily S-4 Sections, Medical and Maintenance Detachments through overlays and movement

should absorb attachments for a period sufficient to realize the problems incident to proper functioning of these organizations when they do not receive support from their own unit. In this campaign Combat Commands held one organization for months whereas on maneuvers they seldom lasted more than a few days and responsibilities were not evident.

(2) Division Engineer. The Division Engineer, being both Battalion Commander and Staff Officer did not function effectively as both unless the Engineer Battalion was located adjacent to Division Headquarters. Engineer consultation was essential to planning, but due to haste and negligence, this seldom happened. Particulary his reconnaissance information, recommendations on disposition of Engineers and possible missions, and engineer knowledge were not utilized in planning.

(3) Location.

a. In nearly all situations engineers must be well forward. Engineer reconnaissance must be with the most advanced tactical reconnaissance. This was true whether or not the movement was against a position or administrative.

b. The engineer reconnaissance gathers information on the enemy first in priority. (1) Obstacles to movement (2) Water (3) Engineer supplies (4) terrain. The engineer troops must be close behind to take action. Experience showed that up to the position of actual attack various engineer missions such as clearing mines on roads, erect and transmit, filling craters, constructing culverts, opening water points and reconnaissance for any obstacles have to be accomplished before operations can continue.

c. Engineer Battalion reconnaissance working forward with Division tactical reconnaissance elements was satisfactory except for communications. The engineer reconnaissance platoon attached to the reconnaissance battalion along with the technical reconnaissance sections in a satisfactory arrangement, provided this platoon had communications direct to battalion and the technical sections.

d. Maps.

a. The procurement and distribution within the Division by the Division Engineer section on reconnaissance of the G-2, was satisfactory. Maps in sufficient quantity were allotted by the Corps Engineer to the Division Engineer. Early experience led to the procedure of Corps furnishing maps to small units entering their zone at the earliest opportunity rather than through the Division to which they were attached. This procedure arose from an incident of a RCT being attached to this Division while in contact, expecting to draw maps from the Division Engineer who had already distributed the Division allotment. The original distribution to the Division though ample, allowed only a small reserve.

b. The scale of the maps most used in Southern Tunisia was 1/200,000, in Northern Tunisia was, 1/100,000. The latter was more satisfactory. However both of these scales were unsatisfactory. I am convinced that the habitual use of the 1/50,000 as a tactical map leads to habits and conceptions that are not realized when the scale of maps is different. The engineers had missions assigned on road work and mine laying that were physically impossible or tactically inexpedient as they were selected from

from map study rather than reconnaissance on the ground. Officers continue to think in terms of scales with which they are familiar.

g. Satisfactory maps or map substitutes for artillery fire were not readily available in some sectors. Air photographs could have solved this problem.

4. Mine Warfare and Booby Traps

a. Friendly - (1) Standardization of mine field marking, records and reports is absolutely essential. This was accomplished between XI Corps and its Divisions but not in lower echelons outside of Engineer troops nor between Allied Nations. Since our minefields were more disastrous to friendly, than enemy troops and vehicles, it is necessary to train all troops to recognize all standard markings in addition to more strict compliance with orders on mine field reports, sketches and records. This training applies to all personnel who are permitted to handle mines. The standardized should be prescribed and taught before troops arrive in the battle zone. Therefore it is necessary to prescribe the rules in a higher echelon than Corps. (2) The tape method of laying mines was the most successful from every point of view. It requires more training to attain speed by this method. Destruction of laying fields was poorly executed on the battlefield particularly at night. This appeared to be the fault of application during training rather than a lack of knowledge. (3) The coordination between arms on selecting sites for mine field and in guarding and protecting them is in the same category i.e., poor execution. Extensive minefields placed to deny tank approaches to the enemy were thought of as a measure against tanks rather than another auxiliary weapon. (4) Selection of sites: The selection of the proper site for a mine field is of primary importance as once laid it fixes all supporting weapons. Ground reconnaissance by representatives of each arm involved (engineers, infantry, tank destroyers and artillery) is the only solution. This reconnaissance is too important to delegate to low ranking subordinates as the mine field, once installed, determines future movements to a large degree. The most successful method was for the local commander to decide the general boundaries on the reconnaissance of his artillery, tank destroyers and infantry commanders and place technique in the hands of the engineers assisted by infantry if necessary. (5) Guarding: Even though properly marked, minefields need constant attendance of guards to pass traffic through gaps and keep stock from entering the field. Many fields were located by observing dead stock in the field. The guards must be trained to handle mines in order to mine the gaps in an emergency. Removal of minefields is difficult if they have been tampered with in any way. (6) Protection: Only two methods were used by the Germans to breach a minefield, manual removal or rushing with a series of tanks. Infantry protection is necessary to contest the former. In the daylight the field can be kept under observation and the entire length of the field under machine gun fire and observed artillery fire. At night it is necessary to have listening posts in or infront of the field equipped with illuminating flares. Machine guns shift to alternate positions at night to cover the field with fixed bands of fire. To combat breaching by tanks anti-tank fire must be available to prevent recovery of disabled tanks. All fire must be held until absolutely needed in order not to disclose positions. No mine field was successful without protection. The coordination of all of this element requires considerable training of combined arms.

b. Enemy - (1) The most effective enemy mining was the sporadic mining of long stretches of roads, road shoulders, culverts and other open minefields. This type of mining caused most effective delays and lowering of morale. The ideal locations for delay were the mining of natural or unique bypasses of craters or demolitions. Heavily mined soft spots strewn with metal fragments to render detectors useless were also effective delays. In general the enemy mine technique was superior as was his mine equipment. The many ingenious devices available and the originality of their

employment have been reported in intelligence bulletins. Among the end of the campaign cheaper equipment and improvised charges were found. (2) The instructions and training principles to combat mines are sound. Most accidents can be traced to their violations such as unnecessary movement in suspicious areas, congregating during removal work, improper detector swinging and an orderly procedure on a clearing project. Drills now taught at mine schools must be followed in every detail as a drill.

g. No devices except concrete rollers attached to tanks were actually used by this battalion to remove the mines. The roller did not encounter any mines on the one trial but did speed up movement as hand detecting was not necessary. The battalion carried 600# of amatol, several primacord sets and detcrete. None were employed in combat.

h. (1) All personnel need more training in various phases of mine problems. Commanders and staffs must know the capabilities and limitations of both friendly and enemy mines and minefields, their laying and removal, and protections. (2) All elements down to companies should have one officer designated as mine and booby trap officer capable of instructing his element in mine warfare. This officer should be responsible for solving mine problems that do not justify sending engineers. Instances of sending engineers all over a command to investigate a suspicion is not justified. Training should teach caution but not fear. (3) The use of amphibians in vehicles in mined areas has proved invaluable. (4) All combat personnel should be instructed in probing for mines.

5. Craters.

Enemy cratering was very effective. Locations were carefully selected so that no by-pass was readily available or it was mined. Locations where working space was restricted and no fill available such as a built up road through a swamp were favorite sites. Craters were frequently mined to slow up work and prevent use of dozers. When craters are expected material should be carried well forward by the engineers to speed up work. Sandbags for fill, loaded dump trucks, expanded metal mats, trash, bulldozers and treadway bridge were useful.

6. Night Operations.

Engineer units did more work at night than in daylight for reasons of security and accuracy. Night training is most essential for every type of engineer mission. Any weakness in night work became evident because training had not imposed strict battle conditions and work from beginning to completion under the cover of darkness. As an example, in laying a mine field, the problem from reconnaissance to the last detail of data for the sketch should be done under the cover of darkness.

7. Bridging.

a. The bridge company was attached to Division trains or with the Division Reserve depending on expected use. Half the treadway bridge (510') floating or trestle, and 120' of Bailey Bridge was carried on the ponton semi trailers. The unique equipment of the medical treadway, floating bridge at the Orma landing justified the existence as equipment of the Armored Engineer Battalion. The bridge carried by this battalion was the only bridge in the Corps. Its availability attributed immeasurably to the success of the final operation where all of the Bailey and 230' of the treadway were installed. Some remarks on this operation follow:

(1) The combination loads of Bailey and treadway add greatly to the flexibility of bridging possibilities. This combination is recommended.
(2) Alternate crossings should be constructed simultaneously.
(3) Two way, all load culvert type crossings are the best type. They should be constructed where possible as soon as possible to supplement the bridges.
(4) Air attack and artillery fire are relatively ineffective for bridge destruction.
(5) Use of existing roads and bridge sites is most advisable.
(6) Night construction is necessary in forward areas.
(7) Infantry bridge loads are essential.
(8) AA protection is necessary to keep the flow of traffic at bridge.
(9) Assigned engineers need more training in tactic treadway bridge construction.
(10) All engineers need training on Bailey bridge construction.

8. Defense Against Air Attack.

Here air carried .50 caliber guns on suitable AA mounts are needed throughout the battalion. One for each half truck and 50% of the 2½ ton cargo trucks. AGAIN BOFORS AA were the most effective protection against low flying planes trying to bomb engineer units.

9. Communications.

The battalion operated with satisfactory radios for the SCR 536 and 300. The authorized communications are inadequate due to the vast dispersion of engineer units. Additional and longer range sets are needed in the lower echelons, particularly reconnaissance elements. The platoons which are frequently attached to independent companies need an SCR 536 and the companies an SCR 300. This critical shortage was evident to all higher headquarters.

10. Maintenance.

Parts for special engineer equipment were unobtainable in forward areas. The electric welder was the most useful piece of equipment in the maintenance section.
Some difficulty was experienced in obtaining higher echelon maintenance by detached companies when the detachment could not be supported by battalion maintenance.
Corps Heavy Engineer Maintenance support is necessary to keep engineer equipment in serviceable condition.

11. Reconnaissance.

The reconnaissance sections of Headquarters Company were most successfully employed when under battalion control. When attached to other units there was a tendency to use the section as a work squad. Training of these officers to reconnoiter independently and aggressively in order to seek engineer information without specific instructions is necessary.

12. Camouflage.

Camouflage discipline was poor. The only criticism of training in that the instructions become involved in details and minutiae that are not practical in the field when much improvement is required. A few simple expedients will ov-

[illegible] of greater value than many half measures. Care and use of nets should be pressed until it is a habit. It is believed that the use of nets in open fields is of particular value to armored units in that they conceal the identity of types of vehicles. Nets deteriorated rapidly without proper care. Nets carried on closed vehicles were fire hazards and have to be dropped when the vehicle is exposed to fire. The supply of garnished nets was inadequate on the front. A replacement of 20% a month is necessary for units in combat.

14. Replacements.

Excepting transfer from a line organization nearly all specialist replacements were unqualified privates regardless of classification. This was undesirable as many replacements arrived when the battalion was in combat.

15. Road Construction.
15

About 30% of the division engineer tasks was road work. Heavy road building repair and maintenance equipment is essential.

16. Recommended Changes in Equipment.
16

1. Replace cable operated D-8 bulldozers with D-8 hydraulic controls.
2. Add one D-7 bulldozer.
3. Add one road patrol.
4. Add one pull grader.
5. Drop 26 - 2½ ton pioneer dump trucks and replace with 13 half track cargo carriers and 13 - 2½ ton dump trucks.
6. Reduce carpenter equipment in ~~squads~~ platoons.
7. Drop heavy hammers, crosscut saws, axes, pole climbers and belts.
8. Replace [illegible] with 3/4 ton trucks.
9. Add 13 [illegible] and 5 - [illegible].
10. Add water trailers to kitchens.
11. Add one mobile water unit.
12. Provide luminous dial compasses.
13. Provide probing rods.
14. Provide mine detectors at rate of 1 per squad with 100% replacement in this battalion.
15. Provide colored marking ~~[illegible]~~ lights.
16. Improved sign painting kits for all squads.
17. Provide ready made material for mine field marking, booby trap markers.
18. The half track is not a suitable vehicle for the present size engineer squad and load carried.
19. Replace half of treadway bridging with Bailey Bridge

17. Recommendations for changes in T/O.
17.

1. The bridge company is understrength. Drivers and assistant drivers should be provided not counting specialists.
2. Transportation for shower units should be provided in headquarters company.
3. A heavy equipment section added to headquarters company engineer section for road equipment.
4. Drop 2 men per squad.
5. Drop second 1/4 ton in each reconnaissance section.
6. Add communications officer.

7. Drop S-3, Air.
8. Add one officer, division drafting, reproduction and maps.
9. Add Asst. Maintenance Officer.

JOHN L. [illegible],
Lt. Colonel, 16th Armored Engineer Battalion,
Commanding.

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HEADQUARTERS, 68th ARMORED FIELD ARTILLERY BATTALION
APO 251, New York, N. Y. COPY NO. 4

AG 370-6 C-M 10 June 1943.

SUBJECT: Report on Combat Experience and Battle Lessons for Training Purposes.

TO : The Commanding General, First U. S. Armored Division.

1. The following report embracing the combat experience and battle lessons of this organization is submitted. This report pertains to self propelled armored artillery only and not towed artillery methods, although most of the findings will apply to both.

A. (1) Offensive - Governed by branch you are supporting (Infantry or tanks). In general close support having forward observers with advance elements, and close liaison with supported unit and combat command. Close command liaison by the commanding officer. Advance by leap frogging to always cover the advance. This includes both batteries and the fire direction center. If the terrain permits, deploy vehicles so that the advance can be made in box formation instead of column. This gives speed in occupying position and better control during a cross country march.

Keep shorter supply lines in offensive advance. There should be supply and maintenance liaison. Higher echelon supply dumps must be brought forward also. Example: The Division Mobile Dump was good.

Use terrain defilade in advance even if it requires the building of a road. Example: Artillery Road in Beja-Mateur sector built by artillerymen and engineers to insure supply and defiladed road for advance.

Occupy new positions during darkness. Deliver harassing fire at night from alternate positions so that actual battery position cannot be located and neutralized by enemy when you are supporting an attack.

There should be a wide dispersal of vehicles in position with fox holes and slit trenches which are necessary even in offensive warfare.

Reasonable artillery sectors so that accuracy and speed can be possible in the delivery of massed fires.

