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Infantry Attacking Across A River

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PREFACE

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Appreciation is expressed to the members of the Staff of The Infantry School Library for assistance given in the preparation of this study.

Throughout this Monograph the term "Supporting Fires" will apply to those weapons not organic, or normally attached to the infantry battalion. In the case of organic, or attached weapons, the Battalion Commander has control over the planning for, and the employment of such weapons. This research was concerned with the fire support that must be provided the frontline battalion in an attack across a river in the face of well prepared and strongly defended enemy positions. Furthermore, consideration was not given to the employment of nuclear weapons, or of CBR agents under the prescribed conditions; only conventional weapons and munitions were considered.

The point of view expressed in this paper is that of the author - not necessarily that of The Infantry School, or of The Department of the Army.

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INTRODUCTION

At the very beginning of a major river crossing operation a few small groups of soldiers, loaded with the essentials of combat, lift the assault boats to their shoulders and follow the guides through the darkness to the near bank of the river. The boats are pushed into the moving water and the men clamber awkwardly aboard. They are as quiet as possible in the cold water and the shifting boats. Hands grasp the unfamiliar paddles and the boats move out into the stream. The hostile bank is only a few yards away; it can almost be seen through the darkness and it takes only a few minutes of earnest paddling to propel the assault craft over the water.

Suddenly, a shot rings out and it is immediately followed by another. Flares turn the night into day and the enemy activity increases; he is aware of the crossing.

The boats grate against the far bank and the troops scramble up the bank amid a hail of machine gun bullets. The attacking elements move against the enemy positions. One machine gun is destroyed with a grenade; another with automatic rifle fire.

Meanwhile, the assault craft are returning to the friendly side of the river to bring more troops into the fight that is rapidly building up. The plan is being carried out and the enemy is reacting as expected. Then, the hostile artillery commences to fire and the rounds strike on the narrow river. Assault boats are blown to bits and the engineer dumps, filled with bridging material, are strewn about in the night. Troops scatter for the shelter of foxholes and the bridging preparations are stopped. Friendly artillery units now implement the counterbattery missions as planned and the tremendous

duel of big guns commences with everything hinged on the outcome. Dispersed over an area of several miles to the rear of the friendly crossing site are a vast assemblage of troops and equipment; waiting for the bridges to be constructed, and then they will pour into the bridgehead and into combat with the enemy. This is the decisive force! In the meantime the enemy artillery continues to pound the river banks and the engineer dumps with unabated fury. The few rifleman on the hostile side of the river have taken their initial objectives, re-organized and now await the arrival of ammunition and for reinforcement.

This, generally, is the situation a unit may face once its troops have been committed over a river, for operations of this sort are characterized by an uncertainty of communications, poor control and a lack of tactical flexibility. It is impossible to commit reserves rapidly over a river; it might even be impossible to withdraw what has been committed.

The one influence a commander retains, if it has been adequately prepared and planned, is the use of supporting fires. It has been said..."the fire power of artillery is essential to a commander who is under any sort of tactical or numerical disadvantage." (17:26) To the artillery might also be added other modern day supporting fires as provided by aircraft, rockets and mortars.

When an infantry unit attacks across a river against a strongly defended position, it is, almost without exception, operating at a tactical disadvantage. This is true because of the defensive nature of the terrain, the concentrations of troops and equipment which make security difficult, and the limited maneuver capabilities of the attacker. At least locally, until the bridgehead is firmly established, it may well be operating at a numerical disadvantage also.

From the broad field of supporting fires, the specific role of

counterbattery neutralization of enemy fires was selected as the objective of this research. The neutralization role becomes much more important in a river crossing operation than in an ordinary attack because of the vulnerability of the attacking troops, the difficulty in achieving surprise and the lack of flexibility in the initial plan. Therefore, it was the intent of this study to prove that unless a small unit is provided effective counterbattery support it cannot hope to be successful in an attack across a river.

This subject is of interest to the members of all the ground forces, for river lines lend themselves readily to the defensive and it is reasonable to assume that future operations will necessitate attacking across rivers in the face of strong enemy defensive positions. The advent of helicopter-borne units promises to facilitate certain aspects of this type operation, however, the neutralization of enemy fires should retain its significance in view of the vulnerability of aircraft to enemy fire at low levels. There is also the consideration of the impact of the employment of nuclear weapons on river crossing operations. Will the tactical use of mass destruction weapons render the conventional types of artillery obsolete? The answer to this question, of course, cannot be given, however, it must be pointed out that the Korean Conflict was fought in the "Atomic Age" without the use of nuclear weapons.

