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COMMUNICATION IN A COMBAT COMMAND

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The accompanying document describes the radio and wire facilities utilized in Combat Command B, 1st Armored Division during the Italian Campaign. It includes a summary of the communication difficulties encountered by the officers and men of that command during several of their early operations, and the plans and preparations made by them which culminated in the closely knit tank-infantry teams that slashed their way out of the Anzio Beachhead. Further, as a result of the experiences of these men, the importance of the use of wire in armored operations is stressed and examples are given of occasions where this method of communication was extensively used with great success.

The success of an armored unit, whether it be a division or a small tank-infantry team, depends more upon continuous and efficient communication than any other single factor. The great preponderance of radios in an armored unit makes it mandatory that every man be able to effectively utilize the radio facilities at hand. Prior to World War II tank radios were bulky, complicated, and for the most part were operated only on key by highly trained operators. Since that time the trend has been to make radios more simple to operate, and to put them in the hands of more people. The present day push-button voice radio is a far cry from the radios installed in tanks in 1940.[1]

1. Although several experimental voice radios, similar to those used by municipal police departments were being tested in armored vehicles prior to 1940, the first definite step taken to set up the reguirements and military characteristics of radios for armored units was made in August 1940, when the Commanding General of the Armored Force stated that the most pressing needs of this newly organized force could be met by four types of radios. Armored Force Board Project 1, entitled, "Radio Requirements of the Armored Force," which was formulated for the purpose of studying this problem, concluded that four radio sets with the following

characteristics would be satisfactory. First, a radio with a range of 100 miles when moving and 250 miles when halted. This set was to be used for division contact with higher headquarters, for contact with division trains and the rear echelon, and would be operated by Signal Corps personnel. Second, a vehicular radio set with a range of 50 miles when moving and 70 miles when halted. This set was to be designed for CW operation only, and was to have four preselected frequencies capable of use within 10 seconds. The size of this set was critical because it was to be mounted in light tanks. Third, a vehicular radio setwith a range of five miles while in motion. This set, to be designed for voice operation only, was to have 100 channels with 10 preset for immediate use; one transmitter, and two separate receivers either of which could be used immediately. Fourth, a portable set for installation on the luggage carrier of a solo motorcycle. This set too was to be designed for voice operation only and would consist of 100 channels of which two would be preset for immediate use. It further stated that this radio should net with the third type radio, and should have a range of five miles under favorable conditions. When these radios were developed, service tested and

This article will deal primarily with communications within Combat Command B, 1st Armored Division during its operations in Italy, and will include a discussion of the methods employed to facilitate tank-infantry cooperation.

During operations it was normal for Combat Command B to operate a command, a reconnaissance and an administrative net to division headquarters; and a command, reconnaissance and administrative net to its subordinate units.

The division command net generally included the division G-3 and the S-3's of each combat command, the division artillery, and the engineer and reconnaissance battalions. When the division commander or his chief of staff were travelling in their vehicles, they reported into this net. The division reconnaissance net included the division G-2, the S-2's of each combat command, and the S-2's of the

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issued to armored units, there were, surprisingly enough, few changes in the original characteristics. Notable among these changes were that the second type radio operated on both voice and CW; the third and fourth types had only 80 channels, and the fourth type was developed as a combination portable set or set capable of being easily installed in vehicles. These four sets are known as the SCR 299; SCR 506; SCR 508, 528, and 538; and the SCR 509 and 510 respectively.

division artillery and the reconnaissance battalion, while the administrative net included the division G-4 and the S-4's of each combat command, the division artillery, the reconnaissance battalion and the division rear echelon. The combat command command net (Fig 1) included the combat command S-3 and the S-3's of each attached combat unit with the exception of the supporting or attached artillery and the attached reconnaissance unit. The combat command reconnaissance net (Fig 2) included the combat command S-2 and the S-2's of each attached unit of battalion size, and the attached reconnaissance unit, whereas the administrative net (Fig 3) included the combat command S-4 and the S-4's of each attached unit of battalion size and the attached ordnance company. When the combat command headquarters was composed of a forward and a rear echelon, contact was maintained between the two elements with SCR 508's.

