



**STRATEGY
RESEARCH
PROJECT**

The views expressed in this paper are those of the author and do not necessarily reflect the views of the Department of Defense or any of its agencies. This document may not be released for open publication until it has been cleared by the appropriate military service or government agency.

**ARMY/AIR FORCE CONFLICT OVER THE DEEP FIGHT:
TIME TO STOP THE BICKERING**

BY

**LIEUTENANT COLONEL SCOTT THEIN
United States Army**

**DISTRIBUTION STATEMENT A:
Approved for Public Release.
Distribution is Unlimited.**

USAWC CLASS OF 2001



U.S. ARMY WAR COLLEGE, CARLISLE BARRACKS, PA 17013-5050

20010514 055

USAWC STRATEGY RESEARCH PROJECT

Army/Air Force Conflict over the Deep Fight: Time to Stop the Bickering.

by

LTC Scott Thein
US Army

Robert Coon
Project Advisor

The views expressed in this academic research paper are those of the author and do not necessarily reflect the official policy or position of the U.S. Government, the Department of Defense, or any of its agencies.

DISTRIBUTION STATEMENT A:
Approved for public release.
Distribution is unlimited.

U.S. Army War College
CARLISLE BARRACKS, PENNSYLVANIA 17013

ABSTRACT

AUTHOR: LTC Scott E. Thein

TITLE: Army/Air Force Conflict over the Deep Fight: Time to Stop the Bickering.

FORMAT: Strategy Research Project

DATE: 10 April 2001

PAGES: 33

CLASSIFICATION: Unclassified

Boundaries and fire support coordination measures (FSCM) are used to de-conflict our battle space to facilitate the optimum application of combat power throughout the depth and breadth of the battle space. Doctrinal friction exists between the Army and the Air Force over the execution of Deep Operations. The purpose of this research is to analyze doctrinal conflict between the Army and Air Force views of deep operations, assess current tactics, techniques, and procedures (TTPs) established by CENTCOM and CINCUSFK and recommend doctrinal modification to establish parameters for the establishment and modification of boundaries and FSCMs. Desired endstate is a seamless battlefield that allows continuous and fully synchronized operations throughout the depth and breadth of the battlefield with the necessary flexibility to exploit the asymmetric advantages that the US military brings to the fight. Research will: focus on the historical evolution of doctrine to current state, contrast Air Force and Army perspectives, highlight TTPs used by CINCs/JTFs/JFLCCs to overcome the ambiguity and conflict between joint and service doctrine.

TABLE OF CONTENTS

| | |
|--|-----------|
| ABSTRACT | iii |
| TIME TO STOP THE BICKERING..... | 1 |
| PRIMACY-CONTROL OF DEEP OPERATIONS..... | 2 |
| PROMISES MADE, HAND SHAKES EXCHANGED | 3 |
| GOLDWATER-NICHOLS AND JOINT DOCTRINE..... | 5 |
| A BROKEN PROMISE-"PRIMACY" ESTABLISHED AS DESERT STORM TTP | 6 |
| CONCLUSIONS DRAWN FROM DESERT STORM | 6 |
| COHERENT JOINT DOCTRINE..... | 6 |
| JOINT WARFIGHTING-TRAINING REQUIRED | 7 |
| C2 RELATIONSHIPS..... | 8 |
| BATTLEFIELD FRAMEWORK, CONTROL AND FLEXIBILITY..... | 8 |
| ELIMINATING THE DOCTRINAL DISCONNECT. | 9 |
| EVOLUTION OF THE FSCL | 9 |
| THE FSCL ISSUE..... | 11 |
| FSCL NOW..... | 12 |
| WHERE TO GO FROM HERE?..... | 13 |
| FUTURE DEEP BATTLE DOCTRINE (RECOMMENDATIONS)..... | 16 |
| ESTABLISH JOINT EFFECTS COORDINATION LINE (JECL) IN JOINT DOCTRINE | 17 |
| REDUCE COORDINATION TIME FOR GRAPHIC CONTROL MEASURE CHANGES | 17 |
| MODIFY DEFINITION AND USE OF FSCL | 18 |
| DYNAMIC BATTLEFIELD ORGANIZATION. | 18 |
| CONCLUSION..... | 18 |
| ENDNOTES | 21 |
| BIBLIOGRAPHY..... | 25 |

TIME TO STOP THE BICKERING

On 22 May 1984, the Chiefs of Staff of the United States Air Force and Army signed a Memorandum of Agreement (MOA) to further Air Force – Army cooperation required to execute the Army's new doctrine of AirLand Battle. The event was the “high water mark” of Army/Air Force doctrinal cooperation on warfighting issues affecting both services. It put in place 31 initiatives that both services resolved to address, assigned specific responsibilities, and established a foundation upon which both services would write their respective doctrines. Further, the expense of new weapons systems and formal budgetary constraints provided incentives to avoid capability duplication.¹ Airmen and soldiers, facing the challenges presented by the Soviet Union, proved big enough to put parochial interests aside. Together, they worked to develop joint warfighting doctrine designed to defeat the most formidable opponent yet faced by this nation.

Joint warfare is team warfare and that's exactly where Joint Pub 1 starts.² Trust is the glue that keeps any team together. However, significant damage was done to the trust between the Army and Air Force during the Gulf War. It is not my purpose to blame any of the players. Certainly no one can argue with the final military outcome, but the war was prosecuted far differently than the Army and Air Force agreed just five years prior. The Army operated in the Gulf War with a set of expectations based on agreements and understandings signed by Air Force leadership only to have that doctrinal foundation shaken during the prosecution of combat operations during Desert Storm. Several circles in the Army felt betrayed by the operational realities of Desert Storm. Almost ten years have passed and most of the scars have healed over time. Joint warfighting battle labs and the establishment of Joint Forces Command now provide the venue for joint discourse needed to address the warfighting requirements of the 21st Century.

Twenty years ago the Air Force and the Army rose above hurt feelings and selfish desires for “credit” or “control” for the good of the team. This spirit of cooperation is precisely what is needed now as we write joint doctrine to guide operational warfighting in the 21st Century.

Background.

The role of the Air Force in support of ground combat has been contentious since the beginning of military aviation. Prior to the establishment of the Air Force as a separate service in 1947, General Carl Spaatz, Commanding General, Army Air Forces, promised General Eisenhower to continue Air Force support of the Army by establishing and maintaining a Tactical

Air Command (TAC).³ The cumbersome multiplayer air-ground coordination system used during the Korean War and largely ineffective air-ground support caused some in the Army to reassert influence over the Air Force. There remained a committed cadre of officers, led by General J. Lawton Collins, who believed that each field Army required dedicated support to address the fire power needs of the field commander. The Army was also concerned about the Air Forces devotion of multi-role bombers that could be called to do missions other than close air support, and wanted a say in the development of future close air support (CAS) systems. The Air Force rejected these initiatives reasserting their independence, countering that the initiatives were an attack on the Air Force operational principles of indivisibility of air power over the battlefield, and the command of all air assets by an air commander not under the control of the Army.⁴ Continued debate over the effectiveness of Air Force's support to land operations, and suspicion about the Air Force's willingness to provide support to ground operations provided the impetus for the development of the Army's current helicopter capability. Though the Vietnam War brought both services closer together, substantial disagreement and concern remained. Not until the development of AirLand Battle doctrine, the strategy to defeat a multi-echeloned ground force like the Soviet Army, were serious, service integrated operations were contemplated and committed to.

