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C4I OF ARMY DEEP OPERATIONS AND AIR INTERDICTION:
FUSION OF EFFORT WITHIN THE SAME BATTLESPACE

by

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A Research Report Submitted to the Faculty

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Preface

Simultaneous operations within the same battlespace have proven to be a contentious issue for the United States Army and United States Air Force. As surface force weapons and weapon systems capable of long range operations and engagements have proliferated in the last decade, this contention has increased and could arguably be the greatest joint operational issue between the services today. Yet in today's increasing dynamic and challenging battlefield, our ability to leverage the strengths of both services within the same battlespace may be the crucial factor in our nation's success or failure.

In this paper, I will propose a concept of coordination and integration that may resolve the conflict and allow simultaneous operations within the same battlespace. I do not propose to provide a "one best way" of accomplishing this task but instead hope to jump-start discussion of the issue along a new and different train of thought. In doing so, perhaps this discussion and others to follow will finally create a means to leverage the power and abilities both of these great servants to our nation bring to the fight.

I would like to thank LTC Jeff Reilly, ACSC's Senior Army Advisor, for the initial discussion of the issue and the encouragement to search for a solution. My Faculty Research Advisor, LTC Randy Soboul, further encouraged the exploration of the issue and provided invaluable direction and support. As a Ground Liaison Officer (GLO) aboard an Airborne Battlefield Command and Control Center (ABCCC) during Operation Desert Storm, he witnessed first-hand the power that simultaneous air and ground forces can bring to bear on our

nations enemies. His views of this issue as both a ground maneuver officer and as a school trained and experienced airpower expert, provided immeasurable insight and direction.

Abstract

Simultaneous operations within the same battlespace have proven to be a contentious issue for the United States Army and United States Air Force. As surface force weapons and weapon systems capable of long range operations and engagements have proliferated in the last decade, this contention has increased and could arguably be the greatest joint operational issue between the services today.

The doctrinal “lightning rod” of this debate is the Fire Support Coordination Line or FSCL. Its use, placement, and movement have proven to be an issue that seems to defy reconciliation. Yet, when one delves into the issue and the doctrinal underpinnings of it, one finds a deeper, more fundamental proximate cause for the debate rather than the superficial one highlighted by the placement of a coordination measure.

The two services are attempting to achieve the same results in the same battlespace. Both are making honest efforts to serve the Joint Force Commander’s intent and are fundamentally operating within the frameworks established by joint doctrine. Both are generally operating within the frameworks established by their own service doctrine and neither doctrine is particularly or diametrically opposed to the other. Yet, both services attempt to execute their efforts separately. Each will provide support to the other. Each provides liaison organizations and systems for the other. What we do not seem to be able to do is to execute our operations at the same time and within the same battlespace.

There is a root cause for this desire to operate in concert with each other yet separated by time or space: We lack a truly effective means of coordinating and integrating our efforts within the same battlespace at the same time.

This statement does not apply to the entire joint battlespace. Close Air Support procedures and the Theater Air Ground System (TAGS) adequately fuses airpower into the surface force scheme of maneuver in its close fight. Likewise, the Theater Air Control System (TACS) and its service liaisons provide excellent command, control, and coordination for most operations at the theater level. The boundaries between these functions and these systems are not distinct, however. Significant overlap exists when these artificial constructs are superimposed on a dynamic battlefield and against a wily and uncooperative opponent. It is here that the contention between services erupts. As Army deep operations attempt to shape and even defeat its opponents, Air Force interdiction operations are also attempting to destroy, disrupt, divert, or delay, that same surface military power. Where those efforts remain separated by space, the existing command, control and coordination systems operate effectively. Unfortunately, this is becoming less the rule and more the exception.

The range, lethality, and availability of surface weapon systems capable of identifying, tracking, and engaging enemy surface forces are rapidly expanding. Where air power was once the only capability available to a joint commander or a higher echelon (Corps or ARFOR) Army commander to identify and engage an opponent at operational ranges, this is no longer the case. Army doctrine has evolved from the limited concept of Follow-on-Forces Attack (FOFA) of the mid-eighties to its current doctrine of deep attack or deep operations. This has increasingly brought Army and Air Force assets into simultaneous engagements within the same battlespace. Yet, our command, control, and coordination systems have not commensurately evolved to assist

in dealing with this dilemma. Most efforts have focused on deciding where and how to divide and assign responsibility and authority over that battlespace. This has resulted in the FSCL debate. Yet, the real problem lies in determining where and how to integrate and fuse our capabilities, rather than on how to segregate and synchronize our efforts.

Current and evolving technologies and organizations offer one solution. The advent of information management and decision-making tools linked to networked communications systems offer new opportunities to provide a distributed common picture of the air and ground battlespace not possible even five years ago. When paired with existing command, control, and coordination organizations, and with missions and functions evolved to reflect the changes in how each service fights, these existing organizations can provide an effective means of implementing simultaneous operations within the same battlespace. This requires more than communications links and information management systems, however. It will require fusion of land component and air component effort during planning, rehearsal, and execution. The situational awareness and common picture of the battlespace is only a tool. The battle staffs at the Corps and the AOC will have to achieve common understanding of intent and priorities in order to capitalize on the capabilities of these new tools and the resulting opportunities they will present the air and land component commanders.

Part 1

Introduction

The nature of modern warfare demands that we fight as a team. The team provides joint force commanders the ability to apply overwhelming force from different dimensions and directions to shock, disrupt, and defeat opponents. Effectively integrated joint forces expose no weak points or seams to enemy action, while they rapidly and efficiently find and attack enemy weak points. Joint warfare is essential to victory.

— Joint Publication 1, Joint Warfare of the Armed Forces of the United States

Current U.S. Army deep operations doctrine and Air Force interdiction doctrine create a functional and positional overlap for warfighters. This overlap creates repeated command and control issues for Army fire support operations, attack helicopter operations, and USAF interdiction operations, since they all operate within the same battlespace. The Fire Support Coordinating Line (FSCL) has become the disputed doctrinal issue. Yet the true issue is the lack of either a functional deconfliction means or a command and control process that allows concurrent operations and simultaneous attack in this battlespace.

Nature of the Problem

Simultaneous operations within the same battlespace have proven to be a contentious issue for the United States Army and United States Air Force. As surface force weapons and weapon systems capable of long range operations and engagements have proliferated in the last decade,

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Scope and Framework of this Study

Scope

Volumes could be written on this broad and intense issue. Historical experience, organizational cultures, differing views of warfare, tension over limited resources and how they should be invested, and evolving operational concepts in both services all play a role in how this issue developed. Preferring to look forward to the future rather than backward at the past, this study will instead depart from where we are now and look forward to where we could be in the next few years.

The focus will be operational and doctrinal. There will be no budgetary or investment recommendations, although the author acknowledges that the recommendations, if adopted, would have an impact on that battlefield as well.

This paper is not about the close fight and CAS or about strategic attack or air superiority operations. As stated earlier, the contention is not applied to the entire battlespace, but rather is

focused on the overlap in battlespace where Army deep operations and Air Force air interdiction operations intersect. My focus will be on this battlespace and on means to coordinate and integrate service capabilities within it.

This paper is oriented towards conventional conflicts rather than on the lower intensity end of the spectrum. It is that arena where Air Force air interdiction efforts and Army deep operations are most likely to be fully employed and where they are most likely to conflict with each other.

Finally, this paper will focus on the interface between the United States Air Force and the United States Army. While the author recognizes that this is only one of many possible combinations of services, these two services have the lead in these operations and act as doctrinal guidons for the others in this arena.

Framework

In order to understand the true nature of this issue, one must begin with a review of the existing doctrine associated with it. Joint, Air Force, and Army doctrine associated with interdiction and deep operations will be summarized and reviewed. Particular attention will be paid to the conceptual understanding of the battlespace involved and how each service seeks to provide command and control within it. Associated liaison and coordination systems will also be reviewed as a foundation of what is currently available for executing these functions within and between the two services.