A fire direction center in a sector so that each unit will bear its proportion of firing, or all artillery can be massed on a single target or area if desired. Example: II Corps Counter Battery Section worked with the 68th Field Artillery Fire Direction Center at El Guettar and our observers fired several battalions including 155mm howitzers and rifles when needed.

(2) Defensive - Tactics governed by terrain and disposition of troops ahead, both friendly and enemy.

Adequate outposts with patrols and communications. Suggest that the SCR-536 be used.

Guns sited for defilade (To avoid counter battery) using depth or width as terrain commands.

Alternate positions for field of fire for howitzers used as anti-tank guns. Where possible select position with both defilade and AT field of fire. Wide dispersal.

Avoid deep wadis, etc. They are dangerous places to be in if tanks ever break through.

Liaison with adjacent units. Patrols note and report any withdrawal of advance units especially in the face of enemy attack.

Towed anti-tank guns of larger caliber than the 37-mm should be dug in on the flanks or at the approaches.

Time fuzes should be cut as short as 1 second, and troops should be trained to estimate ranges for use against close-in enemy infantry attack. This gives close support, ranges 200 - 1000 yards, supplementing the artillery machine-guns.

Avoid obvious features such as towns, cross roads, orchards etc. Obvious battery positions will draw counter battery or enemy bombers.

Close vehicles at night in open country for closer control and defense whenever enemy air night activity is slight.

Adequate fox holes or slit trenches with dug in machine guns are good anti-aircraft defense.

(3) Retrograde Movements: Control of speed and vehicles is necessary to avoid panic and confusion among troops.

Leap frogging of batteries to cover withdrawals. 300 yards is a good distance to displace at a time.

(4) Special Operations: In an armored combat team attack, supply is most important item. Unit ammunition and gas trains should be taken on initial break throughs in center of box formations.

Air support is required in an attack.

In a box movement, guns on the flank should be used in the open country for control and speedy occupation of positions.

(5) Cooperation by support and observation aviation:

Recommend better communications for Combat Command to Air Commanders. Command liaison and air support liaison is desirable.

Recommend air ground communication from air to combat command when friendly planes are overhead. Morale is better with friendly planes overhead most of the time even if smaller numbers of planes are necessary.

Combat protection for artillery air O.P. will give better detection of enemy guns, and more effective artillery observation; also better intelligence reports from air O.P.

At night batteries always laid on defensive fires, determined by the forward observer or liaison with the supported unit. Assign definite fires by concentration number to batteries, make this known to the supported unit so fire can be delivered on the shortest possible notice.

B. (1) Mine warfare and booby traps: Artillery battalions should be trained in mine detection.

Laying of mines and booby traps should remain an engineer function.

Artillery personnel is trained in detection and avoiding of booby traps and anti-personnel mines.

Recommend better markings of friendly mine fields. Example: The majority of our casualties and damage to vehicles was due to poorly marked friendly mine fields. This seemed inexcusable at the time.

(2) Night Operations: Night movements require previous daylight reconnaissance.

Night firing should be from alternate positions and the gun section should be rested the previous afternoon if possible.

(3) Scouting and Patrolling: Use infantry principles on outposting battery positions.

(4) Camouflage, Concealment and Cover: In Tunisia self propelled artillery had no cover whatever.

Wadis for horizontal concealment may be used where tank break throughs are not imminent.

Inflamable camouflage nets cost many vehicles.

Camouflage nets should have poles to hold nets away from the vehicles so as to hide the nature of the vehicles and possibly deceive enemy dive bombers as to the accurate location of the guns among other vehicles.

Use of dummy guns made by special camouflage troops could be advantageous.

(5) Communications, including suitability and sufficiency of equipment. Desire longer range, light weight portable radios for forward observers. We used SCR 509 and SCR 510 in combat.

The SCR 536 for use by the forward observer with the infantry and outposts is desired.

A better radio than the SCR 510 for the artillery air O.P. is desired. A radio actually designed for this use would be better.

(6) Defense against air attack: Permanent attachment of special anti-aircraft equipment and crews. Troops have more confidence in men they know are tested. Changing attached AA crews requires orienting new officers and men in armored artillery tactics and displacements.

A dug in .50 caliber machine gun with a high trip is essential.

The .30 caliber is inadequate for anti-aircraft use.

A wide dispersal of vehicles.

Foxholes away from the vehicles, but close to the guns so that they can be served as long as possible.

Artillery silent as long as enemy aircraft is overhead.

Movement gives away position more than anything else, especially at night when under a flare.

Do not fire anti-aircraft guns at night. It gives away the position.

Have positive identification before opening fire.

Fire only at close range. A good rule is, "Do not fire unless attacked."

(7) Defense against tanks: Outpost warnings with fox holes and communication.

Dug in anti tank guns larger than 37-mm, recommended.

Artillery sited for anti tank fire or alternate positions for anti tank field of fire to move to when tanks do attack.

(8) Reconnaissance: Should be aggressive and active, constantly looking for positions and approaches both forward and rear positions.

Daylight reconnaissance necessary prior to night movements.

(9) Command Leadership and Troop Leading: Calm, cool, precise movements and thinking at all times is the best qualification. Brief definite, clear orders and radio procedure is the key to good leadership.

(10) Security During Movements, At Halts, In Bivouac, etc.:

Movements: Radio Silence except necessary column control.

Flank protection where possible.

Air observers and gunners alert.

Halts: Men dismounted to flanks for ground protection.

Air observers and gunners alert.

Bivouacs: Outposts and patrols according to infantry principles.

Radio silence.

Air observers and dug in anti aircraft guns.

Dug in anti tank guns on flanks and approaches.

Artillery always layed on prearranged defensive fires when in active sector.

(11) Combat Intelligence and Observation: Information comes principally from our own forward observers.

Radio receivers kept in supported unit, combat command, and reconnaissance unit nets. All information is recorded.

S-2 Section kept at command post and intelligence maps kept up to date. All troops given situation as much as concerns them and especially disposition of friendly and enemy troops.

(12) Procurement and Disposition of Aerial Photographs: Units received too few photographs and they were all too old.

Desire better and more photographs and earlier distribution to units.

D. 105-mm Howitzer: Excellent weapon.

Need more spare parts.

Need accurate fuze setter.

Need more night lights.

Smoke in several colors needed.

Need longer time-of-burning fuze.

37-mm: Inadequate. Believe the .57-mm gun will be very satisfactory. Recommend towed guns that can be dug in and camouflaged.

M-7 Mount: Recommend Diesel engines to avoid burning of vehicle when hit by shell or bomb fragments.

Half-Tracks: Recommend only M-3 half tracks, especially for command cars, with .50 caliber machine guns on pedestal mount.

Trailers: 1-ton trailers are not suitable for ammunition carriers. Armored trailers probably will be adequate.

Machine Guns: Recommend that all .30 caliber machine guns be air cooled and not water cooled.

Small Arms: Entirely satisfactory.

E. Present tactical doctrine is sound. No changes recommended.

For the Commanding Officer:

/s/ G. J. HELMS,
G. J. HELMS,
Captain, 68th Armd. F.A. Bn.,
S-3.

REPRODUCED BY G-3 SECTION, HEADQUARTERS, 1ST ARMORED DIVISION, 30 JUNE, 1943.

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HEADQUARTERS
91ST ARMORED FIELD ARTILLERY BATTALION COPY NO. 4
A.P.O. 251, New York City.

10 June, 1943

SUBJECT: Report on Combat Experiences and Battle Lessons for Training Purposes.

TO : G-3, 1st U.S. Armored Division, APO 251, New York City.

1. In compliance with letter above subject, Allied Force Headquarters, file AG 370-6 C-M, dated 14 May, 1943, the following report is submitted:

2. a(3) The tactics, technique and organization of Armored Artillery are dependent upon the tactics and techniques of higher commanders of armored troops, however it is believed that when higher authority decides upon the tactics to be used by armored troops in a given situation that the armored artillery be given a free hand as to employment of its own unit. As an example, early in the Tunisian campaign a battery was taken from battalion control against our better judgment and placed in an isolated position for support of a certain element. The battery was subjected to severe counterbattery fire from medium artillery, terrific bombardment without benefit of the cooperation of the other two batteries of the battalion to counterbattery the enemy batteries and without the cooperation of the remainder of the battalion and attached anti-aircraft in countering the enemy air attack.

Ultimately this battery was completely overrun by tanks and dismounted Infantry, due to the fact that no friendly Infantry outpost was established, thereby allowing enemy Infantry to follow the tank attack closely into the battery's defiladed position. The fire of enemy Infantry prevented battery ammunition handlers, who have no armor protection, from functioning. The howitzer with no ammunition could not cope with the advancing tanks which had advanced to very close ranges. As discussed below the mutual support of the other two batteries would probably have saved this situation together with insistance upon friendly Infantry support.

3. b(1) The Offensive:

An armored Field Artillery Battalion in an offensive operation can and should be invaluable to the supported unit if aggressively used. Because of the armor afforded by the M-7 carriage now in use, it is capable of being used in a forward position, thereby enabling it to carry out its missions before displacement is necessary. Just how far forward batteries can be moved is governed by enemy installations. It should not be moved within range of heavy machine gun or light mortars, it should be defiladed from low trajectory enemy anti-tank installations and should afford a reasonably well covered or defiladed route of approach for artillery ammunition vehicles which are often not armored and therefore quite vulnerable.

Because of the fact the Armored Field Artillery Battalion must be very maneuverable the concealment problem is a very important one. This has not been satisfactorily solved. However, flash defilade is considered paramount.

(2) The Defense:

Defensively, the Armored Artillery has few advantages over ordinary truck-drawn artillery and has some disadvantages not common to truck-drawn units. The first and most important of the disadvantages is the difficulty of camou- and concealment of M-7 weapons. This is particularly important in a defensive sector and only illustrated by the excellent camouflage of enemy gun emplacements

when they were on the defensive. The principal advantage of armored artillery defensively is its ability to displace during daylight hours, offering a reasonable amount of anti-aircraft defense against enemy strafers and bombers, thus enabling it to move from sector to sector as needed.

(3) Retrograde Movements.

Tactically Armored Artillery have certain advantages for retrograde movements. Due to armor this artillery can remain longer in forward areas thereby covering withdrawal of forward troops. This artillery can reasonably protect itself against infiltration of enemy during daylight hours and can also serve as protection against enemy armor in an emergency. Used as a tank-buster the M-7 gun is not too effective due to being a high trajectory weapon of comparatively low muzzle velocity and with a very high silhouette, depending upon defilade to protect itself from hostile high muzzle velocity tank guns.

As previously stated, this artillery can move during daylight hours much better than truck-drawn artillery. On one occasion this command witnessed almost the total destruction of a truck-drawn artillery battalion during a retrograde movement. It was attacked by low flying strafers and bombers which attacked at exactly the right time; when it was pulling out of position and when it was on the road. Vehicles of this type of artillery are very vulnerable to incendiary ammunition used by attacking aircraft.

(4) Special Operations.

The only special operation that this Battalion was called upon to perform was one of a "Tank-Buster" nature. Not recommended for reasons already stated except in cases of extreme emergency.

(5) During the early participation of American troops in the Tunisian Campaign there was very little air support. However, during the latter part of the campaign support aviation was of considerable value in destroying enemy long range gun positions. This was particularly valuable because German artillery can generally outrange American artillery of like caliber.

Observation aviation leaves much to be desired with particular reference to obtaining of usable photos for artillery purposes. Air photos of enemy emplacements a few days old are of little or no value. It is believed that good air photos a few hours old could be furnished.

c (1) Protective mine warfare was considered unnecessary except in very isolated conditions. Booby traps presented no particular problem to well trained artillery troops. However enemy mines presented a considerable problem, particularly in the occupation of position. In an aggressive situation this becomes quite a problem due to overrunning ground recently occupied by enemy troops. Occupation of positions at night presented the hazard of possible loss of personnel and vehicles. The loss of a vehicle (M-7) means the loss of a gun. This condition was partially alleviated by a section of engineers being attached to the battalion for the express purpose of clearing mines from chosen gun positions.

(2) Armored Field Artillery is capable of night operations as well as day. The only limitation on good night firing is the limitation of good survey. Poor battery locations mean poor firing. Therefore daylight survey is necessary for accurate night fire.

(3) Scouting and patrolling is not an artillery function.

(4) Camouflage, concealment and cover commented upon in above paragraphs. However, in a stabilized situation much can be accomplished by moving into position at night or by a covered route, digging gun emplacements, taking advantage of all available cover, skillful use of camouflage nets, restriction of movement and maintenance of flash defilade.

(5) The functioning of communication was very good throughout the campaign; more particularly radio communication which was our primary means of communication.

It is recommended that a built in radio be installed in our present Piper Cub plane with a different type of aerial than now in use to insure better

reception.

Another channel for use in frequency modulated sets would greatly facilitate fire direction nets.

(6) A six gun howitzer battery of self-propelled mounts is frequently a bombing target. However, the present anti-aircraft protection as set up by the present TBA with limited modifications plus the attached anti-aircraft artillery seems adequate for the job. When batteries are in position the .50 cal. machine guns are dismounted from every vehicle except the M-7's and mounted on the ground in a circular pit. This not only affords the gunner more protection but also gives him a better field of fire.

(7) Defense against tanks alone present no serious problem. The M-7 itself is a satisfactory anti-tank weapon, particularly in a defensive role thus the howitzer batteries are able to defend themselves and also the forward CP and FDC, these normally being placed in the semi-circle in rear of the batteries. The Service Battery depends upon its protection from Division Trains with the exception of the ammunition platoon which must protect itself with two TBA 37mm mounts.

(8) Reconnaissance was carried forward constantly by battery and battalion reconnaissance officers for battery positions, avenues of approach and possible movement to the flank and rear.

In addition all forward observers, staff officers and battalion commanders in their trips to forward areas reconnoitered for routes for displacement, gun positions, CP locations, etc.

Extra radio sets were used to monitor the division reconnaissance battalion, thereby capitalizing on information sent in by units outside of our own. This often disclosed enemy installations which could be brought under fire.

