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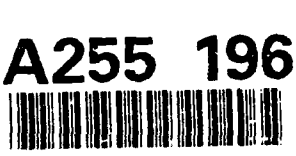

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This study analyzes critical components of the initiative and synchronization tenets of Airland Battle doctrine and Command and Control doctrine to determine if command and control of river crossing doctrine is compatible. It examines these critical components from the perspective of the non-linear, chaotic battlefield environment which stresses the use of decentralized execution and rapidity of operations. The study uses successful and unsuccessful historical river crossings as a basis for determining the criticality of doctrinal shortcomings between river crossing doctrine versus Airland Battle and U.S. Army command and control doctrines. The study concludes that current river crossing doctrine does not adequately support Airland Battle and U.S. Armt command and control doctrines, in that the hasty river crossing is not doctrinally provided for in order to meet the challenges of the future battlefield.

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COMMAND AND CONTROL OF RIVER CROSSINGS: DOES CURRENT DOCTRINE SUPPORT AIRLAND BATTLE DOCTRINE INTENT?

A thesis presented to the Faculty of the U.S. Army Command and General Staff College in partial fulfillment of the requirements for the degree

MASTER OF MILITARY ART AND SCIENCE

by

ALBERT G. MARIN III, CPT(P), USA
B.S., University of Maine at Orono, Orono, Maine, 1980

Fort Leavenworth, Kansas
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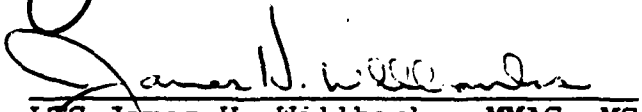

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The opinions and conclusions expressed herein are those of the student author and do not necessarily represent the views of the U.S. Army Command and General Staff College or any other governmental agency. (Reference to this study should include the foregoing statement.)

ABSTRACT

COMMAND AND CONTROL OF RIVER CROSSINGS: DOES CURRENT DOCTRINE SUPPORT AIRLAND BATTLE INTENT?: A comparison of current command and control of river crossing doctrine with the initiative and synchronization tenets of Airland Battle and U.S. Army command and control doctrines by CPT(P) Albert G. Marin III, USA, 165 pages.

This study analyzes critical components of the initiative and synchronization tenets of Airland Battle and U.S. Army command and control doctrines to determine if command and control of river crossing doctrine is compatible. It examines these critical components from the perspective of the nonlinear, chaotic battlefield environment which stresses the use of decentralized execution and rapidity of operations.

The study uses successful and unsuccessful historical river crossings as a basis for determining the criticality of doctrinal shortcomings between river crossing doctrine versus Airland Battle and U.S. Army command and control doctrines.

The study concludes that current river crossing doctrine does not support Airland Battle and U.S. Army command and control doctrines in that the hasty river crossing is not doctrinally provided for in order to meet the challenges of the future battlefield.

TABLE OF CONTENTS

CHAPTER ONE

INTRODUCTION

Field Manual 100-5, Operations, dated May 1986, is the U.S. Army's capstone warfighting manual. It explains how to plan for and conduct operations throughout the spectrum of conflict. As the capstone doctrine, FM 100-5 provides the foundation upon which all other service schools within the Training and Doctrine Command (TRADOC) formulate their doctrine. The preface of FM 100-5 states that it "furnishes the authoritative foundation for subordinate doctrine."[1] The manual places more emphasis on the seizure and retention of the initiative than did the 1981 version of FM 100-5. It reemphasizes the three other tenets of the Airland Battle, namely - agility, synchronization and depth.

FM 100-5 describes the next mid-to-high intensity battle as being chaotic, intense, highly destructive, and nonlinear. It also emphasizes that all of these characteristics will occur at greater speeds than has ever occurred before.

Modern combat vehicles of the land, sea and air make increased speeds possible. Chaos, intensity, high destruction and speed necessitate a doctrine which supports mission order tasking. The speed of modern warfare will not permit time-consuming meetings after operations begin. Success can most readily be assured by commanders at all levels understanding the intent of the higher commander. Subordinate commanders must possess the technical and tactical wherewithal to achieve an objective, once given the mission and higher commander's intent. The intent includes the purpose, all adjacent forces, intermediate objectives, and the desired end state. The intent must be clear and concise. It is meant to communicate a superior commander's guidance to subordinates; however, it allows subordinates freedom of action. Mission tasking, together with the communication of the commander's intent, is stated by FM 100-5 to be the best means of achieving success. Mission tasking allows subordinate commanders to continue to operate without further orders.

Mission tasking also allows for seizing and maintaining the initiative, should battlefield conditions permit. It lends itself to centralized planning and decentralized execution. In brief, mission tasking allows subordinate commanders to act as necessary to exploit success and to win.

FM 100-5 is currently being rewritten. The purpose for the rewrite is to project the doctrine into the future. Projection into the future is mandated as technologies impacting warfighting capabilities change. The new manual will continue to place great emphasis on initiative and mission order tasking. They are considered the pillars of Airland Battle doctrine.

Michael Howard, a prominent professor and military historian, explains doctrine in the following terms. "Usually everybody starts even and everybody starts wrong. ...the advantage goes to the side which can most quickly adjust itself to the new and unfamiliar environment and learn from its mistakes."[2] With this theory in mind, current AirLand Battle doctrine is solid.

It is in the context of AirLand Battle doctrine that river crossing doctrine must be analyzed. This thesis will examine the command and control aspects of river crossings. Specifically, the command and control of river crossing doctrine will be analyzed from two perspectives. The first perspective is the degree to which the river crossing doctrine supports, or differs from, AirLand Battle doctrine. The second perspective is the degree to which river crossing doctrine supports, or differs from, U.S. Army command and control doctrine.

The latter perspective is essential to a thorough analysis of the command and control aspect of river crossing operations.

River crossings are an important military operation. An army maneuvering on the European continent will encounter on average a water obstacle at least one-hundred meters wide every fourty-five kilometers. Water obstacles greater than one-hundred meters wide can be expected every two-hundred kilometers.[3] Rapid operations to maintain initiative, coupled with numerous rivers, may require multiple water obstacle crossings in a single day. The crossing of water obstacles is a necessity to movement. FM 100-5 stipulates that rapid crossing of water obstacles is essential to seize and maintain initiative. Once the initiative is gained, it must never be relinquished to the opposing force.[4] To do so would allow the enemy to recover from any initiative gained or shock imposed, and perhaps allow the initiative to shift to the opposing force. The preservation of speed is imperative.

Current river crossing doctrine is contained in FM 90-13, River Crossing Operations. There is only one chapter regarding command and control in FM 90-13, unlike FM 100-5, Operations, which stresses command and control throughout the entire manual.

Additionally, FM 90-13 does not stress initiative, speed, decentralized execution or exploitation of success among many other Airland Battle imperatives. In explaining the command and control process, FM 71-100, Division Operations, states, "The goal of division tactical operations is to act more rapidly than the enemy, keeping him off balance by changing the situation so rapidly that his reactions are inappropriate and he remains at a disadvantage and thus can be defeated. This concept of warfare, rapidity of action, can only be obtained through a responsive command and control system that facilitates execution of the mission, provides for standard language and symbols, protects the force, and has leaders who motivate soldiers to fight."[5]

A detailed examination of existing river crossing doctrine will be made later in the thesis. The examination will center on the Army's ability, doctrinally, to carry out numerous daily crossings while maintaining speed and initiative.

Section I. Objectives of the Study

The purpose of this study is to determine if a problem exists in the U.S. Army river crossing doctrine.

The objective of the study is to determine the compatability of the command and control of river crossing operations doctrine with current AirLand Battle and U.S. Army command and control doctrines. Changes to the command and control aspects of river crossing doctrine are recommended. Recommendations are made on the basis of lessons learned and conclusions drawn from past major river crossing operations. Recommendations are also made based on significant differences found between AirLand Battle and command and control doctrines versus river crossing doctrine.

Section II. Limitations and Delimitations

Limitations

For the purposes of this study, river crossing operations will be analyzed using past performance data from units corps size and smaller. Emphasis will be placed on the division. Historical river crossings planned and conducted by units larger than corps are intentionally omitted.

As will be further explained in Chapter 2, the majority of historical data pertaining to river crossing operations is from World War II.

It is from this era which most of the historical examples used in analysis shall come.

Delimitations

Three types of river crossings exist. They are hasty, deliberate, and retrograde. Retrograde crossings are a rearward movement of forces over terrain in the possession of friendly forces. Retrograde crossings, due to their inherent difference from hasty and deliberate crossings, will not be discussed in this thesis.

To limit the scope of the thesis, only key areas of the doctrine depicted below will be considered. AirLand Battle doctrine will be researched from the perspective of two of its tenets. They are initiative and synchronization. It is felt that these two tenets will provide an excellent perspective from which to compare the doctrines. Both tenets are vitally important to the success of any operation. The limit is imposed simply to control the scope of the thesis. This limitation is not considered as a detriment in any way. A solid "intent" of AirLand Battle doctrine is definitely achievable using the tenets of initiative and synchronization.

Six historical river crossings have been selected for analysis. There are hundreds of historical river crossings which just as easily could have been selected.

The six crossings chosen are representative of the good and bad cases of river crossings in a war environment, and provide excellent insight as to what made the crossings either a success or a failure.

The command and control aspects only of river crossing doctrine will be researched. This limitation is for two reasons. The first is to limit the scope of the thesis. The second, and more important, is that prior research in the river crossing area has suggested that the command and control of river crossing doctrine may be erred. This same research implies that the command and control doctrine of river crossing operations is too complex. Explanation of this prior research is provided in Chapter 2, Review of Literature. Further study is required to determine river crossing doctrine discrepencies and their extent, if such is true.

Section III. Significance of the Study

The study is significant in that river crossing doctrine must be mutually supporting and compatible with AirLand Battle doctrine. The command and control facets of river crossing operations must meet the intent of AirLand Battle. Conformity is a measure of compatibility with the Army's operations capstone doctrine.

If existing river crossing doctrine is incompatible with AirLand Battle doctrine, chaos will result during combat. An army trains to its doctrine in peacetime as it intends to fight during war. It is imperative to get the doctrine right, or at least as correct as it can be, so that training conducted in peacetime can best prepare an Army for war. Since FM 100-5 is the U.S. Army's capstone fighting doctrinal manual, doctrine at each level of application subordinate to FM 100-5 must be compatible.

CHAPTER 1

ENDNOTES

[1] U.S. Army, FM 100-5, Operations (1986), i.

[2] Michael Howard, "Military Science in an Age of Peace," Journal of the Royal United Services Institute For Defence Studies 119 (March 1984): 3-9.

[3] Paul G. Munch, "The Combat Engineer Support to an Offensive Operation," Master of Military Arts and Science Thesis, U.S. Army Command and General Staff College (1982): 38.

[4] FM 100-5: 15.

[5] U.S. Army, FM 71-100, Division Operations (1990), 3-1.

CHAPTER TWO

REVIEW OF LITERATURE

General

Much was captured from river crossing operations of World War II. This information unfolds itself in the form of books, periodicals and most materially, after action reports written by the units undertaking the river crossings.

There are several Master of Military Arts and Science (MMAS) theses and School of Advanced Military Studies (SAMS) monographs concerning river crossing operations. Some deal with a historical outlook only. They detail river crossing operations from start to finish. Others look at river crossings in relation to the ability of heavy divisions to undertake the crossings. One particularly useful MMAS thesis is entitled "Heavy Division River Crossing Operations In Support of AirLand Battle," written by Bruce Hiagh. This thesis details the ability of the heavy division to undertake river crossing operations and keys in on engineer equipment availability. A SAMS monograph entitled "US Army River Crossing Doctrine and AirLand Battle Future: Applicable or Anachronistic?", written by Gordon Wells,

recommends that further study be given to river crossing doctrine in relation to whether operations be centralized or decentralized.

Periodicals and articles abound in the river crossing arena. Numerous articles in Engineer, Military Engineer, Military Review and Soviet Military Review provide the backbone of periodicals and articles used.

River Crossing Doctrine

Doctrinal literature regarding river crossing operations is also plentiful. The engineer operations capstone manual is FM 5-100, Engineer Combat Operations. This manual details command and control, as well as river crossing operations, from the engineer standpoint. FM 5-71-100, Regimental Engineer Combat Operations, covers both areas, at the divisional level. FM 90-13, River Crossing Operations, is the key Army manual depicting the overall doctrine for river crossing operations. FM 90-13 discusses the who, what, where, when and how of river crossings. This manual will be the single most used reference regarding river crossing doctrine.

Several lessons learned type format reports have been written with respect to river crossing operations.

They detail successes and failures. These lessons learned provide reason for success or failure in many cases.

Suggested changes to the era's doctrine and methods of river crossing operations are depicted in some of the after-action reports.

An excellent example of a source of lessons learned after WWII is the "United States Forces European Theatre General Officer Board Study, Engineer Tactics", which was written shortly after the war's conclusion.[1]

Information is available from our allies and from the Soviet Union. The Soviets conducted numerous river crossings in World War II. Their existing river crossing doctrine is based on lessons learned from World War II operations. An informative article in Soviet Military Review, written by I. Osipenko and entitled "An Assault Crossing", provides superb detail on the Soviet method of river crossings.

FM 100-2-3, The Soviet Army, provides excellent detail on Soviet river crossing capabilities.

Airland Battle Doctrine

Doctrinal literature concerning maneuver forces is plentiful. The Army's capstone operations manual has been expanded upon with field manuals and circulars at most all echelons below Army level, down to and including battalions (task forces). These manuals depict operational doctrine, both planning and execution, at each level. Each successive manual also contains a chapter dedicated to command and control, as well as a chapter or section dedicated to river crossing operations. These manuals are: FM 100-15, Corps Operations; FM 71-100, Division Operations; FM 71-3, Armor and Mechanized Infantry Brigade; and FM 71-2, The Tank and Mechanized Infantry Battalion Task Force.

The bibliography provides major literature sources analyzed and used in this thesis.

CHAPTER 2

ENDNOTES

[1] U.S. Army General Board, USFET Engineer Tactical Policies, Study 72,XV, February 1947.

CHAPTER THREE

METHODOLOGY

In order to study the Airland Battle and river crossing doctrines, both the analytical and historical research methods will be used.

The historical research method will be used to gather the data. Specifically, research will be conducted to determine just what Airland Battle and river crossing doctrines intend.

The historical research method will also be used to examine past river crossing operations. These operations will be examined to determine reasons for their successes and failures. Reasons for successes and failures are suggested in many after-action reports. Where reason is not provided, conclusions will be drawn if possible. In this latter respect, the analytical research method will be applied to draw logical conclusions.

In order to combine all of this information into a usable form from which to fulfill the purpose of this thesis, the following method shall be used.

Both Airland Battle doctrine (from the tenets of initiative and synchronization) and command and control doctrine will be compared to river crossing doctrine (from the command and control aspect) to identify any discrepancies. Next, the conclusions drawn from past river crossings will be examined to determine what most led to success or failure of the crossing. Last, discrepancies between the doctrines will be compared against reasons for success or failure of crossings past, to determine whether discrepancies between doctrines are significant or not. Meaningless and insignificant discrepancies will be cited, and the issue closed. Significant discrepancies (those found to be critical to the successful completion of an operation) will be highlighted and changes to existing river crossing doctrine will be recommended to rectify the problem.

CHAPTER FOUR

THE DOCTRINES

Section I. AirLand Battle Doctrine

> An army's fundamental doctrine is the condensed expression of its approach to fighting campaigns, major operations, battles and engagements. Tactics, techniques, procedures, organizations, support structure, equipment and training must all derive from it. It must be rooted in time tested theories and principles, yet forward looking and adaptable to changing technologies, threats, and missions. 1

General.

AirLand Battle doctrine describes the Army's approach to generating and applying combat power at the operational and tactical levels.[2] The doctrine is based on four tenets. They are initiative, depth, synchronization and agility. The doctrine is based on securing or retaining the initiative and exercising it aggressively to accomplish the mission.[3] All other components of the doctrine are based on that sole premise. It is considered the single most important component of the AirLand Battle doctrine.

AirLand Battle doctrine prescribes throwing the enemy off balance with a powerful blow from an unexpected direction, following up rapidly to prevent his recovery and continuing operations aggressively to achieve the higher commander's goals.[4] The operations should not only be rapid, but they should encompass surprise and violence. This enables the friendly forces to keep the enemy off balance. By striking the enemy first and fast, the enemy is initially shocked. By continuing the actions rapidly, the enemy is never able to recover from the initial blow. The initiative starts with friendly forces and is never relinquished to the enemy.

The coordinating of operations is a part of synchronization. The army fights as a combined arms team. Although combat arms possess the weapons to inflict casualties on the enemy, combined arms possess the resources to make it all possible. Synchronization of the combined arms team is critical to the overall success. Synchronization encompasses many things. They will be discussed below.

Initiative.

FM 100-5 describes initiative as follows. "Initiative means setting or changing the terms by action. It implies an offensive spirit in the conduct of all operations."[5]

Initiative is not something that just happens. It must be planned for, and requires continual effort to maintain. Initiative applies to armies, corps, divisions and so on down to the individual soldier. When applied to the force as a whole, initiative ensures friendly freedom of action, while at the same time forcing the enemy to fight under the terms and conditions set by friendly forces. When applied to individuals, initiative requires technically and tactically sound risk-taking. It implies a willingness of soldiers at all levels to act without continual guidance. A commander's intent, clearly stated and passed to subordinates before an operation, sets the conditions for subordinates to act independently.

Although planning for an operation is normally best done under centralized control, execution of an operation is best decentralized. This goes hand in hand with initiative. In the chaos of battle, it is prudent to decentralize decision authority to the lowest practical level. Over-centralization slows down action and leads to inertia.[6] If an operation is controlled at high levels, and the decision-making authority retained at that same level, valuable time may be lost in the pursuit of a decision. This time could better be spent taking timely,

decisive action. Time spent waiting for a decision may make taking an action impractical by the time the decision is made. The same conditions and opportunities may not still be present once the decision is received. Airland Battle doctrine stresses decentralization of decision-making for just these reasons.

Decentralization of decision-making and conduct of operations is not without disadvantage. Decentralization risks some loss of precision in execution.[7] The doctrine states however, that "The commander must constantly balance these competing risks, recognizing that loss of precision is usually preferable to inaction."[8] Again, the importance of the commander's intent becomes critical. If commanders desire subordinates to exercise initiative without jeopardizing the success of an operation, they must also clearly state their intent for the operation. The intent must include the what is to be done, and not necessarily the how to do it. Additionally, the intent must include the reasons for undertaking the operation, assumptions upon which the intent was built, and the desired end state of the operation. These components, if clearly understood by a subordinate, allow him to pursue the operation without further guidance.

They also allow the subordinate to exercise initiative, should a situation arise warranting it. FM 100-5 sums up the subject as follows, "...the force commander must encourage subordinates to focus their operation on the overall mission, and give them the freedom and responsibility to develop opportunities which the force as a whole can exploit to accomplish the mission more effectively."[9] Once conditions have been set for the exploitation of a situation, through the using of initiative by a subordinate, the superior commander must then quickly synchronize his forces to take advantage of enemy vulnerabilities subordinates find or create.

Synchronization.

Synchronization is both a process and a result.[10] FM 100-5 defines synchronization as, "...the arrangement of battlefield activities in time, space and purpose to produce maximum relative combat power at the decisive point."[11] Synchronization encompasses many things. Not only combat power is synchronized. All combined arms forces must be synchronized to better the chances of success. Most importantly, in an offensive operation, all things are synchronized with maneuver. Further, not only forces are synchronized. Synchronization, as was defined above, includes space, time, and purpose.

The coordination of space, time, and purpose better ensures success in battle.

Synchronization is most important at the decisive point and time. When decisive moments present themselves on the battlefield, the coming together of combined arms forces to exploit the situation is critical. Decisive points and times on the battlefield are few and far between. They must be exploited while the opportunity exists. As with initiative, the commander's intent is important to synchronization. Successful synchronization need not be specifically coordinated (directed) as long as all forces involved understand the intent of the commander.[12] Combined arms training, rehearsed to ever increasing standards, allows forces to synchronize themselves out of habit in response to a situation. This method of synchronization is preferred under the chaos of battle. Confusion, little time, and possible lack of communications make directed synchronization on the battlefield extremely difficult. Lack of synchronization can obviously make the difference between winning and losing. The less synchronization depends on active communication, the less vulnerable it will be.[13]

In summary, synchronization allows for the timely use

of all resources where they will have the greatest impact on the situation at hand. Synchronization provides for the smallest misuse or waste of resources. To achieve proper synchronization requires a comprehensive understanding of the mission, purpose, and intent.