PRIMACY-CONTROL OF DEEP OPERATIONS

As the Army developed AirLand Battle Doctrine, Air Force leaders were also cognizant of the threat posed by the Warsaw Pact and envisioned defeating it in much the same manner as the Army. Air Forces in close coordination with ground commanders would be committed to battlefield support and battlefield air superiority.⁵ Key to the development of joint deep operational concepts developed in the 70's was a Department of Defense (DOD) Systems Analysis Office study asserting that interdiction near the close battlefield was more effective than classic long-range air interdiction that focused on railroad centers, bridges and roads. The study defined battlefield interdiction as air support integrated with ground operations.

The first steps toward closer post-Vietnam battlefield integration were embodied in the Bray-Elder papers produced in 1973. General Leslie Bray, Air Force director of Doctrine, Concepts, and Objectives, stated, "interdiction today has come to be identified almost solely with reducing the flow of men and materials. Indeed, if airpower can find and strike enemy forces...it might well emerge as a significant and perhaps decisive factor for countering enemy land forces."⁶ Though never signed by service chiefs, a key aim was to ensure both services' ability to operate as an integrated combat team. A central theme of the study was "primacy,"

defined as the authority to approve, disapprove, deny or delay combat and support operations.⁷ The Army was to have "primacy" 15-20 miles in front of the forward edge of the battle area (FEBA) with the Air Force exerting its "primacy" beyond that.⁸ Here are the seeds of the Air Force view to control all operations forward of the fire support coordination line (FSCL). This thinking may have heavily influenced Air Force officers being developed professionally during this era, such as the eventual Joint Forces Air Component Commander (JFACC) of the Gulf War, General Chuck Horner.

One of the most ardent supporters of the use of airpower to strike directly at the Soviet Army was the TAC commander, General Robert Dixon. Together with the TRADOC commander, General DePuy they set out to codify the procedures required to form a joint Air Force-Army battle team essential to countering the threat in Europe.⁹ The creation of the Air-Land Forces Applications (ALFA) directorate was to provide a forum to improve joint capabilities, procedures, and doctrine to win the air-land battle. The degree of cooperation was unprecedented and sent a clear message of teamwork throughout the services.

PROMISES MADE, HAND SHAKES EXCHANGED

"The 31 Initiatives" contained in the 1983 Army/Air Force Memorandum of Understanding (MOU) on Joint Employment of the AirLand Battle Doctrine, enumerated and prioritized joint warfighting initiatives required to execute the new doctrine. Deep operations in the 1982 publication of FM 100-5 (AirLand Battle) are inherently joint operations. As its moniker intimates, fires delivered by non-organic aerial platforms were the primary means implemented to destroy, disrupt or delay, follow-on echelons of large motorized formations. An "Army-Air Force Battle Team" was required to execute the doctrine, and Air Force Manuals of the day fully supported Army doctrine. This comprehensive bi-lateral review of joint warfighting was a benchmark in the six-year effort to promote joint force development and integration. The initiatives included among others: Air Defense systems and procedures, electronic warfare, reconnaissance, airlift, CAS procedures, and fusion of combat information.¹⁰

A clear indication of Air Force commitment to fighting deep in support of the Army was initiative #21, Battlefield Air Interdiction (BAI). Seen as a subset of AI, BAI is that portion of AI, which may have a direct or near-term impact on surface operations. Targets were attacked in close coordination between the land and air commanders with the land commander establishing the targeting priorities for attack by the air component of the team.¹¹ The Air Force's primary interdiction mission was to set the conditions for decisive ground operations. The MOU explicitly endorsed the concept of BAI and laid out a plan to develop and refine joint Tactics,

Techniques and Procedures (TTPs) for the planning and execution of missions flown in support of the LCC priorities.¹²

“BAI is air action against hostile surface targets nominated by the ground commander and in direct support of ground operations. It is the primary means of fighting the deep battle at extended ranges. BAI isolates enemy forces by preventing their reinforcement and supply and by restricting their freedom of maneuver. It also destroys, delays, or disrupts follow-on enemy units before they can enter the close battle. BAI missions may be planned against targets on either side of the FSCL in the ground commander’s area of influence. Missions short of the FSCL require close coordination with ground units. Although all BAI missions require joint planning and coordination they may not require continuous coordination in the execution stage.”¹³

Note that this type of AI mission is conducted on either side of the FSCL and is executed without terminal control. The Army and Air Force also agreed to develop and test procedures to synchronize BAI and ground maneuver flexible enough to be adapted to any theater of war. Training and Doctrine Command (TRADOC) and TAC published “General Operating Procedures for Joint Attack of the Second Echelon” in December 1984 and tested the procedures 6 months later during Blue Flag 85-3. Evaluation of the exercise found the procedures adequate.¹⁴

Every senior officer in the Army grew up with the tenets of AirLand Battle. Operationally, the Army depended very heavily on the Air Force to set the conditions for decisive ground combat operations as we do today. BAI required that both the air and land commanders coordinate their operations to ensure effective support. Though enthusiastically embraced by the Army, BAI opened a rift in the Air Force. Many Air Force officers objected because they perceived that the Land Component Commander (LCC) could directly task AI missions. Air Force writings of the time were highly critical of the doctrinal differentiation between AI and BAI.

“Our own doctrine has broken off a piece of the interdiction mission, given it a separate title, and then essentially applied to it the definition of close air support in requiring it to be coordinated with the ground commander’s fire and maneuver!”¹⁵

However, according to Air Force purists, the biggest concern drove at the heart of long standing tenets of the Air Force’s employment doctrine. In their view the concept of dividing air power in support of different land commander’s priorities threatened centralized control, violated the principle of mass and would jeopardize flexibility. BAI did not enjoy popular support in many Air Force circles, and though it remained in Air Force doctrine until 1992, the joint initiatives to refine our Tactics, Techniques and Procedures (TTPs) were effectively halted in the late 1980s.

Air Force and Army doctrine was modified during the 80s to incorporate these warfighting agreements contained in the 31 initiatives of 1983. The 1984 inter-service MOU, that became the foundation for integrated joint warfighting, was codified and exercised vigorously. The 1984 publication of AFM 1-1, Basic Aerospace Doctrine of the United States Air Force, dramatically expanded its description of BAI planning and execution.¹⁶ In all doctrinal definitions of the era to include NATO, BAI was an air action against hostile surface targets on either side of the FSCL. It required joint planning, but NOT continuous coordination during execution.¹⁷ This common understanding was what the Army thought they were executing during Desert Storm. They would prove to be very wrong.

GOLDWATER-NICHOLS AND JOINT DOCTRINE

Two major developments, a change in Air Force leadership and Goldwater-Nichols Defense Reorganization Act of 1986, would have profound impact on the joint warfighting vision of both services. As previously stated, a significant number in the Air Force believed that the TAC agreement with the Army would lead to the Air Force losing control of aircraft during combat operations. Several officers including, then LTG, Chuck Horner believed that BAI was an unnecessary targeting category. Any reference to BAI was quickly eliminated from Air Force doctrine and was not included in Joint Pub 1-02 (December 1989).¹⁸ This would complicate matters significantly since BAI was still part of Army doctrine and NATO agreements.

