



THE WALKER PAPERS



DEVELOPING DOCTRINE FOR THE FUTURE JOINT FORCE

CREATING SYNERGY AND MINIMIZING SEAMS

CHARLES Q. BROWN JR.
COLONEL, USAF

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The Walker Papers



Brig Gen Kenneth Newton Walker

Kenneth Walker enlisted at Denver, Colorado, 15 December 1917. He took flying training at Mather Field, California, getting his commission and wings in November 1918.

After a tour in the Philippines, he returned to the United States in February 1925 to Langley Field, Virginia, with a subsequent assignment in December 1928 to attend the Air Corps Tactical School. Retained on the faculty as a bombardment instructor, Walker became the epitome of the strategic thinkers at the school and coined the revolutionary airpower “creed of the bomber.” “A well-planned, well-organized and well-flown air force attack will constitute an offensive that cannot be stopped.”

Following attendance at the Command and General Staff School at Fort Leavenworth, Kansas, in 1933 and promotion to major, he served for three years at Hamilton Field, California, and another three years at Luke Field, Ford Island, and Wheeler Field, Hawaii. Walker returned to the United States in January 1941, as assistant chief of the Plans Division for the chief of the Air Corps in Washington, DC.

Promoted to lieutenant colonel July 1941 and colonel in March 1942, it was during this time in the Operations Division of the War Department General Staff that he coauthored the air campaign strategy, *Air War Plans Division—Plan 1*, the plan for organizing, equipping, deploying, and employing the Army Air Forces to defeat Germany and Japan should the United States become embroiled in war. It was a monumental achievement, completed in less than one month and just before Japan attacked Pearl Harbor, and the United States was, in fact, at war. Walker is credited with being one of the men who built an organization that became the US Air Force.

In June 1942, he was promoted to brigadier general and assigned by Gen George Kenney as commander of the Fifth Air Force Bomber Command. In this capacity, he repeatedly accompanied his B-24 and B-17 units on bombing missions deep into enemy-held territory. Learning first-hand about combat conditions, he developed a highly efficient technique for bombing when opposed by enemy fighter planes and by antiaircraft fire.

General Walker was killed in action 5 January 1943 while leading a bombing mission over Rabaul, New Britain—the hottest target in the theater. He was awarded the Medal of Honor. Its citation, in part, reads “In the face of extremely heavy antiaircraft fire and determined opposition by enemy fighters, General Walker led an effective daylight bombing attack against shipping in the harbor at Rabaul, which resulted in direct hits on nine enemy vessels. During this action, his airplane was disabled and forced down by the attack of an overwhelming number of enemy fighters. He displayed conspicuous leadership above and beyond the call of duty involving personal valor and intrepidity at an extreme hazard to life.”

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Developing Doctrine for the Future Joint Force

Brown

Creating Synergy and Minimizing Seams

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RESEARCH AND EDUCATION**
AIR UNIVERSITY



**Developing Doctrine
for the Future Joint Force**
Creating Synergy and Minimizing Seams

CHARLES Q. BROWN JR.
Colonel, USAF

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Air Force Fellows

Since 1958 the Air Force has assigned a small number of carefully chosen, experienced officers to serve one-year tours at distinguished civilian institutions studying national security policy and strategy. Beginning with the 1994 academic year, these programs were accorded senior service school professional military education in-residence credit. In 2003 these fellowships assumed senior developmental education (SDE) force development credit for eligible officers.

The SDE-level Air Force Fellows serve as visiting military ambassadors to their centers, devoting effort to expanding their colleagues' understanding of defense matters. As such, candidates for SDE-level fellowships have a broad knowledge of key DOD and Air Force issues. SDE-level fellows perform outreach by their presence and voice in sponsoring institutions. SDE-level fellows are expected to provide advice, promote, and explain Air Force and DOD policies, programs, and military doctrine strategy to nationally recognized scholars, foreign dignitaries, and leading policy analysts. The AF Fellows also gain valuable perspectives from the exchange of ideas with these civilian leaders. SDE-level fellows are expected to apprise appropriate Air Force agencies of significant developments and emerging views on defense and economic and foreign policy issues within their centers. Each fellow is expected to use the unique access she or he has as grounds for research and writing on important national security issues. The SDE AF Fellows includes the National Defense Fellows, the RAND Fellows, the National Security Fellows, and the Secretary of Defense Corporate Fellows. In addition, the Air Force Fellows supports a post-SDE military fellow at the Council on Foreign Relations.

On the intermediate developmental education level, the chief of staff approved several AF Fellowships focused on career broadening for Air Force majors. The Air Force Legislative Fellows was established in April 1995 with the Foreign Policy

Fellowship and Defense Advanced Research Projects Agency Fellowship coming under the AF Fellows program in 2003. In 2004, the AF Fellows also assumed responsibility of the National Laboratories Technologies Fellows.

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Foreword

Doctrine governing the integration of air and ground operations has been a hotly contested area since World War I. Historically, the services have developed and published their doctrine separately, often causing seams in thought and execution. Although joint doctrine exists for today's joint force, its development followed the same historical pattern—taking service doctrines and “melding” into joint doctrine. This construct for developing joint doctrine has its shortcomings, which are most often manifested where we least likely want to see them—on the battlefield.

In many circles, recent contingency operations have been deemed successful. However, the successes have been more reliant on the innovation and tenacity of our warriors than forward-thinking joint doctrine, illustrating that today's “melded” joint doctrine is fraught with issues that negatively impact combat effectiveness. Without change, issues related to support relationships, command and control, planning and execution tools, and coordination measures will constrain potential synergies in future joint operations, particularly in the area of air-ground integration. The publication of the *Joint Operations Concept*, representing the willingness to reconsider in toto the way we will wage warfare in the future, suggests that the time is right to also address future joint doctrine for air-ground integration.

In this award-winning study on *Developing Doctrine for the Future Joint Force: Creating Synergy and Minimizing Seams*, Colonel Charles Q. Brown Jr. argues that recent operations have highlighted seams and shortfalls in joint doctrine that need to be addressed in the shaping of a more effective future joint force. The *Joint Operations Concept* describes the key attributes required to operate and achieve full spectrum dominance within the next 15–20 years. Using the current doctrine command and control tenets and *Joint Operations Concept* attributes as a framework, Colonel Brown develops the foundation of air-ground doctrine for the future joint force. Using case studies from recent contingencies to illustrate gaps in current doctrine, he proposes doctrinal concepts via five air-ground integration focus areas: supporting/supported relationships, establishing directives and

emerging concepts, synchronization of interdiction and maneuver, joint fires concepts, and fire support coordination measures.

To achieve the vision outlined in the *Joint Operations Concept*, Colonel Brown proposes support relationships be defined not by doctrine, but by the joint force commander based on his operational objectives. Joint force commanders would then articulate intent, relationships, and objectives through his proposed establishing directive guidance, which communicates to a joint cross-functional audience. Colonel Brown also proposes a responsive and interoperable joint organizational construct capable of integrating the effects created by fire and maneuver. He completes his proposals by recommending a standardized coordination-measure construct to allow timely decision making and execution in future joint operations.

Colonel Brown concludes his study by using the proposed doctrine concepts to conduct a top-level review of the Air Force Transformation Flight Plan and Army Transformation Roadmap. He deftly uses the doctrine concepts to bring to light ways to enhance synergies and minimize seams between the services in future joint operations.

Originally submitted as a thesis for Air University's Air Force Fellows Program, *Developing Doctrine for the Future Joint Force: Creating Synergy and Minimizing Seams* was selected as one of three inaugural 2004 Brig Gen Kenneth N. Walker Series Award winners for best papers submitted by an Air Force Fellow.

Developing Doctrine for the Future Joint Force: Creating Synergy and Minimizing Seams is a thought-provoking study that can ensure we are on the correct path to achieving the vision for future joint operations. I commend this exceptional work to any joint war fighter that has a role in the shaping of future joint doctrine.



DR. MICHAEL FISCHERKELLER
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About the Author



Col Charles Q. Brown Jr.

Col Charles Q. Brown Jr. (BS, Texas Tech University; MAS, Embry-Riddle Aeronautical University) is commandant, US Air Force Weapons School, Nellis AFB, Nevada.

After being recognized as a distinguished graduate of Air Force Reserve Officer Training Corps, Colonel Brown earned his pilot wings at Williams AFB, Arizona, followed by an assignment in the F-16 to the 8th Tactical Fighter Wing, Kunsan Air Base, Republic of Korea. During his next assignment to the 31st Tactical Fighter Wing, Homestead AFB, Florida, Colonel Brown served as instructor pilot and air-to-ground weapons officer, wing electronic combat pilot, and wing standardization and evaluation flight examiner. He then graduated from the Fighter Weapons Instructor Course (FWIC) and returned to Homestead serving as weapons officer and flight commander. Colonel Brown was selected to return to FWIC as an instructor in the F-16 Division serving as programmer, standardization and evaluation flight examiner, and Weapons/Surface Attack Tactics phase manager. He subsequently served in staff tours as Aide-de-Camp to the Chief of Staff of the Air Force and air operations officer, US Central Command. Colonel Brown returned to the F-16 at Shaw AFB, South Carolina, serving in several squadron and wing leadership positions to include expeditionary fighter squadron commander for Operations Southern Watch and Northern Watch deployments. He completed his assignment to Shaw as commander, 78th Fighter Squadron. Colonel Brown then served as a

National Defense Fellow (Air Force Fellowship, Senior Developmental Education) at the Institute for Defense Analyses, Alexandria, Virginia. Prior to his current assignment, Colonel Brown was the deputy chief, Program Integration Division, Directorate of Programs, Headquarters, US Air Force, Washington, D.C.

Colonel Brown is a command pilot with over 2,400 hours of flight time and is a graduate of USAF Fighter Weapons School, Squadron Officer School, Air Command and Staff College (distinguished graduate), Armed Forces Staff College, Air War College, and National Defense Fellow. He and his wife, Sharene, have two sons, Sean and Ross.

Preface

I chose to research air-ground integration doctrine for several reasons. First, I wanted to research a somewhat familiar and relevant topic from which I could learn something new. Second, my goal in competing for an Air Force Fellowship and eventually selecting this topic was to conduct research, not just to fulfill a graduation requirement. Instead, I wanted to research issues and generate results that might impact future decisions. I realize in taking on this topic that air-ground integration and joint fires have been debated over many years without much resolution. I also recognize that the ideas I propose are not the panacea for these contentious issues. My measure of success in this paper is not the reader's agreement with the ideas and thoughts I present. More so, I base the success of this research paper on its ability to generate discussion that forces the changes required to create synergy and minimize seams in air-ground integration.

Many thanks to Linda McCabe of Headquarters, Air Force Concept Development and Strategy Division who was instrumental in the initial stages of establishing my research topic. I sincerely appreciate the enthusiastic support the Institute for Defense Analyses (IDA) displays towards Air Force Fellows. Thanks to division director Michael Leonard and the entire Strategy, Forces, and Resources Division for creating an exceptional atmosphere for this unique education experience. I am extremely grateful for the endless sound advice and insight from my advisor, Dr. Michael Fischerkeller and reviewer, Dr. Glenn Gotz. The hours I spent talking with them over the course of this research has been truly enlightening. Additionally, the opportunity to interact with the attendees of the Air Force–Army Transformation Symposium hosted by Dr. Fischerkeller proved to be an outstanding research resource. Thanks to the IDA staff members who graciously assisted my research efforts in one way or another, specifically Maj Gen Waldo Freeman, USA, retired; Col Karl Lowe, USA, retired; Dr. Kent Carson; John Tillson; Larry Morton; Mark Lewis; and Shelley Smith. Finally, thanks to my good friend Lt Col Jack Forsythe. He served as an excellent sounding board not just for this paper, but also throughout our Air Force careers.

Most important, I wish to thank my wife, Sharene, and sons, Sean and Ross. Without fail, they have supported my every effort during my Air Force career to include this year of research. I am forever indebted to them for their years of sacrifice and never ending support.

A handwritten signature in black ink, appearing to read 'Ch Q. B. Jr.' with a stylized flourish at the end.

CHARLES Q. BROWN JR.
Colonel, USAF

Abstract

The *Joint Operations Concept (JOpsC)* describes how the future joint force intends to operate within the next 15–20 years and the key attributes required for full spectrum dominance—a force that is fully integrated, expeditionary, networked, decentralized, adaptable, decision superior, and lethal. Recent contingencies displayed rapidly executable, globally and operationally distributed, simultaneous, and sequential operations characteristic of the future joint force. Despite the success of these operations, they highlighted seams and shortfalls in current joint doctrine. For the future joint force to fully realize the synergies of air-ground integration, joint doctrine should evolve in several key areas.

This paper addresses five focus areas related to future joint air-ground integration: supporting/supported relationships, establishing directives and emerging concepts, synchronization of interdiction and maneuver, joint fires concepts, and fire support coordination measures. Using the joint doctrine command and control tenets and *JOpsC* as a framework, this paper proposes doctrine concepts for the future joint force. By its completion, this paper introduces new command and control relationships and processes, joint organizational structures, and joint fires concepts. The proposed doctrine concepts offer a framework to analyze the desired future capabilities of the Air Force and Army. The analysis concludes by recommending several avenues to create synergy and minimize seams in future joint operations.

Executive Summary

Despite their successes, the most recent joint operations highlighted seams in joint doctrine, particularly in the area of air-ground integration. These seams can be categorized into five focus areas—supported/supporting relationships, establishing directives and emerging concepts, synchronization of interdiction and maneuver, joint fires, and fire support coordination measures. The focus areas highlight the following overarching issues in existing joint doctrine that require attention in shaping doctrine for the future joint force:

- Predetermined support relationships based on areas of operations and doctrinal missions inhibit agility and versatility of thought, plans, operations, and organizations.
- Shortfalls exist in articulating to a joint cross-functional audience authorities, roles, and responsibilities that can adapt in dynamic situations.
- Planning and execution mind-sets and processes are not conducive to integrated operations.
- Command and control of joint fires is disparate and stovepiped along service and component lines.
- Coordination measures lack flexibility and responsiveness to support rapidly executed, dispersed operations.

Proposed Doctrine Concepts

Grounded in current doctrine, several new doctrine concepts facilitate achieving the *Joint Operations Concept* vision. The area of operation and doctrinal mission construct for declaring support relationships must change to one determined by a joint force commander based on his operational objectives.

The future joint force will come closer to full integration and adaptability during dynamic joint operations by expanding the guidance for establishing directive format and content. To integrate, vice synchronize, interdiction and maneuver, a new joint organization capable of integrating effects via prioritized effects lists and effects tasking orders is essential to the future joint force. Command and control of integrated joint fires and maneuver requires responsive, interoperable *joint* organizations

at all levels. Adopting component coordination elements, joint tactical action support centers, and joint fire control teams into joint doctrine is a means to achieve this goal. Timely decision making and execution in future joint operations make a joint *three-dimensional* common grid reference standard to facilitate rapid development of real-time digital coordination measures an imperative. The combination of these proposals provides the future joint force with a robust menu of responsive, interoperable, and *joint* integration tools resulting in synergistic and seamless air-ground operations.

Recommendations to Create Synergy and Minimize Seams

The proposed doctrine concepts offer a framework to conduct a top-level review of the Air Force and Army future organizational constructs, transformational capabilities, and interdependencies. The doctrine concepts highlight air-ground integration synergies and seams and how they might be enhanced or minimized, respectively.

Joint force commanders require capabilities-based trade-off models to rapidly assemble and adjust joint capabilities to the most appropriate mix that can achieve the desired operational objective. Once the required capabilities have been identified, execution of future joint operations will depend upon seamless integration of command and control organizations. Seamless command and control demands development of minimum essential joint communications and information systems lists. Additionally, the component coordination element concept should expand to all components. In expanding this concept, the services must develop the manning requirements for their coordination elements—activation only during contingencies, fully manned and functional at all times, or somewhere in between. Maximizing future joint force synergy entails adopting and digitizing establishing directives, prioritized effects lists, and effects tasking orders to allow rapid dissemination of mission, intent, and prioritized effects. Not only should control systems for integrating joint fires be developed, but also the same should be done for integrating joint maneuver. Once these

systems are developed, air-ground integration during rapidly executed, dispersed operations will depend upon adopting responsive, digital, and doctrinally based fire support coordination measure concepts.

The *Joint Operations Concept* vision is achievable, but not without changes to existing doctrine. The proposed concepts do not represent “the approved solution” but are instead offered as tools to stimulate discussion and generate the changes required to create synergy and minimize seams in future joint operations.

Chapter 1

Introduction

Transformation is hard, mental work. It has to have an intellectual element. What happens between the ears of the warfighter, and those who support the warfighter, is more important in my view than the technology. Innovative ideas don't have to involve revolutionary new things or new technology.

—Gen Richard B. Myers,
Speech to 34th Institute for Foreign
Policy Analysis Fletcher Conference,
3 December 2003

Recent operations demonstrated characteristics that war fighters expect to be the norms in joint operations within the next 15–20 years. Operations will be rapidly executable, globally and operationally distributed, simultaneous, and sequential.¹ Commenting on military operations in southwest Asia, Gen Tommy R. Franks, former commander, US Central Command, noted, “Joint force synergy was taken to new levels of sophistication.”² He stated that Operation Iraqi Freedom (OIF) was the first time that joint forces were able to achieve their operational objectives by “the integration of forces rather than deconfliction of forces.”³ Despite the obvious success, seams in joint doctrine detracted from joint forces reaching the full integration expected in the future joint force.

One might argue about which aspect of integration is most important, but few can disagree that air-ground integration has historically generated the most debate. The topic has been contentious since America's first air-land battle at Vaux, France, in 1918 where the US Army was challenged with the nuances of command relationships between the pursuit and observation groups and the corps and armies they supported.⁴ The contention will likely continue unless planners develop, discuss, and agree upon new doctrine concepts during the shaping of the future joint force. Disparate and stovepiped mind-sets and processes in current joint doctrine are not conducive

to integrated air-ground operations due to their lack of flexibility and responsiveness. To address these air-ground integration issues, this paper proposes new doctrine concepts in five focus areas: supported/supporting relationships, establishing directives and emerging concepts, synchronization of interdiction and maneuver, joint fires concepts, and fire support coordination measures (FSCM).

Chapter 2 identifies the desired core capabilities and attributes of the future joint force as outlined in the *Joint Operations Concept (JOpsC)*. Enumerating these capabilities and attributes establishes the framework for the doctrine proposals that subsequent chapters develop. Chapters 3 through 7 propose future joint doctrine concepts that are grounded in the current doctrine command and control tenets. To set the stage for the doctrine proposals, each chapter identifies several current doctrine issues that, if not addressed, inhibit future joint force integration. Examples from recent joint operations that illustrate the current doctrine shortfalls follow. The proposals in each chapter advocate changing joint doctrine concepts, definitions, and organizational constructs as well as mind-sets to facilitate reaching *JOpsC* vision of full integration. Chapter 8 uses the proposed joint doctrine concepts to frame an analysis of future Air Force and Army capabilities applicable to air-ground integration. The paper concludes by recommending ways to create synergy and minimize seams.

Notes

1. Department of Defense (DOD), *Joint Operations Concept* (Washington, D.C.: Director of Operational Plans and Joint Force Development, Joint Staff J-7, November 2003), 9.

2. Senate, *Statement of General Tommy R. Franks, Former Commander US Central Command before the Senate Armed Services Committee*, 108th Cong., 1st sess., 9 July 2003, 5, <http://armed-services.senate.gov/statemnt/2003/July/Franks.pdf>.

3. Ibid.

4. Dr. Bert Frandsen, "America's First Air-Land Battle," *Air and Space Power Journal* 17, no. 4 (Winter 2003): 35, <http://www.airpower.maxwell.af.mil/airchronicles/apj/apj03/win03/win03.html>. This article describes the successful air-land battle at Vaux, France, on 1 July 1918. Although a success, the battle was not without problems. The execution plan changed after the operation began, and command relationships were not well understood. Three dif-

ferent commanders—the French Sixth Army, and two American headquarters—thought they commanded the airpower generated by the 1st Pursuit Group.

Chapter 2

Framework for Introducing Future Joint Doctrine Concepts

A concept is a notion or statement of an idea—an expression of how something might be done.