Since river crossings against strong defenses are normally major operations involving Divisions, Corps, and Armies, it was difficult to isolate a Unit Action of battalion size. However, it is felt that the example selected emphasizes the importance of counterbattery fires to the small unit as well as to the large.

DISCUSSION

Although the methods of employing artillery in offensive actions across a river are the same as for any other offensive type operation there is a difference in emphasis on the various roles to be assumed, and also there are problems of a special nature in the execution of the fire plan. For example... "Counterbattery fire is much more important in a rivercrossing operation than in an ordinary attack situation. The reason for this is that the scarcity of crossing sites canalizes the movement of troops across the stream at points well known to the enemy, upon which he may place accurate artillery fires." (3:31) Also, the question of displacement becomes very much more of a problem owing to the restriction placed on both forward and lateral movements of the displacing batteries. In general the fire support will be employed to;

- "(a) Isolate the bridgehead area.
- (b) Neutralize enemy opposition at the crossing sites.
- (c) Prevent enemy artillery fire on the crossing sites.
- (d) Protect against air attacks.
- (e) Support secondary or deceptive crossings." (3:30)

The assumption made at the Infantry Battalion level for a river crossing operation is that the desired support, as indicated above, will be provided; at least to such a degree that the mission of an assault battalion can be accomplished with acceptable losses, and as a result of a very determined and persistent effort. In the event the required fire support is not forthcoming the following example will illustrate what is very likely to occur.

THE 1ST BATTALION, 141ST INFANTRY REGIMENT AT THE
RAPIDO RIVER, 20 - 22 JANUARY, 1944 (CASSINO)

Upon reaching the Gustav Line (See Annex "A") in January, 1944 the Fifth Army met a very determined resistance from the German Army. The steady and costly progress maintained by the Allies throughout the wet and cold winter slowly came to a halt along the entire front. It was then decided to expedite the movement northward to Rome with an "end run" along the west coast of Italy, utilizing the Allied Sea Power for an amphibious landing at Anzio. It was correctly assessed that the Germans were expecting such a move, as brought out by Field Marshal Kesselring..."Sooner or later he (Fifth Army) must surely end it (the costly advance up the Italian Peninsula) by a landing, which, taking into account the enemy's systematic methods, could only be expected in the region of Rome." (15:231) The landing at Anzio was to be coordinated with a general attack along the Fifth Army Front in order to draw as many of the enemy reserves as possible from the vicinity of Rome. The schedule for the entire operation ran as follows;

- "(a) 12 January FEC (French Expeditionary Corps) drive on the enemy's left toward Sant' Elia.
- (b) 15 January II Corps drive in the center to take Mt. Trocchio.
- (c) 17 January 10 Corps attack to envelope the enemy's right by crossing the Garigliano in the Minturno area and pushing rapidly north toward San Giorgio. Simultaneously 10 Corps was to establish a second bridgehead at Sant' Ambrogio to protect the left flank of II Corps.
- (d) 18 January II Corps frontal assault over the Rapido in the vicinity of Sant' Angelo in Teodice.
- (e) 22 January VI Corps landing at Anzio to threaten the enemy's rear." (13:84)

On 17 January the British X Corps successfully crossed the lower Garigliano River against strong resistance to initiate the third phase of the operation. The FEC and II Corps had accomplished the first two

phases successfully, as scheduled. The British 46th Division, however, was unable to establish a bridgehead at Sant' Ambrogio and thus secure the left flank of II Corps. In spite of this failure, the decision was made to continue with the original plan of the operation, and as a consequence the 36th Infantry Division prepared to attack across the Rapido River south of Cassino.

The terrain in the vicinity of Cassino was ideal for defensive operations. The steep mountains retarded mobility of any sort and afforded excellent observation over the floor of the Liri Valley. Monastery Hill, immediately behind the town of Cassino, rose 1700 feet above the valley area and to its rear stood Mount Cairo with an elevation of 5500 feet. The Rapido River itself is narrow... "varying in width from 25 to 50 feet, it flows between nearly vertical banks three to six feet high, which generally are covered with brush. In January the water was from nine to twelve feet deep." (13:90) Situated on the west bank of the river is the town of Sant' Angelo; built on a 40-foot bluff which slopes away to the north and the south. There are no bluffs on the east side of the river, consequently this area provided the Germans with a vantage point to observe the river and much of the area to the east.

