Theater Commander's Utilization Of Tactical Fighter Assets ... Train Like We'll Fight, Or Are We Shooting Ourselves In The Foot?

A Monograph
by

Lieutenant Colonel John N. Higgins
United States Air Force

School of Advanced Military Studies
United States Army Command and General Staff College
Fort Leavenworth, Kansas

Second Term 90-91

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

GENCY USE ONLY (Leave blank)	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
		MONOGRAPH

LE AND SUBTITLE
THEATER COMMANDER'S UTILIZATION OF TACTICAL ITER ASSETS ... TRAIN LIKE WE'LL FIGHT, OR ARE WE OTING OURSELVES IN THE FOOT?

5. FUNDING NUMBERS

ITHOR(S)
LT COL JOHN N. HIGGINS, USAF

RFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
SCHOOL OF ADVANCED MILITARY STUDIES
ATTN: ATZL-SWV
FORT LEAVENWORTH, KANSAS 66027-6900
COM (913) 684-3437 AUTOVON 552-3437

8. PERFORMING ORGANIZATION REPORT NUMBER

ONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)

10. SPONSORING/MONITORING AGENCY REPORT NUMBER

UPPLEMENTARY NOTES

DISTRIBUTION/AVAILABILITY STATEMENT
APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED

12b. DISTRIBUTION CODE

BSTRACT (Maximum 200 words)
SEE ATTACHED

UBJECT TERMS		15. NUMBER OF PAGES
CAMPAIGN	AIR COMPONENT COMMANDER	41
JFACC	OPERATIONAL ART	16. PRICE CODE
EXERCISES	AEROSPACE DOCTRINE	

SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNLIMITED

SCHOOL OF ADVANCED MILITARY STUDIES

MONOGRAPH APPROVAL

Lieutenant Colonel John N. Higgins

Title of Monograph: Theater Commander's Utilization of Tactical Fighter Assets ... Train like we'll fight, or are we shooting ourselves in the foot?

Approved by:

James J. Schneider, M.A. — Monograph Director

Colonel James R. McDonough, M.S. — Director, School of Advanced Military Studies

Philip J. Brookes, Ph.D. — Director, Graduate Degree Program

Accepted this 15th day of May 1991

ABSTRACT

THEATER COMMANDER'S UTILIZATION OF TACTICAL FIGHTER ASSETS ... TRAIN LIKE WE'LL FIGHT, OR ARE WE SHOOTING OURSELVES IN THE FOOT? by Lieutenant Colonel John N. Higgins, USAF, 41 pages.

This monograph addresses the perception that the U. S. Air Force does not consider air support to the U.S. Army a high priority. The support provided does not fully demonstrate the effectiveness of airpower assets concentrated on that portion of the theater of operations considered most important by the theater commander. Unless we properly demonstrate that effectiveness, we are not training as we expect to fight.

My research focuses at the theater level and the impact senior airman at that level have on fighter support to ground units. It begins with a review of Air Force doctrine and field performance. The scope is limited to the use of tactical fighter assets in direct support of ground units.

The areas of command and control, training methods, budget allocations, institutional bias, and doctrinal validity are used as criteria to make a comparison between doctrine and training performance to answer the research question: With respect to tactical air utilization at the theater level, are we, in fact training as we expect to fight?.

The paper concludes that we are not training as we expect to fight. Shortfalls were revealed in each area. For example, lack of air commander communication with his staff and land component commander; operational art, though discussed and advocated, is not adequately supported by explanatory details in doctrinal references; inadequate range instrumentation led to cancellation of Air Force participation at the National Training Center (NTC); and doctrinal mission priorities, although correct, there is doubt about the suggested ability to do them all at once.

Finally, the monograph addresses programs which have recently been established to correct shortfalls and presents a number of additional suggestions to correct deficiencies and ensure that we indeed train as we expect to fight.

TABLE OF CONTENTS

INTRODUCTION

> Sound military judgment and historical experience dictate the importance of educating and training forces in the way they intend to fight...To ensure the readiness of our forces, commanders must develop and implement training programs that build required war-fighting skills and that simulate, as closely as possible, the combat environment in which we expect to fight.[1]
>
> AFM 1-1

Success on future battlefields will demand the ability to enter the arena ready to fight. The luxury of a transition period may not be afforded before the combat challenge begins. Success on future battlefields will be a combined effort of ground, sea, and air components as demonstrated by Operation DESERT STORM in Southwest Asia. The superb planning and execution of that military success aside, we should not expect to enjoy such an extended transition period. In other words, if the next crisis involves an immediate entry into a shooting war, will we be ready?

