FIRE SUPPORT PLANNING DOCTRINE AND THE DECISIONMAKING PROCESS

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

MASTER OF MILITARY ART AND SCIENCE

by

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B.A., Virginia Military Institute, Lexington, Virginia, 1979

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This thesis provides a comprehensive look at how well fire support planning doctrine is integrated into the tactical decisionmaking process. It examines whether or not fire support planning can be doctrinally accomplished at the corps to brigade levels. The thesis also discusses the current trends in fire support planning as revealed by Operation Desert Storm. Although the brigade, division, and corps have minor differences, the process and problem of fire support planning are basically the same. The current planning process is decisionmaking; the problem is an incongruous fire support doctrine. The fire support doctrine and the decisionmaking process have developed independent of each other. It is left to the fire supporter to somehow merge these two independent processes into a coherent fire support plan. Besides the decisiomaking process, several additional considerations for fire support planning are emerging. In Operation Desert Storm these considerations created a totally new set of planning problems. If these planning problems are trends for the future, the challenges to fire support planning process are growing faster then our ability to manage them. The study concludes with a few recommendations on how to resolve some of the more pressing problems.

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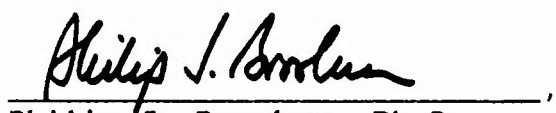

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The opinions and conclusions expressed herein are those of the student author and do not necessarily represent the views of the U.S. Army Command and General Staff College or any other government agency. (References to this study should include the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

ABSTRACT

FIRE SUPPORT PLANNING DOCTRINE AND THE DECISIONMAKING PROCESS by MAJ Ray D. Hendrickson III, USA, 135 pages.

This thesis provides a comprehensive look at how well fire support planning doctrine is integrated into the decisionmaking process. It examines whether or not fire support planning can be doctrinally accomplished at the corps to the brigade levels. The thesis also discusses the current trends in fire support planning, as revealed by Operation Desert Storm.

Although the brigade, division, and corps have minor differences, the process and problem of fire support planning are basically the same. The current planning process is decisionmaking; the problem is an incongruous fire support doctrine. The fire support doctrine and decisionmaking process have developed independent of each other. It is left to the fire supporter to somehow merge these two independent processes into a coherent fire support plan.

Besides the decisionmaking process, several additional considerations for fire support planning are emerging. In Operation Desert Storm, these considerations created a totally new set of planning problems. If these planning problems are trends for the future, the challenges to fire support planning process is growing faster then our ability to manage them. The study concludes with a few recommendations on how to resolve some of the more pressing problems.

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CHAPTER 1:

THE GROWTH OF FIRE SUPPORT AND THE RESEARCH METHODOLOGY

The Research Question

In FM 6-30, Observed Fire Procedures, it is stated that fire support is the eyes, the fire direction center (FDC) is the brains and the firing unit is the brawn of the fire support gunnery team.[1] Having worked with all three, I believe this description is very misleading. The FDC and our weapon systems are governed by science and are easily adapted to automation. Today's FDC is capable of near total automation, with soldiers required only to check or verify the safety of data. In the firing unit, the M109 Paladin computes the firing data, lays the howitzer, and elevates the tube onto the target. The Section Chief and crew merely load and fire. As computers make fire direction and the delivery of fire easier, the difficulties with the art of fire support grows.

It is the job of the fire supporter to integrate the fire support battlefield operating system (FSBOS) into the battle. This task requires a complete mastery of tactics and a thorough understanding of the capabilities and limitations

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[1]U.S. Army, FM 6-30, Observed Fire Procedures (Washington: Department of the Army, 1985), 1-1 thru 1-2.

of each fire support weapon system. By its nature it is an art and requires an artistic touch and understanding. Any artisan attempting to integrate FSBOS without the necessary knowledge, experience and skill faces almost certain failure and frustration.

The demands on fire support have continued to grow over the past forty years. Looking at the doctrinal literature alone, shows the magnitude of the change. In 1953, the first FM 6-20 was published. This manual, the first separating field artillery tactics from technical procedures, has a scant 12 pages dealing with fire support.[2] Today, there are five separate manuals dealing with the same subject.[3]

Why such a change? The howitzer has not changed that much in the last forty years. Has the art of fire support somehow changed, increasing its complexity? If so, how and to what degree?

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[2]The 1953 FM, deals with fire planning in chapter 12 and fire support coordination in chapter 15. Not included in my 12 pages is chapter 11 dealing with target analysis. This chapter is more of a check list then doctrinal information, so I have not included it.

[3]The FM 6-20 series deals almost exclusively with fire support. The series consist of six manuals: FM 6-20 Fire Support in the AirLand Battle, FM 6-20-20 Fire Support Handbook, FM 6-20-30 Fire Support for Corps and Division Operations, FM 6-20-40 Fire Support for Brigade Operations (Heavy), and FM 6-20-50 Fire Support for Brigade Operations (Light). There are two other manuals that have strong fire support themes: they are FM 6-20-10 The Targeting Process and TC 6-71 Fire Support Handbook for the Maneuver Commander. There is a lot of duplications in these manuals as each tries to fill the needs of a select group of fire supporters.

These are the questions I will address in this thesis. I will look at what fire support planning is composed of and what it is required to do from brigade to corps. I will provide a comprehensive description of the problems and inherent complexities in our planning cycle. In chapter V, I will provide possible solutions to the problems discussed.

Key Terms and Definitions

There are several terms I will use throughout this thesis that require precise definitions and understanding. In doctrinal literature many of these terms overlap or are very similar. Where possible, I have selected definitions given in the FM 6-20 series.

Fire support battlefield operating system (FSBOS) is synonymous with the fire support system. The FSBOS is "the product of a system consisting of three parts: 1) fire support command, control, and coordination (C^3) facilities and personnel, 2) target acquisition and battlefield surveillance, and 3) fire support resources . . . weapons."[4] It is the physical structure and organization that provides the maneuver commander fire support.

Fire support is "the collective and coordinated use of indirect-fire weapons, armed aircraft, and other lethal and

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[4]U.S. Army, FM 6-20, Fire Support in the AirLand Battle (Washington: Department of the Army, 1988), 1-2.

nonlethal means in support of a battle plan."[5] This term refers strictly to tactical employment of the FSBOS.

Fire support element (FSE) is a "functional portion of a force tactical operations center that provides centralized targeting, coordination and integration of fires delivered on surface targets by fire support means under the control of or in support of the force."[6] This element is staffed by a field artillery headquarters or close support battalion.

Fire support cells "are organized to facilitate the coordination and execution of the fire support system . . . the FS cell (fire support cell) is not a field artillery organization."[7] Its composition varies between headquarters and echelons. The cell's nucleus is the FSE and will contain representatives from all combat support units that provide or are affected by fire support (e.g., Engineer, Air Defense, Electronic Warfare, Army Aviation, Tactical Air Support).

Fire Support Coordination is the "continuous process of implementing fire support planning and managing fire support assets that are available to the maneuver force."[8] It includes the clearance of fires, management of fire support

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[5]U.S. Army, FM 6-20, Fire Supporting the AirLand Battle (Washington: Department of the Army, 1988), 1-2.

[6]U.S. Army, FM 101-5-1, Operational Terms and Symbols, (Washington: Department of the Army, 1985) 1-32.

[7]U.S. Army, FM 6-20-30 Fire Support for Corps and Division Operations (Washington: Department of the Army, 1989), 1-2.

[8]U.S. Army, FM 6-20-40, Fire Support for Brigade Operations (Heavy) (Washington: Department of the Army, 1990) 1-2.

coordination measures, and the synchronization of all fire support assets.

Fire Support Coordinator (FSCOORD) is "the senior field artillery officer at each echelon above maneuver platoon level who serves as the principal advisor to the commander for the planning and coordination of all available fire support."[9] At brigade and higher, the FSCOORD is also the commander of a field artillery unit.

Fire Support Coordinating Measures (FSCM) are both maneuver and fire support graphics that facilitate the rapid coordination and safeguards friendly troops, aircraft, and installations.[10]

Operational fires is fire support delivered against operational level targets. Operational fire planning is normally conducted by a Joint Targeting Board.

Development of Fire Support Doctrine

At the end of World War II, the US Field Artillery had the reputation of being the best in the world. It accounted for more than half the casualties inflicted on the Germans.[11]

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[9]U.S. Army, FM 101-5-1 Operational Terms and Symbols, (Washington: Department of the Army, 1985) 1-32.

[10]U.S. Army, TC 6-71, Fire Support Handbook for the Maneuver Commander (Washington: Department of the Army, 1988), 47-48.

[11]Russel F. Weigley, Eisenhower's Lieutenants: The Campaign of France and Germany, 1944-1945 (Bloomington: Indiana University Press, 1981) 28.

Tactical operations often required the maneuver arms to pin the Germans, followed by massed fire support to destroy the fixed forces. Responsive massing of entire corps of artillery was the envy of the world. The doctrinal and structural changes to the field artillery that followed the war reflected the lessons and principles learned during the war.

The development of our current fire support doctrine and structure are firmly rooted in our World War II experiences.[12] The lessons of World War II prompted the publication of three Department of the Army Training Circulars in 1949. These circulars formally established a set of principles and responsibilities for fire support coordination developed during the war. In addition, Training Circular 13, published on 7 December 1949, established the Fire Support Coordination Center (FSCC). The FSCC, the forerunner of the FSE, was developed and used during World War II. The Training Circular merely formalized and standardized the FSCC's organization and duties at division and corps.

In October of 1953, FM 6-20 Artillery Tactics and Technique replaced the Training Circulars and consolidated the doctrine for coordinating fire support. The manual contained guidance for the field artillery and air defense artillery battalion, as well as the basic fire support principles. From this humble beginning the entire FM 6-20 series was founded.

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[12]William J. Wood, "Fire Support for Army Forces," Military Review 44 (March 1964): 35-37.

The Korean War had minimal influence on the 1953 FM. Its impact was limited because the Army considered the Korean conflict an anomaly; the real war was going to be in Europe. The war was also largely an Infantry war[13], reinforcing much of our World War experiences. But, the war did highlight the growing combined arms nature of warfare. The initial problems of coordinating between the Far East Air Force and the ground units caused "almost as much harm as good, shooting up American positions and dealing grievous harm to friendly ROK [Republic of Korea] units . . . ."[14] Even the importance of artillery support grew throughout the war. By the end of the conflict it had become "primarily an artillery war."[15]

By the middle of the Korean War, artillerymen like MAJ H.P. Rand saw the growing fire support coordination problem and recommended several changes. First, he pointed out that "whichever echelon does the coordinating, the FSCC of that echelon is responsible for the safety of all friendly installations, troops, airplanes, and vessels."[16] Second, he recommended that the field artillery officer who is

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[13]T.R. Fehrenbach, This Kind of War (New York: Macmillan Company, 1963) 170.

[14]T.R. Fehrenbach, This Kind of War (New York: Macmillan Company, 1963) 167.

[15]T.R. Fehrenbach, This Kind of War (New York: Macmillan Company, 1963) 668.

[16]H.P.Rand, "Fire Support Coordination," Military Review 32 (November 1952): .

attached to the maneuver unit, provide safety measures in the operations order to help safeguard maneuver units.

MAJ Rand's 1952 article was prophetic. In 1960, a new tactical operations center (TOC) system created the Fire Support Element (FSE). The FSE was placed at corps and division and the Combat Support Coordination Center (CSCC) operated at brigade and battalion, replacing the FSCC. FM 6-20-1, published in 1961, outlined the responsibilities of the FSE and CSCC.

The new FSE provided centralized responsibility but had several major shortcomings.[17] First, the FSCOORD's authority for coordination was limited to surface to surface conventional fires only. Although planning, physical coordination, and safeguarding troops and aircraft were his responsibility, he had no authority to coordinate air, nuclear munitions or chemical fires for the commander. Second, the FSCOORD had no authority to resolve conflicts with non-artillery fire support elements. All Army conflicts had to be resolved by the G-3 controlling both elements. Third, the FSCOORD's supervision of fire support was restricted to the FSE; he did not have any supervisory authority to affect employment of other fire support assets. Finally, the FSE was not established above corps. This shortcoming is still

[17]William J. Wood, "Fire Support Coordination for the Army Forces," Military Review 44 (March 1964): 35-37.

present today, in spite of the fact, that artillerymen like LTC Edwin J. McCarren recognized the need back in 1960.[18]

The Vietnam War brought problems never before seen by American Field Artillery. The heavy numbers of aircraft moving in all directions, a nonlinear battlefield and the numerous villages created coordination and safety nightmares. Mission clearance times often negated or minimized fire support effectiveness. Several units like the 1st Cavalry Division gave the FSE and CSCC full coordinating and air space management authority.[19] The CSCC became the "focal point for the coordination of US Artillery along with other means of fire support."[20] The doctrinal change did not occur until the 1973 FM 6-20 was published.

The 1973 FM 6-20, with change 1 issued in 1977, contains most of our current terminology, structure and doctrine. The name of the CSCC was changed to FSE and the FSCOORD was given full coordinating authority over all fire support assets. Our current definitions and names of FSCMs were also published in this manual.

Two notable changes occurred in the 1977 change 1. First, its name was changed from Field Artillery Tactics and

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[18]Edwin J. McCarren, "The Nerve Center of Command," Military Review (June 1960): 56.

[19]Harry O. Amos, "Artillery Support of the Vietnamese" Military Review 46 (August 1966) 31.

[20]Harry O. Amos, "Artillery Support of the Vietnamese" Military Review 46 (August 1966) 31.

Techniques to Fire Support for Combined Arms Operations. This change was to emphasize the combined arms nature of fire support. The second change was in the packaging of the manuals. The fire support techniques tactics and procedures (TTP) were totally separated from the Field Artillery Cannon Battalion manual FM 6-20-1.

Throughout the 1980s, the AirLand Battle (ALB) concept placed more and more requirements on our fire support doctrine. Therefore, in 1988 the FM 6-20 became the capstone manual for an entire series of fire support manuals. The concept, requirements and capabilities of this doctrine will be addressed later.

I find the changes of the late seventies and eighties very interesting in that they were not precipitated by armed conflict. It is true that most of our fire support principals were established during war but the changes caused by ALB doctrine have had a profound effect on our methodology. Noted historian Michael Howard states that doctrine development in peacetime is "like a sailor navigating by dead reckoning."[11] He also states the ultimate test of equipment and doctrine is war. If he is correct, Desert Storm may have validated our direction as we head back out into the sea of peace.

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[11]Michael Howard, "Military Science in an Age of Peace," RUSI, Journal of the Royal United Services Institute for Defence Studies 119 (March 1974), 3-9.

Significance of this Study

FM 100-5, Operations states that the dynamics of combat power "decide the outcome of campaigns, major operations, battles, and engagements."[22] The dynamics consist of four elements: leadership, maneuver, protection and firepower. These four principles form the cornerstones of AirLand battle doctrine; we neglect any one at our own peril.

Leadership is the "most essential element,"[23] providing purpose, direction, motivation and guidance to the other three dynamics. Competent and confident leadership can galvanize the other three elements, creating a synergistic effect on the battlefield.

Maneuver is the movement of forces to achieve surprise, shock, momentum and the initiative. Rarely is maneuver possible without firepower and protection; however, many commanders give only this dynamic their personal attention. The importance given to maneuver can be seen in the degree of detail it is addressed in the operations order (OPORD). The mission statement, commander's intent and tasks to subordinate units define in thorough detail the scheme of maneuver.

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[22]U.S. Army, FM 100-5, Operations (Washington: Department of the Army, 1986), 11.

[23]U.S. Army, FM 100-5, Operations (Washington: Department of the Army, 1986), 13.

The third dynamic, protection, conserves the fighting potential of the force. This dynamic includes actions taken to counter enemy firepower and protect the fighting spirit of our soldiers. Commanders normally address this element in the standing operation procedures (SOP) and in the disposition of their units.

Firepower provides the destructive force that defeats the enemy. The FSBOS encompasses the preponderance of this dynamic. Ironically, this system receives very little formal guidance. The OPORD normally addresses the priority of fires and weapon systems available, not the scheme of fires. The commander's intent must address maneuver, but not his intent for fire support. Providing the proper guidance for firepower normally falls upon the commander's principle advisor for fire support, the FSCOORD. On his shoulders and the fire support cell, rests the responsibility to maximize firepower on the battlefield.

Superior firepower does not necessarily come from superior numbers or better weapons, but from superior integration, coordination and synchronization of available weapon systems. Case in point is Desert Storm; Iraq had superior numbers of artillery that were in many respects far better than ours. Without an integrated system, Iraqi guns sat idle as we penetrated his defensive belts. Because Iraq neglected acquisition systems, allied artillery could fire with impunity, knowing they would not receive counterfire.

Without having a synchronized battle plan, the Iraqis brought only one weapon system at a time against the myriad of allied weapons on the same battlefield. Our fire support system worked well against a disorganized force; but, it is not perfect.

The integration of each system requires a thorough understanding of the system's capabilities and weaknesses. With the growing number of weapon systems and variety of munitions, this complexity is becoming an ever-increasing challenge. Coordination requires time, direct contact and an understanding between headquarters, all of which require constant management. Finally, synchronization is achieved by arranging fire support in time and space, bringing maximum firepower at the decisive place and time. Synchronization is very difficult to achieve and only detailed planning and competent execution can achieve it.

This thesis provides a comprehensive look at the how well fire support doctrine is integrated into our planning and decisionmaking process. I will show that, from a planning perspective, the knowledge requirements, time constraints, coordination problems, and doctrinal conflicts prevent maximum use of our firepower. Desert Storm not withstanding, our system promises more then it can deliver.