(9) The leadership of this battalion was expressed by actions. The Commanding Officer and his executive went forward to the most forward areas, contacted the supported unit or units, found out his wants or desires, brought fire of the battalion on designated targets, gathered information concerning friendly and enemy troops, reconnoitered for possible displacements, coordinated work of the forward observers and liaison officers and flew over enemy positions in Piper Cub plane as aerial reconnaissance. This information was all radioed to FDC for evaluation and forwarding to higher headquarters. This wealth of information enabled the S-3, who had the responsibility of carrying out the assigned mission, to handle the battalion tactically to the best advantage.

(10) Security against tanks discussed above. Air security is of prime importance. During movement the only protection is extended interval on the road except in the case of a concerted attack in which case the column halts just prior to attack and all vehicular weapons brought to bear including attached anti-aircraft guns. Halts are protected by all guns being manned, driver in each vehicle, the remainder of the personnel being dispersed. Bivouac areas are protected from the air by taking advantage of any available cover, camouflage nets and wide dispersal with guns dismounted and manned and air sentries posted. Although this unit has been subjected to many bombing raids not a single howitzer has been lost by that means.

(11) Combat intelligence as already stated consists in gathering information from the battalion commanding officer, the battalion executive, liaison officers, forward observers, aerial observers, reconnaissance officers and monitoring reconnaissance nets, evaluating this information, plotting and forwarding to higher headquarters. This dissemination of information handled by battalion S-2.

(12) The command post and general functioning of the battalion is controlled by the S-3 during active operations. Other staff functions are prescribed by existing instructions.

(13) No deviation from normal in message center procedure.
(14) Movements and marches as prescribed by Commanding Officer or S-3.
(15) If the policy of distributing air photos as set forth in b (5) above was carried out, air photos would be invaluable for distribution to forward observers.

d. It is believed that the M-7 carriage with the mounted 105MM howitzer is the best weapon of its type in the world. No recommended change.

A captured German artillery observation instrument with a 20x80 lense is far better than any known Allied instrument of like nature. Such glasses enables an artilleryman to improve his marksmanship considerably by bringing out more detail. These glasses were used by this battalion during the last phase of the campaign with outstanding results.

It is further believed that the quality and quantities of equipment and weapons is sufficient. As far as capabilities are concerned, as already stated, German artillery is, normally able to outrange weapons of ours of like caliber.

When the occasion ever arises it was found that armored artillery firing direct fire at assembling enemy Infantry using time shell and placing the bursts directly over the enemy from six to eight feet above the ground was very devastating. It is believed that many casualties were inflicted by blast alone, and fragmentation was very good.

e. It is believed that tactical doctrine as carried out by this command during the last two phases of the Tunisian campaign is correct and need not be altered.

For the Commanding Officer:

A. W. McELROY
Capt., 91st Armd.FA Bn.
S-3.

OFFICIAL: /s/W. W. McWhinney
W. W. McWHINNEY,
Capt., 91st Armd FA Bn.
Adjutant.

REPRODUCED BY G-3 SECTION HEADQUARTERS 1ST ARMORED DIVISION 30 JUNE 1943

COPY

SECRET

HEADQUARTERS
47TH ARMORED MEDICAL BATTALION
APO 251, New York, N.Y.

COPY

COPY NO. 4

10 June 1943

SUBJECT: Report on Combat Experience & Battle Lessons for Training Purposes.

TO : The Commanding General, Allied Force, APO 512, U. S. Army.
(Thru: Channels)

1. The organization of the Armored Medical Battalion is sound, no changes of the Battalion or Companies or Platoons is recommended.

2. I think the outstanding lesson learned is the value of the Surgical Trucks, which are not T.B.A. Equipment. These trucks were designed & built by this battalion. Due to their construction, compactness and mobility and short time necessary to set up, they have enabled us to take "Hospital Type" of medical service from 5 to 10 miles behind the front lines. These trucks are indispensible to this organization. I am sure many lives were saved because we were able to perform major operations so close to the front. These trucks with Generators which are necessary should be T.B.A. Equipment.

3. The evacuation system worked well. The Combat Command Surgeon, coordinated the evacuation for the units in that particular command. Ambulance loading posts established and Battalion Surgeons informed of its location. Patients could be collected here or if necessary the Battalion ambulance would take patients directly from the aid station. The average time necessary to transport patients from the battlefield through the aid station to the battalion was approximately 2 hours.

4. Camouflage for the Medical Battalion is not necessary. The Red Cross should be prominently displayed. During the Tunisian campaign our treatment stations were only bombed twice and we feel sure this was not intentional. Traveling in convoy, Medical vehicles should not leave the road, but travel as usual, If all Medical vehicles display the Red Cross, danger from air attack is nil. The Germans respect the Red Cross as illustrated on numerous occasions.

5. In training it is of utmost importance that the Medical Soldier have as much practical experience as possible before entering battle. This was obtained by this Battalion in Ireland, where we operated a hospital, performing many operations which gave the Medical Soldier an experience which proved invaluable.

/s/ Morris R. Holtzclaw
MORRIS R. HOLTZCLAW
Lt.Col., Medical Corps,
Commanding.

REPRODUCED BY G-3 SECTION HEADQUARTERS 1ST ARMORED DIVISION JUNE 28, 1943.

SECRET

COPY SECRET COPY

HEADQUARTERS MAINTENANCE BATTALION COPY NO. 4
APO 251, c/o Postmaster New York, N.Y.

10 June 1943

SUBJECT: Report on Combat Experience and Lessons Learned by Maintenance Battalion, 1st Armd. Div., during Tunisian Campaign.

TO : Commanding General, 1st Armored Division.

I. INTRODUCTION:

The mission of the Maintenance Battalion does not lend itself to the planning or carrying out of tactical operations. The maintenance support has to be planned to function in close cooperation with the tactical mission of some other unit. Every situation is different and maintenance personnel must study the plans for operation and try to anticipate the needs that will develop. Therefore, it's a matter of having capable personnel and equipment, proper coordination and the spirit to "keep 'em rolling".

II. SITUATIONS ENCOUNTERED IN COMBAT WHICH WERE NEVER ANTICIPATED DURING TRAINING:

a. In combat the immediate replacement of vehicles and equipment is one of the most important missions of the Maintenance Battalion. These replacement vehicles must come from higher echelons and very close contact is needed with them at all times. All replacement vehicles must be checked for condition, completeness of accessory equipment, proper radio and interphone equipment, basic load of ammunition, and proper 1st echelon servicing. The vehicles must be ready for combat when they leave the Maintenance Battalion. The combat units do not always have time to check the vehicles over before taking them to battle. To handle this replacement problem a very efficient Supply and Operations section is needed. During the last phase of the Tunisian campaign the Armored Force Replacement organization functioned very successfully. It made available to the Division on call, combat vehicles with or without crews. For this plan to function accurate reports are needed quickly as to vehicles lost. Vehicles reported as destroyed are later found to be alright causing some confusion in knowing what vehicles units actually do need.

b. The controlled operation of a salvage yard is very necessary. Every effort should be made to gather all salvage and captured material together in salvage dumps under supervision of Ordnance personnel. The dump must be guarded and indiscriminate removal of parts and pieces of enemy equipment prevented.

III. PRINCIPLE AND PROCEDURES FOUND TO BE SOUND AND ESSENTIAL:

a. A very efficient supply section is absolutely necessary. It must know what it has. It must be capable of preparing requisitions and making distribution quickly. It must anticipate needs. It must operate a salvage section to remove critically needed parts from salvaged vehicles. Stocks of common hardware, metal stock, and parts common are practically irreplaceable in the combat zone and should be as complete as possible before going into combat.

b. The location of the Maintenance Battalion or detachments must be far enough behind the lines so it can work without undue interruption. Air raids are the biggest danger, and vehicles must be well dispersed (approximately 200 yards between vehicles in open country). Men must all have slit trenches near their place of work and a dependable system of air raid warning must be maintained.

c. On recovery details line units must cooperate with the Maintenance Battalion by furnishing the necessary guides, and guard if the detail is in uncertain territory.

d. It is practically impossible to black out enough to do much night maintenance work. It is better to utilize all daylight hours.

e. Sandbags placed on the floor boards of vehicles definitely saved men's lives in mined areas.

f. Camouflage of special ordnance vehicles to conceal type very helpful in preventing enemy planes from singling the maintenance unit out as a choice target. A 2½-ton Truck tarpaulin and bows were used to cover the 10-Ton wrecker boom.

g. Salvage vehicles must be "Canabalized". It is the only immediate source of some parts. It should be controlled, however.

h. It is recommended that the Maintenance Battalion be authorized to perform some 4th and 5th echelon work especially on instruments. No instrument parts were received during or previous to the campaign.

i. The Maintenance Battalion wreckers are not sufficient to handle all evacuation work. Attached recovery units must do the blunt of the recovery work with the Maintenance Battalion wreckers taking care of most urgent needs and recovery of repairable equipment.

IV. Comment on Ordnance Field Manual 9-10.

The information given in the above publication was found to be very sound. All maintenance units can profit by a careful study of this manual.

V. Comment on Equipment.

a. The equipment of the Maintenance Battalion was quite satisfactory.

b. It is very strongly recommended that a mobile 37mm or 40mm anti-aircraft section be assigned to Battalion in place of the 37mm anti-tank guns. The biggest danger for the Maintenance Battalion is air attack. The anti-aircraft guns could be used against tanks also. Invariably there are combat vehicles in the Maintenance Shops which can be used defensively in case of a break through.

c. A suggestion is made that all personnel of the Maintenance Battalion be armed with revolvers, instead of cal. .30 1903 rifle or carbine. The .45 cal. revolver has been declared outmoded and it is felt unused stock of them are in existence. This would enable a mechanic to keep his arms on his person while working. The mission of the Maintenance Battalion does not call for aggressive infantry action and it need only be armed for a "last stand" with machine guns and anti-tank guns. The arming of the Maintenance Battalion would also release rifles or carbines to more needy persons.

/s/ John H. Ford
JOHN H. FORD
Capt., Maint Bn,
Executive Officer.

REPORDUCED BY G-3 SECTION, HEADQUARTERS FIRST ARMORED DIVISION 30 JUNE, 1943.

HEADQUARTERS 1ST US ARMORED DIVISION TRAINS
A. P. O. 254, c/o Postmaster, New York, N. Y.

1 July 1943.

TRAINING MEMORANDUM :
NUMBER . . . . . :

ORGANIZATION AND OPERATION, 1ST US ARMORED DIVISION TRAINS

SECTION I - ORGANIZATION

1. Unit Trains include all organic train vehicles of each regiment, separate battalion or company. They are subdivided into:

a. Combat Trains which will accompany the combat units unless otherwise directed by division orders, or by the commander of the Combat Command or column to which they belong. Unless directed otherwise by division orders, they will include:

(1) Unit armored maintenance vehicles (In their absence unarmored vehicles may be used).
(2) Wreckers, 10 ton.
(3) Fuel and lubricant vehicles required to complete 200 miles of operation for all vehicles in combat echelon.
(4) All essential ammunition vehicles.
(5) Medical vehicles (including vehicles of supporting element of Medical Battalion).
(6) Motorcycles and ¼ ton trucks organically part of the above elements.

b. Field Trains which will accompany the combat units unless otherwise directed by division order, or by the commander of the Combat Command or column to which they belong. Unless directed otherwise by division orders, they will include:

(1) Fuel and lubricant vehicles other than those in combat trains.
(2) Unit unarmored maintenance vehicles except those in combat trains.
(3) Ammunition vehicles other than those in combat trains.

(4) Equipment, kitchen, ration, baggage, personnel, supply, unit medical supply, passenger and cargo vehicles and any other unarmored vehicles, including motorcycles and ¼-ton trucks not required to perform tactical missions.

(5) Tanks of Maintenance companies, half-tracks not included in combat trains, and the specified A. T. guns of Administrative and Supply Sections.

2. Service Trains consist of the vehicles of the following units, except such as may be attached to or supporting combat units:

a. Train Headquarters and Headquarters Company/
b. Maintenance Battalion.
c. Supply Battalion.
d. Medical Battalion.
e. Rear Echelon, Division Headquarters and the Rear Echelon, Signal Company

3. The Division Train consists of the Service Trains and such Unit Trains as may be grouped together under division control.

4. Unit Trains, when under division control, will be grouped to conform to the tactical organization of combat elements, under command of an officer to be designated by the commander of the tactical group, normally the Service Company Commander of the major element. These groups will be organized into columns, under Column Commanders to be designated by Train Headquarters. Movements necessary to accomplish the above will be made on instructions of the Train Commander.

5. Upon receipt of orders placing Unit Trains under division control, each unit will immediately send a liaison officer to Train Headquarters for instructions. He will be prepared to report the number of vehicles, by type, in his train, and their location. When unit trains are already grouped to conform to the tactical organization, or are to be so grouped prior to passing to division control, only one liaison officer, to be designated by the Train Commander of the group, will report.

6. When elements of the Service Trains are attached to a Combat Command for independent operations, a Column Commander will normally be designated to act as Train Commander for the Combat Command.

SECTION II - MOVEMENT

7. The Division Train will normally move in two or more columns, the tactical situation and available roads permitting.

8. Marching.

a. March Units will consist of from 20 to 40 vehicles each, and will conform to tactical organization whenever practicable.

b. Rate of March is expressed as an average speed to be maintained throughout the march, or as the maximum speed to be maintained by the leading vehicle of the column whenever road conditions permit. March orders will indicate: Rate of March: Average ____M.P.H.; or Rate of March: Leading Vehicle ___M.P.H.

c. Maximum Speeds.

(1) The maximum speed of the leading vehicle of each march unit except the first will be 5 mph faster than the announced speed of the leading vehicle of the column.

UNCLASSIFIED

(2) The maximum speed of motorcycles and passenger vehicles while passing columns will be 40 mph.

(3) The maximum speed of other vehicles will be 30 mph.

(4) In passing thru congested districts, no vehicle will exceed safe driving speed, or 20 mph.

d. Distances.

(1) The marching distance between vehicles will be from 75 to 125 yards unless otherwise specifically indicated. In no case will vehicles close to less than 75 yards distance, except at night, when the distance will be determined by the visibility of black out lights.