The attached or supporting artillery battalion, rather than reporting into the command net, maintained direct radio contact through its liaison officer. The artillery liaison officer and his section of four men, one 1/4 ton truck with radio SCR 510, and one half track with an SCR 506, stayed with the combat command headquarters for the period of time his battalion remained in direct support. His SCR 506 was used to maintain contact with the artillery battalion head-

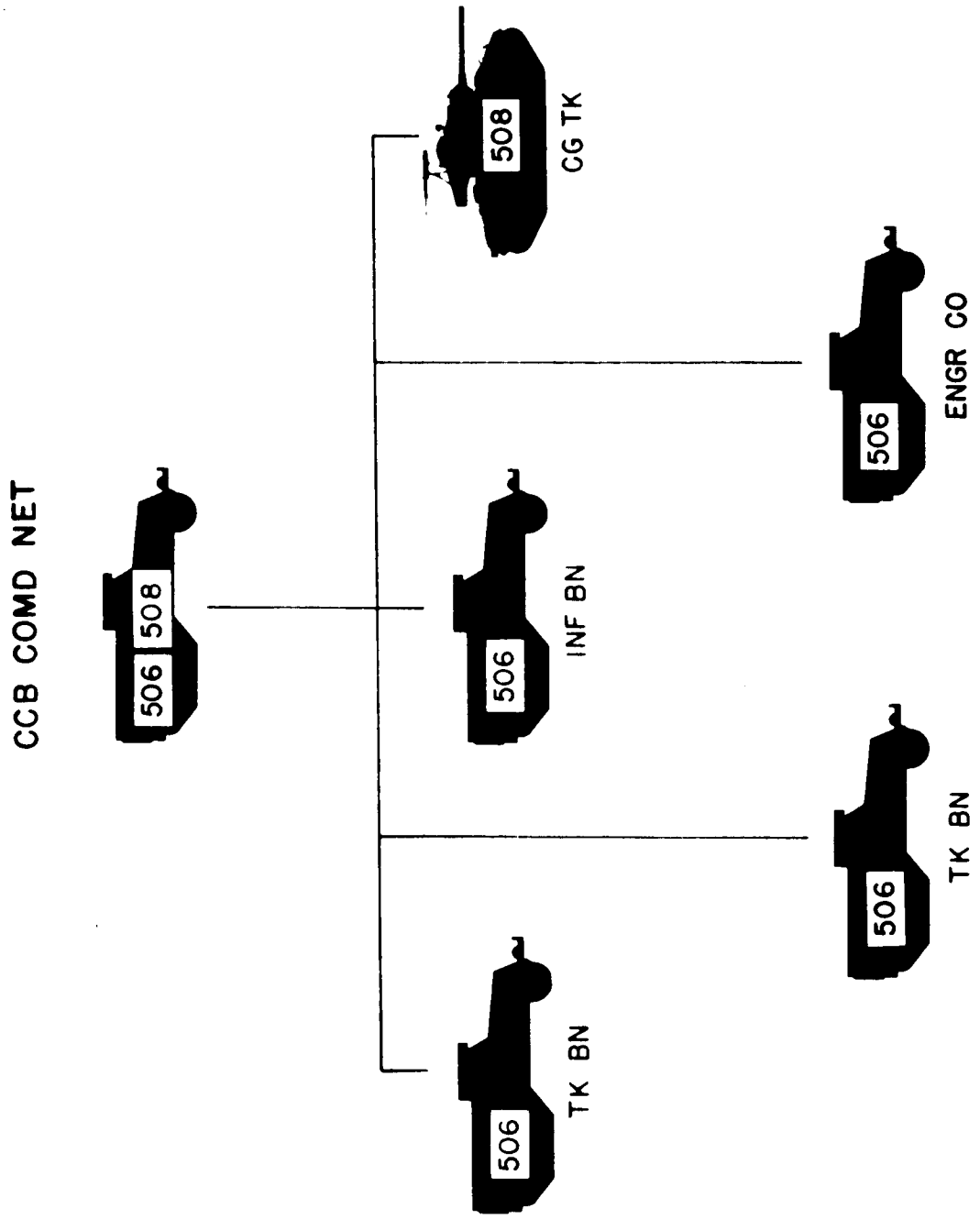
CCB COMD NET
506
508
508
CG TK
506
ENGR CO
506
INF BN
506
TK BN
506
TK BN