The enemy positions were mutually supporting with well prepared and cleared fields of fire. Mines were extensively used by the Germans on both sides of the Rapido River, along with a vast amount of tactical wire. Automatic weapons were located in emplacements and pillboxes. Front line German troops were well supported by artillery, most of which was self-propelled, and a large number of nebelwerfers.

The plan of operations for the 36th Division was to attack with two regiments abreast, the 141st on the right (north) and the 143rd on the left (See Annex "B"). The 1st Battalion was to establish the initial bridgehead for the 141st Infantry by crossing the Rapido at

2000 hours, 20 January. According to a Fifth Army history... "The three rifle companies were to cross abreast, seize an area 1100 to 1500 yards due west of the bend (the "S" bend in the river) prior to daylight on the 21st, and then advance on Sant' Angelo. The first waves were to cross in boats while the engineers constructed five footbridges. The 3rd Battalion was to follow behind the 1st Battalion over the same crossings an hour later and seize the high ground west of Sant' Angelo. The 2d Battalion in Regimental Reserve was to demonstrate south of the bend to simulate a crossing." (13:92)

On 20 January the German positions north and south of Sant' Angelo just west of the river were bombed extensively and Corps Artillery continued a systematic pounding of the same area. A night crossing was planned in order to enhance the probability of surprise, but flares went up from the west bank as the attacking troops reached the equipment dumps near the river. Enemy mortar and artillery fire commenced to fall among the troops immediately. Charlie Company moved out for the crossing site at 1905, followed by Able and Baker Companies at 1930. The Germans stepped up the supporting fires, shelling assembly areas, crossroads and lines of communications to the rear of the crossing sites. Lanes had been cleared through the enemy minefields on the east bank of the Rapido and marked with white engineer tape. Guides were provided to lead the assault troops to the river's edge. However, hostile artillery and mortar fire falling within the minefields destroyed the engineer tape causing the guides to stray from the cleared paths. In addition, there were strong indications that the Germans had re-mined the cleared lanes between the time of clearing and the actual movement into the assault. Casualties resulted from the mines and a loss of control ensued. The units were late in reaching the river, but the Regimental Commander... "knowing

that the assault companies would not reach the river by 2000, ordered the direct and special support artillery to continue firing on the targets covered by the original preparation." (13:94) By 2100 a few boatloads of men from Able and Baker Companies were across, but only a few men from Charlie Company had made it. The German fire, consisting of artillery, nebelwerfers, mortars, machine guns and small arms, covered the small bridgehead area through the night. The engineers struggled to install four footbridges, but..."one was defective, one was destroyed by mines and artillery fire knocked out two more. From the remains of the four, one bridge was finally installed at 0400 and nearly all of A and B rushed across." (13:94) The German artillery fire increased in intensity and in accuracy with the coming of daylight, and consequently Brigadier General Wilbur, the Assistant Division Commander..."ordered C Company and other elements still on our side of the river to withdraw to their assembly areas in order to avoid destruction by enemy artillery during daylight hours." (8:274)

In the meantime, the 143rd Infantry to the south had been unsuccessful in maintaining a crossing of the river owing to the intense fire..."Enemy tanks, or self-propelled guns in hull-down positions, mortars, small arms, and machine guns were taking a heavy toll." (13:95)

Communication with the 1st Battalion of the 141st Infantry was lost on the morning of the 21st and..."only by the firing was it possible to determine that some progress was being made." (13:94) In spite of the heavy resistance, the 1st Battalion succeeded in..."penetrating enemy defenses as far as 1000 yards west of the river." (13:96) A determined effort was made on the 21st to reinforce Able and Baker Companies, but it wasn't until dawn of the 22nd that the remaining units of the 141st were able to cross. In spite of a heavy fog and the liberal use of smoke pots to screen the crossings,

the German fire continued to be extremely accurate as well as heavy, as indicated..."When engineers attempted to work on the Bailey bridge, artillery and mortar fire prevented significant progress." (13:97)

The final struggle of the small bridgehead force to maintain its hold on the hostile side is vividly described as follows..."Telephone communications between the regimental command post and assault troops were satisfactory until 1300, then the lines began to go out, and by 1600 all communication was cut off. All radio equipment was either destroyed or inoperative. Also by 1600 the bridges and boats were destroyed. The infantry on the west side were therefore completely isolated; resupply, evacuation and communication were impossible.