Research Methodology

Fire support planning is time sensitive and is required to work within the decisionmaking process. This process at every echelon must work under the pressure of the OPORD timeline. Any tardiness in preparation places added time pressure on subordinate fire supporters. The interweaving of any fire support weapon system into an operation requires time consuming planning and coordination between at least two different headquarters. The planning process is further exasperated by coordination problems and independent planning timeliness of some of the weapon systems. The synergistic effects sought, may require as many as 10 different weapon systems, not all under the same commander, to operate as one. Any mistake or misunderstanding can disrupt the attack plan and/or put our high value weapon systems at risk. The ability of the fire support community to doctrinally plan fire support is questionable.

It is my hypothesis that the planning requirements placed on the fire support system exceed the time and doctrine available to manage the system. When the system is taxed by a capable opponent, flaws in the design deny the maneuver commander maximum use of his firepower.

In chapter 3, I test the hypothesis by examining the requirements of fire support doctrine in the context of the decisionmaking process. Here, I discuss the four basic fire

support tasks and see if these tasks are properly addressed in the development of the operations order. If they are not addressed, I will identify them and give the reasons why.

Next, I discuss the planning timeliness of each echelon, starting at corps and ending at brigade. For this discussion I have used the 72 hour planning cycle discussed in FM 100-15, Corps Operations. I will examine the timeliness required by certain fire support systems and see if they are compatible with the doctrinal cycles. If they are not incorporated into the planning sequence, what are the repercussions on the fire support planning of the adhoc solutions.

In chapter 4, I examine the current trends in fire support planning. I will look at the Operation Desert Storm's lessons learned from a fire support planning perspective. This campaign highlighted several fire support trends and planning problems. Using this information, I will attempt to see the problems currently facing fire support planning.

In chapter 5, I state my conclusions and finish the thesis with an abbreviated examination of possible solutions to our current and future problems.

My methodology is descriptive in design and relies heavily upon deductive reasoning. I have tried to limit any bias by showing that the doctrinal requirements conflict amongst themselves and exceed any reasonable expectation. It is impossible to use empirical data due to the large number of

variables involved. For example, I can not set a specific amount of time needed to coordinate a fire plan without specifying the number and type of: targets, weapon systems employed, units involved, graphic control methods needed, enemy air defense systems and counterfire capabilities. Although the scientific methodology would be preferred, it is inappropriate for this study.

CHAPTER 2:

LITERATURE REVIEW

Introduction

There are volumes of materials on field artillery tactics and technical procedures. However, there are only field manuals (FMs), a handful of dissertations and a few periodicals on fire support. The preponderance of fire support literature rests within government publications. Nearly every manual dealing with tactics at least gives fire support a cursory overview. These non-fire support manuals try to give the reader a quick overview of the importance and implications of fire support. The basic source documents for most of these manuals are the FM 6-20 series.

Government Publications

My research on fire support began with FM 6-20. The growth of FM 6-20 over the past fifty years reflects the increasing importance and complexity of fire support on the modern battlefield. Before the advent of ALB Doctrine, the manuals lagged behind innovations already in the field. The

battlefield provided the doctrinal changes annotated in the manuals when they were rewritten. The massive changes indoctrine instituted by ALB, made the fire support manuals instruments of change.

ALB doctrine brought with it a host of new fire support manuals and publications. The current FM 6-20 series tries to provide each echelon and headquarters with its own manual and fire support slant. In the following pages, I have provided a complete listing and brief description of all fire support publications known to me. The list is extensive, but, it does give the reader an idea of the doctrinal explosion in fire support.

FM 6-20, Fire Support in the Airland Battle is the capstone manual for fire support. It establishes the doctrinal tenents for fire support employment and attempts to establish a basis for understanding this element of combat power. The manual provides a broad brush overview of fire support, providing the necessary understanding of the basic principles governing fire support. Unfortunately, it fails to provide a solid foundation for the supporting manuals. For example, the manual refers to decide, detect, deliver as the synchronization methodology of fire support.[1] In every other

[1]U.S. Army, FM 6-20, Fire Support in the AirLand Battle (Washington: Department of the Army, 1988) 3-3.

manual the decide-detect-deliver methodology is called the targeting process.[2]

FM 6-20-1, The Field Artillery Cannon Battalion addresses most of what the 1953 FM 6-20 did; the tactical procedures of the cannon battalion. The FM 6-20-1 covers only those fire support tasks that the cannon battalion must know to understand and execute a fire support plan. Overall the manual is very thorough; however, it fails to instruct the reader on how to integrate the field artillery support plan[3] with the fire support plan[4].

FM 6-20-2J, Division Artillery, Field Artillery Brigade, and Corps Artillery Headquarters deals with force artillery headquarters operations. The FSE for the division or corps is provided by the supporting headquarters. Outside of the FSE's organization, there is surprisingly little fire support doctrine provided. This manual is currently under revision.

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[2]U.S. Army, FM 6-20-10, The Targeting Process (Washington: Department of the Army, 1990), 1-3. See also:
U.S. Army, FM 6-20-30, Fire Support for Corps and Division Operations (Washington: Department of the Army, 1989), 4-8.
U.S. Army, FM 6-20-40, Fire Support for Brigade Operations (Heavy) (Washington: Department of the Army, 1990), 2-8.
U.S. Army, FM 6-20-50, Fire Support for Brigade Operations (Light) (Washington: Department of the Army, 1990), 2-8.

[3]The fire support plan is a part of the main OPORD. It contains the information necessary for understanding and executing fire support in support of an operation.

[4]The field artillery support plan is an appendix to an OPORD. The field artillery support plan provides detailed instructions to supporting field artillery units for an operation.

FM 6-20-10, The Targeting Process discusses target value analysis. Although target development according to FM 100-5 is a G2 function,[5] the manual is produced by the fire support community. FM 6-20-10 states that the targeting team's core is the operations, intelligence and fire support officers. Unfortunately, targeting is only extensively taught to field artillery officers.[6]

FM 6-20-20, Fire Support Handbook was published to provide a quick reference for fire support at brigade to company/team levels. It contains checklists, memory aids, and extracts from other publications. It is interesting to note that units going to Desert Storm found this manual inadequate.[7] The Field Artillery School responded to their request with a three inch-thick handbook that effectively combined all the FM 6-20 series manuals.

FM 6-20-30, Fire Support for Corps and Division Operations attempts to describe fire support doctrine for

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[5]U.S. Army, FM 100-5, Operations (Washington: Department of the Army, 1986), 38.

[6]Target Value Analysis (TVA) is currently part of the Field Artillery Advance Course. Students receive six hours of formal instruction, and the subject tested on the second examination. The Military Intelligence Advance Course presents a one hour overview of the process. The U.S. Army Command and General Staff College offers only one elective addressing TVA to resident students. The Advanced Fires elective spends less then two hours discussing the use of the products of TVA. These are the only service schools currently instructing TVA.

[7]The request for a better handbook came from the III Corps Artillery Headquarters. Captain Joseph Ramirez was the project officer.

corps and division operations. It also serves as a guide for echelons above corps regarding the organization, capabilities, and employment of fire support. Future manuals will probably divide corps and echelons above corps from division.

FM 6-20-40, Fire Support for Brigade Operations (Heavy) and FM 6-20-50, Fire Support for Brigade Operations (Light) provides a detailed description of maneuver techniques and fire support considerations at the maneuver brigade level. The only difference between the two manuals is in the slant given to mechanized or towed operations.

TC 6-71, Fire Support Handbook for the Maneuver Commander gives the maneuver commander an thorough understanding of fire support principles, employment considerations and training tips.

The Field Artillery School also produces a set of ten handouts, updated annually, that supplement the current doctrine. Seven of these handouts deal with fire support issues. The handouts contain published articles, changes in doctrinal thinking, summaries of lessons learned from the Combat Training Centers and updated technical readouts on weapon systems. These handouts are provided to the pre-command course students, personnel attending the fire support conference and upon request.

The last governmental publication I will discuss is the Fire Support Lessons Learned. This publication is produced by the Combined Arms Training Activity Center for

Army Lessons Learned at Fort Leavenworth. This is a quarterly publication discussing current trends and problems in the fire support arena.

Periodicals, Monographs, and Theses

Articles dealing with the subject of FSBOS before the late 1980s are rare. There are, however, a multitude of articles dealing with specific issues related to fire support. For example, I found ten articles dealing with the proper use of Army Aviation. Almost all of these articles refer to weapon employment techniques and have minimal impact on this thesis. Some of the best fire support articles were written to the Marine Corps Gazette. Unfortunately, these articles were too service specific for this paper. The first post-World War II article that I found was written by MAJ H.P. Rand in 1952.

MAJ Rand wrote an excellent article called "Fire Support Coordination"[8] that outlined the development of the FSCC. He argued that the Army had not given the FSCC the authority to coordinate all fire support. It also is the earliest article I have read, stating that a balance between safety, flexibility and speed must be maintained. MAJ Rand's

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[8]H.P. Rand, "Fire Support Coordination," Military Review 32 (October 1989): 3.

impact on fire support development is unknown; but, all his recommendations were adopted within the following 15 years.

MAJ Rand's sentiments were echoed eight years later by LTC Edwin J. McCarren in his article "The Nerve Center of Command."[9] He insisted that the limited authority of the FSCOORD prevented reliable fire support coordination. He believed that the FSCOORD must have the responsibility and authority to control all fire support assets.

In 1964, LTC William J. Wood wrote an article similar to MAJ Rand's on the development of fire support coordination. His article "Fire Support Coordination for the Army Forces" outlined the development and problems with the FSE and fire support coordination.[10]

The Vietnam War produced a large volume of "how to" literature (e.g., how to conduct artillery airmobiles, how to employ gunships in the fire support mode, how to work with the Vietnamese, and so forth). Some of this literature, like "Artillery Support of the Vietnamese,"[11] discussed the solutions used by units to solve their fire support problems. However, the best publication on fire support during the Vietnam War was produced in the form of lessons learned. The

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[9]Edwin J. McCarren, "The Nerve Center of Command," Military Review (June 1960): 56.

[10]William J. Wood, "Fire Support for Army Forces," Military Review 44 (March 1964): 35-37.

[11]Harry O. Amos, "Artillery Support for the Vietnamese," Military Review 46 (August 1966): 31.

Vietnam Studies, Field Artillery published in 1975, outline specific field artillery problems and solutions used during the war. This book was one of the last publications dealing with fire support for the next ten years.

In the late 1980s there was an explosion of literature on brigade/battalion level fire support. The only explanation I can find is unit's poor performance at the National Training Center (NTC) at Fort Irwin. Several artillerymen like MAJ Thomas B.L. Stanford[12] and LTC William R. Brown[13] started telling the fire support community what was wrong and how to fix the problems. Most of the periodicals listed in my bibliography fall into this category. It was during this time of turmoil that the "Fire Support Lessons Learned" series began publication.

Among the avalanche of articles offering fixes, few articles tried to answer the question what happened and why. Most answers are short, shallow and symptomatic. For example, CPT Wayne A. Boers[14] attributes the fire support's poor performance to either poor quality or inexperience of the Fire Support Officer (FSO); others like CPT Peter A. Hansen[15]

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[12]Thomas B.L. Stanford, "The Razor's Edge," Field Artillery (May-June 1986) 22.

[13]William R. Brown, "NTC: Fire Support Trends and Fixes," Field Artillery (December 1988) 48.

[14]Wayne A. Boers, "Fire Support Coordinators, the keys to Fire Support," Field Artillery (April 1988): 7.

[15]Peter A. Hansen, "Synchronization a Training Problem," Infantry (September-October 1989) 23.

believe it is a training problem. Although these situations can contribute to poor fire support, it does not begin to explain why they had not existed before the mid-1980s. This is one of the questions that I will attempt to answer in this thesis.

A monograph similar to this paper was written by MAJ H.L. Ware titled "Will the King of Battle Reign on the Future High Intensity Battlefield." He questioned whether "our manpower constraints, budget, doctrine, modern combat experiences, parochialism and can do attitude led us to a complex fire support system that just won't work?"[16] Unfortunately, he never answered this question; instead, he demonstrated that the Soviet Artillery of 1988 was superior to America's. His conclusion was that if we fought the USSR the US artillery would be overwhelmed.

Much of MAJ Ware's paper was built on the work of Christopher Bellamy. Bellamy has written both a book and a Field Artillery Journal article comparing American and Soviet artillery and tactics. It is his belief that faced against superior weapons and numbers, the West has turned to automation. He believes our obsession with automation stems from our need to "extract the last drop of blood from its [the

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[16]H.L. Ware, "Will the King of Battle Reign ont the Future High Intensity Battlefield," (Monograph, US Army Command and General Staff College, 1988), 4.

West's] meager artillery assets."[17] If the volume of literature on artillery automation is any indication, obsession is not an overstatement.

While the preponderance of fire support literature is centered at the brigade and battalion level, division and higher fire support issues are appearing. Most divisional and corps level fire support literature revolves around target value analysis. These articles focus on prioritizing the multitude of targets against the fire support assets available.

A new term, operational fires, is currently getting a lot of emphasis. Operational fires, performed as low as corps level, usually refers to the deep attack of operational level targets. Most of the authors, mainly Air Force officers, seem to separate "operational fires" from the corps deep attack. As a consequence, the majority of literature on operational fires talks only to air delivery system.

Conclusion

Among the volumes of fire support literature, there is a lack of any system analysis. The manuals themselves are disjointed and contradictory reflecting minimal coordination between authors. If our doctrine is disjointed, is the FSBOS?

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[17]Chris Bellamy, "Destruction by Fire: Soviet Artillery in 1980s and Beyond" Field Artillery (September-October 1985) 42.

Can it deliver what is expected of it? The purpose of this thesis is to examine and analyze just the planning portion of the doctrinal fire support system. This thesis will frame the problems facing the fire support cell as it conducts fire planning, and suggest some ways to minimize the problems.

CHAPTER 3:

THE COMPLEXITIES

The Tactical Decisionmaking Process

> "A corps in combat must be able to simultaneously and continuously execute synchronized close, deep, and rear operations. This will require careful planning and detailed coordination...."[1]

Today, careful staff planning and detailed coordination is typically done through a logical planning sequence called the tactical decisionmaking process. The decisionmaking process is principally done at the corps to brigade levels. Its primary purpose is to orchestrate the staff's effort in developing the tactical options available to the commander. The process's nature and design requires that the fire support plan be developed concurrently and within its framework. That framework, however, is not as good a fit for fire support as it needs to be. The poor fit creates several problems for the fire support planner. To demonstrate the multiple doctrinal problems, let us look at the tactical decisionmaking process.

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[1]U.S. Army, FM 100-15, Corps Operations (Washington: Department of the Army, 1989) 3-0.

Mission Analysis

The planning sequence begins with the receipt of the mission. Each staff officer evaluates the mission keying in on the specific requirements for his staff area. The fire support cell looks to identify all required assumptions, tasks, and constraints on providing fire support. During this first phase, the staff also focusses its attention on things critical to the success of the operation, such as centers of gravity and time analysis.

The staff should focus their attention on identifying the sources of strength and balance (centers of gravity) for both friendly and threat forces. By identifying and successfully attacking the center of gravity, we can defeat the enemy without necessarily destroying all his forces. Therefore, the attack of the centers of gravity ". . . is--or should--be the focus of all operations."[2] This is especially true of the fire support planners because the threat's centers of gravity will be deep, necessitating either risky deep attacks or deep fires.[3] Likewise, the friendly centers of gravity must be protected. Identifying and protecting our centers of gravity can require as much fire support as attacking the threat's centers (e.g., protecting vital units

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[2]U.S. Army, FM 100-5, Operations (Washington: Department of the Army, 1986), 179.

[3]U.S. Army, FM 100-15, Corps Operations (Washington: Department of the Army, 1989) 3-5.

from threat fire support, allocating fire support assets to provide rear area fires).

Time analysis determines the speed that planning, decisions, coordination, and movement must be accomplished. According to FM 100-5, Operations, the planning process is as thorough as time allows.[4] Given that the planning sequence is influenced by the unpredictability of war, the corps must still plan at least seventy-two hours out.[5] The reasons for the seventy-two hour timeline are not specifically stated in our doctrinal literature. However, any less time may require all corps units to use an abbreviated planning cycles to meet mission times.

Subordinate units must be given as much time as is possible to do their own planning and coordination. The decisionmaking process addresses this by what is called the one-third two-third rule.[6] This rule states that each staff's planning cycle should take no more then one-third of the available time from mission receipt to execution. By following this rule, subordinate units receive two-thirds of the available time for their planning and preparations.

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[4]U.S. Army, FM 100-5, Operations (Washington: Department of the Army, 1986), 33.

[5]U.S. Army, FM 100-15, Corps Operations (Washington: Department of the Army, 1989), 1-1.

[6]U.S. Army, FM 71-100, Division Operations (Washington: Department of the Army, 1990), 3-8.

It should be noted that FM 6-20-30 refers to a 96 hour planning cycle instead of the 72 hours detailed in FM 100-15.[7] This process allows for more time to move, plan and coordinate fire support and logistic assets. I realize that the seventy-two hour planning cycle is idealistic, and that the tactical situation may require altering this time table. However, a tighter time table will require changes in the ideal planning process that I am addressing. Logically, if the ability to accomplish all the fire support planning in seventy-two hours is questionable, then any tightening of the standard timeline will have some fire support repercussions. Therefore, this thesis assumes the idealistic scenario.