The evidence to be introduced, suggests that we may not be.[2] For example, exercise after action reports received from battalion air liaison officers over an eighteen month period from January 1989 to June 1990, gave the impression that air support to the U.S. Army may not be a high priority for the U.S. Air Force.[3] The effect of the limited number of distributed sorties provided to the echelons at corps level and

below during joint training opportunities has created the impression that while every unit can expect some air support, there may not, in fact, be very many sorties available. Of those sorties that arrive at all, little effect may result.[4] Certainly, the Air Force must provide training to individual units with the associated dilution of effort. This level of effort, however, does not fully demonstrate the effectiveness of airpower assets when concentrated on the decisive portion of the theater of operations. Unless we properly demonstrate that effectiveness, we are not training as we expect to fight.

The easiest solution would be merely to correct the misperception of what the ground units can expect. That would only treat the symptom of an issue lying nearer the top of the Air Force command structure. Solutions, long-term cures, or explanations must be sought at a joint level high enough to provide service-wide impact.

METHODOLOGY

Research of this perceived problem will focus at the theater level and the impact senior airmen at that level have on fighter support to ground units. It will include a comprehensive review of United States Air Force doctrine and Air Force field performance from the perspective of an air component commander. The scope of this paper will be limited to the use of tactical

fighter assets in direct support of ground units.

Using the categories of **command and control, training methods, budget allocations, institutional bias, and doctrinal validity** as criteria, a comparison between doctrine and training performance will answer the research question: **With respect to tactical air utilization at the theater level, are we, in fact, training as we expect to fight?**

The following discussion outlines the parameters of each criterion. **Command and control** will include features of the traditional "integrated systems of doctrine, procedures, organizational structures, personnel, equipment, facilities, and communications that support command and control."[5] **Training methods**, very simply stated, are those actions taken in a peacetime or preconflict environment to prepare for wartime operations. **Budget allocations** are those dollars spent, directed, or set aside to support training methods. **Institutional bias** is the inclination, or habit, to view the environment with the limited perspective of one's own branch of armed service. **Doctrinal validity** is the ability of existing doctrine to remain consistent with historical evidence and to deal with both current and future situations.

Consistency with historical evidence applies particularly to lessons learned in other conflicts or service experience. Obviously, if technology or other

conditions have changed significantly relative to historical evidence, doctrine can not be expected to span the changing times. There should be signs of learning from experience rather than ignoring the evidence in the development of present doctrine.

Analysis of evidence, using these criteria, should show either that we are training correctly, or identify shortfalls and suggest corrective action to ensure that we do train like we plan to fight.

DOCTRINE REVIEW

> The purpose of basic doctrine has been to provide guidelines for employing airpower, but not a checklist of inflexible rules to be followed blindly. Doctrine which has proved irrelevant and ineffective has been abandoned and in its place, has come new doctrine, often the result of lessons learned during or after recent combat. In addition, doctrine has also been influenced by technological change and national policy.[6]
>
> AFM 1-1

Review of doctrine will cover the written guidance provided through multiple U.S. Air Force command levels, Joint Doctrine, and authoritative leaders. Doctrinal manuals usually provide the essentials, but often the timely advice and suggestions of those with vast experience can also provide keen insight to that doctrine and broaden the understanding of its application. Later, in Performance Review, an analysis of evidence will determine just how adequately our doctrine supports our preparation to train as we expect to fight.

Doctrinally, the first priority is air superiority. "Air superiority may be a relative situation, and it may occur in varying degrees."[7] The primary aim is to control sufficient airspace for the time necessary to keep the enemy's air forces from attacking your forces--air, ground, or sea--or preventing them from operating relatively unrestricted in the critical sector(s) of the battlefield.[8]

The second priority is interdiction. The air commander should cooperate with the ground commander and his scheme of maneuver in order to hit the enemy in depth. Such joint efforts will ensure that the full benefit of airpower is focused on the main objective. The air commander must remain constantly in touch with the operational situation. His effective orchestration of resources can have a dramatic effect on the time available to friendly forces or time denied to the enemy.[9] The success of interdiction campaigns in Normandy and Italy had two important elements in common: air superiority and extreme pressure.[10] Interdiction can also deny the enemy vital supplies and allow friendly forces to seize the initiative.[11] Interdiction efforts should be sustained and concentrated--again, mass and concentration are paramount.[12]