At about 1600 the enemy felt out our positions with a counter-attack by approximately two companies which was repulsed with heavy casualties. By that time every company commander but one was killed or wounded. The enemy renewed the attack on the center and both flanks shortly before 1700. American fire was noticeably less in volume, indicating that ammunition was running low. Practically no American fire was heard after 2000, and thirty minutes later the fire was all from German weapons. Between 1800 and 1900 about 40 of our troops returned to the east bank. All the rest had been killed, wounded or captured." (13:97)

ANALYSIS OF THE OPERATION

When the decision was made to attack across the Rapido river it was expected that the fighting would be heavy with a resulting high number of casualties..."Thus, on the day I recorded that I expected heavy losses on the Rapido-Garigliano front, it was our deliberate strategy to draw the Germans there in order to safeguard our landing at Anzio." (8:271) However, it certainly was not expected that the casualty rate would be prohibitive and the mission suicidal. The

attack was expected to be successful and preparations were made to provide an exploitation force by readying a part of the meager forces available in the Theater for this purpose... "According to the II Corps' Plan of attack, the 36th Division was to establish a bridgehead in the area of Sant' Angelo from which Combat Command "B" of the 1st Armored Division would attack towards Aquino and Piedemonte; while the 34th Division on the right put in a holding attack against Cassino, and the 45th Division made ready to pass through the bridgehead at Cassino from the southwest." (11:165)

Since the Infantry Battalion must rely, to a great extent, upon information and directives from higher headquarters in a river crossing operation, it might be enlightening to consider some of the aspects of this particular operation as viewed from the higher level.

Before the battle there was no question about the strength of the German defensive positions in the Cassino area... "The strength of the defenses and of the position generally was well known, and the division and regimental plans were carefully prepared." (13:92) Another observation discloses... "The Italian General Staff, which had often used this area for its training exercises, believed its defenses to be an impregnable obstacle to any army advancing against Rome from the south; and the Germans had made thorough preparation to substantiate that belief." (11:165) Since the Allied planners were aware of the natural defenses of the area, and the fighting capability of the German Army could not be questioned, it must be assumed that adequate preparations were made.

The weather, being foggy and rainy, seemed to enhance the chances of surprise by reducing enemy observation and would seemingly have reduced the effectiveness of enemy supporting fires. On the other hand, the low visibility precluded the use of tactical air support throughout the operation, but it seems that this eventuality must

have been considered, and discounted as a serious disadvantage.

The planned fire support seemed to have been adequately provided for with..."Corps Artillery, consisting of 12 battalions of field artillery and 2 tank destroyer battalions in addition to the organic artillery of the 34th and 36th Divisions." (13:94) Artillery ammunition was available, and expended in considerable quantities, as indicated..."During 20-24 January nevertheless, II Corps Artillery fired 112,303 rounds, most of it in support of the Rapido attack." (13:98)

The enemy had excellent observation of the battlefield from the high mountains on either side of the Liri valley. They were inadvertently assisted in this respect by a restriction which prevented the Allied weapons from firing on Monastery Hill..."The mountains came down to the headland of Monte Cassino and Monastery Hill from whose crown, the ancient Benedictine Abbey, the enemy enjoyed an uninterrupted view over all the approaches to the valley of the Rapido." (11:164) How was it planned to offset this disadvantage? By attacking at night and through the abundant use of smoke and fire power.