The staff, under the direction of the G3, compiles their timelines, information, and assumptions and develop a tentative list of essential tasks. The essential task list identifies those tasks that define success. It is from the essential task list that the mission statement is derived. The mission analysis produces two key products: the restated mission and the commander's intent. Both of these products should be included in the commander's planning guidance.[8] The restated mission must address the questions of who, what, when, where and why. The exact composition of the commander's

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[7]U.S. Army, FM 6-20-30, Fire support for Corps and Division Operations (Washington: Department of the Army, 1989) 2-3.

[8]U.S. Army, FM 100-15, Corps Operations (Washington: Department of the Army, 1989) 4-13.

intent is largely left up to the commander's discretion.[9] The restated mission and commander's intent specifies the goals and parameters of the operation to every staff member. However, the commander's planning guidance's utility is based upon the composition of the rest of the guidance.

The specific composition of the commander's guidance differs greatly between manuals. FM 100-15, simply says that the "guidance is issued to the staff as soon as possible."[10] The student text used at the Command and General Staff College lists eleven items that may be included in his guidance.[11] None of these items provide any specific guidance to the fire support planner. FM 6-20-30 states that the guidance "normally includes attack guidance, priority intelligence requirements (PIR), and his maneuver planning guidance."[12] The manual continues by stating that the commander "should include information of particular concern to the FSCOORD" on: the most dangerous types of targets, what he expects from the

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[9]Currently the CGSC is teaching that the commander's intent that appears in the OPORD must: provide the commander's vision of the operation, the purpose of the operation, the desired end state, and how that end state will facilitate future operations. FM 100-15 on page 4-13 states that the initial intent should provide the "first definitive direction and provides the framework within which plans will be developed...."

[10]U.S. Army, FM 100-15, Corps Operations (Washington: Department of the Army, 1989) 4-14.

[11]U.S. Army, ST 100-9, Techniques and Procedures for Tactical Decisionmaking (Fort Leavenworth, Command and General Staff College, 1991) 2-5 thru 2-6.

[12]U.S. Army, FM 6-20-30, Fire Support for Corps and Division Operations (Washington: Department of the Army, 1989) 2-3.

fire support system and any specific constraints on the employment of fires.[13] The concept of the attack and fire support guidance is an artillery anomaly. I can not argue with the usefulness or need of these two items; but, they are only addressed in artillery literature. Without these requirements being reflected in maneuver and Army manuals, there is little chance that the fire support cell will receive this guidance.

After the Mission Analysis, the fire support planning requirements grow exponentially. One requirement is to assist the G2 in the target development process conducted during the Intelligence Preparation of the Battlefield (IPB).[14] The second requirement placed on the fire support element is to assist and advise the G3 on integrating and synchronizing fire support for each course of action developed.[15] It is also the fire support element's responsibility to ensure that each course of action developed incorporates the Four Basic Fire Support Tasks.

The four basic fire support tasks are to "serve as unifying factors for the fire support system" and provide a

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[13]Ibid, 2-7.

[14]U.S. Army, FM 6-20-10, The Targeting Process (Washington: Department of the Army, 1990) 2-4.

[15]U.S. Army, FM 6-20-2, Division Artillery, Field Artillery, Brigade and Field Artillery Section (Corps) (Washington: Department of the Army, 1983) 1-3.

point of departure for all other tasks.[16] Therefore, all other principles, functions and tasks should support one of these four pillars of the fire support systems. Before continuing the discussion on the planning process, it is necessary to examine each basic task and the other related principles. The following discussion is taken from FM 6-20, Fire Support in the AirLand Battle.

The Four Basic Fire Support Tasks

To deliver firepower on the battlefield, the FSCOORD at every echelon must perform four basic tasks: (1) support the maneuver force in contact, (2) support the force commander's battle plan, (3) synchronize fire support and (4) sustain fire support.[17] These four tasks form the framework for the fire support effort. Although these tasks have a simplistic sound, each task requires the integration of a myriad of sub-systems forming a complicated and sometimes disjointed network of systems. Each of the sub-systems requires detailed planning and coordination if it is to be synchronized into the battle plan.

The first task is to support forces in contact. As the title implies, this "task is the ability to respond to

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[16]U.S. Army, FM 6-20, Fire Support in the AirLand Battle (Washington: Department of the Army, 1988) 1-3.

[17]U.S. Army, FM 6-20, Fire Support in the AirLand Battle (Washington: Department of the Army, 1988), 1-3.

forces engaged with the enemy" using ground, air, naval and electronic fire support.[18] This task also protects our freedom of maneuver by providing fires in the deep, close, and rear operations.

To support forces in contact, deep fires are placed on the follow-on forces before they can be employed against us. This task also includes all actions taken by the unit to facilitate the deep attack. These actions include providing fires (lethal and non-lethal) to suppress known enemy air defense weapons (SEAD) before and during flight operations and offensive counterair to attack air defense weapons on the ground.

In the defense, "adequate" fires must be planned for the security area, main battle area and any forces committed to deep or rear operations. Counterpreparations should be planned to disrupt the enemies attack. Properly planned fire support coordinating measures should open up as much of the battlefield as possible, while protecting friendly units. The targeting effort must include plans that control the target acquisition assets. Finally, the fire support plan must provide fires that are: along the enemies most critical avenue of approach, for final defensive fires, and are flexible enough to be shifted onto the enemies main attack.

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[18]U.S. Army, FM 6-20, Fire Support in the AirLand Battle (Washington: Department of the Army, 1988), 1-3.

To support offensive forces in contact, the leading elements must be allocated responsive fires. The fire support planner must consider allocating fire support to: 1) neutralize enemy bypassed combat forces, 2) protect assaulting troops by neutralizing direct-fire weapons, 3) firing preparation fires to weaken enemy resistance, and 4) prevent enemy reinforcement or counter attacks. In contrast to the defense, offensive fire support coordinating measures should be "well forward to preclude endangering friendly forces."[19]

While the task of supporting forces in contact addresses the fire support needs of the subordinate units, the second task of supporting the battle plan addresses the commander's need for enough fire power to influence the battle. These first two tasks are very similar and several planning considerations overlap.

The performance of this task provides fires to attack designated high payoff targets, provides counterfire against enemy indirect-fire weapon systems, and adds weight to the combat power of maneuver units. Fires are planned to locate and attack critical enemy elements (high-payoff targets) throughout the area of operation. This differs from supporting forces in combat by focusing on specific targets and/or locations (target value analysis), rather than on follow-on forces (deep operations).

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[19]U.S. Army, FM 6-20, Fire Support in the AirLand Battle (Washington: Department of the Army, 1988) 3-2.

In the defense, the fire support planner must retain maximum feasible centralized control of his fire support, concentrating his firepower at the "decisive place and time."[20] By controlling as much fire support as is practical, the commander maintains a degree of flexibility to react to battlefield developments. Fire support is very effective when it is focussed on a natural complexity of the attack, like command and control. The fire support plan should try to place constant pressure on the enemy's command and control structure, using a combination of both lethal and non-lethal fire support weapons. Finally, all fire support assets must be integrated into the maneuver defensive plan by supporting the barrier plan, and providing fires to support the counterattack.

The fire support plan can best serve the offensive battle plan by keeping fire support assets as decentralized as possible. The preponderance of the fire support assets should be available to the main attack, helping to ensure its success. Like in the defense, fires can best serve the commander by massing at critical points on the battlefield such as: during breaching operations, during the enemies counterattack and in isolating the objective during the assault. Deep fires should also be used to prevent enemy from reinforcing, disengaging or resupplying.

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[20]U.S. Army, FM 6-20, Fire Support in the AirLand Battle (Washington: Department of the Army, 1988) 3-3.

The third task of synchronizing fire support addresses the need to precisely arrange fire support assets to "coordinate activities in time, space, and purpose to produce the most effective fires."[21] The synchronization thrust of this task requires that the fire support representatives, like their maneuver counterparts, to operate within the commander's intent.[22] The task implies that the commander give his intent for fire support to the FSCOORD and fire support cell.[23] It is from the commander's intent that the desired "unity of effort throughout the force" can be achieved.[24]

Just as fire support must be synchronized with the other battle operating systems, fire support assets must be synchronized amongst themselves. The main objective of this task is to plan the most effective fire support asset(s) against a prescribed target. Another element of this task is fire support coordination. According to FM 6-20, fire support coordination "entails the planning and execution of fires so that targets are adequately attacked by a suitable weapon or group of weapons."[25] Therefore, fire support coordination

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[21]U.S. Army, FM 6-20, Fire Support in the AirLand Battle (Washington: Department of the Army, 1988) 1-3.

[22]Ibid, 1-4.

[23]The implication is made on page 1-3 and 1-4 of FM 6-20. The FM states that "Fire support synchronization should not require explicit and repeated coordination if all fire support representatives understand the commander's intent."

[24]Ibid, 1-3.

[25]Ibid, 1-2.

involves both tactical and technical considerations necessary to deliver fires on a target. But, more importantly, it involves getting the cooperation, understanding and approval of all the headquarters involved in the delivery of fires.

FM 6-20 states that synchronization is accomplished "through normal fire support coordination"[26] and concurrently with the development of the scheme of maneuver. The next sentence of the manual reads, "fire support synchronization methodology can be found in the decide-detect-deliver approach to targeting and battle management." The rest of that chapter describes the targeting process as the means to synchronize the fire support effort.

I believe that these two statements are very misleading. First, the synchronization provided from "normal fire support coordination" is totally separate from any synchronization of the decide-detect-deliver methodology. The decide-detect-deliver methodology is only a part of the targeting process directed by the G2. Normal fire support coordination is the continuous process of implementing fire support planning and managing fire support assets[27] and is directed by FSCOORD.

Second, the targeting process is inseparably linked to the IPB and the decisionmaking process. The synchronization

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[26]Ibid, 3-3.

[27]U.S. Army, FM 6-20-40, Fire Support for Brigade Operations (Heavy) (Washington: Department of the Army, 1990) 1-2.

of fires to support the targeting process can only be planned after the IPB is complete and the fire plan is being developed. The targeting process identifies a critical enemy asset as well as an appropriates sensor(s) to locate it (decide), designates the sensor to monitor the area (detect) and then attacks the target with an appropriate fire support asset (deliver). The products of this process are the high-payoff target list (HPTL), target selection standards (TSS), and the attack guidance matrix (AGM).[28] None of these tools, by themselves, synchronize fire supports assets.

The synchronization of the targeting effort is accomplished during the IPB and course of action development. The targeting process is idealistically designed to operate within the framework of the command estimate process. For deep operations, "synchronization takes place during threat integration" of the IPB and is graphically portrayed as the decision support template.[29] As each course of action is wargamed and the products of the targeting process and the fire support plan are developed; synchronization is achieved. Therefore, the targeting process should not be considered a synchronization methodology unto itself; but rather a part of the decisionmaking process.

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[28]U.S. Army, FM 6-20-10, The Targeting Process (Washington: Department of the Army, 1990) 2-1.

[29]U.S. Army, ST 100-9, Techniques and procedures for Tactical Decisionmaking (Fort Leavenworth: Command and General Staff College, 1991) 7-31.

The fourth task, sustain the fire support system, is more than logistical resupply. It also addresses the need to protect and technically support the system. The purpose of this task is to "ensure the survivability of the entire fire support system."[30]

Sustainment requires the planner to consider the quantity and distribution of all fire support stocks and supplies. This is especially true for Class V (ammunition). Ammunition expenditure must be carefully monitored and controlled to ensure that the proper munitions are available at the decisive time and place. The fire support planner must also consider the state of mechanical readiness of all available weapon systems. The logistical status of the fire support system provides the fire support planner the boundaries within which he can plan and operate.

Protecting the fire support system consists of all the passive measures taken to prevent the destruction or interdiction of the system by the enemy. If the threat to the fire support system is high, the defensive measures taken may greatly reduce the amount of fire support available. For example, a passive defensive measure against a high counterfire threat is frequent movement. The movements will influence the flow and availability of field artillery support during the battle. Likewise, air parity will reduce the

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[30]U.S. Army, FM 6-20, Fire Support in the AirLand Battle (Washington: Department of the Army, 1988) 1-5.

amount of close air support (CAS), and limit the depth that tactical air support can go.

Technical support is a critical node to the fire support system. It provides command and control, fire direction, meteorology, survey and communication support required for accurate and rapid delivery of fires. The fire support plan must provide for the uninterrupted technical support throughout the operation.

The discussion of the validity or completeness of these tasks is not the purpose of this thesis. I will leave that topic for others to discuss. But, if these four tasks are the foundation that the fire support system is built upon, then all fire support planning should revolve around them.

A major planning problem using these four tasks is they do not fit very well into the battlefield framework. The tactical decisionmaking process uses the battlefield framework as the way to focus the commander's staff's efforts. The framework breaks the battlefield up into deep, close, rear, security, and the reserve operations. The fire support basic tasks are so intertwined within the battlefield framework that addressing one portion of the battlefield may address a portions of all four tasks. To illustrate my point, let us look at deep operations.

Deep operations are "activities directed against enemy forces not in contact"[31] designed to shape the future close battle. The fire support plan developed should address the four basic tasks as follows: 1) support forces in contact by deep fires to disrupt, delay or destroy enemy follow-on forces, 2) support the battle plan by attacking high-payoff targets (HPTs) throughout the depth of the battlefield and using fire support as a means of deep attack, 3) synchronize the fire support system through the development of the decision support templates, and 4) sustain the fire support system by prepositioning ammunition and planning for movements to reduce the risks of counterfire.

The disconnect between the tasks and the battlefield framework means that the tasks are not formally addressed. The fire support officers are staff members of a maneuver headquarters and must therefore follow the format set by the G3. Somehow the tasks must be addressed or a potentially fatal flaw may exist in the fire plan.

The FSE prepares a fire support estimate at the conclusion of the planning process. It is prepared to help integrate and synchronize the employment of all fire support systems with the scheme of maneuver.[32] The fire support

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[31]U.S. Army, FM 100-5, Operations (Washington: Department of the Army, 1986) 19.

[32]U.S. Army, FM 6-20, Fire support in the AirLand Battle (Washington: Department of the Army, 1988) 3-8.

estimate "is a realistic appraisal of the effort required to support the operation."[33] Any variable which could affect the providing of fire support should be considered. In effect, it is a complete fire support plan and the execution portion of the field artillery support plan. Logically, the fire support estimate should incorporate the four basic tasks. It normally does, but not in any direct or by a deliberate design within the structure of the estimate.

The sequence to develop the fire support estimate is drowned by a bewildering assortment of field artillery tasks, principles, and fundamentals. At Appendix A, I have attempted to list them all. A quick perusal should convince the reader that this is not an easy undertaking. With this cumbersome load of tasks and considerations, the first problem facing the planner is deciding how to accomplish the required tasks. Obviously, planning cannot be accomplished following a simple check list.

The fire support manuals provide almost no guidance on how to integrate or accomplish the myriad of complex tasks. Concurrently, the manuals lead you to believe that the same person can do two to three functions simultaneously and that the rest of the staff is as worried as the FSCOORD about the fire support issues. I will demonstrate this point as I go through the course of action development.

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[33]U.S. Army, FM 6-20, Fire support in the AirLand Battle (Washington: Department of the Army, 1988) 3-8.

Course of Action Development

Fire support planning is done concurrently and within the tactical decisionmaking process. Each step has some significance to the fire support planning effort. The fire support element is an active player in the development of each course of action. As the G3 addresses each element of the battlefield framework, the fire support cell integrates fires in accordance with the commander's planning guidance.

The first step, analyze force ratio, requires the G3 to evaluate his combat strength against the threat. This step requires the fire support planner to evaluate the threat artillery and identify the amount of fire support needed to gain the desired force ratios. The fire support analysis does two things: it identifies approximately how much fire support will be required to support the forces in contact, and provides some indication of the type and degree of protective measures required by the threat.

The second step is to array initial forces. As the G3 arrays combat forces against the threat, fire support assets are also allocated as combat multipliers. The allocation of these assets normally requires that the unit have planning and positioning authority over them. So, for planning purposes, these units are no longer available for other missions. As the process continues, these units can be given supplemental requirements so long as they do not interfere with their

primary task of close support. For example, a field artillery brigade reinforcing a divisional artillery (DIVARTY) could participate in a corps level preparation before the division attacks. But, it would not normally participate in firing the corp's preplanned deep fires while performing a reinforcing mission to a DIVARTY.

The third step develops the scheme of maneuver, or how the arrayed forces will accomplish the commander's intent. During this step, the fire support planner "must consider how fires will support the maneuver forces in the various elements of the battlefield."[34] The distribution of the fire support assets should not be based solely on combat ratios or the scheme of maneuver, as the decisionmaking process and maneuver doctrine implies[35]. Rather, it should be based on providing each of the four basic tasks. For the fire supporter, these tasks pose several significant problems in every element of the battlefield.

The problem with the deep attack is to determine how much to allocate. Deep operations, at this phase, will address only the deep maneuver's fire support requirements and the commander's planning guidance for fire support. The true

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[34]U.S. Army, ST 100-9, Techniques and Procedures for Tactical Decisionmaking (Fort Leavenworth: Command and General Staff College, 1991) 3-4.

[35]ST 100-9 makes a lone statement on page 3-4 that "the planner must consider how fires will support the maneuver forces in the various elements of the battlefield." FM 100-15 only addresses the targeting process. FM 71-100 states that fire support must be allocated "to preserve his freedom of maneuver."

deep operations requirements will not be known until after the decision support template and the target value analysis is complete. So, as the fire support assets are committed, the planning cell must retain an undetermined portion for this vital mission.

Most of the fire support assets needed for the close operation were allocated during the initial array. The only additional fire support requirements needed for the close battle are those fires that are immediately available to the commander to influence the battle. Although a portion of these fires can be planned, their main purpose is to provide the commander some fire support flexibility.