Neither joint nor service doctrine provides clear answers to this dilemma. The shortfall stems less from answering the "what is to be done" questions but in answering the "how can we accomplish this together" questions. The solutions provided tend to emphasize separation rather

than coordination or integration. These shortcomings will be reviewed and the specific areas requiring solutions identified.

Finally, one possible solution will be described. As stated earlier, the intent is to provide “a-way” rather than “one-best-way” and to spur further discussion of an issue that begs for resolution.

“Our Military Forces are one team – in the game to win regardless of who carries the ball. This is no time for ‘fancydans’ who won’t hit the line with all they have on every play, unless they can call the signals. Each player on the team – whether he shines in the spotlight of the backfield or eats dirt in the line – must be All-American.

— General of the Army Omar N. Bradley

Part 2

Existing Doctrine

Doctrine offers a common perspective from which to plan and operate, and fundamentally shapes the way we think about and train for warfare.

— Joint Doctrine Capstone and Keystone Primer

Joint and service doctrines frame the debate over the issue of simultaneous operations within the same battlespace. They each provide guidelines on what to do and to some degree shape how things are to be done. Joint and service doctrines perform different functions.

Joint doctrine is designed to offer that “common perspective” required in order to allow mutually supporting concepts of warfare. Almost from its inception after the Goldwater-Nichols Act of 1986, the joint staff established a means to develop and promulgate a joint doctrine system. In 1987, the Chairman of the Joint Staff reorganized the staff and established a separate Joint Doctrine Division and a Joint Doctrine Center within the J-7 Directorate.¹ The Joint Doctrine Center was tasked to, “oversee draft doctrine during the initial stages of the development process, identify and resolve key doctrinal issues, and evaluate and validate doctrine once it was developed to ensure it actually worked.”² The purpose of joint doctrine is, in effect, to resolve differences between the many service perspectives on what needed to be done how to do them. While the role of joint doctrine has expanded since its inception, the listed function and mission fundamentally remains unchanged and was the driving force behind much of the early joint doctrine covering the issue at hand.

Service doctrine provides the basis for the development of component action within the joint framework. All service doctrine manuals caveat their prefaces with an acknowledgement that they are in compliance with existing joint doctrine. Yet where joint doctrine is silent or incomplete, these references are the primary source of component thought and action. Even when two services are aligned with the intent and content of joint doctrine, there exists room for interpretation and expansion upon those ideas. In areas where there is no specified joint view, the services are free to develop their own thoughts and processes. Where joint doctrine does not prescribe specific ways and means to execute joint functions or responsibilities, the services are free to develop their own processes and procedures. It is here that conflict and contention can develop.

Joint Doctrine

Joint doctrine establishes doctrine related to this issue in two distinct areas: Command and control relationships and Joint interdiction doctrine.

Joint doctrine establishes a support relationship between two friendly forces that initiates the doctrinal contention over simultaneous attack within the same battlespace. The concept of supported or supporting commands, while valuable in most instances where there a clear and distinct roles and responsibilities, tends to create a framework that leads to a demand for uniform control over forces or action within an assigned function or area. Joint Publication 3-0, Doctrine for Joint Operations describes the meaning of these relationships:

Joint Pub 1, Joint Warfare for Armed Forces of the United States," describes achieving leverage (that is, gaining, maintaining, and exploiting advantages in combat power across all dimensions) among the forces available to JFCs as 'the centerpiece of joint operational art.' Force interaction with respect to friendly force relationships can be generally characterized as supported (the receiver of a given effort) or supporting (the provider of such an effort).³

While not a command relationship, it is intended to provide a clear picture for subordinate forces of JFC intent. It identifies who is to support whom, in effect identifying a "main effort" or lead force for a particular activity. Its purpose is to provide a picture of how the JFC intends to leverage his available assets and power to accomplish his objectives.

The doctrinal standards for the supported and supporting relationship varies with the battlespace involved and with the type of operations. These varying relationships place different forces in contradictory roles when attempting to execute deep operations and joint interdiction.

Joint interdiction doctrine outlines a unique supporting and supported relationship structure for its operations. As JP 3-03, Doctrine for Joint Interdiction Operations states:

JFCs typically conduct joint interdiction operations through component commanders. Many elements of the joint force may perform interdiction operations. ... To ensure unity of command and effort throughout the theater and/or JOA, the JFC normally delegates the planning and execution of theater- and/or JOA-wide interdiction operations to the component commander, with the preponderance of interdiction assets with theater- and/or JOA-wide range and the ability to control them. In most cases, this is the JFACC. The JFC will normally designate the commander with the preponderance of air assets and the ability to plan, task, and control joint air operations as the JFACC. The JFACC is the supported commander for the JFC's overall air interdiction effort.⁴

The same publication also clearly states that not all interdiction operations need to be a part of the JFC's theater- and/or JOA-wide effort. Component commanders are authorized to conduct their own interdiction operations as required to support their own assigned tasks and missions.

As the publication clearly states:

Components may conduct interdiction operations as part of their specific mission in addition to, or in lieu of, supporting the theater- and/or JOA-wide interdiction effort. ... Within an assigned AO, a surface commander can interdict enemy forces to enhance the effects of the friendly scheme or maneuver with the use of organic assets as Army Tactical Missile System (ATACMs), organic fixed or rotary wing aircraft, and artillery. In such situations as these, C2 for the operation is normally conducted according to the component's procedures.⁵

Similarly, land and naval force boundaries establish responsibilities for interdiction. JP 3-03 defines and describes boundaries as, "a line that defines areas between adjacent units or formations."⁶ These may be used to define areas of operations (AOs) A JFC utilizes these to further assign responsibility for battlespace with an indirect assignment of another supported / supporting relationship. According to JP 3-03:

The JFC may use lateral, rear, and forward boundaries to define AOs for land and naval forces. These are sized, shaped, and positioned to enable land or naval forces to accomplish their mission while protecting deployed forces. ... Boundaries are based on the JFC's concept of operations and the land or naval force commander's requirement for depth to maneuver rapidly and to fight at extended ranges. Within the AOs contained by these boundaries, the land or naval force commander is designated the supported commander. As supported commanders within their AOs, the land and naval force commanders are responsible for synchronizing maneuver, fires, and interdiction. They may designate priority of attacks to focus allocated interdiction assets on the targets or target systems essential to achieving the land or naval force commander's maneuver objectives.⁷

The publication also attempts to clarify joint doctrine on several known areas of contention. It states that, the JFC ultimately approves the integration of joint interdiction operations with execution of other joint force operations."⁸ It states that interdiction operations in or around maritime or littoral areas, "may require close coordination between the joint forces air component commander (JFACC) and the naval force commander"⁹ and has specific guidance concerning interdiction within surface force areas of operations (AOs). It stipulates that:

Additionally, in the case of air interdiction operations short of the fire support coordination line (FSCL), all air-to-ground and surface-to-surface attack operations are controlled by the appropriate land or amphibious force commander. Coordination between the JFACC and the land force commander, as well as coordination between aircrews and friendly forces on the ground, is required through the appropriate air C2 agencies.¹⁰

In effect, these varying support relationships have divided interdiction into distinct sub-sets. Air interdiction and joint interdiction forward of the land or naval force AO are conducted with the JFACC as the supported commander with all other services as supporting commands. Within

a land, maritime, or littoral AO, the assigned naval, marine, or army commander is the supported commander with the JFACC as the supporting commander for interdiction operations. We have, in fact, made separation our standard method of control.

Army Doctrine

Army doctrine utilizes this concept of joint interdiction and battlespace allocation. As it's weapons systems, intelligence collection and management systems, and munitions have extended the eyes and arms of the army commander, its doctrine has evolved to make use of them. The 1996 edition of FM 100-15, Corps Operations, outlines its conceptualization of a battlefield framework:

A battlefield framework helps commanders relate friendly forces to one another and to the enemy in terms of time, space, and purpose. The concept of a battlefield framework is not new, but the proliferation of military and advanced technology and the influence of joint doctrine has caused the battlefield framework to evolve. ...

The battlefield framework consists of four interrelated components: area of operations (AO), area of interest (AI), battle space, and a specific battlefield organization. As a result of the battlefield visualization process, the commander can translate his vision into this framework.