Congress enacted Goldwater-Nichols to reform and improve the joint warfighting capability of the services. This law gave the regional commanders in chief (CINC) primary responsibility for warfighting in their respective theaters, while subordinate service commanders control each service's forces in theater. The concept of a JFACC was developed in Europe to facilitate unity of effort and centralize the control of all airpower in theater under a single functional commander.¹⁹ The Joint Chiefs of Staff (JCS) first approved this concept in Joint Pub 26, legitimizing it as the doctrinal norm for command and control of a theater's airpower assets.²⁰ The concept gives the JFACC, when appointed, operational control over all air assets assigned or attached to the theater, along with responsibility for planning and executing air operations in support of the CINC's campaign plan. The concept immediately generated friction with the Marine Corps who has their fixed wing assets as dedicated to the support of the Marine Air Ground Task Force (MAGTF). That friction remains today.²¹

Taken together, these developments drastically changed the warfighting landscape prior to August 1990. Emerging in the Air Force was a neo-Douhet school of thought, attributed to Colonel John Warden, that believed with the advanced development of precision strike

capability and stealth technology, strategic bombing could and would bring about decision in future conflict. During the Gulf War this cultural renaissance would conflict directly with land forces, as the necessity for ground operations became apparent. The targeting priorities of the battlefield preparation phase of the air campaign conflicted directly with air force planners, who envisioned Iraqi capitulation caused by the application of airpower alone.

A BROKEN PROMISE-"PRIMACY" ESTABLISHED AS DESERT STORM TTP

In August 1990 Central Command deployed to command and control the forces that would execute both Desert Shield and Desert Storm. LTG Horner, as the JFACC, unilaterally decided to put aside both Air Force and Army doctrine and eliminated BAI as an AI category, defined all missions flown short of the FSCL as CAS, and required (with the endorsement of the CINC) all activity beyond the FSCL to be coordinated and approved by his headquarters. The FSCL became a de facto boundary, and was seen as such by the Air Force. As the executive agent responsible for the prosecution of AI throughout the theater, he exercised "primacy" (control) of all activity beyond the FSCL as the realm of deep operations. Desert Storm is seen by the Air Force as the doctrinal model for future joint warfighting. The JFACC was empowered to prosecute the entire AI campaign with seemingly little concern for the targeting priorities of the 3d Army or VII & XVIII Corps commanders. The Air Force's interpretation was that the JFACC was in charge of the deep fight during battlefield preparation. In reality he was not. General Schwartzkoff was also acting as the Joint Forces Land Component Commander (JFLCC), and the JFACC was executing the JFLCCs priorities.

CONCLUSIONS DRAWN FROM DESERT STORM

Several scholars have cautioned against extracting too many broad lessons learned about the nature of the next war and how our military will have to address it. By its nature, the Gulf War can be seen as an anomaly in several ways. The open desert environment provided a nearly ideal environment for our sensors and minimized the effects of terrain and weather on warfighting. Many of the initiatives, research and development, and TTPs developed to fight a multi-echeloned armored force were validated. However, this great victory provides a window into the heart of our doctrine and future joint warfighting.

COHERENT JOINT DOCTRINE

Joint doctrine inadequately addressed critical warfighting issues. Operations Desert Shield and Desert Storm provided the first operational, wartime exercise of the command and control structures mandated in Goldwaters-Nichols and joint doctrine developed thereafter.

Command and control of joint airpower centralized under a JFACC proved to be very effective.²² However, as expected with any new operating system, issues of joint interoperability and service-specific concerns about priorities and control of operation were common. Joint doctrine should not be prescriptive; it should be sufficient and stand as the unifying foundation for joint warfighting. CENTCOM was the geographic CINC least prepared for conflict in 1990. Exercise Lucky Warrior was executed at an extremely low level. 3rd Army was staffed at 50% or less and we threw together one of the best pick-up teams in recorded history. However, much of what was done was "made up" as they went. Joint doctrine was immature and service discrepancies were not de-conflicted. The organization picked and chose from standing procedures in other AORs to establish TTPs to conduct theater level operations. The shear force of personality and experience of the senior leaders involved established the rules, and there were two dominate ones, Horner and Schwarzkopf.

Any conclusions drawn from the Gulf War must be examined through the lens of the command structure and personalities of the key players. The Army and Air Force spent years of cooperative effort to establish joint warfighting doctrine. Variations from agreed to procedures may be necessitated by the nature of the operations in theater. Changes should be taken seriously and dealt with in a deliberate thoughtful way. Lessons learned must be used to modify joint doctrine and enhance our performance in future conflicts involving joint power projection. Contingency operations likely in the next century will require responsive joint and combined forces that execute unified action. Joint doctrine that is well established and thoroughly trained through joint exercises, as operating norms throughout our military will enable our forces to come together quickly and efficiently. An integrating agency, empowered as a coequal to combatant CINCs is required to de-conflict service interests to produce a coherent joint doctrine.

JOINT WARFIGHTING-TRAINING REQUIRED

Joint warfighting is unified warfighting. There is only one fight, and that is the CINC's. All components must thoroughly understand the CINC's mission and intent, and their component's contribution to the overall prosecution of the campaign. General Horner stated very clearly that he was executing the CINC's targeting priorities. It is clear that the army corps commander's were in the dark as to why the air campaign was being prosecuted as it was. Trust is critical to successful joint warfighting. Joint warfare is team warfare. Generals Schwarzkopf, Yeosock, and Horner all enjoyed a close friendship and trusted each other implicitly, however, the same claim can probably not be made for the commanders preparing for ground operations.

Communications is at the heart of this issue, and the responsibility here remains with one person, the JFC.

Personal relationships between the leaders of Desert Storm were essential to lubricate the activities of coalition forces. These relationships are formed very quickly between component commanders. What was lacking most in Desert Storm were organizational relationships that enabled trust between personnel executing operations. Though the senior leadership was in agreement about the execution of Desert Storm, the organizations dependent on doctrine to guide them, were suffering from irreconcilable differences. Critical activities executed by personnel in the grades of O4-O6 are guided by doctrine. Understanding is achieved through interaction with their sister service counterparts. Operations in the future will be joint and inter-agency and those organizations can not properly train in isolation from one another. Desert Storm caused a serious reassessment of military training. Our warfighting strategy requires that trained components be tailored to address various world wide contingencies. They must come to the fight trained to participate immediately in a joint team. Standards for these components must be established and certified.

C2 RELATIONSHIPS

CINC as JFC and JFLCC. When possible the JFC and the JFLCC should not be the same person. This blend of responsibilities clouds judgment and inhibits advocacy by the land component. General Schwarzkopf arguably handled this blend as well as anyone could, but the scope of responsibilities of the CINC is large enough. The CINC spent the preponderance of his time tending to our strategic center of gravity the allied coalition. A separate JFLCC would advocate from his perspective, providing new inputs into the decision-making of the CINC. The JFLCC's operational focus enhances the CINC's ability to maintain his strategic focus. This is a personal decision, but I believe that a fair analysis argues strongly against dual-hatting in a complex conventional operation. In final analysis 3rd Army was probably under-utilized.

BATTLEFIELD FRAMEWORK, CONTROL AND FLEXIBILITY

After Operation Desert Storm (ODS), a survey revealed that one of the most contentious issues during the entire Gulf War was control of operations outside of the FSCL. The non-doxtrinal use of this control measure caused great confusion and concern to many in the staffs of both Air Force and Army headquarters. The issue again is primacy and control of the fight between the FSCL and the GCC's forward boundary. The Battlefield framework in future operations must be more flexible to allow our forces to fully exploit asymmetric advantages as a joint team throughout the depth and breadth of the battlefield.

ELIMINATING THE DOCTRINAL DISCONNECT.

"Let me tell you about one area where I think joint doctrine is broken and we need to fix it. That is the Air-Land Battle portion. Our joint doctrine allegedly forged between the Army TRADOC (Training and Doctrine) Command and Langley (Tactical Air Command) says that, "Every Theater is supposed to operate essentially the same when it comes to how Air-Land Battle is fought." I will tell you it looks good on paper. But I haven't found a theater commander yet, especially a theater air commander, that believes or operates by it. LTG Calvin Waller, Deputy USCINCCENT.