In a consideration of the logistical side of the operation there seemed to be no great handicap..."supplies and equipment, with the possible exception of boats and footbridges, were ample. Even this exception was not decisive in the failure since many companies succeeded in crossing the river." (13:37)

A brief review of the mission of the 1st Battalion, 141st Infantry reveals that the Battalion was to cross the river, seize an area 1100 to 1500 yards due west of the river prior to daylight on the 21st, and then advance on Sant' Angelo. In the meanwhile, footbridges were to be constructed and the remaining elements of the Regiment were to cross and rapidly build up the bridgehead area. In spite of

an almost complete lack of surprise, the difficulties in locating the crossing site and the incessant pounding by the German supporting fires, the 1st Battalion was able to cross the majority of its troops and then advance 1000 yards west of the river (See Annex "B"). With the coming of daylight the momentum of the crossing ceased because of the deadly accuracy of the German artillery fire. On the 21st the Germans brought up reinforcements..."The 211th Grenadier Regiment moved into the line between Piopetto Creek; the 3d Battalion, 104th Panzer Grenadier Regiment, went in south of Sant' Angelo.." (13:95) Although the 2nd and 3rd Battalions of the 141st Infantry were finally able to cross and reinforce the 1st Battalion during the early hours of the 22nd of January, the fate of the bridgehead was inevitable. Present day doctrine for river crossings states..."the rate of build-up on the far bank must exceed the enemy's capability for concentrating against it." (3:20) The Germans had won the race of the "build-up."

The following explanations may shed some light on the subject and offer general reasons for the failure of the operation. Major General Fred Walker, Division Commander of the 36th Division during the operation had this to say on one occasion..."If the crossing was to be a success it would be necessary to have the armor across the river by daylight to operate with the infantry. But bridges could not be built across the river because the approaches to the bridges had to be made over muddy lowland which was mined and which was within the normal barrage area of the German Artillery and Machine Gun fire." (15:16)

In a Fifth Army history it has been stated..."Maximum use of the II Corps Artillery was impossible both preceding and during the attack. Counterbattery missions were difficult because the enemy's artillery, located in the Pignataro, Piedimonte, and Cassino area, was generally silent prior to H-hour. Heavy smoke, which interfered

seriously with visual observation, required almost exclusive use of sound ranging." (13:98)

In "The Campaign In Italy" Eric Linklater offers this..."The Germans had made great use of smoke to conceal the positions and movement of their guns and nebelwerfers whose fire, directed from perfect observation points, had been consistently effective; while American artillery though firing 112,000 rounds in five days had been handicapped by the dense fog that overhung the assaulting infantry, whose positions were too often unknown because of the rapid failure of communication." (11:166)

In a summation of the major factors influencing the final outcome of the Rapido attack there is one irrefutable fact. The German defenders were able to initiate and to maintain very effective supporting fires throughout the entire operation. Reports from observers substantiate that from the moment the assault was discovered a heavy volume of devastatingly accurate fire was placed upon the crossing sites and the approaches thereto, in spite of poor visibility. The continued efforts to build bridges and thus facilitate the reinforcement of the 1st Battalion were constantly frustrated by German fire, primarily artillery and mortars. This clearly indicates that the Germans were taking advantage of their accurately plotted and effectively located final protective fires. It then becomes obvious that once surprise is lost in a river crossing operation enemy supporting fires must be neutralized in order to permit a feasible continuation of the operation.

CONSIDERATIONS IN COUNTERBATTERY FIRE

"Counterbattery fire is normally controlled by the corps fire direction center." (3:31) Some of the reasons for this arrangement are the extensive intelligence effort required to locate and determine the enemy fire support capability, flexibility in the em-

ployment of artillery and other supporting fires in the target area, and observation coordination, equipment and facilities.

The counterbattery effort may be divided into three phases;

- (a) The Intelligence, or collection effort.
- (b) The planning phase.
- (c) And the delivery phase.

The Intelligence effort must be extensive in order to locate the enemy weapons positions. It necessarily requires a considerable amount of time, and the time element may be a severe limitation on the degree of completeness of the effort. Sources and agencies available in the collection of information are observation posts - ground and air, radar and electronic devices, aerial photographs, prisoner of war interrogations, shell reports, information from frontline units, the corps observation battalion and Intelligence agencies such as line crossers, signal intercept, etc. This phase is continuous, both preceding and during the operation, and agencies must be ever alert to ascertain new enemy locations divulged as hostile artillery becomes active. Good observation is essential to effective counterbattery fires, but a shortcoming in this respect may be offset somewhat by the use of sound ranging, radar and other electronic instruments. However, limitations of the equipment itself may be such as to make it ineffective in the locating of enemy weapons. At the Rapido river this proved to be an important factor..."with our own artillery doing so much firing, this method (sound ranging) of locating enemy gun positions could not yield satisfactory results... The latter (nebelwerfers) operated effectively with complete freedom of movement, inasmuch as their flashes were concealed by smoke and sound microphones cannot detect the discharge of rockets." (13:98) The most effective use of this equipment would probably be during the time preceding an operation, because once the assault starts there is likely to be a large volume of fire.