The assets used to influence the battle and the assets used to fight the deep operation are both given general support missions. However, these assets should, if possible, be separated. Planning the same assets to do both, may force the commander to loose one battle to win another. For example, threat reinforcements are approaching a critical choke point an hour earlier than expected. The deep fires plan requires that it be interdicted by the MLRS battalion. The successful interdiction will slow the reinforcement's arrival by three to five hours, giving the corps time to complete the penetration of the second defensive belt. At the same time, the main effort requires that same battalion to fire Program Blue. This is the most critical time in the fight and not firing the program may prevent the division from

reaching its objective. Assuming that there are no other assets available, the commander has a serious dilemma. These sorts of problems can be avoided by planning independent assets against different battlefield operations.

I realize that a commander might not always have enough fire support assets to portion them out to every battlefield operation. In that case, the threat must be analyzed and risks taken. Intense management of the fire support assets may provide a wider coverage of targets at the expense of flexibility.

The rear operation poses a unique challenge to the planner. Most of the time, the need for fire support in the rear area is a possibility and not a probability. Rarely can the commander afford to dedicate fire support assets to a possible rear battle need. Even if the assets are available, the size of the rear area often will prohibit total fire support coverage by all but aviation assets.[36] The planner can offset some of these problems by designating contingency missions to fire support units.[37] However, as I mentioned earlier, the commander is taking a risks by not providing fire support assets devoted to the rear areas.

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[36]U.S. Army, TRADOC PAM 525-47/ USREDCOM PAM 34-3 Close Air Support in the Rear Battle (Washington: Department of the Army, 1986) 1-2.

[37]U.S. Army, FM 6-20-30, Fire Support for Corps and Division Operations (Washington: Department of the Army, 1989) 4-20.

Another problem in the rear area is that the combat service support (CSS) units are soft targets and vulnerable to fire support weapons. Compounding the problem is that combatants and civilians often intermingle in this area making the distinction of friendly and enemy forces very difficult.[38] The decision to deliver close fires should not be made lightly. The commander must consider the fact that uncoordinated fire support may do more damage to the friendly unit than the enemy is capable of inflicting. For these reasons, only ground assaults that threaten to overrun a base cluster should receive fire support.

Probably the biggest problem with rear area fire planning rests with our lack of personnel and equipment. Currently, non-fire support personnel conduct much of the fire support planning and execution for the rear area. In the close and deep operations, fire support officers are at every command echelon from platoon to corps. These trained personnel can effectively plan, clear and attack with fires in a matter of seconds with a high degree of accuracy. In the rear command posts of both the division and corps, the modified tables of equipment (MTOEs) do not authorize fire support personnel.[39] These personnel will be provided

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[38]Ibid, 1-3.

[39]U.S. Army, FM 6-20-30, Fire Support for Corps and Division Operations (Washington: Department of the Army, 1989) A-10 and A-12.

idealistically by the Reserve Component augmentation.[40] Without trained personnel to accurately plan, call and clear fires, the risks to o ital combat service support units are greatly increased. Several units have minimized the personnel problem by taking fire support officers "out of hide" to fill positions in the rear command posts.

The corps rear command post's communications system and equipment is not any better than the personnel situation. The corps rear command post FSE does not have a digital interface with the fire support system. Its primary communications link between the corps rear command post and the bases, base clusters, rear area operations centers, and the operations cells is the multichannel communications system (MCS).[41] The lack of proper communications equipment creates obstacles for fire support planning and makes the probability of receiving timely and accurate fires questionable.

The heavy division is in a little better shape. The Reserve Component augmentation is suppose to bring a variable format message device (VFMED) for digital communications.[42] The VFMED gives the division rear command post a direct link into the fire support system. However, the division rear

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[40]U.S. Army, FM 6-20-30, Fire Support for Corps and Division Operations (Washington: Department of the Army, 1989) 1-16.

[41]U.S. Army, FM 6-20-30, Fire Support for Corps and Division Operations (Washington: Department of the Army, 1989) 1-16.

[42]U.S. Army, FM 6-20-30, Fire Support for Corps and Division Operations (Washington: Department of the Army, 1989) 1-16.

command post, like the corps, does not have a dedicated net to coordinate rear area fire support. This means that all rear area fire support planning and coordination must be done on either a rear operations net (FM) or the MCS.

Security operations differ from the rear, deep, and close operations by existing inside one of these three operating areas. Much of the planning problems posed by security operations are similar to the close battle; because, operations such as screening and security are part of the close operation.[43] Security forces like all other maneuver elements require fire support. The main difference between planning fire support for either security or close operations is that often the same artillery units are used for both fights.

There is an old axiom that says that the field artillery is never held in reserve. Following this rule, all field artillery units not supporting committed brigades or deep operations, are available for employment by the frontal security forces. If the division lacks sufficient artillery to properly support the security force, then the close support artillery battalions can be used. This will greatly increase the security forces combat power and inflict the maximum damage on the enemy early. This is not done without accepting a certain degree of risk. These risks must be minimized

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[43]U.S. Army, FM 100-15, Corps Operations (Washington: Department of the Army, 1989) 3-0.

through planning, or face the possibility of decreased fires during the main battle. There are several manuals that discuss the planning considerations, so I will not repeat them here.[44] Suffice it to say, that fires for security operations should set favorable conditions for the main battle without jeopardizing the required fire support plan for the main battle.

The last element of the battlefield framework is the reserves. There is only one major fire support planning factor to consider; provide sufficient fire support to the unit upon commitment. This is not as easy to do as it might first seem. Our doctrine requires that the unit's organic close support artillery units not be in reserve. So, while a division or brigade awaits commitment, its artillery is used elsewhere in the battle. The fire support planner must use this unit in the area where the reserves will be committed. He must conserve sufficient ammunition so as not to endanger having the reserves committed with their artillery trying to rearm. Further, the fire support planner must not forget that once the reserves are committed they become the main effort.

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[44]See U.S. Army, FM 6-20-30, Fire Support for Corps and Division Operations (Washington: Department of the Army, 1989) 4-13 thru 4-17. See Also U.S. Army, FM 6-20-40, Fire Support for Brigade Operations (Heavy) (Washington: Department of the Army, 1990) 3-23 thru 3-24. See Also U.S. Army, FM 100-15, Corps Operations (Washington: Department of the Army, 1989) 6-4 thru 6-6.

As the main effort, they should be weighted with additional fire support.[45]

Planning for the reserves is easy, so long as the reserves are committed as planned. But since the reserves are the "commander's principal means of deciding a battle or affecting future battles,"[46] their exact employment is uncertain. A divisional level reserve prepared for commitment behind the corps main effort on the right, can easily be required to attack along the corps supporting attack on the far left. If this happens, the reserve division's DIVARTY and reinforcing artillery brigades must be able to arrive on the corps left flank prepared for combat prior to the division's engagement. The key to planning for the reserves is maintaining flexibility and centralized control of the unit. It is best to use the reserve's artillery in a centralized location, doing a mission that allows for a short notice extraction, such as general support.

The G3, having emplaced all his units and developed a course of action, now determines his command and control measures (step 4). During this phase, major subordinate headquarters are allocated forces. At corps this would include assigning artillery battalions to brigade headquarters.

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[45]U.S. Army, FM 6-20, Fire Support in the AirLand Battle (Washington: Department of the Army, 1988) 2-10.

[46]U.S. Army, FM 100-15, Corps Operations (Washington: Department of the Army, 1989) 6-8.

This step also entails emplacing fire control measures. The purpose of these measures are to "facilitate the rapid engagement of targets, and at the same time, provide safeguards for friendly forces."[47] Since the FSCOORD coordinates all fire support in the unit's area of operation, the fire support cell normally recommends the type of measure emplaced.

Along these same lines, the implications of maneuver graphics on fire support must be analyzed. If the maneuver graphics do not clearly separate tactical units, either fire support coordinating measures must be used or maneuver graphics added. The fire supporters must continually monitor these measures and graphics throughout the next step (course of action analysis).

The final step in this course of action development is the preparation of the course of action sketch. This is a brief summary and sketch of the developed course of action. By the conclusion of this phase the fire support planner should have: a rough concept for his scheme of fires, addressed the basic fire support tasks and believe that the course of action is supportable by fires with the assets he has or can get.

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[47]U.S. Army, FM 6-20-30, Fire Support for Corps and Division Operations (Washington: Department of the Army,1989) F-1.

Wargaming

The first step in the course of action analysis is the wargame. During the wargame the staff analyzes and refines each course of action developed. It is during this step that the preponderance of the sub-tasks required by the four fire support basic tasks are addressed. At Appendix B, I have listed when and if each basic task is considered during the decisionmaking process.

For the wargame, the G3 assembles his staff and all available information. After his staff lists all required assumptions, they identify all critical events and decision points. Each of these points and events will have some effect upon the fire support plan. The planner must identify how he can best support the critical events with fires and its consequences elsewhere on the battlefield. By definition, these critical events are tasks that are "essential to mission accomplishment and which, in the judgement of the wargamer, require detailed analysis."[48] Obviously, the fires supporting these events have priority over all other requirements. Using these two tools, the fire supporter focuses and prioritizes his assets to support the critical portions of the battle plan.

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[48]U.S. Army, ST 100-9, Techniques and Procedures for Tactical Decisionmaking (Fort Leavenworth: Command and General Staff College, 1991) 4-2.

After listing the critical events, the G3 selects a wargaming technique and recording method. The technique and method chosen should not have any effect upon the quality of the fire support plan. However, the synchronization matrix provides some advantages worth mentioning.

The synchronization matrix tries to graphically synchronize our course of action over space and time and in relation to the enemy's most likely course of action.[49] By using this method, much of the fire support synchronization task is accomplished. The method does noc synchronize the fire support assets amongst each other, but does synchronize the FSBOS amongst all the other battle operating systems.

Having thus far prepared, the G3 begins his wargame. During the wargame, each requirement for the fire support system that is identified should be recorded. For each counteraction requiring fire support assets, the planner must consider its effect upon the next scheduled use of that asset. For example, if the threat reacts to our scheduled preparation with counterfire, then our reaction to his possible counterfire may be displacement of artillery units. The fire support planner must recognize that the displacement will deny the commander the use of that artillery during the assault upon the objective. Recognizing the consequences of the

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[49]U.S. Army, ST 100-9, Techniques and Procedures for Tactical Decisionmaking (Fort Leavenworth: Command and General Staff College, 1991) 4-3.

preparation, the staff must now reconsider the use and importance of the preparation.

At the conclusion of the wargame, a detailed fire plan should emerge. For each course of action, the fire support cell should list the requirements of all subordinate units and fire support systems. The movement of the fire support assets in conjunction with the battle plan should have been worked out. All required programs, series, and groups should have been identified. The decision support template listing all decision points and target area of interests (TAIs) should be complete. The fire supporter should be able to tell the G4 the logistical requirements in Class V, and the projected battle losses of this course of action. He should have compiled a list of advantages and disadvantages. After the completion of the wargaming phase, most of the requirements for each of the basic tasks should have been formally addressed; however, there are a few that have not.

There are three critical areas where the command decision process does not mix well with field artillery doctrine. They are counterfire, targeting, and field artillery organization for combat.

Counterfire

As mentioned earlier, the disconnect between the basic tasks and the battlefield framework can cause essential fire

support tasks to go unaddressed. One of these areas is in counterfire. According to Joint Pub 1-02, one of the few non-artillery publications to address this issue, counterfire is defined as "fire intended to destroy or neutralize enemy weapons."[50] In field artillery manuals, counterfire is one of three roles given to the field artillery. According to FM 6-20, "counterfires are used to attack enemy indirect-fire systems . . . ."[51] For this discussion I will use the later definition. It should be noted that counterfire can be delivered by any fire support means, such as close air support or electronic warfare.

Just like the close support fires used to support forces in contact, and interdiction fires used in the deep attack, counterfire is a commander's decision. In fact, at division and corps, the commander is responsible for counterfire throughout the depth of his area of responsibility.[52] That statement flies right in the face of our current maneuver doctrine. Much of our maneuver doctrine fails to address this issue. FM 100-5's only direct reference to counterfire is that the "Field Artillery is capable of

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[50]Joint Chiefs of Staff, Joint Pub 1-02, Dictionary of Military and Associated Terms (Washington: Department of Defense, 1989) 93.

[51]U.S. Army, FM 6-20, Fire Support for AirLand Battle (Washington: Department of the Army, 1988) 2-8.

[52]U.S. Army, "Counterfire -- A Whitepaper" (Fort Sill: Field Artillery School, 1989) 8 and 12.

attacking enemy artillery and mortars . . . ."[53] FM 100-15, Corps Operations only comment is buried in the field artillery paragraph. It reads use "counterfire to suppress enemy artillery."[54] FM 71-100, Division Operations has one sentence stating that the Division Commander "must provide for an overwhelming counterfire effort."[55] Ironically, FM 71-3 Armored and Mechanized Infantry Brigade has more on counterfire than all the above references combined.[56] Of course, the heavy brigade commander normally does not have the assets to prosecute the counterfire effort.

A major part of this problem is that counterfire is not readily identifiable in our doctrine as a means to obtain superior firepower. Our capstone manual, FM 100-5, addresses firepower as being capable of suppressing the enemy's fires and disrupting his movements.[57] Logically, fires delivered against his maneuver units will deny him freedom of maneuver. If he does likewise, both maneuver forces will be denied freedom of maneuver. However, if one side can attack both his

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[53]U.S. Army, FM 100-5, Operations (Washington: Department of the Army, 1986) 43.

[54]U.S. Army, FM 100-15, Corps Operations (Washington: Department of the Army, 1989) 3-9.

[55]U.S. Army, FM 71-100, Division Operations (Washington: Department of the Army, 1989) 1-20.

[56]U.S. Army, FM 71-3, Armored and Mechanized Infantry Brigade (Washington: Department of the Army, 1988) 3-28 and 6-2.

[57]U.S. Army, FM 100-5, Operations (Washington: Department of the Army, 1986) 12.

fire assets and maneuver assets, true freedom of maneuver is achieved through superior firepower.

Having said all this, I believe that counterfire is usually addressed by corps staffs. The FSCOORD, realizing the importance of the counterfire effort, will scrounge the assets necessary. The fact that counterfire is not fully addressed, in my opinion, is wrong. Counterfire is provided by all means of the fire support system, both lethal and non-lethal. These assets are not all organic to the artillery commander and may require some prioritization by the G3. Further, counterfire is not a separate battle. "It is inseparably tied to close operations and deep operations and is part of the overall combined arms fight to achieve fire superiority."[58] If this is true, then at division and corps, the G3 should direct this fight as he does deep interdiction fires and the allocation of close support fires to his maneuver units.

Targeting

The targeting disconnect is almost as large as the counterfire problem. Targeting is defined by FM 101-5-1 as:

> A process based on the friendly scheme of maneuver and tactical plan and an assessment of the terrain and threat which identifies those enemy functions,

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[58]U.S. Army, "Counterfire -- A Whitepaper" (Fort Sill: Field Artillery School, 1989) 1.

formations, equipment, facilities, and terrain which must be attacked to ensure success.[59]

The problem with the targeting process is similar to counterfire; the fire support doctrine's needs and wants do not coincide with other branch's manuals. The inconsistency between the manuals, create a question of who has staff responsibility for targeting.

According to FM 100-5, targeting is an intelligence activity and it is the intelligence officer's responsibility to "develop target information, employ intelligence, surveillance, and target acquisition assets to locate targets accurately enough for attack."[60] FM 34-130, Intelligence Preparation of the Battlefield, is even less committal saying that it is done by the targeting triad of the G2, G3 and FSE.[61] Obviously, if the G3 is involved then he should be in charge. However, the field artillery's manual FM 6-20-10, The Targeting Process states that the FSCOORD "oversees the routine activities and coordination of the targeting process."[62] In spite of this confusion, the FSCOORD will

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[59]U.S. Army, FM 101-5-1, Operational Terms and Symbols (Washington: Department of the Army, 1985) 1-70.

[60]U.S. Army, FM 100-5, Operations (Washington: Department of the Army, 1986) 39.

[61]U.S. Army, FM 34-130, Intelligence Preparation of the Battlefield (Washington: Department of the Army, 1989) 4-66.

[62]U.S. Army, FM 6-20-10, The Targeting Process (Washington: Department of the Army, 1990) 1-4.

probably take the lead because his organization is most directly affected by the targeting process.

Besides who is in charge, how the process is to be done is also blurred. Almost every manual discussing targeting has a different perspective of the decide-detect-deliver methodology. Without going into the multiple differences between the manual's processes, I will try to outline the major procedural differences.

FM 6-20-10, The Targeting Process states that targeting is "focused through the development of prioritized lists."[63] The FM uses target value analysis (TVA) methodology as a part of the targeting process. It also addresses the relationship of the targeting process and the IPB.

The targeting tools used during TVA include the use of target spread sheets and target sheets from a Fire Support Mission Area Analysis book. The end products of this methodology are a high-payoff target list, target selection standards, and attack guidance matrix as well as input into the event template and the decision support template. Of these five products the attack guidance matrix and target selection standards are unique to the artillery manuals.

The attack guidance matrix provides the fire support system the commander's guidance on how and when to attack a class of targets. This matrix is not optional to the fire

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[63]U.S. Army, FM 6-20-10, The Targeting Process (Washington: Department of the Army, 1990) 1-3.

support system. Besides being required by TACFIRE, the matrix can focus the unit's fires against a critical class of targets. If this product is not produced by the targeting team, then someone from the fire support element will have to construct it from his understanding of the commander's intent.

Target selection standards, like the attack guidance matrix, is principally a fire support tool. Its purpose is to give guidance on what intelligence producing source(s) are reliable and accurate enough to target. Again, this is not an optional product. It is required by the target production section to prevent needless expenditures of ammunition against poorly located or identified targets.