The most contentious doctrinal issues all involve defining battlespace. Standard joint graphical control measures such as boundaries are widely accepted and are universally understood. Areas of Operations (as delineated by boundaries) clearly mark areas of responsibility and control on the battlefield. Phase lines provide doctrinally based control measures that are clear and commonly understood by all components. However, FSCMs, especially the FSCL, are not clearly understood and have come to mean too many things to too many different organizations. Since the FSCL is at the center of the Army's doctrinal conflict with the Air Force, one should understand how we got here.

EVOLUTION OF THE FSCL

Currently the FSCL is a critical line of demarcation that establishes control or coordination requirements for forces functioning on either side of the line. Depending on which doctrinal sources one reads, it can be interpreted as either a restrictive or permissive measure to facilitate the engagement of the enemy and protect friendly forces from fratricide. Its ancestor first appeared in World War II and has evolved to remain relevant to US warfighting doctrine. Comprehending the history of the FSCL is prerequisite to understand the issues that define its use in combat operations today.²³

The US military entered WWII with no doctrinal tool to de-conflict air and ground operations. The 1940 version of 6-20, Field Artillery Tactics and Techniques, designated the Division Artillery Commander, as the responsible agent for air/ground de-confliction between an Army division and the Air Corps, but provided no procedural doctrine to assist in the endeavor.²⁴

A series of infamous fratricide incidents during the Normandy invasion in June of 1944 highlighted the need for a coordination tool to reduce the threat of fratricide and coordinate and synchronize airpower and maneuver. On at least four occasions during Operations Cobra, Allied heavy bombers attacked friendly positions killing hundreds.²⁵ The 1948 edition of FM 6-20 incorporated the lessons learned from both the tragedies and coordination and

synchronization challenges of WWII and introduced a coordination measure called the bomb safety line (BSL). The BSL was to be established by the ground commander along recognizable terrain to facilitate air-to-surface engagement of targets, and to prevent fratricide. The manual further recommended that the BSL be placed as close to forward elements as the situation would permit to facilitate attack from the air.²⁶

The FSCL replaced the BSL in the 1961 publication of FM 6-20-1, Field Artillery Tactics, was defined as "a no-fire line between corps and higher echelons and a bomb line for ground and air forces. An FSCL may be established by the corps commander to ensure coordination of those fires delivered by forces not under control of the corps, which may affect current tactical operations. When possible, the FSCL should be easy to define on the map and easy to recognize from the air."²⁷ The FSCL continued to evolve in various versions of FM 6-20-1 through the 1960's. Any fair reading of the doctrinal evolution leads to a conclusion that the FSCL was not permissive at its inception or its early refinement. The 1967 edition of Field Artillery Tactics defined the FSCL as:

"a line, which takes the place of the bomb line. It should be established by the appropriate land (normally the corps) commander in consultation with the Tactical Air Commander or his delegate. It is used to coordinate supporting fire by forces not under the control of the appropriate land force commander, which may affect tactical operations. The FSCL should be as close to the forward elements as possible, consistent with troop safety and the tactical situation. Furthermore it should be easy to define on a map and easy to identify from the air."²⁸

The references to troop safety and force make the measure look very restrictive indeed.

The FSCL started to take on a "permissive" flavor in the 1977 edition of FM 6-20, Fire Support in Combined Arms Operations. It defined the FSCL as "a line beyond which all targets may be attacked by any weapon system without endangering friendly troops or requiring additional coordination with the establishing headquarters."²⁹ This doctrine was developed to support the Active Defense Strategy for the defense of Europe that depended heavily on the use of airpower to defeat a Soviet attack. Fire Support in Combined Operations further stated that the FSCL should be considered a dividing line between planned CAS support and air interdiction missions.³⁰ The Air Force interpretation, and a fair one, is that the FSCL marked that unofficial battlefield boundary for targeting synchronization between services.³¹

The last evolutionary step prior to the Gulf War occurred in 1989 when it is first incorporated into joint doctrine. JP 1-02, Department of Defense Dictionary of Military and Associated Terms, defined the FSCL as:

"a line established by the appropriate ground commander to ensure coordination of fire not under the commander's control but which may affect current tactical operations. The fire support coordination line is used to coordinate fires of air, ground, or sea weapons systems using any type of ammunition against surface targets. The fire support coordination line should follow well-defined terrain features. The establishment of the fire support coordination line must be coordinated with the appropriate tactical air commander and other supporting elements. Supporting elements may attack targets forward of the fire support coordination line, without prior coordination with the ground force commander, provided the attack will not produce adverse effects on or to the rear of the line. Attacks against surface targets behind this line must be coordinated with the appropriate ground force commander."³²

Going into the Gulf War the FSCL did not seem too contentious. Typical placement of the FSCL during the 1980s was 20-30 kms forward of the FLOT as army corps and divisions exercised against large multi-echeloned forces during warfighting simulations. However, the fielding of the AH64A, and the development of the Advanced Tactical Missile System (ATACMS), significantly increased the ground commander's ability to affect the enemy with his own organic systems. Joint doctrine existed for joint air attack (JAAT), but the Army would now push the FSCL out to distances that allow organizations like the 101 Airborne Division (Air Assault), with its organic Attack Brigades, the maneuver space to conduct operations at depths that were reserved for Air Force airpower.

THE FSCL ISSUE

The FSCL has evolved dramatically from its origin as a restrictive no bomb line in the 1940s. The permissive character of the line developed as a direct result of the thinking involved in developing doctrine to defeat the Soviet Army. The intensity and desperation of that fight mitigated the risk of using a FSCL as a permissive measure. Sole focus was to bring as much combined firepower on enemy formations as possible, with unspoken acknowledgment that a fratricide might occur. Even in this high intensity environment the odds of a friendly aircraft being struck by friendly indirect fire was extremely small, certainly much larger than an air to ground fratricide. There is no recorded incident of a friendly aircraft ever being knocked out of the sky by friendly indirect fire. Yet during Desert Storm, corps commanders were delayed and at times prohibited from responding to Iraqi artillery fire with reactive counter-fire, because those fires had to be cleared by the JFACC, hardly a permissive condition. So just what is the FSCL, how do the Air Force and Army differ, what does joint doctrine contribute, and should it be done away with?

FSCL NOW

The FSCL has come to mean too many different things to too many people. A careful review of service and joint doctrine will highlight the challenge of common understanding.

Current Air Force doctrine maintains that the FSCL is a boundary between the close and deep battles with the JFACC having responsibility for synchronizing operations beyond the coordination line just as the LCC has responsibility to synchronize operations short of the line. That being the case the FSCL restricts any use of battle space short or beyond the FSCL unless coordinated with the appropriate commander (LCC or JFACC). The Army sees the FSCL as a permissive Fire Support Coordination Measure (FSCM) that is intended to expedite the attack of targets beyond the line by all systems not directly under the control of the LCC. The Air Force objection to this view also includes force protection. The Air Force has pushed hard to require coordination for attacks beyond the FSCL. Airmen view the phrase, 'big sky, little bullet' as anathema and it typically produces a visceral reaction. The Air Force sees the FSCL as a force protection measure that protects forces operating on either side of the line, and requires coordination for attack across the line. Joint Doctrine defines it differently in various doctrinal manuals dependent on the publication's proponent. Joint Pub 3.0 defines it differently in the same manual. The Executive Summary of Joint Publication 3.0 defines an FSCL as:

"... a permissive fire control measure, established and adjusted by the land force commander, in consultation with superior, subordinate, supporting, and affected commanders. It is **not a boundary**; **synchronization of operations on either side of the FSCL** is the **responsibility of the establishing commander** out to the limits of the land force boundary. It applies to all fires of air, land, or sea weapons systems using any type of ammunition against surface targets. Short of the FSCL, the land force commander controls all fires. Beyond the FSCL, coordination and restrictive measures are used to avoid conflicting and redundant operations. Forces attacking targets beyond the FSCL must inform all affected commanders to allow necessary reaction to avoid fratricide."³³

While the glossary definition notably omits any reference of permissive fire support measure or responsibility for coordination beyond the FSCL

"A line established by the appropriate land or amphibious force commander to **ensure coordination of fire** not under the commander's control but which may affect current tactical operations. **The FSCL is used to coordinate fires of air, ground, or sea weapons systems** using any type of ammunition against surface targets. The FSCL should follow well-defined terrain features. The establishment of the FSCL must be coordinated with the appropriate tactical air commander and other supporting elements. Supporting elements may attack targets forward of the FSCL without prior coordination with the land or amphibious force commander provided the attack will not produce adverse surface effects on or to the rear of the line. Attacks against surface targets

behind this line must be coordinated with the appropriate land or amphibious force commander." ³⁴

The tone of this definition is restrictive. All fires inside line must be coordinated. The Air Force reads as implied in this definition, that all fires beyond the FSCL must also be coordinated, highlighting again the Air Force view, that an FSCL is a boundary. It restricts their freedom to engage targets and limits options for air attack to CAS only.

The Army's terms and graphic manual, FM 101-5-1 defines an FSCL as:

"...a permissive fire control measure established and adjusted by the ground commander, in consultation with superior, subordinate, supporting, and affected commanders. It is **not a boundary: Synchronization of operations on either side of the FSCL is the responsibility of the establishing commander out to the limits of the land force boundary.** It applies to all fires of air, land, or sea weapons systems using any type of ammunition against surface targets. Forces attacking **targets beyond the FSCL must inform all affected commanders** to allow necessary reaction to **avoid fratricide.**" ³⁵

Joint definitions tend toward that Army's position, but do address the Air Force's desire to coordinate attacks beyond the line with the JFACC.

By definition the Air Force refers to combat missions flown short of the FSCL as CAS requiring detailed coordination, and terminal control. The Army sees no such distinction and allows for AI (old style BAI) to be flown short of the FSCL. Missions flown short of the FSCL require joint planning and coordination, but they may not necessarily require coordination and terminal control during execution. This distinction generates allocation issues. By defining all missions flown beyond the FSCL as AI and anything flown short of it as CAS, the Air Force leverages battlespace from the land component commander (LCC). The LCC is effectively forced to adopt the Air Force position or create operational friction that could potentially lead to a less than optimum operational outcome. One only need examine the Air Force contention that the Army created a "sanctuary" for the Republican Guard at the end of the Gulf War as a result of the placement of the FSCL along the Iraqi border. ³⁶ There may well have been a sanctuary, but since coordination lines and boundaries only require coordination to engage across, it would be naïve to believe that parochial interests on both sides didn't cloud both thinking and actions.

WHERE TO GO FROM HERE?

"Well let me tell you, this doctrinal bickering is horse manure.... During Desert Storm we had one ground commander for each of the two forces, and they approved every target. Their names were Schwarzkopf and Khaled. Though all the subordinate ground commanders had their say in the process, they had to

*understand that they were not in charge of the air effort—or, for that matter, of the ground effort.*³⁷ Gen Chuck Horner, 1999

If 1984 was the high water mark of cooperation between the Army and the Air Force, then the period immediately following the Gulf War was low tide. Army Corps commanders, betrayed as bumbling whiney incompetents, felt betrayed by the Air Force during Desert Storm. No one can argue our over-all military success during Desert Storm. All coalition objectives were achieved. Saddam Hussein's forces were ejected from Kuwait, his offensive warfighting capability was significantly degraded, and all was accomplished with very few casualties given the scope of the operation and historical precedent. However, joint integration of the deep fight rarely exploited the powerful synergies that can be obtained through close integration of ground and air maneuver and fires. Desert Storm is now used as the Air Force's case study for current doctrine. The combat power possessed by the Army and Air Force are complimentary. Systems are optimized to carry different munitions and are most effective against different target arrays. If we recognize our roles on this team, we won't just defeat the enemy, we will absolutely dominate him on the next battlefield.

DEFINING THE DEEP FIGHT.

The deep battle is capability and mission based. Geographic distance does not constitute the primary distinction between tactical, operational and strategic targeting. Deep tactical and operational fires are intended to strike at targets that will have a future near term impact on the battlefield. Army doctrine provides for several "deep fights" occurring simultaneously. These operations are executed using all elements of combat power to include Air Force CAS and AI sorties.

The Army has long been suspect of the Air Force's organizational commitment to setting the conditions for ground forces, and has developed significant capability to attack to depths that heretofore were reserved exclusively for attack by AI. The development of the AH64A and AH64D (Longbow), the Army Tactical Missile System, and Extended Range Multiple Launch Rocket System (MLRS) have given the Army organic capability to attack targets at operational depths. These technologies dramatically increase the reach of a LCC resulting in a friction point with the JFACC. Historic rules of thumb recommended FSCL placement at maximum ranges of organic weapon systems. That range is now out to 300 kms. Army and joint doctrine both designate the LCC, the supported commander in his Area of Operation (AO), as the responsible agent to coordinate and integrate all operations on both sides of the FSCL. The Air Force position is that they should be the supported commander for all operations beyond the FSCL, and as such, should coordinate and synchronize all operations executed in that battle space.

Another inter-service communication problem revolves around just what is meant by the "deep fight." Complicating the matter is the Army's increasing organic capability to strike targets at extended ranges, and roles of the major field headquarters. The Air Force sees one "deep fight," that beyond the FSCL. The Army has various "deep fights" occurring simultaneously across the breadth and depth of the battlefield. Based on Battle Command Training Program (BCTP) observations, the FSCL is often used as a control measure to coordinate the division and corps deep fights. When used in this manner, the FSCL is:

"a permissive fire support coordination measure that allows attack without coordination with the establishing headquarters. It is also the limit of advance for both ground and Army Aviation operations. Typically not beyond the operational reach of subordinate division's organic capability."

Add an Army Headquarters as the JFLCC, and you have a potential mess as everyone competes for battle space. Reacting to both a doctrinal void and the duplicitous meaning of the FSCL, III Corps uses a non-doctrinal Battlefield Coordination Line (BCL) to synchronize deep operations responsibilities between the corps and divisions.

If the FSCL is used to coordinate battle space between divisions and corps, what then is used to coordinate battle space with the Air Force? CINCs in both Europe and Korea found it necessary to establish another non-doctrinal coordination line called the Reconnaissance and Interdiction Phase Line (RIPL) and Deep Battle Synchronization Line (DSBL) respectively. For the sake of discussion, let's rename the RIPL and DBSL as the Joint Effects Coordination Line (JECL). The JECL is the "primacy" line for control and coordination between the land component and air component in both theaters. It is established by the JFC to protect forces operating on either side of the line and to indicate an area of AI that is subject to the LCC's priorities. A primacy line, whatever its name, simply must exist for all capabilities of the joint team to be properly integrated and synchronized. The FSCL has been too contentious for too long to be useful other than as the CAS demarcation line placed at the maximum indirect fire weapons system depth in a division zone. If the division has organic Apaches or is augmented with corps level deep attack assets then the FSCL should be moved to support operations as coordinated between the corps and division.