The commander mentally establishes an area in which he must focus intelligence-gathering means, This will ensure he is aware of factors that may have a near-term impact on the operation. This is called the area of interest.

The commander next determines the three-dimensional area in which he seeks to dominate the enemy. This volume is referred to as the commander's battlespace.¹¹

Finally, the commander lends structure to his assigned AO through a specific battlefield organization. This organization includes using boundaries, phase lines, and similar measures.

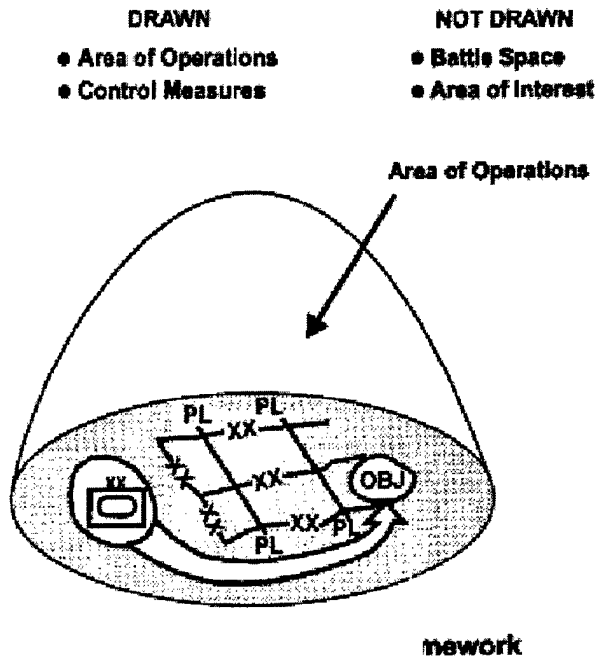


Figure 1 – U.S. Army Corps Battlefield Framework Representation from FM 100-15, Corps Operations, figure 2-1

One of the key evolutions has been the development of a broader concept of the battlefield. The idea of battlespace has developed as a way to see beyond boundaries towards a more comprehensive perspective on how to view, fight, and dominate an opponent. FM 100-15 describes this perspective and defines battlespace:

Battle space is the volume of area in which the commander seeks to dominate the enemy. It is through battlefield visualization that he decides where, when, and how he will dominate the enemy within his battle space.

A commander's battle space expands and contracts in relation to the ability to acquire and engage the enemy with joint or multinational forces. It can change as the commander's vision of the battlefield changes. It is influenced by time, tempo, depth, and synchronization.

A higher commander does not assign battle space. Although battle space is not shown on a map or computer monitor, it usually extends beyond the commander's AO and may overlap with the battle space of other commanders. At the tactical

level, the area in which a commander dominates an enemy (his battle space) is normally smaller than his AI.

Key considerations in determining the size of battle space include the depth and resolution of supporting intelligence, the commander's concept for employing both organic and supporting weapons, and the disposition of the opposing force.¹²

This concept of battlespace relates to how and why a commander organizes the battlefield.

It is further organized into areas of operation to help manage the fight. FM 100-15 describes this:

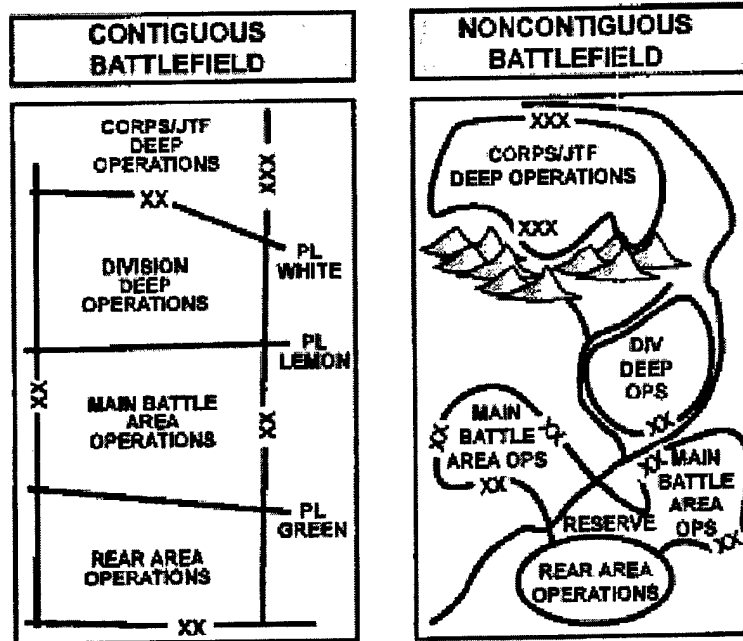
Areas of operation help commanders quickly prioritize and focus resources and efforts. Commanders organize their battlefield with control measures to assign responsibilities, to coordinate fires and maneuver, and to control other activities.

Commanders consider all aspects of the three-dimensional battle and apply the minimum standard control measures to organize their AOs. They use only those measures necessary to ensure the safety of the force while allowing for the initiative and agility of subordinate commanders.

Battles and engagements are at times linear with deep, close, and rear components. Although these components may be noncontiguous, they are not separate and distinct activities. They are synchronized efforts throughout the entire depth of the battlefield.

Three closely related sets of activities--deep, close, and rear--characterize operations within an AO. Commanders fight throughout the depth and breadth of their AO using deep, close, and rear operations simultaneously in a way that will appear to the enemy as one continuous operation.

Simultaneous operations in depth seek to attack the enemy concurrently throughout the depth of the battlefield. They also seek to mass both effects and forces when and where necessary to accomplish the mission.¹³



n

Figure 2 – U.S. Army doctrinal concepts of contiguous and noncontiguous battlefield organization with Close (Main), Deep, and Rear areas of operations from FM 100-15, Corps Operations, figure 2-2

While this concept does not contradict joint doctrine, it does raise battlespace management issues. It is not assigned, so it does not have clearly defined areas of responsibility or clear supported / supporting relationships. It does, in fact, cut across those established areas of responsibility and supported / supporting relationships. The doctrinal concept of deep operations raises particular issues with the supported / supporting relationships and therefore warrants more detailed discussion.

Deep operations are fundamentally an extension of the fight across time and space. In executing synchronized and integrated deep operations, the corps is effectively creating the same kind of effect upon an enemy that parallel warfare does in Air Force doctrine. It seeks to present

the enemy with an unsolvable dilemma. FM 100-15 describes deep operations in the following way:

Corps deep operations are directed against enemy forces and functions beyond the close battle. They may be separated from the close battle in time or space or both. The commander can execute deep operations by combining maneuver, fire support, and/or command and control warfare (C²W) supported by intelligence. When conducting simultaneous attacks in depth, the corps employs long-range intelligence-acquisition and targeting assets, including EW and joint assets. The corps uses these to track enemy forces, to complicate their operations, and to determine the effects of corps strikes in depth.

The corps normally conducts deep operations against the enemy's uncommitted forces or resources to prevent him from using them where and when he wants on the battlefield. Goals of deep operations include--

- Limiting the enemy's freedom of action.
- Altering the tempo of operations in favor of the corps.
- Denying the enemy the capability to concentrate his forces.
- Isolating the close fight.
- Destroying the enemy's will to fight.

Whether in the offense or defense, deep operations perform one or more of the following functions:

- Interdicting enemy LOCs.
- Preventing the enemy's counterattack or his employment of follow-on forces.
- Destroying units and critical targets.
- Cutting off routes of withdrawal.
- Providing the commander with information and intelligence about enemy capabilities in depth.¹⁴

The listed functions performed by deep operations reflect most of the interdiction goals and functions outlined in JP 3-03, Doctrine for Joint Interdiction Operations. Its very definition of interdiction identifies interdiction as, "an action to divert, disrupt, delay, or destroy the enemy's surface potential before it can be used effectively against friendly forces."¹⁵ Army deep operations seek to accomplish this within its assigned battlespace and in conjunction with theater- and/or JOA-wide interdiction efforts.