FIGURE 1

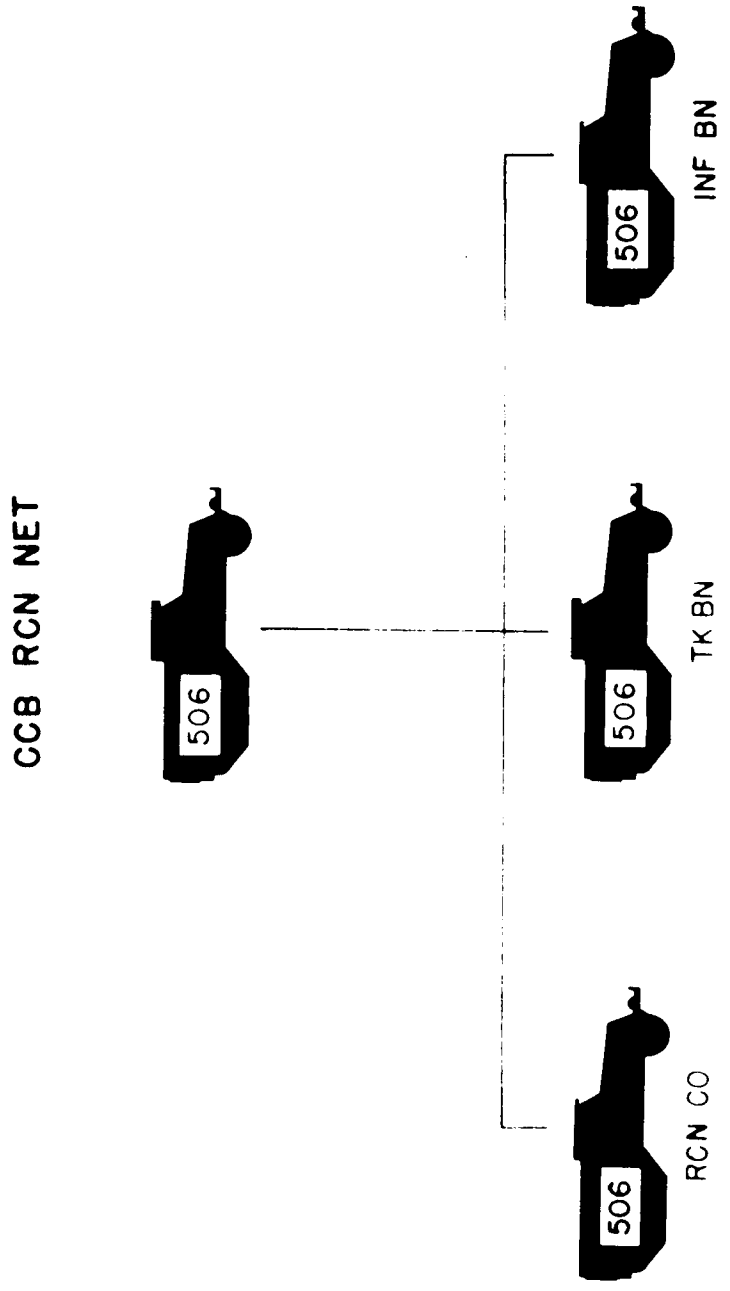

FIGURE 2

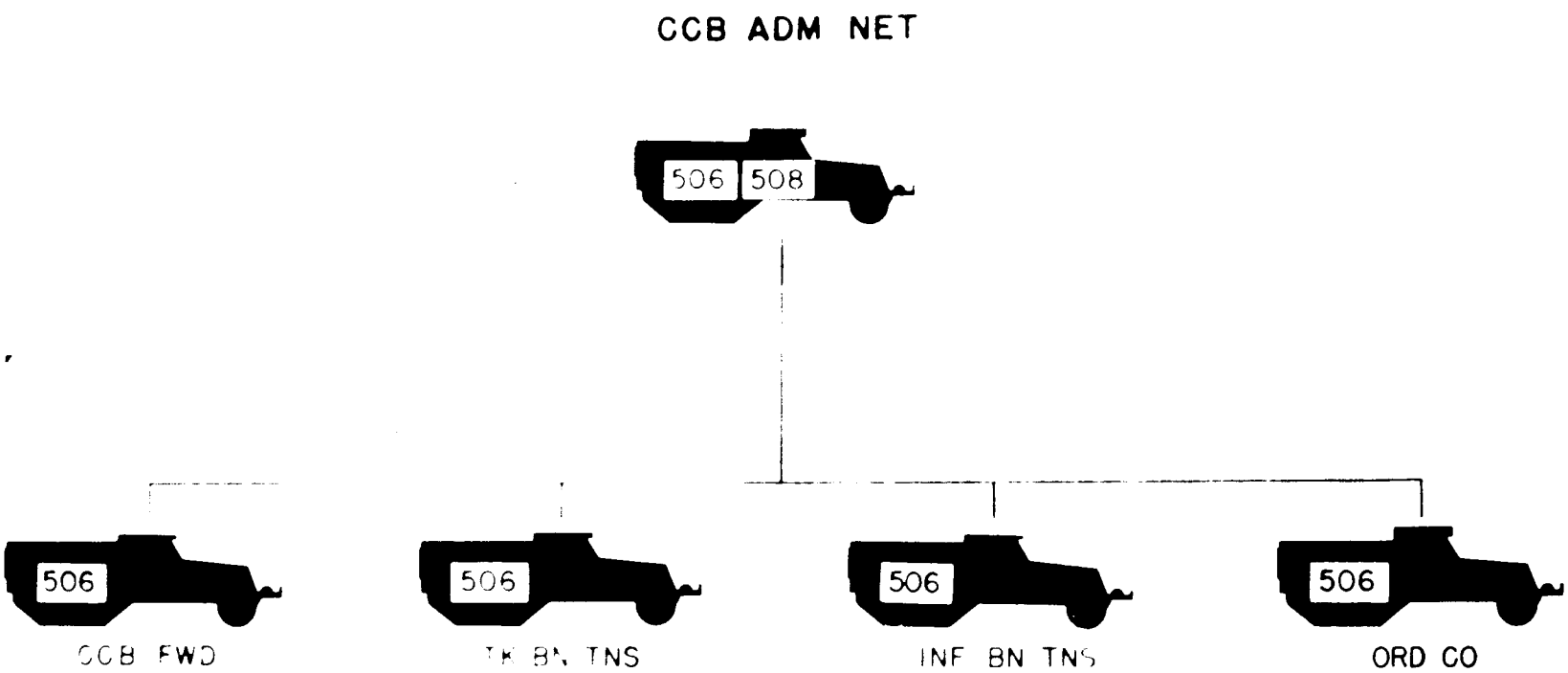
CCB ADM NET
506 508
506
CCB FWD
506
TK BN TNS
506
INF BN TNS
506
ORD CO