—CJCSI 3010.02A

Joint Vision Implementation Master Plan

Increasing political, economic, ethnic, and religious divisions; the diffusion of power among hostile state and nonstate actors; population growth and a scarcity of natural resources; and the proliferation of dangerous technologies and weaponry are dramatically increasing the range of threats to the US homeland and the nation's global interests.¹ Considering the potential range of future adversaries and conflicts, the *Quadrennial Defense Review (QDR) 2001* directed a movement away from a threat-based approach for defense to one that is capabilities-based.² Following this guidance, the *Joint Operations Concept* articulates an overarching idea to guide the development and acquisition of new capabilities through changes in doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF).³

The *JOpsC* identifies eight core capabilities, which are generally required to execute joint operations across a wide spectrum of threats and scenarios. These eight capabilities allow the future joint force to achieve full spectrum dominance focusing more on how the United States can defeat a broad array of adversary capabilities rather than who the adversaries are and how they might individually engage US national security interests.⁴ The *JOpsC* core capabilities are to

- achieve common understanding of all dimensions of the battlespace throughout the joint force;
- make joint decisions and take action throughout the joint force faster than the opponent;
- adapt in scope, scale, and method as the situation requires;

- rapidly deploy selected portions of the joint force that can immediately transition to execution, even in absence of developed infrastructure;
- create and sustain continuous pressure throughout the battlespace for as little or as long as it takes to accomplish strategic or operational aims;
- disintegrate, disorient, dislocate, or destroy any opponent with a combination of lethal and nonlethal means;
- conduct deployment and sustainment activities in support of multiple simultaneous, distributed, decentralized battles and campaigns; and
- accomplish all of the above in an interagency and multinational context.⁵

To attain these core capabilities, joint forces will require a joint and expeditionary mind-set with greater levels of versatility. The *JOpsC* outlines seven required attributes to achieve this goal. The future joint force must be

- fully integrated—able to move beyond deconfliction to fully integrated elements with all functions and capabilities focused toward a unified purpose;
- expeditionary—rapidly deployable, employable, and sustainable throughout the global battlespace regardless of antiaccess or area-denial environments and independent of existing infrastructure;
- networked—linked and synchronized in time and purpose;
- decentralized—capable of leveraging the power of integrated joint capabilities while operating in a joint manner at lower echelons;
- adaptable—prepared to quickly respond to any contingency with the appropriate capabilities mix;
- decision superior—able to make better informed decisions and implement them faster than an adversary can react, or in a noncombat situation, at a tempo that allows the force to shape the situation or react to changes and accomplish its mission; and
- lethal—ready with increased and refined joint force capabilities to destroy an adversary and/or his systems in all conditions and environments.⁶

The combination of these core capabilities and attributes ensure future joint force commanders (JFC) achieve full spectrum dominance during any contingency.⁷ Considering these capabilities and attributes, the entire DOTMLPF continuum requires review, debate, and change as required. This paper limits its focus to doctrine, recognizing that as the challenges of the future evolve, joint doctrine must also evolve to keep pace and drive advancements in the other elements of the continuum.

Joint doctrine promotes a common perspective from which to plan, train, and conduct military operations.⁸ Exercising authority and direction over this common perspective is rooted in command and control. In simple terms, joint doctrine outlines command and control concepts for the planning, training, and conducting of military operations. With these thoughts in mind, the command and control tenets listed in Joint Publication 0-2, *Unified Action Armed Forces (UNAAF)*, serve as the framework for developing doctrine concepts that achieve the *JOpsC* vision. They are

- clearly defined authorities, roles, and relationships;
- information management;
- implicit communication;
- timely decision making;
- robust integration, synchronization, and coordination mechanisms;
- battle rhythm discipline;
- responsive, interoperable support systems;
- situational awareness; and
- mutual trust.⁹

Adhering to the command and control tenets during doctrine development ensures any proposed concepts facilitate a commander's ability to exercise his authority and successfully direct during joint operations. In this paper's development of new doctrine concepts, the five focus areas are linked to the command and control tenets to ensure the concepts maintain relevance to those aspects of joint doctrine that are not likely to change (fig. 1). The next five chapters detail these relationships and introduce new joint doctrine concepts.

Command and Control Tenet/ Focus Area Relationship	
TENET	FOCUS AREA
Clearly Defined Authorities, Roles, and Relationships	Supported/Supporting Relationships
Implicit Communication	Establishing Directives
Robust Integration, Synchronization, and Coordination Mechanisms	Synchronization of Interdiction and Maneuver
Responsive, Interoperable Support Systems	Joint Fires Concepts
Robust Integration, Synchronization, and Coordination Mechanisms Timely Decision Making	Fire Support Coordination Measures

Figure 1. Command and control tenet/focus area relationship

Notes

1. Joint Staff Directorate for Operational Plans and Joint Force Development, *An Evolving Joint Perspective: U.S. Joint Warfare and Crisis Resolution in the 21st Century White Paper* (Washington, D.C.: Joint Staff, J7, 28 January 2003), 2.

2. *Quadrennial Defense Review (QDR) 2001* (Washington, D.C.: Office of the Secretary of Defense, 2001), 13–14.

3. Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 3010.02A, *Joint Vision Implementation Master Plan (JIMP)*, 2001, in *Joint Operations Concept*, 3 (see chap. 1, n. 1).

4. DOD, *Joint Operations Concept*, 8 (see chap. 1, n. 1).

5. *Ibid.*, 10–14.

6. *Ibid.*, 14–17.

7. *Ibid.*, 8. Full spectrum dominance is the defeat of any adversary or control of any situation across the full range of military operations. Full spectrum dominance is based on the ability to sense, understand, decide, and act faster than any adversary in any situation. These actions are preceded by decisions that are led by better understanding of the battlespace.

8. Joint Publication 1, *Joint Warfare of the Armed Forces of the United States*, 14 November 2000, I-8.

9. Joint Publication 0-2, *Unified Action Armed Forces (UNAAF)*, 10 July 2001, III-14–16.

Chapter 3

Supported/Supporting Relationships

There is still a tendency in each separate unit . . . to be a one-handed puncher. By that I mean that the rifleman wants to shoot, the tankier to charge, the artilleryman to fire. . . . That is not the way to win battles. If the band played a piece first with the piccolo, then with the brass horn, then with the clarinet, and then with the trumpet, there would be a hell of a lot of noise but no music. To get the harmony in music, each instrument must support the others. To get harmony in battle, each weapon must support the other. Team play wins. You musicians of Mars must not wait for the band leader to signal you. . . . You must each of your own volition see to it that you come into this concert at the proper place and at the proper time.

—Gen George S. Patton Jr.,
8 July 1941, address to the men
of the 2nd Armored Division

The JOpsC describes the future joint force achieving a common understanding, making decisions, and taking joint action faster than its opponent.¹ (For more detailed background on current supported/supporting relationship doctrine, reference appendix A.)

To do so during distributed operations, adhering to the command and control tenet of clearly defined authorities, roles, and relationships is an imperative. By the same token, adaptability is a required attribute of the future joint force that will ensure unity of effort during joint air-ground operations. Unfortunately, current joint doctrine and definitions have implied and encouraged a mind-set of associating support relationships with areas of operations and doctrinal missions, thereby inhibiting adaptability. Achieving the goals of clearly defined authorities, roles, relationships, and adaptability requires changes to the following two current doctrine concepts:

- areas of operations exclusive to land and maritime commanders; as such, land and maritime commanders are

declared supported commanders within their area of operations;

- the designation of the air component commander as the supported commander for certain theaterwide missions.

While perhaps appropriate in the past, support relationships must not be predetermined in doctrine by virtue of an area of operations or doctrinal mission. Instead, joint doctrine must provide a joint force commander (JFC) the flexibility to assign support relationships to best achieve his objectives. Toward this end, this chapter proposes changing the area of operations and mission association construct for support relationships.

Demonstrated Gaps in Support Relationships

As one looks at the last three major combat operations, the declaration made in current joint doctrine that a land or maritime area of operations would be designated with associated supported/supporting relationships may no longer hold true. The air war over Kosovo did not have a land component or a land area of operations. By default, the air component became the supported commander in the area of operations. The early phases of the Afghanistan campaign provide other examples of where clearly defined supported/supporting relationships consistent with doctrine were not established.² Although the special operations component commander eventually became the supported commander, one might argue whether that was the right choice considering the operational objective and mission execution. After striking many of the fixed targets, the focus switched to striking an elusive target set—Taliban and al Qaeda operatives. Due to the burdensome approval process, opportunities to attack fleeting leadership targets of opportunity were missed.³ The approval process challenges were likely the result of a combination of factors: there was no land component or its habitually associated tactical air control system, the process for finding and engaging time-sensitive targets was not in place, and the operation employed a complicated command and control structure.⁴

As a result of the lessons learned in Afghanistan, war fighters used a new approach for Operation Iraqi Freedom (OIF). Due

to concerns about possible Scud attacks on Iraq's western neighbors, the air component was the supported commander in the western area of operations to enable it to execute time-sensitive targeting against fleeting targets.⁵ To achieve his objectives, the JFC used his authority to designate the mission responsibility, area of operations, and support relationships to best take advantage of the joint capabilities available. In fact, OIF had three areas of operations—south, west, and north. The southern fight was a fast-moving campaign towards Baghdad.⁶ The western fight focused on logistic nodes, command and control facilities, and the location of Scud launchers.⁷ The northern fight consisted of special operations forces, the 173d Airborne Brigade, and Kurdish forces pressing Baghdad defenses from the north.⁸ Each area of operations had a different operational objective and supported/supporting relationship.

New Approaches for Designating Support Relationships

In light of the previous discussion, this paper proposes the following new definition for areas of operations to draw a distinct link to the supported commander and his assigned operational objectives.

Area of operations—an operational area defined by the joint force commander in which a supported commander will complete a task or set of tasks to achieve an assigned operational objective(s).⁹ Areas of operations do not typically encompass the entire operational area of the joint force commander, but may be based on the assigned operational objective(s). In any case, areas of operations should be large enough for component commanders to accomplish their missions and protect their forces.

This proposed definition moves away from the idea that the area of operations and resultant support relationships are exclusive to surface force commanders to the idea that they apply to all component commanders. As such, this definition also follows the precedent established in Joint Publication (JP)

3-30, *Command and Control for Joint Air Operations*, of not tying support relationships to specific missions.

Until JP 3-31, *Command and Control for Joint Land Operations*, was published on 23 March 2004, JP 3-30 and the JP 3-05 series, addressing special operations, were the only approved joint publications for component-specific operations. Prior to March 2004, the lack of approved joint doctrine for land and maritime operations and predetermined support relationships created a doctrine deficiency worth addressing.

The drafters of JP 3-30 debated whether the joint force air component commander (JFACC) should be a supported commander. Initial drafts included previously existing language designating the JFACC as the supported commander for certain doctrinal missions. The joint community disputed this language, resulting in the presentation of two options to the service operations deputies for resolution. The first option recommended maintaining the existing language designating support relationships by mission. The second option recommended listing the supported missions as JFACC responsibilities and emphasizing the JFC's authority to designate supported/supporting relationships.¹⁰ As shown below in the excerpt from JP 3-30, the second option was selected and designated as the model for JP 3-31, *Command and Control of Joint Land Operations* and JP 3-32, *Command and Control of Joint Maritime Operations*.

*The JFACC is given the authority necessary to accomplish missions and tasks assigned by the JFC. The JFACC typically exercises tactical control over air capabilities/forces made available for tasking. The JFC may also establish supporting and supported relationships between the JFACC and other components to facilitate operations. The JFACC conducts joint air operations in accordance with the JFC's intent and concept of the operation.*¹¹ (emphasis added)

The approval of JP 3-30 establishes a construct to give a joint force commander the flexibility to designate support relationships to best execute his concept of operations. It clarifies the JFACC's authority and command relationships and the JFC's authority to determine supported/supporting relationships.

JP 3-31 has moved in the right direction, but not as far as it probably should, particularly when addressing areas of operations. The publication states that the JFC typically defines areas of operations for the land and maritime component, and

the joint force land component commander (JFLCC) will be the supported commander for operations conducted within the area of operations when designated by the JFC and may be the supporting commander for some functions.¹² This language establishes conditions inhibiting vice enhancing the JFC's authority and flexibility.

Summary

The current construct of associating support relationships to areas of operations and doctrinal missions may have worked well in times when operations were linear with more joint de-confliction than joint integration. As we look towards dispersed, fully integrated, and adaptable operations of the future, supported/supporting relationships should not be "mentally" constrained to certain components of the joint force based on a particular mission or area.

This paper advocates a construct where support relationships are not predetermined in doctrine. Rather, a JFC should have the flexibility to designate support relationships in ways not previously conceived to more effectively support his concept of operations. Having this flexibility codified in doctrine ensures the future joint force can adapt in scope, scale, and method as the situation dictates.¹³

Notes

1. DOD, *Joint Operations Concept*, 10–11 (see chap. 1, n. 1).
2. Col Mike Findlay, Lt Col Robert Green, and Maj Eric Braganca, "Fires and Maneuver—Challenges on the Noncontiguous Battlefield," *The Air Land Sea Bulletin*, no. 2003-1 (March 2002): 19–21.
3. Amy Butler, "Moseley: Time Sensitive Targeting Improved from Afghanistan to Iraq," *Inside Missile Defense*, 25 June 2003, n.p., http://www.insidedefense.com/secure/defense_docnum.asp?f=defense_2002.ask&docnum=MISSILE-9-13-8.
4. Lt Col Franklin Walden and MSgt Hal Sullivan, "Joint Close Air Support in Support of Operations ENDURING FREEDOM and IRAQI FREEDOM," 18th Air Support Operations Group briefing, AFDD 2-1.3, *Counterland*, Re-write Conference, Langley AFB, Va., 25 June 2003, slide 3.
5. "DOD Briefing on Coalition Forces Air Component," *Inside Defense.com—Defense Plus*, 5 April 2003, n.p., http://www.insidedefense.com/secure/defense_docnum.asp?f=defense_2002.ask&docnum=dplus2003_978; Butler,

"Moseley: Time Sensitive Targeting," n.p.; and Col Jerry Dillion, Chief of SCUD Strategy, Coalition Air and Space Operations Center, Operation IRAQI FREEDOM, interviewed by author, 13 January 2004.

6. "CENTCOM Operation Iraqi Freedom Briefing ~ 23 March 2003," 23 March 2003, n.p., http://www.centcom.mil/CENTCOMNews/transcripts/transcript_list.htm.

7. Ibid.

8. "CENTCOM Operation Iraqi Freedom Briefing ~ 27 March 2003," 27 March 2003, n.p., http://www.centcom.mil/CENTCOMNews/transcripts/transcript_list.htm; "CENTCOM Operation Iraqi Freedom Briefing ~ 1 April 2003," 1 April 2003, n.p., http://www.centcom.mil/CENTCOMNews/transcripts/transcript_list.htm.

9. JP 1-02, *Department of Defense Dictionary of Military Terms*, 12 April 2001 (as amended 17 December 2003), 379. Current joint doctrine defines *objective* as (1) the clearly defined, decisive, and attainable goals towards which every military operation should be directed; or (2) the specific target of the action taken (e.g., a definite terrain feature, the seizure or holding of which is essential to the commander's plan, or, an enemy force or capability without regard to terrain features).

10. "Air & Space Doctrine Application Exercise," briefing, 15 July 2003, AY 03-04 ISS/SSS *Reindoctrination Read Ahead*, CD-ROM, Headquarters, Air Force Doctrine Center, July 2003, slides 193-96.

11. JP 3-30, *Command and Control for Joint Air Operations*, 5 June 2003, II-1.

12. JP 3-31, *Command and Control for Joint Land Operations*, 23 March 2004, II-2 and III-2.

13. DOD, *Joint Operations Concept*, 11 (see chap. 1, n. 1).

Chapter 4

Establishing Directives and Emerging Concepts

It's all about commander's intent, to me. Commander's intent does not mean that I have to be monitoring every minute. Do I like to have good situational awareness? Yes, I want the best technology and the best capability I can get. But there is no way I think that you can take the place of that timeless commander's intent.

—Maj Gen James Mattis, USMC
Commanding General, 1st Marine Division
Operation Iraqi Freedom

The command and control tenet implicit communication and its underlying concepts, commander's intent and mission-type orders, are important aspects to defining authorities, roles, and relationships. An establishing directive is the tool that facilitates communicating authorities, roles, and relationships, but regrettably, this tool lacks sufficient detail in the following areas:

- clear guidance on specific format for execution of joint operations;
- ability to communicate authorities, roles, and responsibilities to a joint cross-functional audience; and
- avenues for adapting command relationships during rapidly executed, integrated operations. (For more detailed background on current command and control doctrine, reference appendix B.)

Not discounting the goal of implicit communication to minimize restrictive measures and detailed instructions through the concepts of commander's intent and mission-type orders, joint doctrine guidance for establishing directive format and content should be explicit and contain more detail. This chapter proposes expanding establishing directive guidance and introduces emerging command and control concepts that may facilitate realizing the *JOpsC* vision of a fully integrated joint force.

Doctrine Disconnects in Establishing Directives

As the following examples illustrate, failure to clearly communicate command relationships, commander's intent, and mission-type orders can impact the execution of joint operations. The command relationships during the initial phases of Operation Enduring Freedom (OEF) were unclear and not resolved until weeks after the operations in Afghanistan were under way.¹ The lack of clarity and the burdensome target approval process impacted the efficiency of the operation. Designated the supported commander in western Iraq, the air component had difficulty drafting commander's intent and mission-type orders that were easily understood and executable by the supporting joint forces.² Before deploying, elements of the joint force practiced the time-sensitive targeting mission on the Nellis ranges for several weeks. Because of these mission rehearsals, tactics, techniques, and procedures (TTP) were written for use during actual mission execution. In addition to the TTPs, elements of the joint force expected an establishing directive with commander's intent and mission-type orders. Unaware of the expectation, the air component relied on the published TTPs and never produced an establishing directive.³

In a final example, the JFACC's nonpublished intent was to be combat effective versus combat efficient during OIF's rush to Baghdad from the south. This drove the use of close air support stacks to ensure the right mix of effects were available to support the ground commander 24 hours a day.⁴ This sometimes resulted in aircraft returning to base without expending ordnance. Contradictory to the JFACC's intent, aircrews established artificial fuel limits, which allowed them to expend ordnance within the Marine Expeditionary Force area of operations if not used in a timely manner in the V Corps area of operations.⁵ This disconnect between the commander's intent and mission execution may have been caused by the lack of a published or clearly delineated commander's intent in a daily air tasking order addressing the all-important "why" element of mission-type orders.⁶

Proposals for Expanding the Establishing Directive Concept

The definition for command and control that currently exists in joint doctrine is adequate. However, establishing directive guidance lacks sufficient detail regarding command and support relationships. This paper proposes several changes to establishing directive guidance that more explicitly communicate authorities, roles, and responsibilities, thereby minimizing confusion in joint operations. The proposed changes are in *italics* for ease of identification.

An establishing directive normally specifies the purpose of the support relationship, the effect desired, and the scope of the action to be taken. *The establishing directive should be published in the form of a campaign plan, operation plan, and/or operation order. The published establishing directive should include sufficient detail to ensure subordinate and supporting commanders understand and can execute the assigned mission.* It should also include

- *commander's intent;*
- the forces and other resources allocated to the supporting effort;
- the time, place, level, and duration of the supporting effort;
- *mission-type orders for the effort, relative priority of the supporting effort, and possible command relationship transition points;*
- the authority, if any, of the supporting commander to modify the supporting effort in the event of exceptional opportunity or an emergency; and
- the degree of authority granted to the supported commander over the supporting effort.

Unless specifically limited by the establishing directive, the supported commander will have the authority to exercise general direction over the supporting effort. General direction includes the designation and prioritization of targets or objectives, timing and duration of the supporting action, and other instructions necessary for coordination and efficiency.⁷

While this proposed establishing directive guidance is similar to the existing guidance, the differences require some explanation. First is the statement, *the establishing directive should be published in the form of a campaign plan, operation plan, and/or operation order*. The reason for the specificity is that JP 0-2, *Unified Action Armed Forces*, uses the term *establishing directive* five times, all in the context of command relationships. An establishing directive can come in several different forms and be issued by the secretary of defense or any level of joint command.

When designating command relationships for joint operations, current joint doctrine states this designation is done with an establishing directive. However, determining the format or specific document is not as clear. In the early stages of a strategic event, an establishing directive can be one of several types of orders (warning, alert, or planning), which will outline command relationships for planning purposes. Determining a campaign plan (or its derivative operation plan and operation order) using the establishing directive format for execution of joint operations requires a detailed review of JP 3-0, *Doctrine for Joint Operations*, and JP 5-0, *Doctrine for Planning Joint Operations*.⁸ By stating the required establishing directive format for joint operations execution, this proposed change takes the first step in the future joint force achieving a common understanding when establishing command and control relationships.

The next recommended change, *the published establishing directive should include sufficient detail to ensure subordinate and supporting commanders understand and can execute the assigned mission*, addresses the establishing directive format and content specifically. JP 5-0 series and CJCSM 3122 series documents provide excellent overarching examples of campaign plan, operations plan, and operation order formats. However, current joint doctrine fragments the desired full integration of the future joint force.

The approved and draft functional component doctrine publications—air, land, maritime, and special operations—include discussion and/or examples of their respective operation plan and operation order formats. However, each focuses on their respective domain of operations and varies in format and level

of detail. They appear to be written more for subordinate commanders within the component than for all commanders who might support the operational task(s) assigned to the component commander. This construct creates seams, rather than synergy for the joint force. To achieve the adaptability and integration desired, the future joint force should adhere to a single format that communicates to a joint cross-functional audience vice continuing to use the stovepiped and diverse formats found in current doctrine.

Clearly defined authorities, roles, and relationships require unambiguous communication to minimize seams in joint operations. Therefore, this paper recommends adding *commander's intent* and *mission-type orders* to the establishing directive guidance. In his article, "Commander's Intent: An Aerospace Tool for Command and Control?" Lt Col Michael Straight highlights the varied emphasis in this area by reviewing service doctrine. Although the Air Force employs the concepts, it places less emphasis on them in its doctrine than do the other services.⁹ The Air Force lacks the doctrinal framework and training to effectively communicate intent across all levels of joint command. The previously discussed OIF time-sensitive targeting and close air support examples illustrate how this lack of doctrinal emphasis may have hampered joint operations. Explicitly requiring commander's intent and mission-type orders ensures these concepts receive the appropriate emphasis and are not left to implication and potential omission. Adopting this proposal helps achieve the *JOpsC* vision of decentralized execution where joint capabilities are organized and interdependently applied at increasingly lower levels.¹⁰

The next proposed addition is *possible command relationship transition points*. Adding this phrase helps to satisfy one of the future joint force common core capabilities—to be able to adapt in scope, scale, and method as the situation requires.¹¹ The future joint force must have the ability to execute one operation while remaining ready to shift to another, which may or may not be in the same operational area.¹² Based on this premise, the concept of operations can require a change in command relationships during execution in response to an adversary's actions.