Army forces establish a distinct planning and coordination system for these operations. At Corps level, these functions are accomplished by the Deep Operations Coordination Cell (DOCC). FM 100-15 describes the DOCC and its role:

Deep operations are operations directed against enemy forces and functions not engaged in the close battle. Successful deep operations at the corps level require the careful and continuous synchronization of activities between the corps' G2, G3, EW officer, aviation brigade, FSE, air defense element (ADE), A²C² cell, ASOC, and other agencies as the requirements of the operation might dictate.

The technique of using an ad hoc targeting cell to focus the activities of all of the participants involved in the planning and execution of deep operations is inefficient and inappropriate for missions of this magnitude. The solution is to use a deep operations coordination cell (DOCC), usually within the main CP. The DOCC's role is to act as the battle C² facility, which exists to support the successful execution of deep operations.¹⁶

Army forces also provide a separate liaison organization to act as the interface between the ARFOR headquarters and the JFACC. The Battlefield Coordination Detachment (BCD) is the face-to-face interface between the ARFOR commander and the JFACC and his staff. FM 100-13, Battlefield Coordination Detachment, outlines their mission:

The BCD mission is to establish the ARFOR liaison and interface with the JFACC. The BCD eases the coordination and synchronization of JFACC air and ARFOR ground operations. The BCD mission is performed by accomplishing the following:

- Exchanging operational and intelligence data between the JFACC and COMARFOR.
- BCD interpretation of the land battle situation for the JFACC and the air operations situation for the COMARFOR.¹⁷

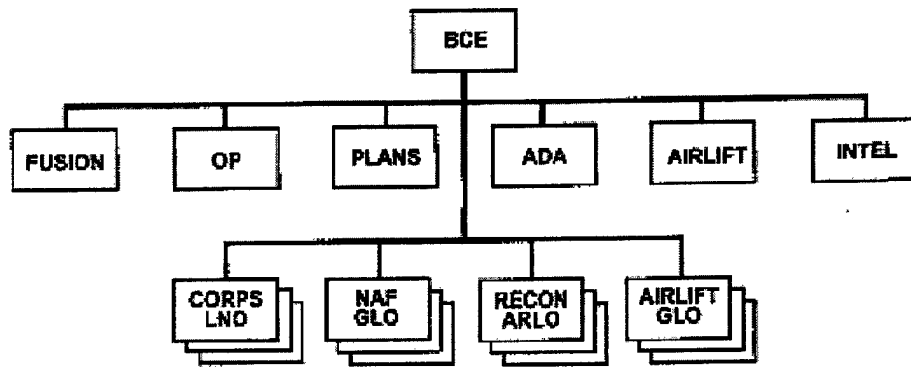


Figure 3 – Battlefield Coordination Detachment Elements and Organization from FM 100-13, Battlefield Coordination Detachment, figure 4-8.

This critical interface provides a number of functions, some implied rather than specified, related to the question of simultaneous attack within the same battlespace. They are the primary conduits of information between the COMARFOR and the JFACC. FM 100-13 describes the functions performed by the BCD:

As the ARFOR commander's representative in the JAOC, the BCD ensures the JFACC is aware of the following:

- The COMARFOR's intent
- Scheme of maneuver
- Concept for application of ground, naval, and air assets in the ARFOR AO.

The BCD monitors and interprets the land battle for the JFACC staff. It passes ARFOR operational data and operational support requirements from the COMARFOR to the JFACC and participating multinational forces to include the following:

- CAS
- AI
- Manned and unmanned reconnaissance and surveillance
- Joint suppression of enemy air defense (JSEAD)

The BCD also communicates the COMARFOR's decisions and interests to the JFACC.¹⁸

This organization performs what is primarily a liaison function, however. They are not direct participants in ARFOR planning and do not normally have decision-making authority. The COMARFOR may elect to delegate decision-making authority to them if the situation so warrants but this is not their doctrinal role.¹⁹ That authority is retained by the COMARFOR and executed by the DOCC. In essence, the only face-to-face interface with the joint interdiction planner and executor is an information conduit rather than an organization that plans and executes operations that affect the JFACC and his assigned responsibilities.

Air Force Doctrine

Although a relative late-comer to establishing formal doctrine for its related operations, the Air Force has made great strides in establishing its doctrinal perspective over the last several years. As such, its doctrine tends to be extremely current and reflects existing concepts and procedures. Air Force Doctrine Document 2-1.3, Counterland, establishes the airman's perspective on interdiction operations. Its definition of interdiction matches, almost verbatim, the joint definition. AFDD 2-1.3 defines air interdiction (AI) in the following way:

Air Interdiction, to include both lethal and non-lethal systems, is employed to destroy, disrupt, divert, or delay the enemy's surface military potential before it can effectively engage friendly forces, or otherwise achieve its objectives.²⁰

AFDD 2-13 establishes several types of AI. This sub-division of interdiction outlines the ideas behind the Air Force's approach towards both planning and executing interdiction operations. AFDD 2-1.3 identifies preplanned and nonpreplanned AI as the two types of AI with several types on nonpreplanned AI as a sub-set. Preplanned AI is the normal method of operation:

This mode is used to hit specific targets that are known in advance, and detailed intelligence information is available to support strike planning. Preplanned attacks are normally flown against fixed targets or against mobile targets that are not expected to move in the interval between planning and execution.²¹

AFDD 2-1.3 also outlines several types of nonpreplanned or flexible AI:

Armed reconnaissance, also known as "armed recce" and "road recce" is a form of AI that is planned against a particular area, rather than a particular target. The area may be defined by a box or grid, or may be defined as a stretch of an LOC such as a railroad, highway, or river. When specific killboxes are used for this purpose, the mission is sometimes known as "killbox AI." Armed reconnaissance is normally flown into areas where lucrative targets are known or suspected to exist, or where mobile enemy surface units have moved to as a result of ground fighting.

In cases where a specific area to search for enemy AI targets cannot be predetermined, missions may be flown in an airborne alert or on-call status. The appropriate C2 agency provides guidance to a specific target, a killbox or other type of coordinating measure to perform armed reconnaissance, or clearance to proceed to a backup target if available.

Real-time targeting is emerging as a viable means of attacking time-critical targets using AI assets. Often flown from an airborne alert status, this form of AI may rely on an offboard sensor such as the joint surveillance, target attack radar system (JSTARS) to provide initial target detection and attack targeting information. Response time can be as short as a few minutes, depending on the distances and C2 arrangements involved.²²

Air Force doctrine recognizes the inherent responsibilities associated with the supported / supporting relationships established in joint doctrine. AFDD 2-1.3 clearly states that. "When flexible AI is flown in direct support of the ground component, the target priorities should reflect those established by the ground component and communicated via the battlefield coordination detachment (BCD) or the theater air-ground system (TAGS)."²³

The Air Force also clearly articulates the unique benefits of close coordination between surface force plans and actions and air maneuver and AI. Doctrinally, the Air Force recognizes the need to closely pair AI with surface force plans. AFDD 2-1.3 states:

An important factor in optimizing air interdiction operations is the integration of aerospace maneuver with surface maneuver. Planning and conducting AI and surface operations within a coherent framework enhances their synergistic effect, in those operations involving both aerospace and surface forces. Proper integration can create a dilemma for the enemy commander as he reacts to the resulting combined and complimentary effects. ... Close coordination among all components will help maximize enemy vulnerability to air interdiction.²⁴

The Air Force provides a command and control system for the use of aerospace power within a theater of operations. Just as the Army provides a system for control of its deep operations and a liaison to the JFACC, the Air Force provides a similar system for the employment of aerospace power exterior to the surface component commander's AO and within it.

The Aerospace Operations Center (AOC) is the centerpiece of this system. The AOC is also known as the Joint Air Operations Center (JAOC) during joint operations and the Combined Air Operations Center (CAOC) during multinational operations.²⁵ AFDD 2-1.3 describes the AOC / JAOC / CAOC as, "The means by which the JFACC exercises centralized command and control of theater air assets and turns the JFC's guidance into an air operations plan, allocating resources, and tasking forces through ATOs."²⁶ As stated earlier, the Army interface with the AOC is the BCD.