FIGURE 3

quarters while the SCR 510 was used to maintain contact with the forward observers. This latter radio was dismounted from its vehicle and set up in the command post. Inasmuch as the forward observers were with each of the companies of the attached tank and infantry battalions, this proceedure provid- another link with the combat battalions which was used in an emergency. Due to the fact that the liaison officer maintained a continuous watch on this channel, the combat command commander was able to secure much information relative to forward locations and enemy activities sooner than he otherwise would through normal channels. The artillery battalions of the 1st Armored Division maintained continuous radio contact with the division artillery regardless of their mission. This gave the combat commands still another link to division headquarters in the event that other radio channels failed.

The radio in the division command net was an SCR 299, with crew, attached to the command from the division signal company. The crew consisted of three radio operators, a message center chief, a code clerk and a driver. During the period of their attachment, the message center chief and the code clerk were made an integral part of the combat command message center. Contact with the division G-2 and the divisional reconnaissance units was maintained through an SCR 506, and crew, also attached from the division signal company.

The other four medium powered radios in the headquarters were operated by communication personnel of the combat command. In brief, the principal radio nets of the combat command were operated with one high power signal center and five medium power signal centers.

In addition to the six radio nets operated within the headquarters, one extra receiver was tuned to the tactical reconnaissance net for the purpose of receiving the most up-to-date air reconnaissance reports. These reports were transmitted on voice, daily from dawn to dusk, from a powerful radio station located on or near the air field at which the planes were based. Inasmuch as no radio operator was available to perform this duty, the work was done jointly by members of the S-2 and S-3 sections. By copying all messages transmitted over this net, much valuable intelligence information was obtained. This listening watch was maintained at all times regardless of whether the combat command was committed or in a rest area.

Although each tank and infantry battalion had two medium power radios for communication with their service elements, and each had a regularly assigned frequency on which to operate a battalion administrative net, I know of no time when any battalion operated in such a manner. In order to have a second link between the combat command and

each of the battalions, and to permit each battalion to have reconnaissance information first hand, they were required to enter a radio in the combat command reconnaissance net. This procedure materially reduced the amount of traffic on an already overloaded command net.

Communication below battalion level except in the case of companies of the engineer, ordnance and reconnaissance battalions was maintained by means of the SCR 508, 528, 538, 509 and 510 radios. All companies of the engineer, ordnance and reconnaissance battalions were equipped with medium powered radios (SCR 506) for communication with their next higher headquarters, and the FM 500 series radios for intra company communication.

During a great part of World War II the majority of the tanks in every tank company of the 1st Armored Division were equipped with SCR 538's. This radio consisted only of a receiver and an interphone amplifier. Not having a transmitter, the individual tank commander could only receive messages from his platoon or section leader. If he acknowleged receipt of a message, his receipt was necessarily made by visual means. Generally tables of organization authorized three out of five tanks to be equipped with SCR 538's. Consequently, only platoon and section leaders were equipped with radios capable of transmitting messages.

All tank battalion commanders continually recommended that the tables of organization be revised to provide for two way communication for every tank.[1] Battalion and company commanders however, saw to it that their commands had a transmitter in every tank whenever possible.[2]

As long as a combat command was composed of those units having medium powered radio sets, the problem of the communication officer was materially reduced. However, with the normal attachment of a medical company, and the possible attachment of a tank destroyer company, or in the case of a tank or infantry company coming directly under combat command control, the radio problem became more complex. This complexity was due to the fact that these units did not have medium powered radios for contact with higher headquarters. In this particular case, units maintained communication with the combat command by means of an SCR 508 tuned in on the combat command channel. Any additional divisional units, not having medium powered radios, which were attached to the command also reported into this

1. AGF Board Report, Interviews on Armored Command activities, with officers of the 1st Armored Division, Nov. 16 - 28, 1943.

2. Report on the Italian Campaign by Maj. G. Artman, AGF Observer, Dec 1943 - March 1944.

net (Fig 4).