The targeting process described in FM 6-20-10, is a complicated and time consuming effort. This is especially true considering that it is only valid for a specific phase of the battle and for the echelon at which it is done.[64] Each phase at division level takes the targeting team one half to two hours of work. Considering all the requirements placed on the G2 and G3 during the tactical decisionmaking process, spending the additional time may not be practical.

As far as targeting, FM 100-5, Operations, is obviously outdated. The definitions and descriptions of the targeting effort are inconsistent with every other manual. For example, the manual states that the commander's

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[64]U.S. Army, FM 6-20-40, Fire Support for Brigade Operations (Heavy) (Washington: Department of the Army, 1990) G-14 thru G-16.

intelligence efforts should be to "identify, locate, and strike high value targets as part of his deep operations plan."[65] The manual continues by saying that high value targets are evaluated by their relevance, greatest threat to our mission, and their capability to damage our cohesion. FM 101-5-1, Operational Terms and Symbols, gives the current definition of a high value target; "a target whose loss to the enemy can be expected to contribute to substantial degradation of an important battlefield function."[66] The determination that it is important enough for us to attack the target, makes it a high-payoff target. Further, the evaluation criteria listed in FM 100-5, are not found in any other publication. This manual also sees targeting as a method of planning deep operations; this belief is consistent with all other non-artillery manuals.

Along with FM 100-5, FM 100-15, Corps Operations, considers the decide, detect, deliver targeting approach as a way to plan the deep fight.[67] Target value analysis is not mentioned. This is inconsistent with the artillery manuals that do not exclusively associate deep operations with the targeting process.

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[65]U.S. Army, FM 100-5, Operations (Washington: Department of the Army, 1986) 38.

[66]U.S. Army, FM 100-5-1, Operational Terms and Symbols (Washington: Department of the Army, 1985) 1-37.

[67]U.S. Army, FM 100-15, Corps Operations (Washington: Department of the Army, 1989) 3-2.

From the artillery standpoint deep operations are planned "to seize and sustain the initiative in order to accomplish combat objectives."[68] The deep operations plan, which is principally composed of deep fires, is aimed at shaping and setting the conditions for the future battle. Much of the deep fires planning effort should revolve around interdiction fires in support of the battle plan. This process does not include target value analysis, but the integration of the IPB.

The purpose of the targeting process is slightly different from that of deep operations. The objective of the targeting process is to "disrupt, delay, or limit those enemy capabilities which could interfere with the achievement of friendly objectives."[69] The targeting process includes target value analysis and is to be used throughout the battlefield. Obviously, high-payoff targets (targets whose attack will give us a substantial battlefield advantage) can exists throughout the battlefield. In fact, close operations offers us the best opportunity to attack these critical assets. As the enemy comes closer to our forces, more sensors can detect them, more weapons can engage them, and the less likely an attacked target can recover before the battle's end. Therefore, targeting is done for the deep attack but is not deep

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[68]U.S. Army, FM 6-20, Fire Support for AirLand Battle (Washington: Department of the Army, 1988) 3-10.

[69]U.S. Army, FM 6-20, Fire Support for AirLand Battle (Washington: Department of the Army, 1988) 1-1.

operations planning. If the difference is not very clear, it is even worse in other manuals.

FM 34-130, Intelligence Preparation of the Battlefield, gives a very confusing description of target value analysis. It states that "determining TAIs (target area of interest) involves target value analysis."[70] Then in the next three sentences it states that target value analysis designates high value targets. (The term target value analysis is never defined, nor is it linked to the development of the high-payoff target). Target area of interest is developed using the IPB process not target value analysis. The lack of understanding in this publication is puzzling. Much of the deep operations targeting and target value analysis effort is conducted during the IPB; therefore, this manual should do a better job of addressing this issue.

One of the best intelligence manuals on the targeting process is FM 34-25, Corps Intelligence and Electronic Warfare Operations. This manual gives a relatively detailed description of all targeting process and products. The methodology discussed is pretty consistent with fire support doctrine. However, it does not explain the linkages between TVA, the targeting process, and the IPB.

The question of how and who will do the targeting effort ultimately rests upon the commander. For the fire

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[70]U.S. Army, FM 34-130, Intelligence Preparation of the Battlefield (Washington: Department of the Army, 1989) 4-69.

supporter, the muddled doctrine interferes directly with his ability to perform his basic fire support task.

Task Organization

While the commander is deciding who and how targeting is being done, he should also decide how he is going to task organize the field artillery. As previously discussed, the G3 arrays the forces in step two of the tactical decisionmaking process. This includes the fire support assets.[71] The G3 also determines the major headquarters that commands and controls these units. FM 6-20-30, Fire Support for Corps and Division Operations, provides nothing to dispute this. In fact, it does not even address the issue of when or how to organize the artillery during the planning process. The doctrinal fire support manual dealing with this subject is FM 6-20, Fire Support in the AirLand Battle. The manual addresses the principles or fundamentals that should guide the task organization of the Field Artillery.

FM 6-20 states that the FSCOORD recommends the field artillery organization for combat to the force commander.[72] He is undoubtedly a better advisor considering the

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[71]U.S. Army, Student Text 100-9, Techniques and Procedures for Tactical Decisionmaking (Fort Leavenworth: Command and General Staff College), 3-3.

[72]U.S. Army, FM 6-20, Fire Support for Corps and Division Operations (Washington: Department of the Army, 1988) 2-10.

ramifications of the task organization. It is a far wiser G3 who gives the fire support requirements to the FSCOORD, and allows him to organize his artillery command to accomplish the mission. If the G3 does task organize the artillery, he must have a total understanding of the myriad of considerations and fundamentals that are often only known and understood by artillerymen.

The fundamentals should direct the setup of the artillery command and control system in much the same way as the four basic tasks should direct the planning effort for fire support. An effective task organization is important to any unit, but to the field artillery it is essential. Before dealing with the tactical considerations, a cursory understanding of the two step process[73] for organizing the artillery is required. Unlike maneuver units, the field artillery units require both a command relationship and a mission to operate.

The first step in organizing for combat is to establish the command relationship. The different command relationships possible are spelled out in FM 101-5, Staff Organization and Operations.[74] They are no different in concept then any other combat support unit; however, a change

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[73]Most of our doctrine deals with the two step process. The only manual that calls it the two step process is FM 6-20-2J, Division Artillery, Field Artillery Brigade, and Corps Artillery Headquarters page 1-6.

[74]U.S. Army, FM 101-5,Staff Organization and Operations (Washington: Department of the Army, 1984), 1-3.

in the artillery's command relationship has a major impact upon how that unit can be employed. For example, by attaching a field artillery brigade to a division gives the division commander full employment capabilities and support responsibilities. He employs the unit as one of his own, being able to assign missions to the brigade and its subordinate battalions. This same attachment makes it more difficult for the corps to quickly extract the brigade from the division for employment elsewhere. Once the detachment order is given, the brigade headquarters needs time to regain command and control of its battalions and redirect its logistic support back through the corps. For these reasons, attachment is normally given for the duration of the maneuver's tactical mission.

The field artillery also requires a mission. As mentioned above, the right to assign a mission is reserved to the unit with the appropriate command relationship. There are four standard tactical missions that can be given to an artillery unit: direct support, reinforcing, general support reinforcing, and general support. The four standard missions are governed and defined by the seven inherent responsibilities. Any deviation from these inherent responsibilities must be spelled out in what is called a nonstandard tactical mission. A description of the missions and inherent responsibilities are defined on pages 1-3 through 1-7 of FM 6-20-1.

The planner, before assigning a mission, must carefully consider the impact and requirements imposed by the inherent responsibilities. The capabilities and limitations of each type unit must also be considered. For example, it is preferable to assign a close support battalion the mission of direct support; because, it is designed by its MTOE to do the mission. It is less desirable to have a corps artillery cannon battalion in direct support; because, it lacks the appropriate communications and personnel for optimal performance.[75] It is not appropriate to assign the direct support mission to a Multiple Launch Rocket System (MLRS) battalion, because it can not provide continuous support.[76] There is not a consolidated list of general rules in our doctrinal literature that gives the dos and don'ts of mission assignment. At Appendix C, there is a complete list of these rules as well as my references. The planner, being totally conversant in the establishment of a command relationship and mission assignment, may now consider the tactical considerations using the five fundamentals.

The stated purpose of the fundamentals is to guide the planner in designing a task organization that will "provide responsive and effective field artillery fires and to

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[75]U.S. Army, FM 6-20-1, Field Artillery Battalion (Washington: Department of the Army, 1983), 1-5.

[76]U.S. Army, TC 6-60, Multiple Launch Rocket System (MLRS) Operations (Washington, Department of the Army, 1988), 5-1.

coordinate all fire support."[77] The manual seeks to organize the planner's efforts by the following fundamentals: 1) provide adequate field artillery support for committed combat units, 2) provide weight to the main effort, 3) facilitate future operations, 4) provide immediate available fire support to the force commander to influence the action, and 5) provide maximum feasible centralized control.[78] The five fundamentals like all tactical planning, must be tempered by the factors of METT-T.[79]

The doctrinal literature on the application of the fundamentals is scarce considering the importance of the product. The biggest problem with the fundamentals, as written, is that they are not designed to work with the basic fire support tasks.

The stated purpose of the task organization is to "provide responsive and effective FA fires and to coordinate all fire support."[80] This statement loosely ties together both the FSCOORD's command and fire support responsibilities. Responsive and effective artillery fires come directly from

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[77]U.S. Army, FM 6-20, Fire Support in the Airland Battle (Washington Department of the Army, 1988), 2-10.

[78]Ibid.

[79] Ibid.

[80]U.S. Army, FM 6-20, Fire Support in the AirLand Battle (Washington: Department of the Army, 1988) 2-10.

the FSCOORD's command responsibilities.[81] The second part of the purpose statement, coordinating all fire support, is part of the synchronization task. I believe that this poor purpose statement is one reason why the fundamentals are not properly correlated to the basic fire support tasks.

Units are tactically organized to perform an assigned mission; therefore, the primary purpose of the task organization is to facilitate the accomplishment of the tactical mission. If this is true, then the fundamentals should create an artillery task organization that can support the fire support plan, consider the supporting battalion's ability to execute it and provide flexibility to react to the unexpected. Although the fundamentals should not be used by themselves, the basic fire support tasks do address the fundamentals.

All but one of the five fundamental and METT-T are specifically addressed in the fire support basic tasks.[82] What is not addressed is facilitating future operations and the considerations of the two step process. It might seem

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[81]U.S. Army, FM 6-20, Fire Support in the AirLand Battle (Washington: Department of the Army, 1988) 2-2. The FM states that "...the command responsibility for ensuring timely and effective field artillery fires." This is quote is obviously what the purpose statement refers to.

[82]U.S. Army, FM 6-20, Fire support in the AirLand Battle (Washington: Department of the Army, 1988) 3-2 thru 3-4. Provide adequate fire support is addressed in the Support Forces in Contact task. Weight the main effort, maximum feasible centralized control and provide immediate responsive fires to the commander are addressed in the Support the Battle Plan task.

logical to modify the sustain the fire support system task to include facilitating future operation and do away with the fundamentals. However, as I mentioned earlier, the four basic tasks are not directly addressed in the tactical decisionmaking process. In fact, without these fundamentals, fire support officers might miss a major portion of the basic tasks. It is the fire support planners responsibility to carefully consider all aspects of the proposed organization and not just five fundamentals. A poorly constructed task organization can greatly interfere or prevent the execution of the best fire support plan.

The Comparison and Decision

After the wargaming the fire support cell can begin preparing the Fire Support Staff Estimate. This can be a very detailed and time consuming analysis. In this estimate "any variable that could affect the mission"[83] should be listed and prioritized. The purpose is to "identify those factors that affect formulation, analysis, and comparison of feasible courses of action."[84]

It should be noted that the artillery manuals have slightly modified the purpose statement of the fire support

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[83]U.S. Army, FM 6-20, Fire Support in the AirLand Battle (Washington: Department of the Army, 1988) 3-8.

[84]U.S. Army, FM 101-5,Staff Organization and Operations (Washington: Department of the Army, 1984) 5-2.

estimate from other doctrinal publications on staff estimates. FM 101-5, Staff Organization and Operations states that the estimate "analyzes the influence of factors within the staff officer's particular field of interest on the accomplishment of the commander's mission . . . ."[85] According to artillery publications the fire support estimate does considerably more. The fire support estimate is prepared by the FSCOORD and his staff to

> ...help him to integrate and synchronize the employment of fire support resources within the fire support system and with the force scheme of maneuver. The fire support estimate is a realistic appraisal of the effort required to support the operation. It serves as a basis for identifying priority fire support requirements.[86]

The fire support estimate is used by FSCOORD as a fire support management tool, as well as by the G3 and maneuver commander in the decisionmaking process.

FM 6-20-30, Fire Support for Corps and Division Operations suggests using the list of advantages and disadvantages derived during the wargaming phase for the course of action comparison.[87] This would be considerably

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[85]U.S. Army, FM 101-5, Staff Organization and Operations (Washington: Department of the Army, 1984) 5-2.

[86]U.S. Army, FM 6-20, Fire Support in the AirLand Battle (Washington: Department of the Army, 1988) 3-8. SEE ALSO
U.S. Army, FM 6-20-30, Fire Support for Corps and Division Operations (Washington: Department of the Army, 1989) 2-9 thru 2-10.

[87]U.S. Army, FM 6-20-30, Fire Support for Corps and Division Operations (Washington: Department of the Army, 1989) 2-12.

faster and more appropriate for the time sensitive decision cycle.

The G3 compares each course of action based on a predetermined set of criteria to determine the course of action with the highest probability of success. Each staff section recommends the course of action he can best support to the G3. Based on the results, the Chief of Staff or G3 decides upon the staff's recommendation. Based upon all the staff estimates and their recommendation, the commander gives his guidance and makes a decision. Upon the commander's decision, the staff issues the orders and the coordination and supervision begins.

The next three sections address the planning idiosyncrasies of the three echelons that use the decisionmaking process.

Corps Planning

Most of the corp's fire support planning is devoted to deep operations. The corps faces several difficulties as it attempts to set favorable conditions for the divisional (corps close) fight. The corps must work around these problems, if the deep attack is going to be effective.

At corps, deep operations are "those activities which are directed against enemy forces not currently engaged in the close operations, but capable of engaging or influencing

future operations."[88] Although maneuver can execute deep operations, it is primarily conducted using fire support assets. Because it is generally a fire support mission, the corps FSCOORD is usually "the individual who is given authority and responsibility by the corps commander to control all deep fires . . . ."[89] Deep operations should be addressed first, since they are designed to shape the battle and or set the conditions for the close operations.

With one minor exception, I was unable to find a manual that addressed exactly when deep operations were to begin in relation to the close and rear operations.[90] Considering that the purpose is to shape the close operations, the deep operations should begin before the enemy closes with the corps and continue throughout the entire battle.

A mechanized corps' deep operations extends out up to 150 kilometers; the depth to which the corps can see and attack with organic assets. If the deep attack is not prepared and executed, the lead enemy forces could engage our lead security elements in a relatively short period of time. It is difficult to place a time on the arrival of enemy forces into the close battle, but assuming no deep attack success or

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[88]U.S. Army, FM 100-15, Corps Operations (Washington: Department of the Army, 1989) 3-0.

[89]Ibid, 3-1.

[90]FM 6-20-30 on page 5-4 states that during defensive operations, deep operations "begin before the enemy closes with the corps or division and continue throughout the battle."

our unimpeded advance, it will be no earlier than the six hours traveling time.[91] The contact between these forces will be on the enemy's terms and at full combat strength. To prevent this, deep operations must begin as early as possible.

Once threat units reach the divisional boundaries, the deep attack continues by attacking follow-on forces in the defense or operational reserves in the offense. These early attacks can significantly "alter the tempo of their (the enemies) commitment."[92] Thus, slowing the enemy's ability to reinforce his success or block ours. The attack of "enemy forces not yet in contact is necessary for success."[93] If deep operations are so important, is its preparation and execution time planned for in the decisionmaking process? On this point the manuals are fuzzy.

FM 100-5 states that "corps and divisions conduct mutually supporting operations simultaneously in three areas - close, deep, and rear."[94] Although this manual states that all three areas can be fought simultaneously, it does not

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[91]The movement time is computed based on the unopposed movement rate of mechanized forces (24 KMPH). This planning time is extracted from ST 100-9 page 4-13.

[92]U.S. Army, FM 100-15, Corps Operations (Washington: Department of the Army, 1989) 3-1.

[93]Ibid.

[94]U.S. Army, FM 100-5, Operations (Washington: Department of the Army, 1986) 33.

expressly rule out that the corps could fight any combination there of. The problem lies in the fact that the execution time normally referred to in the planning process, begins with the close operation (every planning cycle example in our manuals reinforces that assumption).[95] I believe this is a hold over from the European scenario with both forces starting in contact. This is in stark contrast to Operation Desert Storm, where corps deep fires began days before the close operations.

If the corps plans on using deep attacks before the close battle, planning and execution time for the performing units must be planned for in the OPORD. Many of the executing units need as much lead time as the maneuver units do in preparing for the close operation. For example, a cross-flot JAAT using TACAIR, army aviation, and artillery requires tremendous interservice planning, coordinations, accurate intelligence and flawless execution. This type of operation requires the artillery to be in position, the attack helicopter battalion prepared for the deep maneuver, and the TACAIR coordinated to arrive at the precise time. Nowhere is the one-third two-thirds rule more important than with these types of operations. To provide the deep operations assets sufficient planning and preparation time, the G3 should

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[95]FM 6-20-30 states on page 2-8 that the H-hour is the beginning of the defensive operations. FM 100-15 on page 4-17 states that deep fires will "initially delay 2d echelon divisions" ST 100-9 on page 4-6 has the first deep operation starting at six hours after the beginning of the close battle.

consider making the OPORD execution time the start of the deep attack.