The third priority, close air support (CAS) of ground forces, can be vital to the achievement of overall objectives. "The success of both offensive and

defensive surface operations can depend greatly on massing aerospace firepower at decisive points."[13] CAS can allow friendly forces to maneuver as it aids penetrations, covers flanks, and protects the rear of engaged forces.[14] CAS might even be viewed in terms of an operational ground reserve: a limited resource to be applied with proper concentration and timing for maximum shock effect.[15] However, CAS may be unavailable at times. Ground commanders must understand that theater priorities for air superiority and interdiction may be higher, or CAS assets may be needed in other sections of the theater.[16]

While each of the priorities is important in its own right, numerical superiority over the enemy should not tempt the air commander to try to do everything at once. Failure to concentrate force on these objectives will result in dissipated effort.[17]

One of the chief means of achieving focus of effort is command and control.

Command and Control

Modern aircraft are extremely capable machines. They possess the ability to attack more quickly, at greater distance, at night, and even in adverse weather. These improved capabilities do not diminish the need to employ them correctly.[18] The theater commander relies upon his senior Air Force officer to prepare and

execute an air campaign using air resources to meet theater objectives.[19] When the theater commander is an Air Force officer, he has the choice to serve as the air component commander himself or to designate another senior airman to serve in that position.[20]

Theater forces may be controlled by a Joint Force Commander (JFC) through the component commanders. The JFC commits his forces to the component commanders in order to function in accordance with his theater-wide plan. This plan, coupled with enemy threat information, allows the JFC to make apportionment decisions and set mission priorities governing where and how he will weight his application of air effort throughout the theater.[21]

The JFC apportions the available air assets into the various tactical missions: counter air, air interdiction, and close air support.[22] The theater commander must decide where to concentrate his efforts against an enemy. It may be as simple as one single type of target. More than likely, however, it will be a number of different targets. Regardless, their destruction must have an influence on the "enemy's center of gravity."[23] The enemy center of gravity "describes that point where the enemy is most vulnerable and the point where an attack will have the best chance of being decisive."[24]

Unity of effort is achieved in the air war when the air assets are controlled by an Air Force Component Commander (AFCC), who is situated where he can best determine the overall activity of forces in the theater.[25] Joint Chiefs of Staff (JCS) Pub 3-0 (Test Pub), introduces the title Joint Force Air Component Commander (JFACC), who is appointed and draws his authority from the Joint Force Commander.[26]

> The JFACC concept includes three key features: designation of a Service component commander as JFACC; JFC/JFACC awareness of all planned joint air operations, and the ability to reallocate air assets if required; and the provision for the JFACC to make execution day modifications to the targeting/tasking of available sorties as required.[27]
>
> TAF Pamphlet

The JFACC has "significant operational capability" as he is the single agent responsible for employing all tactical air assets to accomplish the Joint Task Force Commander's (CJTF) mission. He serves as a "force multiplier" allowing the CJTF to go to one commander rather than issuing duplicate orders to accomplish the air campaign. The CJTF will normally select the air commander with the most air assets involved to serve as the JFACC.[28] Although specific details for each theater may vary and inter-service concerns may complicate operations, the JFACC provides "'one stop' shopping" to the CJTF so that he can "point a finger at one man and say 'make it happen.'"[29]

The JFACC's primary responsibility is to put the air war together based upon the "big picture," such that it is integrated with the land war. He should concentrate on theater objectives rather than targets. As the JFACC plans the air campaign, he must remember that it is a composite effort of the CJTF, the JFACC, and the other component commanders. To improve his coordination with other component commanders, he must immediately exchange liaison officers and establish his command and control system. As he develops his air campaign, he must get the word out to his supporting component commanders in his own "concept of operations."[30] To preclude diversion of effort from the air campaign, the air commander must be prepared to provide "candid advice" to the theater commander. This advice must be based on service doctrine to ensure that the proper emphasis is placed on the air campaign at the appropriate time and place.[31]

The "operational-level commander" must concentrate on the "big picture" and stand off from the tactical conduct of the war.[32] JCS Pub 1-02 defines the operational level of war:

> The level of war at which campaigns and major operations are planned, conducted, and sustained to accomplish strategic objectives within theaters or areas of operation. Activities at this level link tactics and strategy by establishing operational objectives needed to accomplish the strategic objectives, sequencing events to achieve the

> operational objectives, initiating actions, and applying resources to bring about and sustain these events. These activities imply a broader dimension of time and space than do tactics; they ensure the logistic and administrative support of tactical force, and provide the means by which tactical successes are exploited to achieve strategic objectives.[33]

A campaign is a sequenced series of operations designed to produce desired results from individual battles. The key concept in a campaign is the commander's careful orchestration of available forces synchronized to achieve specific strategic objectives.[34] If properly combined, the effectiveness of joint forces exceeds the sum of the individual forces.[35]

To ensure that he fully contributes to the theater effort, the senior air commander must know the operational goals and concerns of the theater commander and maintain the capability to adjust. While the corps commanders are concerned with today's and tomorrow's battles, the theater commander, who provides the resources for those battles, is concerned with the battles occurring days later. As the air component commander works through all of the planning to comply with the theater commander's directions, he must remember that "air power is a support element and that air units must be in the right place at the right time to affect the battle."[36]

The command, control, communication, intelligence, and interoperability (C^3I^2) systems provided by the Tactical Air Control System (TACS) are the key to the air component commander's effective employment of limited assets against superior forces. Centralized control allows him to shift and redirect resources as required, while the scope and variety of the operation precludes his involvement in the detailed planning and mission execution. His delegation of the detailed planning and execution to subordinate units is called decentralized execution.[37]

Discussion of C^3I^2 reveals four levels of planning: theater, component, execution and control, and unit. The theater level is the joint force level where air apportionment decisions are made. These specify what proportion of air is devoted to air tasks for a particular period of time. At the component level, the air commander conducts the air operations within the apportionment parameters and objectives specified by the Joint Force Commander.[38] The apportionment parameters allow the Air Force Component Commander to allocate sorties to do particular tasks. The Ground Force Commander decides which targets will be attacked with the sorties allocated to close air support.[39] Command and control systems and procedures must be exercised and harmonized through effective and regular training.

Training Methods

Proper employment of forces requires the learning of proper methods; that is, "We learn them by training the way we will fight."[40] The key elements of aerospace forces are speed, flexibility and range.[41] To achieve the full extent of these aerospace capabilities, air commanders must first acknowledge and concentrate on the basics. Tremendous increases in capability and technological developments which enhance and extend these key elements do not diminish the necessity for close adherence to the familiar principles of war.

The air commander can provide tremendous battlefield support as he successfully blends the great speed, flexibility, and range of airpower in consonance with the principles of war. The question thus becomes: How can Air Force leaders experience the practical application of these principles? The obvious answer would be actual combat, but combat is often unavailable and is an unforgiving trainer. Some means are necessary to propel the senior leader out of everyday management activities into the arena of air campaign planning.

The air component commander should take the opportunity to participate in exercises such as BLUE FLAG (Command Post Exercise at Hurlburt Field, Florida) and RED FLAG (Field Training Exercise at Nellis AFB, Neva-

da). Tactical Air Command sponsors these two high value exercises which provide realistic training to aircrews and battlefield management staffs.[42] Frequent opportunities to train in accordance with established doctrine reinforce the principles which will support sound decisions and ultimate success in combat.

Budget Allocations

The amount of money and resources available for training are critical to the achievement of combat capability. This point is so obvious as to appear trivial. Yet commanders should constantly struggle to gain the necessary means to provide equipment, facilities, and opportunities for training which most nearly approximate combat experience.[43] Doctrine has little to say directly about budget issues, however.

Institutional Bias

Congressional pressure and professional awareness have led to better interservice cooperation. Air Force doctrine wholeheartedly supports the integration of aerospace forces with land and sea forces.[44] This position can act as a double-edged sword. The air commander must defend his doctrine that states that the speed, range, and flexibility of airpower are often better exploited when employed independently, while trying to support cooperative actions which can threat-

en that independence.

The challenge for air commanders to organize and exercise their forces for combat as they expect to fight leads into a comparison of Air Force performance relative to the doctrine described in each of the established criteria areas.[45]

PERFORMANCE REVIEW

The combination of doctrine and expert advice provides a practical standard to which we ought to train for success. It also serves as a standard to evaluate daily experience and exercises. In this section, this standard will be compared with actual Air Force performance to measure how well we train and reflect how we might expect to fight.

