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**Air Commander Control of Army
Deep Fire Assets**

**A Monograph
by
Major Mark J. Eshelman
Infantry**



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**School of Advanced Military Studies
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ABSTRACT

AIR COMMANDER CONTROL OF ARMY DEEP FIRE ASSETS by Major Mark James Eshelman, USA, 57 pages.

This study examines whether Army deep fire assets, the Advanced Tactical Missile System (ATACMS) and AH-64 Apache helicopter, should be apportioned by the Joint Force Commander (JFC) against targets not directly supporting the ground commander's tactical fight.

The monograph uses a three step methodology. First, the study shows why ground commanders fight deep, how deep they need to fight, and what their deep battle requirements are. Second, it examines Army deep attack assets to determine their interdiction capabilities and to what degree they can support both air and ground commanders missions. Lastly, recognizing that the subject is only part of the larger issue about Army and Air Force deep responsibilities, the study answers the topic question through an analysis of the entire deep battle environment.

The conclusion is that Army deep fire assets should be apportioned by the JFC, the primary operational level commander. The study concludes that Army commanders must control interdiction in support of their tactical fight, but should usually relinquish control of interdiction assets at the operational level. Finally, the study recommends a battlefield framework which allows the monograph's other recommendations to be implemented.

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Section I

INTRODUCTION

Air and ground commanders must be constantly on the alert to devise, and use, new methods of co-operation... There can never be too many projectiles in a battle. Whether they are thrown by cannon, rockets, or recoilless devices is immaterial. The purpose of all these instruments is identical - namely, to deluge the enemy with fire. Nor is it necessary that these projectiles be discharged on the ground.¹

- General George S. Patton, Jr., 1945

In the early 1980s, the Defense Advanced Research Projects Agency (DARPA) pioneered the development of a new generation of weapons. They were designed to allow the North Atlantic Treaty Organization (NATO) to slow and stop the overwhelming Soviet follow on forces attack (FOFA).² The program was named "Assault Breaker," and it validated the radar technology for the Joint Surveillance and Target Acquisition System (JSTARS) and the Advanced Tactical Missile System (TACMS).³ At the same time, technologies were being developed for the AH-64 Apache helicopter. Today, in 1993, these weapon systems allow the ground commander to acquire and engage targets much deeper than he has been able in the past, into territory that had previously been the sole responsibility of the United States Air Force (USAF).

The Army's increasing ability to fight deep has created deep battle issues for both the Army and the Air Force. For example, the Army is frustrated by what it perceives as an inadequate emphasis by

the Air Force on its tactical air support (TACAIR) needs. At the same time, the Air Force is reluctant to fly through air space that could contain Army projectiles. As a result, the Air Force Chief of Staff, General Merrill McPeak has proposed that the Air Force take responsibility for the Army's high-altitude air defense and long range artillery missions in return for the close air support mission.⁴ A portion of General McPeak's proposal is the topic of this monograph.

Thesis Statement

The research question is: Should the Joint Force Commander (JFC) apportion Army deep fire assets against targets not directly in support of the ground commander's tactical fight? The author's initial inclination is that the answer should be yes. This monograph's hypothesis is that the Joint Force Commander (JFC) should apportion Army (as well as Air Force, Navy, and perhaps Marine) deep fire assets between the Joint Force Land Component Commander (JFLCC) and the Joint Force Air Component Commander (JFACC) in support of the theater campaign plan.

The monograph's scope is limited by space to examining Army deep fire assets, ATACMS and AH-64 Apache helicopters. However, the topic raises similar questions about other Army assets such as remotely piloted vehicles (RPVs), intelligence collection systems, and special operations forces. While it seems logical that the conclusions from this paper would also apply to those systems, the questions must be answered by another author at another time.

To prove the hypothesis, the monograph will consist of several parts, answering several subsidiary questions. Section II will show why

ground commanders fight deep, to include how deep they must conduct operations. Section III will assess Army deep battle assets to determine their capabilities beyond the JFLCC's area of operations, and to what degree they are capable of assisting the JFACC in the deep interdiction campaign. Section IV will prove the thesis by synthesizing the conclusions of Sections III and IV in the context of the larger question of how the Army and Air Force should divide responsibilities in the joint battle area. Finally, Section V will summarize the monograph, listing the conclusions and recommendations. But before beginning the body of the paper, a few key terms must be defined.

Key Definitions

One of the problems with resolving the issues between air and ground power advocates is that the same terms often mean different things to different writers, and that sometimes even the same term means different things to the same writer at different times.⁵ With this idea in mind, the key definitions listed in this subsection must be understood before proceeding with the monograph. Terms of secondary importance are listed in the Glossary of Terms at the conclusion of the paper.

1) Control: Fundamental to development of the monograph is defining what is meant by *control* of deep fire assets. Control is defined as: striking the right targets (designated on a prioritized list), at the right time, in accordance with the JFC's concept of the operation.

2) Interdiction: Actions taken to, "divert, disrupt, delay, or

destroy the enemy's surface military potential before it can be used effectively against friendly forces."⁶ It is important to note that no differentiation is made between air and ground based interdiction.

3) Apportionment: The determination and assignment of the total expected effort by percentage and/or by priority that should be devoted to the various air operations and/or geographic areas for a given period of time.⁷ The apportionment is made by the JFC based on the recommendation of the JFACC.

4) Fire Support Coordination Line (FSCL): A line established by the ground commander to ensure coordination of fire not under his control but which may affect current tactical operations. The FSCL is used to coordinate fires of air, ground, and sea weapons against surface targets. It should follow well defined terrain features, and must be coordinated with the appropriate tactical air commander. Supporting forces may attack targets forward of the FSCL without prior coordination with the establishing ground force, provided the attack will not produce adverse surface effects on or near the line. Attacks on surface targets behind the line must be coordinated with the ground commander.⁸ A recent addition by the Joint Chiefs of Staff is that:

Forces attacking targets beyond the FSCL must inform all other affected commanders in sufficient time to allow necessary reaction to avoid friendly casualties. In exceptional circumstances, the inability to do so will not preclude the attack of targets beyond the FSCL..⁹

5) Reconnaissance and Interdiction Phase Line (RIPL): A North Atlantic Treaty Organization (NATO) control measure that is not

currently in U.S. doctrine. It is placed by the army group commander and is the limit of corps planning. Terrain short of the RIPL belongs to the corps commander, and that beyond it is considered independent of the land war.¹⁰ As used in NATO, the RIPL is not a fire coordination line; it is a planning line.

6) Joint Battle Area: The joint battle area is where Army forces fight to the depth of all their weapon systems and where Army and Air Force capabilities overlap.¹¹

Section II

Why the Army Fights Deep

Airland Battle is now the doctrine of the United States Army. It states that the battle against the second echelon forces is equal in importance to the fight with the forces at the front. Thus the traditional concern of the ground commander with the close in fight at the forward line of own troops (FLOT) is now inseparable from the deep attack against the enemy's follow-on forces.¹²

- General Glenn K. Otis, 1982

Airland Battle was originally developed to allow the United States to fight outnumbered and win in Europe. While Airland Battle could be applied anywhere in the world, it was developed to counter the numerical superiority of Soviet conventional forces in Europe. The main threat posed by the former Warsaw Pact in Europe was a multi-echeloned attack that vastly outnumbered NATO.

A numerically superior enemy can maintain constant pressure

in the attack, eventually achieving force ratios that overwhelm friendly forces. Even though the first enemy units to arrive are likely to be defeated, the opponent is able to sustain the attack, keeping strength at the forward line of own troops (FLOT) constant over time while friendly forces lose strength. By having superior force ratios along the FLOT, the enemy is able to attrit friendly forces, limit freedom of maneuver, and eventually break friendly defenses. Enemy follow on forces can then maneuver to reinforce success and complete the victory.

While the dissolution of the Warsaw Pact means the threat of massed armies fighting a conventional war on the plains of Europe is very small, the principles of why and how to fight deep remain valid. Most western nations, including the United States, are reducing the size of their military services. But some potential adversaries continue to field large armies. As a result, even though the former Soviet threat no longer exists, it is possible that American military forces could find themselves fighting outnumbered in future conflicts. Additionally, even if overall force ratios in the theater of operations are near parity, an enemy could mass force locally, requiring a commander to fight deep to ensure freedom of action for units in close contact. Therefore, even with the demise of the Soviet threat, deep battle remains an integral part of the way ground commanders must fight.