It is to be expected that the enemy will attempt to frustrate any attempts to locate his supporting weapons. As an example, during World War II the German artillery was trained to take the following deceptive measures;

- "(a) Repeated changes of positions between missions.
- (b) Restricted activity from the firing position chosen for the main decisive battle.
- (c) Individual missions and harassing fire are carried out principally by changing the range and moving the batteries.
- (d) A number of silent batteries are held in reserve so as to be available for special missions during the enemy attack."
(5:21)

To penetrate enemy deceptive measures requires an intensive intelligence effort with the exploitation of all sources of information by all possible agencies.

In the planning phase the counterbattery task must be considered at Corps level and then the fire support capability allocated by sufficient number and proper type to accomplish the mission. The counterbattery plan will include known enemy weapon locations, suspected locations, observation posts, communications, command posts and fire direction centers. This practice was effectively employed by units of the 359th Infantry Regiment in the crossing of the Moselle River, 9-14 November, 1944..."these targets included all known and suspected enemy locations, including Command Posts, artillery positions, defensive areas and troop concentrations." (14:16) Provisions must be made for rapidly engaging targets of opportunity disclosed when enemy supporting weapons undertake displacement. At the same time plans must be made to counteract enemy observation through the use of smoke and by firing directly on the observation posts; however, smoke must be planned and utilized with care, or it may assist the enemy by obscuring the flashes of his weapons when they are fired. Smoke will not materially effect

the accuracy of enemy fires when those fires are a part of the final protective fires and have been previously registered.

When it is intended to affect a surprise crossing of a river, the assault may be initiated without the cover of supporting fires. The plan for immediate implementation of supporting fires must be thoroughly prepared, however, and be readily available on call. Furthermore, since enemy fires cannot be suppressed indefinitely, the proper allocation and volume of fires must be planned to neutralize his fire support capability during the critical crossing time and during the build-up on the far bank.

The enemy weapons are engaged during the delivery phase. This phase may take place over a period of several days preceding the crossing, but care must be exercised in order not to disclose the intentions of the attacking force, and the location of the attack. During this time friendly weapons will register on the known and suspected targets, at least to such a degree that effective fire can be readily delivered. Observation, both ground and aerial, are essential to this phase in order to adjust fire when necessary and also to engage targets of opportunity that reveal themselves once the action starts. Closely connected with observation is communication, which is essential to effective supporting fires of any type since a large number of artillery units can be held under centralized control only through communications. The communications from the points of observation, whether they be the forward observers with the rifle companies, or aerial observers, must be maintained if the fires are to be controlled and adjusted.

Another factor in the neutralization of enemy weapons must be that of numerical superiority. This, of course, may be offset to a large degree by qualitative superiority in both equipment and in the training of the men who operate it. Against an industrialized, modern enemy, as was the case in World War II with the Germans, any su-

periority in weapons, techniques of fire, and in tactics may be negligible. The advantages will probably lay with the more experienced combatant, for example..."German experience on the Russian Front in World War II demonstrated the need, in modern warfare, for both specialized weapons and that flexibility of fire that only centralized control can give." (17:27) American Artillery Personnel also learned valuable lessons as the war progressed as indicated..."the Division Artillery Fire Direction Center had adapted existing communications facilities in World War II to speed up the delivery of concentrations by as many as 20 Battalions of Artillery on a single target area."

(12:6) In most cases the defenders will have the advantage of dominating terrain, which aside from observation, offers the advantages of better positions, concealed movement of batteries to alternate positions, and facilitates the construction of protective emplacements for cover against counterbattery fires. This was true in the Gustav Line..."Portable steel pillboxes, connected by communication trenches to well constructed bunkers, were impregnable to all but direct artillery hits." (13:92) This being the case, the counterbattery mission will require more ammunition to accomplish the desired results, and also more weapons. Under these conditions, fire superiority will be a matter of firing a larger number of rounds with a higher degree of accuracy than the opponent.