In his paper, “Employing an Air Maneuver Force: Battlefield Air Operations with Surface Maneuver in a Joint Campaign,” Maj James Jinnette discusses the importance of rapid role exchange and the Army doctrinal concept of battle handover.¹³ Major Jinnette provides several historical examples where air and land forces switched between a shaping force and a force actively engaged, effectively a joint force battle handover. However, a joint battle handover definition or concept does not currently exist in doctrine, and the Army ties the concept to a point on the ground. This paper proposes including and expanding the concept in joint doctrine addressing specific phases or tactical events where a rapid exchange of command relationships might occur.¹⁴ Including the language *possible command relationship transition points* prompts a joint force commander to account for and document joint battle handover criteria in his campaign plans, operations plans, and operation orders.

Emerging Command and Control Concepts

Having completed the discussion on proposed changes to establishing directive guidance, this section reviews recent and ongoing efforts related to command and control. In the remaining chapters, these emerging concepts are integrated with the doctrine concepts proposed in this paper. With further development, the integrated concepts can facilitate achieving the JOpsC vision.

During the conduct of Millennium Challenge 2002 (MC02), US Joint Forces Command (USJFCOM) explored new concepts for future joint operations to validate the rapid decisive operations concept.¹⁵ Associated with effects-based operations (EBO), a concept not yet thoroughly defined in joint doctrine, USJFCOM examined the joint tactical actions (JTA) concept. JTAs are the range of actions undertaken by functional component commanders to achieve effects.¹⁶ The JTA concept prevents the stovepiped use of force by a single component by using the best mix of capabilities from across the joint force to achieve a desired effect.

Two tools that proved effective in integrating effects during MC02 were the prioritized effects list (PEL) and effects tasking order (ETO). Air tasking orders and maritime tasking orders are excellent tools for their purpose but are domain centric and not effective in integrating the desired effects across the joint force.¹⁷ The ETO concept provides an avenue to reinforce commander's intent and issue mission-type orders to a joint force and achieve the desired synergistic effect.

One of the desired capabilities of the future joint force is to be able to rapidly deploy selected portions of the joint force that can seamlessly transition to execution. Addressing this requirement, the standing joint force headquarters (SJFHQ) concept, introduced in the 2001 *Quadrennial Defense Review*, is a full-time, joint command and control element within a regional combatant commander's staff.¹⁸ The SJFHQ concept makes available to combatant commanders a standing, trained, and equipped command and control capability focused on a designated area, which can respond to emerging contingencies.¹⁹ This concept was also examined during MC02 and demonstrated significant improvements in the combatant commander's readiness by enhancing precrisis contingency planning and rapidly establishing an operational joint task force headquarters.²⁰ Although still in development, US Special Operations Command (USSOCOM), with the establishment of its 100-person Center for Special Operations that is solely focused on planning for the global war on terrorism, is theoretically employing the SJFHQ concept.²¹

The *JOpsC* envisions a networked future joint force with reachback beyond its organic capabilities.²² Strategic lift and antiaccess constraints are sure to make having a reachback capability an imperative. The future joint force will not have the luxury of deploying an OIF-size 1,900-person air operations center requiring airlift by more than 30 C-17s, 24 C-5s, and 90 C-130s.²³ In fact, the secretary of defense recognizes reachback as one of the most promising ways to decrease forward presence footprints. With a 9 July 2003 memo, he developed a senior-level steering group and asked the services "to submit Program Change Proposals to employ the reserve component in continental United States (CONUS)-based opera-

tions providing reachback capabilities in support of forward-deployed forces.”²⁴

The use of reachback is not a far-fetched concept and was actually employed with success during OEF and OIF. Central Command headquarters, separated from its execution elements by over 7,000 miles and multiple time zones, achieved unprecedented real-time situational awareness and connectivity during OEF.²⁵ During OIF, reconnaissance platforms operating over Iraq beamed their data back to Langley Air Force Base, Virginia, where intelligence specialists conducted real-time analysis and sent their results back to the air and space operations center in a matter of seconds. Additionally, Global Hawk and Predator unmanned aerial vehicles (UAV) flying missions over Iraq were piloted from CONUS-based locations. This represents a significant reachback accomplishment considering that just one year prior in OEF, Predators were piloted in-theater.²⁶

Changes in organizational concepts for command and control have also been proposed and adopted in practice. In studying OEF, Dr. Milan Vego suggests that a combatant commander should remain at his main headquarters so that he might effectively monitor events across his entire area of responsibility (AOR) and not get bogged down in tactical details at the expense of operational and strategic issues.²⁷ Dr. Vego proposes establishing theaters of operations commanded by a three-star flag officer directly subordinate to the combatant commander.²⁸ In effect, this is what US Central Command elected to do. Although General Franks forward deployed during OIF, he established joint task forces to focus on operations in the Horn of Africa and Afghanistan prior to combat operations commencing in Iraq.²⁹ Continuing this thought process, Michael P. Noonan and Mark R. Lewis recommend taking joint task force organization one step further in their article “Conquering the Elements: Thoughts on Joint Force (Re)Organization.” They highlight that joint forces are organized by the environmental medium in which they perform and that jointness is reserved for very high level component commands. Consistent with the JTA concept discussed earlier, Noonan and Lewis propose organizing along mission-oriented functional require-

ments. To handle multidimensional operations similar to those in OIF, joint force components might include strike, security, support, and information operations component commanders.³⁰ War fighters examined similar alternative command structures during Unified Quest 2003, a cosponsored Army and USJFCOM war game, and during the follow-on USJFCOM war game Pinnacle Impact 2003.³¹ Pinnacle Impact recommended adding a joint information commander on the same level as the other component commanders.³² The point of introducing these alternative command and control structures is not to advocate a particular position. Rather, it is to highlight that the future joint force must be adaptable and not wedded to past organizational constructs.

Summary

This paper proposes combining the recommended establishing directive changes with the emerging command and control concepts and builds on this proposal in the remaining chapters. In adopting the establishing directive proposals, joint force commanders will more explicitly communicate command relationships, commander's intent, and mission-type orders, allowing the future joint force to operate more effectively at lower echelons. Joint tactical actions will integrate the best mix of available capabilities to achieve the desired effects. Prioritized effects lists and ETOs provide an overarching construct to drive prioritization and execution of EBOs.

Taking advantage of reachback capabilities, future joint command and control structures and organizations will be more adaptable than in the past. Ultimately with these concepts, the future joint force will seamlessly and rapidly conduct integrated joint operations with a smaller, more adaptable forward-deployed footprint.

Notes

1. Findlay, "Fires and Maneuver," 19 (see chap. 3, n. 2); and Col Gary Crowder, chief of the Strategy, Concepts, and Doctrine Division, Headquarters Air Combat Command, interview by the author, 8 December 2003.

2. Col Jerry Dillon, chief of SCUD Strategy, Coalition Air and Space Operations Center, Operation Iraqi Freedom, interview by the author, 13 January 2004.

3. Ibid.

4. "DOD Briefing on Coalition Forces Air Component" (see chap. 3, n. 5).

5. Lt Col Steve Gray, "Evolving FSCM/C2 Issues: An Air Combat Command Perspective," briefing, Air Force-Army Transformation Symposium, Institute for Defense Analyses, Alexandria, Va., 30 October 2003, slide 4.

6. Maj Michael E. Fischer, "Mission-Type Orders in Joint Air Operations: The Empowerment of Air Leadership" (thesis, School of Advanced Airpower Studies, Maxwell AFB, Ala., May 1995), 57.

7. *Joint Doctrine Encyclopedia* (Washington, D.C.: Joint Chiefs of Staff, 16 July 1997), 662. This definition is adapted from the establishing directive discussion in the Supported Commander section of the document.

8. Joint Publication 3-0, *Doctrine for Joint Operations*, 10 September 2001, III-7; and Joint Publication 5-0, *Doctrine for Planning Joint Operations*, 13 April 1995, II-20.

9. Lt Col Michael Straight, "Commander's Intent: An Aerospace Tool for Command and Control?" *Airpower Journal* 10, no. 1 (Spring 1996): 37, <http://www.airpower.maxwell.af.mil/airchronicles/apj/spring96.html>.

10. Department of Defense, *Joint Operations Concept*, 9 (see chap. 1, n. 1).

11. Ibid., 11.

12. Ibid., 12.

13. Maj James Jinnette, "Employing an Air Maneuver Force: Battlefield Air Operations with Surface Maneuver in a Joint Campaign" (Maxwell AFB, Ala.: Air Command and Staff College, June 2003), 17.

14. Field Manual (FM) 101-5-1, *Operational Terms and Graphics*, 30 September 1997, 1-18. *Battle handover* is defined as a designated point (phase line) on the ground where responsibility transitions from the stationary force to the moving force and vice versa. It is within direct fire range and observed indirect fire range of the stationary force.

15. *Millennium Challenge 2002 Executive Report* (Norfolk, Va.: United States Joint Forces Command, March 2003), 2-4. MC02 was a joint war-fighting field experiment conducted from 24 July to 15 August 2002. MC02 involved over 13,500 troops from across all services. The joint force headquarters operated out of the United States Joint Forces Command Suffolk complex, while the bulk of computer simulation and live-force action took place at various locations throughout the southwest United States.

16. Air Force Doctrine Document (AFDD) 1, *Air Force Basic Doctrine*, 17 November 2003, 118. AFDD 1 defines *effects-based operations* as actions taken against enemy systems designed to achieve specific effects that contribute directly to desired military and political outcomes. See also *Millennium Challenge 2002 Executive Report*, 18.

17. *Millennium Challenge 2002 Executive Report*, 18.

18. *Quadrennial Defense Review (QDR) 2001*, 32–33 (see chap. 2, n. 2). The current concept evolved from the 2001 QDR's Standing Joint Task Force Headquarters concept.

19. US Joint Forces Command, *Joint Concept Development and Experimentation's Concept Primer: Standing Joint Force Headquarters* (Norfolk, Va.: US Joint Forces Command, October 2003), 1.

20. *Ibid.*, 1–2.

21. Vice Adm Eric T. Olson, USN, deputy commander, US Special Operations Command, address to the 34th IFPA-Fletcher Conference on National Security Strategy and Policy Security Planning and Military Transformation after Iraqi Freedom, 2 December 2003, n.p., <http://www.ifpafletcherconference.com/>.

22. Joint Publication 1-02, *Dictionary of Military Terms*, 440 (see chap. 3, n. 9). *Reachback* is defined as the process of obtaining products, services, and applications, or forces, or equipment, or materiel from organizations that are not forward deployed.

23. US Central Command Air Forces, *Operation IRAQI FREEDOM - by the Numbers* (Prince Sultan Air Base, Kingdom of Saudi Arabia: Analysis and Assessment Division, 30 April 2003), 3. By 21 March 2003, the combined air operations center had grown from a pre-OIF size of 672 personnel to 1,966 personnel; and Laura M. Colarusso and Gordon Trowbridge, "The Future Is NOW: Reach-back Technology Lets Airmen Fight in Iraq from Comfort of Home," *Air Force Times*, 10 November 2003, 14.

24. Elizabeth Rees, "DOD Creates Senior Officer Steering Group to Study Reachback," *Inside the Air Force*, 17 October 2003, 1, http://www.insidedefense.com/secure/defense_docnum.asp?f=defense_2002.ask&docnum=AIR FORCE-14-42-2.

25. US Senate, *Statement of General Tommy R. Franks*, 7 (see chap. 1, n. 2).

26. Colarusso, "The Future is NOW," 14 (see chap. 4, n. 23).

27. Dr. Milan Vego, "What Can We Learn from Enduring Freedom?" *Proceedings* 128/7/1, 1193 (July 2002): n.p., <http://www.usni.org/Proceedings/Articles02/PROvego07.htm>.

28. *Ibid.*

29. *CJTF-Horn of Africa History Fact Sheet* (Tampa, Fla.: US Central Command, 23 July 2003), n.p., <http://www.cjtfhoa.centcom.mil/factsheet.asp>. The core Combined Joint Task Force-Horn of Africa headquarters was formed from elements of the 2d Marine Division in October 2002. The headquarters sailed from Morehead City, North Carolina, on 13 November 2002, aboard the USS *Mount Whitney* joining forces already at Camp Lemonier in Djibouti to form what is the current organization of CJTF-HOA. Jim Garamore, "Operation Mountain Lion Continues, Task Force Assumes Control," *American Forces Press Service*, 6 June 2002, n.p., http://www.defenselink.mil/news/Jun2002/n06062002_200206063.html. On 31 May 2002, Combined Joint Task Force 180 assumed control of operations in Afghanistan. Commanded by a lieutenant general, this task force is responsible to USCENTCOM and to the

secretary of defense and commands US and coalition forces in Afghanistan and supporting troops in Pakistan, Tajikistan, and Uzbekistan.

30. Michael P. Noonon and Mark R. Lewis, "Conquering the Elements: Thoughts on Joint Force (Re)Organization," *Parameters: U.S. Army War College Quarterly*, 33, no. 3 (Autumn 2003): 11, <http://carlisle-www.army.mil/usawc/Parameters/03autumn/noonan.pdf>.

31. Sandra I. Erwin, "War-Gaming a Future That's Much Like Today," *National Defense Magazine*, June 2003, n.p., <http://www.nationaldefensemagazine.org/article.cfm?Id=11116>.

32. US Joint Forces Command, Joint Concept Development and Experimentation, *PINNACLE IMPACT 2003: Joint Concept Development Seminar Wargame* (Norfolk, Va.: US Joint Forces Command, 14 July 2003), 14.

Chapter 5

Synchronization of Interdiction and Maneuver

Military doctrine cannot be allowed to stagnate, especially an adaptive doctrine like maneuver warfare. Doctrine must continue to evolve based on growing experience, advancements in theory, and the changing face of war itself.

—Gen C. C. Krulak, USMC
Marine Corps Doctrinal
Publication 1, *Warfighting*

JP 3-0, *Doctrine for Joint Operations*, and JP 3-03, *Doctrine for Joint Interdiction Operations*, describe the synergistic effects that can be achieved by synchronizing interdiction and maneuver. However, recent operations have demonstrated that serendipity drives synchronization of interdiction and maneuver more than doctrine. Shortfalls in the command and control tenet robust integration, synchronization, and coordination mechanisms created conditions more geared towards serendipity than synchronization. The following constraints in existing joint doctrine create seams, thereby preventing synergy:

- Focus on air interdiction planning and execution processes creates a myopic and constrained view of joint interdiction operations.
- Assumption of air interdiction in support of surface maneuver; as such, doctrine lacks comparable planning and execution processes for all interdiction and maneuver assets.
- Concept of synchronization encourages disparate organizations and processes that fall short of future joint force integration. (For more detailed background on current synchronization of interdiction and maneuver doctrine, reference appendix C.)

The future joint force will not be adaptable or integrated without adding several robust integration, synchronization, and coordination mechanisms to address these existing joint doctrine

issues. Incorporating concepts already proposed by this paper, this chapter recommends a new joint organization to fully integrate interdiction and maneuver in future joint operations.

Synchronization Challenges in Recent Joint Operations

Contingency operations of the recent past validate synchronization of interdiction and maneuver as a viable concept applicable to the future joint force. However, they illustrate that current doctrine processes and mind-sets make synchronization more a result of serendipity than a well-planned and well-executed joint operation.

Although some planners considered Operation Desert Storm a successful joint operation, in retrospect the “Highway of Death” was more a stroke of luck than a synchronized joint effort. Throughout the operation, air support to the ground effort was a contentious issue. In fact, the Army ensured their air support displeasure received high-level attention by including comments in situation reports to that effect on two consecutive days.¹ The Marines’ rapid advance through Kuwait combined with the VII and XVIII Corps attack from the west channeled retreating Iraqi forces up through Basra. The retreat was subject to interdiction attacks from coalition airpower, but an improper placement of the fire support coordination line (FSCL) hampered the interdiction effort. The debate between air and land forces about FSCL placement and interdiction support indicates that synchronized maneuver and interdiction were not by design. After the war, Gen H. Norman Schwarzkopf stated he knew little about the FSCL debate.² Had the Highway of Death been planned as a joint mission, the joint force commander would have been aware of and resolved the FSCL issue.

Bearing resemblance to future joint operations, Operation Enduring Freedom was a noncontiguous and dispersed operation devoid of traditional boundaries and areas of operations. In the opening months of the operation, there was no area of operations or joint special operations area assigned to any element of the joint force below the combatant commander.³ The lack of an area of operations, unclear command relationships, and

the unprecedented air and special operation forces (SOF) combination complicated efforts to synchronize interdiction and maneuver.⁴ During this conflict, SOF personnel with their Northern Alliance partners were a maneuver force that required joint fire support akin to a conventional force. As a de facto ground commander, the SOF component lacked expertise in the joint targeting process and did not possess a robust air support organization to execute the operation.⁵ Even if the expertise and resources had been available, the joint fire support did not easily fit into the traditional joint fires mission areas. The majority of joint fires provided by the air component were neither close air support nor air interdiction as defined in joint doctrine, but somewhere in between. Using SOF personnel as sensors, the air component generated sorties without designating specific targets. SOF personnel, not in direct contact with enemy forces, provided mensurated targeting data to the arriving aircraft.⁶ This ground-directed interdiction concept combined with indigenous force maneuver proved successful, but the success could be attributed more to field solutions than to execution of existing doctrine concepts.

Operation Iraqi Freedom demonstrated the most integrated joint operations seen to date with the air war designed to stay tightly lashed to the ground campaign.⁷ Despite the campaign design, synchronization of interdiction and maneuver again seemed the result of serendipity. During the last week of March 2003, ground forces having progressed to just south of the Karbala Gap were coming to grips with the logistic problems generated by their rapid advance.⁸ A blinding sandstorm coincided with the requirement to regroup and refit prior to the push towards Baghdad. The apparent operational pause was not a pause at all. Although ground maneuver had stopped, interdiction from the air component kept pressure on the Iraqi resistance. Believing they could use the sandstorm as cover, Iraqi forces massed and moved south towards the battle line, subjecting themselves to detection by coalition reconnaissance and destruction by precision munitions.⁹ The sandstorm and lack of coalition ground maneuver enticed an Iraqi reaction, resulting in engagement by another element of the joint force—airpower. On the surface, this appears to be an excellent example of syn-

chronized interdiction and maneuver, but closer examination illustrates this was more a result of circumstance than design.

Moving towards Integration: Proposals to Satisfy the Demands of the JOpsC

Although the previous examples are not synchronized interdiction and maneuver in the purest sense, they demonstrate how recent operations have outpaced current joint doctrine. JP 3-0 states that all levels of war require agility and versatility of thought, plans, operations, and organizations.¹⁰ With this statement in mind, the following paragraphs propose changes to joint doctrine to ensure the realization of the attributes of the future joint force.

Synchronization as a goal—military actions arranged in time, space, and purpose—falls short of describing the full joint force integration desired by the *JOpsC*.¹¹ JP 1-02 defines *integration* as the arrangement of military forces and their actions to create a force that operates as a whole.¹² For a joint force to effectively execute interdiction and maneuver as a whole, serendipity will have to be replaced by defined planning and execution processes in joint doctrine. The first recommendation is to change “synchronization of interdiction and maneuver” to “integration of interdiction and maneuver.” This change would better emphasize that interdiction and maneuver should not be separate operations against a common enemy, but rather complementary operations designed to achieve the JFC’s campaign objectives.¹³

This paper proposes integration of interdiction and maneuver be considered a joint tactical action, bringing together the best mix of capabilities to achieve a desired effect. As currently written, joint doctrine does not facilitate executing integrated interdiction and maneuver as a joint tactical action. To include recommendations in this paper, several new joint doctrine concepts are required to allow seamless integration of interdiction and maneuver. Consider the following scenario.

During a contingency operation, a joint force commander determines that a joint tactical action is required to achieve a specific objective or effect. To execute the joint tactical action, the

joint force commander designates one of his functional commanders as the supported commander and assigns an area of operations. Within the area of operations, the supported commander is responsible for the integration of all effects—interdiction, maneuver, and so forth. To ensure the joint force achieves a common understanding of the desired effects, an establishing directive is published to communicate commander's intent and mission-type orders to all elements of the joint force participating in the joint tactical action. This establishing directive, a common format operation plan and/or order, also identifies situations where the main effort might shift between elements of the joint force requiring a battle handover.

To execute the joint tactical action, the supported commander requires expanded apportionment and tasking mechanisms similar to those in current joint doctrine. A framework currently exists for supported surface commanders requesting nonorganic interdiction from the air component. Upon receipt of the request, the JFACC melds the theaterwide and supported commander's interdiction priorities into an apportionment recommendation to the JFC. Once approved, the air apportionment recommendation is translated into an air tasking order for execution. For future operations, this paper recommends supported commanders—air, land, maritime, or special operations—use a prioritized effects list to request nonorganic interdiction and maneuver capabilities from supporting commanders. Associating the listed prioritized effects with an element of the joint force would, in effect, be an apportionment recommendation to the JFC. The apportionment recommendation is put into execution by publishing an effects tasking order.

To make this scenario a reality, the future joint force requires established organizational structures and processes, allowing commanders at all levels to collaborate in bringing the appropriate joint capability to bear at the right place and time. Current joint doctrine states that interdiction-capable commanders require access to command and control systems to take advantage of real-time and near-real-time intelligence.¹⁴ Targeting and apportionment processes are fairly well established for interdiction support of maneuver. The same requirements probably are valid for maneuver-capable commanders, but are

missing in joint doctrine. The command and control systems and processes currently available that might facilitate integrated interdiction and maneuver operations tend to be domain centric. This lack of integrated systems and processes exposes a seam inhibiting integrated joint operations.