Section II. River Crossing Doctrine

> The purpose of any river crossing is to project combat power across a water obstacle in order to accomplish a mission. 14

FM 90-13, River Crossing Operations, dated July 1990, is the U.S. Army's doctrinal manual for river crossings. The manual has been in revision since publication. Comments from both the engineer community and maneuver commanders necessitated the revision. Although not formal, the July 1990 version of FM 90-13 is considered by the engineer school to be an interim field manual, until revision is complete and a new manual fielded. The structure of the command and control portion of FM 90-13 remains basically unchanged from the 1987 final version of the same manual.[15] The July 1990 version of FM 90-13 will be used to outline the command and control aspects of river crossings. Before discussing command and control of river crossings, some basic information regarding crossings themselves is appropriate.

The challenge in a river crossing operation is to limit the impact of the crossing on maneuver as much as possible. The biggest impact is time. Time equates to initiative and speed. If the initiative is with friendly forces, a long drawn out river crossing can negate the initiative. Depending on the situation, the initiative could swing to the opposing force. River crossings can impose great dangers on friendly forces. Friendly forces are canalized into the bridgehead in a river crossing operation. The bridgehead is the area where the crossing will take place. It includes the near shore, and projects across the river to the far shore. The far shore is where friendly vehicles will exit the river after having crossed. Canalization occurs as forces approach the river towards the river crossing means. Canalization, although not desirable, is unavoidable due to limited bridging assets. While forces are massed, they are most vulnerable to enemy attack. It is important to reduce the vulnerability time to the absolute minimum required. Speed and multiple crossings along a broad front are two ways of reducing the vulnerability time. Because bridging assets are limited, multiple crossings along a broad front are difficult to do. Speed then, becomes the most logical means of reducing vulnerability of friendly forces at the crossing site.

There are two types of offensive river crossings. They are hasty and deliberate. Hasty crossings are the preferred method.

The hasty river crossing, as the preferred method, is "...a continuation of the attack across the river, with no intentional pause at the water to prepare, so there is no loss of momentum."[17] The hasty crossing is conducted when threat resistance is weak and the river is not a severe obstacle.[18] Deliberate crossings, according to FM 90-13, "...are conducted when a hasty crossing is not feasible, when one has failed, or when renewing offensive operations along a river."[16]

FM 90-13 lists six river crossing fundamentals.[19] They are:

1. Surprise - normally gained through the use of speed and deception.

2. Extensive preparation - using all available intelligence to situate the enemy, pick the crossing site, plan for deception, and plan friendly force course of action. This fundamental includes rehearsal of the crossing.

3. Flexible plan - remaining adaptable to changing situations, good or bad, during the crossing. Having alternate plans just in case the crossing goes astray.

4. Traffic control - planning for the crossing of units at the location and in the sequence desired.

5. Organization - organizing command and control, support and maneuver forces to best accomplish the crossing.

6. Speed - minimizing crossing time. The longer the force takes to cross, the less likely it will succeed.[20]

All six fundamentals apply to both hasty and deliberate crossings. They are integrated into the plan as much as time permits. River crossings are dealt with as is any other type of operation. The maneuver commander is responsible for the overall conduct of the crossing. Engineers are responsible for constructing the equipment to cross the force. They prepare the entrance and exit banks to the crossing site. They remove or reduce other obstacles around the crossing site which could impact the crossing. Engineers also advise the maneuver commander on the type of crossing to be undertaken, the location of the crossing, and the assets available to undertake the crossing.

The command and control of river crossings is very complex. Control of units making a crossing is different than most any other type of operation. Command remains basically the same, except that additional commanders, above and beyond those needed for other type operations, are created. A description of the command and control process follows. This process is that outlined by FM 90-13, for <u>any type</u> river crossing operation.[21]

Overall command responsibility of a river crossing is vested in the senior maneuver commander conducting the crossing. This will normally be the division commander, and at times the brigade commander.[22] For simplicity, only the division crossing will discussed. A river crossing operation is normally broken down into crossing areas. Each area is normally under the control of a brigade. Each crossing area has a crossing area commander. This commander is responsible for the movement of all forces inside the crossing area. The crossing area commander is normally one of the two assistant division commanders. This allows the division commander the freedom to continue command of all of his forces, not just those in the crossing area.[23]

Although not a commander, a crossing force engineer is appointed to each division. This person is normally the commander of an engineer group from the corps engineer brigade.[24] The crossing force engineer provides additional planning and planners for the division engineer.[25]

Each crossing area is assigned a crossing area engineer. There is normally one crossing area per maneuver brigade to make the crossing. This person is responsible to the brigade commander for crossing means and sites. He keeps the brigade commander abreast of the crossing situation. This person is usually the commander of a combat engineer battalion or bridge battalion from corps.[26] The crossing area engineer commands those engineers who stay at the river site and who are responsible for moving the force across the river.

Within a crossing area, there may be as few as one or as many as three crossing sites. Crossing sites are the locations in which actual rafting or bridging assets will be placed. The number of crossing sites depends on many variables. Most importantly, the number of sites depends on the mission, the number of forces to cross, and the rafting and bridging assets available.

Crossing sites each have their own commander. This person is doctrinally the engineer company commander for the bridging unit constructing bridging at that site. This person also commands and controls all Call Forward Areas and Engineer Regulating Points along the route to his particular crossing site. Call Forward Areas and Engineer Regulating Points will be discussed later in this chapter under the control of river crossing operations. Each crossing site commander is subordinate to the crossing area commander. Lastly, the crossing site commander has the responsibility to determine and take immediate action necessary to keep the route to his crossing site open.[27] A graphic portrayal of the command structure for river crossing operations is at Figure 1.

There is one more person in the command structure of river crossing operations. Each battalion sized or separate unit to cross the river appoints a unit movement control officer. This person coordinates the unit's crossing of the river with the staff planners for the operation. Coordination includes number and type of vehicles participating in the river crossing.

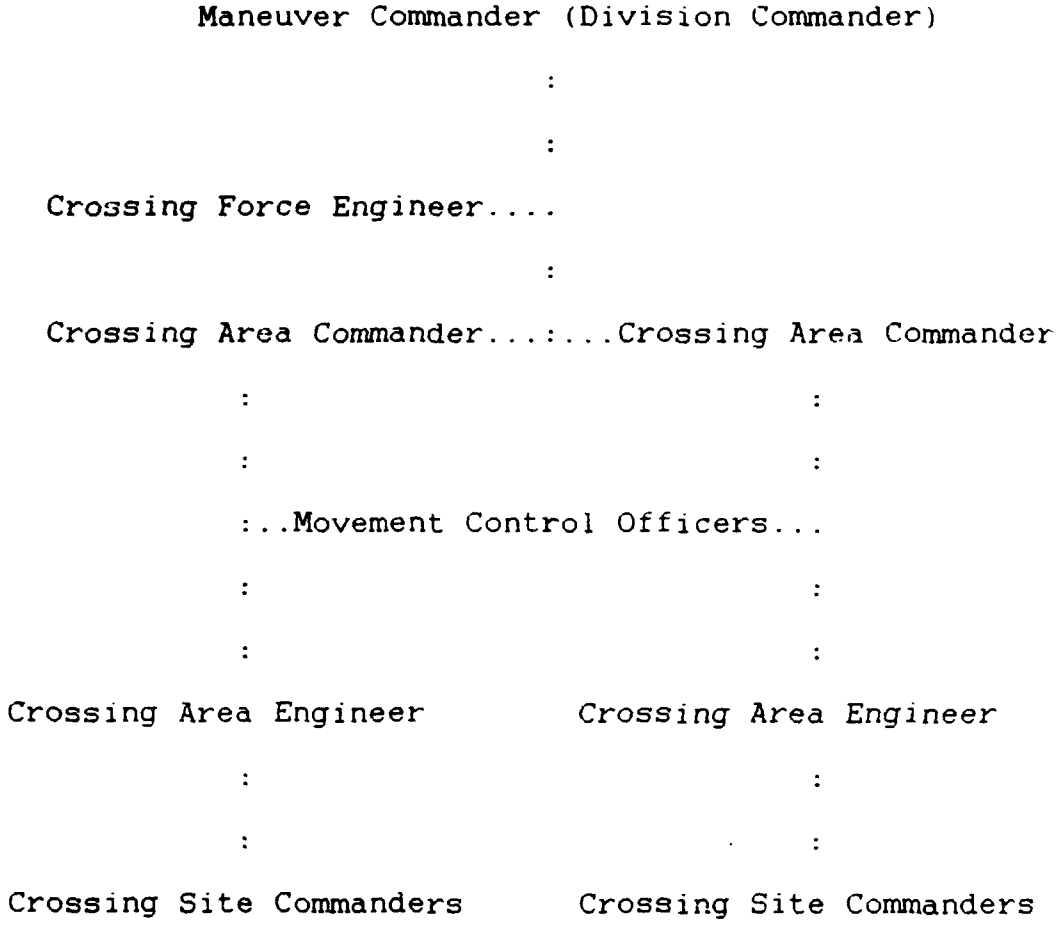


Figure 1

River Crossing Command Structure

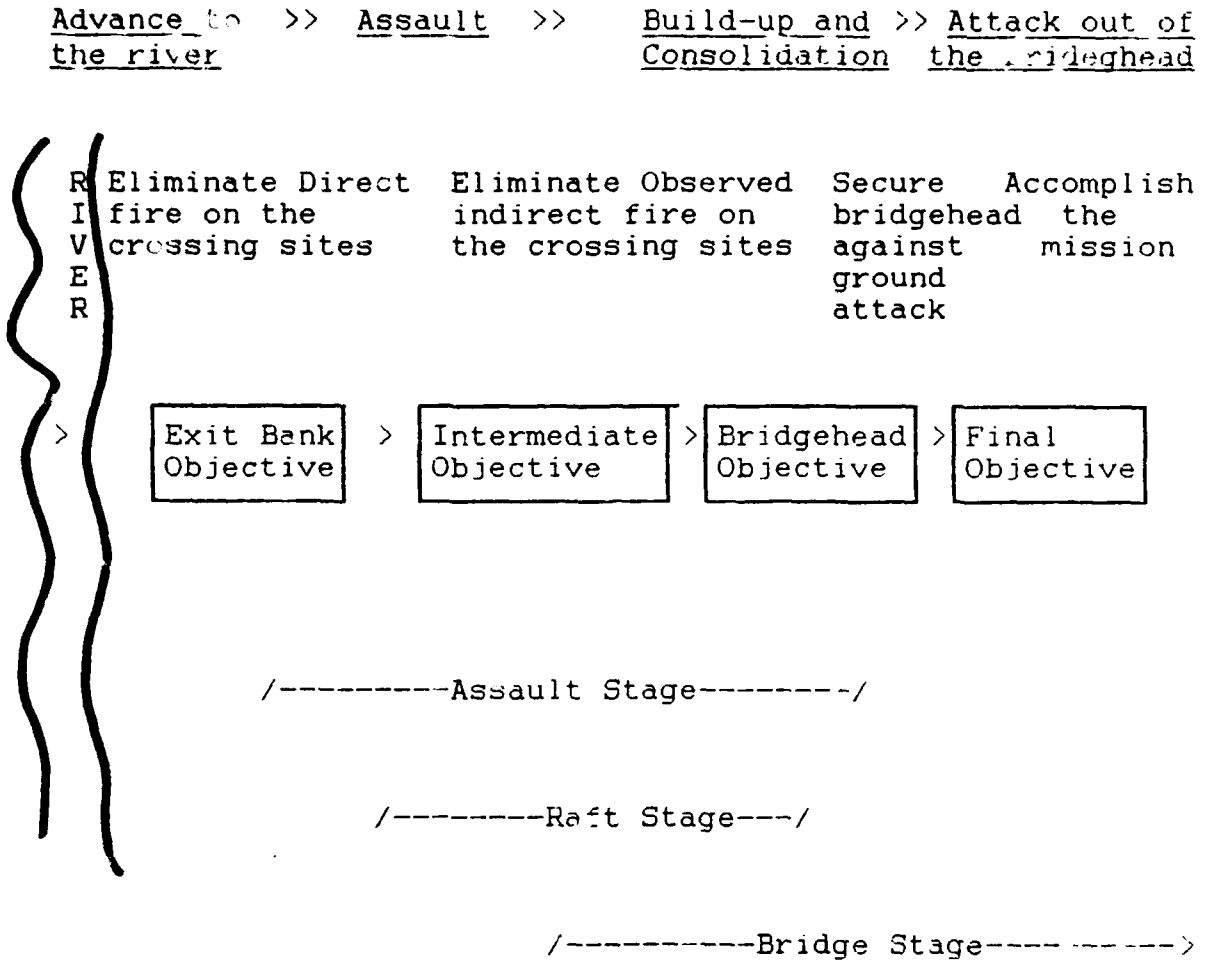
All four of these quasi-command positions (crossing area commander, crossing area engineer, crossing force commander and crossing site commander) are created just for the river crossing operation. They do not exist in the normal Table of Organization and Equipment of any unit[28]. They are taken out of the existing personnel structure. The crossing force engineer, the crossing area engineer and the crossing site commander are normally all dual hatted during river crossing operations. In addition to their duties of the river crossing, each also commands an engineer unit. At times, depending on the scope of the river crossing to be undertaken, they must relinquish temporary command of their units to their executive officers. This is the only way they can devote their full attention to the river crossing operation.[29]

Command aspects of a river crossing operation are very complex. The commanders described above are in addition to the normal unit commanders for each and every combat, combat service, and combat service support unit operating in the area of operations. Some of the commanders are also dual hatted, performing two or more functions simultaneously. This adds to the complexity. Doctrinal control measures for river crossing operations are just as complex. They will be discussed next.

FM 90-13, River Crossing Operations describes four phases in a river crossing operation. They are advance to the river, assault, build-up and consolidation, and attack out of the bridgehead. The four phases are shown in Figure 2. The control measures that have been established compliment these four phases.

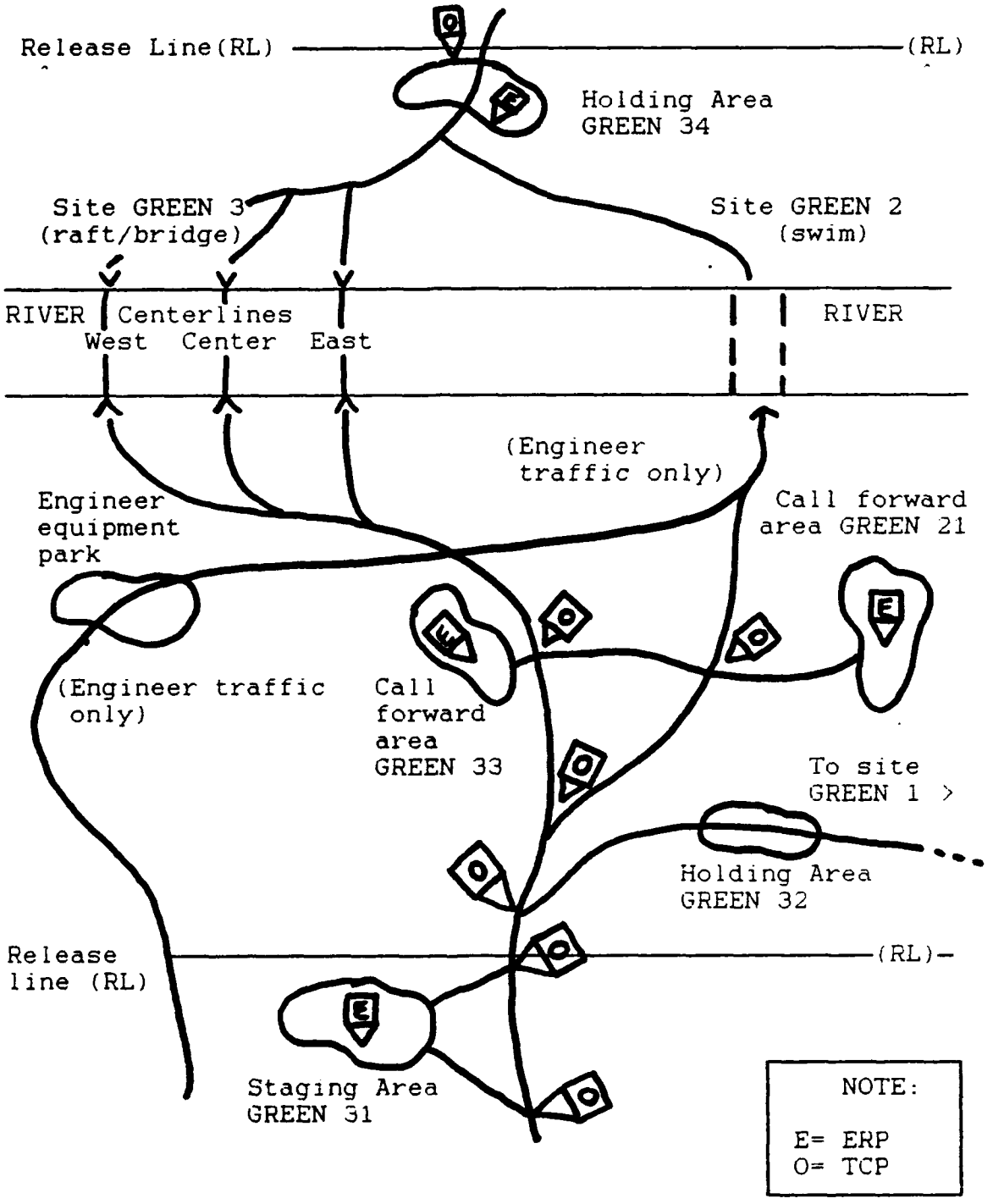
As was stated previously, the maneuver unit undertaking the river crossing operation is responsible for its command. Command and control of the crossing includes the planning. The main command post at division or brigade level prepares the river crossing plan. Plans include the coordinated schedules, locations and times for subordinate units to make the river crossing. To coordinate such movement requires numerous control measures and features. The major control measures are outlined below. A graphic portrayal of these control measures is provided at Figure 3.

Traffic regulating lines assist movement control and delineate areas of responsibility for traffic regulation between different headquarters.[30] They are usually emplaced along easily identified terrain features such as roads, small streams and hilltops. Traffic regulating lines are also called release lines when established between two different units controlling different crossing areas.



SOURCE: FM 90-13. River Crossing Operations. U.S. Army, July 1990: 4-1.

Figure 2
River Crossing Phases



SOURCE: FM 90-13, River Crossing Operations U.S. Army, July 1990: 3-2.

Figure 3
River Crossing Control Measures

Crossing areas are controlled access areas that help control the amount of traffic in any one given area along the river to be crossed. They are set up to spread out the number of vehicles crossing the river on a given crossing asset. The total number of vehicles to be crossed, together with the crossing assets available, leads to the determination on the number of crossing areas to be established. There is normally one crossing area created per maneuver brigade to be crossed in the lead echelon of maneuver forces. Crossing areas normally extend two to three kilometers on both sides of the river. The two to three kilometer distance is the average maximum effective range of most threat direct fire weapons. This is the reason for the crossing area being sized two to three kilometers on both sides of the river. The exact depth of crossing areas also depends on the terrain, and may be extended to allow for placement along an easily identified piece of terrain. Enemy forces defending the river, and their disposition, are also a contributing factor in establishing the depth of the crossing area.

Waiting areas are set up along the routes to the river. They can be set up from two to three kilometers back from the river.

Some, depending on the force to cross the river in the lead echelon, may be as far back as ten to fifteen kilometers from the river. There are three types of waiting areas. The first is a staging area. It is a battalion sized area. The staging area is the furthest away from the river. It is located out of the boundary of the crossing area. The staging area allows battalion sized forces to get off of the road while they wait to enter the crossing area. All follow-on forces, not detailed for immediate crossing of the river, wait in staging areas. The staging area is also used to give briefings to the unit regarding vehicle speed, vehicle interval, and vehicle order of march to be used in approaching and crossing the bridge. Vehicle operators also prepare their vehicles for making the crossing in the staging area.[31] Staging areas are far enough back from the river to allow for rerouting units to other routes to the river, or to alternate crossing sites, should the need for the same arise. Staging areas must provide for concealment of the vehicles to avoid detection from the air as much as possible. The organic commander of the unit in a staging area retains command and control of his unit while in a staging area, since it is outside of the crossing area.

The second type of waiting area is the call-forward area. Call-forward areas are company sized waiting areas inside of the crossing area. Movement and operational

control of units in a call-forward area passes to the crossing area commander.[32] At a minimum, each crossing site has its own call-forward area. More may be established as is deemed necessary. Final vehicle preparations are made in the call-forward area.[33]

The last type of waiting area is the holding area. The holding area is the closest waiting area to the river. Holding areas may also be created on the opposite side of the river, the far shore. The purpose for a holding area is to provide an area, off of the route to the crossing site, into which vehicles can deploy should traffic at the crossing site become congested or backed up. Holding areas on the near shore of the river are normally company sized. This allows company size units coming out of the call-forward area to easily pull into a holding area if need be. Holding areas on the far shore, if established, are normally battalion sized. If traffic is flowing smoothly across the river, there is no need for units to deploy into a holding area. Units simply bypass the holding area and proceed to the crossing site. Military police are responsible for the movement of traffic in, through, and out of the crossing area. The military police advise the crossing area commander on the traffic situation. The crossing area commander makes the determination on whether

or not the holding area is to be used based on traffic reports from the military police. Holding areas need possess the following characteristics.[34]

1. Are located to support the crossing plan.
2. Are easily accessible from routes.
3. Have sufficient area for dispersion.
4. Provide cover and concealment.
5. Are defensible.
6. Maximize traffic flow with minimum control.