Besides the OPORD execution time, the deep operations planning process is further complicated by the tactical air support request cycle. The tactical air support request cycle is totally out of synch with the planning cycle. The tentative apportionment occurs 72 hours prior to the air tasking order (ATO) execution or concurrently with the corps receipt of its mission. The apportionment divides out in percentages the type of missions that will be flown within the theater of operation (i.e., close air support, air interdiction, or counter-air). From this recommendation the tactical air control center gives the corps main command post the initial planning guidance for the number of sorties to expect. However, at 72 hours out, this information "will not be a precise forecast . . . ." [96] The apportionment will not be approved until 36 hours prior to the ATO effective period and a good 12 hours after the corps has published its OPORD.

The problems this creates for the corps' deep operations planning can not be over emphasized. Considering the limited organic assets available to the corps to attack 100 kilometers plus, tactical air support is indispensable. However, the corps commander can ill afford to rely too

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[96]U.S. Army, TRADOC PAM 525-45/ USREDCOM PAM 525-8 Joint Attack of the Second Echelon (Fort Monroe: Training and Doctrine Command, 1984) 2-9.

heavily on a weapon system that may or may not be available in the quantity and type needed for the deep attack.

If there is only one corps in theater, the apportionment gives the corps a good idea of the number of sorties to expect. However, if more than one corps is to receive support, the corps must wait for the allocation published around thirty hours out. The allocation gives the number of aircraft that will be used for each type of mission. It is at this time the corps gives the battle control element (BCE) their air interdiction nominations and a prioritized battlefield air interdiction target request. Updates to the target request will continue until 12 hours prior to execution (refinement up to 2 hours out).

The allocation is followed by the distribution that gives the corps the specific number of aircraft they will receive. This information is at least 24 hours behind the corps OPORD. Finally, the air tasking order is published by the tactical air control center (TACC) 12 hours out. Without high confidence in sorties available to the corps, the divisional deep and close air support planning is merely speculative.

The air tasking order comes out daily, so the corps and division deep operations cells must be in a three day cycle. Developing deep targets 72 hours out using the apportionment, then refining, prioritizing, and requesting 36 hours out with the allocation. Finally the corps should

distribute CAS sorties to the divisions, make final target adjustments and coordinate the attack 24 to 12 hours out.

Another deep battle planning problem, reinforced by Operation Desert Storm, was in the area of target damage assessment (TDA). Currently, the corps has no dedicated TDA assets to confirm that the desired effects were achieved. TDA requirements are set during the decide function of the decide, detect, deliver methodology. This information "allows us to fine tune our efforts to achieve the greatest results with the least amount of expenditure or risk."[97] Without these assets, the targeting process lacks the feedback loop needed for the process to work properly.

By design, the targeting process must be able to assess if the attack of critical targets have met the commander's guidance. Without that vital information, valuable intelligence assets will continue to look for and fire support assets fire upon, targets that have been destroyed.

As mentioned earlier, deep operations are a continuous process. The G3, G2, and FSCOORD must continuously monitor and adjust the deep attack as intelligence, sorties, and TDA become available. As the deep battle is fought, the G3 must be prepared to change the close operations to exploit success

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[97]U.S. Army, FM 6-20-10, The Targeting Process (Washington: Department of the Army, 1990) 4-4.

or react to failure. How the corps staff plans and adjusts has a direct impact upon the divisional planning process.

Division Operations

The divisional planning and responsibilities are very similar to the corps with a few distinct differences. First, the planning time is significantly reduced. The division, by doctrine, receives the corps OPORD at approximately 48 hours before execution. Using the one-third two-thirds rule the division has 16 hours to publish their order. Considering that the heavy division has a third less personnel[98] and similar responsibilities of the corps, this is a tall order. The division staff does have one advantage over corps; it should have received warning orders and updates from the start of the corps planning process. So, tentative planning could and should have been done. The state of the divisional planning, upon receipt of the corps OPORD, is totally dependent upon the information provided by the corps planning staff.

One piece of information that the corps should provide the division, as early as possible, is the amount of corps fire support assets the division will receive. This is of

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[98]The corps FSE has a total of 30 personnel. The heavy division possess the largest FSE, consisting of 21 personnel. The light divisions have 13 personnel. The airborne and air assault divisions are authorized 15 personnel.

vital importance to the division's deep operations planning effort; because, the division has very few organic deep fire assets.

The division's total organic fire support assets consist of three battalions of close support artillery, a MLRS battery of nine launchers, and any attack helicopters assigned the mission. Even this is misleading, because the three close support artillery battalions provide the minimal fire support to their habitually associated brigades. Further, the MLRS battery provides the division commander his one fire support asset to influence the division's close fight. Therefore, a division with two brigades on line fights the deep attack with: one close support artillery battalion from its uncommitted brigade, the MLRS battery when not supporting the close effort, any attack helicopters the division is willing to risk, and any augmenting corps fire support assets.

The corps' augmenting fire support assets can include a field artillery brigade, electronic warfare assets and BAI target nominations. Division has a similar problem with planning TACAIR into their operations as does corps. The distribution that tells the division the number of sorties they will receive, is not available until approximately 12 hours after the division publishes their OPORD. This leaves the planning cell relying almost exclusively upon the artillery assets.

The restrictive use of artillery fire support means that the extent that the division can plan is 30 kilometers, the maximum range of a MLRS. At 30 kilometers, unimpeded units are within an hour and a half of making contact. Obviously, the division's ability to effectively prosecute this time sensitive battle is limited by the amount of corps fire support assets he receives. With the limited amount available, the division might wish to conserve his assets to attack second echelon units, allowing first echelon units to approach unhampered. But whatever the decision, it will have a major impact on his close fight. Therefore, before any detailed fire support planning can be accomplished the division must know the extent of corps fire support they will receive.

Along with deep operations, the division must also provide close support counterfire coverage for the entire division. The corps can either fight the counterfire battle for the division or provide the assets for the division to fight it themselves. Either way, the fire support plan must address either the appropriate coordination for corps assets or a counterfire plan.

The bottom line is that the division has only the minimum artillery to provide close support, the rest must come from corps. But, these units come to the division with varying values. They are corps assets, and often will provide fires to several different units throughout the battle. What

this means to the division staff is that they must analyze the disposition of each artillery battalion they receive from corps. Units assigned to provide fires during the initial phase of the operation should be at full strength, fully armed and in position to provide fires. On the other hand, units arriving later on in the battle may have lost significant strength, be low on ammunition and may require movement to effectively use their fires. Understanding each artillery battalion's previous mission should allow the division to make sound assumptions about the unit's utility to the division.

Another planning consideration for using corps assets, is knowing under what circumstances the division will lose these assets to corps. This requires that the division staff understand the reasons that the corps furnished the units. For example, say that the corps gave a division a field artillery brigade to weight the main attack. The division should expect that when the reserves are committed and they are no longer the main attack, that they will probably lose the fires of that field artillery brigade. Phasing operations often alleviates this problem by identifying exactly when all on order missions will be executed.

Having corps fire support assets come and go complicates one other planning effort, the division and brigade's rehearsals. This is not to say that the corps should not try to have a rehearsal; it just may be impractical for a corps in contact to conduct one. Divisions and

brigades, on the other hand, should set aside the time during their preparation to conduct one. The rehearsal is a means of reducing some of the friction involved in combat operations.[99]

Exactly when the rehearsal is to be accomplished is not specified in our doctrine. But, I would recommend that it be done after the brigades have prepared their OPORDs. This will not only give the brigades the opportunity to thoroughly understand the division's OPORD, but the rehearsal would not interfere with the brigade's decisionmaking process.

Brigade Operations

There are four major differences between divisional fire support planning and that done at brigade. The brigade's differences include: a small staff, does not normally conduct deep operations or counterfire, and uses an abbreviated targeting process.

The brigade fire support element consists of two officers plus the brigade FSCOORD (field artillery battalion commander). They should receive the division OPORD sometime around 32 hours before execution. Using the one-third two-third rule the brigade has ten hours to complete their planning process. With so few personnel and so little time, the brigade staff must focus and prioritize their efforts.

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[99]John F. Petrik, "Fire Support Rehearsals," Field Artillery (October 1989):40.

Further, these officers are not solely dedicated to fire support planning, they are the complete brigade FSE.

With the smaller size comes smaller responsibilities. Two areas that the brigade normally does not plan for are deep operations[100] and counterfire. The main reason for this is that the brigade does not have sufficient organic assets to acquire and engage these targets as well as provide fire for the close operations . The one exception to this is counterfire in a low intensity conflict.

Light artillery units have organic Q36 radars; these radars are designed especially for mortar fire. In the low spectrum of conflict, the most likely indirect fire threat will be an occasional mortar attack. This threat will not require an extensive counterfire plan or significant attack assets. Also, the brigade can be expected to operate independent from the division, necessitating a more complete fire support system.

In every level of conflict the lack of personnel, assets, and time does not negate the requirement to perform target value analysis. The brigade is the lowest echelon that performs target value analysis and has some significant differences from division and corps analysis procedures. First the brigade's target value analysis concentrates on the division's analysis as the bases for their high-payoff target

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[100]U.S. Army, FM 100-5, Operations (Washington: Department of the Army, 1986) 37.

list, attack guidance matrix and target selection standards.[101] Second, the brigade's targeting effort "always occurs within the context of the decision support template."[102] By following these two shortcuts, the brigade FSE can greatly reduce the time spent on the targeting effort.

Although the brigade, division, and corps have minor differences, the process and problem of fire support planning are basically the same. The process is decisionmaking; the problem is an incongruous fire support doctrine. The fire support doctrine and decisionmaking process have developed independent of each other. I have already outlined the development of fire support doctrine in Chapter 1, and it does not contain any considerations for the decisionmaking process. It is left to the fire supporter to somehow merge these t: independent processes into a coherent planning process.

Besides, the decisionmaking process several additional considerations for fire support planning are emerging. These considerations can best be examined within the context of Operation Desert Storm.

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[101]U.S. Army, FM 6-20-1, The Targeting Process (Washington: Department of the Army, 1988) 7-1.

[102]U.S. Army, FM 6-20-1, The Targeting Process (Washington: Department of the Army, 1988) 7-1.

CHAPTER 4:

OPERATION DESERT STORM - TRENDS OF FIRE SUPPORT

In war, maximum combat power is generated through the most efficient use of firepower and maneuver.[1] Efficient firepower can only be created through effective fire planning. The planning of our fire support has grown considerably since its doctrinal conception in 1949. Today, fire support planning has grown into an extensive and complicated process; but what is more, it has not stopped growing. Desert Storm highlighted several ominous trends that will have an increasing impact on our planning process.

Targeting

One new procedure that is becoming more common place is that of linking intelligence sensors directly to a weapon system. The purpose of this practice is to decrease the attack time on fleeting targets. Our current doctrine requires the G2 to be the intelligence collection manager.[2]

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[1]U.S. Army, FM 6-20, Fire Support in the AirLand Battle (Washington: Department of the Army, 1988) 1-1.

[2]U.S. Army, FM 34-2, Collection Management (Washington: Department of the Army, Final Draft 1990) 2-1.

The collection manager initiates, receives, integrates and processes all intelligence information. As targets are identified they are passed on through the Field Artillery Intelligence Officer (FAIO) to the target production section at the artillery headquarters. The target production section then sends the target to the fire control element, who in turn issues a fire order to firing unit(s). The processing time can vary from seven minutes to two hours.

This system will work, as long as, the target is not very time sensitive. If the target is highly mobile or elusive, this processing time is far too slow. To decrease this time, the force commander can authorize a direct communication downlink to the firing unit.[3] This downlink could allow a sensor such as the joint surveillance and target attack radar system (JSTARS) to request fire support directly from a battalion armed with the army tactical missile system (ATACMS). JSTARS is downlinked through a special communications center called the ground station module (GSM). One employment option for the GSM is to place one at the

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[3]Jon C. Schreyach, "Deep-Attack System of Systems," Field Artillery (December 1989): 51-52. SEE ALSO
U.S. Army, FM 6-20-10, The Targeting Process (Washington: Department of the Army, 1990) 3-6.

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[2]U.S. Army, FM 34-2, Collection Management (Washington: Department of the Army, Final Draft 1990) 2-1.

ATACMS battalion operations center.[4] This procedure was experimented with during Operation Desert Storm.[5]

The downlink processing method comes with a coordination and planning price tag. The launchers must be positioned to range the likely locations of the targets. The air space for short notice launch must be prearranged and not interfere with other operations.[6] Preplanned targeting requires the fencing of launchers to preclude interference with the deep battle plan.

The JSTARS and ATACMS downlink is just one example of this trend. The management of just one sensor being downlinked is not difficult. However, this process left unchecked, can overload the system and derail the fire plan by what is called the "emerging target syndrome."[7]

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[4]Jon C. Schreyach, "Deep-Attack System of Systems," Field Artillery (December 1989): 54.

[5]U.S. Army, "Field Artillery Desert Storm Lessons Learned" (Fort Leavenworth, Center for Desert Storm Lessons Learned, 1991) pages not numbered, look under Operational Fires, issue: JSTARS downlink with ATACMS.

[6]Clearance of ATACMS Block I is especially difficult. ATACMS can reach operational depths of over 150 KM and has a maximum ordinance of approximately 100,000 feet. To protect the launcher from counterfire, the launcher randomly selects a flight path with a minimum of five turns before reaching its target. The flight path is not provided to the operator, nor can he influence it. The procedures used during Desert Storm created a two mile wide safety zone and a minimum of a two hour delay for targets of opportunity. The reference for this is the "Fort Sill Desert Storm Lessons Learned," under Operational Fires (pages not numbered).

[7]"Fort Sill Desert Storm Lessons Learned" under Operational Fires (pages not numbered). This after action report is located at The Center for Desert Storm Lessons Learned, Fort Leavenworth, Kansas.

The airborne command and control center (ABCCC) suffered from the emerging target syndrome during Desert Storm. The ABCCC maintains contact with a multiple number of intelligence platforms. Its primary function is tactical control of aircraft, similar in function to the fire control element at the division artillery headquarters. As the ground war started, the ABCCC was deluged in targeting information. This fire support control element diverted aircraft from the army component commander's (ARCENT's) deep attack to "chase spurious targets with varying degrees of success."[8]

The lesson that should be learned from this is that sensors should not drive fire support; rather, the plan should direct the sensors to support the targeting effort. High tech sensors should not be treated any differently then a forward observer. As the sensors become more sophisticated and more omniscience, there will be a greater tendency to turn over firing units to them.

Joint and Combined Army Operations

Another trend that is flavoring all areas of fire support is joint operations. The push towards joint operations is obvious by the advent of publications such as Joint Pub 1. In the preface it states that "The nature of

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[8]Ibid.

modern warfare demands that we fight as a team . . . Joint warfare is essential to victory."[9]

Most joint operations are very complex and require detailed planning and coordination. The complexity of joint operations is nothing new to the fire support community. Over the past ten years, several joint manuals have been published by the Air Force and the Army. These manuals are designed to assist the planning efforts and bring some common understanding between the services. Today, there are four joint fire support manuals each dealing with a certain type of operation.[10] The complexity of the operations are underscored by the fact that they are single tasks, such as a joint air attack team (JAAT) or joint suppression of air defence (JSEAD). In spite of these manuals, the joint planning during Operation Desert Storm had some doctrinal problems that are not yet resolved.

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[9]Joint Chiefs of Staff, Joint Pub 1, Joint Warfare of the US Armed Forces (Washington: Department of Defense, 1991) iii.

[10]U.S. Army, USREDCOM PAM 524-8/ TRADOC PAM 525-45/ TACP 50-29, General Operating Procedures for Joint Attack of the Second Echelon (J-SAK) (Washington: Department of the Army, 1984).

U.S. Army, USREDCOM PAM 34-3/TRADOC PAM 525-47 Joint Concept and Procedures for Close Air Support in the Rear Battle (Washington: Department of the Army, 1986).

U.S. Army, FM 90-21/ FMFRP 5-44/ TACP 50-20/ USAFEP 50-20/ PACAFP 50-20, Multi-Service Joint Air Attack Team Operations (Washington: Department of the Army, 1990).

U.S. Army, FM 90-15/ FMFRP 5-43/ MACP 55-52/ TACP 50-23/ USAFEP 50-23/ PACAFP 50-23/ AACP 50-23, Multi-Service Procedures for the Joint Suppression of Enemy Air Defenses (Washington: Department of the Army, 1990).

The definition of fire support coordination line (FSCL) has become a major topic of discussion in the Desert Storm after action reports. The Marine Corps interprets the FSCL as "authority to fire beyond the FSCL, regardless of boundaries, without coordination."[11] The Air Force interpreted the FSCL as a restrictive fire support coordination measure requiring coordination with them to fire beyond it.[12] The Army defines the FSCL as:

> ...a line established by the appropriate commander to ensure coordination of fire not under his control... supporting elements may attack targets forward of the FSCL, without prior coordination...."[13]

There are also unanswered questions on who can establish it, and how the FSCL can be efficiently moved by the ground commander.[14] Since the FSCL is a fire support coordinating measure, any changes to its definition will have an affect upon its planning and coordination.

The inter-service use of scatterable mines was also an area of contention during Desert Storm. The mine laying authority for all non-ARCENT units was the air component commander at CENTCOM Air Force (CENTAF). The battle

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[11]U.S. Army, "MG Tait's After Action Report, Master Book II,"(Fort Leavenworth: Center for Desert Storm Lessons Learned, 1991) DSSSP AAR III-3-1 thru III-3-2.