The Air Force fields a series of support teams to Army commands to support air operations in support of ground forces. The Air Support Operations Center (ASOC) is "the primary control agency of the TACS for the execution of aerospace power in direct support of ground operations."²⁷ AFDD 2-1.3 describes the roles and functions of the ASOC:

Normally aligned with the senior Army tactical level of command, the ASOC coordinates and directs aerospace support for land forces at corps level and below. It is directly subordinate to the JAOC, and is responsible for the coordination and control of air component missions within its associated ground component's area of operation (AO). This AO typically extends to the fire support coordination line (FSCL) for actual control of mission execution, and may extend to the corps forward boundary for planning and advisory purposes. In that latter capacity, the ASOC commander and staff advise the corps commander on CAS employment and target nominations for those AI and SEAD missions that support the ground force and that part of tactical reconnaissance and airlift that directly supports the Army. ... Air missions that do not directly support the ground component but are flown inside the ASOC's control area will normally be coordinated through the ASOC to deconflict with ground force maneuver and fires and to receive target and threat updates. The ASOC also provides fast reaction to requests for air

support and is capable of assisting time-critical targeting and friendly force location information to CAS, AI, SEAD, air mobility, surveillance, and reconnaissance missions.²⁸

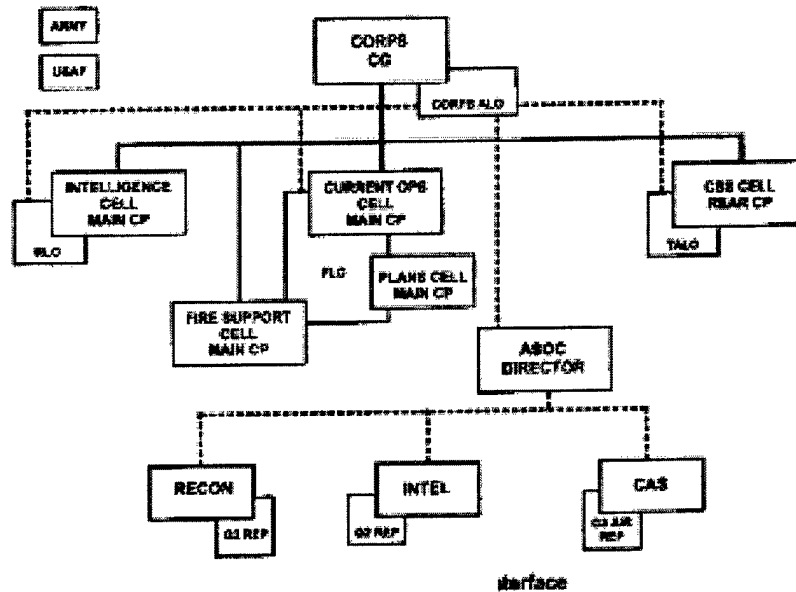


Figure 4 – ASOC and U.S. Army Corps staff interface, from FM 100-15, Corps Operations, figure 4-9

Doctrinally, authority and control over aerospace assets in support of ground operations varies. For good reasons, air component commanders adhere to the tenant of Centralized Control and Decentralized Execution. This tenant of airpower has historically provided theater commanders with the most efficient and effective application of limited airpower assets. As the tempo and scale of theater operations has increased, air component commanders have balanced competing demands for airpower through prudent allocation of that power at both operational and tactical levels. The JFACC seeks to balance the inherent flexibility and versatility that centralized control offers the JFACC with the increased responsiveness that delegated authority and control provides. AFDD 2-1.3 outlines several options related to this issue:

The AOC will normally delegate launch or commit authority for alert CAS missions to the ASOC, providing faster response time when air support is needed. The decision to delegate re-targeting authority for specific short-of-the-FSCL AI

missions to the ASOC will depend on actual circumstances, including the timeliness required for getting desired effects on target. *Unless specifically delegated, however, targeting authority for all AI missions remains with the AOC.* (Emphasis in the original)

Control and coordination of air interdiction not within the ASOC's area of assignment takes a different form. AI's control and coordination measures are defined by their relation to the FSCL. AFDD 2-1.3 states that, "The control measures used for AI missions will vary greatly depending on the type of target attacked and whether the target sits beyond or short of the FSCL."²⁹ When AI occurs beyond the FSCL, Air Force doctrine calls for a more fluid means of control and coordination:

For missions flown against preplanned targets beyond the FSCL, which normally comprises the bulk of AI, there are no special requirements for airspace control. Missions will normally check in with a command and control agency such as the airborne warning and control system (AWACS) and monitor a designated strike frequency to and from the target area for threat information and other updates.³⁰

In essence, in the eyes of the Air Force, any operation short of the FSCL, whether it is CAS, AI, or strategic attack, places additional coordination requirements upon the use of JFACC assets. This reflects a significant limit on both control of assets and on targeting authority. This view subconsciously creates a desire for separation of forces in an effort to minimize the impact of coordination. By tying it to the FSCL, we create the doctrinal "lightning rod" that exists today.

Notes

¹ Joint Doctrine Capstone and Keystone Primer, 15 July 1997, p. 83

² Ibid

³ Joint Publication 3-0, Doctrine for Joint Operations, 1 February 1995, p III-14.

⁴ Joint Publication 3-03, Doctrine for Joint Interdiction Operations, 10 April 1997, pp. II-7 to II-8.

⁵ Ibid, p. II-4

⁶ Ibid, p.II-11

⁷ Ibid, pp.II-11 to II-12

⁸ Ibid

Notes

- ⁹ Ibid
- ¹⁰ Ibid. pp. II-4 to II-5.
- ¹¹ Field Manual 100-15, Corps Operations, , n.p.; on-line, Internet, 12 February 1999, available from <http://155.217.58.58/cgi-bin/atdl.dll/fm/100-15/Ch2.htm#s3>
- ¹² Ibid
- ¹³ Ibid
- ¹⁴ Ibid
- ¹⁵ Joint Publication 3-03, Doctrine for Joint Interdiction Operations, 10 April 1997, p. v
- ¹⁶ Field Manual 100-15, Corps Operations, , n.p.; on-line, Internet, 12 February 1999, available from <http://155.217.58.58/cgi-bin/atdl.dll/fm/100-15/Ch4.htm#s3>
- ¹⁷ Field Manual 100-13, Battlefield Coordination Detachment, 5 September 1996, p. 1-1.
- ¹⁸ Ibid, p. 1-2
- ¹⁹ Ibid
- ²⁰ Air Force Doctrine Document 2-1.3, Counterland, 27 August 1999, p. 23
- ²¹ Air Force Doctrine Document 2-1.3, Counterland, 27 August 1999, pp. 26-27
- ²² Ibid, p.27
- ²³ Ibid
- ²⁴ Ibid, pp.28-29
- ²⁵ Ibid, p.50.
- ²⁶ Ibid
- ²⁷ Ibid, p.51
- ²⁸ Ibid, pp. 51-52
- ²⁹ Ibid, p.64
- ³⁰ Ibid

Part 3

Doctrinal Shortfalls and Their Impact

There is still a tendency in each separate unit ... to be a one-handed puncher. ... 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 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.

— General George S. Patton, Jr.

The Effect of Existing Doctrine

There is little dramatic distinction between the various service definitions and concepts for operations designed to shape the impact of enemy surface military power. Joint doctrine defines what types of effects and operations are covered under the name of joint interdiction. Army service doctrine expands on its allowed function of shaping the close fight through interdiction in its AO, calling it deep operations. The Air Force describes the same effects and operations under its concept of air interdiction. Definitions of control measures such as the FSCL are universal and uniformly used.

So, what is the issue that creates the contention associated with these operations? The contention stems from the placement of the dominant control measure from which most responsibility and requirements develop or are defined: The Fire Support Coordination Line. Yet as we have seen, debate over where this control measure is placed, how and when it is changed,

and the resultant cascade of changes such placement or movement creates overshadows a deeper, more important issue. Where the line is placed, even the need for the coordination measure, is based on the lack of an effective coordination and control system that would allow rapid clearance of air or surface operations within a shared battlespace. If such a system existed, the decisions over supported / supporting relationships, control over the engagement of targets on one side of the measure or the other, and theoretically the very need for an FSCL becomes moot.