Command and Control

According to research sources, Exercise SAND EAGLE 89-2 "was a composite force, joint training exercise intended to provide training in the Crisis Action System by responding to a rapidly developing crisis."[46] Key component commanders of U.S. Southern Command players in the exercise were the 12th Air Force Commander (Air Component Commander, USSOUTHAF) and the XVIII Airborne Corps Commander (Land Component Commander.[47]

Air Force doctrine clearly and frequently states

that the air component commander must coordinate his efforts principally with the land component commander and communicate his plans and intentions to his command and control agencies. During this exercise, a serious shortfall occurred in communication and coordination with USSOUTHAF. The only direct guidance the Tactical Air Control Center (TACC) received from the Air Force commander was the sortie allocation. The TACC had to function blind, not aware of what the real plans were. Even though the late arrival of the Army Battlefield Control Element certainly contributed to the error, it still can not be blamed for the Air Force planning its war without regard to the Army plan.[48] While the orientation of SAND EAGLE exercises changed over time, performance in this, the 14th such exercise, should have begun to resemble that expected in combat. This command and control breakdown indicates a failure to train as we would expect to fight.

This exercise demonstrated one of the finest exercise features: a no-threat environment in which commanders were allowed and expected to make decisions without having to worry about subsequent performance ratings. Instead, commanders can concentrate on personal lessons learned.[49] This freedom of action, in a high-paced simulated combat environment, allowed senior air commanders to train as they would expect to fight.

Another exercise, this time in the Pacific thea-

ter, provided other useful insights:

> Cobra Gold 90 was conducted by a Combined Joint Task Force (CJTF) composed of Thai and U.S. Command and USCINCPAC, respectively. Under the exercise scenario, U.S. forces deployed to Thailand in response to simulated aggression against the Kingdom of Thailand by an external force. Activities included deployment to operating locations, joint/combined cross training, command post exercise (CPX) and field training exercise (FTX), and culminated with U.S. force deployment.[50]

During this exercise, the air component commander was designated as the JFACC; yet the joint force commander insisted that he serve on his staff, rather than as a component commander. This relationship complicated the JFACC's ability to execute the air campaign without having adequate staff and authority.[51] Although joint doctrine allows the JFC to structure and tailor his staff to his liking, that practice can create major difficulties and uncertainties.[52] Such flexibility can easily produce an ambiguous situation where a JFACC never knows for sure what staff structure to expect until the time he arrives.

The best way to ensure that we train like we plan to fight is to actually train together. Often, opportunities are missed or allowed to pass. One possible explanation for an apparent lack of priority or support for such training is that some Army exercises are scheduled over weekends. In 9th Air Force [all Tactical Air Command units east of the Mississippi River], for example, CAS missions during the week were fully

covered, to include ground spare aircraft, to provide uninterrupted support. On weekends, active duty units generally did not fly to provide only as few as 4 sorties on both Saturday and Sunday. 9th Air Force attempted to fill weekend requests with Guard or Reserve units that normally drill on weekends. Unfortunately 9th Air Force did not have the authority to task those units for support.[53]

There are two other causes for this apparent lack of priority: the Tactical Air Command Commander's Day and schedule inflexibility. If a TAC unit achieves its flying hour program for a given month, the commander may declare a goal day as a reward for achieving the program goal. This Wing Commander's option allows him to stand his wing down for a day, usually the last flying day of the month. If that day happens to be a day with scheduled CAS, it may be cancelled since support of that peacetime training requirement would defeat the whole purpose of the day off. Compounding this problem, the Army is not likely to alter its training schedule to accommodate Air Force days off.[54]

The command and control lesson provided in these examples is basic. There are usually explanations for the lack of support. Regardless, lack of support degrades training for both the Air Force and the Army. With decreasing budgets and opportunities for realistic joint training we can ill afford to pass up chances to

train together. Senior leaders in the command and control chain can change this condition, if they choose to. Failure to provide adequate training support runs counter to Air Force doctrine.[55]