Engineer equipment parks are areas a short distance away from the river used for engineer purposes. They are used to preassemble bridge and raft parts that can be preassembled. Empty bridge trucks also park in the engineer equipment parks.[35] Spare bridge and raft parts are maintained here. The location selection of the engineer equipment park is an important decision. It must be close enough to the crossing site so that equipment can readily be transferred. It must provide some cover and concealment and enable equipment to be dispersed within its limits. Most importantly, the engineer equipment park must be located along routes to the crossing site other than those routes to be used by all other vehicles. If the engineer vehicles are forced to use the same routes to and from the crossing site

as other vehicles, serious road congestion will result. On many occasions, engineer vehicles must drive from the near shore away from the river, not towards it as do most all other vehicles. Two-way traffic on single routes can lead to traffic congestion. This is especially true considering the large military vehicles, such as M1 tanks, that must cross the river.

Traffic control points are yet another control measure used during river crossings. The traffic control points are established by the river crossing planners and manned by the military police. Traffic regulations are enforced from these points. Traffic control points are also used to relay information back to the crossing area engineer regarding the status of units moving to the river. Traffic control points are set-up on both sides of the river to ensure traffic is kept moving. Traffic control points are usually located at critical road junctions, adjacent to staging areas, holding areas, and engineer regulating points.[36]

Engineer regulating points are the last of the river crossing only control measures. Engineer regulating points are co-located with traffic control points where possible. They are manned by engineers.

They are used to check all vehicles crossing the river. Items to be checked are the load balance of the vehicle, to make sure it is not excessive on one side or the other, and the military load classification, to ensure that it does not exceed the bridging or rafting assets capability.[37]

As was the case with command positions established for river crossings, all of the control measures above are used solely for river crossing operations. They are in addition to all other control measures used to control operations and conduct maneuver. Control measures are but a portion of the control used for river crossing operations. Crossing control and movement control are two other aspects of river crossing control as outlined by FM 90-13. A discussion of each follows.

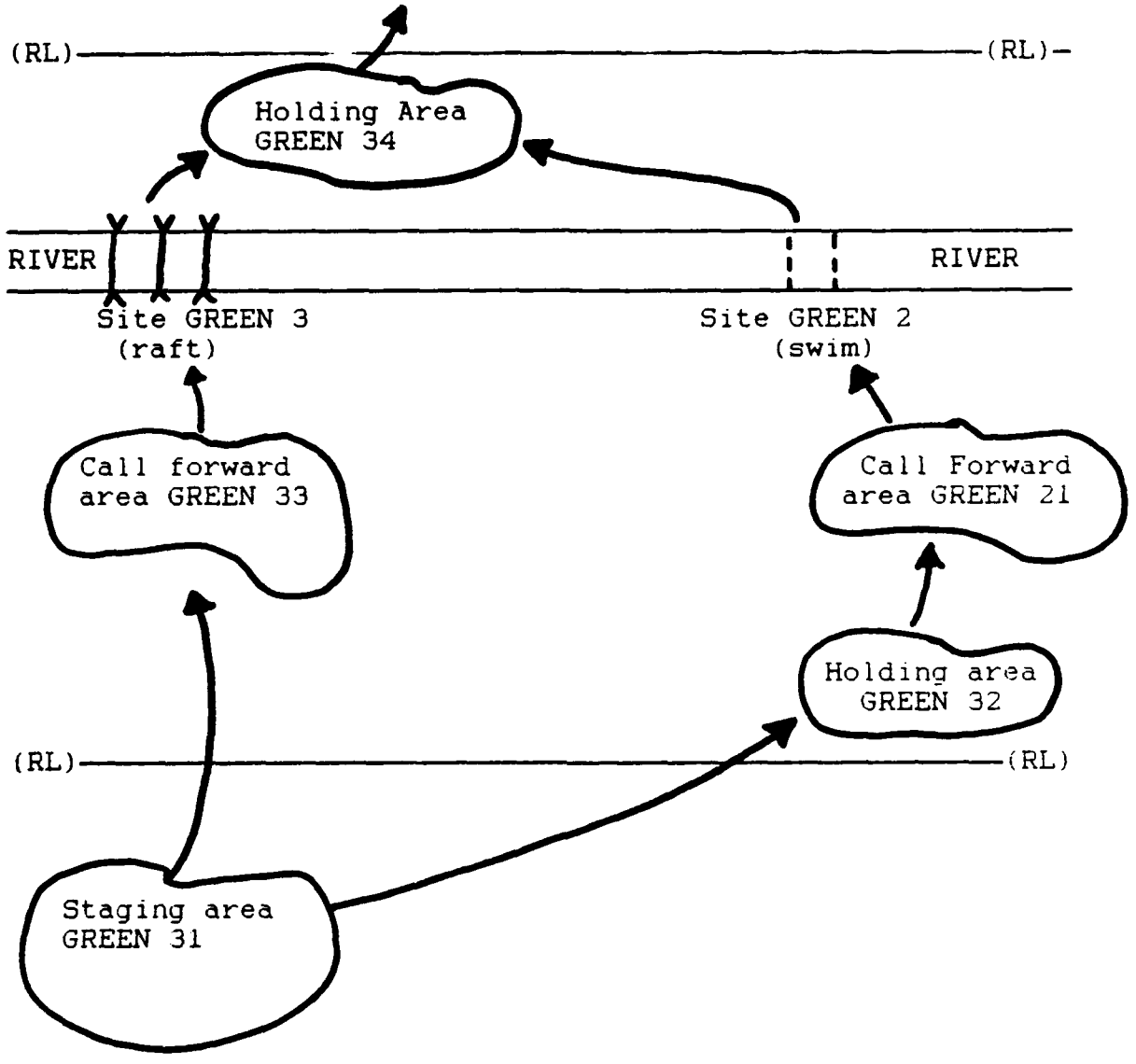
Crossing control for a river crossing operation begins after the third phase of river crossing operations. The first two phases, advance to the river and assault, are usually under the maneuver commander's control. Advance to the river is the main body's movement to the river. This movement is conducted ta tically. Initially, only forces to conduct the assault across the river, their overwatching forces, and any necessary support forces proceed all the way to the river.

The remainder of the force, regardless of its size, remains some distance back from the river. This distance is determined using METT-T.[38] Depending on the river to be crossed and the disposition of the enemy, the type of assault to be used is selected. The assault may be initiated with the use of RB-15s.[39] The assault may also be only mounted in infantry fighting vehicles, armored personnel carriers or cavalry fighting vehicles.[40] The assault may further be conducted using an air assault across tyhe river. A combination of RB-15s, mounted vehicles and air assault is also possible. Regardless of the type assault, the purpose is to rapidly seize a foothold on the far shore and to expand the bridgehead. Once a foothold is secure on the far shore, the brigade commander activates the crossing area. At this point, crossing control shifts to the crossing area commander.

With activation of the crossing area, crossing control begins. Thereafter, all units move through the crossing area under the crossing area commander's control. The crossing area commander, through the crossing area engineer, orders bridging and or rafting equipment to the river. Depending on the river and the elements of METT-T, rafting operations may proceed bridging operations. They may also occur simultaneously.

The first objective is to project fire power across the river. Tanks and supporting artillery receive initial priority. During the rafting stage, the crossing flow is from the staging area, through the call-forward area, to the crossing site and into a far shore holding area. Vehicles then proceed out of the crossing area and resume normal operations. Figure 4 depicts crossing flow during the rafting stage. During the bridging stage, the crossing flow is from the staging area, through the crossing site, and then out of the crossing area. Figure 5 depicts crossing flow during the bridging stage. The reason for the difference is that by the time bridging is underway, both the near and far shores are normally secure. Only traffic problems would normally necessitate use of the call-forward and holding areas.

Once enough combat power has crossed the river and adequate depth has been achieved on the far shore, the river crossing operation is no longer considered the close battle of the force making the crossing. At this time, the crossing area commander turns control of the crossing over to either the crossing area engineer, or to the follow-on maneuver unit crossing area commander. The crossing site then becomes simply an engineering and traffic control problem for all other forces to cross.



SOURCE: FM 90-13, River Crossing Operations, U.S. Army, July 1990: 3-8.

Figure 4
Crossing Flow During Rafting Stages

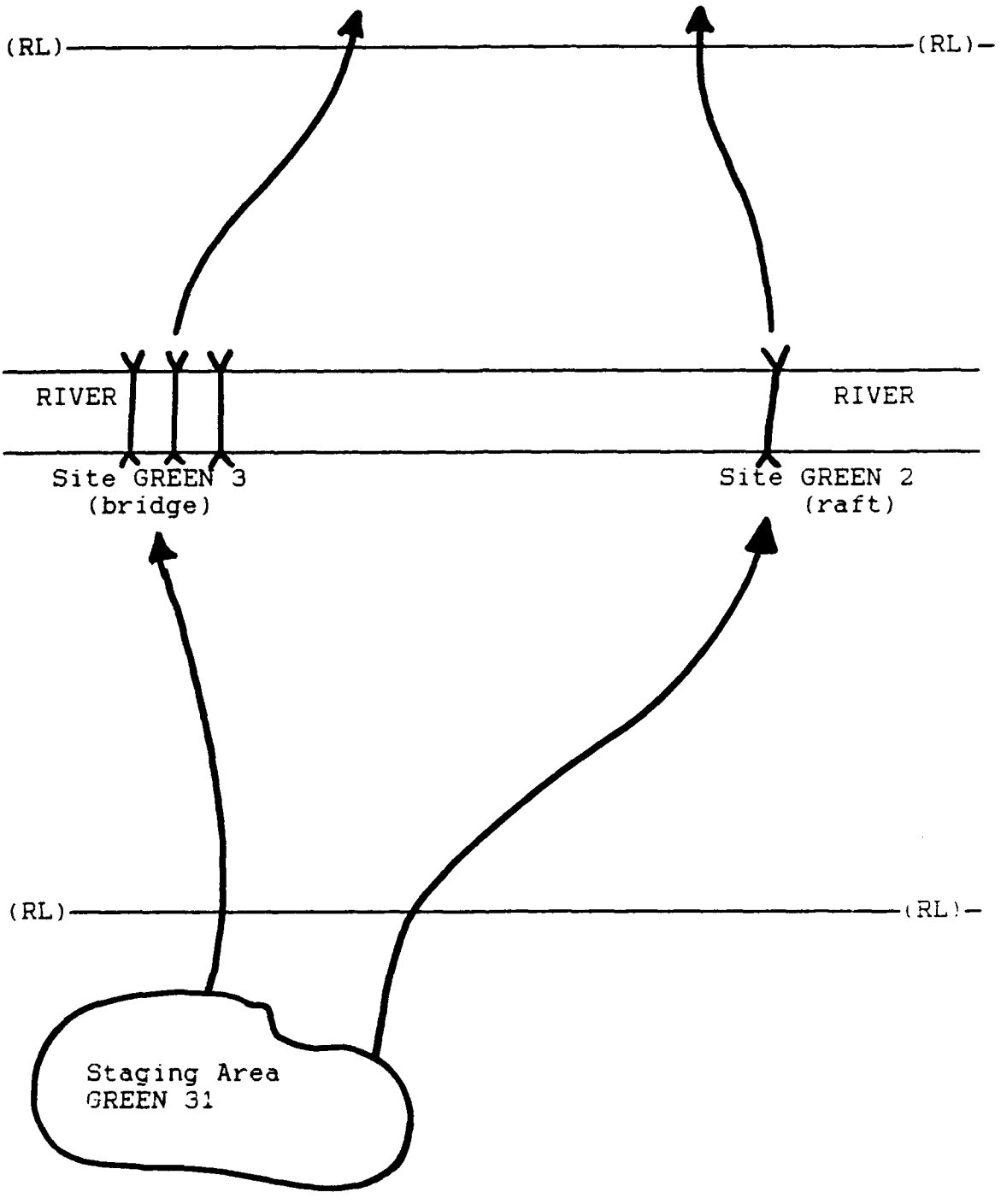


Figure 5
Crossing Flow During Bridging Stages

The third aspect of control involving river crossing operations is movement control. Proper sequencing of vehicles is important to the maneuver commander. Movement control ensures that this sequence is prepared for and followed. Movement control is exercised through the traffic control points. Movement control officers provide traffic information to the river crossing planning cell. This information is then rolled into the crossing forces crossing plan, and priorities established for crossing. The plan is published using a road movement table and overlay, in the operations order. Units move out of the staging area in the proper order. It is important that they consider vehicle order when occupying a staging area, so that proper vehicle order is achievable upon leaving the staging area. Traffic control points check for compliance. If need be, changes to vehicle order can be made in the call-forward or holding area.

Another large part of controlling a river crossing operation is communications. The area is far too complex to be discussed in this thesis, and is omitted.

Control of a river crossing is a complex business. There are control measures and functions unique to only a river crossing operation.

FM 90-13, River Crossing Operations, does not delineate different control, nor different command features, for hasty versus deliberate river crossing operations. For both operations, the command and control remains doctrinally the same. The only difference, according to FM 90-13, is the amount of planning that is conducted prior to the river crossing itself.[41]

Section III Command and Control Doctrine

It is important to understand the function of command and control to river crossings. To do this, an understanding of the U.S. Army's command and control doctrine is essential. This section outlines current command and control doctrine. Critical aspects will be used in Chapter 5 to provide a framework against which to measure river crossing doctrine.

Command and control is an area that has received considerable attention in recent years. With changes in technology have come changes in the definition of command and control. Army and joint references describe command and control as "...the exercise of authority and direction by a properly designated commander over assigned forces in the accomplishment of a mission. Commanders perform command and control by orchestrating personnel, equipment,

communications, facilities, and procedures to plan, direct, coordinate and control the battle."[42] FM 22-103, Leadership and Command at Senior Levels, further defines command as "...the primary means whereby the vision is imparted to the organization."[43] The vision is that of the unit commander. FM 22-103 lists the following characteristics of command.[44]

- well informed vision and clearly communicated intent.
- clearly understood goals and objectives.
- quality, low volume communications throughout the command.
- concept expression of tasks.
- emphasis on success and rewards.
- focus on the future.
- timely involvement to ensure results.

To command is to accept risk. A well known axiom throughout the military is that the commander is responsible for all that his command does or fails to do. Perhaps the reason that command and control is so hard to place an exact definition on is that different people command and control units differently. However, current Airland Battle doctrine

suggests that effective command must facilitate freedom to operate and delegation of authority. This freedom to operate is accomplished through mission orders that "specify what must be done without prescribing how it must be done."[45] FM 100-5 doctrine is postulated on a delegation of authority, freedom to operate environment. Only through the use of this style of command can the tenets of Airland Battle be achieved. Of most importance, initiative can not be realized without a freedom to operate environment. If a unit commander has no freedom to operate, or fears retribution from above every time he makes a decision, the environment will not be conducive to subordinate commanders exercising initiative. Such an environment would allow many decisive moments on the battlefield to pass, without exploitation. For all of these reasons, Airland Battle doctrine says command "...should restrict the operations of subordinates as little as possible."[46]

"Control is inversely proportional to command."[47] Control is the process used to establish restrictions and to provide structure to the system. As with anything else, some amount of control is essential. This is particularly true with military operations. Control provides for organization during uncertain situations. Without it, chaos may result.

Control is a means of checks and balances over command. Where command is strong and competent, control is normally less restrictive. Where command is weak and suspect, control is normally more restrictive. The latter is the worst possible situation. Excessive control can lead to tension between levels of command, centralization of all decision making and power, and confusion. The following are characteristics of the control process.[48]

- high volume, routine communications.
- coordination activities between elements internal and external to a unit having related responsibilities.
- structure, which limits uncertainty.
- emphasis on efficiency as a goal.

Control can take the shape of many forms. The most common form of control is the mission itself. Depending on how a mission is written, the mission statement in itself can exert a tremendous amount of control over subordinate units. Another general form of control is U.S. Army doctrine. All soldiers learn doctrine from their initial entry training in the army.

Doctrine is continually learned throughout a career. Doctrine controls the way one is trained to react and operate. It is a form of control. Operation orders with supporting annexes and graphics are another form of control. They state specifics that are to be carried out. Normally, these specifics include the time and place in which an operation is to be conducted. Still yet, another form of control is through the verbal process - verbal communications. Control varies from commander to commander, and from situation to situation. Some commanders desire to exercise a large degree of control via their operations orders. Oppositely, some commanders desire to exercise little control via the operations order, and a lot of control through communications on the battlefield, as the situation develops. Still yet, other commanders desire to let their subordinates exercise the majority of control. These type commanders emphasize little control in either the operations order or through communications. The amount of control a commander exercises is basically personality dependent.

Current Airland Battle doctrine, from U.S. Army level down to battalion task force level, all agree on the overall context of the command and control process. An excerpt from the doctrinal manuals of each level is provided to show the continuity.

From FM 100-5, Operations:

> The need for flexibility in command and control is greater for the committed maneuver unit commander than for anyone else. He cannot depend on constant direction, but must fight independently even when he cannot communicate outside his own zone or sector. He must know the intention of the commander two levels above him, understand the concept of operation of his immediate commander, and know the responsibilities of the units on his flanks and in support of his operations. If he understands these things, the committed commander can conduct his operations confidently, anticipate events, and act freely and boldly to accomplish his mission without further orders. 49

From FM 100-7, The Army in Theatre Operations:

> Command allows army leaders to impart their vision to subordinates, fix responsibilities and empower subordinates with freedom of action. Commanders use control to establish limits, focus effort and provide structure. Senior leaders must balance their level of command versus control such that their subordinates can exploit opportunities and avoid the vulnerabilities and uncertainties of dynamic combat or other military operations. 50

From FM 100-15, Corps Operations:

> The corps commander provides direction by developing subordinate leaders who can help prepare the corps for war, sustain it, and successfully apply our warfighting doctrine. He communicates his intent so that others understand what must be done, and then lets competent subordinates he has developed decide how to accomplish missions. 51

From FM 71-100, Division Operations:

> The division commander must deal with the uncertainty and friction of war through a decentralized command and control system consisting of mission oriented orders.

> By accepting the uncertainty and rapidly changing nature of the battlefield as a fundamental element of war, only the commander on the spot is in a position to determine the most effective methods and means to accomplish an assigned mission. 52

From FM 71-3, Armored and Mechanized Infantry Brigade:

> Decentralized execution and coordination are the norm. 53

From FM 71-2, The Tank and Mechanized Infantry Battalion Task Force: 54

Key command and control considerations for the battalion/task force commander include-

- making maximum use of time.
- planning for and maintaining flexibility.
- decentralizing execution.
- providing clear, concise missions.

As can be seen from the above excerpts, the command and control doctrine for the U.S. Army stresses decentralized execution and flexibility. These considerations are imperative to achieving the Airland Battle tenets of agility and initiative. Commanders must maintain enough control to supervise the situation, while at the same time maintaining a command climate which fosters freedom of action. This balance between command and control is deemed imperative by FM 100-5 to win the next war. General Schultz, a commander of the 48th Panzer Corps in World War II summed up the importance of this balance in the following statement. "The right moment alone, correctly judged, exploited with lightning speed and prompt action can produce victory - and despite the fact these victories may

not at times correspond to the exact ideas and wishes of the higher commander, this must be accepted in silence. Victory is the only thing that matters."[55]

CHAPTER FOUR

ENDNOTES

[1] U.S. Army, FM 100-5, Operations (1986), 6.

[2] Ibid., 14.

[3] Ibid., ii.

[4] Ibid., 14.

[5] Ibid., 15.

[6] Ibid.

[7] Ibid.

[8] Ibid.

[9] Ibid.

[10] Ibid., 17.

[11] Ibid.

[12] Ibid.

[13] Ibid., 18.

[14] U.S. Army, FM 90-13, River Crossing Operations (1990), 1-1.

[15] The 1987 version of FM 90-13 was Field Circular 90-13, dated March 1987.

[16] FM 90-13, 1-2.

[17] Ibid., 1-1.

[18] Ibid.

[19] Ibid., 1-2.

[20] Ibid., 1-3.