So, how can we fight together in the same battlespace? What type of coordination and control system would allow both services to attack targets, either mutually engaging the same target or engaging different targets in relative proximity to each other, within the same battlespace? What would this system have to be capable of doing? Really nothing more than the TACS, TAGS, BCD, and DOCC perform today. Each service currently has in place (or is currently fielding) systems that provide the type of coordination required for simultaneous operations in the battlespace. The challenge is being able to do it in real-time and in a way that provides each service and echelon with a common situational awareness picture. This will require integration of organizations, functions, and interoperability of command, control, communications, and automation systems. It will demand a new approach in thinking about the joint fight in what may well be the decisive portion of the battlespace.

Requirements of the Coordination and Control System

The requirements of this system are inherent, yet separate, qualities in each of the existing support and liaison systems that make up air and ground component command and control. Four critical nodes, the AOC's Combat Plans and Combat Operations Divisions, the ASOC and supporting ABCCC, the BCD, and the DOCC, all provide some portion of the requirements but do not currently provide them in a coherent and integrated fashion. In many ways, it is the

concurrent and parallel execution of these functions by separated elements that drive the need for separation of effort rather than integration of it.

The Planning Function

Each element provides a planning function. In conjunction with their own intelligence, surveillance, and reconnaissance (ISR) means, each element provides a planning function for the employment of lethal and nonlethal effects on surface targets.

The AOC's Combat Plans and Combat Operations Divisions provide this planning function across the ATO cycle for theater level strategic attack and interdiction with the concurrence of the JFC via his apportionment decision or through the deliberation and recommendation of a Joint Targeting Board. The Combat Plans Division provides the majority of this planning as it focuses on the production of the next day's ATO. Yet as we see a rise in dynamic retargeting options within the current ATO cycle via the new concepts of "kill box" AI and flex targeting, a growing amount of planning (albeit rapid planning) is also coming from the Combat Operations Division. In either case, these two divisions of the AOC conduct the vast majority of the planning function for Air Interdiction.

The ASOC provides planning support for the application of airpower in support to ground component commanders and their plans. The ASOC provides this function in conjunction with the DOCC who specializes in the application of Army indirect fires and organic Army deep operations systems. Both support and assist the ground component commander in selecting nominated targets for AI within his AO.

The Liaison Function

Each element provides a liaison function to each sister service. This liaison function passes a variety of information requirements between the air component and the ground component

necessary for the safe and effective execution of each other's operations. This function includes threat data and targeting information, friendly force location and activities, and current coordination measures controlled by each that are currently in effect.

The air component commander does this through the ABCCC, the ASOC / ALO and TACPs. These elements are provided with adequate communications and battle management systems to monitor the greater air picture and control air assets operating in their sector. The BCD and Ground Liaison Officers (GLOs) provide a similar function for the ground commander. The BCD / GLOs provide on-site liaison with the AOC and Air Force Wings and have adequate communications and automation support to track and report critical information between the two components.

The Coordination Function

In both cases, however, it is important to note that neither of the elements is part of both components' planning functions; they participate in one or the other. The ASOC is a key player in ground component planning, in conjunction with the DOCC, but is not an active participant in AOC planning. The BCD has teams in both the Combat Plans and Combat Operations divisions of the AOC but is specifically not part of the ground component's planning process. This leaves a critical function, coordination, unfilled in any realistic way, by existing structures and organizations. While both the ASOC and the BCD are tasked to provide this function, they are unable to because they lack integration into both planning worlds. Physical geographic separation has made this almost impossible in previous conflicts. Yet, information technology that is currently being fielded may provide a manageable solution and finally allow both integrated planning and detailed, real-time coordination possible.

The Deconfliction Function

A final function that these existing elements provide is a deconfliction function. Modern warfare's battlespace, despite its ever-increasing size and scope, remains a crowded place. The battlespace in which air power and land power attempt to conduct their respective operations is particularly congested with respect to the airspace surrounding it. The majority of weapon systems capable of conducting attacks in this battlespace utilize airspace to arrive over their respective targets. While there are numerous ways to deconflict this airspace (time, distance, and altitude), these methods all have one thing in common: the segregate rather than integrate. The requirement to segregate the flight paths of various weapons and platforms will remain. Attack helicopters, fixed wing aircraft and projectiles of various forms will never be able to occupy the exact same airspace simultaneously without catastrophic consequences. Yet our current methods for preventing this disaster expand that separation requirement to great distances because of one simple fact. We lack a timely, accurate, and reliable way of knowing where each element in the battlespace is, where it will be, and when it will be there relative to an ever-changing target location. In this particular functional area, evolving information management systems and their associated communications architecture offer ground and air component commanders their greatest opportunity. These systems, paired with a refined set of organizational functions and responsibilities, offer air and ground a potential solution to the persistent problem of simultaneous operations within the same battlespace.

"When two work side-by-side, one or the other spots the opening first if a kill's at hand..

*When one looks out for himself, alert but alone,
his reach is shorter – his sly moves miss the mark."*

— King Nestor of Pylos
In Homer, The Iliad

Part 4

Integrated Coordination and Battlespace Management: One Answer

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

— GEN George Joulwan, then USCINCEUR

One alternative system of planning, liaison, coordination, and deconfliction may provide the answer to this long-standing problem of simultaneous operations by air and ground components within the same battlespace. It transitions existing organizations, systems and relationships into a conceptual model that may provide the timely, accurate and reliable picture of the battlespace and its players that has so long eluded warfighters. It does so by applying new battle management tools with updated organizational functions. While the author in no way assumes it to be a complete solution to the problem, he does believe that it points the way towards an eventual solution.

The Conceptual Model

The key concept to the model is the developing availability of a common tactical picture (CTP)¹. This concept is at the heart of Joint and service efforts to develop and employ new information management automation, automatic position location, and reliable digital communications. CTP will provide the warfighter, regardless of the color of his uniform, with a

common framework of information on friendly and enemy actions and locations in a flexible configuration that allows each element to tailor his view to his particular needs. This fusion of information will enable the different elements of the current command and control organizations to plan, control, and coordinate their actions in a manner and to a level yet unheard of in the history of warfare. Most importantly, this fusion will allow real-time deconfliction of mutually supporting or independent operations within the same battlespace.

The systems most relevant to the question simultaneous operations by air and ground forces within the same battlespace are the Advanced Field Artillery Tactical Data System (AFATDS) and the Contingency Theater Automated Planning System (CTAPS). These planning and management systems, when combined with digital communications and information distribution systems, provide the gateway to CTP for the air and ground components. Both systems are hardware compatible and share Joint Variable Message Format (JVMF) message parameters enabling them to exchange agreed upon digital messages and information.²

In many cases, these systems already exist within the same organizations. AFATDS is being fielded to all Fire Support Elements (FSEs) at Corps and below and to the BCDs. Corps DOCCs are currently utilizing an alternate automated planning system for planning deep operations, but the functions provided by this system are currently "rolled" into the FY 99 version of AFATDS software.³ As AFATDS are fielded in the BCD and positioned in both the Combat Plans and Combat Operations Divisions of the AOC, access to the relevant CTP provided by the system is immediately accessible to Air Interdiction planners and executors.⁴