The undertaking of a major operation, of any sort, without close air support is almost unthinkable, consequently the neutralization capabilities of this arm will be briefly discussed. Tactical air support can be used very effectively in forcing a river crossing in daylight. This coordinated effort proved very effective for the Germans in 1940 when they crossed the Meuse and Loire Rivers against the French defenses..."As soon as neutralization of the defense by ground fire and aerial bombardment began, small detachments of infan-

tryman, sappers, etc., crossed..." (6:2) The massive destruction capability of Air Force ordnance and the desirable characteristics of napalm, rockets, etc., make close air support a necessity against well constructed emplacements, such as those encountered in the Gustav Line. On the other hand, there are several limitations that must be considered in the planning for air support. First is the lack of an all-weather capability, which can completely remove it from an operation, as was the case at Cassino, or reduce the effectiveness of the mission. Since river crossings may be purposely planned to take advantage of the concealment offered by darkness, fog, rain, etc., the use of this arm could be utilized only under the appropriate conditions of visibility. Consequently, the time lapse between the air mission and the assault may provide the enemy the requisite time and opportunity to re-establish the full effect of his fire support capability after an effective mission by aircraft. Also, an extensive air mission of the type required for the effective neutralization of enemy artillery would undoubtedly conflict with any hope for surprise in the actual assault.

There are other factors that enter into the counterbattery neutralization of fires, but the aforementioned are considered to be the most important. Infantry units have a definite responsibility in the counterbattery plan which may be primarily exercised in the intelligence phase. Front line units can render valuable assistance in the locating of enemy supporting weapons by shell reports, sound rangings and the timely reporting of enemy activity. Indirectly, they may also contribute by passive measures, such as local security, camouflage and the restriction of movement, which will prevent the disclosure of the intentions of the attacking force and also of the point of crossing. Once the location of the crossing is revealed to the enemy, he will commence the immediate concentra-

tion of forces in the threatened area. This concentration by the defense will surely include more supporting weapons, thus complicating the counterbattery mission. It is readily apparent that infantry cooperation is not only desirable for the success of the effort, but is of immediate personal interest to the infantryman themselves.

FUTURE TRENDS

In the future, airborne forces, either helicopter-borne or parachute, will probably be used in conjunction with a surface crossing. The airborne force may be landed directly into the bridgehead, thereby greatly increasing the reinforcing capability of a unit. This would necessitate the securing of the bridgehead by a surface-borne assault force initially to establish and secure the landing sites. It is readily apparent that enemy supporting fires must be either destroyed or neutralized to render such an operation feasible. Airborne forces might also be landed beyond the enemy defensive positions with a subsequent attack in the rear of the defenses. This action would most likely be in conjunction with a frontal attack across the river, thereby forcing the enemy to fight on two fronts. By thus forcing the enemy to "split" his supporting fires, the task of effective neutralization of enemy fires would be somewhat facilitated, but the counterbattery mission would retain all of its significance.

CONCLUSION

In a consideration of all the aspects peculiar to an attack across a river which is strongly defended, it is apparent that unless the enemy's fire support capabilities are greatly diminished by counterbattery fires a bridgehead cannot be established; or if it is established the cost will be prohibitive. A crossing must be deliberately planned, rehearsed and provided for, and to undertake such an operation with anything less than adequate preparation is to invite disaster. The "unknown" must be reduced as much as possible by the exploitation of all intelligence sources and through the use of all possible agencies. Infantry units can render valuable assistance in this intelligence effort. One of the most important elements of information is the number, types and locations of enemy supporting weapons. This is true because the attacking elements must pass through carefully planned, prepared and plotted fields of fire, and once astride the river, or during the initial bridgehead operation, there is little that can be done to assist the attackers other than reducing the effectiveness and the volume of fire placed upon them. The reinforcing of the bridgehead requires the building and maintaining of bridges to speed up the crossing of troops, ammunition and equipment. The weapons that would prevent the construction of bridges, and that would destroy them once they are built, must be attacked directly, or a situation will develop such as faced the 5th Division when they crossed the Sauer River, 6-13 February, 1945..."This was the type of artillery duel, apparently, where enemy artillery fire on our infantry and our artillery fire on enemy infantry, this seemed to be true because later

enemy artillery fire was as active as ever." (9:15) It is not enough to deny the enemy observation of the crossing area, because as illustrated in the Rapido River crossing, observation of the target area is not necessary to accurate fire if the fires have been prepared before hand for just such an operation. The enemy supporting weapons themselves must be destroyed, or their fires neutralized.