Training Methods

The Air Force aggressively pursues flying exercises. RED FLAG, GREEN FLAG, COPE THUNDER, and other exercises represent tremendous opportunities for realistic combat training. As the activity shifts from the more exciting realm of actual flying and directly related activities, the interest naturally begins to fade--the less exciting and perhaps more mundane command post exercises are never quite like the real thing. Since command post exercises are not the real thing, it would appear that the Air Force does not always fully train or exercise the right people. This is particularly true of air component commanders and their staffs. For example, a colonel may serve as the air component commander, such as in Exercise COBRA GOLD 90.[56] It is certainly useful experience for a colonel to function as an air component commander (ACC). In fact he could reasonably be expected to assume such duties in combat. Recent experience, such as Exercise JUST CAUSE or Operation DESERT SHIELD/DESERT STORM, however, would suggest that the air component commander will more likely be a flag officer, such as a lieuten-

ant general, USCENTAF Commander, or a brigadier, USSOUTHAF (Forward) Commander. Assignment of a flag officer would be more desirable in light of present service disagreements and interpretations of JCS publications. What preparation do these flag officers or other officers receive to prepare them to serve as air component commanders? The power struggles resulting from these disagreements would place a more junior air component commander at a distinct disadvantage.[57]

The average senior fighter pilot chosen from an operational fighter wing to serve as an air component commander would probably not have a working knowledge of all service publications pertaining to an air component commander's functions and responsibilities within the Tactical Air Control System. This is also true of the JCS publications with their associated nuances and areas of impassioned interservice concern.[58] Understandably, but regrettably, the senior pilot's focus more than likely has been on tactical application with high performance aircraft and combat leadership of men and women.

Thorough knowledge of the advertised capabilities of assigned aircraft is essential to the air component commander. For example, Tactical Air Command Pamphlet 50-39, *Beacon* Multi-Service Radar Beacon Operations details considerable capability for Air Force aircraft to perform night and adverse weather close air

support.[59] Research revealed that some personnel do not do any beacon work and were not even aware of the beacon operations pamphlet.[60] The performance error in this case rests with the senior leadership for not demanding practice of advertised capabilities and not ensuring that all personnel had the opportunity to receive the most up-to-date training.

Exercise BLUE FLAG provides valuable training for air component commanders. The tasking list for officers to fill positions on the BLUE FLAG staff, however, allows the rank of the candidate to decrease by one or two levels. Many participants report their activity as little more than glorified receptionists and warm bodies assembled for viewing by generals visiting the exercise area. For example, one such participant, a fully qualified F-4E Weapon Systems Officer, was tasked instead to serve as a duty officer for the F-111, an aircraft he had never flown. Staffing procedures such as these can only detract from the training received by all participants: from the air component commander through his battle management staff to his pilots.[61]

A solid background in Air Force doctrine is only the beginning for the senior Air Force leader upon assuming duties as an air component commander. One of the newest approaches to warfighting is the application of operational art. As discussed in the doctrine section, operational art is a key element for putting

all the joint components together in order to achieve strategic goals and objectives. Easily enough said, but how is it done?

In the Air Force's opinion, JCS Pub 3-0 (Test Pub) falls short of its original contract in providing specific and detailed guidance to the joint commanders in the wartime execution of their missions. The air component commander has a very real part to play before, during, and after the development of theater campaign planning. He has direct input into the initial apportionment of air assets and an influence on the allocation of those resources to support the theater commander's intent and direction of effort. Unfortunately, the Test Pub does not provide the joint force air component commander the specific guidance to enable him to practice operational art.[62] Although the joint community responsible for the publication must take steps to bridge the gap, there may be other reasons why the operational art of war is not well understood.

For one, it is difficult to experience the operational level unless a war is in progress. During peacetime, the commander is often caught up in the training process since "training and maintaining is a full-time job."[63] Another factor is that officers are not assigned to operational levels of command until they are of high rank.[64]

Shifting the focus briefly to the tactical level, consider the operational significance of the levels of support afforded to the three doctrinal priorities: air superiority, interdiction, and close air support.

Training for air superiority and interdiction seldom suffer since no fighter pilot will decline an opportunity to fly an air combat training sortie or a mission to a air-to-surface gunnery range to practice conventional or tactical weapons deliveries. Close air support seems to be a different story.