Another typical problem with which I was continually confronted was that of the attachment of small nondivisional units having no radios which would net with any radio within the combat command. If time permitted, I had an SCR 510 installed in one of the vehicles of that unit. This wholeprocedure could be completed in a matter of one of two hours. The actual installation could be completed in about one half hour. If time did not permit, I gave that unit an SCR 509 from one of the combat command staff cars.

It is my opinion that the tank elements of an armored division had sufficient radios to ensure adequate communication but that the armored infantry, once dismounted from their vehicles, was inadequately equipped. A tank platoon or even a tank section could be detached from its parent organization and, under the most adverse conditions, have communication established with another divisional unit in a matter of minutes. If a crystal did not have to be changed this communication was established immediately. On the other hand, the infantry battalions, when dismounted, only had available the SCR 509. In addition to its being a cumbersome load to carry, this radio had the disadvantage of having only two preset channels. Further, inasmuch as this set only had one receiver, the radio operator was not

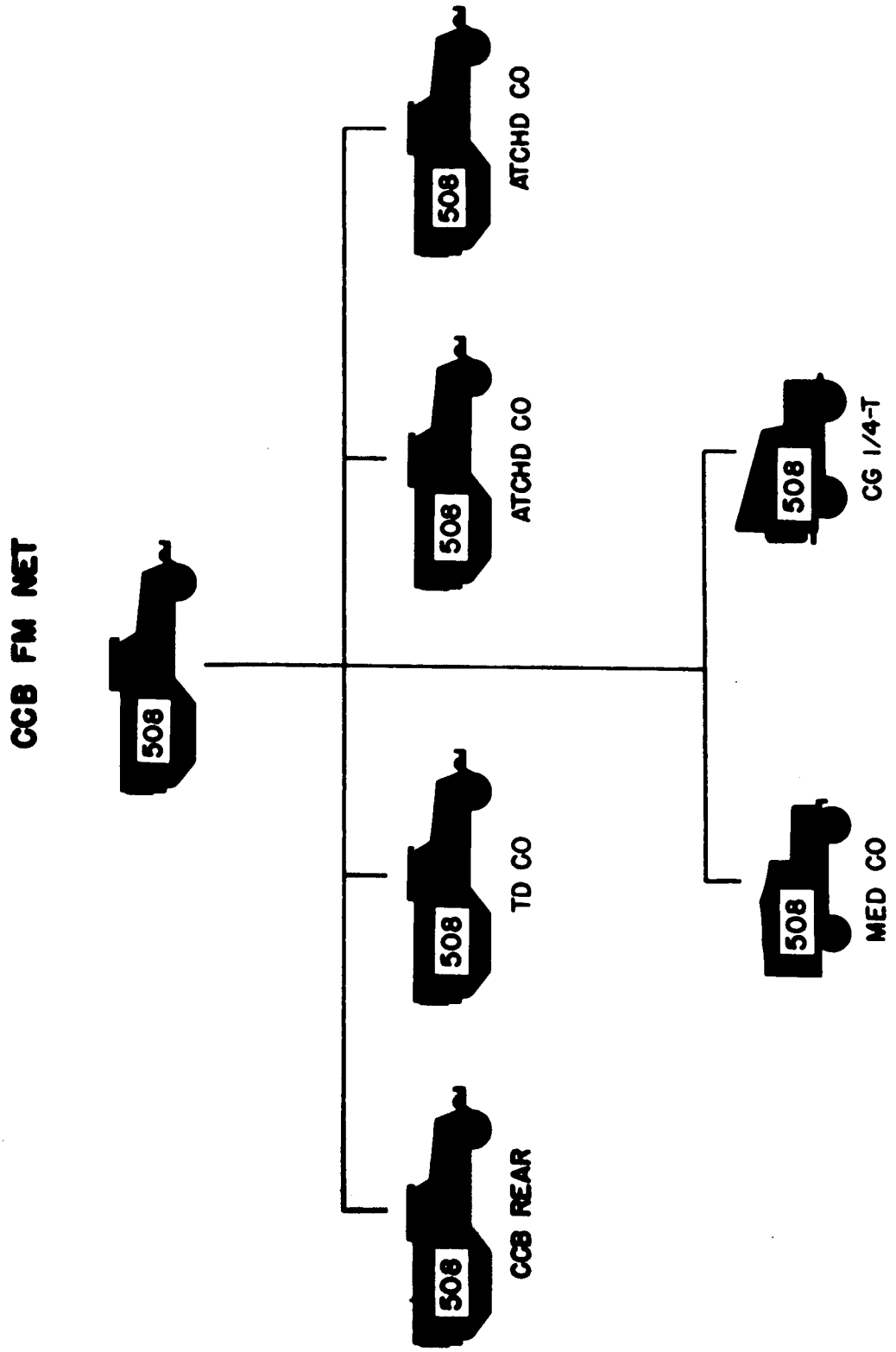
CCB FM NET
508
508
ATCHD CO
508
ATCHD CO
508
CG 1/4-T
508
TD CO
508
MED CO
508
CCB REAR

FIGURE 4

able to tell whether or not he was being called on the other channel.