To counter a numerically superior enemy, ground commanders must seize the initiative from attacking forces, or deny the initiative to defending forces by conducting deep attacks.¹³ Interdiction of reinforcing enemy forces prevents the opponent from achieving local superiority on the FLOT and can create windows of opportunity for

friendly action in the close fight. Until recently it was clearly the object of the deep attack (by striking enemy forces not in contact) to create the conditions for the ground commander to win his close fight. The latest revision of FM 100-5 will cloud this connection by the way it describes a seamless battlefield framework and expands the concept of deep operations to the operational level of war.¹⁴

The 1986 version of FM 100-5 clearly stated that the close battle was the focus of ground combat operations, and that deep battle was intended to isolate and ensure the success of the close fight. The 1986 manual stated that deep operations at any level are designed to influence conditions for future close operations. At the operational level, it said that deep battle isolated the battlefield and set up future battles. At the tactical level it meant shaping the battlefield for close engagements.¹⁵ But at any level, the importance of attacking deep to the ground commander was to allow his forces to win the close-in fight against enemy forces. It did this by creating opportunities for friendly ground units.

Because a distinction must be made between the operational and tactical levels of war, the 1993 version of FM 100-5 may confuse readers who are accustomed to the 1986 version's close, deep, and rear battlefield framework. The new FM 100-5 will expand the deep battle concept to the operational level of war, in part, by removing much of the close, deep, and rear verbiage.¹⁶ Although the verbiage will be missing, the authors of the new doctrine recognize the validity of the 1986 manual's construct at the tactical level.¹⁷ A central issue of both the doctrine and this monograph is where the break between the tactical deep battle and operational battle should occur.

At the tactical level, this author's opinion is that the close, deep, rear construct of the 1986 FM 100-5 is appropriate. The Army's unique capability is close-in battle with enemy forces. It is the author's personal experience that young infantry and armor officers are trained to believe that the missions of their branches of service are to "close with and destroy the enemy." In part, the current mission of the United States Army Infantry is to, "Close with the enemy by means of fire and maneuver..."¹⁸ This capability for close combat is what the Army alone brings to the battlefield. The new version of FM 100-5 also recognizes the point when it states, "Close operations by ground forces give commanders staying power and battlefield leverage to achieve objectives not obtainable by other means."¹⁹ Therefore, while the new Army doctrine may be interpreted as reducing the importance of the tactical link between the close and deep battles, it recognizes the basis of that link's origin. Furthermore, the new FM 100-5 actually depicts a greater interdependency between the tactical deep battle and the operational battle than described in the 1986 manual.

Weakening the tactical connection between close and deep battles is fraught with danger. It gives the Air Force an opportunity to claim responsibility for interdiction in that portion of the battlefield. This danger will be debated in much greater depth in Section IV (Discussion), but the reason gets to the fundamental missions of the Army and Air Force. From the time of Billy Mitchell through the theories of Colonel John Warden, U.S. air forces have seen their primary role as deep interdiction. That is one of their assigned responsibilities today, and it should be. The Air Force has the preponderance of weapons platforms and intelligence collection assets

to fight the strategic and operational interdiction battles.²⁰ Because the Air Force has both the responsibility and the capability to conduct operational interdiction, there does not seem to be any reason for the Army to get involved except in a supporting role. If interdiction is not in direct support of the tactical close-in fight, there is little basis for ground commander control of targeting it, and actually little to distinguish it from operational or strategic interdiction.

From an operational perspective, lessening the connection between close and deep battles appears sound. In his article "Managing Intellectual Change: Army's Revision of FM 100-5," LTC John W. Reitz explains the rationale for the new doctrine.

The need for the deep battle, as we understood it in 1986, rested on the close battle. Recent experience suggests that deep operations can directly effect the objectives of our major operations and campaigns. Also, the mobility, agility and technology characteristic of our modern forces and demonstrated by recent battles, blur the distinction between close and deep.²¹

Some soldiers might try to argue that ground commanders can now plan to defeat enemy forces at operational depths without ever closing to the tactical fight. While this might happen on occasion, it should not be a doctrinal standard because the Army does not own the operational level of war the way it does the tactical. The operational level is, by definition, a joint responsibility.

With respect to interdiction, the move from the tactical to operational levels of war is a major leap. At the tactical level, the primary commander is normally the land force commander. While corps commanders do get involved at the operational level, they primarily fight tactical battles. At the same time, it is generally recognized that the Air Force will normally take the lead when it comes

to fighting the enemy at operational and strategic depths.²² Only confusion and friction will result if both the Army and Air Force attempt to do the same job. Therefore, an Army deep attack intended to prevent a future tactical battle implies a conflict between the battlefield roles of the two services. The answer is that both Army and Air Force commanders are fighting what amount to tactical battles, and the JFC must command both efforts.

The fact that deep interdiction takes place at operational or strategic depths does not alter the fact that executing interdiction is, in a sense, similar to the Army's tactical fight. Actual combat is taking place in the near term on a relatively small portion of the battlefield. The commander responsible for orchestrating both 'tactical' fights into a campaign is the JFC. The Joint Force Commander is the primary operational commander. These command relationships will have a major bearing on the conclusions of this monograph because the primary commander for any given portion of the battlefield should be the one to control fires, to include interdiction fires.

The first conclusion of this monograph is that after the JFC has determined that close battle with the enemy is required, the Army must doctrinally control deep fires at, and only at, tactical depths to ensure success in the close fight. This does not negate the idea that successful deep battle at the operational level might preclude the tactical battle from taking place. As a prelude to Section IV (Discussion), in which a comprehensive proposal for the control of both tactical and operational interdiction will be offered, it is necessary to explain the Army commander's requirement to control deep fires at the tactical level.

To support the tactical battle, there are two possible objectives

for the deep fight. First, deep battle can ensure favorable force ratios for friendly units in contact. Second, it may gain time for the ground commander to execute his scheme of maneuver. The 1986 version of FM 100-5 states, "Through the use of depth, a commander obtains the necessary space to maneuver effectively; the necessary time to plan, arrange, and execute operations; and the necessary resources to win."²³ Enemy forces do not have to be destroyed. The intent is to deny follow-on forces the ability to arrive at the main battle area (MBA) intact, at the time of their choosing, so as to create periods of friendly local superiority to win battles or engagements.²⁴

The deep battle changes the relationship of the ground war to the battlefield interdiction of enemy forces. Because the ground force commander attacks deep to shape the battlefield to his scheme of maneuver, his concept for the future battle guides his determination of the relative importance of enemy forces.²⁵ This means that the ground commander's vision determines the relative importance of potential battlefield interdiction missions. Therefore, he must be able to engage enemy forces at the time and place *he* desires, so as to shape the battlefield for his close fight. Again, the objectives are to ensure the proper force ratios during the close battle, or to gain time to execute a scheme of maneuver to set up a future close engagement where friendly forces will have the proper force ratios. The intent is not to get involved with deep interdiction where, for example, the Air Force might have the lead in destroying an operational reserve at no cost to friendly land forces.

To ensure that windows for action are created, identified, and acted upon in a timely manner, there must be one single plan for the

entire area of operations. General Donn Starry put it well when he said, "This demand for careful coordination of present and future action throughout the depth of the battlefield dictates that the plan stem from the concept of a single commander."²⁶ The problem is that many opportunities for deep attack, such as moving armored formations, will be fleeting in nature. If several planning cells are involved, they could end up working at cross-purposes to each other. They could enter into competition, resulting in turf battles or the mistaken belief that another cell will deal with a situation. As a result, opportunities could be lost before they are acted on.

It is the need to coordinate all fires and maneuver throughout the depth of the battlefield that demands one unified plan for both the ground scheme of maneuver and the interdiction that supports it. This is why ground commanders must retain control of ATACMS and AH-64 Apaches for use in their tactical deep battles. Retention of these assets is particularly important because current joint doctrine only allows ground commanders to nominate, *not control*, AI targets which have a near term impact on the close battle (formerly referred to as battlefield air interdiction, or BAI).

The emphasis on the close-in fight applies to offensive operations as well as the defense. In the offense, the object is to retain the initiative. FM 6-20-30, *Fire Support in Corps and Division Operations*, states that offensive deep attack is designed to isolate, immobilize, and weaken the enemy in depth in order to sustain the momentum of the attack (by blocking the movement of enemy reserves for example).²⁷ The goal is to sustain the momentum of the attack, allow friendly forces to win one battle and prepare for the next. Therefore,

whether in the offense or defense, the purpose of tactical deep battle is to create opportunities for future operations.

It should not be assumed that the ground commander should wish to automatically get involved with the operational interdiction portion of the campaign. He does not have the assets to plan and execute operational interdiction. He is only concerned with interdiction of enemy forces which could have a tactical impact on his close battle. Therefore, the question of how deep ground commanders should tactically fight must be addressed.