21
FM 90-13 does not delineate different command and control procedures for hasty versus deliberate river crossings.
22
These are the only two levels that FM 90-13 stipulates command and control of river crossings for.
23
In a division or brigade level crossing, only a portion of the force may be in the crossing area at a given time. The remainder of the unit may be approaching, or already beyond the crossing area.
24
FM 90-13, 3-3.
25
Ibid., 3-4.
26
Ibid.
27
The crossing site commander normally works through the military police to enforce route clearance.
28
The Table of Organization and Equipment (TOE) is a listing of personnel and equipment authorized and required a unit in order to perform its wartime mission.
29
The unit itself may be far detached from the commander, especially during the planning stages of a river crossing. The unit is not part of the brigade or division undertaking the river crossing operation.
30
FM 90-13, 3-1.
31
Vehicle preparation includes balancing loads to prevent unnecessary tilting, as well as checking total weight.
32
Control of the unit only, not command. Any vehicle inside of the crossing area, once active, comes under the control of the crossing area commander.
33
Final preparations include organizing vehicles into raft loads for rafting operations, ensuring order of march, and preparation for swimming if required.
34
FM 90-13, 3-1.

35
Bridge transport trucks carry most all tactical bridging in the U.S. Army's inventory. Without modification, there is little else for the vehicles to do after dropping bridge bays. The trucks normally wait in the engineer equipment park until the tactical bridging is replaced with more permanent type bridging.

36
FM 90-13, 3-3.

37
Military load classification is a numeric weight designation equivalent to the gross tonnage of the vehicle.

38
METT-T is the U.S. Army's acronym standing for mission, enemy forces, terrain, troops available and time.

39
An RB-15 is an inflatable rubber boat owned by the engineers. It can carry up to fifteen people, three of which are engineers.

40
These are the existing infantry and cavalry fighting vehicles with a swim capability.

41
FM 90-13, 1-2.

42
U.S. Army, Combined Arms Combat Developments Activity, Army Command and Control Master Plan Executive Summary (1990), 1.

43
U.S. Army, FM 22-103, Leadership and Command at Senior Levels (June 1987), 41.

44
Ibid.

45
FM 100-5, 21.

46
FM 100-5, 21.

47
Army Command and Control Master Plan Executive Summary, 5.

48
FM 22-103, 42.

49
FM 100-5, 22.

50
U.S. Army, FM 100-7, The Army in Theatre Operations (Draft) (July 1990), 2-22.

51
U.S. Army, FM 100-15, Corps Operations (September 1989), 4-0.

[52] U.S. Army, FM 71-100, Division Operations (June 1990), 3-2.

[53] U.S. Army, FM 71-3, Armored and Mechanized Brigade (May 1988), 2-3.

[54] U.S. Army, FM 71-2, The Tank and Mechanized Infantry Battalion Task Force (September 1988), 2-10.

[55] FM 71-100, 3-3.

CHAPTER 5

COMPARISON OF THE DOCTRINES

Chapter Four detailed Airland Battle doctrine. The tenets of initiative and synchronization in particular were highlighted. Chapter Four also detailed command and control and river crossing doctrines. The command and control function of river crossing operations was highlighted. Section I of this chapter will compare those critical aspects of Airland Battle doctrine to river crossing doctrine. The critical aspects of initiative and synchronization from Airland Battle doctrine will be used for comparison. Section II of this chapter will compare the critical aspects of command and control doctrine to river crossing doctrine. A concluding chart depicting the highlights of discussion in sections I and II of this chapter is presented in Section III. Concluding remarks regarding this analysis are also provided in Section III.

Section I Comparison of Airland Battle Doctrine to River Crossing Doctrine

The following critical, major parts of initiative and synchronization tenets of Airland Battle are those from

which comparison to river crossing doctrine will be made.

Initiative

- rapid execution.
- allows friendly freedom of action.
- forces enemy to fight under terms and conditions set by friendly forces.
- requires technically and tactically sound risk taking.
- centralized control.
- decentralized execution.

Synchronization

- synchronizes combined arms with maneuver.
- consolidates purpose of mission.
- minimizes, yet coordinates time and space.
- relies on habitual (not directed) synchronization.
- conserves resources.

Initiative

Rapid execution

The command and control of river crossing operations does not support rapid execution. In the command area, the creation of the crossing area commander, crossing force commander, crossing area commander and crossing site

commander take time. Time must be spent bringing together these personnel. Even prior planning can not eliminate this time. Additional time must be spent coordinating the actions of these personnel, coordinating command relationships amongst them and between other commanders, and certainly establishing some form of command post from which these personnel will work. Granted, the coordination time lessens each time these personnel are brought together. The more that they work with one another, and the more that they work with the divisional staff, the easier the whole process becomes. However, any time a new command post is set up some amount of coordination is required. Coordination in turn, takes time.

The concept of rapid execution is further violated in the control of river crossings. The establishment of crossing areas, traffic regulating lines and control points, waiting areas, equipment parks and engineer regulating points is extremely time consuming. Even with detailed prior planning, crossing area creation consumes vast amounts of time. By creating crossing areas under the control of other than a maneuver commander necessitates additional time. This time is spent coordinating requirements regarding terrain responsibilities and management. All of these additional time requirements are unique to river crossing operations.

The doctrinal procedures for establishing command and control of river crossing operations do not lend themselves to rapid execution of operations. If these command and control aspects are necessary, as the river crossing doctrine stipulates they are, rapidity of execution is sacrificed for their establishment.

Allows friendly freedom of action.

The command and control of river crossing operations does not support friendly freedom of action. If a force is proceeding to a river, the majority of that force (excepting the assault force) must halt some distance back from the river to wait for the establishment of the crossing area.

The command portion of river crossing doctrine does not provide a battalion sized unit the capability to cross a river on its own. The smallest sized unit, according to doctrine, that can command a river crossing is the brigade. A battalion would have to wait for its brigade headquarters to establish the crossing area before proceeding across the river. Doctrinally, this holds true for both deliberate and hasty type river crossings. Friendly freedom of action is hindered in this respect.

Control of river crossings also impedes freedom of action.

This holds true for the same reasons mentioned under rapid execution above. Friendly freedom of action is also seriously hampered by the availability of bridging assets. Bridging assets are not the focal point of this thesis, however. A table of bridging assets available to maneuver units is provided at Annex A, solely for the interest of the reader. The recent implementation of the Engineer Restructure Initiative (ERI) compounds the problem. Under ERI, maneuver divisions no longer have a ribbon bridge company organic to the division.[1]

Forces enemy to fight under friendly force terms and conditions.

River crossing command and control doctrine does not support friendly force freedom of action. Because friendly forces are not able to maintain freedom of action, they can not completely force the enemy to fight under their terms and conditions. A halt or delay at the river line gives the enemy time to prepare a defense along the far shore. The establishment of a crossing area and its amenities tips the enemy where friendly forces intend to cross the river. Initiative gained could easily be lost with the halt in maneuver. Initiative may swing to the enemy at this point. Even if it does not, the enemy is no longer being forced to fight under friendly terms.

A river is a formidable obstacle when it must be crossed with an enemy force defending the far shore. Any means to prevent enemy buildup on the far shore lessens the formidability of the obstacle. A delay crossing the river is time for the enemy to prepare a defense, recoup, reorganize, rearm, and provide reinforcement. Without a continual pressure on the enemy, he is able to set the terms and conditions of the battle himself. A way around this lapse in rapid action is to continue to strike the enemy with violent air strikes or indirect fires. This alone may not be enough. The enemy owns the terrain on the far shore at this point. Assuming defensive positions have been prepared along the far shore, air strikes may not be effective. Friendly forces can pick the time and location with which they will cross. Once the crossing is started however, friendly forces can not force the enemy to fight under friendly terms and conditions. The enemy is able to mass forces along suspected friendly crossing areas. By doing so, the enemy can set the terms of battle until such time he is driven from the terrain, and a bridgehead established and secured.

Requires technically and tactically sound risk taking.

The command and control doctrine of river crossing operations does not support risk taking at the tactical level.

A battalion sized force halting at a river is not taking a risk in trying to forge a hasty crossing of the river. The same holds true for a brigade sized force. Doctrinally, the establishment of a river crossing area precludes such risk taking. These tactical forces are trained to halt at the river line. During the halt, overwatch forces are brought forward. Air defense and indirect fire weapons systems are also brought forward. Combat engineers then move forward, together with maneuver forces, to try and forge a crossing of the river. Once the far shore is achieved, and a foothold gained, the crossing area is activated. This operation in itself is risky. This type of risk is not that intended under the initiative tenet of Airland Battle doctrine. Risk under initiative is taking a chance. Risk under crossing a river to establish a bridgehead is not chance, it is inherent. The problem with existing river crossing command and control doctrine is that it does not provide for any risk taking at the tactical level. The intent is not to force a river crossing in the face of a stiff enemy resistance. To do so would be an unnecessary risk. However, if a battalion or brigade size force sees an opportunity to assault across the river and secure a bridgehead, and the risk merits taking the chance, doctrine should permit the undertaking.

Technical and tactical risk taking at the operational level is provided for in river crossing doctrine. Establishing deception plans and alternate crossing sites encompasses risk. The risk is taken to lure the enemy away from the main river crossing site. It is hoped that the enemy will mass forces at the wrong crossing site, making the main site less defended. Some amount of risk is also being taken at the operational level. This risk is that associated with the ability of the enemy to prepare a defense on the far shore, and conversely, the ability of friendly forces to avoid or break the enemy defense in making a crossing.

Overall, technically and tactically sound risk taking is neither supported nor unsupported by command and control river crossing doctrine.

Centralized control.

The command and control doctrine of river crossing operations strongly supports centralized control. All planning is done at division level. Bridging assets are also controlled by the division.[2] The tempo, location, and site of crossing are all controlled by division or brigade. Crossing area commanders work directly for the division commander, and report only to him.

Crossing force engineers work directly for the crossing area commander. Subordinate units receive an operations order telling them exactly who is to cross the river, where and when. The entire operation is commanded and controlled by the division commander responsible for the crossing. There is little to no decentralized control in river crossing operations.

Decentralized execution.

For all the same reasons given in centralized control above, river crossing operations doctrine does not support decentralized execution. Not only is the entire operation controlled by the division, it is entirely executed by them. Subordinate units have little to no execution responsibility in river crossing operations. They only respond to the operations order for the crossing and move into the crossing area when directed to do so. Command and control is carried out using the three command posts of the division. The tactical command post (TAC CP) controls the bridgehead force's attack across the river.[3] This is considered the close battle. The TAC CP crosses the river shortly after a foothold on the far shore is gained. The TAC CP then controls the fight to secure the bridgehead. At this point, the main command post (Main CP) assumes control of the remainder of the river crossing.

The Main CP prepares the river crossing plan and coordinates the crossing on activation of crossing areas.[4] The Main CP also directs the deep battle against enemy forces on the far shore of the river. The deep battle tries to interdict enemy reinforcements from entering the battle, and tries to destroy enemy forces defending the bridgehead from capture.

The rear command post (Rear CP) sustains the effort.[5] FM 90-13 says, "As a guide, the Main CP displaces across the river after the division reserve. Once the Main CP displaces across the river, the crossing becomes a rear operation controlled by the Rear CP."[6]

Doctrinally, the entire command and control of executing a river crossing operation lies with the division responsible for the crossing.

Synchronization

Synchronizes combined arms with maneuver.

River crossing doctrine provides for synchronization of the combined arms with maneuver. The detailed command and control structure of river crossing doctrine ensures all combined arms are involved in the crossing. Air defense systems are given high priority in the doctrine. Indirect fire systems are also considered essential. "The crossing

plan is integrated throughout the division and is as detailed as time permits."[7] All combat service and combat service support units are involved as necessary.

A possible flaw in the river crossing doctrine is who doctrine holds responsible for writing the river crossing plan. As doctrine currently suggests, the division engineer is ultimately responsible for the crossing plan. This delineation of responsibility is supported by the following statement from FM 90-13, "The division receives support from a CFE (crossing force engineer)....who provides additional staff planners for the division engineer section at the main CP."[8] Further leading one to believe that the river crossing plan is not written by the division plans and operations section, but by the division engineer section. is another statement out of FM 90-13 as follows. "The crossing plan is integrated throughout the division operation order...."[9] If the division operations section were responsible for writing the crossing plan, an integration into the division operation order would not be necessary. If river crossing doctrine intends for the division engineer section at the main CP to write the crossing plan, and then to "integrate" it through the division, the best possible synchronization of combined arms is not provided for. There is no way that a division engineer section, even with assistance from the crossing force engineer, can equal the

combined arms integration effort of the division operations (G-3) staff.

Mission purpose.

River crossing doctrine is compatible with the Airland Battle tenet of synchronization in consolidating mission purpose. The entire division has a sole purpose - to cross the river. All combat, combat service and combat service support units play a part in the river crossing. A typical example, by battlefield operating system, is given below.

Maneuver

A divisional river crossing would consist of three brigades attacking abreast, unless attack along a broad front was not possible. In the latter case, an attack across a narrow front would be executed. An attack along a narrow front would most likely have three brigades attacking in column. The brigades would be broken down into three forces. The leading force is called the bridgehead force. The bridgehead force is that force which assaults across the river and is primarily responsible for securing terrain on the far shore. The second force is the support force. The support force follows closely behind the bridgehead force and provides suppression, obscuration and the crossing means. The third force is the breakout force. The breakout force crosses the river only after the bridgehead force has secured the far shore, and when adequate crossing means have

been installed. The breakout force continues the attack on the far shore of the river to a tactical objective. All maneuver forces then, are involved in the river crossing. They are broken down into the bridgehead force, the support force, and the breakout force.

Intelligence

Intelligence plays a critical role in a river crossing. First and foremost, the intelligence is used to define enemy strengths and dispositions in the entire area of interest. Intelligence also portrays likely enemy courses of action in response to the friendly force river crossing. Based on the most likely enemy course of action, a friendly course of action to cross the river is chosen. Each course of action includes branches and sequels to consider the "what if" situations. Intelligence is continually updated. This allows the friendly force to remain abreast of the enemy situation, and to react as necessary to continue the operation successfully.

Fire support

Fire support assets are continually involved in the river crossing. They are used to provide preparatory fires in advance of the bridgehead force's attack across the river. They are also used to provide obscuration fires to conceal the friendly force crossing. Fire support assets provide advancing fires in front of the advancing force to limit enemy capabilities, as well as providing counter-fire

to negate enemy fire support fires. The fire support assets are critical assets. Fire support weapons are included in the early elements to cross the river so as to provide continuous fire support as the friendly force advances.

Mobility, countermobility, survivability

Engineers obviously play the key role in a river crossing operation. Engineers are part of the bridgehead force. These engineers assist the maneuver force with mobility. They reduce obstacles in the path of friendly advance. Separate from these engineers are the engineers who provide the initial crossing means. These engineers also provide mobility. The mobility may be provided with rafts, boats, expedient bridging means, or a combination of the three. Engineers also are included in the support force. These engineers are those with the river crossing means, i.e. the bridges. Engineers are also part of the bracket force to provide mobility. Engineers also maintain roads leading up to the river crossing site to ensure traffic flow is maintained as best as can be with available assets.

Air defense artillery

Air defense artillery assets are brought as far forward as possible before the river crossing commences. They are responsible protecting the crossing site from enemy air strikes while the crossing is being forged. Approaches and crossing sites along the river are the highest priority

for air defense during the crossing. Air defense assets are then projected to the far shore of the crossing site to provide a continuous air umbrella protection over the crossing site and the bridging assets. Air defense also provides protection over critical command posts, material stockage sites, and the like to better ensure the success of the crossing.

Command and control

Command and control is paramount to the river crossing. The division command posts, brigade command posts, crossing forces command posts, etc., are all intricately involved in the river crossing.

Combat service support

Combat service support provides continuous resupply of all classes of supply to the division before, during and after the crossing. Class III (fuel) and class V (ammunition) are prestocked as close to the near shore of the river as possible before the crossing commences. This provides for immediate resupply to forward units as needed. Combat service support assets are also contained with bridgehead force, the support force, and the bracket force. These combat service support units are normally as austere as possible, but large enough to sustain the maneuver force in its mission. The combat service support assets are tailored to support the mission as required.

Mission purpose, as is seen from the above, is clearly provided for in existing command and control for river crossing doctrine. Each element of the division is critical to the success of the crossing, and each supports the overall mission.

Minimizes, yet coordinates time and space.

River crossing doctrine coordinates time and space well; but, it does not minimize time and space. The coordination of time and space is a by-product of mission purpose. All battlefield operating systems are considered in the mission planning, as was detailed above. Their integration into the overall division river crossing plan is provided for in FM 90-13, River Crossing Operations. The phased employment of the battlefield operating systems to support the division crossing plan is a coordination of time. The establishment of crossing areas in depth on both sides of the river does not minimize space; as compared to other operations such as breaching a minefield etc.. The massing of forces to assault across a river on a broad front, and the continued massing of forces on the far shore requires time, as does the establishment of the crossing area complete with the command and control features outlined in Chapter Four. "Crossing requires depth in area on both shores of the river, in crossing resources, and in time ...."[11]

Neither time or space are minimized to the extent they could be. The final analysis then, is that river crossing doctrine is neither supportive or unsupportive of minimizing, yet coordinating time and space.

Relies on habitual synchronization.

FM 90-13 states, "(River crossing) assault and support forces must carefully synchronize all actions to ensure the crossing force produces adequate combat power at the decisive point and time. This synchronization requires careful calculation during planning and attention during execution."[12] The close attention that must be given to synchronizing forces, time and space during a river crossing operation, given current command and control doctrine for river crossing operations, necessitates directed, not habitual synchronization. The crossing area commander controls all tactical movements within the crossing area. Units are directed when and where to move. The bridgehead force is the force most able to use habitual synchronization. Support and bracket forces entire operation is directed by the division, as is there move across the river. For these reasons, the command and control of river crossings does not support habitual synchronization. On the contrary, directed synchronization is the norm, not the exception.

Conserves resources.

Vast amounts of resources are required to conduct a river crossing operation. Men, equipment, time, ammunition, staff planning, assault crossing assets, bridge assets, numerous control measures, and large command structures all consume resources. Granted, any tactical military operation consumes resources. The resources demanded by current river crossing doctrine are severalfold more than other tactical operations, however. Current river crossing doctrine necessitates the division receiving additional resources from corps or above, to successfully carry out a crossing. Very few resources are conserved in a river crossing operation. It can not be said that command and control of river crossings doctrinally supports the AirLand Battle tenet of synchronization in conserving resources.

Section II. Comparison of U.S. Army Command and Control Doctrine to River Crossing Doctrine

The following critical, major parts of U.S. Army command and control doctrine are those from which comparison to river crossing doctrine will be made.

Command

- well informed vision, clear intent.
- quality, low volume communications.

- concept expression of tasks.
- focus on future.
- accept risk.
- facilitates freedom to operate.
- provides rapid response.

Control

- coordinates activities between lower, higher and adjacent units.
- provides structure, limits uncertainty.
- high volume, routine communications.
- emphasizes efficiency.
- adaptable.

COMMAND

Well informed vision, clear intent

The command and control of river crossing operations provides for the division commander's vision and intent. The vision and intent are components of a consolidated mission purpose discussed earlier under synchronization. Current river crossing doctrine stipulates the early planning of the river crossing at the division level. Before the planning commences, the division commander provides the G3 and Crossing Force Engineer his vision for the operation. The vision includes the desired end state. The vision portrays the river crossing operation from start

to finish. The division commander also provides information regarding his intent. The intent includes what the commander wants done, and not necessarily how to accomplish the operation. With this information in hand, the crossing force engineer and division engineer staff planners commence planning the river crossing operation.

When the river crossing plan is complete, it is forwarded from division to concerned, subordinate units. The river crossing plan is normally part of a larger, division operations order. The operations order, per required format, includes the commander's vision and intent.

Quality, low volume communications.