Each armored infantry battalion commander had three channels he was able to switch to at any time in order to contact each of his companies. His companies could contact him at any time because he was normally on the battalion channel. The two channels on the battalion commanders radio were set up on the battalion command channel, and the channel of his leading company. Each rifle company had one channel set on the battalion channel and the other on its own command channel. It was therefore impossible for the battalion commander to contact two of his companies unless they happened to be listening on the battalion command channel. This problem was solved either by having all companies of a battalion operate on the battalion command channel, of by making two radios available to the battalion commander. In the latter case, one radio was set on the battalion command channel and one rifle company command channel, and the other was set on the other two rifle company command channels.

The armored infantry battalion, once dismounted, carried four SCR 509's per rifle company, and three in the battalion command group. Each of these sets were usually carried by two men, although I have seen one man carry the

complete load. When carried by two men, the transmitter and battery pack were not clamped together, but were connected by an extension cord CD 509. This permitted the two components to be separated by approximately eight feet, whereby enabling each man to carry one portion of the load. While in motion, the set was switched on and the telescope antenna remained attached to the set. The radio operator carried the transmitter and wore the headset. Messages were transmitted or received only while stationary. I emphasize this particular point to show the great difficulties encountered by the armored infantryman in his effort to maintain communication. Although very difficult, infantry battalion and company commanders were able to maintain contact with their units using this method.

From the time 1/4 ton vehicles were introduced into the army, many attempts were made to install and operate radios from them. None of these attempts were too successful because of the size and the number of components of the radios in use. Because of their compactness however, the 500 series radios were readily adoptable to installation in these small vehicles. Although original tables of organization authorized only SCR 510's to be so installed, it was not long before the majority of the battalion and company commanders had SCR 508's or 528's installed in their "peeps".

When a tank unit was attached to an infantry unit, no communication difficulties were encountered inasmuch as every tank with an SCR 508 or 528 had one channel set on the channel of the infantry unit to which attached. However, when an infantry unit was attached to a tank unit, tank unit commanders habitually sent a radio liaison vehicle, usually a 1/4 ton truck with an SCR 510, to the infantry unit for liaison purposes. This radio was in the command net of the tank battalion and stayed with the infantry commander at all times. When the terrain became so difficult as to preclude use of the vehicle, the crew dismounted and operated their radio as a portable set.

During World War II commanders seemed unduly worried about interference on the channels in the 500 series radios. The majority of these radios were designed to operate on any 10 of 80 crystals. Well over 100 different channels are required to ensure the effective operation of and armored division. This fact makes it necessary that a certain number of channels be assigned to more than one unit. It is, therefore, desirable that the two units assigned a particular channel, be separated as much as possible in order to reduce the possibility of radio interference. For example, the channel assigned to the division trains headquarters company might also be assigned to a combat command

headquarters company. In cases where two companies of a battalion were assigned adjacent channels, transmissions made on one channel could be picked up on the other channel when the two companies were close together. There was little or no interference when the companies were separated by two hundred yards. This situation was remedied to a great extent by assigning widely separated channels to companies of the same battalion. On one occasion it was necessary to have the channels of a complete tank battalion changed prior to an impending attack on Cassino. Combat Command B, which was attached to the New Zealand Armored Division, was composed of an armored regiment of three tank battalions, two separate tank battalions, two infantry battalions, two infantry battalions and a New Zealand Armored Brigade. One of the separate tank battalions was using several of the channels that were in use by elements of the other four tank battalions. Due to the fact that the 1st Armored Division less Combat Command B and the 13th Armored Regiment was at Anzio I was able to use channels belonging to other units of the division for assignment to the separate tank battalion. The complete change was made in less than twelve hours.

Prior to March 1944, although infantry and tank units had been attached to one another for specific actions, the tank-infantry team as now visualized was not employed either

in Africa or Italy. However, during the months of April or May of 1944, one phase of the 1st Armored Division training on preparation for the inevitable breakout from the Anzio Beachhead was an intensive tank-infantry training program. The significance and scope of this action is expressed in the following statement of the battalion commander of the 1st Battalion, 1st Armored Regiment in an after action report of that regiment for the period 25 November 1943 through July 1944:

> "For the first time in the history of the battalion extensive training with the infantry was conducted. ... Each day found our tank platoons working problems with close support of the infantry. ... In the training great emphasis was placed upon close support with infantry companies, of working out the complications in communications and in educating the tankmen in the tactics of the infantrymen and in teaching the infantrymen the problems, limitations and capabilities of the tank."