How Deep is Deep Enough?

The 1986 version of FM 100-5 provides the answer. It says that deep operations must extend far enough to give the ground commander at all levels time to react to enemy forces, assess his options, and execute operations accordingly.²⁸ On the battlefield, the commander fights his deep battle according to the terrain and enemy situation. However, the distance must be calculated from the time it takes to decide, detect, and deliver an attack, with respect to the enemy rate of closure on the FLOT. Therefore, the unit's area of deep responsibility must be deep enough to include all enemy formations threatening to become part of the close battle before mission accomplishment.²⁹ This is the area where the ground commander can influence the battle; it is the area in which enemy forces can affect current operations. According to our doctrine, it is called the area of operations.³⁰

Ground commanders must also be concerned with enemy forces outside their area of operations which could influence their future operations.³¹ Enemy formations in this area are considered to be in the

ground commander's area of interest. Areas of operations and interest vary with the size of the ground force and the nature of the operation. Even though technological advances in today's military equipment have probably made them obsolete, U.S. Army doctrine still shows typical areas of operations and interest as depicted in figure I-1. These areas are shown in terms of the amount of time it would take enemy forces to become a part of the close battle. In different terrain, the times would translate into different distances in answer to the question how deep is deep enough?

Areas of Operations		Areas of Interest	
Level	Time (hours) beyond the FLOT	Level	Time (hours) beyond the FLOT
Battalion	3	Battalion	12
Brigade	12	Brigade	24
Division	24	Division	72
Corps	72	Corps	96

figure I-132

Conclusions About the Deep Attack

With respect to the ground tactical battle, the idea is to have one integrated and seamless battlefield with the separate parts interrelated over time.³³ However, because the Air Force will usually take the lead in operational interdiction, the tactical deep fight and operational battle must, to some degree, remain separate but related. Furthermore, it was shown that unity of effort throughout the depth of the JFLCC's area of operations is vital to the success of ground operations. Army

commanders must control interdiction fires in the tactical deep battle, but that is the only place they should automatically be given doctrinal responsibility. At the operational level, it is the JFC's responsibility to designate who commands and controls interdiction. A graphic depiction of the tactical and operational deep battles, as envisioned by the author, is shown at figure III-4, page 34.

Section III

DEEP BATTLE REQUIREMENTS AND ASSETS

The single biggest maneuver factor on the battlefield was the Apache.... Who won the battle [Gulf War]? Certainly, the artillery and the Apache. It will be hard to remember that eleven years from now when you are in charge of force development working 20 hours a day. The artillery and the Apache are the hammers that make the end game work.³⁴

- MG Barry R. McCaffrey

Current joint publications state that ATACMS and the AH-64 are weapon systems capable of conducting interdiction.³⁵ The introduction noted that these systems, in combination with JSTARS, allow the ground commander to acquire and engage targets at battlefield depths previously reserved for the Air Force. The purpose of this section is to examine each of these systems with respect to both the ground and air commander's interdiction needs. Several points of consideration should be kept in mind.

The most important considerations for integrating fire support into ground operations are each weapon's adequacy, flexibility, and

continuity.³⁶ Adequacy concerns the system's ability to accomplish the mission. It must be able to range the commander's area of operations, and have a reasonable expectation of mission survivability. If a firing platform, it must also be able, in terms of accuracy and munitions effects, to put the desired effect on the target. Flexibility means being able to engage different targets across a broad front in a variety of terrain and weather; it also relates to the speed with which targeting can be changed. Continuity means the system is available when needed.

The four tasks for fire support must also be considered. The three tasks applicable to the deep battle are: synchronizing all means of fire support, supporting the commander's battle plan, and sustaining deep fire support.³⁷ While not all these tasks entail attacking enemy forces, they all have a major effect on the deep battle. For example, a commander may be limited as to how deep he can send AH-64s by how deep he can establish a forward arming and refueling point (FARP). Therefore, these tasks must also be considered when deciding what weapon system to employ in any given situation.

The following subsections will examine JFLCC's and JFACC's use of JSTARS, ATACMS, and the Apache helicopter. Each system will be considered in terms of its advantages and disadvantages with respect to the aforementioned criteria as they relate to interdiction.

Advanced Tactical Missile System

ATACMS is an inertially guided, semi-ballistic missile fired from the M270 Multiple Launch Rocket System (MLRS) launcher. Each MLRS launcher can carry a pod of two ATACMS missiles.³⁸ With the advent of ATACMS, the Army has taken a major step toward having a piece of the

deep interdiction mission.

ATACMS provides the ground commander a dramatic increase in range and accuracy of his deep fire assets. While the unclassified range of ATACMS is 130 km, the extended range ATACMS, currently under production, is anticipated to range between 250 and 300 km depending on the warhead.³⁹ ATACMS is normally employed well forward to get the maximum effect of its range.⁴⁰ Mobility can be a disadvantage as missile systems are limited by vehicle speed and terrain.

There may be times when ATACMS fires should be controlled by the JFACC. While a 130 km range puts ATACMS at about the limit of corps planning, an increase to 250 or 300 km would allow it to strike targets well beyond those required to shape the tactical fight. With respect to the basic ATACMS missile, the ends of JFACC control would not justify the effort since the range of ATACMS, for all practical purposes, would not extend beyond the ground commander's area of operations (as proposed in Section IV). The extended range ATACMS is another matter. It will have the capability to provide a major contribution to operational interdiction by firing between 120 and 170 kilometers deeper than required for the ground commander's tactical fight.

ATACMS is a very accurate missile. Even though it is technically less accurate than cannonfire, its large kill radius makes up for the difference. This makes ATACMS good against large area targets, but it should only be used on targets that are firmly located.⁴¹ If used on a target that is inaccurately located, more missiles will have to be expended to achieve the desired effects. Since ATACMS will be a very limited asset on the future battlefield, such expenditures are unwarranted. Because ATACMS targets need to be observed, they are

best employed against stationary targets. Deep battle requirements against which ATACMS could be used include counterfire, SEAD, and enemy fire support assets, as well as assembly and staging areas.⁴²

Additionally, the ATACMS Block I submunitions are designed for relatively soft targets. As a result, using the munitions on armored forces is wasteful.⁴³ However, when fielded, the Block II warhead will contain smart munitions capable of engaging hard and moving targets.⁴⁴ These munitions, combined with the depth provided by extended range ATACMS, will give both ground and air commanders great flexibility in fulfilling their responsibilities.

The timeliness of ATACMS fires can either be an advantage or a disadvantage. On the positive side, they will be available in all weather, day and night. When used in a decentralized mode (not the normal procedure), launch can be near real-time. While missiles can be launched very quickly, timeliness can be a problem. When used in its normal centralized mode, ATACMS requires valid target information up to 30 minutes before launch.⁴⁵

The AH-64, Apache Helicopter

There are many advantages to using attack helicopters deep. One advantage is range, with respect to which the AH-64 is limited only by fuel capacity and flight time. Fielding the Apache significantly improved the range capabilities of Army aviation. Cobra helicopters could penetrate up to 45 km beyond the FLOT, for about two hours duration.⁴⁶ With the AH-64, attack helicopters can routinely penetrate up to 120 km, and they did during Desert Storm.⁴⁷ In fact, Apaches were able to attack an Iraqi armor brigade 250 miles behind enemy lines.⁴⁸

However, to achieve these extended ranges, tradeoffs have to be made; either the use of external fuel tanks, or taking fuel with the force. Both options were used during the 1991 Gulf War, but both have drawbacks.

Because of a limited enemy air defense threat during Operation Desert Storm, it was possible to move fuel with the force when attacking 250 miles deep. To consistently strike targets deep in the corps sector will be difficult because in some threat environments it will be hard to conduct resupply by putting FARPs beyond the FLOT.⁴⁹ The air supremacy which coalition forces enjoyed during Desert Storm may not exist on the future battlefield, likely making this type attack the exception rather than the rule. As a result, moving fuel with the attacking force cannot be counted on as a method to get Army attack helicopters to the depths required to engage deep interdiction targets.

For intermediate ranges, external fuel tanks can be put on the aircraft in place of weapons racks. The AH-64 has mounting points for up to four 230 gallon auxiliary fuel tanks, increasing the range by about 180 nautical miles per tank for a maximum of 720 nautical miles.⁵⁰ However, one weapons rack is lost in this configuration, reducing the combat load of Hellfire missiles by twelve, for each tank added. During Desert Storm, Apaches routinely used at least one auxiliary tank, but using more than two radically reduces combat power. As with taking fuel into the attack, auxiliary fuel tanks allow the AH-64 to strike targets throughout the tactical deep fight, but only with difficulty can it assume operational interdiction missions.