In a summation of the research conducted, and of an analysis made of it, the following conclusions are made;

(1) Counterbattery neutralization of enemy fires must be realized if an attack across a river is to be successful.

(2) Infantry units have a definite responsibility in the counterbattery effort of assisting in the location of enemy weapons.

(3) In a "surprise" crossing of a river, a very detailed fire plan must be prepared and readied for immediate implementation once surprise is lost.

(4) Because of the distraction of other activities during the battle, enemy weapons, observation posts, and communications centers must be located prior to the attack.

(5) The attacking force must have a superior supporting fire capability, both numerically and qualitatively, over the defender in a river crossing operation.

(6) A general lack of observation such as occurs in a heavy fog, darkness and through the use of heavy smoke screens, will assist the defender more than the attacker once surprise is lost owing to the canalization of the attack, the advantages of terrain and previously registered fires.

(7) Immunity from fire granted to certain enemy positions, such as the Benedictine Abbey on Mount Cassino, may severely handicap the attacking force.

(8) Signs and markers for minefields with cleared lanes must be

provided that are not highly susceptible to destruction, or disturbance by artillery and mortar fires.

(9) An airborne assault, either helicopter-borne or parachute landed, in combination with a surface crossing would offset many of the critical aspects of a strictly surface crossing.

BIBLIOGRAPHY

1. FM 6-20 Artillery Tactics and Techniques (Washington, D.C.: Department of the Army, 1953).
2. FM 7-20 Infantry Battalion (Washington, D.C.: Department of the Army, 1950).
3. FM 31-60 River Crossing Operations (Washington, D.C.: Department of the Army, 1955).
4. FM 100-5 Field Service Regulations, Operations (Washington, D.C.: Department of the Army, 1954).
5. German Doctrine of the Stabilized Front, Special Series No. 17 (Military Intelligence Division, War Department, Washington, D.C.: 15 August, 1943). D 731.1
.U45 17
6. Notes on River Crossing by German Armored and Motorized Units, Tentative Lessons Bulletin No. 53 (Military Intelligence Division, War Department, Washington, D.C.: September 30, 1940). D 731.1
.U 4
7. Operations in Sicily and Italy (July 1943 to May 1945) (Department of Military Art and Engineering, United States Military Academy, West Point, New York, 1947). D 769.1
U. 21
8. Clark, Mark W., General, U.S. Army, Calculated Risk (New York, N.Y., Harper and Brothers Publishers, 1950). D 769
.C 54
9. Dies, Frederick W., Lt Col., "Operations of the 5th Infantry Division in the crossing of the Sauer River, 6-13 February, 1945" Military Monograph Advanced Infantry Officers Class No. 1, 1949 - 1950, The Infantry School Library, Fort Benning, Georgia.
10. Kesselring, Albert, GeneralFeldMarschall A.D. A Soldier's Record (New York, William Morrow & Company, 1954). DD 247
.K48 .A2
11. Linklater, Eric, The Campaign in Italy (His Majesty's Stationery Office, London, 1951). D 769.3
.L64 bU
12. Robinson, Leonard G., Lt Col., "Artillery - Arbiter of the Battlefield," Military Review, C&GSC, October, 1952.
13. Starr, Chester G., Lt Col., From the Salerno to the Alps, A History of the Fifth Army 1943 - 1945 (Washington Infantry Journal Press, 1948). D 808.1
5th S 7
14. Talbott, Orwin G., Maj., "Operations of the 359th Infantry Regiment (90th Inf Div) In Crossing the Moselle River." Military Monograph Advanced Infantry Officers Class No. 1, 1948 - 1949, The Infantry School Library, Fort Benning, Ga.

15. Walker, Fred L., Major General, "Experiences With the 36th Division in Italy," Military Review, C&GSC, January, 1945.
16. Walker, Fred L., Major General, "Report From Italy," Mailing List V. 28, 1944.
17. Williams, Edward T., Major General, "Effective Artillery Support Isn't Accidental," The Army Combat Forces Journal, July, 1955.