The area from the FSCL to the JECL defines the area where the establishing commander, typically a corps, conducts joint operations to shape the battlefield by destroying enemy forces, to set conditions for future operational or tactical maneuver. A corps commander prosecutes this fight integrating and synchronizing all elements of combat power at his disposal. If the FSCL is kept tight (30 kms or less), a coordination line, like a JECL, gives both the Air force and Army exactly what they each want. AI is flown beyond the defined CAS line (FSCL) and the

Army exerts a greater degree of influence over the kinds of missions, targets and execution timing out to the JECL. The area inside the JECL is open to attack by anyone except when expressly prohibited by the GCC. Coordination for specific joint deep attacks short of the line addressed during the target process and should be verified by the battle field coordination detachment (BCD) located at the TACC and reflected on the ATO

The FSCL is doomed to be defined using the lowest common denominator between services. One only need read the condemnations of joint and army doctrine in recent publications of the Maxwell Papers No. 7 and 12.³⁸ Any fair evaluation of the history of the FSCL and joint warfighting requirements argue strongly that the Air Force has a case when it argues that joint doctrine does not adequately address the issues surrounding the FSCL. Joint doctrine says that it is not a boundary, yet even the army uses it as a boundary. If it looks like a duck, acts like a duck, and sounds like a duck, IT IS A DUCK. The Army and more specifically the Field Artillery community should back off, and redefine the FSCL in terms that can be agreed upon by joint community or eliminate it.

Most of the doctrinal conflict today revolves around the practices of Desert Storm. The Army and Air Force continue to blame each other for coordination problems during the Gulf War. Corps commanders were generally dissatisfied with the level of support given by the JFACC to attack Army's AI nominations. Complicating matters was that the JFC was also the JFLCC, and was directing the activity of the JFACC without keeping the Corps commanders informed. Our doctrine continues to be written by committees seeking compromise between all interested parties. It is time for the bickering to stop. Unified commanders fight wars. It's time for joint and other supporting service doctrine to support that reality. The CINCs in Korea and CENTCOM have both developed TTPs that address the challenges of coordinating deep operations. What is required is a common operational standard?

FUTURE DEEP BATTLE DOCTRINE (RECOMMENDATIONS)

"So back in the Pentagon, quit writing doctrine that is a compromise between the ways each separate (emphasis added) service wants to fight wars, because they (the services) don't fight wars. Unified commanders and their allied commanders are in charge. If we follow the doctrines of compromise published by the services and the Joint Staff, we will end up with "war fought by committee"—a sure loser."³⁹ General Chuck Horner

"Doctrine provides a military organization with a common philosophy, a common language, a common purpose and a unity of effort."⁴⁰

"Air and ground commanders must be constantly on the alert to devise, and use, new methods of cooperation...there can never be too many projectiles in a battle." General George S. Patton

Warfighting is a joint endeavor. With joint contingency operations likely to be the norm, it is imperative that we develop a common warfighting doctrine that can be executed worldwide. In unified commands service squabbling is squashed by the CINCs. Each has adopted TTPs that address the friction points between services. Europe, Korea and CENTCOM all have well defined TTPs that define battle space, and synchronize operations on the seams between component commanders by creating non-doctrinal coordination measures to synchronize combat power. These systems have evolved to address a doctrinal shortcoming. It is time to integrate them into our joint doctrine.

ESTABLISH JOINT EFFECTS COORDINATION LINE (JECL) IN JOINT DOCTRINE

Incorporate non-doctrinal TTPs, RIPL and DBSL, rename it and codify it in joint doctrine. The JECL is a phase line established by the JFC in coordination with the JFACC and JFLCC beyond which all actions must be coordinated with the JFACC. It is used to synchronize all joint activities to include space-based systems. The JECL could be located out to as far as 300 kms or placed near the FLOT depending on the tactical situation. The space is expanded during condition setting operations and minimized during defensive operations like Desert Shield or the early stages of Desert Storm. As the campaign transitions to condition setting for offensive ground operations, the line establishes the ground commander as the supported commander and provides for increased influence on targeting priorities in his AO. Joint doctrine must govern/regulate service doctrine. Conflicting definitions must be eliminated. There simply cannot be two different playbooks.

REDUCE COORDINATION TIME FOR GRAPHIC CONTROL MEASURE CHANGES

The digital revolution leads the Revolution in Military Affairs (RMA). There is simply no reason to accept 6 hours as the time required to coordinate a graphical control measure. Component commanders should be able to anticipate coordination measure changes well enough in advance to be included on joint coordination documents like the ATO, but with the ability to have a real time common operational picture (COP), changes to battlefield frame work can occur in minutes, not hours. If the situation is dynamic and changing, our technology and coordinating agencies like the Battlefield Coordination Detachment (BCS), TACC (Tactical Air Control Center), Joint Air Operations Center (JAOC), and Airborne Warning Command and Control System (AWCCS) should be able to handle this high priority coordination effort in no

more than one hour. If we cannot translate our ability to have real time situational awareness into a real time operational advantage that maximizes our asymmetric advantages, we may as well not have it.

MODIFY DEFINITION AND USE OF FSCL

As argued earlier, the FSCL has evolved significantly in the past fifty years to remain relevant to warfighting. Though a strong argument can be made to eliminate the line completely, there remains a need to separate the corps close and deep fights. This could be done with a division forward boundary, but the FSCL provides flexibility to the corps commander and is useful as the CAS demarcation line for the JFACC. Air operations inside the line require coordination and terminal control. Air operations outside the line are AI and require only coordination through normal targeting regimes and advocacy at the JAOC by the BCD. The Joint Targeting Coordination Board (JTCCB), which has matured considerably as a targeting input de-confliction agency, provides the right forum to insure the targeting concerns of each of the components is adequately addressed.

DYNAMIC BATTLEFIELD ORGANIZATION.

Given the current state of real-time battlefield tracking, especially for aircraft, we need not be bound by classic linear boundaries and FSCM while executing deep operations in the future. Army deep shaping operations conducted with attack aviation are short duration and can only be executed successfully if executed in concert with the Air Force and many of its unique capabilities. JSEAD is essential and the combined effects of fixed wing air strike and helicopter assault has devastating effect. These missions are planned well in advance and require extensive coordination with the members of the joint team. The strike package is by its very nature joint, each service must become comfortable giving up some degree of control to have properly integrated and coordinated operations. Just as Army Apaches were task organized to support the strategic AI campaign at the beginning of the Gulf War, future warfare will require components willingly provide elements of joint strike packages that provide overwhelming asymmetric advantage. Mission focused joint force structures can and should be organized for the planning and execution operations to ensure all capabilities are closely synchronized.

CONCLUSION

Whereas in previous times we could chop up the battle space and delegate the various pieces to the components, as battle space becomes more nonlinear and combat power is applied more asymmetrically, this is a luxury we can no longer afford. General George Joulwan, USCINCEUR

I am not inclined to agree completely with General Joulwan's observation, though his vision is closer to the future reality that most soldiers developed during the Cold War are comfortable with. The battlefield of the future will know boundaries, but we must not allow them to be obstacles to the timely and overwhelming application of combat power that exploits all the asymmetric advantages our military service can bring to bear. Warfighting has required joint cooperation since antiquity. It has been statutory in the U.S. military since the Defense Reorganization Act of 1947. The latest expression of law, Gold Water-Nichols, provided the framework for true joint integration. However, as General Horner observed, much of our doctrine is written by committee and is at the mercy service agendas. Depending on the proponency of various joint documents, joint doctrine today expresses sometimes contrary views. When the Army and TAC agreed to the 31 Initiatives in 1983, TAC did not speak for the entire Air Force, rendering mute the formal agreement signed at the time. Changes in Army and Air Force leadership soon after the agreement, created a rift in our joint warfighting doctrine leaving it open to service interpretation. The resulting "misunderstanding" was at the foundation of challenges experienced by Army commanders expecting to have a substantial voice in setting battlefield conditions for future operational and tactical maneuver.