Attack helicopter fires are highly accurate because they use direct fire weapons. Targets are under observation by both the helicopter scout section and the attacking pilot. Because fires are

observed, rounds can be adjusted quickly to compensate for a first round miss.⁵¹ This capability, along with the scout's ability to maintain surveillance on likely kill zones and avenues of approach, make the Apache effective against mobile targets. The unique combination of range, weapons effects, and accuracy means that attack helicopters are best suited for attacking moving enemy formations. Logically, their primary mission is the destruction of armor and mechanized forces.⁵²

There are other advantages to using attack helicopters in the deep attack. Because they are highly mobile, Apaches are well suited to situations in which fires must be massed rapidly or where terrain restricts the movement of ground forces. They are also fast enough to respond across a wide front.⁵³ This means attack helicopters have the speed and mobility to respond rapidly to changes in the tactical situation - they have flexibility. Weapons stand-off is another significant advantage. In the Gulf War, Apache helicopters engaged enemy forces at three times the range of Iraqi tank guns.⁵⁴

Availability can generally be considered an advantage of Army aviation. Attack helicopters are a primary tool for ground commanders to influence the battle at the critical time and place. Therefore, Apaches are usually retained by the higher headquarters to which they belong, meaning they will be available for that headquarter's deep battle.⁵⁵ On the other hand, to ensure attack helicopters are massed and not employed piecemeal, doctrine calls for employing aviation units intact.⁵⁶ From an availability perspective, this requirement means only a relatively small number of targets can be engaged at a time. With respect to this analysis, it constrains the use of AH-64s by both the ground and air commanders.

One disadvantage to using AH-64s deep is that they may not be employed in a timely manner. Attack helicopter units normally require 24 to 48 hours of planning time, although this time can be reduced significantly by the use of warning orders.⁵⁷ Loiter time over the objective is also short.⁵⁸ Additionally, attack helicopter operations can be limited by weather and visibility. Effectiveness is somewhat reduced at night. On the positive side, technology is steadily reducing the limitations nature imposes on army aviation. Still, timeliness would not be a problem with respect to the JFC's apportionment in the 72 hour Air Tasking Order (ATO) cycle should he determine a requirement for the JFACC to control some attack helicopter assets.

Another disadvantage of attack helicopters is survivability. Due to their slow speed and light armor, the AH-64 is vulnerable to enemy air defenses, to include small arms fire. Air Marshal Sir Patrick Hine, past commander of NATO's 2nd Allied Tactical Air Force (ATAF) says, "...relatively low speed helicopters would be vulnerable to enemy air defense weapons and small arms fire."⁵⁹ At the same time, the ability to fly nap of the earth can reduce the exposure to hostile air defenses.⁶⁰

In conclusion, attack helicopters are the tool of choice to attack enemy armored forces. They are accurate. Their range, mobility, and flexibility allow them to react rapidly across a wide front, and where terrain restricts ground movement. Apaches can attack targets throughout the tactical deep battle, but would be less successful, or have difficulty, supporting operational interdiction. High losses should be expected when sending AH-64s deep against targets with extensive air defenses. Commanders will have to weigh expected losses against the benefits gained, and the other assets available. Availability limits attack

helicopter support to both Army and Air Force missions simultaneously.

Joint Surveillance and Target Acquisition System

JSTARS is an airborne radar platform designed to provide Army commanders with continuous, wide-area surveillance of an Army corps size area. Designed to meet a multi-echeloned Soviet conventional forces threat in Europe, it can detect, classify, and track moving and stationary ground targets, including rotating antennas, and slow moving aircraft.⁶¹ The fielding of JSTARS gives commanders an unprecedented ability to detect targets deep (greater than 200 km), accurately report enemy locations (within 100 meters), in near real time (less than 60 seconds from the time of detection).⁶²

JSTARS can provide near-real time targeting data to a variety of precision long-range attack weapons. There are two data links, one Army and one Air Force, that provide information and targeting data to their respective C3I nodes.⁶³ During the 1991 Gulf War, the services rarely developed targets jointly, but generated them separately. Only USAF fighter aircraft and Army artillery used JSTARS information to engage Iraqi forces (the AH-64 is capable of using the information, but procedures were not worked out to do so).⁶⁴ One method to improve attack response is to directly link the intelligence sensor to the weapon platform. This method reduces the time spent collecting, processing and passing information from an intelligence officer to a targeting section, then to a fire control element, and finally to a firing unit.

JSTARS is capable of passing data directly to the attacking weapon system. An example is the Advanced Field Artillery Tactical Data System (AFATDS), developed under the artillery's concept of System of

Systems.⁶⁵ It allows Army artillery to react much quicker than army aviation or TACAIR. With regard to this capability, Loren Larsen, deputy director of the Pentagon's Deep Strike System Office states, "....emphasis on rapid communications and fast ground-launched ATACMS gives the Army an advantage over the Air Force which relies on piloted aircraft that react more slowly."⁶⁶ This observation was borne out in the Gulf War when one cause of failed target handoffs was an inability of attack aircraft to respond to near-real time targeting data which required aircraft to make inflight mission changes.⁶⁷ With JSTARS's capabilities, it is not surprising that the Army and Air Force are in competition over its use in the deep fight.

JSTARS has two different modes of operation. In the wide area surveillance (WAS) mode, it provides wide area coverage, painting an intelligence picture of the battlefield. JSTARS can also zoom in on one portion of the battlefield in the synthetic aperture radar (SAR) mode. During Desert Storm, the Army desired the WAS mode for decentralized situation development and target selection. The Air Force desired a very centralized control of JSTARS at theater level, in the SAR mode, as a precise targeting tool.⁶⁸ Currently, JSTARS is not capable of using both modes at the same time.

While JSTARS did not provide simultaneous support to both the Army and the Air Force during Operation Desert Shield/Storm (it supported both services by providing data to first one, then the other), developments should soon be made to accomplish said support. JSTARS was not completely developed when it was deployed to the Gulf; a prototype was sent. The lack of concurrent support to both Army and Air Force was primarily due to the technological immaturity of the

system. System upgrades currently planned and budgeted, along with normal technological advances, are expected to solve the problem.⁶⁹ This should resolve some of the competition between the services, allowing simultaneous support of ATACMS, AH-64s, and USAF aircraft by both air and ground commanders.

One limitation of JSTARS is survivability. The E-8A (militarized Boeing 707) platform is a large aircraft which reflects a big radar signature. Additionally, there is a tremendous radar and radio transmission signature. Combined with a lack of maneuverability, these traits make JSTARS a high-payoff target that is easy to locate and shoot down.⁷⁰ To protect the aircraft, USAF combat air patrols must be flown. JSTARS can also employ standoff procedures, using its 200+ km range to accomplish its mission from friendly territory, thereby increasing survivability.⁷¹ Even though 200 km is a tremendous range, the standoff requirement means that JSTAR's range will not extend much beyond the corps commander's area of responsibility. While JSTARS supports the ground commander's deep battle, it does not support the Air Force deep interdiction mission nearly as well.

Conclusions About Attacking Deep

There are two conclusions drawn in this section which bear directly on the thesis statement. First, while ATACMS and Apache helicopters give ground commanders an unprecedented deep strike capability, they provide limited support to the Air Force's operational interdiction mission. The current version of ATACMS cannot fire much beyond the ground commander's deep battle requirements. AH-64s can strike well beyond the ground commander's area of operation, but only

by reducing the firepower they can deliver on the objective. On the other hand, when the extended range ATACMS is fielded, the Army will have a weapon capable of conducting operational interdiction.

Providing the extended range ATACMS a real-time data downlink from JSTARS will mean the Army can add a significant new weapon to America's deep interdiction arsenal. While JSTARS cannot 'see' deeper than about 200 kilometers, this is well into the joint battle area. Near real-time targeting could provide the JFACC a capability to react much quicker to temporary targets of opportunity than he currently can with piloted aircraft. Furthermore, with future upgrades that are already planned and funded, JSTARS will be able to support both the ground and air commanders simultaneously.

Section IV

Discussion

Because [the Air Force] absolutely would not fly short of the FSCL before G-Day, we kept the FSCL in close to facilitate air attack of division and corps high priority targets. This caused two problems. Every fire mission or AH-64 attack beyond the FSCL had to be carefully and painstakingly cleared with the Air Force. Even counterfire required this lengthy process. Equally bad, air sorties beyond the FSCL were completely the domain of the Air Force. VII Corps could nominate targets beyond the FSCL, but could never be sure they would be attacked.⁷²

- BG Creighton Abrams
VII Corps Artillery Commander

The question of JFACC control of Army deep fire assets is only one portion of a larger issue about Army-Air Force responsibilities in the joint battle area. To answer the thesis question, one must closely

examine the larger issue and the entire deep battle environment. The essence of the problem concerns two conflicting interests: the effective engagement of targets and the prevention of friendly casualties.⁷³ Effective engagement concerns both the duplication of effort between Army and Air Force systems, and the facilitation of attacks on time-sensitive targets of opportunity.