General Merrill A. McPeak declared that he considers close air support "a core mission of our tactical forces....It is a mission we want to do."[65] That is the party line, but the solution to effective close air support is a change in attitude. Commenting on the replacement CAS aircraft, Lt Col Gary L. Dikkers suggested that its success is wholly dependent upon the "attitudes, motivation, training and proficiency of the pilots flying that airframe, and **how committed senior tactical air force leaders are to providing quality direct battlefield support for the Army** [emphasis added]." If the CAS mission is not primary, the current situation will continue: CAS stays the lowest priority.[66]

Sometimes shortfalls in resources adversely affect training. Often the resources to make a training exercise effective are not provided. In COBRA GOLD 90,

limited joint air assets were available to exercise tactical air capabilities and the tactical air control system's ability to support joint and combined ground forces.[67] Just as important as any physical resource or component, many participants are simply not familiar with the Tactical Air Control System, basic terminology, airpower employment, targeting, apportionment, and many other details needed to effectively operate within the system.[68]

Even when the resources are provided, sometimes the Air Force sends the wrong message as it provides "each battalion exercise 4 sorties per day; 2 in the morning and 2 in the afternoon."[69] It is difficult to incorporate air in exercises of battalion size. In reality, if that battalion is the focus of effort for a corps, they will likely see lots of air support. If not the focus of effort, the participants might not see any air support. The solution lies somewhere between no air support and massive air support. No air support denies vital unit training. Massive air support, typical of the amount seen for a major corps effort, would take up too much time and energy to the exclusion of other training.[70] The correct answer would seem to be very dependent upon the nature of the exercise. Knowing that factors such as these impact heavily upon the success of training puts a great responsibility upon the planners.

Budget Allocations

The present scale of exercise training has hurt the Air Force as much as it has the Army. Far too often, the CAS pilot attacks targets of one or two vehicles rather than a mass of ground vehicles in attack formation. The National Training Center provides good training opportunities, but the inability of the Army computerized evaluation and tracking system to provide realistic air battle data has led to Congressional restrictions and an end to Air Force participation.[71] Compatibility demands expenditures to equip the target range properly in order to provide the required data and integration of the air and ground battles.

As we noted in the SAND EAGLE Exercise series, budget has an effect upon our training as we deal with "fiscal austerity".[72] During COBRA GOLD 90, failure to deploy command and control and other electronic assets detracted from overall Field Training Exercise (FTX) activity. During the Command Post Exercise (CPX) portion, the exercise and associated staff decisions were further degraded by limited air activity, lack of air battle damage assessment, and exercise controller attrition.[73] It is difficult to say whether these shortfalls were merely due to a lack of funds or other commitments. The ultimate answer would be enough money

to provide all that is required. That extreme is probably unrealistic; however with innovative scheduling and a strong desire to improve our training, there are solutions.

One of the great advantages gained from joint training is the appreciation of institutional bias. As mentioned earlier, institutional bias is a double-edged sword, requiring careful handling.

Institutional Bias

The often repeated cry from Army officers is "why don't we get more air?" Although the explanation can be long and detailed, the Air Force officer must remind his sister-service partners that the joint force commander does not make his apportionment decisions in a vacuum. The ground component commander is usually either present or represented at the apportionment decision briefing. The ACC/JFACC apportionment recommendation to the JFC is a coordinated effort following "consultations with Army liaisons, FSE [Fire Support Element] personnel, Marines, Navy, Intel and allied force representatives."[74]

The Air Force officer must understand the Tactical Air Control System and his own relationship in the joint arena to avoid weak excuses which could further fuel existing bias.

This understanding must be solidly based on doc-

trine and include an awareness of the subtle nuances and problem areas especially associated with new joint territory. Colonel Robert F. Simpson, who served as the JFACC in COBRA GOLD 90, related in his final report that although the JFC is supposed to have the "big picture," he often may not understand the whole operation of the USAF Tactical Air Control System.[75] Colonel Simpson perceived some other potential biases. Marine and Army commanders will take a "parochial" view of CAS and BAI, even to the detriment of the "OCA DCA and deep interdiction campaign."[76] Another problem occurs when Corps or Division G-3s nominate targets that are fleeting or do not merit the BCE's dedication of the effort. The BCE will not validate "poorly done requests".[77] A well-versed air component commander could cope with these concerns and effectively diffuse situations which could otherwise become troublesome. Sometimes bias appears in subtle forms.