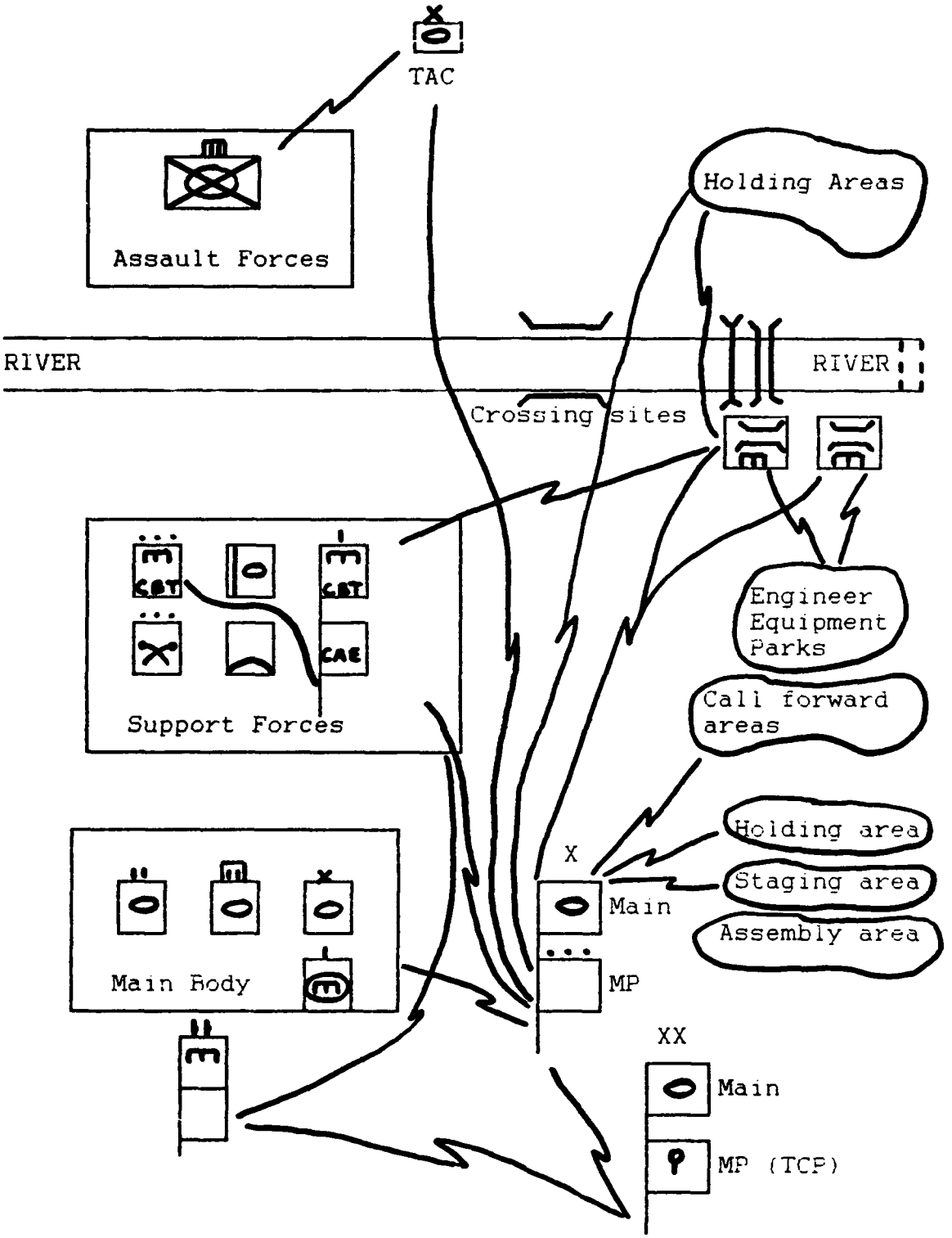
River c· ·g doctrine does a poor job at supporting this aspect of command and control doctrine. Communications for a river crossing operation are too complex and lengthly to detail in this thesis. A brief look at the communications is provided as supporting evidence to the fact that river crossing doctrine does not support low volume communications.

There are up to seven communications nets that are activated for both hasty and deliberate river crossings. The division main CP maintains communications with the three maneuver forces (bridgehead, support and breakout). This

is normal for any type operation. The division main CP must also establish and maintain communications with the crossing force engineer, holding areas on both sides of the river, staging and assembly areas, and the crossing sites. These communications nets place a tremendous burden on the division, as assets must normally be obtained from out of the division to set up and operate the nets. The volume of communications over these nets, in addition to other operations and intelligence nets, is tremendous. Figure 6 provides a typical communications schematic for a divisional level river crossing.

Concept expression of tasks.

Command and control of river crossings goes far more than giving just a concept expression of tasks. The concept(s) are explained in great detail via the river crossing plan. All movements, times, roads, crossing sites and forces involved are explicitly outlined in the crossing plan. To put this in context with other divisional level missions eases the comprehension. A division conducting a defense mission tasks its brigades along the following lines. "Defend in sector from grid coordinate xxxxxx to grid xxxxxx not later than a specified date and time group." Other pertinent tasks relating to the operation may also be found under the tasks to subordinate units portion of the operations order, or in the coordinating instructions. One



SOURCE: FM 90-13, River Crossing Operations U.S. Army, July 1990: 3-5.

Figure 6
Communications Schematic for Divisional River Crossings

would not find an annex to the operations entitled "Defensive Plan". The brigades are given the concept to defend, an area to defend, an operations overlay and other necessary documents relating to the operation. In a river crossing operation, the brigade would be given the task to form one of the three crossing forces (depending on the situation) and the task to cross the river in the operations order. As in the defensive scenario, the brigade would be given other pertinent information in the tasks to subordinate units or coordinating instructions portion of the operations order. Additionally, the operations order would contain the river crossing plan. The plan details (rather than conceptualizes) the crossing from start to finish. River crossing doctrine does not support concept expression of tasks.

Focus on future.

The command and control doctrine for river crossing operations does not provide a focus on the future. Near term river crossing operations are rendered practically infeasible by the tremendous resource expenditure required of a current crossing. The division does not have enough resources in engineers, military police, air defense, communications, and most importantly, bridging assets to undertake multiple river crossings. In a multiple division scenario, corps does not have enough

assets to furnish that which is required doctrinally to undertake a single river crossing operation, much less multiple crossings. There is only one corps engineer to be a crossing force engineer. Corps engineer battalion commanders are not in limitless supply either. Who then is to be the crossing area engineer when multiple crossings are conducted? It is important to recall that the crossing area engineer is the person who commands those engineers who stay at the river site and are responsible for moving the force across the river. Lastly, the division has no bridge companies organic to it. Crossing site commanders (the commanders of the bridge companies) all come from corps. There is no way this person can be in two places at once. Even if he could, the effort would be in vain. There are not enough bridging assets in a bridge company to conduct two brigade size crossing simultaneously.

Accept risk.

For reasons identical to those outlined for requiring technically and tactically sound risk taking under initiative, river crossing doctrine does not support risk taking at the tactical level. Some amount of risk is provided for at the operational level, however, this risk is inherent risk and not risk taking.

Facilitates freedom to operate.

The command and control doctrine of river crossings does not support the freedom to operate concept. Freedom

to operate implies an ability of brigade and lower commanders to do as they deem necessary and proper, within acceptable limits of risk. Command and control doctrine restricts this freedom to operate concept. Brigade and lower commanders must halt at a river line, and not chance a crossing on their own accord. Halting can allow an opposing force to strengthen defenses on the far shore of a river. Halting can also be a factor in a friendly force losing the initiative to the enemy. Neither of these results in halting on the near shore facilitate freedom to operate.

Provides rapid response.

Rapid response providing is the ability of a subordinate maneuver unit to query, and receive response from its higher headquarters. A streamlined chain of command and responsive command and control systems are conducive to the provision of rapid response. Whenever the command and control system has extra links imposed in the chain, the responsiveness decreases. Obviously, the more links one has to go through to reach the top of the chain, the more time is required. Command and control doctrine for river crossing operations adds up to four additional command positions in the chain. While units are in a river crossing area, these extra links are in effect. Although rapid response is not altogether impossible, it is more likely than not that it will be decreased over what response would otherwise be available without the four additional positions

imposed. The command and control doctrine for river crossings does not support the concept of providing rapid response. Additional command and control requirements of the river crossing doctrine decrease response time, not increase it.

CONTROL

Coordinates activities between lower, higher and adjacent units.

The command and control doctrine for river crossing operations strongly supports the concept of coordinating between lower, higher, and adjacent units. The entire river crossing concept is published in the river crossing plan. The river crossing plan is an add-on to the division operations order. Each unit below division, down to company level, publishes its own operations order. Elements of the river crossing plan pertinent to each unit are either included in these lower unit operations orders, or simply extracted from the division river crossing plan and included in an annex to the operations order. Since timing is critical to the initiation of a river crossing, the division coordinates with adjacent units routinely. Adjacent units may be conducting their own river crossing, or more likely are conducting some form of a supporting attack to facilitate a corps deception plan for the river crossing. In either case, coordination to set timing, ensure mutua.

understanding of boundaries and responsibilities, or to arrange support in some form is a must. The river crossing doctrine provides for this coordination to occur.

Provides structure, limits uncertainty.

Notwithstanding whether the structure provided is adequate or not, river crossing doctrine does provide a detailed command and control structure. The structure outlined in FM 90-13 for command and control is very implicit, and leaves little room for uncertainty. Doctrinally then, the command and control for river crossings supports this concept. Chapter four detailed the command and control structure doctrine for river crossings.

High volume, routine communications.

This concept of high volume, routine communications is the opposite of the quality, low volume communications outlined previously as a requisite for successful command. River crossing operations doctrine did not support the latter concept, and conversely, supports the concept of high volume, routine communications. With upwards of seven operations and intelligence nets activated for the command and control of a river crossing, high volume communications is ensured. Routine communications are also provided for between elements of the engineer community controlling operations inside the river crossing area, and the maneuver unit headquarters responsible for the crossing itself. In fact, the crossing force commander makes most decisions

effecting anything to do with the river crossing operation based on information received from the crossing force engineer. The crossing force engineer in turn, receives information from subordinate crossing area engineers, crossing site commanders and traffic control points established in the crossing area.

Emphasizes efficiency.

The command and control doctrine for river crossings both supports and does not support the concept of emphasizing efficiency. On one hand, resources stipulated for the river crossing operation are numerous. The resources were discussed above under conserving resources as a part of synchronization. The resources called for are more than the division can afford to provide. In this respect, river crossing doctrine does not support efficiency.

On the other hand, river crossing doctrine centralizes the resources to plan and conduct the river crossing operation at division. By centralizing the resources, the most efficient utilization of them is provided for. If the resources were split apart, and farmed out to each of the brigades, their utilization would not be as efficient (nor would they be of adequate quantity to conduct the planning and conduct of the river crossing). In this respect then, river crossing doctrine supports the

emphasis on efficiency.

Adaptable (flexible).

"Even successful crossings seldom go according to plan. A flexible plan enables the crossing force to adapt rapidly to changes in the situation during execution."[13] This passage from FM 90-13 illustrates that existing river crossing doctrine supports adaptability. When building a river crossing plan, multiple approach routes to a bridge with a good lateral road network between them is a must. This allows traffic to be diverted from one crossing site to another as needed. Reserve stocks of bridging assets are also called for by doctrine providing an additional amount of flexibility. Also, the three forces that are doctrinally established to cross a river (bridgehead, support and breakout) provide flexibility. If one force fails to accomplish its mission, a subsequent force is simply held back. This mitigates friendly loss, and does not commit the whole force at once to possible destruction.

Section III Conclusions Regarding Analysis

Figure 7 depicts where command and control doctrine for river crossing operations supports, and where it does not support, Airland Battle and U.S. Army command and control doctrines. A summarizing statement follows the chart.

Figure 7

Doctrine Supportability Summarization Chart
Command and Control of River Crossings
versus
Airland Battle and U.S. Army Command and Control
Doctrines

Doctrinal Elements	River Crossing Supportability
Airland Battle Doctrine	
INITIATIVE	
- rapid execution	-
- allows friendly freedom of action	-
- forces enemy to fight under terms and conditions set by friendly forces	-
- requires technically and tactically sound risk taking	0
- centralized control	+
- decentralized execution	-
SYNCHRONIZATION	
- synchronizes combined arms with maneuver	+
- consolidates purpose of mission	+
- minimizes, yet coordinates time and space	0
- relies on habitual synchronization	-
- conserves resources	-
Command and Control Doctrine	
COMMAND	
- well informed vision, clear intent	+
- quality, low volume communications	-
- concept expression of tasks	-
- focus on future	-
- accept risk	-
- facilitates freedom to operate	-
- provides rapid response	-
CONTROL	
- coordinates activities between lower, higher and adjacent units	+
- provides structure, limits uncertainty	+
- high volume, routine communications	+
- emphasizes efficiency	0
- adaptable	+

Figure 7 summarizes how and where current command and control for river crossing doctrine either supports or does not support Airland Battle and command and control doctrines. A (+) symbol represents a supporting condition. A (-) symbol represents a non-supporting condition. A (0) symbol represents a neutral condition: one in which river crossing doctrine neither supports or non-supports Airland Battle and command and control doctrines.

From Figure 7 it is seen that the command and control of river crossing doctrine does not support the initiative tenet of Airland Battle doctrine. On the other hand, the river crossing doctrine barely supports the synchronization tenet of Airland battle doctrine. Further analysis of the reason for this situation reveals the following. FM 90-13, River Crossing Operations, leans almost completely on the conduct of deliberate river crossings. Although FM 90-13 states that the hasty river crossing is the preferred river crossing method, the manual does not adequately provide for the command and control of a hasty river crossing. Hasty river crossings are virtually ignored from a command and control perspective. Whether or not FM 90-13 intended the command and control portion of the doctrinal manual to suffice for both hasty and deliberate crossings is unknown. Regardless, FM 90-13 simply fails to provide a suitable command and control doctrine for hasty river crossings.

This shortcoming contradicts the initiative tenet of Airland Battle doctrine. If a maneuver commander sees an opportunity to forge a hasty river crossing, he must be allowed to do so. This is in keeping with the initiative tenet of Airland Battle doctrine.

Synchronization is a requirement of both hasty and deliberate river crossings. Had FM 90-13 provided for hasty river crossings, synchronization would have scored higher. As it is, synchronization was provided for in river crossing doctrine. The adequacy of the synchronization provided for is questionable.

Figure 7 also reveals that river crossing doctrine does a poor job supporting current "command" aspects of command and control doctrine. This poor showing is also attributable to the fact that FM 90-13 is written to the deliberate river crossing only. U.S. Army doctrine for command relies heavily on decentralized execution. Decentralized execution implies a willingness of subordinate commanders to exercise sound judgement in using initiative. As with initiative above, FM 90-13 severely hinders command initiative of subordinate commanders by ignoring the hasty river crossing. Conversely, FM 90-13 scores well in the "control" aspect of the command and control doctrine.

This is explained by the fact that the deliberate river crossing is a tightly controlled operation, requiring large degrees of coordination and communication. The significance of these shortcomings will be explained in Chapter 7, Conclusions.

CHAPTER FIVE
ENDNOTES

1 The ribbon bridge company that used to be organic to the divisional engineer battalion has been moved to corps level. The bridge company is now part of the corps engineer brigade. The division's only remaining bridging asset is the armored vehicle launched bridge (AVLB). The AVLB can span gaps up to 18.3 meters wide, using prepared abutments.

2 Bridging assets are allocated to the division by corps, and then the division controls the bridging assets.

3 U.S. Army, FM 90-13, River Crossing Operations (1990), 3-3.

4 Ibid.

5 Ibid.

6 Ibid.

7 Ibid., 3-4.

8 Ibid.

9 Ibid.

10 Ibid., 4-3.

11 Ibid., 1-1.

12 Ibid.

13 Ibid., 1-3.

CHAPTER 6

HISTORICAL ANALYSIS OF RIVER CROSSINGS

General.

This chapter analyzes select historical river crossings. The analysis focuses on what made the river crossing a success or failure. Reasons for success and failure will center on the elements used for comparison between Airland Battle and command and control doctrines with river crossing doctrine. The results will show the significance of doctrinal shortcomings depicted in Chapter 5.

Historical Examples.

The crossings selected are representative of the many different river crossings conducted during periods of war. Crossings selected include both successful and unsuccessful ventures. An effort has been made to capture river crossings from an infantry, armor and engineer perspective. These perspectives ensure a varied, yet combined arms outlook on the reasons for success or failure of river crossings.

The Rhine River in western Europe has posed a significant water obstacle to many warring forces for

centuries. The Rhine has been merciful to many attempting to cross its surface: it has also consumed many attempting the same. If the Rhine River were capable of speech, it could provide an excellent overview of the reasons why certain river crossing attempts succeeded, and conversely, why many failed. Unfortunately, the Rhine can not speak. One is compelled then, to rely on the written memory of the many military forces who either crossed, or attempted to cross, the Rhine River. Notwithstanding, the Rhine offers an abundance of memories from which a firm start to any river crossing analysis may be made.

Remagen and the Ludendorff Bridge

By February, 1945, the allied forces of World War II had breached the German West Wall, and were well on their way eastward towards the Rhine River. The Germans were retreating quickly to the east and had retrograded across the Rhine River to assume defensive positions on its east bank. Unfortunately, for the Germans, Hitler had not allowed a prior defensive effort along the east banks of the Rhine. The Germans were forced to build their defense as they went. As the allied forces neared the Rhine River, they fully expected to have to cross it in order to defeat the German Army. Crossing the river was perceived to be a major undertaking. The loss of many lives in the attempt to cross the Rhine was fully expected and planned for.

Such loss was not considered without merit. Crossing the Rhine and continuing the attack into the German heartland was thought to be the quickest means of bringing an end to the World War II European theatre.

III Corps of the First U.S. Army was one of the many allied forces planning a Rhine River crossing. 9th Armored Division, one of three divisions in III Corps, played a major role in the Rhine crossing. 9th Armored Division's exploits are worthy of analysis.

The 9th Armored Division was ordered to advance in its zone of operations directly to the Rhine River, to clear the enemy enroute, and to seize crossing sites along the river.[1] In 9th Armored Division's zone lay the town of Remagen. Remagen was a unique town along the Rhine River in that recent aerial photography indicated that the Ludendorff railroad bridge was still intact. So rare was it for a bridge to be standing that the III Corps commander, General Milliken, remarked to Major General Leonard, the 9th Armored Division commander, "Do you see that black line on the map (Ludendorff Bridge)? If you can seize that, your name will go down in history."[2]

In the advance to the Rhine River, 9th Armored Division divided its forces into three task forces.

One task force was to approach the river in the north of the division zone, the other in the south, and the third constituted the division reserve. The final march to the Rhine began on 7 March 1945. Task Force Engleman was the northern task force, whose zone included the town of Remagen. On the morning of 7 March, the division commander received updated intelligence information reporting that the Ludendorff bridge was still standing. The division commander ordered Task Force Engleman to seize the bridge intact as quickly as possible. Speed was essential. A delay would most certainly permit the Germans to learn of the allied approach, and to blow up the bridge. To expedite the advance, tanks were moved forward to rush to the bridge.

Ironically, the first 9th Armored Division troops to see the Ludendorff bridge called in artillery fires on it. German troops were still in the process of retrograding, and the artillery fires were requested to destroy them. Luckily, the request was denied. III Corps feared fratricide of American troops in the area. Amazingly enough, personnel manning fire support channels were unaware of the importance of seizing the Ludendorff bridge intact. This incident was the only poor showing in 9th Armored Division's Rhine crossing, and reflects a lack of unity of purpose and communications.

9th Armored Division forces, after confirming that the Ludendorff bridge was still intact, began dismounting troops to seize it. Massive amounts of smoke were applied around the bridge to mask the allied attempt to cross it, and to prevent the enemy from bombarding it. The division commander immediately incorporated his combined arms team in the crossing. Field artillery was rushed forward to suppress the Germans and to fire counterbattery. Additional tanks were brought forward to provide overwatching fires for the dismounted troops attempting to cross. Air defense positions were established to fend off impending German airstrikes. Dismounted engineer and infantry soldiers were the first soldiers to cross the bridge. The engineers dismantled explosive charges that the Germans were emplacing at the time the allies seized the bridge. German indirect fires destroyed the western approach to the bridge, but did not damage the bridge itself. Within thirty minutes, the infantry and engineers had crossed and established overwatch positions. The Task Force Engleman commander, noting that success had been achieved sending dismounted troops across the river, exploited the success by ordering his entire task force across. This decision was not without risk. By sending his entire task force across the river, he risked the possibility of isolating the task force on the far shore. Had the Germans been able to destroy the bridge,

even with a single successful indirect weapon hit, Task Force Engleman would most likely have been annihilated. There would have been absolutely no way for them to cross back to the near shore. Similarly, there would have been no way for the 9th Armored Division to assist the task force from the near shore. As it was, engineers quickly repaired the western approach to the bridge, and mounted troops were pushed across the river to defend the bridgehead. The exploitation by the Task Force Engleman commander proved to be of great importance. Shortly after the task force achieved the far shore, the Germans launched a counterattack. The Germans were almost successful in reseizing the bridge. They managed to push Engleman's forces back to within one-hundred meters of the bridge, but no farther. Had it not been for the quick, decisive effort to exploit the situation at hand, the Germans counterattack would most likely have been successful, and the Ludendorff bridge destroyed. Ultimately, by day's end 8 March, 9th Armored Division completely secured the bridgehead. In doing so, the 9th Division fended off two more counterattacks and three airstrikes by the Germans. The Ludendorff bridge served the allies well during the ensuing attack into the heart of Germany.

The seizure and crossing of the Ludendorff bridge represents a classic hasty river crossing

conducted successfully. The major contributors to its success were initiative on the part of the corps commander down to platoon level leaders, speed exercised through the use of tanks to move forces to the river, aggressiveness, a willingness to assume risk, and synchronization of the combined arms team at the decisive moment to preclude a German counterattack and reseizing of the bridge.