(2) The distance between march units is variable, and requires constant consideration to correctly balance the requirements of driving comfort and tactical control. It should be approximately one minute.

e. Successful marching requires that there be instilled in the leaders of march units and in all drivers a knowledge of the capabilities of the vehicles, alertness, aggressiveness and safe driving methods. The speeds indicated in c. above, are maximum speeds. They must be reduced for march units and for individual vehicles as may be necessary to insure the safe passage of obstacles, curves, etc. In moving over hilly country with successive short hills, trucks may reduce the distance lost at the top of the hills by taking a run at the bottom and closing to the minimum of 75 yards distance. The driver who lags behind and speeds to regain lost distance disrupts the entire column behind him. Aggressive driving and aggressive leading produces a condition of alertness in which vehicles maintain their distances and march units are closed to minimum practicable distances. Each man is imbued with the idea of getting the column forward smoothly and safely.

f. The usual practices of posting traffic guards during halts, checking to determine the cause of halts, keeping drivers awake and alert, etc., will be scrupulously observed.

9. Route Reconnaissance will be performed by the Reconnaissance Platoon, Train Headquarters Company, reinforced, when necessary, by additional personnel and vehicles detailed from train units. When possible, phase lines for reconnaissance will be prescribed and reports made on arrival thereat, in order that changes of route may be made if the route is blocked by obstacles or by enemy action. Conditions permitting, a road repair crew will follow the reconnaissance detachments for the purpose of making repairs before the arrival of the column.

10. Route Marking will be accomplished by guides furnished by the Military Police Platoon of the Division Service Company, supplemented by additional personnel and vehicles detailed from train units. When available, the personnel sections and band sections will be utilized for this purpose. They will move with the Military Police detachment, posting markers as directed. When the last markers are posted the trucks will return to the post of the first markers, pick up the markers as they follow the route of the column, and rejoin their organizations in bivouac. When transportation is available, markers will be picked up by other vehicles following the tail of the column.

11. Traffic Control, in addition to that furnished by the Military Police Platoon, will be furnished when necessary by units.

12. Formation of Columns. Columns will be formed by passing units thru a designated IP at prescribed times and in a prescribed order. No unit will pass thru the IP or enter upon a common route to the IP ahead of a unit designated to precede it without specific authority in each case. Units remain in bivouac area until proper time to move to IP. In moving out of bivouac, vehicles will not be halted on the road in order to assemble the column. Preparation will be made to insure that each vehicle moves at the proper time to take its place in column so as to permit continuous movement on the road. Whenever possible, movement on to the road will be facilitated by the use of more than one exit from the bivouac.

13. Liaison.

a. Each march unit will, at all times while marching, maintain liaison with the preceding march unit.

b. When a movement of the trains is imminent each column and service unit commander will send a liaison agent to the bivouac of the unit which is to precede it thru the IP or on a route leading to the IP. He will inform his commander of the extent of any delay and when the road is clear. He will report to the representative of Train Headquarters at the IP to indicate the head and tail of his unit.

14. Coordination of columns will be obtained by prescribing, in the march order, phase lines or check points. Column commanders will report the time of reaching or passing those lines or points. Columns may be required to halt upon reaching phase lines or check points pending further instructions.

15. Rest Periods will be prescribed in march orders. Normally routine halts of 10 minutes will be made at the end of each two hour period. Heads of march units will halt on schedule and resume the march on schedule without regard to location, except that the schedule will be varied sufficiently to avoid halting in towns, gassed areas or other critical localities, in which case the march will be resumed at a correspondingly earlier or later time. If the time of halting is to be delayed the march unit commander must assure himself that he can clear the critical area before being blocked by the unit ahead. Vehicles will not close at halts.

16. Instruction of Subordinates. Prior to the beginning of each march all subordinates, including the drivers of vehicles, must be instructed as to the destination and route of march. If necessary, a slip of paper containing the names of towns on the route and the pronunciation, will be furnished each driver.

17. Reports. Column and Service Unit Commanders will report without special instructions to Train Headquarters:

a. When head of advance guard reaches IP and each phase line.

b. When head of main body reaches IP and each phase line.

c. Hourly odometer reading (from IP) when moving, unless phase lines or check points are designated.

d. Location of CP when changed.

e. Any delay in executing movement orders.

f. When movement is completed.

SECTION III - BIVOUACS

18. The bivouac area for the Division Train will normally be assigned by Division order, and will be assigned to units therein by Train Headquarters.

19. Composition of billeting details.

a. One (1) officer, Train Headquarters, Train billeting officer.

b. (One (1) officer from each Service Battalion, each Combat Command Train and separate unit train in Field Train columns and Rear Echelon Signal Company.

c. Enlisted men, as assistants and guides, at the rate of three per regimental train; one per separate battalion train, and one per company for Division Service Units.

20. Duties. Billeting details are responsible for reconnaissance of assigned areas, and assignment to subordinate units; location and preparation of entrances and exits; tentative location of CPs; and meeting units at assigned meeting points and guiding them to their areas.

21. In establishing the bivouac the following will be observed:

a. Vehicles will move off the road promptly so as not to block vehicles in rear. When possible, more than one entrance to bivouac will be prepared.

b. Vehicles will be arranged, with from 100 to 150 yards interval, so they can move out readily in the dark, and instructions necessary to insure rapid movement from the bivouac in case of necessity will be issued.

c. Gas and air sentries will be posted immediately and slit trenches dug.

d. Immediate steps will be taken to camouflage vehicles and to establish camouflage discipline.

e. A close in defense will be organized at once in each bivouac area. (See Section IV).

f. Each Service unit and Column Commander, immediately upon reaching bivouac, will send a messenger to Train Headquarters. Messengers will be released when telephone communication has been established.

g. Each Service unit and Column Commander will submit to Train Headquarters as soon as practicable a sketch or overlay of its bivouac and installations for close in defense.

22. Train Headquarters, Rear Echelon, Division Headquarters and Rear Echelon Signal Company will normally bivouac in the same area. See appendix A for plan of bivouac and order of march.

23. Traffic Guide Posts will be established, when necessary, by the Military Police officer on the principle axes from front to rear. They will be furnished information (map or overlay when necessary) relative to the location of all units and installations in the rear area, and to the direction of circulation. The Train Commander will report the location of the guide posts to the Asst. C of S, G-4, who will in turn, notify the combat elements. All vehicles moving between the front and rear areas will report to a guide post for information and direction

24. When necessary, circulation in the rear area will be controlled by the Military Police officer in accordance with the circulation map prepared by S-3 after consultation with the Assistant G-4.

SECTION IV - DEFENSE

25. The protection of the Division Train involves three phases, as follows:

a. Protection of the train while in bivouac.

b. Protection of the train while moving.

c. Protection of supply columns moving between the combat elements and the rear echelon while the train is either in bivouac or moving.

26. Protection in Bivouac.

a. Protection in bivouac will be provided by the establishment of —

(1) an outpost, established by the Train Commander, consisting of outguards composed of anti-tank guns, machine guns and observation posts; and a reserve of such tanks, anti-tank guns, machine guns and riflemen as may be available. The number and strength of outposts will be dependent upon the proximity and characteristics of enemy forces and the protection afforded by other friendly troops.

(2) A close-in defense, established by Column and Service Unit Commanders, to protect each Column and Service Unit bivouac.

b. The Outpost.

(1) A march outpost, for the protection of the Trains during the occupation of the bivouac, will be established by advance guard commanders, utilizing the means available in the column advance guards and reconnaissance detachments. Information relative to the location of the bivouac area and the march outpost will be obtained from the billeting officer. The march outpost will be relieved or disposed as part of the outpost on orders from Train Headquarters or from the Column Commanders if they are establishing the outpost.

(2) Outguards.

(a) Outguards will be located, during darkness, in close country, from 2 to 5 miles from the bivouac, covering avenues of approach. They will be protected, when applicable, by mines or other obstacles, and will be covered by sentries who will guide friendly traffic thru the position and give warning of the approach of hostile vehicles or personnel. During day light hours they will normally occupy alternate positions in order to take better advantage of observation and to prevent the night locations being observed. In open country where approach to the bivouac is not confined to roads, the outguards will be located close in, in mutually supporting groups, at a distance which will prevent small arms fire being placed on the bivouac, and will be covered by listening posts located 5 to 10 miles from the bivouac. Air observation will be employed when available. Obstacles will be employed to restrict hostile movement into the bivouac area when practicable.

(b) Outguards will be posted in accordance with instructions issued by Train Headquarters. When field trains are present Column Commanders will normally be assigned sectors of responsibility and will post the necessary outguards utilizing the equipment and personnel in their columns, supplemented, when necessary, by additional means furnished by the Train Commander. If field trains are not present the outguards may be posted by units, upon instructions from Train Headquarters, or by the Security officer, utilizing the means provided by the units. A unit which posts an outguard will be responsible for its supervision, inspection and messing. The Security officer, Train Headquarters, will be responsible for coordination and general supervision of the outguards.

(c) Outguards will normally include machine guns, anti-tank guns and necessary personnel. In order to reduce the time required for transmission of instructions and posting of outguards, details will be called for by "outpost units." One "unit" will include a machine gun, an anti-tank gun, a messenger mounted on a motorcycle or a ¼-ton truck, (or radio) three reliefs for a sentry on each gun and an observation post, and a non-commissioned officer, a total of eleven men. When an outguard consists of more than one "unit", the senior non-commissioned officer will be in command. If equipment or personnel, in addition to that included in the specified number of units, is required, the instructions will so state.

(3) Patrols will be utilized for the purpose of observing the areas between the outguards. Normally they will be mounted on ¼-ton trucks, but will be dismounted when necessary.

(4) The outpost reserve, consisting of anti-tank guns, tanks and other armored vehicles, and provisional motorized infantry as available and necessary, will be located centrally in the bivouac area under command of the Security Officer. Where road conditions make it advisable, the reserve will be located in two areas, the Security officer remaining in the vicinity of Train Headquarters.

c. Close-in Defense. Immediately upon arrival in bivouac each service unit and each unit Field Train column will establish a defensive system for protection against a close-in attack, utilizing the means available after details have been withdrawn for the outpost. The close-in defense will be coordinated between adjacent bivouacs. In each Field Train Column and Service unit bivouac the equivalent of one platoon will be designated as reinforcement for the close-in defense. It will be prepared to move at a moments notice, and will be provided with motor transportation when necessary.

d. In the event of an attack, Train Headquarters will be notified by radio and messenger. All units will be notified by Train Headquarters and will be alerted at once and await orders. An attack against the outpost will be met initially by the local reserve (per 26 c) and by the troops in that area.

e. All train units, including unit trains, will be trained to function in combat as infantry units.

f. Every man will keep his personal weapon, helmet and ammunition at hand at all times, regardless of the work he may be performing, so as to be able to take his place in formation immediately in the event of an alarm.

g. As soon as possible after arrival in bivouac, and in conjunction with the establishing of the close-in defensive system, each man will be informed of the place where his unit will form in case of alarm. All units will "stand to" in battle positions one half hour before daylight each day. A practice "stand to" will take place just after dark the first night in each new bivouac.

h. One platoon of riflemen, with necessary transportation, will be detailed as required from Service units and unit columns as part of the outpost reserve.

i. All unit and column commanders will post sufficient guards to warn their commands against enemy ground troops, paratroops, airplanes and gas attacks.

j. Defense against air attack, in adaition to the normal passive measures, will consist of the fire of all available weapons, including rifles and carbines. Machine guns will be dispersed sufficiently to prevent more than one gun being engaged by a single plane, and will be dug in. Fire will be opened against hostile planes by the nearest machine guns, at ranges under 1000 yards, so as to give a tracer pattern in front of the plane. Other weapons will open fire as the plane comes within range, adding their fire to that of the leading guns so as to produce a cone of fire in front of the plane.

k. Warning Signals.

(1) Air Alert: Three short blasts of a whistle, three shots from a weapon, or a siren, continuing as necessary. The "all clear", one whistle blast, to be blown by an officer, if one is present.

(2) Ground Attack: Sound the air alert, followed by instructions for assembly and movement.

(3) Gas Alarm: Wooden clacker, and shout of "Gas" or "Spray" as appropriate.

27. Protection on the march.

a. Defense against air attack.

(1) Passive measures for defense against air attack will include the maintenance of prescribed distances, staggering vehicles and use of cover during halts, changing routes or movement to concealed assembly positions when warning of an impending attack is received in sufficient time and the posting of air observers in all open vehicles. Normally, when attacked without warning, the march will be continued.

(2) The active defense against air attack will consist of the fire of all weapons. Anti-aircraft guns will be manned, ready for instant action, at all times during a march.

b. Defense against ground attack.

(1) Reconnaissance detachments, to give warning of danger, will operate in front of and, when pertinent, on the flanks and rear of each column.

(2) Advance and rear guards, consisting, when possible, of tanks, half-tracks, anti-tank guns and reconnaissance trucks, will protect each column for the purpose of dispersing or destroying small hostile forces or of delaying large forces to enable the columns to change direction or to prepare for defense. They will operate under column commanders. The necessary vehicles will normally be detailed for the purpose by the Train Commander.

(3) When one or both flanks are exposed to attack, flank guards will be employed. They will operate in successive small groups, one opposite the head and one opposite the center of the column, well out from the route of the column, moving by bounds from one observation point to the next so as to be able to give warning of any hostile threat to the column and to delay the hostile forces as much as possible. When strong flank guards are provided they will operate opposite the center of the column with reconnaissance well to the front and rear, prepared to interpose between the column and any hostile threat. When the road net makes it necessary to employ an excessive number of troops for adequate flank protection, the flanks may be protected by assembling anti-tank guns at the head of a column and dropping one at each entering road to remain until the column has cleared.

(4) Combat vehicles and weapons will be disposed throughout each column. Available tanks will be distributed in sections (2 each). Anti-tank guns will, so far as practicable, be organized into battalion sections and will be marched at the head of the battalion train under an officer or non-commissioned officers.