The Air Force position on deep battle is that interdiction is an operational level effort, directed by airmen, and under the operational guidance of the theater commander. Furthermore, the Army deep fires concept is an attempt to gain control of theater interdiction assets normally controlled by the JFACC, and justify the extended ranges of newer deep fire assets.⁷⁴ Therefore, the Air Force position is that the JFACC should be responsible for all attacks beyond the FSCL. AFM 1-1 states:

Because synchronization is usually vital to effectiveness, the theater commander should make the JFACC responsible for controlling the overall interdiction effort when aerospace forces provide the preponderance of interdiction capability.⁷⁵

By controlling the overall interdiction effort, the JFACC would control Army deep fire assets taking part in the interdiction fight. Central to the controversy is the Fire Support Coordination Line.

The specific issue concerns coordination beyond the FSCL. The Air Force position is that coordination beyond the FSCL is just as important as coordination inside it.⁷⁶ There are good reasons for coordination beyond the current FSCL. The Air Force concern about duplication of effort is a valid one.⁷⁷ Unity of effort in the deep interdiction fight is just as important as in any other battle or campaign. Additionally, with the number of aircraft and projectiles in

the air on the modern battlefield, fratricide of Air Force pilots is another valid concern.⁷⁸ From a doctrinal perspective (see key definitions, page 4), any requirement to coordinate beyond the FSCL seems to defeat its purpose: the expeditious attack of targets beyond it.

With respect to interdiction, Army commanders are primarily interested in defeating enemy forces capable of having a near term effect on friendly ground units, attacks formerly called Battlefield Air Interdiction or BAI. These are enemy forces in the deep battle area as discussed in Section II of this monograph. As LTC John W. Reitz states, "The distinction between air interdiction operations using Army assets or deep fires in support of Army corps operations is not clear."⁷⁹ There are two aspects to the problem. They center on what assets the Army commander has to shape his deep battle, and placement of the FSCL.

Currently, the only weapons a ground force commander has to shape the battlefield deep are the AH-64 helicopter and ATACMS. He can nominate AI targets that have a near-term impact on his close fight, but he does not have final say on their execution. This inability to control Air Force missions deep makes it all the more important that he retain control of his organic deep fire assets. However, FSCL placement constrains the employment of even these assets.

The FSCL was designed as a permissive fire support coordination measure to facilitate the engagement of targets beyond it. FM 6-20 states that if the commander's intent is to delay, limit, or disrupt enemy forces, the FSCL is typically placed beyond where the commander wants to shape deep operations. On the other hand, if the commander's intent is to destroy enemy forces, the FSCL should be placed as close as possible to friendly forces.⁸⁰ Placing the FSCL deep would allow the commander to

tightly control what targets are engaged at specific times, while placing it in close maximizes the ability of interdiction forces to destroy whatever enemy forces are beyond the FSCL. However, from the perspective of the ground commander, current practice creates problems whether the FSCL is close-in or deep.

Problems with a deep FSCL were demonstrated during Operation Desert Storm. Just prior to termination of the conflict (on 27 February 1991), VII Corps was attempting to prevent the escape of Iraqi forces north of the Euphrates River. Air interdiction would have been the preferred method to stop the Iraqi retreat, but VII Corps could not get approval to fly sorties short of the FSCL.⁸¹ Throughout the conflict, the Air Force refused, or after the ground offensive began was reluctant, to fly short of the FSCL for fear of inflicting friendly ground casualties. This was one case where the American military suffered because a nondoctrinal application of the FSCL restricted aircraft from accomplishing a mission for which they were best suited.

Placing the FSCL in close to friendly forces also has an adverse impact on the ground fight. The Air Force doctrinally controls missions beyond the FSCL.⁸² Therefore, it is not feasible for the ground commander to move the FSCL in close to friendly lines in an effort to get air sorties into the action as he gives up positive control over his tactical deep battle (this reiterates the point about ground commanders nominating targets to the Air Force, but not having final say on whether they will be attacked or not).

Over time, the FSCL has evolved, in the eyes of many soldiers, from a permissive fire support measure to a restrictive one. It is often thought of as a division between close air support and interdiction, even

though targets near the FSCL but beyond it can have a near term effect on the battle.⁸³ The implication is that the FSCL has, in effect, turned into a boundary dividing the Army and Air Force battles. Essentially, when a corps commander establishes a FSCL, he relinquishes control over the application of firepower in part of his assigned area of operations.⁸⁴

Whether the FSCL is placed in close or far out, so long as coordination with the Air Force is required to engage targets beyond it, it will be a restrictive measure for Army commanders. When the FSCL is placed in close to friendly forces, every ATACMS or Apache mission beyond it requires coordination through the Air Force. When the FSCL is placed far out, there are no air interdiction sorties flown in support of the commander's close battle. Current use of the FSCL is illustrated in Figure III-1.

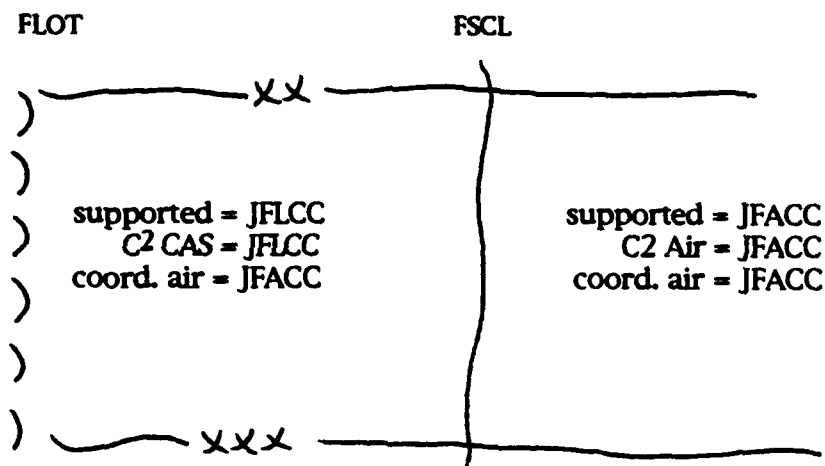


Figure III-185

There are valid points in support of both the Air Force and Army positions. The Air Force is correct that, on today's battlefield,

coordination has to take place on both sides of some line, currently called the FSCL. The Army is correct that the current system, particularly as it was used in Operation Desert Storm, does not allow ground, particularly corps, commanders to shape the battlefield deep to ensure victory in their close battle. The United States Air Force Air Combat Command (USAFACC) has proposed a solution to the problem.

Air Combat Command Proposal

Air Combat Command has proposed a battlefield framework divided into three areas of responsibility: one area from the FLOT to the FSCL, a second from the FSCL to a boundary between the JFLCC and JFACC, and a third area beyond the boundary. Command and control relationships for the proposal are shown in figure III-2.

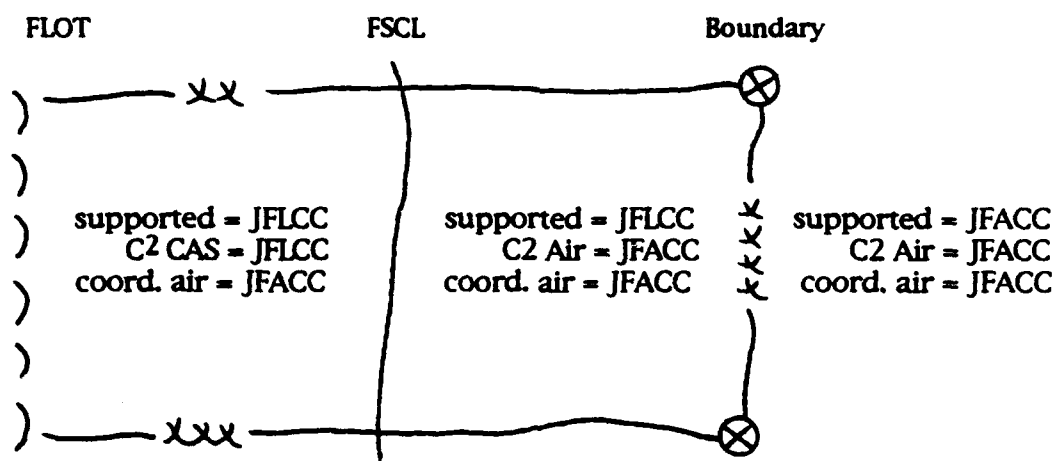


Figure III-286

Under the USAFACC concept, the JFACC would use the overall interdiction priorities, and interdiction priorities specifically apportioned for use within the boundary, to plan and execute theater

wide interdiction efforts. There are similarities between the USAFACC proposal and concepts already in existence. There is a similarity between the proposal's use of a boundary and the NATO RIPL, both designating the limit of ground commander planning. Additionally, apportioned interdiction aircraft in support of the land fight is reminiscent of BAI.