During Operation Allied Force, for example, the air operations center lacked a strong Army intelligence presence to facilitate attacking field forces. Instead, the air component relied on information from the Army's Task Force Hawk and the construction of its own flexible targeting cell to address the issue.¹⁵ As the Air Force brings direct attack online as a doctrinal mission, the challenges associated with organizing, training, and exercising command and control for integrated interdiction and maneuver are highlighted.¹⁶ The article "Direct Attack: Enhancing Counterland Doctrine and Joint Air-Ground Operations" suggests that land-warfare experts be resident on the air component's staff in a formal capacity, rather than serve as members of the land component's battlefield coordination detachment.¹⁷ The article also suggests that functional command and control requirements for direct attack be executed by an organization that approximates the capabilities of an air support operations center (ASOC).¹⁸ To execute effectively integrated interdiction and maneuver, this paper suggests the adoption of two new organizational concepts—a component coordination element and a joint tactical action support center (JTASC). Similar to the 11-person air component coordination element (ACCE) used during Operation Iraqi Freedom, component coordination elements (CCE) give each component headquarters senior-level air, land, maritime, and special operations expertise resident and formally assigned to its staff.¹⁹ Subordinate to the supported component, a JTASC approximates a combined ASOC and fire and effects coordination cell (FECC). A JTASC would have a set of core capabilities and could adapt based on the situation either by deploying additional resources or using reachback.

The previous discussion of integrated interdiction and maneuver operations addresses sustaining pressure on an adversary by employing lethal means, but has not addressed non-lethal means like information or psychological operations.²⁰ During the first week of Operation Iraqi Freedom, coalition

forces dropped over 28 million leaflets, some of which included capitulation instructions, creating both positive and negative nonlethal effects.²¹ On the positive side, some Iraqi forces became prisoners of war with little resistance. On the negative side, a great many of the Iraqi force laid down their weapons and walked away from their positions.²² Had maneuver forces been present to complement this nonlethal effect, a greater number of prisoners of war may have been taken, preventing forces from being available to fight another day as insurgents. Like integrated interdiction and maneuver, a JTASC can integrate nonlethal effects by having information or psychological operations capability either resident inside its organization or available via reachback.

Summary

Applying the doctrine concepts proposed thus far to the Afghanistan example discussed in this chapter may have yielded more synergy and fewer seams. Based on the objectives of attacking mobile Taliban and al-Qaeda targets, the joint force commander would have designated a supported commander and an area of operations to conduct the mission. Since there was no surface area of operations, one could argue that the air component could have been the supported commander since he owned the bulk of the firepower and command and control assets.²³ The air component commander would have published commander's intent and mission-type orders for the involved joint forces in an operation plan and/or order. The document would identify events and times when the main effort might shift between the air and SOF components affecting a joint battle handover. Both the air and special operations component would have had CCEs facilitating real-time joint decisions in planning and execution. The air component would have generated a PEL with an apportionment recommendation and published an ETO for execution. A JTASC would have deployed to integrate the mix of joint capabilities available for the operation's execution. The proposed doctrine concepts would have ensured interdiction and maneuver operations and processes were integrated from the initial stages of planning to the final stages of execution.

Serendipitous integration is not objectionable since war fighters expect the future joint force to be adaptable enough to be able to react as the situation dictates. However, serendipitous integration of interdiction and maneuver should be the exception, not the norm.

Changing synchronization to integration, adding PELs and ETOs, standing up CCEs, and establishing JTASCs can facilitate successful future joint force operations. The turf battles, confusion, lack of deployed capability, and reactive operations experienced in the examples discussed will likely decrease and be replaced by well-planned, coordinated, and executed integrated joint operations. If nothing else, adoption of the proposed concepts allows the future joint force to respond more readily to emerging integration opportunities during the course of a conflict. It is worth noting the *Force Application Functional Concept* takes strides towards the proposed concepts in this chapter. This document defines *force application* as the integrated use of maneuver and engagement to create the effects necessary to achieve assigned mission objectives.²⁴

Notes

1. Michael R. Gordon and Bernard E. Trainor, *The Generals' War: The Inside Story of the Conflict in the Gulf* (Boston, Mass.: Little, Brown and Company, 1995), 330.

2. Ibid., 413.

3. Findlay, "Fires and Maneuver," 18–19 (see chap. 3, n. 2).

4. Ibid., 19. Since there was not a surface area of operation with a traditional supported/supporting commander, one might assume that the air component supported commander was the supported commander. Similarly, the joint special operations task force (JSOTF)-North was the de facto ground commander conducting maneuver and requiring interdiction support since leaders had designated his operations the main effort. This designation, however, was not a command relationship to make the JSOTF a supported commander.

5. Ibid., 20–22.

6. Ibid., 20–21.

7. Bradley Graham and Vernon Loeb, "An Air War of Might, Coordination and Risks," *Washington Post*, 27 April 2003, A1, <http://www.washingtonpost.com/ac2/wp-dyn?pagename=article&node=&contented=A42694-2003Apr26¬Found=true>.

8. Williamson Murray and Robert H. Scales Jr., *The Iraq War: A Military History* (Cambridge, Mass.: The Belknap Press of Harvard University Press, 2003), 196.

9. Graham and Loeb, "An Air War of Might, Coordination and Risks," A1; and Dr. Rebecca Grant, *Gulf War II: Air and Space Power Led the Way*, An Air Force Association Special Report (Arlington, Va.: Aerospace Education Foundation, 2003), 21.

10. JP 3-0, *Doctrine for Joint Operations*, IV-10 (see chap. 4, n. 8).

11. DOD, *Joint Operations Concept*, 14 (see chap. 1, n. 1). The *JOpsC* states that the joint force must move beyond deconfliction to fully integrated elements with all functions and capabilities focused towards a unified purpose.

12. JP 1-02, *Dictionary of Military Terms*, 261 (see chap. 3, n. 9).

13. JP 3-0, *Doctrine for Joint Operations*, IV-14 (see chap. 4, n. 8).

14. *Ibid.*, IV-13.

15. Lt Col Phil M. Haun, "Airpower versus a Fielded Army: A Construct for Air Operations in the Twenty-First Century," *Aerospace Power Journal* 15, no. 4 (Winter 2001): 84, <http://www.airpower.maxwell.af.mil/airchronicles/apj/apj01/win01/haun.html>.

16. Maj Gen David Deptula, Col Gary L. Crowder, and Maj George L. Stamper Jr., "Direct Attack: Enhancing Counterland Doctrine and Joint Air-Ground Operations," *Air and Space Power Journal* 17, no. 4 (Winter 2003): 8, <http://www.airpower.maxwell.af.mil/airchronicles/apj/apj03/win03/deptula.html>. Direct attack is becoming a counterland-apportionable mission category to complement close air support and interdiction. The working definition for *direct attack* is air operations conducted to render the adversary's military capabilities ineffective outside an established land area of operations or when surface forces are operating in a supporting role to air forces.

17. *Ibid.*, 11. A battlefield coordination detachment is an Army liaison provided by the Army component or force commander to the air operations center (AOC) and/or to the component designated by the joint force commander to plan, coordinate, and deconflict air operations. The battlefield coordination detachment processes Army requests for air support, monitors and interprets the land battle situation for the AOC, and provides the necessary interface for exchange of current intelligence and operational data.

18. *Ibid.*, 11-12. An ASOC is the principal air control agency of the theater air control system responsible for the direction and control of air operations directly supporting the ground combat element. It processes and coordinates requests for immediate air support and coordinates air missions requiring integration with other supporting arms and ground forces. It normally collocates with the Army tactical headquarters senior fire support coordination center within the ground combat element.

19. Elaine M. Grossman, "Iraq War Could Feature Unprecedented Air-Land Collaboration," *Inside the Pentagon*, 13 February 2003, 1, http://www.insidedefense.com/secure/defense_docnum.asp?f=defense_2002.ask&docnum=PEN TAGON-19-7-1.

20. DOD, *Joint Operations Concept*, 12–13 (see chap. 1, n. 1). In accordance with the *JOpsC*, the future joint force should have the capability to create and sustain continuous pressure throughout the battlespace and disintegrate, disorient, dislocate, or destroy any opponent with a combination of lethal and non-lethal means.

21. “CENTCOM Operation Iraqi Freedom Briefing ~ 24 March 2003,” 24 March 2003, n.p., http://www.centcom.mil/CENTCOMNews/transcripts/transcript_list.htm.

22. Ibid.

23. Findlay, “Fires and Maneuver,” 19 (see chap. 3, n. 2).

24. DOD, *Force Application Functional Concept* (Washington, D.C.: Force Application Assessment Division, Joint Staff, J-8, February 2004), 4. This concept recognizes that we have moved beyond the current doctrinal definitions of fires and engagement.

Chapter 6

Joint Fires Concepts

If as one people speaking the same language they have begun to do this, then nothing they plan to do will be impossible for them. Come, let us go down and confuse their language so they will not understand each other.

Biblical Story of the Tower of Babel
Genesis 11:6–7

Joint fires and joint fires support enabled recent operations in Afghanistan and Iraq to reach new heights of combat effectiveness but fell short of their potential since they were not grounded in the command and control tenet: responsive, interoperable support systems. Outdated mind-sets and doctrinal processes impacted the joint force's ability to be fully integrated. Until the following issues are addressed, a future joint force with a pervasive joint team mind-set will remain a concept and not become a reality.¹ (For more detailed background on current joint fires doctrine, reference appendix D.)

- Command and control of joint fires focuses on air-delivered fires and is primarily close air support centric.
- Command and control of joint fires is challenging due to five disparate and complex service-specific structures that lack commonality, compatibility, and standardized capabilities.
 - Command relationships determine which of the five systems will support an operation.
 - Without an established command relationship, each component uses its own command and control system.
 - Doctrinal associations and domain centric orientation inhibit integrated joint operations.
- The two-service mind-set constrains the joint fires concepts, thereby hampering integration of effects under a joint force commander.

To address these issues and propose changes, this chapter reviews examples from recent contingencies that illustrate the doctrine gaps in joint fires. By chapter's end, the author recommends a new organizational construct, creating a joint team mind-set with responsive, interoperable support systems for joint fires employment.²

Joint Fires Support Challenges

Joint fires support during recent operations in Afghanistan and Iraq often did not have linking support systems that possess commonality, compatibility, and standardization to the greatest extent possible.³ The Operation Enduring Freedom example discussed in chapter 5 highlights some of the issues associated with joint fires support. The operation executed non-doctrinal fire missions, and, due to rigid doctrinal relationships, the joint force did not have adequate planning and execution expertise deployed to theater.

Even with the entire command and control system deployed for operations in Iraq, the existing systems and processes did not adequately provide for effective communications within the air component or between components early in the conflict.⁴ In fact, many of the interfaces to support joint fires were unwieldy, ineffective, and inefficient.⁵ The operation employed a number of command and control systems, and each provided different information in a variety of formats requiring personnel to be proficient on several interrelated and partially redundant systems.⁶ Due to the lack of standardization and compatibility, the forces developed standard operating procedures to decrease the chances of error resulting from the manual transfer of data between systems. With the multitude of systems and differing formats, most headquarters defaulted to using Microsoft Office applications and chat rooms to more effectively create decision tools and communicate ideas.⁷ Information system incompatibility was just as challenging at the tactical level, requiring ground commanders to monitor up to 12 different and incompatible information systems to execute fire support.⁸

Joint doctrine and the scheme of maneuver in OIF led to several disparate joint fires support networks executing the

same functions (fig. 2). The execution differed between support networks and was not necessarily joint. Within their respective areas of operations, the Army and Marines had their own habitually associated and service-specific air support centers. In contrast, the SOF task forces had a joint air control element (JACE) to provide joint fires support. The Air Force provided two ASOCs to support V Corps operations. The main one in Kuwait and another roughly half the size that was forward deployed.⁹ Traditionally separated by other staff functions, the ASOC and V Corps FECC were collocated during OIF to better handle the rapidly changing situation.¹⁰ V Corps lessons learned recommended continued placement of the ASOC immediately next to the FECC in future operations.¹¹ In the Marine area, there was a total of four Marine direct air support centers (DASC), three surface-based and one airborne, supporting Marine and coalition forces.¹² All of these organizations and platforms served the same functions, but their air-ground relationships and execution philosophies were not necessarily the same.¹³

As figure 2 illustrates, each of the air support organizations is associated with a senior-level ground element. The difference in command channels sometimes requires liaisons to get the job done but not always in the most efficient manner. For example, a Marine liaison was placed on the Airborne Warning and Control System (AWACS) to conduct real-time battle management of joint fires air assets.¹⁴ Though a liaison officer proved to be an effective asset, it took several weeks before this ad hoc arrangement realized its full utility.¹⁵

Due to information system compatibility issues and the inability of some systems to operate on the move, the 3rd Infantry Division (Mechanized) (3ID[M]) also relied on Marine liaison officers using Iridium phone communications to conduct cross-boundary fires. The lack of common communications capabilities made the clearance of these fires extremely slow.¹⁶

The uncoordinated employment of Army Tactical Missile Systems (ATACMS) during OIF illustrates the lack of a surface-based fires support structure that compares with that for air-delivered fires. V Corps forces fired three ATACMS, and, for a variety of reasons, did not complete adequate coordination with

the air component to clear the airspace.¹⁷ Although some may not consider the three events joint fires per current joint doctrine, they illustrate that air and land fires are not integrated at the lowest level. Established procedures required V Corps to coordinate airspace deconfliction for long-range ATACMS shots up through the land component commander who in turn would coordinate with the air component.¹⁸ It is not clear what role the ASOC played in the coordination, but the established processes and dual command chains probably did not result in seamless coordination. Although service-specific structures and processes have the same functional responsibilities, the combination of capability gaps, doctrinal associations, and domain-specific orientation limits the flexibility of joint force commanders to create an integrated joint fires support network.

Terminal Control Challenges

Army lessons learned recognized that the integration and relationships between fire support elements and terminal air control parties greatly improved timely and responsive joint fires.¹⁹ However, terminal control during operations in Afghanistan and Iraq was not without issues.

Dispersed and highly mobile operations in Afghanistan and Iraq highlighted limitations in communications capabilities and terminal control asset density. During OIF, the Air Force established the 484th Air Expeditionary Wing, which focused on the Tactical Air Control System and air-ground operations. Instead of using standard formulas to place tactical air control parties (TACP), the wing proactively placed and assigned TACPs based on mission and/or unit requirements.²⁰ Despite these efforts, the 3ID(M) still felt they had a shortage of enlisted terminal attack controllers (ETAC) to control the amount of airpower available.²¹ There was a robust package of ETACs at the brigade and battalion levels, but not sufficient numbers available to the lower elements of the ground force.²² Army channels concluded that company-level fire support teams (FIST) require training as universal observers capable of not only supporting indirect (type 2 or 3) close air support (CAS) control, but also support all means of joint fires.²³

Incompatible equipment and the inability to communicate over dispersed distances or on the move also hampered fire control. During Operation Anaconda, fire supporters did not have equipment that allowed them to communicate with all delivery platforms.²⁴ During OIF, the 20–25-kilometer-range radios typically used for fire support were not capable of supporting brigade combat teams separated by up to 270 kilometers. Additionally, the inability to conduct communications on the move contributed to decreases in joint fires situational awareness and effectiveness.²⁵ Even with reliable communications, CAS employment was degraded and at times dangerous due to non-doctrinal terminology and procedures.²⁶ The non-doctrinal employment of CAS assets likely was due to the lack of a joint fire support qualification standard. Prior to adding the joint terminal attack controller (JTAC) definition in joint doctrine in September 2003, there were four different terminal control quali-

fication standards, none of them universally recognized across the joint community.²⁷ Despite communications issues and their perceived limited numbers, the ETACs and JTACs deployed for Operation Iraqi Freedom executed superbly. Pilots on CAS missions did not have trouble talking to the ETACs and JTACs, rather the communication issues were a matter of control agencies not being similarly configured.²⁸

Propositions for Responsive and Interoperable Joint Fire Support

Joint warfare is team warfare where effectively integrated joint forces expose no weak points or seams to an adversary.²⁹ To execute team warfare, joint force commanders may choose to employ capabilities from any service or component that is part of the joint team.³⁰ An integrated joint force concept approaches a stage where the two-service requirement to consider a function or operation joint may be obsolete. A joint force might still be a force composed of significant elements, assigned or attached, of two or more military departments operating under a single joint force commander.³¹ This paper proposes that the operative words defining an entity joint move from “two service” to “operating under a single joint force commander.” In simple terms, fires supporting the joint objectives of a joint force commander are joint fires. This change in thinking dictates changes in command and support relationships and processes.

Considering all fires as joint fires does not discount the fact that a service or component has a requirement to maintain certain joint fires capability to support its assigned task(s). Services or components may follow the Marine Air Ground Task Force (MAGTF) model making excess joint fires capabilities available to a joint force commander for tasking.

The Marine Air Ground Task Force (MAGTF) commander will retain operational control (OPCON) of organic air assets. During joint operations, the MAGTF air assets will normally be in support of the MAGTF mission. The MAGTF commander will make sorties available to the JFC, for tasking through the JFACC, for air defense, long-range interdiction, and long-range reconnaissance. Sorties in excess of MAGTF direct support requirements will be provided to the JFC for tasking through the JFACC for the support of other components of the joint force or joint force as a whole.³²

Using this construct for joint fires, a component commander retains control of his organic joint fires assets to support his assigned joint tasks and makes excess capability available to the JFC for tasking through the supported commander.

Making Joint Fires Organizations Joint

Reviewing current joint doctrine and the joint fires challenges from OEF and OIF highlights the fact that most joint fires support is not in fact joint and lacks interoperability. Interoperable at some levels, joint fires processes and structures require the ingenuity of outstanding personnel to create nonstandardized solutions to achieve interoperability at all levels. Displaying the four elements of joint fires command and control illustrates how far we have to go to make the future joint force fully integrated so that joint capabilities are organized and interdependently applied at increasingly lower echelons (fig. 3).³³

To meet the *JOpsC* objectives, joint fires structures and processes must be decentralized and leverage the power of integrated joint capabilities while operating in a joint manner at lower echelons.³⁴ To facilitate achieving these goals, this paper recommends adopting a joint fires structure similar to the one shown in figure 4.

Incorporating the proposed concept from previous chapters, a JFC uses an establishing directive to delineate command and support relationships to achieve joint objectives. Part and parcel to those objectives is joint fires execution. Every functional component has joint fires and maneuver capabilities that can be integrated with sister component joint fires and maneuver capabilities to achieve a synergistic effect. Figure 4 illustrates these capabilities creating a single joint effect. When in reality, this same construct can be duplicated numerous times in the same or another area of operations to achieve the objectives of a joint commander.

Different from past organizational constructs, each component headquarters would have CCEs instead of liaison officers. Similar to the successful ACCE employed in OIF, the CCE makes senior-level cross-component expertise resident on sister component staffs that are capable of planning and integrating joint

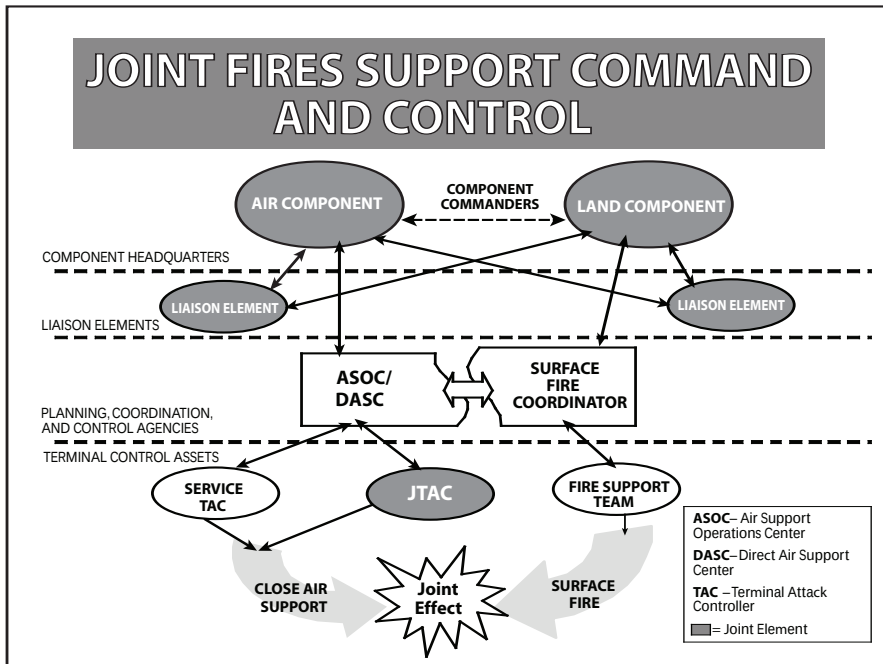


Figure 3. Joint fires support command and control

operations. The ACCE concept is founded on and success depends on representation at a level commensurate to staff principals of the host components.³⁵ The battlefield coordination detachment, located at the air component headquarters, served the same role as the ACCE for the land component, but did not have the same senior-level representation.³⁶ Joint doctrine captured the ACCE concept with its inclusion in the September 2003 approval of JP 3-09.3. However, joint doctrine limits this concept to air component support of the land component. This paper recommends formalizing the CCE concept for all components in future joint doctrine.