[12]Ibid.

[13]U.S.Army, FM 101-5-1, Operational Terms and Symbols (Washington: Department of the Army, 1985) 1-32.

[14]Ibid.

coordination element (BCE) assumed the mission of coordinating the emplacement of the minefields with CENTAF; however, the BCE was not staffed nor trained for this mission.[15] The BCE also did not have direct contact with MARCENT or NAVCENT to coordinate their emplacement. Even worse, CENTAF was not directed to inform ARCENT of the location, density, and duration of the minefields.[16] The consequence was friendly ground units locating the minefields the hard way, driving into them.[17] I have not found any evidence that this caused any fratricide, but the potential was definitely there. If only one headquarters had the planning and emplacement authority for the scatterable minefields, this problem could have been avoided.

Desert Storm also raised a multitude of joint doctrinal planning issues at echelons above corps. For example, the joint planning process did not come together because of coordination problems.[18] Another question is why did not CENTCOM use the Joint Targeting Board suggested by our

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[15]U.S. Army, Issues (Fort Leavenworth: Center for Desert Storm Lessons Learned) located under DSOP 032, File 0350.

[16]U.S. Army "MG Tait's After Action Report, Master Book II" (Fort Leavenworth: Center for Desert Storm Lessons Learned, 1991) DSSP AAR II-2-14.

[17]U.S. Army, "VII Corps Desert Storm After Action Report" (Fort Leavenworth: Center for Desert Storm Lessons Learned, 1991) Part 2, Vol 2a, Tab C - Pages not numbered.

[18]U.S. Army, "Field Artillery Desert Storm Lessons Learned" (Fort Leavenworth, Center for Desert Storm Lessons Learned, 1991) pages not numbered, look under Operational Fires, issue: Joint doctrine was not followed while planning and....

doctrine.[19] These questions are beyond the bounds of this paper; however, they do show the scope and depth of our joint planning problems. It is my opinion that much of the problem of joint operations is caused by simple unfamiliarity. As the services work closer together, many of the problems with joint operations will dissolve in our mutual understanding of each other's doctrine.

Combined operations are international armies formed by the alliance of our country with one or more other countries. Unlike joint operations, combined operations have been a part of American warfare since the revolutionary war. Further, "all indications are that future U.S. Army operations will require even closer cooperations with armies of other nations . . . ."[20] In spite of the long history of combined warfare, there is only one manual that addresses this issue.[21]

Several complications of combined operations are similar to joint operations. Understanding each others terminology and doctrine is required to prevent tactical misunderstandings. Liaison teams must be exchanged to facilitate coordination between nationalities. This is very

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[19]U.S. Army, "MG Tait's After Action Report, Master Book II" (Fort Leavenworth: Desert Storm Lessons Learned) DSSSP AAR III-3-1.

[20]U.S. Army, FM 100-8, Combined Army Operations (Preliminary Draft) (Washington: Department of the Army, 1992) 1-1.

[21]FM 100-8, Combined Army Operations is the only manual that addresses combined operations. This draft manual only covers combined operations at the operational level of war.

similar to the joint complexion of division and corps staffs. Even in the area of politics, the operations are similar.

In Desert Storm, many political issues influenced the tactical planning of the war. For instance, the Arab Coalition forces would not enter Iraq. Also, their Soviet style forces did not have the flexibility to react to the Iraqi collapse. In spite of CENTCOM's prodding, the Arab Coalition stuck to their timetables. At lower levels, American artillery and Air Force supported the British division. This had to have created some doctrinal problems because of the way the British artillery supports their ground forces.[22]

The similarities between joint and combined operations should require a similar response in doctrinal literature; unfortunately, it has not. This is, without a doubt, an area in need of greater attention.

The Technical Aspects of Weaponry

The technical requirements and residual affects of modern weaponry are doing anything but dissolving. Today's planning process must consider more than a weapon's effectiveness, but also the consequences of its use. The

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[22]I was unable to find any after action reports from the III Corps artillery that supported the British Division. The doctrinal support difference between the American and British system are outlined in FM 6-20-40 on page A-2. This is one of the very rare references to combined operations.

employment of improved conventional munitions (ICM) during Desert Storm is a prime example.

One very effective air-delivered munitions is the cluster bomb (CBU). The CBU has over 200 submunitions per bomb that are very similar in nature to the artillery ICM round. These bombs were used extensively during the air campaign with no forethought of its possible effects on the ground campaign. Similarly, the field artillery fired Dual Purpose Improved Conventional Munitions (DPICM) as the munitions of choice from both cannon and MLRS units.

Unfortunately, all these weapons have a relatively high dud rate in ideal circumstances, 2.5 percent.[23] Considering the facts that: each CBU bomb dropped can create over 25 duds each, a typical MLRS target can leave approximately 200 duds, and an artillery fire mission (the fire order standard was a battalion 6) can produce over 300 duds, high concentrations of duds were created over the targeted area. Many of these duds are live and pose a threat to dismounted infantry, tracks and tires.[24] The planner, to preclude unwarranted risk, should consider high concentrations of these munitions as minefields. If the plan requires

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[23]U.S. Army, "Fort Sill Desert Storm Lessons Learned" (Fort Leavenworth, Department of the Army, 1991) pages not numbered, look under "ISSUE: The Air Force, Navy and Marine Corps did not Coordinate...."

[24]U.S. Army, "Employment of the M483A1, 155mm Bomblet Carrying Projectile" TA04SD H05, Special Munitions (Smoke, FASCAM, DPICM) (Fort Sill: Fire Support Division Warfighting Section, 1990) 3.

maneuver units to attack through a targeted area, the fire support plan should restrict the employment of these munitions.

The ICM planning problems pale in significance to the problems with employing guided, smart and brilliant weapons. These weapons are typically expensive and can only be effectively employed under certain battlefield conditions. Weather, smoke, positioning, and defensive countermeasures must all be considered before using these weapons.[15] An excellent example of the planning problems required of high tech weapons can be seen in the employment of Copperhead.

Copperhead is a laser guided artillery projectile. The weapon is guided into the target by a laser. The laser must be positioned between the target and the firing battery. The laser must be less than three kilometers away from a moving target and not more then five kilometers from a stationary target. The target must be continuously tracked and lazed for the final 13 seconds of the weapons time of flight. The cloud ceiling can not be any lower then 770 meters and the observer must have an uninterrupted line of sight to the target. The target must be in or move into a prearranged target area called a footprint. If all these conditions are met the probability of a hit is greater than 50 percent. Not all of these high tech weapons require such

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[15]U.S. Army, A304, Advanced Fires (Fort Leavenworth, Command and General Staff College, 1991) 81-86.

detailed planning; but, the fire support planner must know all the preconditions to employ them effectively. With the surge in this class of weaponry seen in Desert Storm, this planning challenge will get more difficult.

The Question of Planning Time

Perhaps the most difficult challenge facing our planning process is the unknown question of speed and time. The VII Corps' OPLAN for Desert Storm envisioned a ten-day ground offensive, complete with two JAATs destroying Iraqi reserves moving forward. The speed of the ground offensive shocked even the most optimistic planners. The OPLAN was obsolete within 24 hours of the ground offensive. The rapid advance of the allied forces provided minimal planning time, requiring that orders be changed by fragmentation orders[16] and subsequent planning be done on the move. At that pace, the planning process must be adapted to the time available. I realize that a trend is not set by a single campaign; but, it does show the need to plan and train for a "blitzkrieg" type war.

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[16]U.S. Army, "VII Corps After Action Report" (Fort Leavenworth: Center for Desert Storm Lessons Learned, 1991) Tab C (pages not numbered).

CHAPTER 5:

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

What can be concluded about our fire support planning? First, the fire support officer has a tall order. The knowledge and skills required to perform proper fire support planning include: 1) knowing the capabilities, limitations and employment considerations for every fire support weapon he is planning for, 2) being able to plan, target and synchronize fire support throughout the battlefield framework, without overcommitting or undercommitting his assets, 3) having a thorough knowledge of fire support doctrine and being able to apply it to the decisionmaking process as well as maneuver, AirLand Battle, and joint doctrines, 4) being able integrate the higher's fire support plan as well as his commander's guidance into his targeting and fire support planning effort, and 5) being flexible enough to react to the changing environment and technology of the battlefield.

Obviously, few if any officers can do all this. If you combine the several doctrinal problems I have identified,

strict and sometimes unpredictable time constraints, unreliable intelligence and poor command guidance; you have an impossible task. The most you can hope for is a working solution. Perhaps that is all that we need, but even a working solution is not that easy to develop.

Desert Storm proved that fire support planning can be done given sufficient time and a poor enough opponent. The real question today is, will it work in the next war? The multiple doctrinal problems I have outlined can prevent the development of a working solution. Without totally relying upon the ingenuity and dedication of the fire support cell to work around these stumbling blocks, the system would inevitably fail.

Technological Solutions

Since technology is equipping us beyond our ability to plan and individually coordinate every fire support system, can automation technology deliver us? The answer is yes and no.

The advanced field artillery tactical data system (AFATDS) should greatly assist in the execution and coordination of fire support. It should make planning and scheduling of fires easier. Targeting will be simplified by

tieing sensors, fire control centers and firing platforms together.[17]

The army tactical command and control system (ATACCS) is being designed to integrate with AFATDS. The system will assist the planner by "enabling information to be transmitted, received and most importantly processed automatically."[18] All these automation advances provide an increase in tactical information, command, control and execution. Unfortunately, until artificial intelligence can plan the battle, fire support planning will have to be done in the minds of its officers.

A Better Officer

There are a few things that can be done to improve the quality of fire support planning. First, we can clear up the doctrinal conflicts that needlessly complicate the planning process. Some problems, like the ATO planning cycle, require revision of joint doctrine. Other problems, such as incorporating the four basic fire support tasks into the decisionmaking process, requires a better fusion of fire support doctrine with combined arms doctrine. Still others, such as targeting, need clearer direction and proponentcy.

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[17]U.S. Army, A304, Advanced Fires (Fort Leavenworth: Command and General Staff College, 1991) 48.

[18]U.S. Army, FM 100-15, Corps Operations (Washington: Department of the Army, 1989) 48.

The reasons for the multitude of doctrinal conflicts are beyond the scope of this paper; however, the need to formally resolve these types of issues is growing with the combined arms nature of our warfare.

Second, the fire support officers should be of the highest quality and experience. Considering the problems and complexity facing the fire support planner, this should be a statement of the obvious. Unfortunately, few positions do not demand the best and the brightest. The same officers that would be your best fire support officers would also be your best battery commanders or staff officers. The best field grade officers would not only be the best brigade or division fire supporter officer, but also the best executive and operations officers.

Each commander must make these decisions based on his perceived priorities. In peace time, priority is probably to his unit's operations. In war and at the Combat Training Centers, it may shift to fire support. Regardless of the officer chosen, he must be of a high caliber to make the system work.

Third, we can build experience and knowledge at the higher echelons by making fire support an alternate specialty. Currently, the fire support officers must divide their professional development between cannon battalion operations like battery command and fire support operations. Even under the best circumstances the officer's fire support development

is limited. For example, a lieutenant may serve as much as two years as a company fire support officer and the another two in the firing battery. As a captain he will serve a minimum of 18 months as a battery commander and maybe two or three years as a battalion fire support officer. After his nominal tour of three to four years, he may return as a senior captain or junior major to the position of brigade fire support officer. Therefore, after 14 years of service he may have served as many as seven years as a fire support officer.

This is the most optimistic of scenarios and any battalion staff time reduces his fire support experience. This is not to say that cannon battery experience is unneeded, for the fire support officer must have an apposite understanding of his principle weapon system. The real dichotomy of interests lies in the need for the maximum fire support experience versus the well-rounded officer.

This solution could fill the division and corps FSEs with experienced officers. Selected officers would be able to continue to develop their fire support skills while their counterparts work outside their basic branch. By coding brigade, division and corps fire support element's slots with this specialty, you can be assured of receiving a more knowledgeable officer. Having a greater depth of experience at the higher echelons would go a long way in solving the knowledge and experience requirements of the fire support officer.

The Field Artillery School could also assist in the fire support officer's development by providing a special fire support training course. Currently, the Field Artillery Officer Advance Course is the highest schooling offered for fire support training. This course trains up to brigade level fire support, with little to no training at division and corps level. At the same time, special courses are offered for fire direction officers, target acquisition, MLRS, and the pre-command course. It is my opinion that fire support is so complex that a course of study on it is more than warranted.

Final Thoughts

The United States Army has enjoyed overwhelming firepower against its enemies for over a hundred years. The cornerstone of that firepower for the last forty years has been the fire support officer. It is he who has planned and coordinated the commander's firepower. It is he who has developed effective systems to deliver that firepower, in spite of doctrine or the lack thereof. In the past his performance and ingenuity have been exemplary. Today the nature of warfare is changing. Combined and joint operations are becoming the norm, and the fire supporter is being required to operate more and more within the bounds of published doctrine. Therefore, the Army's doctrine must be uniform and solid and the fire support officer's training

sound, so that the Army continues to receive the firepower it has come to expect from the "King of Battle."

APPENDIX A:

FIELD ARTILLERY TASKS

I have included a few critical planning tasks for illustrative purposes for each set of principles. The far right column list which of the four basic fire support tasks the principles support.

TASK	SOURCE	PURPOSE
1. Seven Sensor Planning Principles.	FM 6-20 p. 2-6	Used when planning, allocating and initiating sensor requests.
a. Tasks units and forces, not equipment.		
b. Tasks must compliment system capability.		
c. Constant coordination is required for effective employment of target acquisition assets.		Supports basic tasks of: SFIC SBP
d. 13 areas that the planner should focus upon.		
2. Five Fundamentals of Organization for Combat.	FM 6-20 p. 2-10	Provides a method of task organizing the field artillery.
a. Adequate field artillery support to committed combat units.		
b. Weight the main attack.		
c. Facilitate future operations.		Supports bask tasks of: SFIC SBP
d. Immediately available support for the commander to influence the action.		
e. Maximum feasible centralized control.		

SFIC= Support Forces in Contact, SBP= Support the Battle Plan, SFSS= Synchronize the Fire Support System, SUS= Sustain the Fire Support System.

TASK	SOURCE	PURPOSE
3. Thirteen Fire support Planning/Coordination Principles.	FM 6-20 p.3-5	Optimize FA employment into the battle plan.
a. Plan early and continuously.		
b. Exploit all available targeting assets.		Does not directly support basic tasks.
c. Consider the use of both lethal and nonlethal attack means.		

Corps and Division Planning

TASK	SOURCE	PURPOSE
1. Six Principles for Prioritizing Fire Support Planning and Coordination.	FM 6-20-30 p. 4-6	Method of prioritizing fire support.
a. General Planning and coordination parameters.		Does not directly support any task, but applies to all.
b. Targeting Procedures.		
c. Use of electronic warfare assets.		
d. Weapon status during attack.		

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TASK	SOURCE	PURPOSE
2. Five Factors for Allocating Fire Support for the Committed Reserves. a. Plan for the use of the habitually associated battalion or organic artillery battery until the commitment of the reserves. b. Provision for the adequate support to the force at the time of commitment. c. Consider the factors of METT-T. d. Scheme of maneuver.	FM 6-20-30 p. 4-9	Considerations for allocating fire support to the reserves. Supports the basic tasks of: SBP
3. Five Fire Support Considerations to Support the Reserves Upon Commitment. a. On the flanks to protect the force. b. On the way to the objective. c. On the objective to suppress, neutralize or destroy targets. d. On enemy elements that have been bypassed.	FM 6-20-30 p. 4-12	Guidelines for fire support planning. Supports basic tasks of: SFIC

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TASK	SOURCE	PURPOSE
4. Four Fire Support Tasks for Reconnaissance and Security Operations.	FM 6-20-30 p. 4-13	Employment considerations for security operations.
a. Orient on location or movement of the reconnaissance objective.		Support basic tasks of: SFIC
b. Report all on formation.		
c. Retain freedom of maneuver.		
d. Provide deceptive fires.		
5. Four Fire Support Tasks for the Advanced Guard and Flank Security Forces.	FM 6-20-30 p. 4-15	Employment considerations for advanced guard operations.
a. Responsive fire support for the security force.		Support basic tasks of: SFIC
b. Fires to prevent decisive engagement.		
c. Suppressive, screening and illumination fires to allow freedom of movement.		
d. Nuclear and chemical fires to block the enemy approach.		
6. Six Fire Support Considerations for Rear Operations.	FM 6-20-30 p. 4-21	Planning fire support for rear operations.
a. Reduction of fire support to the main battle.		
b. Suitability as determined by the overall tactical situation.		Does not directly support the basic tasks.
c. Responsiveness of the available weapon systems.		