(5) In the event of an attack by ground forces against the flank of a column the warning will immediately be passed to all stations by the nearest radio, using a prearranged signal, and by motorcycle messenger. The senior officer in the vicinity of the attack will assume command. He will employ the available combat vehicles and weapons to destroy or drive off the attacking force. All combat vehicles in the vicinity of the attack will join the action. Other vehicles will continue movement so long as possible. When required to halt, due to hostile fire or to a road block, they will clear the road for the passage of combat vehicles, take cover if possible, and the personnel in the vicinity of the attack will join the action using their rifles and truck mounted machine guns.

(6) In open desert country the trains will, when practicable, march in multiple short columns. Protection will be provided by placing tanks and anti-tank guns in front and on each flank, and anti-tank guns in rear, with reconnaissance, both ground and air, well out on all sides to give warning of hostile movements.

28. Protection of supply columns.

a. The protection of supply columns moving between the combat area and the rear area will be accomplished:

(1) By convoy, using the same procedure as is indicated in paragraph 27 for the protection of train columns in movement, or

(2) By an area defense, in which combat and train elements are utilized to defend the area thru which the supply columns will pass.

b. The S-4 of the major unit of a combat command will normally be the S-4 of the command. He will give the necessary instructions for the formation of supply columns and will inform the Combat Command Train Commander (CO Service Company) as to the destination.

c. Supply columns will be conducted to their destination and returned to their bivouac by the Combat Command Train Commander or by an officer designated by him. No supply column will move from the bivouac area until it has been cleared by the Column Commander acting for the Division Train Commander.

d. The Column Commander will, prior to the movement of a supply column, ascertain from Train Headquarters the amount of hostile resistance which may be expected and the amount of protection required. He will provide the required amount of protection from the means available to him or from that furnished by the Train Commander. He will not release the supply column until adequate means for protection have been furnished.

e. Empty supply vehicles of the combat train will be returned to the rear area in groups for refilling or replacement. The Combat Command Commander is responsible for furnishing them adequate protection.

f. Armored vehicles which have been repaired by the Maintenance Battalion and are available for return to their units will be utilized, when practicable, for the protection of trains and supply columns.

SECTION V - COMMUNICATIONS

29. Radio nets in use by elements of the Division Trains are shown in Appendix "B".

30. Prescribed radio procedure will be adhered to at all times. Unnecessary talking over the radio will be eliminated and readability tests will be reduced to a necessary minimum.

31. a. In bivouac, the following means of communication, in order of priority, will be utilized: Telephone; messenger; FM radio; CW radio. When the situation requires, more than one means may be employed.

b. On the march, communication will be by radio and messenger.

32. Radio nets will be opened, unless silence has been imposed, forty-five minutes before the leading element moves from the bivouac, and at such other times as may be ordered. Nets will remain open until closed by the N.C.S.

33. A time signal will be transmitted by N.C.S. prior to each march, as soon as the nets are open.

By order of Colonel HAMILTON:

S. C. WHITE, JR.,
Lt. Col., Infantry,
Executive & S-3.

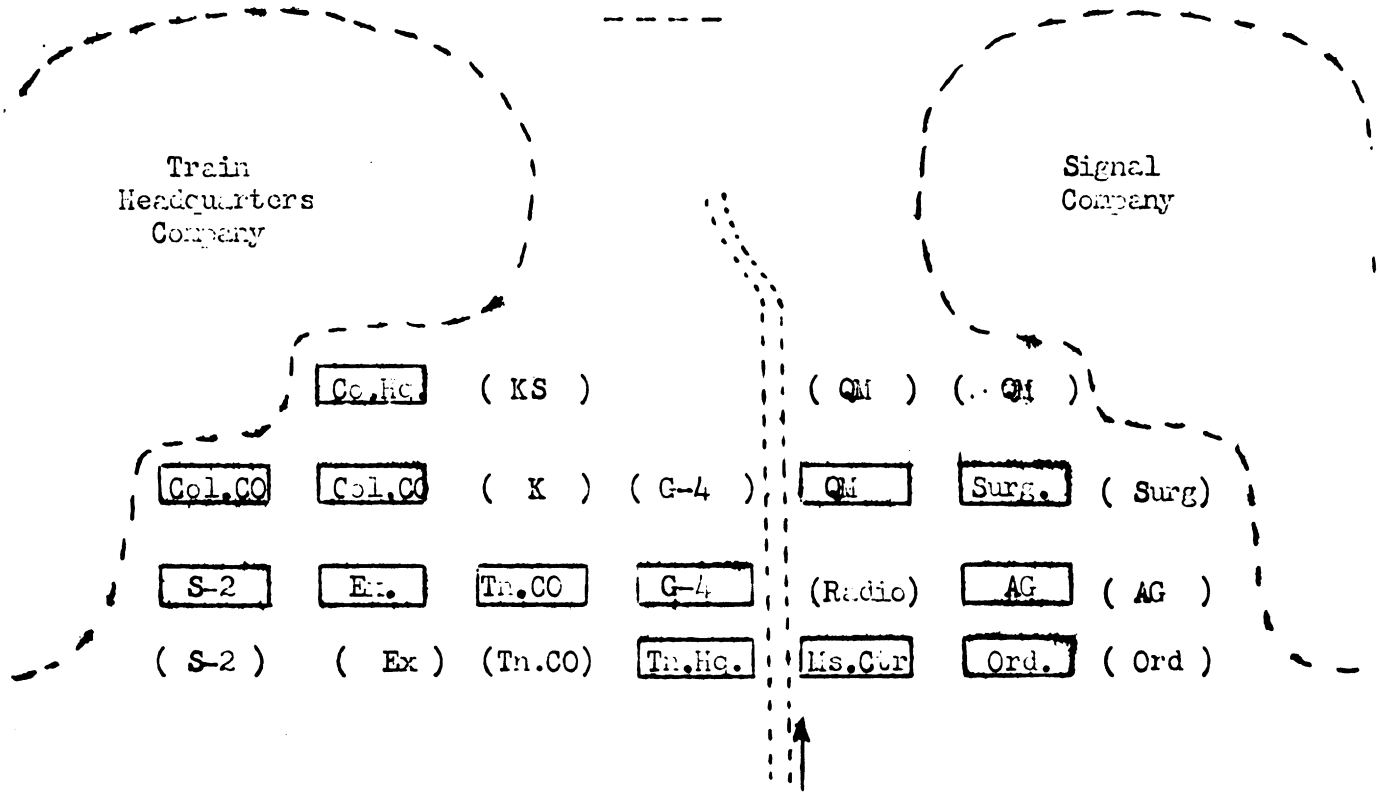
OFFICIAL:

IRVIN H. COLBY,
Major, Infantry,
Acting Adjutant.

DISTRIBUTION:

10 - Tn. Hq. 1st A.D.
2 - Tn. Hq. Co. 1st A.D.
6 - 47th Med. Bn.
5 - Supply Bn. 1st A.D.
6 - Maint. Bn. 1st A.D.
2 - Signal Co. 1st A.D.
4 - Hq. 1st A.D.
1 - Service Co. 1st A.D.
16 - S-4's and Field Train Cmdrs of each unit.

PLAN OF BIVOUAC
Train Headquarters and Rear Echelon Division Headquarters



Distances and intervals will be from 100 to 150 yards. Tents and vehicles will be staggered to avoid straight lines.

In establishing the bivouac, the Message Center and the Radio car will be located and their positions indicated on the ground. Sections will move direct to their positions, utilizing the Message Center-Radio car line as a base.

Vehicles indicated: ( )

Tents indicated : ▭

Appendix "A"

ORDER OF MARCH: Train Headquarters, Rear Echelon Division Headquarters and Rear Echelon Signal Company.

Train Commander.

Executive.

S-2.

Column "A" (If in Train Commanders Column).

Column "B" (If in Train Commanders Column).

Train Headquarters Company (—Cargo Vehicles).

Division Headquarters (Rear Echelon).

G-4 (Rear).

Division Ordnance.

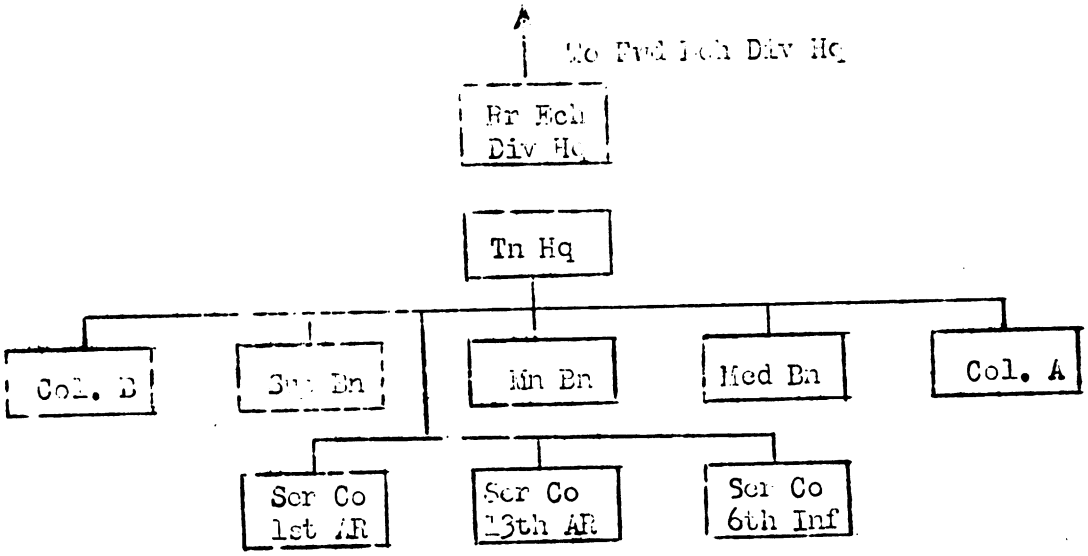
Adjutant General.

Division Surgeon.

Division Quartermaster.

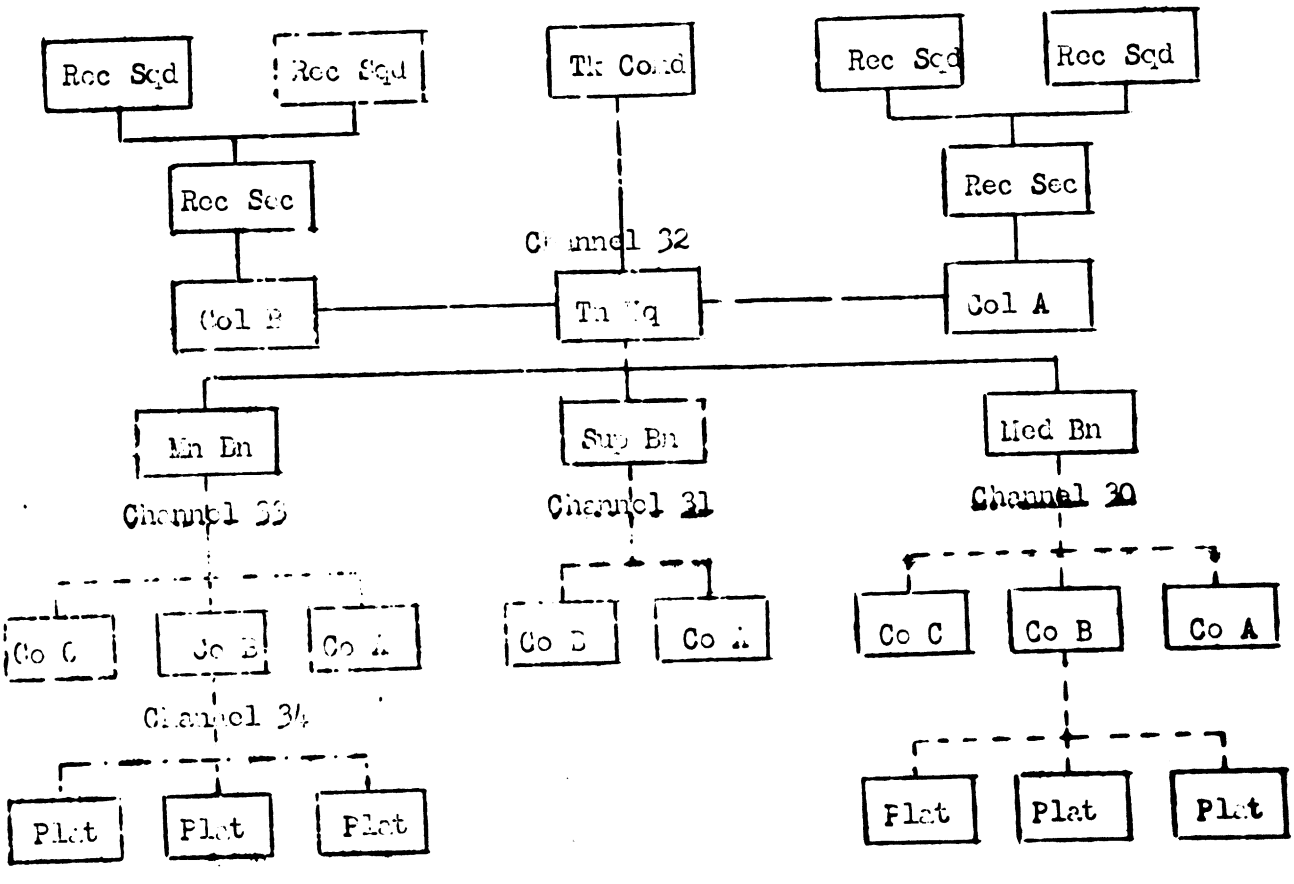
Signal Company (Rear).

TRAIN COMMAND NET (CW)



(When under Division control)

BN NETS



Train Command Net _____

Battalion Nets - - - - -

Company Nets —·—·—

UNCLASSIFIED

Appendix "B"

COPY SECRET COPY

HEADQUARTERS, SUPPLY BATTALION COPY NO. 4
First Armored Divisio n, A.P.O. 251, c/o Postmaster
New York, N. Y.

10 June 1943.

SUBJECT: Report on Combat Experience and Battle Lessons.

TO : Allied Force Headquarters.