Perhaps the most important level of joint fires execution, the joint fires planning, coordination and control agencies are currently the least joint entity of all the joint fires command and control areas. Each of the elements at this level is either service- or component-specific with disparate capabilities and processes preventing fully integrated, responsive, and interoperable joint

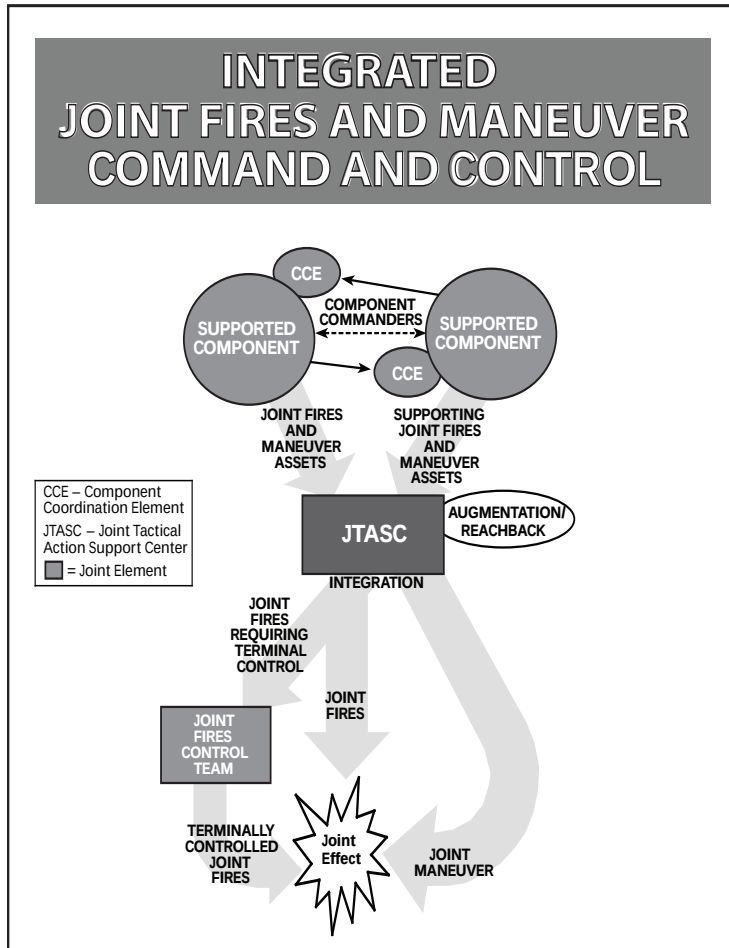


Figure 4. Integrated joint fires and maneuver command and control

fires support. Chapter 5 proposed the JTASC as the organization to integrate interdiction and maneuver. Carrying this concept a step further, the JTASC would be the joint organization with responsibilities to integrate joint fires (interdiction, CAS, surface fires, nonlethal, etc.) and maneuver. Instead of the ASOC and FECC just being collocated, the JTASC concept makes them a single joint entity responsible for the integration of joint fires and maneuver. Considering that a supported component commander can have several dispersed areas of opera-

tions, it is conceivable that he can have more than one JTASC under his command.

The future joint force would have a requisite number of JTASCs with core capabilities. Following the construct established in the *2003 Joint Close Support Action Plan*, this paper suggests developing for the JTASC a single comprehensive (battle planning through combat assessment) listing of joint essential tasks required for integrated joint fires and maneuver.³⁷ In conjunction with a list of core tasks, a list of joint interoperable communications and information systems needs to be developed. Establishment of JTASC joint essential task lists and standardized communication requirements would facilitate the development of JTASC TTPs. The goal of this initiative is twofold: (1) make JTASC command and control of integrated joint fires and maneuver transparent regardless of which component is the supported commander, and (2) establish standards so that any appropriately qualified personnel, regardless of service, could operate in any JTASC and be effective. This approach would yield a fully integrated and adaptable joint force capable of delivering responsive and interoperable joint fires support.

Terminal control of joint fires, specifically CAS, made a move towards jointness with the establishment of JTAC. JP 3-09.3 recently added the JTAC to the doctrine lexicon in September 2003.

A [JTAC is a] qualified (certified) Service member who, from a forward position, directs the action of combat aircraft engaged in close air support and other offensive air operations. A qualified and current joint terminal attack controller will be recognized across the Department of Defense as capable and authorized to perform terminal attack control.³⁸

Although a definition has been agreed upon, qualification and certification standards are still in development as part the *2003 Joint Close Air Support Action Plan* (the same is being done for forward air controller-airborne). Notwithstanding, the JTAC construct brings some degree of standardization to joint fires, but it should not stop there.

An Army fire support coordinator from Operation Anaconda stated, "We cannot continue to operate with add-on conglomerate of Air Force personnel, especially during combat opera-

tions. We must train and fight as a team.”³⁹ Statements like these and lessons learned from recent operations have generated discussion within the joint community to train and equip more Airmen, soldiers, and Marines to call in air strikes.⁴⁰ There is a proposal within the Army to create joint fire control teams of multiservice troops trained to call in strikes from air, sea, or ground weapons.⁴¹ Under this concept, soldiers, sailors, Airmen, and Marines would be qualified to safely and accurately deliver the entire range of joint fires from mortars to air strikes.⁴² However, having a single individual qualified for all joint fires control may be counterproductive, creating jacks of all trades, masters of none.

It takes two years to create a fully qualified terminal attack controller.⁴³ Terminal attack controllers are dedicated to the single, complex mission area of air-delivered joint fires, and some consider the singular focus an advantage.⁴⁴ Considering the amount of training required to be proficient in this one joint fires area, the training pipeline to create a qualified (certified) terminal controller for all joint fires may not be feasible without lowering the standard. Due to the lethal capability of US joint fires and the obvious fratricide concern, lowering the standard should not be an option.

Instead of creating “mile-wide, inch-deep” terminal controllers capable of controlling all joint fires, a true joint fire control team might better serve the future joint force. This paper proposes a joint fire control team consisting of experts with each member having a unique capability to control a segment of the joint fires spectrum. A joint fire control team member would be qualified (certified) in his or her service-specific skill sets and trained and intimately familiar with other joint fires assets. Different from today’s disparate joint fires elements, terminal attack controllers and surface fire supporters would merge into a single team under this concept. For example, a two-person tactical air control party would now become a joint fire team consisting of a terminal attack controller and a fire support team member. Each has his or her respective expertise but supports his or her counterpart as the situation dictates, facilitating a real-time joint battle handover. Representing jointness at the lowest level, this example has the potential to create

greater numbers of fully capable joint fires control teams that can be dispersed throughout the battlespace.

Summary

Changing the mind-set for defining entities as joint will be the first step to achieving responsive and interoperable joint fires. Second, adopting the component coordination elements, joint tactical action support centers, and joint fire control team concepts proposed in this chapter creates a single joint fires structure to replace the five disparate structures that exist today.

Combining these concepts with a list of joint essential tasks and interoperable communications and information systems facilitates achieving the rapid information transfer and decision making that the future joint force requires. A more “joint” and standardized joint fires structure ensures future joint operations reach the full integration desired by the *JOpsC*.

Notes

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22. Ibid., 4-2.
23. Ibid., 12-23. JP 3-09.3 defines type 2 and type 3 CAS control as follows: Type 2 control will be used when the JTAC desires control of individual attacks but assesses that either visual acquisition of the attacking aircraft or target at weapons release is not possible or when attacking aircraft are not in a position to acquire the mark/target prior to weapons release/launch. Type 3 control may be used when the tactical risk assessment indicates that CAS attacks impose low risk of fratricide. When commanders authorize type 3 control, JTACs grant a “blanket” weapons release clearance to an aircraft or flight attacking a target or targets which meet the prescribed restrictions set by the JTAC.
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Chapter 7

Fire Support Coordination Measures

On the battlefield of the future, enemy forces will be located, tracked and targeted almost instantaneously through the use of data-links, computer-assisted intelligence evaluation and automated fire control. With first-round kill probabilities approaching certainty, and with surveillance devices that can continuously track the enemy, the need for large forces to fix the opposition physically will be less important.

I see battlefields that are under 24-hour real or near-real time surveillance of all types. I see battlefields on which we can destroy anything we can locate through instant communications and almost instantaneous application of highly lethal firepower.

—Gen William C. Westmoreland
Speech to the Association of the US Army,
14 October 1969

Successful execution of fire support coordination measures relies on these command and control tenets: robust integration, synchronization, and coordination mechanisms, and timely decision making. Recent fast-paced and dispersed operations have demonstrated fire support coordination measure gaps related to these tenets that detract from joint operations synergy. This is not to say joint forces did less than an outstanding job in Afghanistan and Iraq. Several issues that hamper coordination measure responsiveness made their job more difficult. (For more detailed background on current fire support coordination measure doctrine, reference appendix E.)

- Perspectives on employment of permissive fire support coordination measures, particularly fire support coordination lines and kill boxes, differ.
- Kill box concept and area reference systems are not well understood or codified in joint doctrine.
- Common grid reference systems lack standardization and fail to adequately address the airspace above the grid system.

- Current fire support coordination measure constructs lack the flexibility and responsiveness required to support rapidly executed, dispersed operations.

The goal by the end of this chapter is to recommend a fire support coordination measures model that provides the future joint force with robust integration, synchronization, and coordination mechanisms to facilitate timely decision making during rapidly executed and dispersed operations.

Seams in Fire Support Coordination Measures

Operation Enduring Freedom provided a glimpse into the future of dispersed and noncontiguous operations. Instead of using doctrinally permissive fire support coordination measures (FSCM) like a fire support coordination line (FSCL), the majority of the measures were restrictive due to the noncontiguous environment and multiple organizations involved in the operation.¹ This translated into more than 200 restrictive FSCMs during Operation Anaconda, making coordination measure management a full-time job for fire supporters—a challenge likely complicated by not having the full array of command and control assets and processes in place during the operation (fig. 5).² Additionally, permissive special engagement zones (SEZ) were established, which essentially created free-fire areas along known and suspected infiltration and exfiltration routes to facilitate interdiction operations.³ During the course of OEF, coordination measures evolved to a system of kill boxes and fires clearance procedures to more effectively support operations.⁴

During the initial phases of Operation Iraqi Freedom, the FSCL was 100 km or more beyond the forward edge of the battle area.⁵ This was well beyond the doctrinal placement of 30–40 km—the maximum range of division-level organic fires.⁶ Some argued that the FSCL placement created a command and control burden to getting joint fires on target in an expeditious manner.⁷ The combination of rapid advance and extended coordination time required to move the FSCL is a likely reason for its extended placement. The FSCL movement times were

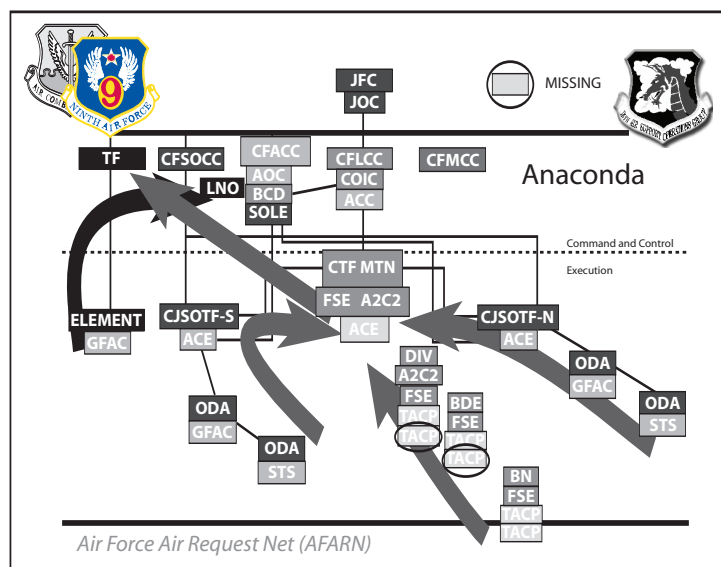
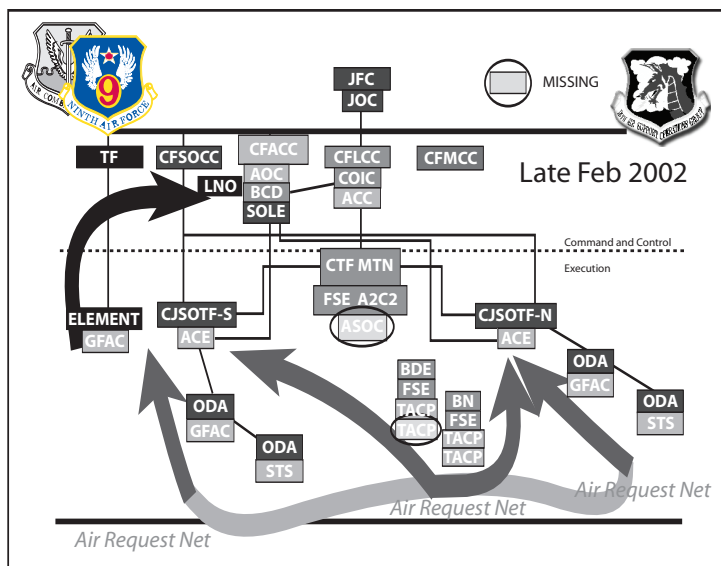


Figure 5. Operation Enduring Freedom command and control. (Reprinted from Lt Col Franklin Walden and MSgt Hal Sullivan, "Joint Close Air Support in Support of Operations ENDURING FREEDOM and IRAQI FREEDOM," 18th Air Support Operations Group briefing, AFDD 2-1.3, *Counterland*, Re-write Conference, Langley AFB, Va., 25 June 2003, slides 4–5.)

coordinated with and published in the air tasking order, resulting in a coordination measure that was not always responsive to the ground scheme of maneuver. Twice during OIF, the lead brigade combat teams of the 3ID(M) were on the verge of crossing the FSCL.⁸ Considering the 3ID(M) traveled 350 kms in 48 hours, a doctrinal placement and movement (six hours coordination) of the FSCL would not have been possible.

The kill box concept alleviated some of the FSCL issues but was unsuccessful in some cases. The inability to rapidly update target information and to close kill boxes as friendly forces approached or the fact that the concept is not well understood in joint doctrine were just a few of the stumbling blocks.⁹ Forces used several work-arounds including battlefield coordination lines (BCL) or similar measures, but in all cases, joint operations were more restrictive than permissive, particularly in the V Corps area of operations.¹⁰ Despite all these challenges, FSCL placement and kill box employment became more effective and efficient as the operation progressed.¹¹

Future Fire Support Coordination Measures Assumptions

Without going into specific material solutions for interoperable communications, the future joint force will require a network of information systems that will maximize machine-to-machine interface. This capability assists in the movement of targeting and coordination information throughout a joint force in a timely manner. Ideally, the capability to disseminate and display FSCMs digitally changes the hours of coordination time to several minutes. Assuming that the command and control structures, processes, and information systems are in place, the remainder of this chapter focuses on developing a responsive FSCM system.

Adopting a Construct for Future Coordination Measures Development

The FSCL is not a dead concept, but with the fast-paced and dispersed operations envisioned by the *JOpsC*, the FSCL con-

cept may not be applicable in all future joint operations. Certainly, six hours of coordination time is no longer an acceptable standard. The first step in developing a future FSCM system conducive to nonlinear and noncontiguous operations is to look at area reference systems.

Since an area reference system is a three-dimensional reference, it can be a useful tool for creating coordination measures; however, it requires standardization. JP 3-60, *Joint Doctrine for Targeting*, leaves the standardization to each theater, which equates to no standard for an expeditionary joint force. Combined Forces Command, Korea; European Command; and Central Command all use a common grid reference system (CGRS) or a common geographic reference system, but each uses a different numbering and subdivision convention for its respective theater.¹² Additionally, when kill boxes are established, the theaters use different terminology to designate kill box status. This creates a condition where joint force units and information systems must be capable of employing three different systems for no apparent operational reason—a detriment to expeditionary operations.

To date, established and proposed CGRSs have focused on two-dimensional numbering conventions. Modeled after the battlefield coordination line/airspace control area construct, this paper recommends developing a three-dimensional numbering convention to subdivide the airspace above the surface grid. For example, the airspace above the surface grid or z-axis could be divided in 5,000-foot increments that can be combined to rapidly create coordination measures. Similar to an airspace coordination area, the dividing line for the z-axis is based on threat avoidance, aircraft ordnance release altitudes, and artillery trajectories. It is conceivable that a standardized z-axis dividing line or base altitude can be established that accounts for the majority of the friendly and adversary weapons systems. This is not to say that one size fits all, but one size fits most. An outcome of a standardized base altitude is that it establishes an expectation for the expeditionary future joint force. A joint force can deploy to any theater and not only expect the same numbering convention for the surface grid system, but also standard altitudes for the z-axis. Additionally, it estab-

lishes a standard that can be used in training, irrespective of the theater to which the joint force might be deployed. This paper proposes a numbering convention that not only includes the grid square, but also the altitude division for the z-axis. The kill box example in figure 6 is based on a three-dimensional common grid reference system using a 15,000-foot base altitude over flat terrain.

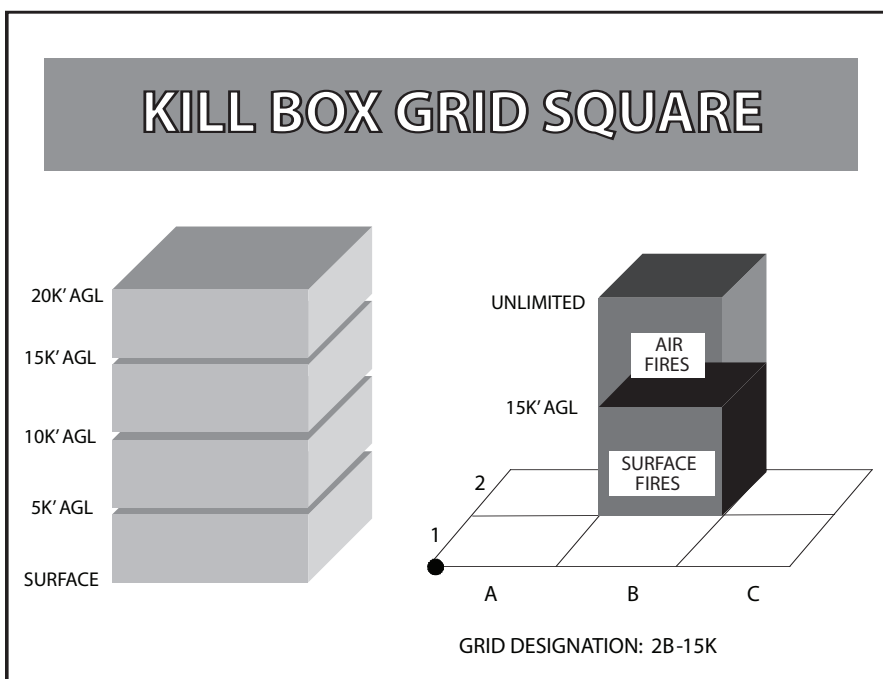


Figure 6. Kill box grid square

Although the FSCL is not a measure of the past, nonlinear and noncontiguous operations may not be conducive to having a line defining the boundaries for fire control. The FSCL can be curved or enclosed, but the word *line* does not imply an enclosed FSCM. Instead, it implies a division of the battle-space into forward and rear areas that have distinct differences in fire support coordination. During nonlinear and non-

contiguous operations, the differences between forward and rear areas are less distinct, and a simple line cannot divide the battlespace (fig. 7).

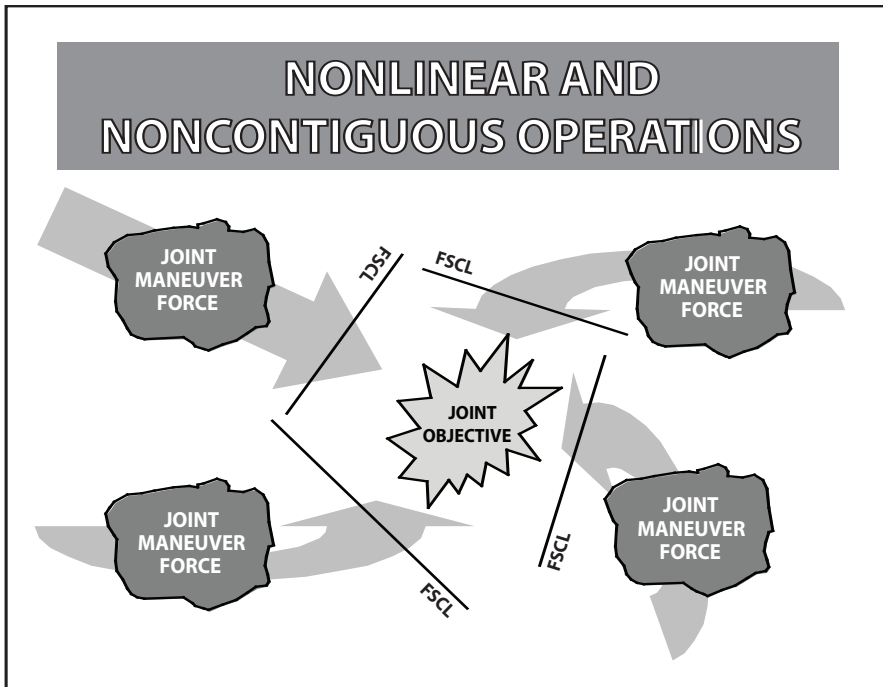


Figure 7. FSCL placement in nonlinear and noncontiguous operations

To account for nonlinear and noncontiguous operations, this paper suggests adding the fire support coordination area (FSCA) concept to joint doctrine. An FSCA serves the same purpose as an FSCL but avoids additional and unnecessary coordination in areas where friendly forces have bypassed or sandwiched pockets of adversary resistance. The previously proposed three-dimensional CGRS defines the lateral and vertical limits of the FSCA and associated kill boxes. In simple terms, there would be four three-dimensional coordination measures in effect for the future joint force—no-fire area, restrictive fire area, fire support coordination area, and free-fire area. The no-fire areas

would be over friendly force locations and encircled by an FSCA. Outside the FSCA, an area of open kill boxes would exist where joint fires can shape the fight for a surface force in accordance with the commander's intent and mission-type orders. The definitions for the no-fire area, restrictive fire area, and free-fire area currently found in joint doctrine would not require change. What would change is their employment and display in joint doctrine (fig. 8).