Rhine River Crossing at Wesel

As part of the same allied campaign described in the Ludendorff crossing above, the Rhine River had to be crossed over an enormously wide front to permit the advance of the entire allied force. Massive combat power was necessary to destroy the German force and continue the attack into Germany. Not all crossings over the Rhine River were as easy as the Ludendorff example.

Allied planning for the Rhine River crossing was detailed. Planning began in October 1944, six months prior to the actual river crossing.[3] The crossing site at Wesel was reconnoitered and selected at Army level (9th Army), and was planned for implementation by XVI Corps; specifically the 30th and 79th Divisions. Once Wesel was selected as a definite crossing site by 9th Army, training by the units selected to make the river crossing began. The training commenced in March, 1945. The 79th and 30th Divisions

trained along the Maas River. The Maas provided nearly identical conditions to those along the Rhine River vicinity of Wesel. Training was a combined arms effort. The engineers worked diligently with the infantry, field artillery, and air defense artillery.

XVI Corp's plan for crossing the Rhine River included the use of deception. Since the river crossing was going to be a deliberate crossing, deception was considered key to its success. A fake 79th Infantry Division was created and deployed some twenty kilometers south of Wesel along the Rhine River, in the vicinity of Verdigen. The fake division wore 79th Infantry Division patches, created radio traffic similar to that expected prior to a river crossing, constructed false artillery positions, and even went as far as to construct bridge approaches up to the west side of the river. Great care was taken to allow the Germans to see these efforts, while at the same time, present the atmosphere of normal operations and security. After the crossing was successfully made, the allies captured intelligence information from an opposing German division G2 (intelligence officer). The information captured proved the success of the deception plan. The information portrayed the 79th Infantry Division as being in Verdigen, and had Verdigen selected as the most likely site for a XVI Corps Rhine river crossing attempt.

Prior to the crossing, a tremendous effort to prestage all classes of supply close to the river was put forth by the XVI Corps. Anticipated bridge requirements were huge. So numerous were they that two columns, thirty-five miles long each, meandered away from the river on the friendly side.[4] Heavy casualties were anticipated in what was expected to be stiff German opposition to the Rhine crossing. In preparation for the casualties, large numbers of hospitals were also moved forward to handle the patient flow. Also prior to the crossing, a ten day smoke barrage was employed over the entire corps front, some twenty miles wide.[5] The smoke was employed to confuse the Germans, and to mask the XVI Corp's crossing of the Rhine River.

On 24 March, 1945, the crossing by 30th and 79th Infantry Divisions began. The crossing was preceded by a one-hour artillery preparation onto the far shore, followed by scheduled fires planned by tactical units, to be followed by on-call fires as needed. The air force was integrated into the crossing plan. The air force's primary task was to eliminate the German air threat: their secondary task was to support the ground troops. The 30th Division's river crossing plan called for three assault battalions (one from each regiment). The remainder of the division combat troops would follow in column. Each assault battalion would cross in four waves. A two minute interval was planned between

waves. The first two waves consisted of two reinforced rifle companies in storm boats operated by engineer soldiers. The storm boats had fifty-five horsepower outboard engines on them to propel the assault forces quickly to the far shore. The outboard motors in the lead assault wave were noisy. The division commander was willing to sacrifice surprise for speed. The remaining two waves of the 30th Division would cross in slower rubber assault boats, to reinforce the lead two waves. The 79th Division plan was different than the 30th Division's. The 79th Division plan called for two lead assault battalions to cross in three waves. The lead waves used the rubber assault boats, trying to achieve the element of surprise. The following two waves would cross in the faster outboard motor driven boats to exploit success gained by the lead wave. Both division's plans were similar in that the sequence of activities was the same. The first step was to eliminate enemy observed fire on the far shore. The next step was to immediately begin constructing bridges, followed by removing enemy indirect fire on the far shore, and lastly to cross the bulk of the division on the now completed bridges.

The entire XVI Corps river crossing was much more successful than planned. The 30th Division assault began at 0200 hours on 24 March, and was complete by 0600 hours of

the same day. The 79th Division assault began at 0305 hours on 24 March, and was complete by 0730 hours. As it turned out, enemy strengths were much less than anticipated. The biggest problem with the entire river crossing was that the failure to remove enemy indirect fire capability, prior to constructing bridging, resulted in direct hits on bridging assets on several occasions. Fortunately for the XVI Corps, bridging assets had been prestaged and replacement parts for damaged bridges were readily available. The failure to remove enemy indirect fire was not a mistake forgotten. The lesson was learned and river crossing doctrine was changed to include the removal of the enemy indirect fire capability prior to constructing bridges. Peter Allen, in his book entitled One More River, summed up the crossing as follows. "Enemy positions were rapidly overrun and the operation became immediately more of an engineer construction task than a military tactical maneuver."[6]

The XVI Corps crossing of the Rhine River in World War II can be deemed a success by any measure. Although it was not quite as easy as the Ludendorff crossing, it was not as difficult as anticipated. The reasons for the success of this crossing can be summed up as follows. First, detailed prior planning enabled both assaulting divisions time to prepare and rehearse the crossing. Deception played a major role and lured the Germans into defending Verdigen, rather

than the actual crossing site at Wesel. Both speed and surprise played a role in the division's successful assault across the river. Speed was used by the 30th Division, whereas surprise was used by the 79th Division. The use of combined arms, although not described in detail, was also a contributing factor to the success of the crossing. The entire corps had a unity of mission. All elements of the corps were focused on the river crossing alone. Time was available to train the combined arms team in the crossing, along the Maas River, prior to the actual Rhine crossing. This training allowed for habitual synchronization, smoothing the crossing effort between the infantry, engineers and field artillery. Successful as this river crossing was, two problems surfaced which could have proved costly had the German defense been greater. The first has been mentioned - the need to remove enemy indirect fire before attempting to construct bridges. The second problem surfaced in the actual crossing of vehicles. The bridges planned and constructed were inadequate to handle the volume of traffic needing to cross the river. Traffic control problems became enormous. Vehicles were lined up for approximately ten miles on the near side of the river waiting to cross. The order of the vehicles was not that necessarily needed on the far shore. In some instances, a combat unit's supply vehicles preceded its combat vehicles across the river. Due to the traffic congestion, it was

nearly impossible to change the vehicle order of march. Had the German resistance been greater, and the need for combat power to be projected forward as quickly as possible. serious problems would have been encountered. Delays to moving combat systems forward could have resulted in the loss of many friendly forces.

Roer River Crossing at Julich

Other rivers too provide ample opportunity for analysis of the reasons for success or failure of a river crossing. The 29th Infantry Division's crossing of the Roer River on 22 February 1945 is but one example.

The U.S. XIX Corps, Ninth Army, had progressed eastward to the Roer River in November 1944, as a part of the allied advance on Germany. The 29th Infantry Division was one of four infantry divisions in the XIX Corps. As XIX Corps advanced towards the Roer, the Germans destroyed all bridges across the river. Additionally, in an effort to prevent the allied forces from crossing the Roer, the Germans destroyed a large dam in the vicinity of the Hurtgen Forest. The dam was located upstream from the town of Julich, which is where the Germans envisioned the allied forces attempting to cross the river. The destruction of the dam created a flood all along the Roer River. The high water made any effort at crossing the river

fruitless. XIX Corps decided to wait until the river receded before attempting to make the crossing. It would not be until February 1945 when conditions for the crossing would be favorable to the allies.

The nearly ninety-day timeframe waiting for favorable river conditions was used by XIX Corps and the 29th Division to plan and train for the crossing. During the planning effort, intelligence placed elements of two German infantry and two German armor divisions opposing the crossing.[7] The 29th Infantry Division's crossing plan consisted of one infantry regiment as the leading assault force. The assault was to be made in motorized assault boats, driven by the divisional engineers. A second infantry regiment would follow the assaulting regiment, crossing on assault footbridges to be constructed by the engineers. The assault bridges were to be constructed at two different sites. The third regiment of the division would also follow the lead assaulting regiment, but only after the lead regiment secured a bridgehead on the far shore of the river. The third regiment was to cross in assault boats. The third regiment, after crossing the river, would pass through the lead assault regiment to expand the bridgehead, and to relieve the assaulting regiment. Due to the enemy intelligence information gathered, it was felt that the lead assaulting regiment would be pretty well beat up after

having fought to establish a bridgehead on the far shore. The crossing plan also included a single tank battalion to provide overwatching fires from the near shore, for the assaulting regiment. Field artillery and air defense assets were also to be placed well forward. The field artillery would fire preparatory fires to suppress the enemy in the advance of the lead assaulting regiment. Both the field artillery and air defense assets would provide additional defenses to the river crossing site, and provide support to ground forces as needed. A total of five field artillery battalions supported the 29th Division for the crossing. The last part of the crossing plan detailed a smoke generation company to provide smoke all along the river crossing front to mask friendly forces crossing the river and, to hinder German efforts to call indirect fire into the crossing site. Although not part of the crossing plan itself, the divisional engineers had to clear approach lanes up to the river on the friendly side. The Germans, in their retreat, had heavily mined the near shore.

Rehearsals for the river crossing were conducted several times. A river crossing site along the Meuse River was chosen as the site for the rehearsals. Rehearsals included a full mock-up crossing of all of the lead battalions of the lead assault regiment, and were conducted with the entire compliment of combined arms participating in

the crossing. The rehearsals were considered extremely useful to the division. The division G-3 quipped, "Such a possibility rarely presents itself during the course of a war."[8]

The time for planning and practicing the crossing came to an end towards the latter part of February, 1945. On 22 February, the lead assaulting regiment moved into preplanned attack positions under the cover of darkness. "All through the night, increasing numbers of men and equipment continued to mass along the west bank of the Roer."[9] At 0230 hours on 23 February, tanks moving into overwatch positions ran into a minefield. The lead tank, and a recovery vehicle trying to remove it, became disabled by the mines. Both vehicles came to a stop directly in the path of following vehicles and equipment. The blockage in the route to the river resulted in the delay of several assault boats. At 0245 hours, preparatory fires began, and at 0300 hours smoke generation began, all according to plan. The division commander refused to let the minefield incident change or delay the plan. The lead assault battalions mounted their assault boats at 0300 hours too, and began the journey across the river. One company of the front assaulting battalion immediately had their assault boats swept downstream. The river current was still very strong due to the flood which, although much reduced from the November

1944 time frame, still posed a threat to the crossing. Assault boat operators tried frantically to steer the misguided assault boats back to the near shore. Having successfully done so, the infantry and engineer soldiers got out of the boats, pulled the boats ashore, and began lugging the boats back upstream to the original launching site. Unfortunately, these soldiers also ran into a minefield and were rendered casualties in a matter of moments. Through the chaos and over the cries of the soldiers locked in the minefield, the second assaulting battalion began its trek across the river. Without incident, they reached the far shore and established the initial foothold for the 29th Division's crossing. At 0330 hours, the remainder of the assaulting regiment began crossing the river. By this time, the smoke screen was severely thick, and it overwhelmed several infantry and engineer soldiers attempting to construct assault bridging. The regimental commander decided to cease the smoke operations. Concealment was done away with in favor of speed.

By mid-afternoon on 23 February, two assault bridges and a steel treadway bridge were in place. "Enemy artillery, mortar and rocket fires, although not extremely heavy, repeatedly interfered with the engineer mission. Two direct hits were obtained on partially constructed treadway

bridge, and infantry support bridges were severed a number of times."[10] Each time that a 29th Division force successfully reached the far shore, the division commander exploited the success by funneling more troops in the same direction. This move not only exploited success, but provided for mass on the far shore. On 24 February, the tank battalion successfully crossed the river on the steel treadway bridge. The tank battalion was instrumental in expanding the bridgehead to the required depth, and by days end on the 24th, the bridgehead was deemed secure by the division commander. All enemy forces has been removed.

Overall, this river crossing operation was a success. The potential existed for major disaster. Early unfavorable events and repeated German attempts to stop the river crossing effort could have easily rendered the crossing a failure. Initiative on the part of battalion and lower level commanders most contributed to success. With the approach to the river blocked by the tank in the minefield, the two lead assault battalion commanders made the decision to dismount their troops and walk almost a mile and a half to the river. Under other conditions, such a walk would have been ordinary. This walk included downloading the assault boats and hand carrying them all the way to the river. One lead assault company's being swept down river and landing in a minefield could also have thrown the whole

river crossing out of kilter. Under extremely arduous conditions, company commanders were able to maintain control of their units. They coerced follow-on soldiers into their assault boats over the cries of fellow soldiers dying in the minefield. Solid leadership, and well trained soldiers were the contributing factors to overcoming inertia in the latter case. The 29th Infantry Division's crossing of the Roer River was also successful because the soldiers believed in themselves, and in their ability to forge the crossing. Detailed prior planning, time to rehearse the crossing, unity of mission, clear and concise communications during the crossing, habitual synchronization, combined arms participation, minimization of space and time, and exploitation of success were all contributors to the success of the crossing. Without the homogeneous coming together of all of these elements, the 29th Division's crossing could just as easily have been a failure.

Rapido River Crossing Along the Gustav Line

Perhaps one of the best known river crossing failures is the 36th Infantry Division's undertaking of the Rapido River crossing. The reasons for the failure differ amongst actual participants, planners for the operation and historians. Notwithstanding, there are some basic lessons that can be learned from this river crossing attempt. An endeavor will be made to analyze these lessons in order to

provide conclusions, to which present day river crossing doctrine can be compared.

In 1943, the Allies took Sicily from the defending Germans. After much debate between the Allied forces, it was agreed that an attack on Italy to capture Rome was of strategic importance. By attacking northward towards Rome, pressure would be applied to the German's southern flank; thus improving the chances of a later cross channel attack from England, through France, and into Germany. The Allies landed at Salerno on 9 September 1943 to begin the attack towards Rome. Initially, the attack was successful. The German's willingness to trade space for time, continually withdrawing northward, aided the success. The situation changed just south of Rome. Here, along the Gustav line, the Germans decided to defend in depth and strength. By October 1943, Allied forces were no longerable to drive north, and initiative was lost. To break the halt in the offensive, the Allies planned an amphibious operation at Anzio to cut off the Germans from the west to the east. To aid the Anzio landing, a supporting attack from the south was also planned. Ultimately, it was thought that supporting attack forces would drive northward to link up with Anzio forces, and together the attack into Rome would be achieved. The 36th Infantry Division, part of LTG Clark's 5th Army, was a part of the supporting attack.

The 36th Infantry Division was to attack northward into the Gustav line on 20 January 1944. In order to do so, a crossing of the Rapido River was necessary. The conditions in January were not good. Low land visibility was poor. Snowmelt caused the Rapido River to rise nearing flood conditions. The weather was wet and the temperature cold. Approaches to the river were soggy, rendering vehicular traffic impossible. The river water was a few degrees above freezing and the current swift.

Not only were the weather conditions bad. The 36th Division's crossing site was opposite German defenses, particularly the high ground leading into the Liri Valley. In the west, high ground in the vicinity of Sant' Angelo and Cassino dominated the terrain. In the south, high ground in the vicinity of Sant' Ambrogio did the same. The high ground and extensive German defensive positions gave them excellent fields of fire and observation over the 36th Division's area of operations. The near shore terrain was flat and denude of most vegetation. The lack of concealment extended for the better part of a mile away from the friendly side of the river. "This inferior position forced American units and equipment to stay two to five miles from the river; the superior German positions also forced American operations to be conducted principally at night."[11]

Directly opposing the 36th Infantry Division was the 15th Panzer Grenadier Division. Farther to the south was the 94th Panzer Division. To aid the 36th Division's crossing, the French Expeditionary Force, on the right, was to cross the upper Rapido on 12 January and to move into the high ground behind Cassino. Then, on 17 January, the British X Corps, on the left, was to cross the Gorigliano River. The British would then move to secure two bridgeheads across the Gorigliano, as well as to secure the high ground near Sant' Ambrogio. Securing the high ground on both sides of the 36th Division's crossing was critical. In the hands of the enemy, the high ground provided observation over the entire river crossing site. Observation would allow deadly, accurate adjusting of both direct and indirect fires on any opposing force attempting to cross the river. Observation would also eliminate any element of surprise in launching an assault crossing over the river. The French attack was successful. The British attack was not. The 36th Division's left flank was unsecure by the failure of the British to secure the high ground.

Rehearsals for the river crossing were conducted at the Volturno River. Two regiments of the 36th, along with the divisional engineers, participated in the rehearsals. The two participating regiments were those planned to make

the 36th Division's assault crossing of the Rapido. Major General Walker, the division commander, stated that the rehearsals were "...of little or no value because of the different characteristics of the two rivers."[12] At least one regimental commander, who actually participated in the rehearsals, thought otherwise. He thought the rehearsals were very successful, and that, if nothing else, that they gave confidence to the soldiers and leaders about to embark on a difficult mission. The rehearsals also provided opportunity for the infantry to work side by side with the engineers. By doing so, habitual synchronization was being instilled in the soldiers. MG Walker thought so little of the rehearsals that he later changed one of the assaulting regiments. The change deleted one of the regiments who participated in the rehearsals and added a regiment who had not participated in the rehearsals. MG Walker made this change against the advice of the division, corps, and army engineers.

Prior to the crossing, MG Walker doubted it would succeed. This is evidenced by an entry he made in his diary, to wit, "I do not know of a single case in military history where an attempt to cross a river that is incorporated into the main line of resistance has succeeded. So, I am prepared for defeat."[13] MG Walker had

protested the river crossing for days prior to it's attempt. He disliked the terrain, the crossing site, the weather, and, most of all, the enemy disposition. MG Walker's frustrations were well known by his staff and subordinate commanders. This situation leads one to suspect command during the crossing operation. Without one's heart and mind in such a difficult operation, it is extremely doubtful that good, solid command was present. Sometimes leading (command) entails taking risk. The only way to minimize the impact of this risk is through solid command and clear vision, integrated and resilient plans, and initiative. Surely MG Walker's vision was not for the river crossing to fail?

At 1800 hours on 20 January, the initial assault began. Two hours later, assault boats and bridging equipment were still not at the river. Both pieces of equipment had to be carried by hand a distance of two miles. By the time the soldiers carrying the equipment reached the river, they were exhausted. These were the same soldiers who were to undertake the assault crossing as well. All hopes of achieving any surprise were lost, even under the auspices of dark. "The enemy artillery was accurate and deadly."[14] One-quarter of the river crossing assets were destroyed by enemy fire before reaching the river. One-half of the river crossing assets were

destroyed before ever being emplaced in the river. Chaos enroute to the river was prevalent. Problems cited were "... lack of forceful leadership in small units and inexperience of the infantrymen in carrying the equipment."[15] Soldiers became concentrated at the river, making easy prey for the German's. Bullet ridden rubber assault boats were placed in the water with full crews aboard, only to sink shortly thereafter. Poor handling of boats resulted in others capsizing. Still yet, other boats were simply abandoned and left to the river's current, as soldiers sought cover. Out of two assaulting regiments, only a single battalion was able to reach the far shore. Unluckily, one battalion alone could not advance the bridgehead. All support for this battalion was still on the near shore, leaving the battalion to fend for itself. MG Walker knew that he had to try a second assault crossing, if for no other reason but to rescue the sole battalion stranded on the far shore. During the entire assault operation, MG Walker stayed in his command post. For most of the time, communications between regiments and from regiment to division were out. Landlines had been severed by enemy indirect fire. Lack of communication resulted in lack of control, synchronization of the combined arms team, and response to query.

Not until the next day, at 1600 hours, could another assault crossing be attempted. Only one of the two regiments scheduled to make the assault at 1600 hours did so. The other regimental commander decided, on his own and without communicating his intent to the division commander, to begin his assault at 2100 hours. For reasons unknown, the exact same river crossing sites were used again. No attempts were ever made to exploit the single successful crossing site. Because the assault was to be made in daylight, smoke was generated to mask the operation. The smoke hindered friendly troops as much as it did to conceal the crossing. Since the same crossing sites were used, the German's already had prepositioned guns layed on exact coordinates. A battalion of the single regiment undertaking the second assault attempt made it to the far shore. They were able to advance the bridgehead some 1000 meters. Within a short amount of time, German fires became intense, and this battalion, like the first to get across, was without reinforcing support. Within two hours, the battalion was forced to return to the near shore.

The second regiment attempted the division's third assault crossing at 2100 hours. This attempt fared no better than the previous two. Although six rifle companies did manage to gain the far shore, they found no survivors from the battalion reaching the far shore the night prior.

The engineers, able to install two footbridges, were unable to do more. Under intense direct weapons fire, the engineers could not construct bridging adequate to cross tanks. Without the tanks, proper support of infantry soldiers could not be achieved on the far shore. The division saw the entire crossing operation as hopeless, and ceased further attempts. The assault crossing cost the division most all of its bridging assets, and more preciously, 1681 casualties.