DIGITIZED BCD OBJECTIVE CONFIGURATION

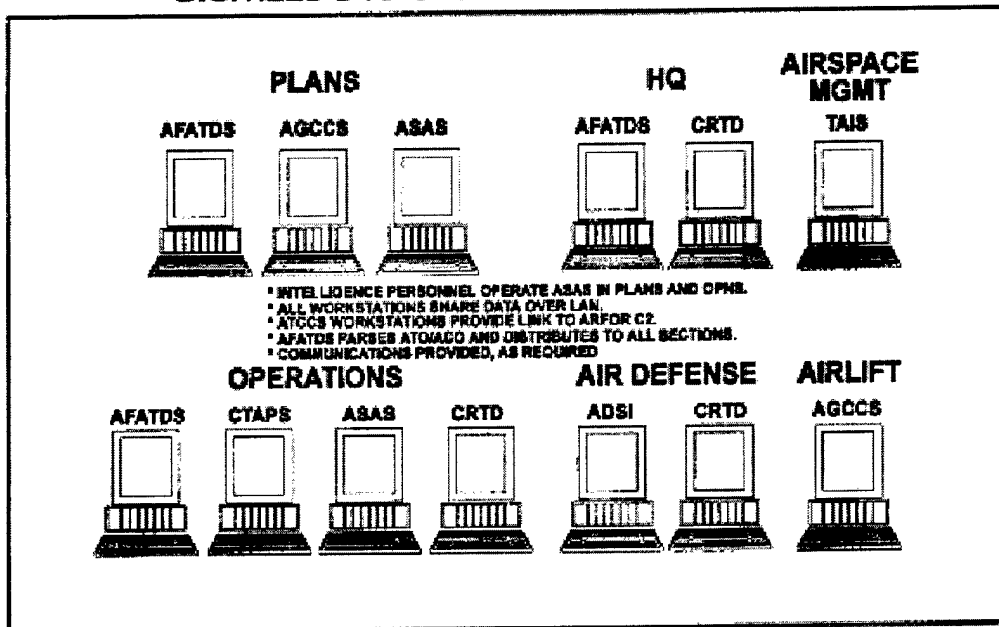


Figure 5 – The objective configuration of an automated BCD from FM 100-13, Battlefield Coordination Detachment, figure 12

Future systems will strengthen this linkage. The Global Command and Control System – Army (GCCS-A) will allow direct interface with CTAPs and provide relevant CTP information directly to the CTAPs system and USAF networks.⁵

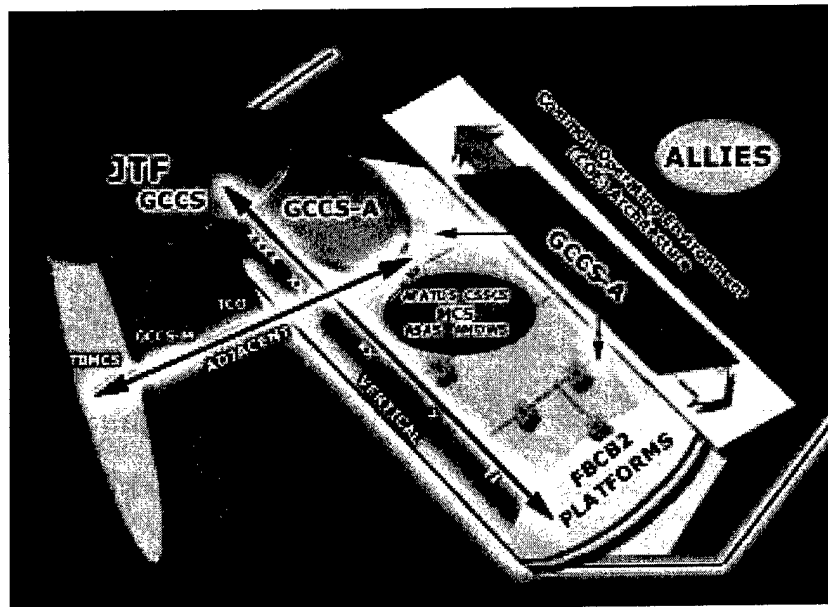


Figure 6 – GCCS-A architecture with AFATDS and JTF level interfaces from the Army Tactical Command and Control System Homepage at <http://160.147.21.82/wsdocs/stccs/gccsa.asp>

The conceptual model then provides all planners and liaison elements with a common picture of the battlespace and provides real-time updates to friendly and enemy actions and locations. Yet “real-time” is not instantaneous. Transmission times delay information dissemination to some degree. For planning and coordination purposes, these systems will suffice. But to ensure safe simultaneous operations within the same battlespace, we must further augment the deconfliction function of the system with a C2 platform capable of filling the gap.

The ABCCC offers an existing solution to this problem. As an airborne command and control platform capable of providing voice and digital communications with both the ground and air components executing operations within the same battlespace, it is the ideal “on-scene” commander for such operations. Properly manned by liaison officers from the ground component headquarters executing deep operations, and as a subordinate command and control element from the AOC, it offers an ideal “tactical command post” for deep operations and near

interdiction. Indeed, it has performed this role for over a decade, successfully performing these kinds of immediate, on-scene, coordination and deconfliction missions for ground and air operations in Desert Storm.⁶

The Model in Execution: A Hypothetical Example

As combat operations unfold, the BCD provides the AOC with substantial intelligence on enemy threat activities via its connection to the All Source Analysis System (ASAS), augmenting USAF collection efforts with a fused Army picture of enemy locations and activities⁷. This augmentation provides vital situational awareness of ground targets of interest to the theater commander enhancing the air interdiction effort. As the ground component commander begins preparing his plans for land operations in support of the JFC's concept of the operation, detailed information on his courses of action and resulting scheme of fires and maneuver are available to the JFACC via the AFATDS / GCCS-A link. Ground component nominations for AI are passed directly into CTAPS for inclusion in the theater Air Interdiction campaign when and where they meet theater interdiction priorities, further supported by detailed and continuous update of the target via the ASAS link⁸. Having established an FSCL for planning and coordination purposes only, targets on either side of the line are rapidly coordinated by the two staffs via their common picture of the battlefield. Those targets not selected by the Joint Targeting Board for inclusion in the Air Interdiction campaign are entered into the ground component's deep operations plans, as they still remain vital to the ground commander's efforts to shape his battlespace.⁹ The DOCC elects to engage a target with an ATACMs mission but will not be in range until H-3, well inside the ATO planning cycle. The DOCC passes the planned mission skeleton (exact firing location or target location are not yet known) to the AOC via the BCD in order to include the mission in the ATO for planning purposes. The target is

tracked by Army ISR systems during the intervening time span, passing the updated data automatically to the AOC via the AFTADS link. Recognizing that the mission will be near the FSCL but unsure of what side of the FSCL it will finally end up on, the mission is included in the ground operations brief to the ABCCC GLOs assigned from the ground component¹⁰. As the operation unfolds, the firing position for the MLRS unit assigned to execute the ATACMs unit is updated and passed to the AOC for inclusion in its plans, providing the JFACC with a continuous visual picture of both the shooter and its intended target. The Combat Operations Division of the AOC begins to plan out the notification requirements of the impending launch and transmits a warning order to both the AWACS and ABCCC assigned to the sector and to aircraft who may see the launch and mistake it for a SAM launch¹¹. As the target approaches ATACMs range, the MLRS unit begins its pre-launch coordination. The Fire Direction Center (FDC) transmits the ATACMs Platoon Air Hazard Area and Target Air Hazard Area messages, identifying the exact airspace effected by the launch and engagement, to all its higher headquarters which automatically relays the messages to all required agencies including the ASOC and AOC¹². ABCCC is notified and assumes control of the mission to affect local and final clearance and deconfliction of the airspace. Having tracked aircraft and ground forces in proximate range of the target area, they rapidly clear the airspace and execute the engagement. With the detailed picture provided by the close coordination and fused tactical picture, those air assets executing AI and CAS close to but outside the flight corridor are unaffected by the temporary engagement. The ABCCC and/or FAC clear aircraft, momentarily held outside the flight corridor, to reenter the target area as soon as the "Splash" command is monitored via voice and digital links.

Notes

¹ Multiservice Tactics, Techniques and Procedures Manual JTF-IM, Multiservice Procedures for Joint Task Force Information Management, April 1999, pp III-1 and III-2.

² Special Text 6-3-1 (Draft), AFATDS Digital Leaders Guide, Chapter 1 and 6. In reviewing the interoperability charts and narratives, one can identify the various JVMF formats currently embedded in the 99 version of software. Its emphasis is on improving Joint and Air operations interoperability. The interoperability of hardware was further confirmed in testing reviewed in "PEO CCS AFATDS Interoperability Demonstrated", *The IMA Viewpoint*, Summer / Fall 1994, as cited in Rice, Robert J., "Operational Fires for the 21st Century: The Argument for a Joint Fires Coordinator" AU/ACSC Research Paper/232/1998-04, p. 28.