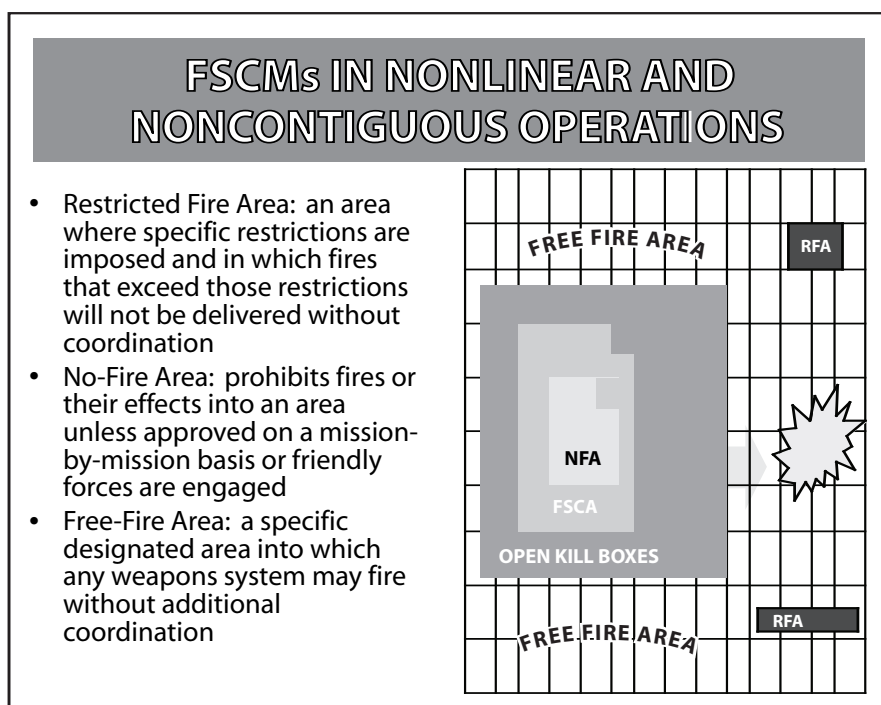


Figure 8. FSCMs in nonlinear and noncontiguous operations

A review of operations in Afghanistan highlighted that decision time has become the long pole in the tent, an issue rooted in command authorities.¹³ This paper recommends combining a standardized three-dimensional CGRS with FSCMs based on valid assumptions to decrease the decision and coordination

times for joint fires and maneuver integration. To do so, real-time digital tracking of friendly forces and digital dissemination and display of FSCMs throughout the future joint force are requirements. Using agreed upon doctrinal assumptions in the development of digital FSCMs would move commanders and staffs from active participation to oversight of the FSCM process. For example, digitally tracked friendly forces would be covered by a no-fire area and encircled by a fire support coordination area defined by the doctrinal limits of its organic fires. As the friendly force maneuvered, the no-fire area and fire support area would reshape to accommodate the fire support requirements of the surface maneuver force. In real-time, the status of the appropriate grid squares would be digitally transmitted and displayed so that joint fires and maneuver could be rapidly integrated to achieve the desired effects. At all times, the supported commander would have the ability to adjust or override the organic fires buffer to match his concept of operations. Depending on the situation, the supported commander could also delegate this authority to a supporting commander, the JTASC, or a subordinate commander. This same concept can be employed in linear operations. As the friendly force moves forward, the buffer advances, and the status of the grids changes appropriately. In effect, the forward trace of the grids defining the extent of the buffer zone would be the FSCL (fig. 9).

Summary

A standardized three-dimensional common grid reference system combined with digital capabilities and doctrine concepts introduced earlier could have decreased the FSCM friction that existed during OEF and OIF. A supported commander would have published an effects tasking order for the forces executing and supporting joint objectives in the area of operations. The ETO would have described the concept of operations for integrated joint fires and maneuver. Knowing the concept of operations, desired effects, and the doctrinal FSCM standards, the joint force would have had certain expectations on FSCM placement and likelihood of change. Using these proposed doc-

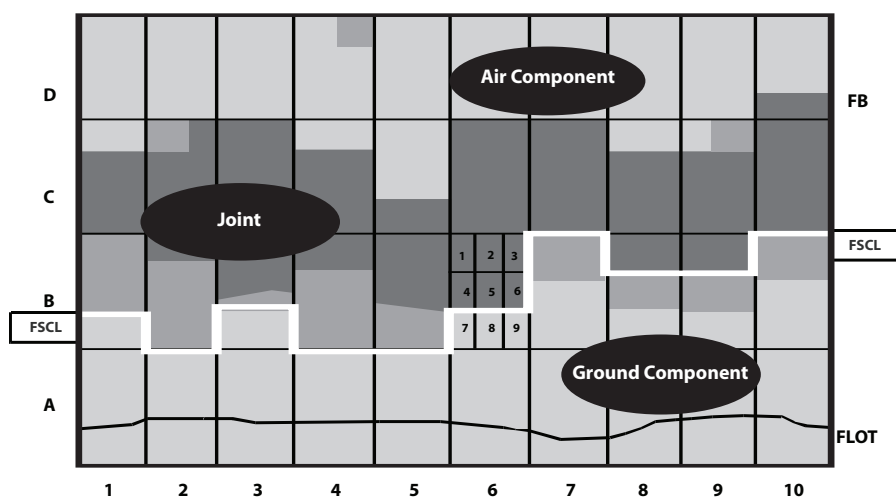


Figure 9. Forward trace fire support coordination line. (Adapted from Lt Col Steve Gray, "Joint Air-Ground Operations: Lesson Learned from Recent Conflicts," briefing, Langley AFB, Va., 12 May 2003, slide 18.)

trine concepts, friendly force tracking systems would have triggered automatic FSCL or FSCA updates that would have been digitally broadcast throughout the joint force. Additionally, open kill boxes inside the FSCL or FSCA would have closed to prevent fratricide incidents as friendly forces approached. In addition, FSCAs could have been established for the logistic lines of communication supporting the rush towards Baghdad. With a few exceptions, the FSCM system would have been primarily hands-off monitored by the supported component headquarters and appropriate JTASC and overridden only as the situation dictated. Adopting the concepts proposed in this chapter provides the future joint force with robust integration, synchronization, and coordination mechanisms to conduct joint operations with less friction and greater efficiency.

Notes

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2. *Ibid.*, 12.
3. *Ibid.*
4. Findlay, "Fires and Maneuver," 19 (see chap. 3, n. 2).

5. "Operation Iraqi Freedom," 12-8 (see chap. 6, n. 8).
6. *Ibid.*, 12-14.
7. Grant, *Gulf War II*, 20 (see chap. 5, n. 9).
8. "Operation Iraqi Freedom," 4-5 (see chap. 6, n. 8).
9. *Ibid.*, 4-5, 12-4, 12-5 (see chap. 6, n. 8); Marine Corps Combat Development Command Studies and Analysis Division, *Marine Aviation Weapons and Tactics Squadron One Lessons Learned*, 67 (see chap. 6, n. 12).
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11. Grant, *Gulf War II*, 20 (see chap. 5, n. 9).
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13. Anthony H. Cordesman, *The Lesson of Afghanistan: War Fighting, Intelligence, and Force Transformation* (Washington, D.C.: CSIS Press, 2002), 110.

Chapter 8

Creating Synergy and Minimizing Seams

There are many ways of going forward, but only one way of standing still.

—Franklin D. Roosevelt

Having proposed doctrine concepts for the future joint force in chapters 3 through 7, this chapter offers a top-level look at the respective service concepts—Air and Space Expeditionary Task Force (AETF) and the Army's Future Force—and transformation efforts as they relate to the proposed doctrine concepts. The intent is to highlight synergies and seams detailing how the doctrine concepts may enhance or minimize them, respectively. The conclusions reached in this chapter do not represent the "approved solutions," rather they are food for thought for use in shaping the future joint force.

In accordance with the *Transformation Planning Guidance*, each of the services is required to publish its detailed transformation strategy to address the challenges of the future. The Air Force's *Transformation Flight Plan* and the Army's *Transformation Roadmap* are the basis for analysis in this chapter. The analysis reviews the future organizational constructs for each service and the transformational capabilities and interdependencies that apply to air-ground integration. This chapter concludes with an estimation of synergy and seams and suggestions regarding areas for improvement and further study.

Air and Space Expeditionary Task Force

As a result of the post-cold-war environment which required smaller and diverse regional commitments, the Air Force created the air and space expeditionary force (AEF) concept.¹ The concept allows the Air Force to present trained and ready combat and support forces to combatant commanders on a rotational and predictable basis. An AEF is not an employable entity but is a pool of trained forces that can provide a set of capabilities to

a combatant commander. The Air Force has formed five AEF pairs (10 AEFs total) which evenly divide expeditionary combat and combat support resources across the AEFs. To round out the capabilities of each AEF, air mobility, low-density/high-demand, and enabling (stealth, space, intelligence, and bomber) forces are available to supplement, as required.²

Elements of an AEF will organize and deploy as an AETF. An AETF presents a JFC with a tailored, task-organized, and integrated package of Air Force capabilities that have the appropriate balance of force, sustainment, control, and force protection.³ An AETF command element will have a commander, Air Force forces (COMAFFOR); an appropriately sized staff and adequate command and control facilities; and mechanisms to direct and support forces in their achievement of joint objectives.⁴ Under this construct, an air and space operations center (AOC) serves as the command and control center for operational air and space forces and, an A-staff is responsible for the range of support activities such as logistics, personnel, medical, and security.⁵

The AETF force structure is completed by the deployment of tailored AEF force packages organized as air and space expeditionary wings, groups, or squadrons. Each of the expeditionary organizations can be either a deployed unit or unit-slice with the appropriate level of command and control and support assets deployed with it. Figure 10 displays a notional AETF structure.⁶

An Air Force organizational concept in development is the warfighting headquarters (WF HQ). The Air Force plans to have 10 WF HQs—seven regionally focused and three globally focused. A three- or four-star general will lead each WF HQ, and the organization will be right-sized based on its geographic location, responsibilities, and mission. The WF HQ is designed to enhance combat capability, integrate combat staffs with AOCs, and provide the combatant commander with a single Air Force voice that has a focused war-fighting structure.⁷ The WF HQ will also enable the Air Force to integrate a standing joint force headquarters into its organization.⁸

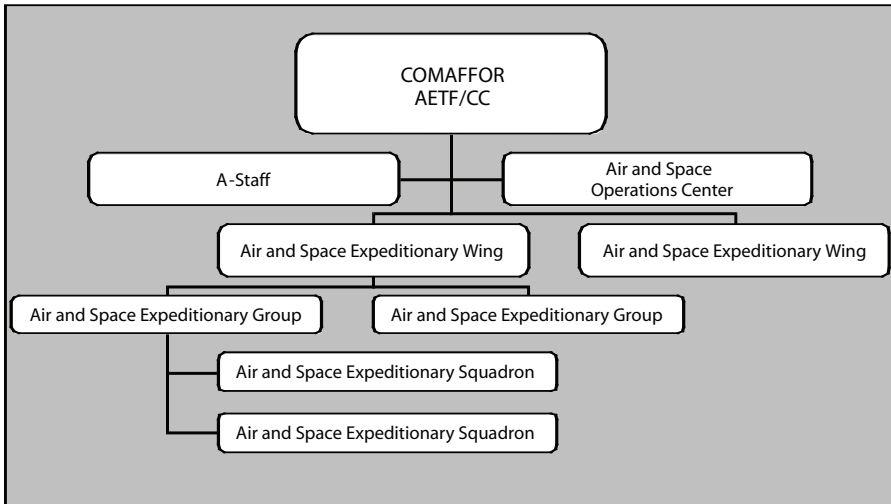


Figure 10. Notional AETF structure

Air Force Transformational Capabilities and Interdependencies

The Air Force envisions joint force commanders will be able to see the entire battlespace, identify key adversary centers of gravity, and apply the right force to the right place at the right time.⁹ Two concepts that facilitate this vision are parallel warfare and effects-based operations (EBO).¹⁰ Under the EBO concept, joint forces may strike fewer targets, with fewer weapons mitigating risk to friendly forces and noncombatants. These concepts can theoretically be effective, but current limitations in technology and organizational structure prevent the military from achieving the full potential of parallel warfare and EBO.¹¹

To address some of the current limitations and also enhance future joint war fighting, several initiatives are ongoing between the Air Force and other services. Those applicable to air-ground integration include

- **air component coordination element.** During OIF, an ACCE team was located within each component headquarters to integrate air and space power with the operations of the other components.

- **Army-Air Force discussions on improving cooperation.** The Air Force and Army are working to improve air support of ground forces in a number of forums. Action items applicable to this paper include
 - updating Joint Publication 3-09.3;
 - providing ATACMS fire support to the JFACC;
 - developing Joint Air Liaison Element Concept;
 - improving liaison office manning, training, and teamwork;
 - installing common, interoperable software;
 - developing a joint simulator requirement for combat air support;
 - strengthening joint training;
 - instituting battalion air liaison officers attending the Army Battle Staff Course concept; and
 - identifying command and control integration and training improvements.
- **improved data modem.** This will provide critical Joint Surveillance Target Attack Radar System (JSTARS) data to Army Apache helicopter gunships.
- **joint command and control.** Navy, Marines, and Air Force are collaborating to synchronize the development of their respective command and control programs, FORCEnet, and the Command and Control Constellation.¹²

To move to a capabilities-based expeditionary force, the Air Force developed six concepts of operations (CONOPS): global mobility; global response; global strike; homeland security; nuclear response; and space and command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR).¹³ The CONOPS are used to identify war-fighting capabilities needed to successfully engage and defeat potential enemies and drive the investment strategies to obtain those capabilities. Although the CONOPS are still evolving, preliminary analysis by the Air Force has resulted in an anticipated 16 transformational capabilities. All 16 transformational capabilities will impact future joint operations, but seven have particular application to the concepts proposed in this paper:

- seamless joint machine-to-machine integration of all manned, unmanned, and space systems;
- real-time picture of the battlespace;
- predictive battlespace awareness;
- ensured use of the information domain via effective information assurance and information operations;
- order of magnitude increase in number of targets hit per sortie;
- achievement of specific, tailored effects on a target short of total destruction; and
- rapid and precise attack of any target on the globe with persistent effects.

The *Transformation Flight Plan* lists a number of Air Force programs that will make these transformational capabilities a reality. Besides the Air Force programs, relevant DOTMLPF solutions and support from the other services are required for these capabilities to reach their full potential. The support the Air Force requires from the other services that is specific to air-ground integration includes

- jointly developed communications and information systems to satisfy all services' requirements and to ensure a common operational picture and a single interpretation of processed information. All services should jointly pursue common hardware and software development to ensure interoperability and to reduce development, procurement, and overall operation and maintenance costs.
- all services should follow the new Defense Information Systems Agency Net-Centric Operations and Warfare and the Net-Centric Enterprise Services processes. This will ensure better machine-to-machine interfaces and system interoperability between the services and joint commands.
- a joint fire control system-of-systems that enables the joint force commander to seamlessly access the sensor-to-shooter assets of all the services to put a cursor over a target in a timely manner.
- coordinated information operations efforts, to include ensuring that all information systems are effectively protected against adversary information operations.

- continued improved coordination of air operations and combat air support between the services. This includes coming to a common agreement with the Navy on metrics to measure capabilities packaged in an air and space expeditionary force and a carrier strike group.¹⁴

The Future Force

Like the Air Force, the Army is transforming its force to meet the national security demands of the post-cold-war environment. The Army intends to develop more modular, strategically responsive organizations while cultivating and institutionalizing a joint and expeditionary mind-set throughout the force.¹⁵ This organizational transformation enables the Army to significantly contribute to increasing a combatant commander's ability to rapidly defeat an adversary or control any situation across the range of military operations.¹⁶ To achieve this end, the future force will be organized into two modular capabilities-based joint organizations—unit of action (UA) and unit of employment (UE).¹⁷

The UA will be brigade-size combat maneuver elements and be the decisive, tactical war-fighting elements within the Army.¹⁸ Modular units of employment, as either an UE_X or UE_Y, will provide command and control for units of action. Within this construct, the UE_X would be a higher tactical headquarters and the UE_Y would be an operational-level headquarters.¹⁹ Besides being able to accept joint capabilities such as a standing joint force headquarters, both UE types will have the organic capability to serve as a joint task force or land component headquarters.²⁰ Figure 11 illustrates how the future force levels of command will transform from their current state to one which supports the modular and responsive future force. In addition to the UE, future force organizations will be supported by home station operations centers (HSOC) which facilitate rapid force projection and provide reachback, planning, and analysis capabilities while reducing the forward-deployed footprint.²¹

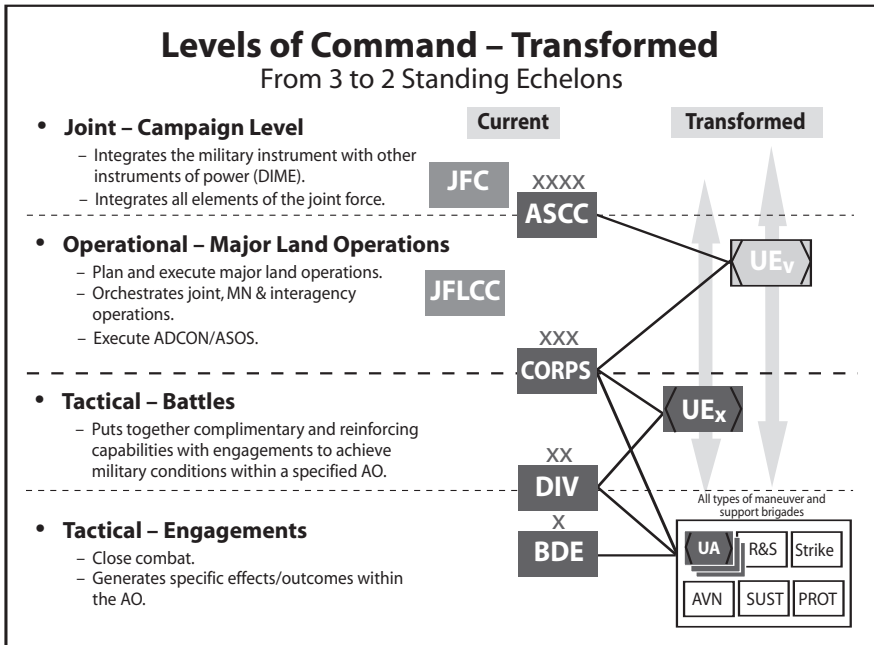


Figure 11. Future force levels of command. (Reprinted from *Unit of Employment [UE] Operations White Paper*, version 2.4, fourth draft [Fort Leavenworth, Kans.: Army Command and General Staff College, 19 February 2004], 8.)

Army Transformational Capabilities and Interdependencies

The modular capabilities-based future force will enable a joint force commander to create rapidly deployable and tailorable force capability packages, which will enhance and enable full-spectrum dominance by the future joint force.²² Future force campaigns will embody interdependent, network-centric, effect-based operations, which will be characterized as simultaneous, distributed, noncontiguous, and nonlinear.²³ The broad dispersal of joint forces in a rapidly executed operation with these attributes will place heavy demands on joint force leadership and command and control.²⁴ In that light the Army views battle command, the art and science of applying leadership, and decision making to achieve mission success as an essential operational capability.²⁵

Under the overarching *JOpsC*, there are four supporting joint operating concepts (JOC). The *Army Transformation Roadmap* uses the JOCs to define capabilities the future force and joint force will require to be successful. Although the JOCs are inter-related and are not likely to be executed in isolation, the Army identifies the following required air-ground integration applicable capabilities to support the major combat operations JOC:

- modular, combined arms combat forces rapidly deployable in a ready-to-fight configuration into a JOA or multiple JOAs at the times and locations required by the combatant commander and consistent with time frames specified in the defense strategy;
- part of networked joint fires linking sensors to shooters, line-of-sight (LOS) and non-line-of-sight (NLOS), kinetic and nonkinetic lethality capabilities that deliver precise and desired effects at the ranges required for decisive operations by rapid, integrated, and near-simultaneous application of joint forces throughout the joint operations area;
- battle command on-the-move capabilities that support and enable rapid, integrated, and near-simultaneous operations throughout the joint operations area, including the land force component of the common operational picture, real-time blue and gray force (commercial, civilian, noncombatant, etc.) tracking, en route/on-the-move mission planning and rehearsal capabilities, and long-range communications;
- knowledge-based collaborative planning and decision support tools integrated with joint planning systems/processes, including near-term good-enough capabilities and, for the longer-term, development of a single, joint interoperable battle command system of systems;
- Army force headquarters designed to operate as a JFLCC headquarters, and when augmented with the appropriate SJFHQ and Joint Interagency Coordination Group (JIACG) elements, function as a joint task force headquarters; and
- home station operations centers to support rapid force projection and provide reachback, planning, and analysis capabilities, while reducing footprint in the joint operations area.²⁶

The Army also identifies several interdependent capabilities required by the joint community that are applicable to future air-ground integration:

- joint-integrated command, control, communication, computers, and intelligence, surveillance, and reconnaissance capabilities and networks to gain information superiority, share a common operational picture, determine the enemy's systemology, enhance joint-integrated information operations, and improve the ability of joint force and component commanders to synchronize operations based on better, more timely decisions at a pace that the enemy cannot match;
- commonality of doctrine, terms, graphics, tactics, techniques, and procedures, and visual tools and displays;
- networked joint fires that support mounted and dismounted maneuver in all conditions throughout the breadth and depth of the joint operations area; and
- joint-integrated fire control system of systems for more effective and timely application of all-source fires and effects.²⁷

The *Army Transformation Roadmap* lists a number of transformational capabilities to make the future force a relevant and ready asset to the joint team. In addressing future battle command issues, Army and joint analysis has provided some insight into essential capabilities for the future joint force:

- joint and coalition interoperability—a requirement to meet joint interoperability existing and emerging standards over time;
- friendly locations—a need for a near-real-time, digitized, visualization tool to display locations of all services, allies, coalition, and interagency formations within the battlespace;
- current enemy situation—a need for a digital visualization tool to display and provide knowledge of all enemy formations in the battlespace;
- running estimate—a collaborative, predictive tool and capability tied to the commander's critical information requirements and decision making;

- graphic control measures—a need for a management and visualization tool to display operational graphics in relationship to the joint operations area and terrain;
- fragmentary order—a digital capability to exchange information changes of mission, intent, or priorities with higher, lower, and adjacent units in the battlespace; and
- fire support coordination measures—a need for a digitized, visualization and management tool that enables the execution and deconfliction of fires.²⁸

The combination of the interdependent capabilities and the battle command essential capabilities points out the types of capabilities the future joint force will require to achieve air-ground integration.