This training was carried out with elements of the 34th Infantry Division and the 1st Special Service Force,

the units with which the tanks would operate. During this training period, and the operation that followed, radio contact between the tanks and infantry of certain teams was maintained by using the SCR 300 and for others, the SCR 509. Although it would have been most desirable to use the SCR 300 for all teams, this was not possible due to a shortage of this type of radio. The division had been issued 37 of this type of radio which were used during the operation. The remaining teams were equipped with SCR 509's.

With the advent of the SCR 300, many of the problems inherent to tank infantry communication were eliminated. In addition to making communication between the units of the armored division more flexible, this radio eliminated the lack of communication between company and platoon sized units in the armored and infantry divisions. Several times during the Tunisian Campaign, tank battalions of the 1st Armored Division were attached to regiments of infantry divisions and on occasion one or two infantry battalions of an infantry division were attached to a combat command. Although no particular difficulty was encountered in establishing contact between the attached battalion and higher headquarters, it took a certain amount of coordinating because the radios would only net on

certain frequencies. On the other hand, there was no radio contact between the attached infantry and tanks unless established by SCR 508's installed in 1/4 ton liaison vehicles.

Inasmuch as these radios were not issued to the platoons of an armored infantry company the effectiveness of radio communication was lessened between tank and infantry platoons due to the bulkiness of the SCR 510's which the infantryman had to carry. Attempts were made to increase the effectiveness of the tank-infantry communication by use of the SCR 536 (walkie-talkie) but the results were not satisfactory due to the unreliability of the set when transmitting from a tank.

Wire is a means of communication which many armored personnel are prone to pass over lightly. Granted it is of little or no value in a fast moving situation, but it is of great value in a slow moving situation and is practically the only means of communication used in rest and bivouac areas. During the battle for Cassino in early 1944, all of Combat Command B, with the exception of two infantry battalions which were occupying defensive positions, was in an assembly area in the vicinity of Mignano, Italy, waiting for Cassino, the key to the Liri Valley to fall. During this period, the command consisted of five tank battalions, one tank destroyer battalion, four artillery battalions,

and one reconnaissance company. Almost all of the communication was carried on by telephone and messenger.

This was the first time I had used wire to any extent. On previous occasions, the division signal company had laid telephone lines to our headquarters when practicable and had also laid and maintained any essential lines to our subordinate units. I was in no way prepared to take over the duty of establishing and maintaining an extensive wire system when I was notified that Combat Command B would take over a defensive sector in front of Cassino in about seven days. It was necessary to procure personnel wire laying equipment, wire, switchboards and vehicles to accomplish this task. I had the good fortune to get from the division signal officer one experienced wire man whom I immediately designated as wire chief. This man had had considerable experience, both civilian and military, in this field. Next, I obtained authority to contact the divisional units of the combat command for the purpose of obtaining 9 men to form a wire team. All of the men selected had had the advantage of some experience in wire laying. These men were given two days training by the wire chief and were declared to be effective wire men. The necessary wire, wire laying reels and switchboards were given on temporary loan from the division and army signal

officers, and the army ordnance officer issued a halftrack and a 3/4 ton truck which were to be used as wire laying vehicles. These vehicles were supplemented by one 1/4 ton truck from the combat command headquarters.

The infantry battalions took over positions in place from an infantry regiment whereby alleviating the necessity of laying lines to those units. The remainder of the lines were laid and were operative in less than 10 hours. For the next two months the wire section repaired breaks in the lines and when occasion arose laid new ones. Further, this section was used continually and effectively until the conclusion of the Italian Campaign. I'd estimate that in this sector there was in excess of 100 miles of wire laid in the combat command area. The infantry battalions occupying sectors of the front laid wire down to squads, outposts and listening posts. The artillery had a most elaborate wire system covering all of their own units, OP's and adjacent units. The majority of the telephones and much of the wire used were German.

Another example of the use of wire in an armored division can be sited from the breakout of Anzio. Three plans called Buffalo, Grasshopper and Turtle, had been drawn up to accomplish this mission. One plan envisioned a breakout towards the south to join the troops in the

Cassino-Minturno area; the second, for a breakout to the east to cut off all enemy in the Cassino Area; and the third for a breakout to the northeast to capture Rome. Circumstances were such that a decision as to which plan would be put in effect could not be made until just prior to the attack. In order to be prepared for any eventuality, each combat commander was directed by the division commander to be ready to immediately occupy any one of three prescribed areas on the perimeter, and to execute any one of the three plans selected. Troop lists were made up for each of the plans. The Commanding General of Combat Command B assigned areas in each of the three perimeter areas to each of the subordinate units of the command and directed that communication facilities be put in such state that they could be established immediately upon moving into any one of the three areas.