1. a. The combat experiences and battle lessons this organization experienced were few, due only to the fact it functioned well behind the actual zone of fighting. However the lessons taught in supplying an offensive armored division has been many and in often cases costly in man power and material.

b. The function of this battalion was primarily that of supplying ammunition to the Armored Division but were used for any and every purpose. As an example, one platoon of one Company was detached for duty with the Division Quartermaster. The remaining platoon was often called upon to assist in this work resulting in only one Company available for division use. In doing this, loss of control in administration and company maintenance. To overcome this it is believed better to organize one more truck company to handle this extra work. That is one suggestion, the other suggestion is to divorce this work complete from this battalion and create a new Quartermaster Company for the Division.

c. A central dispatch system by one or two officers would cut down dry runs. The recent campaign has as high as 25% dry runs. There was little coordination to attempt to carry "payload" both to and from the destination. The cost in gasoline, wear on vehicles, loss in man power amounted to a great deal in this division.

d. Poor column control during black out movements resulted in lost vehicles in making wrong turns. Motorcycle controlling the column would eliminate this and could be used for front and rear communication. Four cycles for each three companies would I believe be sufficient. This had been overcome somewhat by informing all drivers where the battalion was to go.

e. It is believed also that one platoon should be added to each Company with the specific duty of guarding the battalion in movement and while in bivouac. Numerous times sections have been called for duty, this resulted in reducing the guard and exposing a portion of the bivouac area, as each section supplies its own guard, and train protection was not available.

f. The dispersion of vehicles while in bivouac is necessary due primarily to the danger of burning gasoline. It has been found that 200 yards reduces the danger of exploding gas cans. This also reduces the target and discourgages enemy activities.

g. It has been found that having the crews of the truck sleep near their vehicles reduces the loss of time in placing details on the road.

h. The digging of slit trenches near the kitchen area reduces the hazard of air attack during the meals. Chow lines are discouraged. The practice of having all personnel up at daybreak also reduces the chance of casualties due to early morning air activities.

i. It is impossible to eliminate roads in an active bivouac. Frequent changes of the Battalion C.P. helps to keep this down.

j. Road traveling during day light hours should be reduced to absolute minimum. Vehicles should be led into and out of bivouac by assistant driver during night movements.

k. Each truck leaving bivouac should have one man available for an observation and gunner.

l. Early morning maintenance check is very important to extended operation in the combat zone.

m. The number of deadlined vehicles could be reduced greatly if companies were permitted to carry with them into the field minor but important spare parts. This would permit higher echelon maintenance while away from maintenance company support. A four ton wrecker for each company would have reduced lost time and delay in supplies.

n. At least one .50 caliber machine gun for every third truck is suggested due to road interval between trucks extending to 200 yards in the combat zone. This also would serve as protection in bivouac.

o. Camouflage in a truck bivouac tends to draw bombers in search of armored vehicles.

p. This battalion is equipped with radio which has never been placed in use. It has however experienced difficulties with delayed messages from division message centers. Messages have been received too late to act upon.

2. This report although having little combat value are some of the experiences which confronted the battalion and in certain instances proved costly in man power, trucks and material.

/s/ Milton F. Putman
MILTON F. PUTMAN
Capt., U.S. Army
Commanding

REPRODUCED BY G-3 SECTION HEADQUARTERS IST ARMORED DIVISION 30 JUNE 1943.

RESTRICTED

GJE/jwc

HEADQUARTERS 1ST ARMORED DIVISION
APO 251 -- c/o Postmaster
New York City, N.Y.

31 March 1945

OPERATIONAL MEMORANDUM)
:
NUMBER . . . . . 3)

MINE WARFARE POLICY

1. GENERAL

a. Recent observation has shown that units of the Division are not properly informed in procedure to be followed in Mine Warfare. This Memorandum outlines this procedure in detail.

b. The following previous instructions on Mine Warfare are rescinded:

(1) Operational Memorandum #17, AP Minefield Procedure, this Headquarters, dated 20 March 1944.

(2) G.O.P., 1st Armored Division, dated 9 November 1944, paragraph 6a and 6b.

2. DEFINITIONS:

a. Minefields are classified as follows, according to purpose:

(1) A Tactical Minefield is one placed to break up or canalize the enemy's attack formation and to hold him in areas covered by intense defensive fires, particularly anti-tank and automatic weapons. Reconnaissance and detailed layout of Tactical minefields is the responsibility of the Division Engineer. Engineers may require assistance of other units to lay tactical minefields.

(2) A Protective Minefield is laid to prevent enemy penetration of a defended locality, or for protection of an outpost or road block. Unit Commanders on the ground are responsible for the laying of mines for strengthening their local defenses. These fields must be marked, recorded and reported in conformance with the following Division Policies.

3. PROTECTIVE MINEFIELDS OF AP AND/OR AT MINES:

a. Procurement:

No mines will be laid by units of this command unless requisitions have been approved by the Division Engineer Supply Officer. All mines not used within four (4) days after issue will be turned in to Division Ammunition Dump. Tally-in for these must reach Division Engineer Supply Officer immediately.

b. Responsibility:

The commander on the ground of the 1st higher unit concerned, (e.g. Battalion or Combat Command), may propose laying protective minefields. This commander is responsible that the proposed minefield is essential, that the location meets their requirements, and that minefields are properly marked and recorded when laid without Engineer supervision.

c. Approval:

The mine plan as proposed by the commander including an explanation of the purpose to be accomplished, (e.g. outpost warning system, to delay enemy attack, or to deny territory to the enemy) will be submitted to Division G-3. Division G-3 is responsible that the proposed minefield is not laid on terrain over which a counterattack is to be launched, and that the minefield does not interfere with tactical minefield plan of Division Commander. Division G-3 will confer with the Division Engineer in determining final approval and together they will decide whether Engineer Supervision of the Minefield laying is necessary.

d. Marking:

All minefields, whether dummy, friendly or enemy, must be marked. When mines are laid without Engineer supervision, a fence surrounding the minefield will be installed if possible. This fence is not to incorporate inside, with an existing fence unless it is

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marked with standard m[illegible] (red triangles of 9" sides). If impossible to construct [illegible], obvious expedients will be used, e. g. rocks or brush pyramids to mark the boundaries of the minefield. Engineers will conform with standard mine marking practice.

e. Recording:

Minefields, whether one mine or hundreds of mines, must be properly recorded on standard minefield record form, Sheets A & B. These records, in triplicate (See sample records, Incl #1 & #2) will be in the hands of Division Engineer within 24 hours of time laid. In addition, a telephone, messenger, or radio message by quickest possible means will be sent to Division G-3 as soon as field is complete or work ceases. This message will give the number and type of mines laid, time and by whom laid, coordinates of field and any other pertinent data, e.g. anti-lift, trip wires, etc. The Division G-3 will notify S-3, 16 Armored Engineer Battalion immediately, and any other units concerned as deemed necessary. Complete records of the field will not be kept by units below Division. The Division copy will be in hands of Division Engineer. Units who operate in the mined sector should retain only such information regarding the mine field necessary in troop relief, as would not be intelligible to enemy in case it is captured.

f. Installation and Maintenance:

Minefields normally laid for outpost protection should be fields of trip flares (See Section 4, Flares). A mine-field to prevent enemy penetration can frequently be a dummy field. If the purpose is to inflict casualties on enemy personnel, mines must be well camouflaged especially from the outer side. The American Jumping Mine, M2A1, has a casualty radius of 10 yards and danger radius of 150 yards. The block mine, M-3, has a casualty radius of 10 yards and danger radius of 100 yards.

Minefield maintenance is a continuous process. Where possible a daily check will be made to insure that the mines have not been removed or tampered with, that mines are properly camouflaged, that fuzes, and trip wires if used, are in the armed state, and that marking of the fields as reported on minefield record forms A & B has not been changed. Any changes in the field will conform to requirements of Paragraph g., Removal.

g. Removal:

When the minefield has accomplished its purpose or proves a barrier to the unit on the ground it may be removed entirely or partially at discretion of the commander who has responsibility to lay minefields. If removed entirely the Division Engineer or S-3, 16th Armored Engineer Battalion, will be immediately notified. Only information required to designate and identify field is needed, e.g. "Minefield at L-555666 removed 1 January 1945 by Company X, 1st Infantry". If field is partially removed a change in the record is required. To accomplish this change it will be necessary to accurately locate the mine by a reference that is used on the minefield record. It is not sufficient to say that one of the three mines in field at L-555666 has been removed.

4. TRIP FLARES:

a. Procurement:
Same as AP or AT mines.

b. Responsibility:
Same as AP or AT mines.

c. Approval:
Approval of Division G-3 will be secured.

d. Marking:
Fields of Trip flares need not be marked with a surrounding fence. Some local expedient (rocks, stakes or brush) marker should be used to identify the location to troops on the ground and to expedite the maintenance check.

e. Recording:
No record forms for fields of Trip flares is required at Division. Units are cautioned to retain only such information in hands of forward troops required for troop relief that will not be intelligible to the enemy. Units will report the number of flares and the Map coordinates to S-3, 16th Armored Engineer Battalion, immediately after laying.

f. Installation and Maintenance:
Fields of Trip flares are subject to the same maintenance recuirements as AP or AT fields.

g. Removal:
S-3, 16th Armored Engineer Battalion, will be notified of any change in number or position of Trip flares.

By command of Major General PRICHARD:

JOHN L. INSKEEP,
Colonel, G.S.C.,
Chief of Staff.

OFFICIAL:

D. A. MOLYNEUX,
2nd Lt., A.G.D.,
Asst. Adj. General.

Incl: #1 - Minefield Record
#2 - Minefield Chart

DIST: "B"

A

MINEFIELD RECORD

MOST SECRET

For use by Div Engrs

Serial No. _____

Copy No. _____

LAID BY 1st Bn 99th Inf Regt, Unit 86 Div.

1. Officer i/c laying Lt. T. M. Carbine

   Authority for laying 99 Inf Regt

2. DATE OF LAYING 1 April 1945 Time 2200

3. LANDMARK With ref. to Map Sheet No. 47-I-NW, Scale 1;25,000

   Map Reference 170548

   Description Trail intersection

4. LANDMARK TO DATUM POINT

   Distance 50 yards. Magnetic bearing 93 degrees.

   Description of Datum Point Five (5) rock in a pile

5. DATUM LINE Length 3 yards.

   Magnetic bearing from Datum Point 100° degrees

6. ROWS Distance from Datum Point to first row Not applicable yards.

   Distance between subsecuent rows Not applicable yards.

   Number of rows Not applicable

NOTE: Subsecuent changes of direction of rows must be shown in sketch. Where knotted wire method was used, see over.

7. TOTAL NUMBER OF MINES LAID 2 A.P. (1 Am M-3) (1 Am M-2A1)

8. APPROX. DENSITY OF FIELD ---------- Mines per yd. of front.

9. GAPS. Width of gap None Length of Gap _____

   Bearing through gap _____ degrees.

   Distance from Datum Point on a bearing of _____

   location of _____ spare mines to close gap (if any) _____

10. No. AND DETAILS OF A.PERS MINES OR BOOBY TRAPS.

    1 - M-2A1 on the North side of trail, 1 - M-3 on the South side of trail. Both have two (2) trip wi

    Signature T. M. CARBINE, 1st Lt., Inf.

11. Unit 1st Bn 99th Inf Regt

    Date 1 April 1945

Serials 3, 4, 5, 6, 9, 10. MUST be shown on ske

REMEMBER

On the accuracy of these particulars will depen the lives of our men who have to lift this min or clear a lane th

Inclosure #1 to Operational Memorandum #3, Hq 1st Army Div, dated 30 March 1945.

Picket

Wire letter	Spacing of Mines	Distance between wire	No. of mines in row

Datum Point ☐ Distance between Datum Point and first row of mines _____

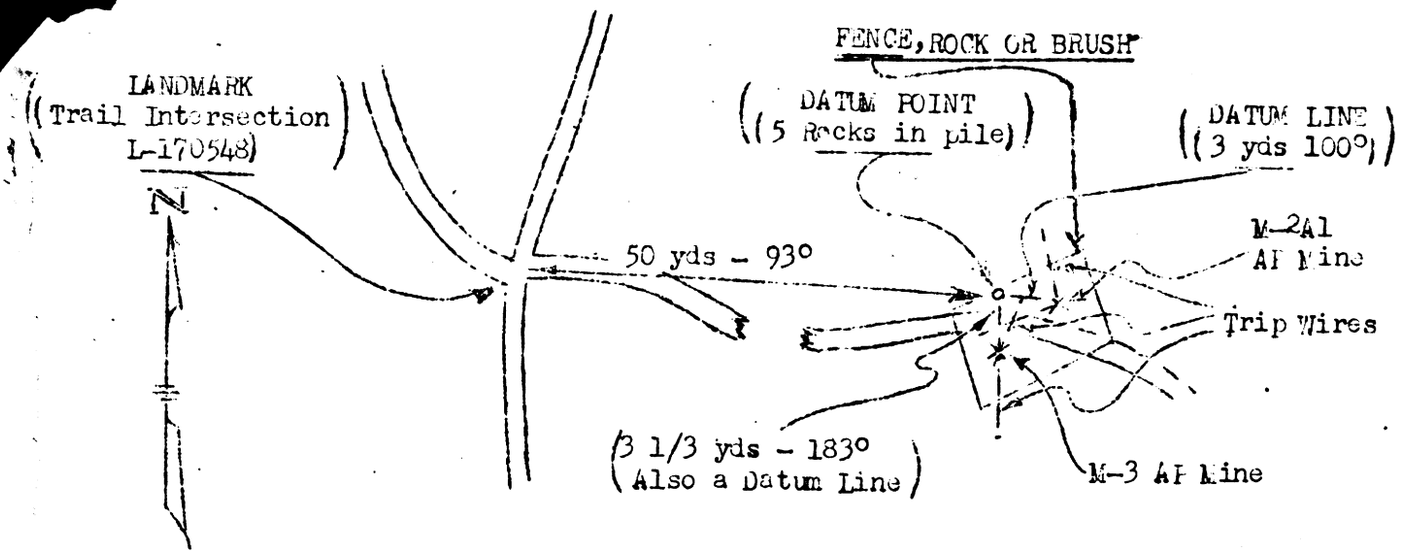
Must accompany "A")

MOST SECRET

For use by Div Engrs (Ser. _____ (Copy _____

s sketch must be full and detailed.