Studies by the Combat Studies Institute, Ft. Leavenworth, give some of the following reasons for failure of this operation. Other reasons cited are drawn from conclusions reached during analysis of this crossing operation.

- failure of commanders above division level to see, that under the circumstances, the operation was doomed to failure.[16]

- superb enemy defense.

- terrain favoring the enemy.[17]

- poor friendly tactics.[18]

- lack of combined arms synchronization, control and communications.

- lack of engineer soldiers and equipment.

- failure to exploit success and reinforcement of failure.

- lack of speed in the assault.

- 20 January assault attempt allowed the Germans adequate time to prepare defenses in depth and strength.[19]

- lack of habitual synchronization.

- wasteful resource expenditure (boats and bridging equipment)

- unwillingness of division and lower commanders to accept risk, portray confidence and to project a clear vision, unambiguous intent.[20]

- poor quality to no communications.

- improper citing of critical leaders.

- an unadaptable plan.

Martin Blumenson. in his book entitled Bloody River: The Real Tragedy of the Rapido, brings out a few additional lessons learned from this operation.[21] They are as follows.

- the British 46th Division (part of the British X Corps) operation plan did not include securing high ground to the left of the 36th Division crossing.

- the 36th Division engineers selected the location for the river crossing sites. These locations were changed by regimental commanders. against the advice of the engineers.

- there was no close maneuver to engineer relationship. The two had infrequently worked together. and

although rehearsals along the Volturno River improved the situation, the relationship was strained.

- on the second assault crossing attempt, engineers were directed by regimental commanders to install a bailey bridge (semipermanent type bridge) first, before assault bridging was installed. The intent was to force a crossing with tanks early, together with the infantry. The bailey bridge was destroyed. Installing semipermanent bridging first violated doctrine of the time. Similar to present day doctrine, a force must first establish and secure the bridgehead, remove enemy observed indirect fires and all direct fires, before bridging attempts are made. To do otherwise is to risk a loss of precious resources in short supply, namely bridge assets.

Although the Rapido River crossing itself was a failure, the intent of the overall operation was successfully completed. The Rapido assault, as the supporting attack for a larger operation, managed to divert German operational level reserves away from Rome to the Gustav line. The German reserves were not available to figure in the Anzio landings. While at the strategic level the overall Anzio landings may be considered a success, at the tactical level the Rapido River crossing attempt can only be considered a "tragedy".

Egyptian Crossing of Suez Canal

The "Yom Kippur War" began on 6 October 1973 with Egyptian and Syrian forces, in concert, attacking Israel. This war was one of many over disputed territory in the Southwest Asia region. Egyptian forces attacked into the Sinai, while Syrian forces attacked into the Golan Heights. The Egyptian attack into the Sinai, and subsequent Israeli counterattack in the same area, encompassed the crossing of the Suez Canal. What follows is an analysis of Egypt's crossing of the Suez. The Israeli counterattack and crossing of the Suez Canal will be analyzed in the next case study. Both crossings provide a modern day example of river crossings under fire. Both crossings also provide a chance to see if modern day technology, equipment, and doctrine have changed the method of crossing a river in wartime.

The Suez Canal was first opened to traffic on 17 November 1869. It has since stood as a water obstacle between Egypt and the Sinai region. The canal is approximately 180 meters wide, thirteen meters deep, and has an east bank (Sinai side) considerably steeper than the west (Egypt side) bank.[22]

The 6th of October 1973 was Yom Kippur in Israel - the most holy day of the year for the Jewish faith. Generally, no work is done. The majority of Israeli people stay home

to celebrate with family, or travel on vacation. "The Arab forces (Egypt and Syria) were counting on the element of complete surprise and hoping that the Israel cease-fire line would be undermanned during Yom Kippur."[23] In reality, the Israeli's had a normal contingent of forces manning the cease-fire line.

Since the 1967 cease-fire agreements between Israel and Egypt, both sides had prepared elaborate defenses along their respective sides of the Suez Canal. The Israeli's built protective firing positions, observation points, and moved sand to the edge of the canal to increase the slope from the water to the Israeli side of the Sinai. Likewise, the Egyptians built artificial hills used as firing points and numerous egress points leading away from the water.

At 1400 hours on 6 October 1973, Egypt began its attack eastward with five infantry divisions. The divisions were part of the 2d and 3d Armies. Both armies had been assigned to the Suez Canal region for some time and had undergone considerable training in the assault crossing of water obstacles. Training was conducted using Soviet doctrine and a myriad of equipment (Soviet, British, French and Egyptian). The Egyptian plan was to conduct an assault crossing of the Suez Canal with the infantry in rubber and wooden assault boats. Once the infantry seized the far

shore, they were to be followed by amphibious vehicles and personnel carriers. The amphibious vehicles and personnel carriers were lightly armed, and were to be used to assist the infantry in expanding the bridgehead. The next phase of the operation was to be the implementation of light tactical ferries, to be followed by heavy bridging. The heavy bridging was the only asset with which the Egyptians could cross tanks. The biggest problem facing the Egyptians was the exit bank on the far shore. Because it was so steep, negotiating the bank while coming off a raft or bridge was almost impossible. Vehicles would be unable to gather enough speed or momentum to make the steep slope without bogging down. Through the use of improvisation and initiative, the Egyptians developed a novel way to reduce the far shore banks. The plan called for the use of a high pressure water pump and hoses. Water would be pumped from the canal and sprayed onto the far shore banks. The force of the water hitting the banks would simply wash away the banks, creating an exit route.

The assaulting infantry forces reached the far shore in less than two hours. Initially, the assault caught the Israelis by surprise but, since a normal contingent of forces was manning the cease-fire line, it was not long before they responded in force. Surprise was not an operational or strategic victory for the Egyptians. After

the assault forces secured a foothold on the far shore, the Egyptians began crossing amphibious vehicles and constructing rafts. Once the amphibious and rafted vehicles hit the far shore, the Egyptian forces began to expand the bridgehead. All of the crossing up to this point was done under moderate to light enemy fire. Within three hours after commencing the assault, the Egyptians expanded the bridgehead, and penetrated the Sinai to a depth of fifteen kilometers. The assaulting force was halted at this point to await the crossing and subsequent arrival of tanks, so that further penetration could be made with the tanks violently leading the way. The delay waiting for tanks is about the point where the Egyptians reached their culminating point.

The original Egyptian plan envisioned the bridges over which tanks would cross being completed within three hours of the assault force reaching the far shore. Months of training prior to the operation had shown that three hours was achievable. The Egyptians had all the necessary equipment and manpower present to complete the bridges in three hours. Yet, the heavy bridges were not completed until six hours after the assault. Egyptian commanders feared that by dropping all of the bridging components into the water at one time, as they had done numerous times in training, that many would be lost to Israeli fires.

The Egyptian commanders decided, on the spot, that bridge components would be dropped into the water a few at a time. Once the few were assembled, additional components would be brought forward, and they too dropped into the water. The added time cost the Egyptians dearly. "This delay might very possibly have given the IDF (Israeli Defense Forces) enough time to enable some units to arrive to the front by early 7 October and establish the beginnings of a stiff resistance to the attack."[24]

In total, the Egyptians constructed four, class-sixty bridges, four infantry assault footbridges, two, twenty-five ton bridges, and four, four ton bridges. The Egyptians, despite the success at constructing bridges, were not able to exploit the assault forces established bridgehead. By the time heavy armor was able to cross the river, the Israelis manned defensive positions in enough strength to contain the offensive. The Israelis contained the Egyptians long enough to defeat the Syrians in the Golan Heights, and then launched a counterattack against the Egyptians. The war ended some two months later with the IDF well into Egyptian territory, and the Egyptians defeated for all practical purposes. The Israeli counterattack will be described in the next case study.

An analysis of the Egyptian canal crossing reveals the following lessons learned. First of all, the Egyptian plan for crossing the Suez Canal was basically sound. The biggest flaw with the plan is that it did not provide for the continuation of rapid execution. The initial infantry assault was planned and conducted superbly. Although the plan called for crossing tanks about three hours after the assault, the execution failed to do so. Assault forces were halted to wait for the tanks, and the delay cost the Egyptians. Along with this shortcoming in the plan, it can be said that the plan did not provide for friendly freedom of action. The reasoning is the same as that for not providing continual rapid execution capability. The remainder of the tenets of Airland Battle doctrine were fairly well followed. The crossing forced the enemy to fight under friendly terms and conditions. The plan initially synchronized the combined arms team well. By failing to construct heavy bridges in a timely manner, the synchronization was not sustained on the far shore. The Egyptians trained for six months in water crossing operations. Habitual synchronization was present during the crossing, until such time as on the ground maneuver commanders decided to change the bridge construction methods. The plan definitely accepted some amount of risk. Assuming that the Israelis would be vacationing during Yom Kippur and that complete surprise would be achieved was

risky. The risk was assumed using the best intelligence information available to the Arabs at the time. The Arabs had a clear vision, and the intent was portrayed to all commanders. A unity of purpose and mission prevailed. Perhaps another shortcoming was lack of control between higher and lower units. Had the Egyptian higher command been aware that the heavy bridging was being delayed by a change to plan, they might have accepted risk and ordered all bridging components to be placed in the water at one time. As it was, the components were piecemealed into the water, and the extra time threw the plan out of sequence. Lastly, the plan was not adaptable because of the lack of river crossing assets available. Had the Egyptians possessed class 60 rafting capabilities, the entire outcome of the war may have been different.

Israeli Crossing of the Suez Canal

By the end of the second day in the Yom Kippur War, the Israelis were launching a counterattack to regain the Golan Height region from the Syrians. The Golan Heights was considered of higher strategic importance than the Sinai, so it is there that the Israelis put the brunt of their initial effort. Initially, the Israelis were content with containing the Egyptians in the Sinai, until such time as they could fight a two front war or move troops from the Golan Heights, whichever occurred first.

On 13-14 October, the Egyptians tried to continue their offensive in the Sinai. They attempted for the first time to cross mass amounts of armor to breakout of their current positions on the far shore. By this time in the war, the IDF had major forces in the Sinai and defeated the breakout attempt. With that done, the Israelis were posed to launch a counterattack in the Sinai to repulse the Egyptians from Israeli territory, as well as to begin their own offensive into Egyptian territory.

The Israelis too, had been training in water crossing operations for months. Training was as realistic as possible. An example of the realistic training is given in the following excerpt. "Approximately six months prior to the war, IDF engineers conducted a full scale water crossing training exercise utilizing their full compliment of equipment. The exercise was staged at a desert training site where the engineers dammed a wadi creating a 1:1 replica of the Suez Canal, including the banks. A certain amount of instruction and training on specific pieces of equipment was conducted.... IDF prewar training and plans with regards to a potential water crossing maneuver were geared towards a crossing in the same general area of the 16 October bridgehead."[25] The Israeli training was in fact conducted with the intent of the water crossing being an

Israeli preemptive attack into Egypt, and not as part of a counterattack.[26] Nonetheless, the procedures to be used were the same and the training proved to be of valuable assistance in the actual conduct of the Suez Canal crossing operation.

The Israeli plan to counterattack, and then to assault across the Suez was different than that of the Egyptians. The crossing plan called for an assault crossing in rubber boats by airborne soldiers, to seize the far bank. Once the far bank was secure, ferrying operations to immediately cross armored forces would follow. Here, the Israelis anticipated the need for speed and rapid execution on the far shore, whereas the Egyptians had not. The ferrying operations were to use varied types of ferries, so that all types of vehicles could be crossed simultaneously. Ferrying operations would continue until such time as the far shore was void of all enemy direct and indirect fires, at which time bridging operations would commence.

At 0100 hours on 16 October 1973, the IDF launched its assault. A brigade of airborne troops maneuvered to the river, and with supporting engineers jumped off in the assault boats. The assault force crossed under light resistance. The crossing site was selected by maneuver

commanders and engineers. The site was selected for three reasons.[26] First, the site appeared to be on the seam (boundary) between the Egyptian 2d and 3d Armies. Second, the site was bounded to the north by the Great Bitter Lake. The lake provided security for the Israelis left flank, and allowed them to economize their force in the security effort. Third, the Sweet Water Canal lies just west of the Suez Canal on the Egyptian side. The distance between the two canals varies from two-hundred meters up to fifteen kilometers. At the crossing site selected, the distance between the canals is fifteen kilometers. The distance, it was felt, would allow the Israeli forces to regroup after the Suez crossing, before having to make a second crossing. These key considerations allowed the IDF to make the Suez crossing under the light resistance. The crossing site was in fact located at the seam between the two armies, which allowed the operation to go almost unnoticed. The bridgehead was secure within two hours. At 0600 hours, right as planned, ferrying operations of armored vehicles began. An entire armored brigade was put across the river within three hours of the ferrying operations beginning. The division commander responsible for the canal crossing (MG Sharon) put his assistant division commander in charge of the crossing operation and went across the river as soon as ferries were available. Upon observing the situation personally, he opined that enemy resistance was light.

MG Sharon then radioed higher command and suggested that a second division be crossed immediately, to exploit the situation. It was not until the end of day 17 October that the IDF was able to move a second division into the bridgehead area. This division crossed the Suez on ferries. Not until 1200 hours on 18 October did Israel construct a bridge across the canal. The ferries were operating without opposition, and in the IDF's eyes, valuable bridging assets were not needed until such time. With two divisions across the river, the IDF pushed further into Egyptian territory, and ultimately enveloped the Egyptian forces. With the envelopment complete, it was only a matter of time before the conflict would come to an end.

Looking at the reasons for the success of this crossing three items present themselves immediately. The IDF used initiative to regain the momentum, and once the initiative was seized, it was never relinquished to the enemy. The crossing plan was flexible. The Israelis had adequate river crossing assets to use either bridges or ferries (rafts) to cross heavy forces. The plan called for the early crossing of tanks, so that rapid execution could be sustained on the far shore. The execution of the plan succeeded in doing so. The plan was centrally controlled, and decentrally executed. All members of the IDF had a unity of mission. The IDF was not content with just

expelling Egyptian forces from Israel territory. Their plan went the extra step so as to permit the seizing and maintaining of the initiative. Only by pushing the Egyptians into their own land, and continuing to apply pressure, could the initiative be maintained. Resources were definitely conserved in the crossing. Rather than expend valuable bridging assets, the Israelis continued to use rafts until they were absolutely sure that bridges could be installed without danger. The conservation of resources, coupled with driving deep into Egyptian territory, focused on the future. Had a need for bridging assets risen elsewhere on the battlefield, or even later at the crossing site, they would have been available. Additionally, by driving into Egyptian territory, the Israelis were able to approach the negotiation tables from a position of strength. Had the IDF simply stopped at the Suez Canal, they would have entered the negotiation tables no better or no worse off then when the war started.

CONCLUSIONS

The preceding river crossing case studies provide a valuable outlook on the reasons for success or failure of many river crossings. Not surprisingly, many of the reasons for success or failure repeat themselves. This was not always true with each river crossing case study, however. An example was with the 9th Armored Division's crossing of the Rhine River. A clear intent was obviously not painted

to all participants. Had the call for indirect fires onto the Ludendorff Bridge been provided, history might read different than it does today. In this case, luck prevailed. Sometimes, luck may be the deciding factor. But it is in a very small percentage of the cases where luck wins out. A solid plan, executed rapidly as planned, certainly puts the advantage into the hands of the force carrying out that plan. There are recurring elements in each river crossing example that most led to success when present, and when absent, lent to failure of the crossing. Trying to place a priority on these elements, as to their importance to the success or failure of a river crossing, is nearly impossible. The absence of one element, in most cases, did not by itself render a river crossing a failure. Likewise, the presence of one element did not, in itself, render a crossing a success. All of the recurring elements must be considered in combination, as a whole. It can be safely said that the more elements present, the higher the chances of success of a river crossing became. A summarization of these recurring elements is portrayed below. A final concluding analysis of the reasons for success or failure of river crossings, as compared to doctrine, is provided in Chapter 7.

- synchronization of combined arms with maneuver.

- the willingness to take technically and tactically sound risk.

- centralized control, decentralized execution.

- rapid execution.

- exploitation of success.

- communications (the studies do not provide a preference for either quality, low volume communications or high volume, routine communications. In the World War II timeframe, communications intercepting and direction finding technology was not that of present day. A reasonable conclusion is being made to say that high volume, routine communications is less desirable than low volume, quality communications. It is felt that with a clear intent and well informed vision, a commander can undertake a river crossing operation using only quality, low volume communications. To do otherwise puts the commander, and his force, at risk of being found on the battlefield and removed by indirect fires).

- habitual synchronization.

- proper positioning of leaders on the battlefield.

- an adaptable river crossing plan.

CHAPTER SIX

ENDNOTES

1 U.S. Army, U.S. Army Armor Center Research Report, Armor in River Crossings (Ft. Knox, Kentucky, 6 March 1950) 6.

2 Ibid.,8.

3 U.S. Army, U.S. Army Command and General Staff College, Analysis of Operations Varsity and Flashpoint (Ft. Leavenworth, Kansas, 8 July 1946) 3.

4 Peter Allen, One More River (New York: Charles Scribner's Sons, 1980) 189.

5 U.S. Army, Analysis of Operations Varsity and Flashpoint, Appendix F, 1.

6 Ibid.,Appendix F, 2.

7 Ibid., 61.

8 Ibid., 66.

9 Ibid., 67.

10 Ibid., 70.

11 U.S. Army, Combat Studies Institute Battlebook 22-A, Rapido River (Ft. Leavenworth, Kansas) 7.

12 Ibid., 41.

13 Ibid., 42.

14 Ibid.

15 Ibid.

16 Ibid., 53.

17 Ibid.

18 Ibid.

19 Ibid., 54.

20 Ibid.

21 Martin Blumenson, Bloody River: The Real Tragedy of the Rapido (Boston: Houghton Mifflin Company, 1970)

22 Department of Defense Intelligence Information Report No. 6-849-0342-73 (Defense Attache Office Tel Aviv, Israel, 28 December 1973) 2.

23 Ibid.

24 Ibid., 13.

25 Ibid.

26 Ibid., 16.

CHAPTER 7

CONCLUSIONS AND RECOMMENDATIONS

GENERAL

> Well trained and equipped for quick river assaults, the Red Army expects to force water obstacles with barely a pause in their advance, a tactic that can overwhelm weaker defenses. 1

The excerpt above seems to fit the intent of AirLand Battle doctrine to the letter. Unfortunately, it is taken from an article entitled River Crossings, Soviet Style. The U.S. Army has long strived for a doctrine similar to that of the Soviets. The U.S. Army has long understood the need for operations on the battlefield to be rapid. Rapid operations, when well planned and executed, allow for the gaining and maintaining of initiative. Initiative is imperative to success. Initiative can be very fragile. Possessing initiative is only half of the equation. Maintaining initiative is the other half. It is very easy to lose the initiative through tactical mistakes, unnecessary halts in the offensive, and a myriad of other reasons. In relation to river crossing operations, a halt at a river line may be that element which causes the U.S. Army to lose the initiative. If the U.S. Army truly desires to conduct rapid, decentralized execution type operations, its doctrine must be supportive of the concept.

Present river crossing doctrine outlined in FM 90-13, River Crossing Operations, is not unlike that which existed during World War II. The preponderance of World War II and present day river crossing doctrine suggest that a halt at the river line is necessary. Without such a halt, the doctrine implies that the river crossing operation may fail. According to doctrine, halts are necessary to properly plan the crossing, establish resources required for the crossing, prepare vehicles to make the crossing, and to synchronize the combined arms team to participate in the crossing. A study of river crossing operations conducted at the end of World War II states the following about the U.S. Army river crossing doctrine. "While the American doctrine touches lightly on the advantages of river crossings in the pursuit, the Russian doctrine is emphatic in the advantages to be gained in placing phase lines beyond the bridgehead area so that river crossing operations may, whenever possible, be made during the period of greatest disorganization of the enemy resistance."[2] Present day doctrine too only touches on the advantages to be gained by conducting a hasty river crossing. The command and control of river crossing doctrine does not expound on the hasty river crossing at all. The same river crossing study conducted at the end of World War II concluded that, "...the doctrine (river crossing doctrine) should be expanded to emphasize the advantages accruing to the attacker by crossing natural

obstacles prior to temporary halts for regrouping and resupply. ...instructions should emphasize the necessity for securing bridgeheads and the control of exits based on the plan of advance for the next phase of the operation."[3] The next section of the thesis will make final conclusion on the importance of current river crossing doctrine shortcomings. The next section will also show where command and control of river crossing doctrine is weak, and where improvement is needed. The last section of the conclusions will make recommendation as to how the command and control of river crossing doctrine can be improved.

SECTION I. DOCTRINAL SHORTCOMINGS IMPORTANCE

The following elements of AirLand Battle and command and control doctrine were found as not being supported by the command and control portion of river crossing doctrine.