The formation of Joint Forces Command (JFCOM) provides our military a unique opportunity to completely revolutionize warfighting. The trend toward corps level certification, as Joint Task Force headquarters, is a trend that must continue as we prepare to fight future conflicts. Army organizations down to division must be capable of command and controlling joint forces for a smaller more flexible military to optimize its combat potential. A theater operation with multiple JTFs operating simultaneously is the future of military operations. We must be prepared and develop the operational flexibility to take on this challenge. As the force trainer and provider, JFCOM is best positioned to write integrated joint doctrine. Its location at Norfolk provides the geographic separation necessary to promote the development of solutions unhindered by the parochial interests of each service.

Coordination measures like the FSCL and the JECL should be included in our joint doctrine and TTPs to facilitate the timely and over-whelming application of effects on targets throughout the area of operations. We need one set of operational TTPs vice the area of responsibility (AOR) driven solutions in place today. Potentially, JFCOM will furnish forces to potential each AOR; they should be certified with one set of TTPs common to all joint warfighters.

The reality is that there is only one war. There isn't an Air War, Sea War and a Land War. The unfortunate characterization of the air campaign of ODS as a separate conflict, has

left a trail of suspicion in its wake. Advocates for each service make the case that theirs brought victory in the desert, there is more than enough credit to go around. Warfighting is a joint venture requiring the subjugation of personal and service interests for the good of the team. It's time we did just that!

Word Count=8503

ENDNOTES

¹ Richard G. Davis, The 31 Initiatives: A Study in Air Force – Army Cooperation, (Washington, D.C., Office of Air Force History United States Air Force, 1987), 2.

² Joint Chiefs of Staff, Joint Warfare of the Armed Forces of the United States, Joint Publication (Pub) 1 (Washington D.C.: Department of Defense, 10 January 1998), vi-vii.

³ Kent Roberts Greenfield, "Army Ground Forces and the Air-Ground Battle Team Including Organic Light Aviation" (Study #35), Historical Section Army Ground Forces, 1948, 77.

⁴ Robert Frank Futrell, Ideas, Concepts, Doctrine a History of Basic Thinking in the United States Air Force, 1907-1964 (Maxwell AFB, Ala, 1974), p 155.

⁵ Robert F. Futrell, Ideas, Concepts, Doctrine: Basic Thinking in the United States Air Force, 1961-1984, vol. 2 (Maxwell AFB, Ala.: Air University Press, 1989), 494.

⁶ Futrell, 548.

⁷ Davis, 25.

⁸ Ltr (with attached copy of Bray-Elder Papers), Creighton W. Abrams, CSA to Gen William Depuy, Comdr, TRADOC, Oct 5, 1973, Notes from the Top, TRADOC Historian's Office, Fort Monroe, VA

⁹ Futrell, 540.

¹⁰ Davis, 49.

¹¹ AFM 1-1, Functions and Basic Doctrine of the United States Air Force, February 1979, 2-13.

¹² Davis, 58.

¹³ Memo of Understanding, Army/Air Force, Enhancement of Joint Employment of the AirLand Battle Doctrine, s/Gen Charles A. Gabriel, CSAF, and Gen E. C. Meyers, CSA, Apr 21, 1983.

¹⁴ History, TAC, Jan-Dec 85, p 316.

¹⁵ Robert D. Rasmussen, "The Central Europe Battlefield: Doctrinal Implications for Counter Air-Interdiction," Air University Review 29, no. 5 (July-August 1978): 11-13.

¹⁶ AFM 1-1, Basic Aerospace Doctrine of the United States Air Force, 1984, 3-3 to 3-4. According to this manual, air interdiction against targets that are close enough to have a near-term effect on friendly ground forces is called battlefield air interdiction. The manual adds, "the primary difference between battlefield air interdiction and the remainder of the air interdiction effort is the level of interest and emphasis the land commander places on the process of identifying, selecting, and attacking certain targets. Therefore, battlefield air interdiction requires joint coordination at the component level during planning, but once planned, battlefield air

interdiction is controlled and executed by the air commander as an integral part of the total air interdiction campaign.”

¹⁷ NATO Allied Tactical Publication (ATP) 27(B), Offensive Air Support Operations (Brussels, Belgium: Military Agency for Standardization, 1983), 3-2 to 3-3.

¹⁸ Major Mark H. Ayers, The Answer is? Friction Over Who Should Plan & Control Joint Fires Beyond the FSCL, (Army Command and General Staff College, Fort Leavenworth, KS, May 1997), 15.

¹⁹ Major Dwight R. Motz, "JFACC: The Joint Air Control 'Cold War' Continues," Marine Corps Gazette 77, no.1 (January 1993): 67.

²⁰ Major Jeffrey E. Stambaugh, "JFACC: Key to Organizing Your Air Assets for Victory," Parameters 24, no. 2 (Summer 1994): 98.

²¹ Motz, 67.

²² Motz, 68.

²³ R. Kent Laughbaum, "Synchronizing Airpower and Firepower in the Deep Battle," CADRE Paper, (Air University Press, Maxwell Air Force Base, Ala, 1999), 16.

²⁴ FM 6-20, Field Artillery Tactics and Techniques, 1942, 42.

²⁵ Benjamin Franklin Cooling, ed., Case Studies in the Development of Close Air Support (Washington, D.C.: Office of Air Force History, 1990), 271.

²⁶ Department of the Army, Field Artillery Tactics and Techniques, Field Manual 6-20 (Washington D.C.: U.S. Department of the Army, 1948), 95-98.

²⁷ Department of the Army, Field Artillery Tactics, Field Manual 6-20-1 (Washington D.C.: U.S. Department of the Army, 1961), 30-31.

²⁸ Department of the Army, Field Artillery Tactics with Change 1, Field Manual 6-20-1 (Washington D.C.: U.S. Department of the Army, 1967), 23-24.

²⁹ Department of the Army Fire Support in Combined Arms Operations, Field Manual 6-20, (Washington D.C.: U.S. Department of the Army, 1977), 3-15.

³⁰ Harold R. Winton, "Partnership in Tension" The Army and Air Force between Vietnam and Desert Shield," Parameters 26, no.1 (Spring 1996): 113.

³¹ Laughbaum, 19.

³² Department of Defense, Department of Defense Dictionary of Military and Associated Terms, Joint Pub 1-02 (Washington D.C.: U.S. Department of Defense, December, 1989), 146.

³³ Department of Defense, Doctrine for Joint Operations, Joint Pub 3-00 (Washington D.C.: U.S. Department of Defense, February 1995), xviii.

³⁴ Ibid, GL-7.

³⁵ Headquarters, Department of the Army, FM 101-5-1, Operational Terms and Graphics, (Washington, D.C.: U.S. Government Printing Office, 15 July 1995), 1-120.

³⁶ Carl Pivarsky, Air War College Maxwell Paper No.7, Airpower in the Context of a Dysfunctional Joint Doctrine, (Maxwell AFB, AL), p. 18.

³⁷ Tom Clancy with General Chuck Horner (Ret), Every Man a Tiger, (New York, NY, Berkley Books, 2000), 474.

³⁸ Commend for reading Maxwell Paper 7, Airpower in the Context of a Dysfunctional Joint Doctrine by Lt Col Carl R. Pivarsky Jr., and Maxwell Paper No. 12, Integrating Joint Operations Beyond the FSCL, Is Current Doctrine Adequate?, by Lt Col Dewayne P. Hall.