Scale 1" - 10 yds



Explanation: A landmark is required to accurately locate vicinity of mine field. A Datum point is necessary to accurately locate the mine or mines. Direction and distance from landmark to Datum point is necessary. Mines are located by accurate direction and distance measurements from the datum point.

Definitions:

1. A landmark is a prominent easily recognized ground feature or permanent object on the ground which when described and referred to by map coordinates enables an individual with a map to locate the exact point on the ground. Landmarks: Stone house, cross-roads, bridge, -

2. A Datum point is a fixed point used as a basis of reckoning. A Datum point should be within 10 yards of the mine or center of minefield, on the inner side so that friendly troops can move from landmark to Datum point and to the first mine without danger of setting off mines. A Datum point may be an improvised construction of rocks or stakes. Datum points, lone tree, burned out vehicle, stake or pile of rocks.

3. Datum Line is a reference line from which measurements of distance and direction are made. In protective minefield recording the line from Datum point to the mine or a line perpendicular to the center line of the mine field is the Datum line. This line is recorded by direction (magnetic azimuth) and distance (accurately measured).

4. Scale is the relation between the distance on a map, chart or sketch, and the corresponding distance on the ground expressed in the same unit of measurement.

Notes:

1. It may be necessary to have more than one Datum Point for the same field. This is permissable if both Datum points are referred to the same landmark by Direction and Distance.

2. The landmark and Datum Point may be the same feature e.g. House, L-755433 but the Datum Point must be a specific point of the house, e.g. NE Corner House, L-755433.

3. Each mine must be referred to some other mine in the field by direction and distance or to the Datum Point.

Signature T. M. CARBINE, 1st Lt. Unit 1st Bn 99th Inf Regt. Date 1 April 1945

Inclosure #2 to accompany Operational Memorandum #3, HQ 1st Armd Div, dated 30 March 1945.

ISa-22-A

SECRET

HEADQUARTERS 141ST ARMORED SIGNAL COMPANY
APO 251 U. S. Army.

8 June, 1943.

SUBJECT: Report on Combat Experience and Battle Lessons for Training Purposes.

TO : Commanding General, First Armored Division, APO 251, U. S. Army.

1. In compliance with letter, subject same as above, 14 May, 1943, Allied Force Headquarters, the following report on this organization is submitted.

2. The participation of this organization in six months of combat with the First Armored Division demonstrated an insufficiency of equipment and personnel required to furnish communications for the division with a maximum degree of efficiency.

3. Recommended changes in T/O and T/BA are covered in inclosures one and two.

4. The soundness or weakness of present tactical doctrine and organization of the following subjects is discussed below in paragraphs 5 to 9 inclusive.

a. Wire Communications
b. Radio Communications
c. Signal Supply
d. Radio Repair
e. Message Center

5. WIRE COMMUNICATIONS:
The present doctrine of wire technique was proven sound. The sufficiency of wire equipment was inadequate. A picture of this is given by a comparison of the present T/O and T/BA of an Armored Signal Company and a new T/O outlined in inclosures one and two.

While making a successful attack, an Armored Division will consume 40 miles of wire per day. This includes only the wire handled by Signal Company personnel. Present T/O is insufficient to lay and maintain this amount of wire. Present equipment is insufficient. This organization actually acquired and kept busy a wire section of 38 men and two officers. Two additional ¼-ton trucks and one additional 3/4-ton weapons carrier were employed.

6. RADIO COMMUNICATIONS:
Radio equipment in the Signal Company proved sufficient with the exception of the nigh power Signal Centers. One additional high power set was acquired and used extensively. At least two more are desirable.

Changing of radio frequencies and code signs daily proved sound and desirable.

Radio discipline and procedure on CW nets was relatively good. Radio discipline and procedure on FM sets and voice AM sets was extremely poor. This was due to the lack of training of officers particularly and other unskilled radio personnel

14

EXHIBIT "A"

who often operated the voice sets. Almost every rule of Radio Security was violated. Questioning of enemy prisoners revealed that the following information had been given away by voice radio.

a. Time and place of attack
b. Position of friendly troops
c. Presence of high ranking officers
d. Casualties - vehicular and personnel
e. Status of Supplies

It was definitely demonstrated that the teaching of Radio Security must be more thorough and must reach everyone who is liable to use the radio in combat. It is further suggested that the training of Radio Operators will not be limited to code table training. It has been the experience of this organization that replacement operators must spend too long a period acclimating themselves to actual combat radio nets. Evidently this has been due to the fact that they were not taught to operate in radio nets where there was a great deal of interference. Radio nets during operations have a tremendous amount of interference from other stations. It is suggested that a period of the radio operators training be allotted to having operators work in nets where there is excessive interference.

7. SIGNAL SUPPLY:

Signal Supply was poor in the early stages of combat but improved as time went on. At first, replacement tanks came with incomplete radio equipment and in some cases none at all. Radio crystals for the FM sets were insufficient. There were no replacement parts for the 500 series radios used by this Division. In many cases a radio could not be used due to the failure of one particular part.

The supply of expendable signal corps items at the forward depots was good. The supply of critical items and spare parts however was poor. It is thought that a method must be worked out, using as a basis the requirements estimated a month in advance for an organization, of supplying these advanced depots with these critical items and spare parts. There is not enough time to send equipment up from the rear depots.

8. RADIO REPAIR:

Radio Repair doctrine was proven to be sound. It is not advisable to send Signal Company repair sections further forward than the Rear Echelon of the Division. There should be three Radio Repair Sections instead of two - the present T/O allowance for the Signal Company. It was found desirable to attach a radio repair section to each letter company of the Maintenance Battalion during combat.

9. MESSAGE CENTER:

Message Center methods proved satisfactory as set forth in the present doctrine. Experience demonstrated the desirability of having an officer on duty 24 hours a day during combat. This officer must be acquainted with the tactical situation and must control the message center personnel.

For the Commanding Officer:

GEORGE S. KAGER, JR.,
1st Lt. Signal Corps,
Executive Officer.

2 Incls-
#1 - T/O Armd Sig Bn
#2 - T/O Armd Sig Bn (Chart)

15

ARMORED SIGNAL BATTALION

1	UNIT	2 Technician grade	3 Bn Hq	4 Co "A" Adm Section	5 Co "A" Wire Plat-oon	6 Co "A" Comm. Plat. (3)	7 Co "A" Msg. Cen. Plat.	8 Co "A" Radio Plat.	9 Co "A" Total Company	10 Co "B" Adm Sect.	11 Co "B" Wire Plat.	12 Co "B" Msg. Cen. Plat.	13 Co "B" Radio Repair Plat. (3)	14 Co "B" Radio Sect.	15 Co "B" Motor Maint Sect.	16 Co "B" Total Co.	17 Total Bn.	18 Remarks
2	Lieutenant Colonel		1														1	
3	Major		1a														1	All Officers and Noncommissioned Officers of first 3 grades will be armed w/ pistols and all others armed w/ carbine
4	Captain			1		1b			4	1						1	5	
5	1st Lieutenant		3		1		1	1	3			1				1	7	
6	2nd Lieutenant					1	2		5		1		1			4	9	
7	Total Commissioned		5	1	1	2	3	1	12	1	1	1	1			6	23	
8	Warrant Officer		2c														2	
9	Master Sergeant, including		1d			1	1	1	6								6	
10	Bn Sergeant Major (585)		(1)						(1)								(1)	
11	Chief Radio Operator (766)							(1)	(1)								(1)	
12	Communication Plat. Chief (766)					(1)			(3)								(3)	
13	Message Center Chief (674)						(1)		(1)								(1)	
14	First Sergeant (585)			1						1							2	
15	Technical Sergeant including		1		1		2		3				1			3	7	
16	Chief Clerk (052)		(1)														(1)	
17	Message Center Chief (674)						(2)		(2)								(2)	
18	Radio Repair (174)												(1)			(3)	(3)	
19	Wire (595)				(1)				(1)								(1)	
20	Staff Sergeant including			2		1			5	1	1	1			1	4	9	
21	Maintenance (337)														(1)	(1)	(1)	
22	Mess (824)			(1)					(1)	(1)						(1)	(2)	
23	Message Center Chief (674)											(1)				(1)	(1)	
24	Radio Repair (174)			(1)		(1)			(4)								(4)	
25	Wire (595)										(1)					(1)	(1)	
26	Sergeant, including			1	1	5	1	8	27	1	2	2	1	1	2	11	38	
27	Maintenance (337)			(1)					(1)						(2)	(2)	(3)	
28	Supply (821)			(1)					(1)	(1)						(1)	(2)	
29	Radio Operator (766)					(4)		(8)	(20)					(1)		(1)	(21)	
30	Radio Repair (174)												(1)			(3)	(3)	
31	Wire (595)				(1)	(1)			(4)		(2)					(2)	(6)	
32	Messenger (675)						(1)		(1)								(1)	
33	Message Center Chief (674)											(2)				(2)	(2)	
34	Corporal, including		1		5	2	6		17		4				2	6	24	
35	Asst Message Chief (674)						(3)		(3)								(3)	
36	Chief Tp. & Tg. Swbd. Opr. (537)				(1)	(1)			(4)		(1)					(1)	(5)	
37	Messenger, Agent (716)						(3)		(3)								(3)	
38	Maintenance (337)														(2)	(2)	(2)	
39	Supply (821)		(1)		(1)				(1)		(1)					(1)	(3)	
40	Lineman, Tp. & Tg. (238)				(3)	(1)			(6)		(2)					(2)	(8)	
41	Technician, Grade 3																	
42	Technician, Grade 4																	
43	Technician, Grade 5 including		13	17	22	29	28	42	196	14	20	14	7	6	12	87	296	
44	Private First Class																	
45	Private																	
46	Agent Messenger (716)	5				(1)e	(3)e		(6)								(6)	
47	Agent Messenger (716)					(1)e	(6)e		(9)			(3)e				(3)	(12)	
48	Armorer (511)			(1)					(1)	(1)						(1)	(2)	
49	Chauffeur, 2½-ton Tk. (345)		(2)	(4)	(2)				(6)	(5)	(3)		(2)		(2)	(16)	(24)	
50	Clerk (405)	4	(2)										(1)				(3)	
51	Clerk (405)	5	(2)	(1)					(1)	(1)						(1)	(4)	
52	Clerk (405)		(3)	(2)					(2)	(2)						(2)	(7)	
53	Clerk, Code (721)	5				(4)	(3)	(3)	(18)			(3)				(3)	(21)	
54	Clerk, code (721)							(5)	(5)					(1)		(1)	(6)	
55	Clerk, Msg. Cen. (405)	5										(1)				(1)	(1)	
56	Cook (060)	4		(2)					(2)	(2)						(2)	(4)	
57	Cook (060)	5		(2)					(2)	(2)						(2)	(4)	
58	Draftsman	5	(1)														(1)	
59	Driver, Half Track (735)	5				(4)	(1)	(8)	(21)			(1)		(1)		(2)	(23)	
60	Electrician, Auto (012)	5													(2)	(2)	(2)	
61	Inst., repairman, Tp & Tg.	4			(2)				(2)		(3)					(3)	(5)	
62	Lineman, Tg & Tp (238)	5			(4)	(1)			(7)		(3)					(3)	(10)	
63	Lineman, Tg & Tp (238)				(9)	(3)			(18)		(6)					(6)	(24)	
64	Mechanic (014)	4													(2)	(2)	(2)	
65	Mechanic (014)	5		(1)					(1)						(4)	(4)	(5)	
66	Mechanic (014)			(1)					(1)						(2)	(2)	(3)	
67	Messenger (675)	5					(3)		(3)			(3)					(6)	
68	Messenger (675)					(1)	(12)	(5)	(18)			(3)		(1)		(4)	(22)	
69	Operator, Tg. Printer (237)	5			(2)				(2)		(2)					(2)	(4)	
70	Operator, Tg Printer (238)				(1)				(1)		(1)					(1)	(2)	
71	Operator, Tp. & Swbd. (309)	5			(1)	(1)			(4)		(1)					(1)	(5)	
72	Operator, Tp. &. Swbd. (309)				(1)	(1)			(4)		(1)					(1)	(5)	
73	Radio Electrician (174)	3											(2)			(6)	(6)	
74	Radio Electrician (174)	4	(1)	(1)		(1)			(4)								(5)	
75	Radio Electrician (174)	5		(1)		(1)			(4)				(1)			(3)	(7)	
76	Radio Operator (766)	4				(5)		(13)	(28)					(2)		(2)	(38)	
77	Radio Operator (766)	5				(4)		(8)	(20)					(1)		(1)	(21)	
78	Warehousman (252)		(1)	(1)					(1)	(1)						(1)	(3)	
79	Driver, 1½-ton Panel (345)					(1)			(1)				(1)			(1)	(1)	
80	TOTAL ENLISTED		13	17	22	29	28	42	138	14	20	14	7	6	12	87	338	
81	AGGREGATE		16	22	29	38	38	51	254	17	27	17	9	7	17	112	382	
82																		

a. Executive Officer, Ass't Div. Signal Off.
b. Signal Off. at Combat Command. Complete Platoon remains at Combat Comd at all times.
c. One is Ass't Div. Sig. Property Officer. Other is Radio Repair Technician who is atchd to Hq Maint. Bn. during Combat.
d. Bn. Sgt. Maj.
e. Mounted on motorcycle.
f. Special vehicle housing complete SCR-299 w/trailer
g. Special vehicle housing complete Msg. Cen. including MC-134 A, BD-96 & TG-7A or equivalents.