The Way Ahead

Before specifically addressing the potential synergies and seams and how the doctrine concepts introduced in this paper may enhance or minimize them, a short summary of the concepts might be helpful.

- **Supported/Supporting Relationships.** An area of operations or doctrinal mission should not predetermine support relationships. Declaration of support relationships, areas of operations, and mission responsibilities are left to the discretion of the JFC to best facilitate the concept of operations.
- **Establishing Directives and Emerging Concepts.** Use establishing directives, campaign plans, operation plans and/or operation orders that explicitly state support relationships, commander's intent, mission-type orders, and triggers for joint battle handover. The establishing directive would employ a standardized format and be written for a joint cross-functional audience. Emerging command and control concepts include joint tactical actions, prioritized effects lists, effects tasking orders, standing joint force headquarters, reachback, and alternative command structures.

- **Synchronization of Interdiction and Maneuver.** Change synchronization to integration, employing prioritized effects lists and effects tasking orders. Consider integrated interdiction and maneuver a joint tactical action controlled by joint tactical action support centers that can increase their core capabilities via augmentation or reach-back as required.
- **Joint Fires Concepts.** All fires in support of a joint force commander's concept of operations are joint fires. Command and control of integrated joint fires and maneuver executed by responsive and interoperable joint organizations at every level—component coordination elements, joint tactical action support centers, and joint fire control teams.
- **Fire Support Coordination Measures.** Establish a joint three-dimensional common grid reference standard that can be used to rapidly designate coordination measures. Use fire support coordination areas in nonlinear and non-contiguous operations. Couple digitized friendly force tracking with digitized coordination measures using established doctrinal standards to facilitate real-time updates.

Considering the transformation efforts by the Air Force and Army, the doctrine concepts listed above can become a reality for the AETF and the future force. Both services have common goals that they are either working towards or have identified as requiring more attention. A top-level review of these efforts shows not only the promise for future joint force synergy, but also the potential for seams (table).

The AETF and future force are both modular and expeditionary organizational structures designed to support the needs of future JFCs. These organizational schemes can allow a JFC to create tailored force packages to generate the synergistic effects required to achieve the operational objectives. However, a methodology does not exist to allow a JFC to execute capabilities-based trade-offs to ensure the best mix of capabilities is included in a tailored joint force package. The Air Force has specifically mentioned this requirement when comparing AEFs with carrier strike groups, but this concept needs to expand throughout the joint force to avoid an inappropriate mix of capabilities with an oversized deployed footprint. The paper

Table. Potential synergies and seams

Potential Synergy	Potential Seam
Modular, tailorable, and expeditionary organizational structure	Methodology or tools for capabilities-based trade-offs
New operational-level organizations focused on war fighting	Lacking jointly developed and interoperable communication and information systems to allow seamless integration Liaison concepts for new headquarters
Digital fragmentary order	Digitized establishing directive and overarching mechanisms to integrate effects
Joint integrated fire control system-of-systems	Comparable maneuver control system-of-systems to integrate joint fires and maneuver
Digitized coordination measures	Methodology to decrease decision-cycle times

recommends development of capability trade-off models to assist future commanders in rapidly assessing a mix of joint capabilities and making adjustments as the situation dictates to maximize synergy and minimize seams.

Both services are developing operational-level command structures to support their modular forces. The warfighting headquarters and unit of employment both state that they can be augmented by SJFHQs. However, seamless augmentation will depend upon jointly developed communications and information systems—an interdependent capability identified by both services. As these headquarter concepts are developed, this paper recommends developing a minimum essential joint communications and information systems list. Developing and enforcing such a list facilitates the seamless integration of command and control organizations like the SJFHQs, component coordination elements, and joint tactical action support centers.

Liaison manning, training, and teamwork have had success and are still being worked by the Air Force and Army. As the WF HQ, UE, and HSOC concepts are developed, liaison concepts must evolve to keep pace. Adopting the coordination control element for all components, as proposed in this paper, can assist in addressing this broad issue. The services must identify their liaison requirements for each of their respective headquarters organizations. They must also determine CCE manning levels for both steady-state and contingency operations. During OIF, the air component stood up seven previously non-existent air component coordination elements, the largest being at the land component headquarters.²⁹ Conversely, the Army has four standing battlefield coordination detachments, three active duty and one reserve, that can be placed in an AOC.³⁰ The services must settle on the number of CCEs required and whether they are activated only during contingencies, fully manned and functional at all times, or somewhere in between. Regardless of what liaison concept the services elect to pursue, liaison manning and training requirements will be issues that must be dealt with, preferably sooner than later.

A promising essential capability described in the *Army Transformation Roadmap* related to establishing directives is the digital fragmentary order.³¹ An abbreviated operation order, the digital fragmentary order, is designed to quickly disseminate changes of mission, intent, and priorities. This paper recommends expanding this capability to include the establishing directive (which articulates the original mission, intent, and priorities), prioritized effects list, and effects tasking order concepts. Adopting and expanding this capability enables the future joint force to digitally disseminate mission, intent, and prioritized effects and rapidly match those effects to capabilities for execution.

Joint integrated fire control systems that allow machine-to-machine interface to facilitate seamless sensor-to-shooter execution have been identified by both services as a capability that needs joint attention. Creating the previously discussed minimum essential joint communications and information systems list is an avenue to address this issue. However, an air-ground integration seam is likely to exist until fully interoper-

able communications and information systems are available that can execute integrated joint fires and maneuver. This paper recommends the services expand this issue to include developing comparable systems to control joint maneuver. Adopting the proposals in this paragraph and fire support coordination measure recommendations in this paper can facilitate digitized coordination measures and decrease decision cycle times during rapidly executed, dispersed operations.

Conclusion

The future joint force has outstanding potential for synergy at the right place, at the right time, with the right effect. However, as this paper suggests, reaching that potential still requires some work to eliminate or at least minimize the seams. Despite the challenges associated with the fog and friction of combat operations, today's joint force has executed exceptionally well. Successful operations have relied on ingenuity and drive when doctrine for the situation was either not appropriate or not yet developed. Advancing air-ground integration will require doctrine compromises by both services and several technological solutions that are either in development or still need joint attention.

While waiting for technological solutions, doctrine development for the future joint force should not stagnate, and the services should recognize that doctrine compromises in the near-term are sure to be less costly than seams in future joint operations. To create synergy and minimize seams, the doctrine concepts proposed in this paper should be adopted and/or explored in more detail to facilitate air-ground integration during rapidly executable, globally and operationally distributed, simultaneous, and sequential operations.³²

Notes

1. Air Force Doctrine Document (AFDD) 1, *Air Force Basic Doctrine*, 73 (see chap. 4, n. 16).

2. United States Air Force, *The U.S. Air Force Transformation Flight Plan* (Washington, D.C.: Headquarters, United States Air Force, Future Concepts and Transformation Division, November 2003), 31.

3. Air Force Doctrine Document (AFDD) 1, *Air Force Basic Doctrine*, 73 (see chap. 4, n. 16).

4. AFDD 2, *Organization and Employment of Aerospace Power*, 17 February 2000, 36.

5. *Ibid.*, 36–37.

6. *Ibid.*, 42.

7. United States Air Force, *The U.S. Air Force Transformation Flight Plan*, 40.

8. *Ibid.*, B-3.

9. *Ibid.*, 6.

10. *Ibid.* *Parallel warfare* refers to simultaneous attack of carefully selected targets as opposed to a sequential destruction of targets. *Effects-based operations* are based on designing campaign actions to achieve desired outcomes rather than simply destroying targets.

11. *Ibid.*, 7.

12. *Ibid.*, 15–16.

13. *Ibid.*, 41.

14. *Ibid.*, 72–73.

15. United States Army, *2003 United States Army Transformation Roadmap* (Washington, D.C.: Headquarters, Department of the Army, Army Transformation Office, 1 November 2003), 1–11.

16. *Ibid.*

17. United States Army, *The Army in 2020 White Paper* (Arlington, Va.: Objective Force Task Force, 1 November 2003), 10.

18. United States Army, *The Army in 2020*, 10.

19. United States Army, *2003 United States Army Transformation Roadmap*, 1–11.

20. *Ibid.*

21. *Ibid.*, 3–10.

22. *Ibid.*, 1–11.

23. *Ibid.*, 1–9.

24. *Ibid.*, 3–6.

25. *Ibid.*, 2–1.

26. *Ibid.*, 3–9 to 3–10.

27. *Ibid.*, 3–11 to 3–12.

28. *Ibid.*, 8–7.

29. Amy Butler, “As A-10 Shines in Iraq War” (see chap. 6, n. 36).

30. Kelly and Andreasen, “Joint Fires” (see chap. 6, n. 4).

31. JP 1-02, *Dictionary of Military Terms*, 213 (see chap. 3, n. 9). A *fragmentary order* is an abbreviated form of an operation order (verbal, written, or digital) usually issued on a day-to-day basis that eliminates the need for restating information contained in a basic operation order. It may be issued in sections. It is issued after an operation order to change or modify that order or to execute a branch or sequel to that order.

32. Department of Defense, *Joint Operations Concept*, 9 (see chap. 1, n. 1).

Appendix A

Current Doctrine: Supported/Supporting Relationships

Joint Publication 0-2, *Unified Action Armed Forces (UNAAF)*, states that support is a command authority that can be exercised by commanders at any echelon at or below the level of combatant command.¹ Flexible by design, the support relationship conveys priorities and resources required for the planning and execution of joint operations.² In short, it helps commanders manage expectations between and within elements of a joint force.

When designating a supported commander, the JFC stipulates the purpose and time associated with the designation. Unless limited by the JFC, the supported commander has the authority to exercise the general direction of the supporting effort to include designation and prioritization of targets or objectives, timing and duration of the supporting action, and any additional guidance to ensure the efficiency and success of the supported effort.

In accordance with current joint doctrine, the supporting commander aids, protects, complements, or sustains the supported commander's force and is responsible for providing the assistance required by the supported commander.³ A supporting commander is involved in the planning and integration of forces and capabilities into the supported commander's scheme of operations. The supporting commander ascertains the needs of the supported force, ensures the support requirements are communicated within his organization(s), and takes the appropriate actions within existing capabilities, consistent with priorities and requirements of the assigned tasks.⁴

Designating Support Relationships by Areas of Operations and Missions

Joint Publication 1-02, *Department of Defense Dictionary of Military Terms*, describes an *area of operations* as “an opera-

tional area defined by the joint force commander for land and naval forces.”⁵ An area of operations does not typically encompass the entire operational area of the joint force commander, but should be large enough for component commanders to accomplish their missions and protect their forces.⁶ More importantly, joint doctrine declares that land and maritime component commanders are the supported commanders within their assigned areas of operations. Additionally as supported commanders, they are responsible for integrating and synchronizing maneuver, fires, and interdiction within their assigned area of operations. Under this authority, land and naval commanders designate target priorities, effects, and timing of fires within their respective areas of operations.⁷

As depicted in figure 12, the area of operations definition connotes that the areas outside the land and naval areas of operations belong to the JFC and are not assigned necessarily

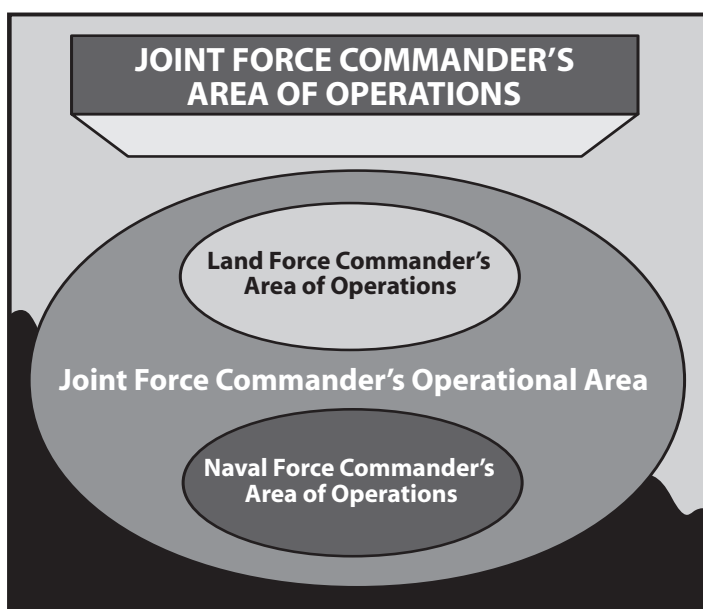


Figure 12. Area of operation. (Reprinted from *Joint Doctrine Encyclopedia*, 16 July 1997, 46.)

to another component commander. The JFC can, however, designate a joint special operations area for the conduct of special operations activities.⁸ Similar to the land and maritime component commanders, joint special operations commanders are supported commanders within a joint special operations area.⁹

As with areas of operations, doctrinal missions have been used in the past to define supported/supporting relationships. For example, the JFACC is normally the supported commander for the theater and/or joint operations area-wide counterair and overall air interdiction missions.¹⁰ The joint doctrine tide, however, is shifting away from specifically designating supported/supporting relationships by mission with the recent approval of Joint Publication 3-30, *Command and Control of Joint Air Operations*. Specific missions that once defined supported/supporting relationships for the air component are now listed as responsibilities.¹¹

Notes

1. JP 0-2, *Unified Action Armed Forces (UNAAF)*, xii (see chap. 2, n. 9).
2. *Joint Doctrine Encyclopedia*, 659 (see chap. 4, n. 7).
3. JP 1-02, *Dictionary of Military Terms*, 511 (see chap. 3, n. 9).
4. *Joint Doctrine Encyclopedia*, 664–65 (see chap. 4, n. 7).
5. JP 1-02, *Dictionary of Military Terms*, 385 (see chap. 3, n. 9). An *operational area* is an overarching term encompassing more descriptive terms for geographic areas in which military operations are conducted.
6. *Ibid.*, 44.
7. JP 3-0, *Doctrine for Joint Operations*, II-10 (see chap. 4, n. 8).
8. JP 1-02, *Dictionary of Military Terms*, 288 (see chap. 3, n. 9). A *special operations area* is defined as a restricted area of land, sea, and airspace assigned by a joint force commander to the commander of a special operations force to conduct special operations activities.
9. JP 3-05, *Doctrine for Joint Special Operations*, 17 December 2003, III-7.
10. JP 3-01, *Joint Doctrine for Countering Air and Missile Threats*, 19 October 1999, II-4. *Counterair* is defined as a mission that integrates offensive and defensive operations to attain and maintain a desired degree of air superiority. Counterair missions are designed to destroy or negate enemy aircraft and missiles, both before and after launch. Also see JP 3-03, *Doctrine for Joint Interdiction Operations*, 10 April 1997, II-8.
11. JP, 3-30, *Command and Control for Joint Air Operations*, II-1 to II-2 (see chap. 3, n. 11).

Appendix B

Current Doctrine: Establishing Directives

Joint Publication 1-02 defines *command and control* as

The exercise of authority and direction by a properly designated commander over assigned and attached forces in the accomplishment of the mission. Command and control functions are performed through the arrangement of personnel, equipment, communications, facilities, and procedures employed by a commander in planning, directing, coordinating, and controlling forces and operations in the accomplishment of the mission.¹

Command requires joint force commanders to visualize the current state of friendly and enemy forces, then formulate concepts of operations to achieve a desired end. Control regulates friendly forces and functions to execute commander's intent by assessing requirements, allocating means, and integrating effects.² Carrying out these inherent command and control functions requires capable planning and execution systems. The precision with which these systems operate significantly enhances the speed and accuracy of information transfer between commanders, thus increasing synergy during joint operations.³

Establishing Directive

To allow the exercise of command and control authorities, the joint force commander normally issues an establishing directive. As an establishing authority, the JFC is responsible for ensuring that both the supported and supporting commanders understand the supported commander's degree of authority. An establishing directive is used at all levels of command. The establishing directive guidance from existing joint doctrine is provided as a frame of reference.

An establishing directive is normally issued to specify the purpose of the support relationship, the effect desired, and the scope of the action to be taken. It should also include

- the forces and other resources allocated to the supporting effort;
- the time, place, level, and duration of the supporting effort;

- the relative priority of the supporting effort;
- the authority, if any, of the supporting commander to modify the supporting effort in the event of exceptional opportunity or an emergency; and
- the degree of authority granted to the supported commander over the supporting effort.

Unless limited by the establishing directive, the supported commander will have the authority to exercise general direction of the supporting effort. General direction includes the designation and prioritization of targets or objectives, timing and duration of the supporting action, and other instructions necessary for coordination and efficiency.⁴

Commander's Intent and Mission-Type Orders

Embedded within an establishing directive and key to achieving the implicit communication desired are two underlying concepts discussed in joint doctrine—commander's intent and mission-type orders. Both of these concepts are essential to allow decentralized execution of joint operations. Commander's intent concisely expresses the purpose and desired end state of an operation. It is not a summary of the concept of operations but is the overarching guidance that allows subordinates to pursue the desired end state without further orders.⁵ So as not to stifle initiative during changing situations, the intent statement may contain an assessment on where and how the commander is willing to accept increased risk during the operation. Despite the changing conditions and unexpected challenges during the operation, the commander's intent usually remains unchanged.

Having defined the desired end state with commander's intent, mission-type orders outline the execution to reach that end state. Mission-type orders direct the joint force to perform a mission without specifying how it is to be accomplished. In accordance with commander's intent and concept of operations, a superior commander delegates the authority and responsibility to conduct elements of operations by issuing mission-type orders. Most importantly, the details of execution and freedom of action to accomplish the mission are left to the

subordinate.⁶ The lack of specifics encourages initiative and facilitates decentralized execution within a joint force.

Notes

1. JP 1-02, *Dictionary of Military Terms* (see chap. 3, n. 9), 100.
2. *Joint Doctrine Encyclopedia* (see chap. 4, n. 7), 161.
3. *Ibid.*, 162.
4. *Ibid.*, 663.
5. *Ibid.*, 175; and JP 0-2, *Unified Action Armed Forces (UNAAF)* (see chap. 2, n. 9), III-15.
6. *Joint Doctrine Encyclopedia* (see chap. 4, n. 7), 522-23; and JP 0-2, *Unified Action Armed Forces (UNAAF)* (see chap. 2, n. 9), III-15.

Appendix C

Current Doctrine: Synchronization of Interdiction and Maneuver

Joint Publication 1-02 defines *interdiction* as “an action to divert, disrupt, delay, or destroy the enemy’s surface military potential before it can be used effectively against friendly forces.”¹ The target type, weapon employed, or executing component does not define an operation or mission as interdiction; the desired effect makes this determination. Current joint doctrine outlines four objectives, or effects, that can be achieved by interdiction—diversion, disruption, delay, and destruction.

Diversion prevents enemy forces from reaching their operational or tactical objectives. More specifically, interdiction missions are designed to *divert* adversary resources from being used for their intended purpose(s). This includes personnel, equipment, or supplies reaching a specific location at a designated time to counter friendly force objectives. It could also include diverting enemy resources to repair damage from an interdiction mission or protect vulnerable centers of gravity.² Interdiction attacks on lines of communications, critical infrastructure, and telecommunications nodes *disrupt* an enemy’s movement of resources and information.³ Additionally, interdiction can *delay* an enemy’s movement of war-fighting resources, increasing the time an adversary is vulnerable to attack and maneuver effects promulgated by a joint force.⁴ Finally, *destruction* is the “most direct” interdiction method and can cause diversion, disruption, and/or delay to an enemy force.⁵ Clearly, the four interdiction objectives, or effects, are closely related and are not typically realized in isolation. Each objective or effect has the potential to make an enemy vulnerable to the joint force by channeling movement, constricting logistics, and forcing inadequately planned and time-urgent movements.⁶

Although Joint Publication 3-03 suggests that interdiction is accomplished by any component of the joint force, the focus of the publication is *air interdiction*. Additionally, the Joint Publication 1-02 definitions for air interdiction and interdiction differ.