³⁹ Tom Clancy with General Chuck Horner(Ret), Every Man a Tiger, (New York, NY, Berkley Books, 2000), 474.

⁴⁰ General George H. Decker, USA, speech given at the US Army Command and General Staff College, Fort Leavenworth, Kansas, 16 December 1960, quoted in Robert D. Heinl, Jr., Dictionary of Military and Naval Quotations (Annapolis, Maryland: Naval Press, 1966), p. 95.

BIBLIOGRAPHY

- Annen, LTC David M. Joint Interdiction – The Gray Area. Strategy Research Project, U. S. Army War College, Carlisle Barracks, PA, 15 April 1996.
- Ayers, Major Mark H. The Answer is? Friction Over Who Should Plan and Control Joint Fires Beyond the FSCL. Monograph, School of Advanced Military Studies, Fort Leavenworth, KS, 1997.
- Bingham, LtCol Price T. "Air Interdiction and the Need for Change." Strategic Review 20 (Fall 1992): 24-33.
- Clancy, Tom and General Chuck Horner. Every Man a Tiger. New York, NY: Berkley Books, 2000.
- Cooling, Benjamin Franklin. Case Studies in the Development of Close Air Support. Washington D.C.: Office of Air Force History United States Air Force, 1990.
- Davis, Richard G. The 31 Initiatives: A Study of Air Force - Army Cooperation. Washington D.C.: Office of Air Force History United States Air Force, 1987.
- Department of the Air Force, Air Force Basic Doctrine (AFDD1), Washington, D.C., U.S. Department of the Air Force, 1997.
- Department of the Air Force, JFACC Primer, 2nd edition, Washington, D.C., Department of the Air Force, 1994.
- Department of the Air Force, AFM 1-1, Functions and Basic Doctrine of the United States Air Force, Washington D.C., Department of the Air Force, 1979.
- Department of the Air Force, AFM 1-1, Basic Aerospace Doctrine of the United States Air Force, Washington D.C., Department of the Air Force, 1984.
- Department of the Army, F 6-20 Fire Support in the AirLand Battle, Washington D.C., Department of the Army, 1988.
- Department of the Army, Field Manual 6-20, Fire Support in Combined Arms Operations, Washington D.C., Department of the Army, 1984.
- Department of the Army, Field Manual 6-20, Fire Support in Combined Arms Operations, Washington D.C., Department of the Army, 1977.
- Department of the Army, Field Manual 6-20, Field Artillery Tactics and Operations, Washington D.C., Department of the Army, 1973.
- Department of the Army, Field Manual 6-20, Field Artillery Tactics and Operations, Washington D.C., Department of the Army, 1958.
- Department of the Army, Field Manual 6-20, Field Artillery Tactics and Operations, Washington D.C., Department of the Army, 1953.

Department of the Army, Field Manual 6-20, Field Artillery Tactics and Operations, Washington D.C., Department of the Army, 1948.

Department of the Army, Field Manual 6-20, Field Artillery Tactics and Operations, Washington D.C., Department of the Army, 1942.

Department of the Army, Field Manual 6-20-1, Field Artillery Tactics, Washington D.C., Department of the Army, 1961.

Department of the Army, Field Manual 6-20-1, Field Artillery Tactics with Change 1, Washington D.C., Department of the Army, 1967.

Department of the Army, FM 100-5, Operations, Washington D.C., Department of the Army, 1993.

Department of the Army, FM 101-5-1, Operational Terms and Graphics, Washington D.C., Department of the Army, 1995.

Department of Defense, Joint Pub 3-56.1, Command and Control for Joint Air Operations, Washington D.C., Department of Defense, 1994.

Department of Defense, Joint Pub 1, Joint Warfare of the Armed Forces of the United States, Washington D.C., U.S. Joint Chiefs of Staff, 1998.

Department of Defense, Joint Pub 1-02, Department of Defense Dictionary of Military and Associated Terms, Washington D.C., Department of Defense, 1989.

Department of Defense, Joint Pub 1-02, Department of Defense Dictionary of Military and Associated Terms, Washington D.C., Department of Defense, 1994.

Department of Defense, Joint Pub 3-09, Doctrine for Joint Fire Support, Washington D.C., Department of Defense, 1998.

Department of Defense, Joint Pub 3-03, Doctrine for Joint Interdiction Operations, Washington D.C., Department of Defense, 1997.

Department of Defense, Joint Pub 3-0, Doctrine for Joint Operations, Washington D.C., Department of Defense, 1995

Fedorchak, Major Scott A. "Air Operations Must Be Joint." Airpower Journal vol. ix, no. 1 (Spring 1995).

Futrell, Robert Frank. Ideas, Concepts, Doctrine: Basic Thinking in the United States Air Force, 1907-1961. Maxwell AFB, AL, 1974.

Futrell, Robert Frank. Ideas, Concepts, Doctrine: Basic Thinking in the United States Air Force, 1961-1984, v.2. Maxwell AFB, AL, 1989.

Greenfield, Kent Roberts. Army Ground Forces and the Air-Ground Battle Team Including Organic Light Aviation (Study 35), History Section Army Ground Forces, 1948.

- Lanza, Maj. Stephen R. Permissive or Restrictive: Is There a Need for a PARADIGM Shift in the Operational Use of the Fire Support Coordination Line? Monograph, School of Advanced Military Studies, Fort Leavenworth, KS, 1994.
- Laughbaum, LtCol R. Kent. "Synchronizing Airpower and Firepower in the Deep Battle." CADRE Paper, Air University Press, 1999.
- Lewis, Col Richard B. H. "JFACC Problem Associated With Battlefield Preparation in Desert Storm." Airpower Journal Vol 8 No 1 (Spring 1994): 8-28.
- McPeak, LTG Merrill A. "TacAir Missions and the Fire Support Coordination Line." Air University Review Vol LXXXVI No6 (September-October 1985): 65-72.
- Motz, Major Dwight R. "JFACC: The Joint Air Control 'Cold War' Continues..." Marine Corps Gazette 77, no. 1 (January 93): 66-69.
- New, LtCol Terry L. "Where to Draw the Line Between Air and Land Battle." Airpower Journal (Fall 1996): 37.
- Pivarsky, LtCol Carl. "Airpower in the Context of a Dysfunctional Joint Doctrine." Air War College Maxwell Paper No. 7. Air University Press, 1997
- Rasmussen, Robert D. "The Central Europe Battle Field: Doctrinal Implications for Counterair-Interdiction." Air University Review 29, no. 5 (July-August 1978).
- Reimer, General Dennis J. and General Ronald R. Fogleman. "Joint Warfare and the Army-Air Force Team." Joint Forces Quarterly (Spring 1996): 9.
- ROK-U.S. Combined Forces Command, Deep Operations Primer-Korea, Seoul, Korea, U.S. Combined Forces Command, 1998.
- Ruskin, John. The Oxford Dictionary of Quotations. New York: Oxford University Press, 1980.
- Stambaugh, "JFACC: Key to Organizing Your Air Assets for Victory." Parameters 24, no.2 (Summer 1994): 98.
- Vozzo, Martin L. Considerations for Use and Placement of the Joint Force Land Component Commander's Forward Boundary. Strategic Research Project, U. S. Army War College, Carlisle Barracks, PA, 30 January 1999.
- Winton, Harold R. "Partnership in Tension, The Army and Air Force between Vietnam and Desert Shield." Parameters 26, no.1 (Spring 1996).
- U.S. Army War College, Joint Forces Land Component Commander Primer, Carlisle Barracks, PA, Department of Military Strategy, Planning, and Operations, 1998.