The proposal's use of a boundary in place of a fire support coordination measure is a positive step forward. Currently, Army doctrine recognizes lateral and rear boundaries (see Figure III-3.a.) but not boundaries forward in sector.⁸⁷ However, as the Army increasingly gains the ability to fight deep, the delineation of a commander's forward area of responsibility becomes more important. The importance of this issue was recognized by NATO when it delineated the extent of corps planning with the RIPL.

Current Boundary Doctrine

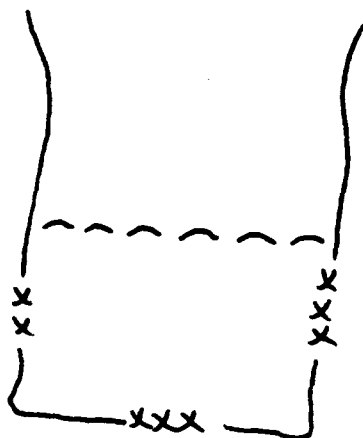


Figure III-3.a.

Proposed Boundary Doctrine

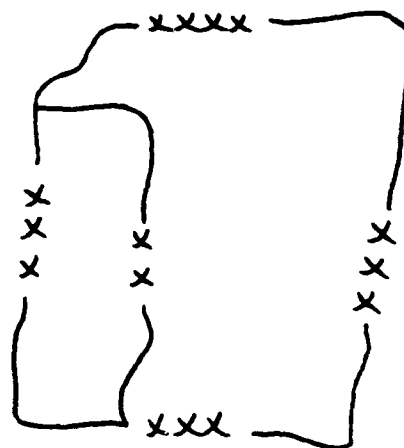


Figure III-3.b.

Figure III-388

There are many advantages to using a boundary to delineate the ground commander's deep battle area instead of a line such as NATO's RIPL. Boundaries are not only planning lines, but they also delineate where commanders can maneuver (important in the deep battle with respect to aviation as well as long-range reconnaissance and special operations units). More importantly, they are also fire support coordination measures. The critical aspect is that each portion of the battlefield has one person responsible to coordinate and control fires, resulting in unity of effort.

Using a boundary to separate the JFLCC and JFACC areas of operation is also consistent with current fire coordination procedures. This monograph has demonstrated that the FSCL is currently a de facto boundary between Army and Air Force operations anyway. It has also concluded that there is a need for the air commander to coordinate fires in his area of responsibility. Currently, there are no provisions in joint doctrine to give the Air Force a piece of ground for which it is responsible. However, Army commanders have no valid argument to control territory deeper than that required to set the conditions for the tactical fight. Thus, another conclusion of this study is to put a boundary on the ground and let the Army be responsible for fire and maneuver inside it, and the Air Force outside it.

The next question would be placement of the boundary. From the ground commander's perspective, it has to go deep enough to allow him to set the conditions for the future close fight. The USAFACC proposal has the JFC setting the boundary.⁸⁹ As the theater commander responsible for both the air and ground components, this is obviously appropriate.

Giving the ground commander a boundary implies that he will be able to control what takes place inside it. The USAFACC proposal is that the JFLCC would be responsible to synchronize maneuver, fires, and interdiction through target priorities, desired effects and timing of missions.⁹⁰ This sounds pretty close to the author's definition of control (see key definitions, page 3); but doesn't quite come close enough because command and control of interdiction is retained by the JFACC. It is the same issue that existed during the debates over BAI. While recognizing the importance of apportioning interdiction assets to support the land commander, it is inconsistent not to give him actual control of what targets those assets engage. The USAFACC proposal clearly shows the JFACC controlling and coordinating air attacks between the FSCL and the boundary. This issue is particularly important if the ground commander's organic interdiction capable weapons, ATACMS and AH-64s, are taken away or apportioned.

An Alternate Proposal

While the USAFACC proposal is a major step forward, and may even be workable as it is, the services can do better. The author's fundamental difference with the Air Force proposal is not the geometry of the battlefield, but control and coordination of interdiction between ground and air component commanders from the FSCL to the boundary.

It has been established that the JFLCC must be able to orchestrate his own deep fight to ensure victory at the tactical level. To fight a synchronized tactical deep battle, he must be able to control interdiction that has a near term effect on the close-in fight. Therefore, the ground commander should have control of interdiction

area of operations.

Interdiction targets in any specific area of the battlefield should not be controlled by the commander with the preponderance of assets, but by the commander responsible for operations on that particular piece of ground. A problem with this proposal, from an Air Force perspective, is that interdiction strikes should be planned and executed by professionals who have expertise with the systems being employed. One of the defining characteristics of interdiction is that positive control during mission execution is not required, a situation ideal for the use of mission orders.

Mission orders would solve the problem by allowing the JFLCC control of targets while allowing the experts to plan and execute operations. The Chairman, Joint Chiefs of Staff (CJCS) recently stated in a Joint Operational Concepts memorandum that:

The supported commander should articulate clearly the vision of maneuver operations to those commanders that will apply interdiction forces within the boundaries to attack the designated interdiction targets or objectives. In particular, supported commanders should provide supporting commanders as much latitude as possible in the planning and execution of their operations. They should clearly state how they envision interdiction enabling or enhancing maneuvers and what they want to accomplish with interdiction (as well as those actions they want to avoid, such as the destruction of key transportation nodes or the use of certain munitions in a specific area). Upon understanding what the supported commanders want to accomplish and what they want to avoid, interdiction-capable commanders can normally plan and execute their operations with only that coordination required with supported commanders.⁹²

Mission orders would allow those who execute interdiction, whether the employed system be ATACMS, Apache helicopters, or air sorties, to select the appropriate tactics and techniques for engaging any particular

target. In short, mission orders allow for the application of expertise, while allowing supported commanders to fight their battles according to their own priorities. A legitimate concern relates to the primary limitation of mission orders for interdiction operations - they are fine so long as coordination to prevent fratricide is not required during execution.

Retaining the FSCL

The problems with the FSCL as it is currently used have already been described. This does not mean there is not utility in retaining the FSCL, without radically altering its definition, so as to protect friendly soldiers. The purpose of fire support coordination measures (FSCMs) are to "facilitate the rapid engagement of targets, and at the same time, provide safeguards for friendly forces."⁹³ Placing the FSCL close to the friendly FLOT while allowing the use of mission orders beyond it would both facilitate target engagement and protect soldiers.

The practical result of retaining the FSCL while adding a boundary is to create a two-line system of joint interdiction coordination. One line, the FSCL, would ensure that friendly forces are protected while facilitating the rapid engagement of targets beyond it through the use of mission orders. The second line, the boundary, would define the limit of the ground commander's responsibility similar to NATO's RIPL, but would be more encompassing. The boundary would divide the battlefield into two areas of responsibility: one for the Army and the other for the Air Force.

The idea of compartmenting the battlefield is controversial. The Chief of Staff of the Air Force, General Merrill McPeak, concerned

about an Air Force ability to engage targets short of the FSCL, has stated, " ...our focus now is how to attack the target jointly, rather than a battlefield hived off into exclusive domains."⁹⁴ General McPeak voices a valid concern that the proposed system does not represent a seamless battlefield, but a 'hived-off' battlefield.

The answer has to do with unity of effort. The preferred method to achieve unity of effort is to have unity of command. Unless taking part in combined operations with allies, there is no good reason not to have unity of command on all parts of the battlefield. To have unity of command, one person has to be responsible to coordinate fires in all areas of the battlefield. At the same time, it is clear the Army and Air Force each have roles on or above the ground area of operations. The Army has a primary role in the close battle at tactical depths and the Air Force a primary role in the deep battle at operational depths. The transition of responsibilities has to take place somewhere.