As a result of this directive, wire was laid in each area from the proposed combat command CP to the proposed CP's of each of the attached units. These lines were maintained by the combat command for several days before it was decided which plan would be put in effect. During more than 2 1/2 years of combat, the 1st Armored Division laid more than 54,000 miles of wire.

To my knowlege, carrier pigeons were actually used

twice in the combat command during the Italian Campaign. They were first made available to the three infantry battalions of the 6th Armored Infantry Regiment during the attack on Mt. Porcia in January 1944. In that particular case the pigeons were not successfully used because the concussion of the exploding artillery shells killed them. However, several months later, during an attack to capture three extremely high peaks in the vicinity of Vergato, in Northern Italy, they were successfully used by the armored infantry when radio communication failed. The birds were released by the battalion and flew to the 5th Army Pigeon Loft located several miles in rear of the combat command headquarters. The information was then telephoned forward. Although this was a comparatively slow means of transmission it was successful and was much faster than messenger.

An important part of any communication system is its messenger service. Messengers must be used and must be used often. They are of inestimable value when radio and telephone fail and are the only practical means of transmitting maps, reports and documents. It was SOP in Combat Command B that all attached units send a mounted messenger to the headquarters immediately upon attachment. This messenger was required to remain at the headquarters regardless of whether or not his unit had a liaison officer

there. I found it necessary that one man be detailed as a permanent dispatcher and be charged with control of all messengers. It was his duty to know where every messenger slept and where each one was at all times. If not properly mannaged, messengers can be the bane of any communications officer's exsistance.

One of my greatest aides in maintaining communications was the attached radio repair team which came from the division signal company. I can think of no instance between 1942 and 1945 when a radio repair team was not made available to the combat command in either a supporting or an attached role for an operation. This team consisted of an officer or warrant officer and five repair men. Its vehicular equipment consisted of one 2½ ton carge truck, one 3/4 ton truck, one 2½ ton shop truck and one 1/2 ton trailer and power unit. In addition to carrying a very generous supply of radio tubes and spare parts for each type of radio in the division, several complete radios of each type and numerous additional mounting bases, receivers, transmitters and antennae were carried at all times. When a radio was brought in for repair, the inoperative unit was immediately with a serviceable one and the inoperative unit repaired when time permitted. Most of the repair work of this crew was accomplished at night. In addition to its other duties

the radio repair section served as a crystal bank for the command.

The team was habitually attached to the supporting ordnance company. Arrangements were made with the commander of this company to permit the radio repair team to check for repairs. Further arrangements were made to insure that every replacement vehicle received by the company was inspected by the repair team and its radio set on the proper channels. This team provided a great variety of services in addition to the actual repair of radios. At one time, due to a critical shortage of batteries for the SCR 509's, this section made useable batteries from combinations of batteries BA 2's and BA 30's. Further, during emergencies they were able to repair some of the crystals which became inoperative. Stepping out of their role as radio repair men, this team maintained and operated a semi fixed radio station during one critical period.

I believe that the radio equipment in an armored division has proven to be most satisfactory under combat conditions. Under extremely favorable conditions organic radio sets have transmitted and received messages over amazing distances. In November 1942, an SCR 299, located in Combat Command B bivouac area outside of Oran transmitted messages to another 299 with another part of the combat

command in Tunisia, a distance of more than 700 miles. With minor modifications, the Brazilian Expeditionary Force, while in Italy, maintained contact, by voice, with Rio De Janiro using the same type of radio. At times, American troops in the Cassino area were able to hear troops of the 1st Armored Division at Anzio operating SCR 508's. This distance was approximately 60 miles. Upon many occasions, ground troops were able to communicate readily with artillery liaison planes for distances of 20 miles using SCR 509's.

Successful tactical operations are necessarily predicated on sound utilization of signal equipment. Widely separated commands operating at great distances from division or higher headquarters must be able to readily communicate with those headquarters and with each other. Their very exsistance depends on it. While a radio or telephone in the hands of an untrained or careless operator is a potent weapon of self destruction, insufficient or inadequate communication facilities are equally destructive. The units of the armored divisions were, and are well equipped with long, medium and short range radios for the accomplishment of their mission. The sole exception is in the case of the armored infantry battalions. In order to insure complete tank-infantry team cooperation from the

point of view of communication personnel, it is necessary that the armored infantry battalions be equipped with SCR 300's down through platoons, if they are to be maintained at the same high degree of flexibility that characterizes other combat elements of the armored division. Further, it is essential that all communication personnel in tank and armored infantry battalions, and combat commands, be given training in the installation and maintenance of wire.

The vast number of radios in the armored division have made all armored personnel familiar with the capabilities, limitations and operation of at least one of the several types of radios found in the division. This one factor has been the motivating force which has made the combat soldier aware of the importance of his organic signal equipment and has caused him to place confidence in that equipment and the men who operate it.

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