83	O	Car, H/T, M2, w/Armament				(3)		(3)	(12)										(12)
84	O	Carbine Cal. .30	14	19	28	36	35	50	240	15	26	16	8	7	16	104	358
85	O	Gun, machine .50 H B															2
86	O	Gun, machine .30 light															4
87	O	Gun, Sub-mach. (on ¼ T Truck)	2	1	3	2	6	5	20	1	2	3		1	7		30
88	O	Gun, Sub-Mach Incld on Ord Veh.				4	1	8	21			1		1		2	23
89	O	Pistol, Cal..45	9	4	2	4	6	2	28	3	2	2	2		1	14	49
90	O	Personnel Carrier M-3 Spec. (SCR-299)				1f		5f	8					1f			9
91	O	Personnel Carrier M-3 Msg Cen.					1g		1			1g				1	2
92	Q	Motorcycle solo				2	12		18			3					21
93	Q	Truck, ¼ Ton	2	1	3	2	6	5	23	1	2	3			1	7	30
94	Q	Truck, 3/4 Ton Carryall	1										1			3	4
95	Q	Truck, 3/4 Ton WC			2	1			5						2	2	7
96	Q	Truck 2½ Ton	2	4	2				6	5	2		2		2	15	23
97		Bus or Panel body (Rad. Repr).										(1)				(3)	(3)
98		Equipment	(2)	(2)	(1)				(3)	(3)			(1)			(6)	(11)
99		Kitchen		(2)					(2)	(2)						(2)	(4)
100		Maint. Wrecker w/winch													(2)	(2)	(2)
101		Wire, w/winch			(1)				(1)		(2)					(2)	(3)
102	Q	Trailer, 1 Ton Cargo		2		1	1	5	11			1	1	1		5	16
103	Q	Truck 3/4 Ton C&R	1	1						1							3
104	S	Power Unit PE-92											1			3	3
105	S	Radio Set	1			8	1	16	41						2	2	43
106	S	Reel Unit RL-26			1				1		2					2	3
107	S	Switchboard BD 72			1	1			4		1						5
108	S	Telephone EE-8-A			25				25		25					25	50

PREPARED BY
DIVISION SIGNAL OFFICE
HEADQUARTERS FIRST US ARMORED DIVISION
1 MAY, 1943.

ARMORED SIGNAL BATTALION

BN. HEADQUARTERS

Lt. Col.	-	Bn. Commander & Division Signal Officer.
Major	-	Bn. Executive and Assistant Division Signal Officer.
1st Lt.	-	Bn. Adjutant and Bn. Supply Officer.
1st Lt.	-	Bn. Maintenance Officer.
1st Lt.	-	Div. Signal Property Officer.
W.O.	-	Assistant Division Signal Property Officer.
W.O.	-	Radio Repair Technician.
Mr. Sgt.	-	Bn. Sergeant Major.
T/4	-	Clerk, Division Signal Officer.
T/4	-	Clerk, Bn. Administration.
T/5	-	Clerk, File
Tech. Sgt.	-	Bn. Supply Sgt. and Division Signal Supply Sgt.
T/4	-	Clerk, Division Signal Supply.
T/5	-	Clerk, Division Signal Supply.
T/5	-	Draftsman
Cpl.	-	Chief Warehouseman, Division Signal Supply.
Pvt.	-	Chauffeur - 2½-ton Division Signal Supply
Pvt.	-	Chauffeur - 2½-ton Division Signal Supply.
Pvt.	-	Warehousman - 3/4-ton Carry all Division Signal Supply.
T/4	-	Radio Repair Technician
Pvt.	-	Clerk, Chauffeur, 3/4-ton C&R.
Pvt.	-	Clerk, chauffeur, ¼-ton C&R.
Pvt.	-	Clerk, chauffeur, ¼-ton C&R.

COMPANY "A"

ADMINISTRATIVE SECTION

Capt.	-	Commanding Officer.
1st Sgt.	-	First Sergeant.
T/5	-	Company Clerk.
Sgt.	-	Motor Sergeant.
T/5	-	Motor Mechanic.
Pvt.	-	Motor Mechanic and Chauffeur 1½-ton panel.
Staff Sgt.	-	Radio Repair Sergeant.
T/4	-	Radio Electrician.
T/5	-	Radio Electrician and Chauffeur 1½-ton panel.
Staff Sgt.	-	Mess Sergeant.
T/4	-	First Cook.
T/4	-	First Cook.
T/5	-	Second Cook.
T/5	-	Second Cook.
Pvt.	-	Chauffeur, 2½-ton Kitchen Truck.
Pvt.	-	Chauffeur, 2½-ton Ration Truck.
Sgt.	-	Company Supply Sergeant.
T/5	-	Warehousman, Company Supply.
Pvt.	-	Company Armorer.
Pvt.	-	Chauffeur, 2½-ton Gas & Oil Truck.
Pvt.	-	Chauffeur, 2½-ton Company Supply.
Pvt.	-	Clerk, chauffeur ¼-ton C&R
Pvt.	-	Clerk, chauffeur 3/4 C&R.

WIRE SECTION

1st Lt. - Wire Officer.
Tech. Sgt. - Wire Chief.
Cpl. - Chief Switchboard Operator.
T/5 - Switchboard Operator.
Pvt. - Switchboard Operator.
T/5 - Chief Teletype Operator.
T/5 - Teletype Operator.
Pvt. - Teletype Operator.
T/5 - Installer, Repairman, Telephone and Telegraph.
Sgt. - Crew Chief, 2½-ton w/RL-26
T/4 - Lineman.
T/5 - Lineman.
Pvt. - Lineman.
Pvt. - Lineman.
Pvt. Lineman and chauffeur 2½-ton 6x6.
Cpl. - Wire Supply Warehouseman.
Pvt. - Chauffeur, 2½-ton Wire Supply.
Cpl. - Crew Chief 3/4-ton Weapons Carrier w/RL-31
T/5 - Lineman
Pvt. - Lineman.
Pvt. - Lineman and Chauffeur 3/4-ton W.C.
Cpl. - Crew Chief, 3/4-ton Weapons Carrier w/RL-31
T/5 - Lineman
Pvt. - Lineman.
Pvt. - Lineman and Chauffeur 3/4-ton W.C.
T/4 - Trouble Crew Chief ¼-ton w/RL-31
Pvt. - Lineman, Chauffeur, ¼-ton C&R
Cpl. - Trouble Crew Chief ¼-ton w/RL-31
Pvt. - Lineman, Chauffeur, ¼-ton
Pvt. - Lineman, Chauffeur ¼-ton C&R.

COMBAT TEAM
COMMUNICATION PLATOON (Total of 3)

Capt. - Signal Officer, Combat Team.
1st Lt. - Ass't Signal Officer, Combat Team.
Mr. Sgt. - Platoon Sergeant.
Sgt. - Crew Chief. SCR-22 Div. Comm Net.
T/4 - Radio Operator.
T/4. - Radio Operator.
T/5 - Radio Operator.
T/5 - Clerk, code.
Pvt. - Messenger, ¼-ton C&R
T/5 - Driver, H/T
Sgt. - Crew Chief SCR-193
T/4 - Radio Operator Total of Three (3)
T/5 - Radio Operator 1 to work Div. Hcn Net.
T/5 - Clerk, code 1 to work ARU Net.
T/5 - Driver, H/T 1 to work Div. Adm. Net.
Sgt. - Crew Chief, Wire.
T/5 - Lineman.
Pvt. - Lineman.
Pvt. - Lineman, Chauffeur, 3/4-ton W.C. w/RL-31, BD-72.

COMBAT TEAM CONTINUED
COMMUNICATION PLATOON

T/5 - Messenger, Motorcycle.
Pvt. - Messenger, Motorcycle.
Staff Sgt. - Crew Chief, Radio Repair.
T/4 - Technician, Radio Repair.
T/5 - Technician, Radio Repair.
Pvt. - Driver, 1½-ton Panel.

MESSAGE CENTER PLATOON

1st Lt. - Message Center Officer.
2nd Lt. - Ass't. Message Center Officer.
2nd Lt. - Ass't Message Center Officer.
Mr. Sgt. - Message Center Chief.
Tech Sgt. - Ass't. Message Center Chief.
Tech Sgt. - Ass't. Message Center Chief.
Sgt. - Chief Messenger.
T/5 - Driver, Half Track.
Cpl. - Crew Chief. (3 Identical Crews)
T/5 - Code Clerk.
Cpl. - Motorcycle Messenger and Dispatcher.
T/5 - Motorcycle Messenger.
Pvt. - Motorcycle Messenger.
Pvt. - Motorcycle Messenger.
T/5 - Messenger, ¼-ton C & R
Pvt. - Messenger, ¼-ton C & R
Pvt. - Foot Messenger.
Pvt. - Foot Messenger.

RADIO PLATOON

1st Lt. - Radio Officer.
Mr. Sgt. - Radio Platoon Sergeant.
Sgt. - Crew Chief Radio Set SCR-299
T/4 - Radio Operator.
T/4 - Radio Operator.
T/5 - Radio Operator.
Pvt. - Code Clerk.
Pvt. - Messenger, ¼-ton C & R
T/5 - Driver, H/T
Sgt. - Crew Chief.
T/4 - Radio Operator.
T/5 - Radio Operator.
T/5 - Code Clerk.
T/5 - Driver, H/T

(5 Crews in Div. Hq.
1 NCS Div. Comd Net.
1 NCS Div. Rcn. Net.
1 NCS Div. Adm. Net
1 NCS Air Req. Unit Net
1 to work Corps Comd Net.)
(3 Crews, Fwd. Echelon)

COMPANY "B"

ADMINISTRATION PLATOON

Capt. - Company Commander.
1st Sgt. - First Sergeant.
T/5 - Company Clerk.
Pvt. - Clerk, Chauffeur, 3/4-ton C & R.
Pvt. - Clerk, Chauffeur, ¼-ton C & R.
Sgt. - Company Supply Sergeant.
T/5 - Warehouseman, Company Supply.
Pvt. - Company Armorer.
Pvt. - Chauffeur, 2½-ton Truck Company Supply Truck.
Pvt. - Chauffeur, 2½-ton Truck Company Supply Truck.
Pvt. - Chauffeur, 2½-ton Truck Bn. Adm. Truck.
Staff Sgt. - Mess Sergeant.
T/4 - First Cook.
T/4 - First Cook.
T/5 - Second Cook.
T/5 - Second Cook.
Pvt. - Chauffeur, 2½-ton Kitchen Truck.
Pvt. - Chauffeur, 2½-ton Ration Truck.

WIRE PLATOON

2nd Lt. - Wire Officer.
Staff Sgt. - Wire Chief.
Cpl. - Chief Switchboard Operator.
T/5 - Switchboard Operator.
Pvt. - Switchboard Operator.
T/5 - Chief Teletype Operator.
Pvt. - Teletype Operator.
T/5 - Teletype Operator.
T/4 - Installer, Repairman, TP, TG, & TGP.
T/5 - Installer, Repairman, TP, TG, & TGP.
Sgt. - Ass't. Wire Chief & Crew Chief 2½-ton W/RL-26.
T/4 - Lineman.
T/5 - Lineman.
Pvt. - Lineman.
Pvt. - Lineman.
Pvt. - Lineman, and Chauffeur 2½-ton
Cpl. - Wire Supply & Equipment.
Pvt. - Chauffeur, 2½-ton Wire Supply.
Cpl. - Trouble Crew Chief ¼-ton W/RL-31 (2 Identical Crews)
Pvt. - Lineman, Chauffeur, ¼-ton C & R.

MESSAGE CENTER PLATOON

1st Lt. - Message Center Officer.
Staff Sgt. - Message Center Chief and Crew Chief.
T/5 - Counter Clerk.
T/5 - Code Clerk.
Pvt. - Foot Messenger.
Pvt. - Motorcycle Messenger.
T/5 - Messenger, ¼-ton C & R.
T/5 - Driver, Half Track.

MESSAGE CENTER PLATOON CONTINUED

Sgt.	- Crew Chief	(2 Crews)
T/5	- Code Clerk.	
Pvt.	- Foot Messenger.	
Pvt.	- Motorcycle Messenger.	
T/5	- Messenger, ¼-ton C & R.	

RADIO REPAIR PLATOON

(3 Identical Sections)

2nd Lt.	- Radio Repair Officer.
Tech Sgt.	- Radio Repair Section Chief.
Sgt.	- Radio Electrician and Installation Chief.
T/3	- Radio Technician.
T/3	- Radio Technician,
T/4	- Supply Clerk.
T/5	- Radio Technician.
T/5	- Chauffeur, 2½-ton Signal Repair Truck.
Pvt.	- Chauffeur, 2½-ton Radio Supply Truck.
Pvt.	- Chauffeur, 3/4-ton C & R Car.

MOTOR MAINTENANCE SECTION

Staff Sgt. - Motor Sergeant.

(2 Identical Crews)

Sgt.	- Mechanic and Crew Chief.
T/4	- Mechanic and Welder.
T/5	- Mechanic.
T/5	- Mechanic.
T/5	- Auto Electrician.
Pvt.	- Chauffeur, 2½-ton Wrecker, Parts, W/Winch.
Cpl.	- Parts Supply.
Pvt.	- Mechanic, Chauffeur, 3/4-ton Weapons Carrier.

RADIO SECTION

Sgt.	- Crew Chief.	(SCR-299)
T/4	- Radio Operator.	
T/4	- Radio Operator.	
T/5	- Radio Operator.	
Pvt.	- Messenger, ¼-ton C & R.	
T/5	- Driver, H/T.	

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SECRET

USA-222

SERVICE COMPANY, FIRST US ARMORED DIVISION
APO 251, New York City

15 June 1945

SUBJECT: Lessons Learned in Last Operations.

TO : G-3, First Armored Division, APO 251, New York City.

1. In compliance with telephonic message dated 6 June 1945, requesting report on lessons learned during last operations, the following report is submitted:

a. TACTICAL LESSONS: Because of the areas occupied by the Service Echelon no new tactical lessons were learned.

b. ADMINISTRATIVE LESSONS: A Replacement Center should be built up in this organization, including Administrative personnel, kitchens and supply.

An average of 800 replacements and men returning from hospitals were serviced by this echelon. Kitchens originally set up for messing 350 men were used to mess 800 to 1100 men at various intervals. Men returned from hospitals with little or no equipment and the Company Supply Section was not able to meet the demands because it showed an overage on our T.B.A. equipment.

Recommendations: (Additional Personnel and Equipment)

Personnel	Number	Equipment
Mess Sergeant	1	2 Field Ranges
Cooks	3	and accessories for
Cooks' Helpers	3	kitchen equipment.
Basics	6	
Supply Sergeant	1	
Supply Clerk	1	
Basics	2	

W. E. SIMMONS
Captain, USA
Commanding.

2a

EXHIBIT "A"

SECRET