This monograph's proposal has a smooth transition that supports both ground and air commanders. Concerning methods of interdiction coordination, Joint Pub 3-03 says

Procedures must be simple and effective; based on the needs of the JFC, and give due consideration to individual Service capabilities for speed, range, maneuver, weapon system characteristics, EW ability, and intelligence gathering.⁹⁵

Using an FSCL inside a ground commander's assigned area of responsibility, delineated by a boundary, is quite simple. Having the JFC assign the ground commander's area ensures they support the theater plan, while allowing ground commanders to shape the tactical fight. Finally, the use of mission orders between the FSCL and the boundary

allows for the transition between ground and air commander's control of interdiction targets. This proposal addresses legitimate USAF concerns about rapid engagement of targets by air sorties. With respect to the topic question, the ground commander would retain control of ATACMS and Apaches (and TACAIR sorties) in his area of operations, while he would give up control beyond it.

Apportionment of Army Deep Battle Assets

The idea that the ground force commander should be ready to give up control of ATACMS and the AH-64 to the Air Force for use in the operational interdiction campaign raises the question of how this would happen. Since the JFC apportions USAF aircraft, it seems that would be an appropriate way for him to prioritize the Army interdiction effort as well.

There is no reason the JFC should not be able to apportion Army deep attack assets similar to the way he currently apportions air sorties. U.S. joint doctrine does not prohibit such apportionment, and even indicates that it is permissible. Joint Pub 3-03 states that the JFC, "... sets interdiction priorities, provides targeting guidance, and determines the weight of effort to be devoted to joint interdiction operations."⁹⁶ The publication does not differentiate between air and ground interdiction assets, implying the JFC has authority to control all interdiction weapon systems, regardless of the service to which they belong.

The CJCS Joint Operational Concepts memorandum goes even farther. It differentiates between interdiction deep in the enemy rear that supports the air commander's strategic and operational interdiction responsibility, and interdiction with an operational and tactical impact

on maneuver commanders.⁹⁷ It also clearly indicates a JFC responsibility to prioritize both:

Thus, Joint Force Commanders vary the emphasis upon interdiction operations and surface maneuvers depending on the strategic and operational situation confronting them. Joint Force Commanders may choose to employ interdiction as a principal means to achieve the intended objective (with other components supporting the component leading the interdiction effort). Where maneuver is part of the Joint Force Commander's concept, the Joint Force Commander may synchronize that maneuver and interdiction.⁹⁸

By directing that other components support the component leading the interdiction effort, the document strongly indicates that Army deep attack assets could be expected to support the air commander in some circumstances.

Section V

Summary, Conclusions, and Recommendations

The principles of Mass were better stated: "Mass is the concentration of optimum combat power selected from the available maximum, to be used at a critical time and place."⁹⁹

- J. M. Cameron

In the final analysis the importance of the topic question, and all related questions concerning joint interdiction, is the ability of the American military team to effectively apply combat power to achieve operational objectives directed at obtaining strategic goals while protecting friendly servicemen. As the one man responsible for both the air and ground campaigns, the JFC should apportion Army

interdiction assets, as well as TACAIR sorties, to support both. This conclusion only makes sense in the context of several other conclusions drawn in this monograph as follows:

Conclusions and Recommendations:

1) The Army's deep battle is a tactical fight that remains connected directly to the close battle. Army commanders must have an area of responsibility large enough to ensure they can shape and ensure victory in close, decisive operations. The only reason an Army ground force commander must control deep fires is to ensure tactical success. The author recommends that Army doctrine clarify the distinction between the tactical deep battle and the operational fight. Additionally, that Army doctrine retain the close connection between close and deep operations at the tactical level of war.

2) The old concept of the FSCL is obsolete. In its place, there should be two new lines. The first is actually a boundary, established by the JFC, delineating the depth of the JFLCC's area of responsibility. The second line would be a restrictive fire support coordination measure, similar to the FSCL, intended to protect friendly ground forces while facilitating the engagement of targets beyond it through the use of mission orders.

3) The Army should control and coordinate all fires, to include interdiction by Army and Air Force deep fire assets, throughout the assigned area of operations. This would include from the proposed FSCL

to the proposed boundary.

4) The Air Force should control and coordinate all fires beyond the proposed boundary. This is in the interest of unity of effort in the operational and strategic interdiction campaign, and to prevent the fratricide of friendly pilots.

5) With the exception of the extended range ATACMS (yet to be fielded), Army deep attack assets cannot provide significant support to the Air Force in conducting operational and strategic interdiction. JSTARS can see into the joint battle area, but it was designed, and is best suited, to support the corps commander's deep battle.

6) Working in combination, JSTARS and the extended range ATACMS can give the Air Force a new, potent, and useful weapon in the operational interdiction campaign. It could give the JFACC a near real-time engagement capability he does not currently have against fleeting targets of opportunity. Since JSTARS should be able to support both ground and air commanders simultaneously in the future, allowing JSTARS to support deep interdiction where it is capable would bring no adverse impact on the ground commander's fight.

7) The JFC can and should apportion Army deep attack systems, specifically ATACMS and AH-64 Apache helicopters, to support both the land battle fought by the JFLCC and the deep interdiction campaign fought by the JFACC in order to achieve the objectives of his theater campaign plan.

Glossary of Secondary Terms

1) **Air Interdiction (AI):** AI is an interdiction subset - air operations that delay, disrupt, divert, or destroy an enemy's military potential before it can be brought to bear against friendly forces.

2) **Joint Precision Interdiction (JPI):** JPI is another subset of interdiction. It is a refinement of NATO's concept of Follow-On Forces Attack (FOFA), required because of the changing security environment, (including future force parity and technological advances by potential enemies, in Europe).¹⁰⁰ JPI attacks enemy mobility potential to establish an allied advantage, allowing for decisive engagements at the time and place the JFC chooses.¹⁰¹ The essence of JPI is to locate the enemy deep, identify priority targets and blind enemy sensors, then attack selected enemy moving targets in near-real time.¹⁰² The U.S. Air Force (USAF) nonconcurred with the Final Draft of Joint Pub 3-03.1, Doctrine for Joint Precision Interdiction. The reason is that the Air Force believes that interdiction, planned and coordinated by the JFACC, already attacks enemy mobility in a manner responsive to the JFCs overall objective.¹⁰³

3) **Deep Fires:** Fires executed in the ground commander's deep battle area. FM 6-20 states, "The objective of deep fires is to functionally kill specific enemy capabilities which could affect the successful accomplishment of the corps objectives."¹⁰⁴ The USAF is on the record as stating 'deep fires' are the same as interdiction, and that the term was

created by the Army in an attempt to justify new systems of increased range, to include ATACMS and the AH-64 helicopter.¹⁰⁵

4) Operational Fires: The application of firepower to achieve a decisive impact on the conduct of a campaign or major operation.¹⁰⁶ The attack of purely operational level targets separates operational fires from deep fires. This does not mean that operational fires cannot be conducted as low as corps level.

5) Artillery Deconfliction Line: The artillery deconfliction line is a non-doctrinal term which was proposed by the USAF in the 1991 Gulf War, and used by the U.S. Central Command (CENTCOM). It allowed artillery units to fire at maximum range as long as trajectories did not reach a maximum ordinate at or above 20,000 feet. The JFACC would coordinate routes with Army fire support elements (FSEs) for flights below the deconfliction line from the corps rear boundary to the FSCL.¹⁰⁷

6) Boundary: A control measure normally drawn along identifiable terrain features and used to delineate areas of tactical responsibility for subordinate units. Within their boundaries, units may maneuver within the overall plan without close coordination with neighboring units unless otherwise restricted. Direct fires may be placed across boundaries on clearly identified enemy targets without prior coordination, provided friendly forces are not endangered. Indirect fires also may be used across boundaries with prior coordination.¹⁰⁸

7) Battlefield Air Interdiction: A term no longer in the Air Force glossary of terms. Another subset of air interdiction, it is defined as: AI attacks against targets that have a near term effect on the operations or scheme of maneuver of friendly ground forces, but not in close proximity to friendly forces. As a result, while BAI targets required joint planning and coordination, they did not normally require continuous coordination during execution. Some soldiers believe the Air Force eliminated the term BAI to obfuscate the issue of interdiction support to the JFLCC.

ENDNOTES

¹George S. Patton, Jr., War as I Knew It (Boston: Houghton Mifflin Company, 1947), 357.

²Tom Donnelly, "Homing In: Air Force Looking at Gaining Control of Missile System" Army Times, 9 November 1992, 30.

³Anonymous, "Honing the 21st Century Technological Edge," based on the Defense Science and Technology Strategy published by the Office of the Director of Defense Research and Engineering, July 1992; printed in Defense 92, November/December, 39.

⁴Donnelly, 30.

⁵David MacIsaac, "Voices from the Central Blue: The Air Power Theorists," in Makers of Modern Strategy, ed. Peter Paret, 624-627 (Princeton: Princeton University Press, 1986), 638.