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TASK	SOURCE	PURPOSE
7. Four Fire Support Considerations for Exploitation Operations. a. Fires to front, flank, and rear. b. Massed fires on key terrain. c. Suppressive fires to fix bypassed enemy. d. Ensure that fires do not create obstacles.	FM 6-20-30 p. 4-27	The planning of fires for an exploitation operation. Supports basic tasks of: SFIC
8. Fourteen Fire Support Considerations for Pursuit Operations. a. Responsive fire support for both the direct-pressure force and the encircling force. b. Provide fires to slow enemy's retreat. c. Provide fires to stop reinforcements. d. Use quick fire planning.	FM 6-20-30 p. 4-27	Fire support planning considerations for a pursuit operation. Supports basic tasks of: SFIC
9. Five Planning Considerations for the Use of Attack and Acquisition Systems in the Defense. a. Provide deep fires. b. Provide Counterfire. c. Provide SEAD. d. Interdict critical enemy elements.	FM 6-20-30 p. 5-2	Considerations for employing acquisition systems. Supports basic tasks of: SBP

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TASK	SOURCE	PURPOSE
10. Seven Planning Considerations for Deep Operations. a. Provide adequate fire support to achieve operational objectives. b. Destroy HPTs in enemy follow-on forces. c. Deliver SEAD to support TACAIR. d. Use Army aviation as a means to provide deep fires.	FM 6-20-30 p. 5-4	Considerations for deep operations fire planning. Supports basic tasks of: SBP
11. Six Fire Support Tasks for Security Forces. a. Engage reconnaissance early. b. Assist maneuver in moving and disengaging. c. Provide SEAD. d. Engage engineer mobility detachments.	FM 6-20-30 p. 5-5	Considerations for security operations fire support planning. Supports basic tasks of: SFIC
12. Fifteen Main Battle Area Planning Tasks. a. Mass fires to canalize and stall enemy forces. b. Isolate first echelon. c. Support friendly strongpoints. d. Suppress enemy air defense.	FM 6-20-30 p. 5-8	Considerations for planning fire support for the main battle area. Supports basic tasks of: SFIC

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TASK	SOURCE	PURPOSE
13. Six Fire Support Planning Tasks for Employment of Reserves in the Main Defensive Effort. a. Plan fires to support the commitment of reserves during movement. b. Plan fires to strike at objectives in depth as enemy dispositions are revealed. c. Plan deceptive fires to deceive the enemy into thinking the reserve is committed elsewhere. d. Plan to rearm, refit, and refuel organic and supporting fire support before assuming on-order missions.	FM 6-20-30 p. 5-10	Considerations for planning fire support for the reserves. Supports basic tasks of: SFIC
14. Four Fire Support Considerations for the Defense of the Rear. a. Rear area operations net may become overloaded. b. Use multichannel communi-cations as much as possible. c. Use one net from a dedicated fire support agency. d. Identify a spare or alternate net for a rear area fire support net.	FM 6-20-30 p. 5-13	Communication considerations for rear operations. Does not directly support any basic task.

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TASK	SOURCE	PURPOSE
15. Six Fire Support Planning Tasks for Supporting the Delay. a. Attack enemy forces far forward. b. Assist maneuver in disengaging. c. Support limited counter-attacks by fire. d. Six additional fire support planning and coordinating factors.	FM 6-20-30 p. 6-2	Considerations for planning fire support for the delay. Supports basic tasks of: SFIC
16. Seven Fire Support Planning Tasks for Supporting a Withdrawal. a. Mask the movement of friendly forces. b. Cover obstacles with fire and observation. c. Provide final protective fires when necessary. d. Be prepared to support a delay.	FM 6-20-30 p. 6-3	Considerations for planning fire support for the delay. Supports basic tasks of: SFIC
17. Eleven Fire Support Planning Tasks for Supporting a Forward Passage of Lines. a. Obscure the enemy's forward observation of the passage. b. Mass indirect fires. c. Plan fires to support the deception.	FM 6-20-30 p. 6-5	A list of fire support tasks to support a passage of lines. Supports basic tasks of: SFIC

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TASK	SOURCE	PURPOSE
18. Nine Considerations for a Rearward Passage of Lines. a. Plan smoke to conceal movement through the passage points. b. Plan massed fires to disengage forces. c. Plan fire support coordinating measures.	FM 6-20-30 p. 6-5	A list of fire support tasks to support a rearward passage of lines. Supports basic tasks of: SFIC
19. Six Fire Support Planning Tasks for Supporting a Breakout. a. Reorganize available fire support. b. Concentrate firepower at breakout point. c. Consider the use of FASCAM to help hold the shoulders of the breakout gap. d. Eight additional fire support consideration for the breakout.	FM 6-20-30 p. 6-7	A list of fire support tasks to support a breakout. Supports basic tasks of: SFIC
20. Seven Fire Support Considerations for a Linkup Operation. a. Employ RFLs as required. b. Ensure fire supporters are aware of the progress of the linkup. c. Position weapons to allow them to mass at linkup points.	FM 6-20-30 p. 6-8	A list of fire support tasks to support a linkup. Supports basic tasks of: SFIC

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TASK	SOURCE	PURPOSE
21. Eleven Fire Support Planning Considerations for Supporting a River Crossing Operation. a. Assign priority of fires to assault forces. b. Plan smoke and suppressive fires in greater than normal depths. c. Screen crossing sites. d. Use all available targeting assets to develop targets at bridgehead.	FM 6-20-30 p. 6-8	A list of fire support tasks to support a river crossing. Supports basic tasks of: SFIC
22. Nine Planning Factors for Deep Operations. a. Mutual support must be planned for FA. b. Extended communication lines are required. c. Ammunition expenditure will be large. d. Simultaneous interdiction fires must be planned to add weight to the attack.	FM 6-20-30 p. B-1	Planning considerations for planning deep operations. Supports basic tasks of: SBP
23. Four Factors that are Paramount for Planned Fires. a. Likely enemy approaches. b. Where the enemy is likely to be first detected. c. Likely enemy assembly areas.	FM 6-20-30 p. B-9	A list of considerations when developing a fire plan. Supports basic tasks of: SBP

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TASK	SOURCE	PURPOSE
24. Five Fire Support Tasks for the Rear Operations a. Establish an FSE within the operations cell of the rear CP. b. Select and prepare supplementary positions. c. Arrange for survey control for rear area positions. d. Determine FA ammunition considerations for rear operations.	FM 6-20-30 p. B-13	Unique fire support tasks for conducting rear operations. Does not directly support the four basic tasks.

Brigade Planning

TASK	SOURCE	PURPOSE
1. Fifty-Four Considerations for Fire Planning. a. Consider planning fires to support the unit movement to the LD or LC. b. Provide priority of fires to lead elements. c. Consider planning fires to block enemy reinforcements and resupply by ground or air. d. Consider using groups or series to assist in withdrawal.	FM 6-20-40 p. 2-9	Considerations for preparing a fire plan. Supports basic tasks of: SBP

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TASK	SOURCE	PURPOSE
2. Twelve Fire Support Tasks Associated with Offensive Operations. a. Use aggressive counterfire. b. Soften enemy targets by attacking logistical centers. c. During consolidation, plan fires to break up enemy counter-attacks. d. Provide responsive fires to maneuver.	FM 6-20-40 p. 3-1	Planning tasks for the offense. Supports basic tasks of: SFIC
3. Seven Fire Support Tasks Associated with the Defensive Operations. a. Integrate indirect and direct fires in support of the operation. b. Strike the enemy as he attacks. c. Canalize the enemy.	FM 6-20-40 p. 3-1	Planning tasks for the defense. Supports basic tasks of: SFIC
4. Five Considerations for Providing Fires to a Unit Conducting a Movement to Contact. a. Allocate priority targets to companies performing a mission requiring responsive fires. b. Responsive movement of batteries. c. Position forward observers with lead elements.	FM 6-20-40 p. 3-2	Planning tasks for a movement to contact. Supports basic tasks of: SFIC

SFIC= Support Forces in Contact, SBP= Support the Battle Plan, SFSS= Synchronize the Fire Support System, SUS= Sustain the Fire Support System.

TASK	SOURCE	PURPOSE
5. Nine Close Air Support Planning (CAS) Considerations. a. Unit mission. b. Mission response time. c. Terrain. d. CAS and artillery integration.	FM 6-20-40 p. A-9	Employment considerations for CAS. Supports basic tasks of: SFIC
6. Nine Joint Air Attack Team (JAAT) Planning Considerations. a. Whether the enemy is moving or not. b. Whether the enemy can be flanked. c. Whether local air superiority can be seized. d. Is enemy counterattacks likely?	FM 6-20-40 p. A-32	Employment considerations for a JAAT. Supports basic tasks of: SFIC
7. Seven Planning Considerations for using Family of Scaterable Mines (FASCAM). a. Employ mines at choke points. b. Cover mines with effective direct and indirect fires. c. Keep mines under continuous observation. d. Emplace mines in belts.	FM 6-20-40 p. A-32	Employment considerations for FASCAM. Supports basic tasks of: SFIC

SFIC= Support Forces in Contact, SBP= Support the Battle Plan, SFSS= Synchronize the Fire Support System, SUS= Sustain the Fire Support System.

TASK	SOURCE	PURPOSE
8. Six Planning Considerations for using Smoke and illumination. a. Use smoke to screen friendly movements. b. Illuminating munitions will ruin the night vision of friendly units and give away our advantage of night vision devices. c. Units in the defense normally have the advantage of knowing the terrain better than the enemy. The use of illumination may negate that advantage.	FM 6-20-40 p. 3-19	Employment considerations for the use of smoke and illumination. Supports basic tasks of: SFIC
9. Nine Copperhead Planning Considerations. a. Copperhead has a high hit probability on point targets that are stationary, lesser with moving targets. b. A laser does not have the pronounced firing signature of a Antitank guided missile. c. The laser operator is vulnerable to suppressive fires. d. Effectiveness of target engagement is limited to the operator's ability to track the target during the last thirteen seconds of flight.	FM 6-20-40 p. H-22	Employment considerations for Copperhead. Supports basic tasks of: SFIC

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TASK	SOURCE	PURPOSE
10. Environment and Terrain Planning Considerations. a. Thirty-three considerations for mountain fire planning. b. Eleven considerations for jungle operations. c. Sixteen considerations for night fire planning. d. Twenty-five considerations for military operations on urban terrain fire planning. e. Twenty-five considerations for fire planning in cold weather.	FM 6-20-40 Appendix J	Lists the effects that terrain or the environment will have on fire planning. Supports basic tasks of: SFIC

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APPENDIX B

THE FOUR BASIC FIRE SUPPORT TASKS

This appendix addresses when and if the fire support officer addresses each of the four basic tasks during the tactical decisionmaking process (TDM). The code N/A states that it is not formally addressed in the process. Where the task is not addressed, I have identified other locations where it could be considered as part of the fire support planning process.

I. Support Forces in Contact

TASK	TDM PROCESS
A. In All Phases of War.	
1. Provide deep fires to disrupt, delay, and destroy enemy follow-on forces before they can engage friendly forces.	COA step 3.
2. Plan counterfire to destroy, neutralize, or suppress the enemy's indirect-fire weapons.	N/A Counterfire Plan
3. Provide fires to suppress known enemy air defense weapons (SEAD).	COA step 3.
4. Provide offensive counterair fires to destroy, neutralize or suppress aircraft and missiles on the ground.	N/A FS Plan
B. In Defensive Operations.	
1. Provide adequate fire support to security forces, main battle area forces, and forces conducting deep and rear operations.	COA step 3.
2. Plan counterpreparation fire.	COA step 3.

COA = Course of Action, N/A = Not Applicable to the Tactical Decisionmaking Process, FS Plan = Fire Support Plan FA ORG = Field Artillery Organization for Combat, FS EST = Fire Support Estimate of Supportability, TVA = Target Value Analysis.

TASK	TDM PROCESS
3. Plan permissive fire support coordinating measures.	COA step 4.
4. Plan target acquisition and control of fires on all avenues of approach.	N/A
5. Plan targets on avenues of approach to strike the enemy during the assault.	COA step 3.
6. Select planned targets on critical avenues of approach, and allocate fire units for final protective fires.	CAO step 3.
C. In Offensive Operations	
1. Allocate responsive fire support for leading elements.	COA step 3.
2. Allocate fire support for the neutralization of enemy bypassed forces.	COA step 3 & Wargame
3. Provide preparation fires, when required.	COA step 3.
4. Plan targets to protect assaulting troops.	N/A FS Plan
5. Plan fires beyond objectives to prevent enemy reinforcement or consolidation.	COA step 3. FS Plan
6. Use permissive fire support coordination measures well forward.	COA step 4.

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II. Support the Battle Plan

TASK	TDM PROCESS
A. In All Phases of War.	
1. Retain control over enough firepower to influence the battle.	N/A FA ORG
B. In Defensive Operations.	
1. Interdict critical enemy elements before the attack.	N/A TVA
2. Plan counterfire against enemy indirect-fire systems attacking critical friendly elements.	N/A Counterfire Plan
3. Apply constant pressure on enemy's command and control structure.	N/A TVA
4. Plan acquisition and attack of HPTs throughout the battlefield.	N/A TVA
5. Provide fire support, in synch with maneuver and C^{2}CM, in conduct of deep operations.	Wargame, TVA, & Deep OPs
6. Use fire support alone as a means of deep attack.	COA step 3. Deep OPs
7. Retain centralized control of fire support resources in order to concentrate fire at the decisive place and time.	N/A FA ORG
8. Provide fires to support counterattack.	Wargame
9. Plan indirect fires in support of the barrier or obstacle plan.	N/A FS Plan

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TASK	TDM PROCESS
C. In Offensive Operations	
1. Attack deep targets with massed fire support to prevent enemy reinforcements, or resupply.	N/A Deep OPs
2. Weight the main attack with a preponderance of fire support.	COA step 2. FA ORG
3. Provide counterfire.	N/A Counterfire Plan
4. Disrupt enemy counterattacks.	Wargame
5. Plan fires to support breaching operations.	COA step 2. FS Plan
6. Coordinate FASCAM.	Wargame FS Plan
III. Synchronize the Fire Support System.	
1. Synchronize through normal fire support coordination.	N/A FS Plan FS EST
2. Synchronize using the decide-detect-deliver approach to targeting.	N/A Targeting

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IV. Sustain the Fire Support System.

TASK	TDM PROCESS
A. Protection.	
1. Plan the protection of various components of the fire support system.	N/A FS EST
2. When possible, plan for subsequent firing positions.	N/A FS EST
3. Ensure that personnel, equipment and systems are difficult to locate, strike and destroy.	N/A
B. Logistic Support.	
1. Protect and position stocks and supplies to sustain fire support.	N/A
2. Consider and maintain the state of readiness of equipment.	COA step 2. FS EST
3. Plan for and expeditiously make known the logistics requirements.	Wargame
4. When necessary, strict controls and priorities on supplies are employed to ensure strength at the decisive place and time.	Wargame FS EST
C. Technical Support	
1. Command and control facilities are redundant where possible.	N/A
2. Fire support personnel are well-trained; and, training is continuous.	N/A
3. Firing systems and support equipment are mobile and correctly emplaced.	N/A

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TASK	TDM PROCESS
4. The technical aspects of fire support are accurate and rapid.	N/A

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APPENDIX C

SOME RULES FOR ORGANIZING THE FIELD ARTILLERY FOR COMBAT

1. Field artillery brigades are never in direct support to a division. They are either given a general support-reinforcing or reinforcing mission to the division artillery.

Reference or reason: U.S. Army, Battle Book (Fort Sill OK: Field Artillery School, 1990) 1-7.

2. Artillery battalions that are apart of an attached field artillery brigade may be sub-assigned a mission.

Reference or reason: U.S. Army, Battle Book (Fort Sill OK: Field Artillery School, 1990) 1-7.

3. Two artillery units can not be assigned a direct support mission to the same maneuver unit.

Reference or reason: U.S. Army, Battle Book (Fort Sill OK: Field Artillery School, 1990) 1-7.

4. No more then two units either reinforcing or general support-reinforcing a direct support battalion.

Reference or reason: U.S. Army, Battle Book (Fort Sill OK: Field Artillery School, 1990) 1-7.

5. A unit can only reinforce or general support-reinforce one unit at a time.

Reference or reason: U.S. Army, Battle Book (Fort Sill OK: Field Artillery School, 1990) 1-7.

6. If possible, use the close support battalion habitually associated with a maneuver brigade to provide direct support.

Reference or reason: U.S. Army, FM 6-20-1J, Field Artillery Battalion (Washington: Department of the Army, 1984) 2-4.

7. If the habitually associated battalion is not available for the direct support mission, then use: another unemployed close support battalion, a corps 155mm battalion, or an eight inch battalion, in order.

Reference or reason: The order of preference is based on TOE communication and equipment availablility. The close support battalion is perfectly tailored to handle a direct support mission. The only caveat is that the habitually associated brigade must not be committed while providing this support.

8. When a field artillery brigade is attached, the brigade headquarters must be given a mission.

Reference or reason: Every unit must a mission and a command relationship, this includes the brigade headquarters.

9. If the field artillery brigade is given the mission of counterfire headquarters, the divisional Target Acquisition Battery should be attached to the brigade.

Reference or reason: The target acqusition battery of the division contains the target production section required for the counterfire effort.

10. Avoid requiring a unit to perform back to back direct support missions to two different units during the same battle.

Refence or reason: The direct support mission requires the total commitment of the unit's resources. The drain on personnel, supplies and equipment will be tremendous. This drain could hamper the unit's ability to perform the second direct support mission.

11. Avoid assigning a unit a reinforcing mission prior to a direct support mission during the same battle.

Reference or reason: While reinforcing another unit, it may expend large quantities of ammunition and be poorly position for the direct support mission.

12. Normally a eight inch battalion and multiple launch rocket system (MLRS) unit is given a mission of general support or occasionally general support-reinforcing.

Reference or reason: U.S. Army, FM 6-20-1J, Field Artillery Battalion (Washington: Department of the Army, 1984) 2-4.

13. MLRS on rare occasions may be assigned the mission of reinforcing, but never direct support.

Reference or reason: U.S. Army, FM 6-20-1J, Field Artillery Battalion (Washington: Department of the Army, 1984) 2-4.

14. An field artillery brigade can control no more then six battalions.

Reference or reason: U.S. Army, FM 6-20-2, Division Artillery, Field Artillery Brigade and Field Artillery Section (Corps) (Washington: Department of the Army, 1983) 4-12.

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