AirLand Battle Doctrine

- rapid execution
- allows friendly freedom of action
- forces enemy to fight under terms and conditions set by friendly forces
- decentralized execution
- relies on habitual synchronization
- conserves resources

Command And Control Doctrine

- quality, low volume communications

- concept expression of tasks
- focus on future
- accept risk
- facilitates freedom to operate
- provides rapid response

Each of these elements will be compared to what made the historical river crossing examples in Chapter Six successful or unsuccessful, to determine the importance of the shortcoming.

Rapid execution

Rapid execution is very important to the success of a river crossing. The seizing of the Ludendorff Bridge would most likely never have occurred had the operation to capture it intact not been rapidly executed. The German forces were in the process of preparing the bridge for demolition when the Allied forces arrived at the bridgehead. The Rhine River crossing at Wesel was also marked a success, partially due to the rapid execution of the 30th and 79th Divisions in executing the assault crossing. Both assaults caught the Germans by surprise. The speed with which assault forces seized the far shore and cleared the enemy did not allow the Germans to react. When the Germans tried to react by launching counterattack, it was too late. The Allied forces were already implanted on the far shore and had roots established. Speed was also essential to the 29th Infantry

Division's crossing of the Roer River in the vicinity of Julich. The initial assault force ran into problems by being swept downstream, and ultimately ran into a minefield. When friendly smoke used to conceal the crossing operation became a hinderance for the crossing, the smoke was lifted in favor of speed. Also, when the approaches to the river became blocked by disabled vehicles, on the spot battalion commanders decided to walk to the river, even though rafting equipment would have to be handcarried. The decision was made to keep the crossing on schedule as much as possible, and to avoid time wasted waiting for the disabled vehicles to be recovered. The lack of rapid operations hurt the Egyptians in their 1973 crossing of the Suez Canal against Israel. The inability of the Egyptians to rapidly install heavy river crossing assets brought an otherwise successful crossing to a screeching halt. Without the heavy vehicles on the far shore, the Egyptians were not able to sustain the attack. Conversely, the rapid operations of the Israeli forces in installing rafting assets in their counterattack against the Egyptians was crucial to their success. Rapid operations are paramount to the successful crossing of a river in war. Failure to maintain rapid operations can result in friendly forces losing the initiative, and render the crossing a failure. The inability of FM 90-13, River Crossing Operations, to stress rapid execution is considered a serious shortcoming, and should be addressed.

Allows friendly freedom of action

The ability of a force to maintain its freedom of action is also deemed critical to the success of a rivercrossing. Each river crossing analyzed in Chapter Six was either successful or unsuccessful because the crossing force maintained a freedom of action. Freedom of action is perhaps best looked at by the inability of a force to succeed in a river crossing when it does not have freedom of action. The Rapido River crossing of the 36th Infantry Division is a case in point. The 36th Division was assaulting into a heavily defended German defense of the Rapido, along the Gustav Line. The 36th Division was simply not able to gain freedom of action. The superior German defense prevented the 36th Division from undertaking the actions that were successful to the river crossing. Without the ability to take these actions (establishing a foothold on the far shore, expanding the bridgehead, crossing support forces, removing indirect observed and direct fires), the 36th Division's crossing attempt was thwarted. Likewise, the Egyptian crossing of the Suez Canal, although initially allowing the Egyptians freedom of action, was reduced to being ineffective when the Egyptians were unable to maintain freedom of action. The inability of the Egyptians to cross tanks reduced their freedom of action. There was not much that the infantry divisions on the far shore could do without the heavy armor support. The Egyptians were forced

to halt their offensive while waiting for the tanks to cross the canal. The halt ultimately resulted in not only the Egyptian loss of freedom of action, but the initiative as well. FM 90-13's shortcoming in stressing friendly freedom of action is considered a serious deficiency.

Forces enemy to fight under terms and conditions set by friendly forces

The doctrinal shortcoming of FM 90-13 regarding this element is not considered a serious deficiency. The analysis of historical river crossings does not suggest that forcing the enemy to fight under terms and conditions set by friendly forces is of utmost importance. That is not to say that this element is not important. The Egyptians forced Israel to fight under Egypt's terms and conditions, at least initially. Even doing so did not ensure success of the Suez Canal crossing. A superior force, a force who is more tactically and technically proficient, or a force who is able to exploit success and use initiative to it's vantage, can overcome the force setting the initial terms and conditions of the battle. Although the element of forcing the enemy to fight under friendly terms and conditions is important to the success of a campaign, or an entire battle, it is not deemed of absolute importance to the river crossing operation. The depth with which FM 90-13 covers forcing the enemy to fight under friendly terms and conditions is considered adequate.

Decentralized execution

Decentralized execution is considered of grave importance to the success of a river crossing, particularly a hasty river crossing. The leader on the spot is in the best position to determine what needs to be done and when. In the Ludendorff Bridge example, the initial assault forces successfully crossed the bridge, and established an Allied foothold on the far shore. This was done according the the centrally developed plan for the crossing. The Task Force Engleman commander decided to exploit the success by sending his entire task force across the river. Although the Task Force Engleman commander was taking risk in doing so, the risk was tactically and technically sound. If the Task Force Engleman commander had not utilized the decentralized execution philosophy, not enough forces would have been on the far shore to stave off the rapid German counterattack to reseize the Ludendorff Bridge. The 29th Infantry Division's crossing of the Roer River also provides testimony to the importance of decentralized execution. Battalion commanders on the spot, in the best position to see and understand current situations, decided to dismount soldiers and to complete the trek to the river on foot. Brigade and division commanders were not in a position to make that call. There is no way for any commander to see the entire battlefield. In this same river crossing, company commanders took control of the situation at the river line

just as chaos was about to prevail. With the first assault force thrust into a minefield, it would have been easy for the remainder of the friendly force to simply give up the crossing in despair. Again, the on the ground leaders took charge, and made things happen. That is what leaders, at all levels, are charged to do. Trying to execute the operation centrally would not allow small unit leaders to lead. There is a price for permitting decentralized execution of operations. In the Rapido River crossing case, the second days assault attempt was not as effective as it could have been, by one of the two regimental commanders deciding, on his own, to begin his assault some five hours later than the planned time for the assault. This decision resulted in a split of effort in the overall 36th Division's crossing attempt. Forces were not available to mass. The Germans were not required to fend off two regiments attacking abreast. only one. The effort for the Germans was made easier, in this case, because of the use of decentralized execution. Over the course of the other river crossing examples, and other tactical operations for that matter, decentralized execution of operations has more often than not, proved to be of utmost importance. Leaders, at all levels in the military, are trained to take charge when in charge. The leader in the spot to see and feel what is happening around him is in the position to make the best call on how the next step should be executed. FM 90-13

shortcomings in decentralized execution, at least for the hasty river crossing, must be addressed to bring the doctrine in line with Airland Battle intent.

Relies on habitual synchronization

Every river crossing example analyzed in Chapter Six included the element of habitual synchronization. Some river crossings used habitual synchronization successfully, others did not. The Ludendorff Bridge example showed the utility of using infantry and engineers to quickly cross the river, dismantle explosive charges on the bridge, and seize a foothold on the far shore. Tanks were used to provide overwatching fires, field artillery pieces were employed forward, as were air defense assets, to provide overwatch. All of these same elements were demonstrated in the XVI Corps crossing of the Rhine River at Wesel. The Wesel crossing also implemented air forces to maintain air superiority and to provide support to ground troops. Each of these crossings was successful due to the combined arms synchronization done out of habit, not by directive.

Rehearsals, as a provider of habitual synchronization, also played a key role in many river crossings. The 79th and 30th Divisions, XVI Corps, practiced the Rhine River crossing along the Maas River, at a site as identical to the Rhine crossing site that was available. The 29th Division's crossing of the Roer River was preceded with rehearsals along the Meuse River, and considered of extreme importance

to the success of the crossing. Both the Egyptians and the Israelis practiced the Suez Canal crossings for months prior to conducting the crossing. Each of these rehearsals included conditions as near the actual crossing site as was possible. These rehearsals also included the combined arms team, working in concert, to synchronize their efforts and capabilities into a harmonious operation. Oppositely, the 36th Division's rehearsal of the Rapido River crossing, although conducted, was not conducted under conditions equal to the Rapido River. The division commander's decision to change his assault forces from those that participated in the rehearsal did not help the situation either. Habitual synchronization is a requisite to success, and shortcomings in FM 90-13 must be corrected to more aptly provide for its use.

Conserves resources

FM 90-13 shortcomings in the conservation of resources are not considered critically important to the command and control section of river crossing doctrine. In all the river crossing examples analyzed, resources, although short in some cases, were not the determining factor in success or failure. Where resources were short, the river crossing was normally delayed until the resources were obtained. The wasteful utilization of resources in the Rapido River crossing case is understandable, given the situation. The intent of this thesis was never to analyze the

appropriateness of river crossing resources in the U.S. Army inventory. The largest portion of the FM 90-13 shortcoming in the conservation of resources is in the people arena. FM 90-13 calls for many people, especially planners, to come from corps assets to assist the division. Lessons learned from World War II indicate that although extra planners may be helpful, they are not always the answer. A general board analyzing engineer tactical problems after the war concluded with the following statement relating to this situation. "In special operations where additional engineers are required, the responsibility for planning must still rest with the division engineer. His knowledge of the strengths and weaknesses of the divisional units and the division method of operations places him in the position of being the engineer who can best determine the location and strength of engineer support. Where the responsibility is passed to another agency, either the corps engineer or corps engineer group commander, the operation is reduced to the basic book principles and can not be expected to include the refinements which can be provided only by the division engineer, and which the division commander has every right to expect."[4] In each of the river crossing cases analyzed, units made due with the people they had, and undertook the crossing. This would hold true today. The most important part is to undertake the crossing correctly, not necessarily the "who" participating in the crossing. FM

90-13 is considered adequate, in relation to Airland Battle doctrine, in the area of resources.

Concept expression of tasks

The concept expression of tasks is closely related to decentralized execution. The two go together like hand and glove. It is difficult to utilize a concept expression of tasks and centralized control at the same time. By utilizing the concept expression of tasks, one is basically implying decentralized execution. By stating a clear vision and clear intent, a commander is utilizing the concept expression of tasks. He is not stating exactly what must be done, how it must be done, where it must be done, under what conditions it must be done, and when it must be done. He is stating a concept for the operations, the desired end state of the operations, and related information crucial to the undertaking of the operation. Such was the case with the Ludendorff Bridge example. The corps, and subsequently division commanders, gave the order to try and seize the Ludendorff Bridge intact. Neither commander stated the particulars of how and under what conditions it was to be done. Those decisions were left to the commander on the ground - decentralized execution. XVI Corps crossing of the Rhine River at Wesel implemented the same concept expression of tasks. The task was to cross the river. The 30th and 79th divisions plans to complete the task were not the same. The 30th Division thought that speed was more

important than surprise, so they utilized noisy motor driven assault boats in the first wave across the river. The plan worked. Conversely, the 79th Division thought that surprise was more important than speed, so they utilized quiet paddle driven rubber assault boats in the initial wave across the river. This plan also worked. In the 36th Division's crossing of the Rapido River, neither the army or corps level commanders dictated the crossing plan. The plan was left up to MG Walker, as he saw fit. The directive to the 36th Division included the vision, to launch an offensive into the Liri Valley and drive northward, link up with forces conducting the Anzio landing, and continue the drive into Rome to defeat the German forces there. The intent was for other forces to secure the 36th Division's flanks, for the 36th to cross the Rapido River, and for the forces in the south to draw away German reserve forces from the Anzio landing. Although the 36th Division was not successful in the river crossing, part of the intent was achieved. German reserve forces were drawn away from the Anzio landing. The Rapido River crossing had many faults, but lack of utilizing a concept expression of tasks was not one of them. Because concept expression of tasks is so closely related to decentralized execution, it is considered very important to the success of a river crossing operation. FM 90-13 requires revision in concept expression of tasks to make it consistent with present command and control doctrine.

Focus on future

Although focusing on the future is very important, not enough information could be found in historical river crossing operations to determine its significance on the river crossing itself. The only river crossing example that included comment of a focus of the future was the Israeli crossing of the Suez Canal. The Israeli's held back their heavy fixed bridge assets in the canal crossing and opted to cross tanks early using rafting assets. The intent was to save the bridging assets for a time when they could be emplaced under completely secure conditions. By doing so, the Israeli's were anticipating a future need for the bridges, assuming the Egyptians would seriously attack the canal crossing site. As the war went, neither the rafts or the bridges were ever in serious jeopardy. Due to a lack of evidence one way or another regarding the importance of a focus on the future, FM 90-13 is considered adequate as written.

Accept risk

Accepting risk, deemed important by present command and control doctrine, is considered critical to the successful undertaking of river crossings in the Airland Battle concept of operations. The Ludendorff Bridge example, as already explained, was successful because the Task Force Engleman commander took risk. Had he not risked the sending of his entire task force across the river, the

quick German counterattack to reseize the bridge would probably have been successful. There is no doubt that the Rapido River crossing was a risky venture. MG Walker seemed to not be willing to accept the risk. His attitude, displayed openly in front of his subordinates, was that the operation was too risky and was doomed to failure. The extent to which MG Walker's attitude permeated the division is unknown. It would be nearly impossible for his attitude to not have affected his subordinates in some form. It is possible that MG Walker's unwillingness to accept risk contributed to the failure of the Rapido River crossing, by affecting the performance of subordinates. The Egyptians were also unwilling to take risk, and it severely hurt their chances for success in the Yom Kippur War. In the six months of rehearsing the Suez Canal crossing prior to the attack into Israel, the Egyptians practiced installing heavy bridging rapidly by dumping all of the bridge components into the water at a single time. Once the components were in the water, the Egyptian engineers would round them up and assemble them rapidly, forming a 180 meter long bridge in three hours. This method of constructing bridges was extremely successful in saving time. On 6 October 1973, when it came time to actually construct the heavy bridges, Egyptian commanders on the ground were unwilling to accept the risk of dumping all of the bridge components into the

water at once. Egyptian commanders countermanded the plan and piecemealed the bridge components into the water a few at a time. Once the few were completely assembled, more components would be brought forward and the task repeated. The Egyptian commanders feared that Israeli attacks into the crossing site would damage large amounts of bridging assets, if the attacks were successful. The attacks never mounted a serious threat to the Egyptian bridges. The unwillingness to take risk cost the Egyptians the ability to sustain their attack, which ultimately led to their defeat. The taking of risk, when considered sound, is the military person's responsibility. Risk is an integral element of both command and control doctrine, and Airland Battle doctrine, as outlined in Chapter Four. Risk taking is considered important to successful river crossing operations, and the failure of FM 90-13 to properly address the issue should be resolved.

Facilitates freedom to operate

Facilitating freedom to operate is also directly related to decentralized execution. Decentralized execution allows commanders to operate as they see fit. For all the same reasons given above under decentralized execution, and concept expression of tasks, facilitating freedom to operate is important to river crossing doctrine. Shortcomings must be addressed to alleviate discrepancies between river crossing doctrine, command and control doctrine, and Airland Battle doctrine.

Provides rapid response

Providing rapid response is an important element of present command and control doctrine. It is also considered an important element in the ability to successfully forge river crossings. Again, the Ludendorff Bridge example serves best in illustrating the importance. Intelligence reports prior to 7 March 1945 stated that the Ludendorff Bridge was intact. An intelligence estimate on the morning of 7 March 1945 reported that the bridge was still standing. By being able to provide rapid response, III Corps was able to inform 9th Armored Division of the fact that the bridge was still intact, and subsequently, 9th Armored Division was able to pass the same information to Task Force Engleman. Without the provision of rapid response, the quick passing of information may not have been possible. Any delay may have resulted in the Germans destroying the Ludendorff Bridge before the Allies had a chance to seize it. The destruction of the bridge was imminent. Only the rapid passing of information and subsequent rapid execution of operations to seize the bridge prevented it from being blown. The lack of an ability to provide rapid response hurt the 36th Division at the Rapido. Neither of the assaulting brigades were able to query division, nor was division able to query the assaulting brigades. Landline communication,

the only form of communication relied on for the Rapido crossing, had been severed by German indirect fires. If any attempt was made to fix the communication problem, it was unsuccessful. Lack of communications resulted in lack of control. Lack of rapid communications did not permit assaulting battalions and brigades to effectively coordinate much needed indirect fires. The division staff was completely out of the picture. How much this contributed to the failure of the crossing is uncertain, but, the fact is that the lack of rapid response (or any response in this case) contributed to the failure of the Rapido River crossing. In the command and control area, the ability to provide rapid response is a must. Without rapid response, the ability of a force to use all of the assets available to it is taken away. This reduces the chances of achieving success. FM 90-13, River Crossing Operations, established too elaborate a communications network and command structure for the command and control of river crossings. The elaborate communication network and command structure should be reduced. Reductions should be made to the minimum requirements for communications and command positions in order to improve the ability of the division to provide rapid response.

SECTION II. FINAL RECOMMENDATIONS

In analyzing the deficiencies in current command and

control of river crossing doctrine, it appears that the single biggest problem is that the entire doctrine is geared to the deliberate river crossing only. FM 90-13, River Crossing Operations, states early on in the manual that the hasty river crossing is the preferred method. Provisions for undertaking the hasty river crossing are not adequately provided for. The single biggest recommendation that can be made is that FM 90-13 better provide doctrine for planning and undertaking the hasty river crossing. As recommendation, FM 90-13 should be split into two sections. The sections must be prefaced by the statement that the hasty river crossing is the preferred method of crossing rivers in the Airland Battle environment. The manual should go on to say that the deliberate river crossing method should only be used as a last resort. Additionally, the river crossing doctrinal manual must emphasize the fact that a maneuver commander, by making the decision to cross the river deliberately, is risking losing initiative, rapidity of operations, freedom of action, and the possible use of decentralized execution. Historical examples of river crossings should be employed in the manual to emphasize this fact.

The deliberate river crossing section of FM 90-13 should be geared to the fact that a river crossing is only part of an operation, not an operation in itself. As such,

if an operation is phased, any river crossing to be made must be placed at the end of a phase, not encompass the beginning of a phase in itself. By doing so, the ability of a friendly force to retain freedom of action, and to continue to use decentralized execution coupled with concept expression of tasks, is maintained. Also, the river crossing operation can be kept a maneuver responsibility, and not become an engineer driven task. A force crossing a river in its sector could then cross the river without the grandiose crossing area requirements dictated currently by FM 90-13. The engineer would simply plan the river crossing operation as he would any other in-stride obstacle breaching task. This would also eliminate the large scale communiactions requirements imposed by FM 90-13. By so doing, improvement would be made in the ability of a command to provide rapid response. Finally, the deliberate river crossing section of FM 90-13 should emphasize habitual synchronization as a must to river crossing success. It is recommended that FM 90-13 speak to the combined arms synchronization using the elements of the battlefield operating systems (BOS). Each BOS (maneuver, intelligence, command and control, fire support, air defense, mobility-countermobility-survivability, and combat service support) should make up a section of the river crossing manual. Each BOS's role in the deliberate river crossing should be outlined, and their relationship to one another

and the overall river crossing detailed. Comments on the habitual synchronization apply equally as well to what is recommended for the hasty river crossing section of FM 90-13.

The hasty river crossing of FM 90-13 should state that rapid operations are essential to the Airland Battle fight. As such, the hasty river crossing is the best means of maintaining rapid operations. The hasty river crossing portion of FM 90-13 should be built on the premise that the river crossing is the maneuver commander's responsibility. The maneuver commander should gainfully employ his engineer early in the planning process to ensure that the manipulatable conditions for undertaking the hasty river crossing task are met well in advance of a unit approaching the river. Maneuver commanders, division and below, must decentralize to subordinate commanders the decision making authority whenever possible. This would allow subordinate commanders the utmost flexibility of seizing opportunities to forge river crossings as the opportunities present themselves on the battlefield. The best means of achieving decentralized execution is by the maneuver commander utilizing a concept expression of tasks. The concept expression of tasks would be for a unit to be given a mission to seize and secure Objective X. Objective X should be on the far shore of the river. FM 90-13 should, in an

effort to meet the need for concept expression of tasks, delineate to the maneuver commander and engineer what is required to forge a hasty river crossing. Requirements should be in the things to consider realm, and must contain the tools and equipment necessary to undertake the hasty crossing. It must be outlined in FM 90-13, that by utilizing decentralized execution and the concept expression of tasks, that a commander is accepting risk. The amount of risk is not over that already called for by FM 100-5, Operations. It is simply extending risk to river crossing operations.

Present doctrine for the command and control of river crossing operations is not, in all cases, compatible with Airland Battle and U.S. Army command and control doctrines. If the recommendations above are incorporated into FM 90-13, River Crossing Operations, river crossing command and control doctrine will be mutually supportive of, and compatible with, both Airland Battle and U.S. Army command and control doctrines.

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