⁶Joint Publication (Joint Pub) 3-03, TEST PUBLICATION, Doctrine for Joint Interdiction Operations (Washington, D.C.: Joint Chiefs of Staff, 11 December 1990), I-1. see also: Joint Chiefs of Staff, A Doctrinal Statement of Selected Joint Operational Concepts (Washington, D.C.: Joint Staff, 23 November 1992), 14. In this statement, interdiction can also include action against the enemy's subsurface potential.

⁷Joint Publication (Joint Pub) 1-02, Department of Defense Dictionary of Military and Associated Terms (Washington, D.C.: Joint Chiefs of Staff, 1 December 1989), 32.

⁸Field Manual (FM) 101-5-1, Operational Terms and Symbols (Washington, D.C.: Department of the Army, 21 October 1985), 1-32.

⁹Joint Chiefs of Staff, 18 & 19. see also Joint Pub 3-09 (pg. D-8). It has a slightly different wording, stating that ground force fires beyond the FSCL should be coordinated with the JFACC, but that inability to effect this coordination will not preclude attack beyond the FSCL.

¹⁰James P. Kahan, "Air Support in CENTAG Deep Operations." in Military Review, August 1989; reprinted in ST 100-2 (Fort Leavenworth: Command and General Staff College, 31 May 1991), 4-42.

¹¹Armed Forces Staff College Publication (AFSC Pub) 2. Service Warfighting Philosophy and Synchronization of Joint Forces DRAFT (Norfolk, Virginia: Armed Forces Staff College, October 1991), I-3-17.

¹²Glenn K. Otis, "The Airland Battle," a message from the commander of U.S. Army Training and Doctrine Command in Military Review, May 1982, 2.

13FM 6-20, 1-1.

14Colonel John W. Reitz, co-author of the 1993 FM 100-5, interview with the author, 25 March 1993. Col. Reitz indicated that even though deep battle was mentioned in connection with the operational level of war in the 1986 FM 100-5, the concept was applied exclusively to the tactical level.

15Field Manual (FM) 100-5, Operations (Washington, D.C.: Department of the Army, 5 May 1986), 19.

16The 30 August 1992 draft of the new manual stated the commander *usually* fights deep to set the terms for future close operations, but that successful deep operations may mean the close battle is never fought. In the final draft, even this sentence lessening the link was removed. See Field Manual (FM) 100-5, Operations, DRAFT (Fort Leavenworth: School of Advanced Military Studies, 30 August 1992), 7-16. See FM 100-5, Operations, FINAL DRAFT (Fort Leavenworth: School of Advanced Military Studies, 19 January 1993), 7-21 for where it was dropped. Another example: FM 100-5 (30 August 1992), 9-13 and 9-14 said, "Commanders conduct deep operations to deny the enemy freedom of action and set the terms for future close battles." See FM 100-5 (19 January 1993), 10-18 for where it was dropped. Another example: FM 100-5 (30 August 1992), 7-17 and 7-18 said, "We usually measure the success of deep and rear operations by their eventual impact on the current and future close fights and by their contributions to major decisive operations." See FM 100-5 (19 January 1993), 7-22 for where it was dropped.

17Colonel Reitz interview with the author.

18Major General Jerry A. White, Chief of Infantry, comments during a presentation to U.S. Army Infantry officers at the U.S. Army Command and General Staff College, Fort Leavenworth, KS, 27 February 1993.

19FM 100-5 (19 January 1993), 7-18.

20Other than a limited human intelligence capability, a U.S. Army corps intelligence collection capability goes out to 150 km. Air Force tactical air reconnaissance (TAR) systems can provide intelligence collection well beyond 1,000 km. Field Manual (FM) 34-1, Intelligence and Electronic Warfare Operations (Washington, D.C.: Department of the Army, 2 July 1987), 2-44 and 2-46.

21LTC John W. Reitz, "Managing Intellectual Change: Army's Revision of FM 100-5." Army, September 1992, 46.

22 Perhaps the most conclusive proof of the concept that the Air Force has most of the weapons and will normally take the lead when it comes to fighting at operational depths is that it appears in U.S. Army doctrine, see FM 6-20, 1-3.

23Field Manual (FM) 100-5. Operations (Washington, DC: Department of the Army, 5 May 1986), 16.

24FM 100-5, 39.

25Kahan, 4-44.

26General Donn A. Starry, "Extending the Battlefield," Military Review, March 1981, 39.

27Field Manual (FM) 6-20-30, Fire Support in Corps and Division Operations (Washington, D.C.: Department of the Army, 18 October 1989), B-1.

28FM 100-5, 145.

29Lieutenant General William R. Richardson, "Winning on the Extended Battlefield." Army, June 1981, 36.

30FM 100-5, 35.

31FM 100-5, 35.

32FM 6-20, 3-44.

33Starry, 39.

34Colonel Burt S. Tackaberry, "24th Aviation Brigade in Desert Storm." Army Aviation, 30 June 1991, 28 and 29.

35Joint Chiefs of Staff, 14 and 15; and Joint Pub 3-03, II-5.

36FM 100-5, (5 May 1986), 44.

37FM 6-20, 1-3.

38Major (Retired) Leighton L. Duitsman, "Army TACMS," Field Artillery, February 1991, 39.

39Pamela Pohling-Brown, "ATACMS to Build on Gulf Successes?" International Defense Review, December 1992, 1197.

40Training Circular (TC) 6-60, Multiple Launch Rocket System (MLRS) Operations, (Washington, D.C.: Department of the Army, 28 September 1989), 4-0; and Major Roger P. Busico, Battlefield Air Interdiction: Airpower for the Future. M.M.A.S. Thesis. Fort Leavenworth, KS: U.S. Army Command and General Staff College, 1980, 36.

41United States Army Training and Doctrine Command (TRADOC) Handbook, Corps Deep Operations (ATACMS, Aviation, and Intelligence Support) Tactics, Techniques, and Procedures (Fort Leavenworth: United States Army Combined Arms Center, April 1990), 4-23.

- 42TC 6-60, 4-0.
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- 45Field Manual (FM) 6-20-30, 4-18.
- 46LTC L. D. Holder, "Maneuver in the Deep Battle," Military Review, May 1982, 57.
- 47VII Corps, Briefing Slides, subject: "Air-Ground Operations - Operation Desert Storm," 1991.
- 48Sean D. Naylor, "Tomorrow's Tank," Army Times, 5 August 1991, 24.
- 49Field Manual (FM) 17-50, Attack Helicopter Operations (Washington, DC: Department of the Army, 4 May 1984), J-5.
- 50Field Manual (FM) 1-111, Aviation Brigades (Washington, D.C.: Department of the Army, 27 August 1990), I-2.
- 51Busico, 38.
- 52FM 1-111, 3-9; and FM 6-20, 1988, 2-14.
- 53FM 1-111, 1-12.
- 54Naylor, 24.
- 55Busico, 38.
- 56Field Manual (FM) 1-100, Doctrinal Principles for Army Aviation in Combat Operations (Washington, D.C.: Department of the Army, 28 February 1989), 2-3. and FM 17-50, J-5.
- 57FM 1-111, J-2.
- 58FM 6-20, 1983, 3-44.
- 59Harold T. Gonzales, Tactical Air Support of Ground Forces in the Future (Maxwell Air Force Base: Air University Press, 1990), 44.
- 60Joint Publication (Joint Pub) 3-09, Doctrine for Joint Fire Support, FINAL DRAFT (Washington, D.C.: Joint Chiefs of Staff, June 1991), I-23.
- 61Major Leonard J. Sambrowski, The Joint Surveillance Target Attack Radar System: Can Procedures be Developed to Support the Requirements of the Land and Air Component Commanders? M.M.A.S. Thesis. Fort Leavenworth, KS: U.S. Army Command and General Staff College, 1992, 3. Additionally, Major Sambrowski is a JSTARS expert. He worked the JSTARS project during its final development, and flew

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63David A. Boutacoff, "Army Banks on Joint STARS for Airland Battle Management," Defense Electronics, August 1986, 80.

64Samborowski, 6 & 7.

65Colonel Jon C. Schreyach, "Deep-Attack System of Systems," Field Artillery, December 1989, 52.

66Anonymous, "Army Role in Deep-Strike Missions Debated," Army Times, 7 December 1992, 33.

67Colonel Martin S. Kleiner, "Joint STARS Goes to War," Field Artillery, February 1992, 27.

68Samborowski, 97.

69Samborowski, 142.

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71Glenn W. Goodman, Jr., "New Airborne Sensors Look Deep, Allow Army/USAF to Strike Deep," Armed Forces Journal International, January 1989, 84.

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