Air interdiction operations are defined as air operations conducted to destroy, neutralize, or delay the enemy's military potential before it can be brought to bear effectively against friendly forces at such distance from friendly forces that detailed integration of each air mission with the fire and movement of friendly forces is not required.⁷

A JFACC, who has the preponderance of the interdiction assets that have theater- and/or joint operations area (JOA)-wide range and capability, is delegated the responsibility to plan and execute theater- and/or JOA-wide interdiction operations.⁸ Also, if supported land or naval commanders cannot strike an interdiction target in their respective areas with organic assets, the target is turned over to the JFACC for prosecution with joint interdiction assets.⁹ Interestingly, the only joint interdiction assets the JFACC controls are air assets.

Maneuver Definition

In the context of synchronizing with interdiction, joint doctrine defines *maneuver* as the "employment of forces in the battlespace through movement in combination with fires to achieve a position of advantage in respect to the enemy to accomplish the mission."¹⁰ Maneuver places an adversary in a position of disadvantage through the flexible application of combat power at decisive points achieving surprise, psychological shock, and physical momentum.¹¹ By maneuvering to a position of advantage, air, land, and naval forces control an adversary's centers of gravity, achieving an effect instead of using attrition warfare. Creating the right effect at the appropriate time renders an opponent incapable of resistance and impacts his ability to operate as an effective fighting force.

The concept of maneuver is in a process of evolution within joint doctrine. The *Joint Doctrine Encyclopedia*, dated 1997, identifies *land and naval forces* (including their organic air assets) as the only elements of the joint force that can maneuver to control enemy centers of gravity.¹² The 2001 update of Joint Publication 3-0 no longer makes the distinction between organic and nonorganic air assets and now includes air forces as a maneuver element.¹³ Considering all air assets maneuver elements is a step in the right direction. However, joint doctrine lacks detail on how air maneuver might be integrated into joint operations.

Synchronization of Interdiction and Maneuver

Joint Publication 1-02 defines *synchronization* “as the arrangement of military actions in time, space, and purpose to produce maximum relative combat power at a decisive place and time.”¹⁴ When interdiction and maneuver are synchronized, they can be the most dynamic concept available to the joint force.¹⁵ The complementary aspects of maneuver and interdiction create dilemmas for an adversary force requiring time-critical decisions, which could put that force at a disadvantage. An opponent can elect to remain stationary and engage maneuver forces from a disadvantage or reposition and expose its resources to interdiction strikes. If the joint force is at a disadvantage, interdiction can divert, disrupt, delay, or destroy elements of an adversary force so the joint force can maneuver and engage on advantageous terms.

Notes

1. JP 1-02, *Dictionary of Military Terms* (see chap. 3, n. 9), 266.
2. JP 3-03, *Doctrine for Joint Interdiction Operations* (see app. A, n. 10), I-2.
3. *Ibid.*, I-2 to I-3.
4. *Ibid.*, I-3 to I-4.
5. *Ibid.*, I-4.
6. *Ibid.*, I-4 to I-5.
7. *Ibid.*, II-4.
8. *Ibid.*, II-7.
9. *Ibid.*, II-13.
10. JP 1-02, *Dictionary of Military Terms* (see chap. 3, n. 9), 316.
11. JP 3-0, *Doctrine for Joint Operations* (see chap. 4, n. 8), IV-9.
12. *Joint Doctrine Encyclopedia* (see chap. 4, n. 7), 481.
13. JP 3-0, *Doctrine for Joint Operations* (see chap. 4, n. 8), IV-10.
14. JP 1-02, *Dictionary of Military Terms* (see chap. 3, n. 9), 516.
15. JP 3-0, *Doctrine for Joint Operations* (see chap. 4, n. 8), IV-13 to IV-14.

Appendix D

Current Doctrine: Joint Fires

Joint Publication 3-09, *Doctrine for Joint Fire Support*, defines *fires* as “the effects of lethal or nonlethal weapons.”¹ In accordance with doctrine, air, land, naval, space, and special operations assets are all capable of delivering fires.² This definition covers the whole gambit of effects available to a joint force commander. Lethal weapons effects come to mind when one thinks of fires in combat operations. However, this definition includes nonlethal weapons effects usually delivered via nonkinetic means, like electronic warfare, psychological operations, and information operations.³ “Fires produced during the employment of forces from two or more components in coordinated action toward a common objective” are defined as *joint fires*.⁴

Joint fire support is defined as “joint fires that assist air, land, maritime, amphibious, and special operations forces to move; maneuver; and control territory, populations, airspace, and key waters.”⁵ The joint fire support structure is composed of three parts: target acquisition, command and control, and attack resources.⁶ In combination, these three subsystems enable a joint force commander to achieve his objectives by being able to find, fix, track, target, engage, and assess an adversary target set.

Joint Fires Command and Control

Joint fire support command and control should encompass the entire realm of joint fires, both surface-delivered and air-delivered. Joint doctrine, however, focuses its discussion on the command and control of *air-delivered* joint fires as can be seen in both joint interdiction and CAS doctrine discussions. In fact, the command and control structure used to execute joint fire support is found in Joint Publication 3-09.3, *Joint Tactics, Techniques, and Procedures for Close Air Support*, and is extremely complicated. A wiring diagram of the Theater Air

COMPONENT AIR COMMAND AND CONTROL AGENCIES FOR CLOSE AIR SUPPORT

USAF Theater Air Control System	USA Army Air-Ground System	USN Navy Tactical Air Control System	USMC Marine Air Command and Control System	SOF Air Command and Control	Component Headquarters
Air and Space Operations Center		Tactical Air Control Center/ Tactical Air Direction Center	Tactical Air Control Center/ Tactical Air Direction Center	Joint Special Operations Air Component	
	Battlefield Coordination Detachment	Naval and Amphibious Liaison Element	Marine Liaison Officer	Special Operations Liaison Element	Liaison Elements
Control and Reporting Center		Fleet Air Warfare Center	Tactical Air Operations Center		
Air Support Operations Center		Air Support Coordination Section	Direct Air Support Center	Special Operations Command and Control Element	Planning, Coordination, and Control
	Fire Support Element/Airspace Command and Control	Supporting Arms Coordination Center	Fire Support Coordination Center	Special Operations Command and Control Element	
Tactical Air Controller (Airborne)		Tactical Air Controller (Airborne)	Tactical Air Controller (Airborne)		
Forward Air Controller (Airborne)		Forward Air Controller (Airborne)	Forward Air Controller (Airborne)		Terminal Control Assets
Tactical Air Control Party			Tactical Air Control Party		
Terminal Attack Controller			Forward Air Controller	Joint Terminal Attack Controller Qualified Special Operations Personnel	

Figure 14. Component air command and control agencies for close air support. (Adapted from Joint Publication 3-09.3, *Joint Tactics, Techniques, and Procedures for Close Air Support [CAS]* [see chap. 6, n. 38].)

gories: component headquarters; liaison elements; planning, coordination, and control agencies; and terminal control assets.

The component headquarters is the senior agency for tasking and exercising joint fires support. The liaison elements provide an interface between the supported and supporting components of the joint force. Figure 14 depicts the liaison elements that are found within an air and space operations center. The planning, coordination, and control agencies are pri-

marily responsible for battle management and joint fire support planning, coordination, integration, and synchronization functions. Finally, terminal control assets are typically the principal liaison with ground maneuver units serving as advisors on the employment and limitations of airpower. They assist in the planning, requesting, and coordinating of CAS assets and are uniquely qualified to conduct terminal attack control for CAS aircraft. In some cases, terminal control assets may include a forward air controller (airborne) or FAC(A), an airborne extension of surface-based terminal control assets.⁹

As the last couple of paragraphs have described, the execution of joint fire support is CAS-centric. When doctrine addresses joint fire support, CAS command and control structures and processes are the only ones discussed. Current joint doctrine provides very little guidance on the command and control of all joint fires. The combination of CAS-focus and lack of other joint fires command and control guidance is a doctrine deficiency. To achieve the *JOpsC* vision, doctrine concepts are required to support joint fires from any and all elements of the joint force.

Notes

1. JP 3-09, *Doctrine for Joint Fire Support*, 12 May 1998, I-1.
2. Ibid.
3. Ibid.
4. JP 1-02, *Dictionary of Military Terms*, 279 (see chap. 3, n. 9).
5. Ibid.
6. JP 3-09, II-1.
7. JP 3-09.3, *Joint Tactics, Techniques, and Procedures for Close Air Support (CAS)*, II-1 (see chap. 6, n. 38).
8. Ibid., II-1.
9. Ibid., II-10.

Appendix E

Current Doctrine: Fire Support Coordination Measures

Fire support coordination measures expedite attack of targets; protect forces, populations, critical pieces of infrastructure, and sites of religious or cultural significance; deconflict fire support operations; and establish conditions for future operations.¹ Permissive measures facilitate the attack of targets. With the exception of the fire support coordination line, permissive measures do not require additional, detailed coordination prior to weapons employment.² Conversely, restrictive measures primarily protect friendly forces and impose requirements for specific coordination before target engagement.³ Elements of the joint force have different perspectives on permissive FSCMs and how their placement takes the best advantage of their respective capabilities. This difference of opinion has led to some air-ground operations friction. The ability for so many elements of the joint force to affect an adversary with fires in a permissive environment drives the debate on two of the more commonly employed permissive measures, the fire support coordination line and kill box.

Fire Support Coordination Line

The FSCL might well be considered the most important line in the battlespace related to air-ground operations. The FSCL placement defines command and control and support relationships for the execution of joint fires. Joint Publication 1-02 defines the FSCL as follows:

A fire support coordinating measure that is established and adjusted by appropriate land or amphibious force commanders within their boundaries in consultation with superior, subordinate, supporting, and affected commanders. Fire support coordination lines (FSCL) facilitate the expeditious attack of surface targets of opportunity beyond the coordinating measure. An FSCL does not divide an area of operations by defining a boundary between close and deep operations or a zone for close air support. The FSCL applies to all fires of air, land, and sea-based weapons systems using any type of ammunition. Forces attack-

ing targets beyond an FSCL must inform all affected commanders in sufficient time to allow necessary reaction to avoid fratricide. Supporting elements attacking targets beyond the FSCL must ensure that the attack will not produce adverse attacks on, or to the rear of, the line. Short of an FSCL, all air-to-ground and surface-to-surface attack operations are controlled by the appropriate land or amphibious force commander. The FSCL should follow well-defined terrain features. Coordination of attacks beyond the FSCL is especially critical to commanders of air, land, and special operations forces. In exceptional circumstances, the inability to conduct this coordination will not preclude the attack of targets beyond the FSCL. However, failure to do so may increase the risk of fratricide and could waste limited resources.⁴

There is a distinct difference in joint fires employment short of and beyond the FSCL. Short of the FSCL, the appropriate surface commander *controls* all fires. Beyond the FSCL, all commanders must *coordinate* in sufficient time to allow the necessary deconfliction and protection actions to take place. Attacks beyond the FSCL must not produce adverse effects or be considered “free-fire area” operations. They must be coordinated and deconflicted to the maximum extent possible in the support of joint force objectives.⁵ Additionally, FSCL changes must be coordinated and disseminated to all affected forces in sufficient time to allow incorporation within these forces and/or their components. Six hours is the doctrinal standard to accomplish coordination and dissemination.⁶

The FSCL is not a requirement for joint operations, but if used, its placement should be based on the commander’s concept of operations (anticipated rate of movement and tempo), enemy force locations, and organic firepower.⁷ Per Army doctrine, the primary consideration for placement of a FSCL is that it be located beyond the area in which a corps intends to shape the deep fight. Under this premise, the FSCL may be established well beyond the range of cannon and multiple rocket field artillery systems.⁸ The firepower that a corps uses to shape the battlespace deep fight is not limited to surface fires but also includes air-delivered fires. Air Force doctrine has a slightly different take on FSCL placement.

The optimum placement of the FSCL varies with specific battlefield circumstances, but typically it should be placed where the capability to produce the preponderance of effects on the battlefield shifts from the ground component to the air component. In this way, the FSCL placement maximizes the overall effectiveness of the joint force, and each

component will suffer the minimum reduction in efficiency. To place the FSCL so deep or shallow that one component is given complete freedom to operate will usually result in the other components being so restricted that overall joint effectiveness suffers.⁹

Deep placement of the FSCL can create situations where the range and density of organic fires, when combined with the requisite control of inorganic fires, can give an adversary a sanctuary from attack. Conversely, an FSCL not placed deep enough may constrain the ground scheme of maneuver due to the coordination time required to implement an FSCL change. Ideally, tactical units would place the FSCL at a range where most of the organic indirect fires could engage targets short of the FSCL. However, FSCL placement is typically a nominative process with the JFC making the final determination. For a variety of reasons, the FSCL is often placed further out than some tactical ground units and the air component might prefer, hence the continuing debate.

Current joint doctrine makes a single cursory comment on FSCMs in nonlinear operations stating: FSCLs do not have to follow “traditional” straight-line paths; curved and/or enclosed FSCLs have applications in nonlinear joint operations.¹⁰ Air Force doctrine gives a more detailed discussion, but recognizes that FSCMs in a nonlinear environment can be very complex.

One option is to create a new fire support coordination measure, based on a standardized box, circle, or other easily employed shape, to accomplish the same task that the FSCL performs for the linear battlefield. By drawing lines around the areas occupied by friendly troops, properly padded for both close proximity and intended scheme of maneuver, there would be large areas left available for more unrestricted “beyond the FSCL” type of air attack. This discussion presents the concept of nonlinear coordination in very simple terms, as any real example would be very complex and would require great flexibility.¹¹

Battlefield Coordination Line and Airspace Coordination Area

Although not codified as joint doctrine, the Marines have instituted a complementary permissive FSCM to prevent the creation of a perceived sanctuary for enemy forces between the maximum range of organic artillery and the FSCL.¹² The battlefield coordination line (BCL) is designed to allow Marine Air

Ground Task Force aviation assets to attack surface targets in the ground command element's area without approval.¹³ To deconflict air and surface fires between the BCL and FSCL, an airspace coordination area overlies the area.¹⁴

An airspace coordination area (ACA) is a three-dimensional block of airspace in a target area, established by the appropriate ground commander, in which friendly aircraft are reasonably safe from friendly surface fires.¹⁵ Threat avoidance, ordnance release altitudes, and artillery trajectories are used to determine an ACA's altitude limits.¹⁶ The BCL/ACA combination facilitates the expeditious attack of targets short of the FSCL by both surface- and air-delivered fires.

The Kill Box Concept

Similar to the BCL/ACA concept, the kill box concept has been employed to achieve some of the same objectives. The kill box concept, in its present form, was first used in earnest during Operation Desert Storm. Coalition aircraft were not destroying targets within the Kuwaiti theater of operations as rapidly as desired. One of the adjustments made was to use F-16s as killer scouts to improve target acquisition for incoming flights. Aircraft would be directed to predesignated 15-by-15 nautical mile areas to attack their assigned targets or more lucrative targets found by the killer scouts.¹⁷ In theory, kill boxes can rapidly open and close, both short and long of the FSCL, to facilitate deconfliction or expeditious employment of air-delivered fires. The merits of this concept led to its inclusion in Air Force doctrine and adoption by three combatant commands.¹⁸ The concept, however, is not standardized across commands and is not fully embraced and explained in joint doctrine. The confusion that exists in this area is not surprising since during Operation Desert Storm kill boxes and a grid-based reference system were developed together. Joint doctrine adds to the confusion by essentially making the terms *area reference system* and *kill box* virtually synonymous in its discussion of common reference systems.

The kill box concept, in theory an FSCM, is addressed in the area reference system section of Joint Publication 3-60, *Joint*

Doctrine for Targeting. An area reference system is defined as “a three-dimensional reference, enabling timely and effective coordination and control and facilitates rapid attacks throughout the designated JOA.”¹⁹ Once an area reference system has been developed for a theater, the system may be used to designate control and coordinating measures, like FSCMs and airspace control measures (ACM). It is important to understand that area reference system and kill boxes are not one in the same. A theater-level area reference system is the framework used to establish kill box parameters. As Joint Publication 3-60 states, theater-level kill boxes can be an effective coordination tool.

Theater-level kill boxes often combine FSCMs with ACMs as a single coordination and control measure. This combination of fire support and airspace coordination enables the use of these area reference systems to be a reactive, timely and simple tool for joint force employment and component integration.²⁰

In publishing the *Multi-Service Tactics, Techniques, and Procedures for Targeting Time-Sensitive Targets*, the Air Land Sea Application (ALSA) Center is introducing a standardized common geographic reference system (formerly known as the common grid reference system).²¹ The ALSA publication is not joint doctrine, but it can serve as the means for getting a standardized common geographic reference system into joint doctrine. Once a standard has been established, the common geographic reference can be used throughout the future joint force to designate

- location of friendly forces,
- surface force maneuver boundaries,
- areas of intended attack,
- airspace control measures,
- fire support control measures,
- high threat areas, and
- terrain or airspace orientation.²²

Notes

1. JP 3-09, *Doctrine for Joint Fire Support*, III-13 (see app. D, n. 1).
2. *Ibid.*, III-13.
3. JP 3-09.3, *Joint Tactics, Techniques, and Procedures for Close Air Support (CAS)*, III-23 (see chap. 6, n. 38); and JP 3-09, *Doctrine for Joint Fire Support*, III-13 (see app. D, n. 1).

4. JP 1-02, *Dictionary of Military Terms*, 199 (see chap. 3, n. 9).
5. JP 3-09, *Doctrine for Joint Fire Support*, A-2 (see app. D, n. 1).
6. Ibid.
7. Ibid., A-3.
8. Field Manual (FM) 6-20-30, *Tactics, Techniques, and Procedures for Fire Support for Corps and Division Operations*, 18 October 1989, F-3 to F-4.
9. AFDD 2-1.3, *Counterland*, 27 August 1999, 61.
10. JP 3-09, *Joint Tactics, Techniques, and Procedures for Close Air Support (CAS)*, A-2 (see chap. 6, n. 38).
11. AFDD 2-1.3, *Counterland*, 62.
12. Lt Col Michael R. Kennedy and Lt Col Larry J. Holcomb, "Genesis and Development of the Battlefield Coordination Line," *Marine Corps Gazette* 86, no. 4 (April 2002): 64.
13. Ibid., 66.
14. Ibid.
15. JP 1-02, *Dictionary of Military Terms*, 27 (see chap. 3, n. 9).
16. Kennedy and Holcomb, "Genesis and Development of the Battlefield Coordination Line," 66.
17. Col Richard B. H. Lewis, "JFACC Problems Associated with Battlefield Preparation in Desert Storm," *Aerospace Power Journal* 8, no. 1 (Spring 1994): n.p., <http://www.airpower.maxwell.af.mil/airchronicles/apj/apj94/lewis.html>.
18. Scheel, "Bullet Background Paper on Common Grid Reference System," 1 (see chap. 7, n. 12); and AFDD 2-1.3, *Counterland*, 64.
19. Joint Publication 3-60, *Joint Doctrine for Targeting*, 17 January 2002, D-1.
20. Ibid.
21. Air Land Sea Application Center, *Multi-Service Tactics, Techniques, and Procedures for Targeting Time-Sensitive Targets*, G-1 (see chap. 7, n. 12).
22. Scheel, "Bullet Background Paper on Common Grid Reference System," 1 (see chap. 7, n. 12).

Glossary

3ID(M)	3d Infantry Division (Mechanized)
ACA	airspace coordination area
ACCE	air component coordination element
ACM	airspace control measure
AEF	air and space expeditionary force
AEG	air and space expeditionary group
AES	air and space expeditionary squadron
AETF	air and space expeditionary task force
AEW	air and space expeditionary wing
AFDD	Air Force Doctrine Document
ALSA	air land sea application
AOC	air and space operations center (formerly air operations center)
AOR	area of responsibility
ASOC	air support operations center
ATACMS	Army Tactical Missile System
BCL	battlefield coordination line
CAS	close air support
CCE	component coordination element
CGRS	common grid reference system or common geographic reference system
CJCSI	chairman of the Joint Chiefs of Staff Instruction
COMAFFOR	commander of US Air Force forces
DASC	direct air support center
DOTMLPF	doctrine, organization, training, materiel, leadership, personnel, and facilities
EBO	effects-based operations
ETAC	enlisted terminal attack controller
ETO	effects tasking order
FAC(A)	forward air controller (airborne)
FECC	fire and effects coordination cell
FM	field manual
FIST	fire support team
FSCA	fire support coordination area
FSCL	fire support coordination line
FSCM	fire support coordination measure
HSOC	home station operations center

JACE	joint air control element
JAOC	joint air and space operations center (formerly joint air operations center)
JCAS	joint close air support
JFACC	joint force air component commander
JFC	joint force commander
JFLCC	joint force land component commander
JIACG	joint interagency coordination group
JIMP	Joint Vision Implementation Master Plan
JOC	joint operating concept
<i>JOpsC</i>	<i>Joint Operations Concept</i>
JSTARS	joint surveillance targeting attack radar system
JTA	joint tactical action
JTAC	joint terminal attack controller
JTASC	joint tactical action support center
LOS	line-of-sight
MAGTF	Marine Air Ground Task Force
MC02	Millennium Challenge 2002
NLOS	non-line-of-sight
OEF	Operation Enduring Freedom
OIF	Operation Iraqi Freedom
PEL	prioritized effects list
SEZ	special engagement zone
SJFHQ	standing joint force headquarters
SOF	special operations forces
TAC	terminal attack controller
TACP	tactical air control party
TTP	tactics, techniques, and procedures
UA	unit of action
UAV	unmanned aerial vehicle
UE	unit of employment
UNAAF	Unified Action Armed Forces
USJFCOM	US Joint Forces Command
USSOCOM	US Special Operations Command
WF HQ	warfighting headquarters

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