³ Special Text 6-3-1 (Draft), AFATDS Digital Leaders Guide, Chapter 1 and 6. The 99 version of software places its emphasis on improving Joint and Air operations interoperability. The detailed improvements for rotary wing operations and ATACMs fires are designed to incorporate the functions currently provided by the automated deep operations coordination system (ADOCS) currently used by most DOCCs. In doing so, it will reduce the number of automation systems required to provide the connectivity and functionality necessary for CTP.

⁴ Field Manual 100-13, Battlefield Coordination Detachment, 5 September 1996, p. 4-3.

⁵ Ibid, p.4-2

⁶ Discussion with LTC Randy Soboul, USA, who, as a Ground Liaison Officer aboard ABCCC in Desert Storm, repeatedly executed these simultaneous, attack operations on both sides of the FSCL during the ground campaign.

⁷ This was recognized as a substantial benefit from this type of linkage during recent operations in Kosovo. The BCD assigned to the CAOC in Italy provided vital expertise and targeting data on Serbian ground forces via their link to TF Hawk as cited in Bridgeford and Grossman, "BCD Targeting for Operation Allied Force", *Field Artillery*, January/February 2000, pp. 17-18. The "value-added" associated with an information link to ground component intelligence sources with which to build a better enemy ground order of battle would tend to reinforce the idea that attack of surface forces by air assets can be greatly enhanced with intelligence provided by ground force ISR systems and analysts.

⁸ ⁸ Field Manual 100-13, Battlefield Coordination Detachment, 5 September 1996, p. 4-3. The integration of ASAS terminals into the Combat Operations and Combat Plans divisions of the AOC is listed as the standard, "planned" configuration of BCD automated interfaces within the AOC. As stated previously, AFATDS will provide a direct input of ground nominations into the CTAPS system for inclusion in ATO planning and apportionment.

⁹ This would be the recommended "first-cut" on which systems should engage which target, all other considerations being equal. Obviously, there are targets better served by using unmanned weapons like ATACMS and there are a number of targets for which ATACMS does not provide adequate effects on target. All things being equal, however, the ground component should allow the JFACC to first consider the target if it is beyond the FSCL and engage beyond it only when the target is not included in the MAAP / ATO for that cycle. This will minimize the coordination required and frankly "save" his limited deep attack options for those targets he must engage but are not prosecuted by the JFACC.

¹⁰ As indicated, I foresee the ABCCC acting as the "on-scene" controller for simultaneous air and ground attack operations. In Army parlance, it acts as the TAC, providing positive control over crucial missions. By having ground component liaisons from the respective headquarters, it

Notes

provides a reliable and "known quantity" for the ground component commander to rely on. LTC Soboul proposed this concept of trained and ready GLOs within each Corps and to whom credit and acknowledgment is deserved.

¹¹ This was a problem identified again in recent operations in Kosovo. Both ATACMs launches and potentially standard MLRS rocket launches would look like SAMs to nearby pilots. Additionally, these recent operations noted that U.S. Army Q-36/37 radars are detected by USAF ELINT and EW aircraft adding the potential for HARM missile-related fratricide incidents unless locations and radiation timeframes are published at the joint level. AFATDS can transmit location and launch messages for MLRS missions and can provide location and radar search zones for notification purposes to the AOC via multiple digital means, further enhancing the joint air and ground common tactical and operational picture. Noted in Bridgford, Hersey, and Varner, "Lessons Learned from Operation Allied Force in Kosovo", Field Artillery Magazine, January/February 2000, p.12

¹² Special Text 6-30-30, The Army Tactical Missile System (ATACMS) Family of Munitions TTP, pp 19-20. These message formats are available for transmission now. They simply need to be transmitted and routed to appropriate agencies for airspace clearance.

Part 5

Conclusions

Essentially, situational awareness is brought about by equipping combat units with onboard computers, position-location devices, and digital communications capability. Through this combination of technologies, each platform ... can instantaneously and continuously answer three questions that have befuddled soldiers since the beginning of history: "Where am I?", "Where are my buddies?", "Where is the enemy?"

— Robert R. Leonard
"A Culture of Velocity" in Digital War

In being able to answer these three questions with accuracy and reliability over a continuous period of time, we get at the root opportunity presented by the explosion of information and communications technologies on the modern battlefield. In solving these age-old questions we also have the opportunity to achieve a fundamental goal of joint operations – the integration of combat power to produce unity of effort and exploit total force capabilities.¹

As the number of available systems capable of striking at the enemy at long range has multiplied, the need to integrate air and ground efforts in certain parts of the battlespace has grown. Yet until these battle management systems that are now entering service have appeared, we have lacked the ability to effectively do so. We now possess the means but lack the effective organizations, tactics, techniques, and procedures to make use of them. The Army and Air Force team must now look beyond their existing processes and organizations and begin to make use of them.

The model presented here is but one generalized possibility with which to solve the dilemma of simultaneous air and ground operations within the same battlespace. Systems experts, more skilled in automation and communications architecture than the author, should take this modest starting point and develop a more coherent structure in which to execute this concept or some derivative. Yet the possibilities are there and warrant further development.

The services are at a crossroads not dissimilar to that faced by the American Army and its Air Corps in the 1920s. At that point, a major question within the service was the best use for, or any use for, the radio. Having been a technology planned for use on the battlefields of France at the end of World War I, these systems were not introduced in any realistic number until the 1920s. Attitudes of users, shaped by the successes of World War I, dismissed the new technology because of its initial unreliability. New technologies often do fail until they are refined through testing and use. Yet the revolution in warfare this technology would eventually bring to the warrior is now unquestioned.²

We face similar problems today. The technology is yet to be proven and our military has battle-proven experience and processes to fall back upon. Yet, the technology exists, must be mastered, and applied to our doctrine and to our warfighting procedures. For if we do not, history shows that someone else will.

Notes

¹ Joint Publication 6-0, Doctrine for Command, Control, Communications, and Computer (C4) Systems Support to Joint Operations, May 1995, p. viii.

² Summarized from Bateman, Robert L., "Pandora's Box" in *Digital War*, pp. 6-10. The parallel of a victorious military, significantly downsized, and attempting to modernize with RMA levels of technological change while in a severely constrained budgetary environment are uncanny.

Glossary

ABCCC	Airborne Battlefield Command and Control Center
ADE	Air Defense Element
ADOCS	Automated Deep Operations Coordination System
AFATDS	Advanced Field Artillery Tactical Data System
AFDD	Air Force Doctrine Document
AI	Air Interdiction
AI	Area of Interest
AO	Area of Operations
AOC	Air Operations Center
ARFOR	Army Forces
ASAS	All Source Analysis System
ASOC	Air Support Operations Center
ATACMS	Army Tactical Missile System
ATO	Air Tasking Order
AWACS	Airborne Warning and Control System
BCD	Battlefield Coordination Detachment
C2	Command and Control
C2W	Command and Control Warfare
CAOC	Combined Air Operations Center
CAS	Close Air Support
COMARFOR	Commander Army Forces
CTAPS	Contingency Theater Planning System
CTP	Common Tactical Picture
DOCC	Deep Operations Coordination Center
FDC	Fire Direction Center
FSCL	Fire Support Coordination Line
FSE	Fire Support Element
FOFA	Follow on Force Attack
GCCS	A – Global Command and Control System - Army
GLO	Ground Liaison Officer
ISR	Intelligence, Surveillance, and Reconnaissance
JAOC	Joint Air Operations Center
JFACC	Joint Forces Air Component Commander
JFC	Joint Force Commander
JOA	Joint Operations Area
JSEAD	Joint Suppression of Enemy Air Defenses
JSTARS	Joint Surveillance, Target Attack Radar System
JTB	Joint Targeting Board

JVMF	Joint Variable Message Format
LOC(s)	Line(s) of Communication
MAAP	Master Air Attack Plan
MLRS	Multiple Launch Rocket System
TACS	Theater Air Control System
TAGS	Theater Air Ground System

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