On a recent trip, an Army classmate commented that he knew the weather was going to be good in Washington. Pressed for a reason, he said, "I knew the weather would be good or the Air Force wouldn't be here!" Intended merely as a cute joke, it reveals an attitude not entirely groundless and one which we must be cautious not to perpetuate.[78] Returning to the metaphor of the double-edged sword, the air component commander is reminded that he must be prepared to provide "candid

advice" to the theater commander to ensure that the proper emphasis is placed on the air campaign at the appropriate time and place.[79] This insistence that there are missions that air must perform independent of ground units could create additional bias, unless operational art provides an enlightened view. Since operational art provides an expanded view of activities in the theater, the fact that air assets are pursuing objectives in apparent independent action would not trouble those who understand it. Planners will understand that the operational design of the air campaign is actually integrated with the overall operational design of the ground campaign. These campaigns when combined with that of the sea forces provides an integrated whole with no evidence of any service pursing its own selfish ends.

Having compared performance with doctrine in the four areas of command and control, training methods, budget allocations, and institutional bias, it is time now to look carefully at the validity of the doctrine itself. Recall that doctrinal validity is the ability of existing doctrine to remain consistent with historical evidence and to deal with both current and future situations.

Doctrinal Validity

Some express concern that centralized control,

which is key to Air Force operations, would not provide the responsiveness required on the battlefield.[80] A common thread seems to be control over forces available for tactical air support:

> Our ground operations are based to a large degree on the firepower available to our force, and withdrawal of a portion of that firepower on short notice can have decisive effects upon mission accomplishment. As a minimum, the Army should have the authority to allocate a definite number of sorties among its field armies, and the right to designate targets and target priorities, and to determine concentration of effort. At present, apportionment of air assets is retained by the tactical air force commander. The Air Force has consistently placed close air support as their third priority behind counter-air and interdiction....[81]

This complaint is consistent with our doctrine in terms of the order of mission priorities: air superiority, interdiction, then close air support. The complaint concerning apportionment, however, is not valid. The apportionment decision is actually made by the theater commander, acting upon the express recommendation of the air and land component commanders. Further, once the close air support sorties are allocated to the ground component commander, he allocates, on a real-time basis if necessary, where the support actually goes.[82] This higher level of planning and control leads into a discussion of the level of war and the significance of air priorities.

Current doctrine "must guide the operational level of war".[83] Effective employment requires thinking at

the operational level to use airpower at the correct place and time within the theater.[84] Based upon Royal Air Force successes in North Africa during the early days of World War II, the old FM 100-20 suggested that there were three doctrinal priorities: air superiority, then interdiction, and finally close air support. No effort was to be made to move along to the second priority until the first was achieved.[85] Current doctrine, outlined in TACM 2-1, presents the same missions but suggests that the Air Force can do them simultaneously.[86]

The belief, that fewer airplanes with high technology and a more sophisticated command and control system could achieve what could not be done with many more aircraft in World War II, is questionable.[87] Operation DESERT STORM experience has highlighted the ability of fewer aircraft to inflict greater damage than was possible in Vietnam or World War II.[88] Stating that air superiority is primary, however, Colonel Warden seems to come closer to the truth when he suggests that this does not mean that other missions can not be flown. Rather, any missions flown in addition to those used to gain air superiority should not diminish the main effort.[89] Significantly, NATO air planners have developed a priority in their planning which matches that outlined in the old FM 100-20.[90]

Another problem is illustrated by an example of an

exercise in Korea involving three field armies. One of those armies had the main effort, while the other two were in support. In the apportionment of CAS, the army with the main effort received only 5% more (35/30/30) than the other two armies.[91] Certainly it is possible that this was in fact the exact apportionment that the theater commander wanted. If so, it is absolutely correct. Otherwise, the apportionment appears to be little more than a simplistic division of assets without regard for doctrinal or real world rationale.

Several possible faults have appeared in a joint pamphlet created as a cooperative effort between the U.S. Army Training and Doctrine Command and the U.S. Air Force Tactical Air Command. The J-SAK Pamphlet (Joint Attack of the Second Echelon) represents a lack of focus at the operational level. There is too much emphasis on targets: although the TACC and BCE coordinate, the staffs of the air and ground commanders do not plan together. Further, and cause for NATO rejection of the doctrine, J-SAK proposes that all air missions can be done at the same time.[92]

The performance review conducted in this monograph considered only two major exercises due to classification restrictions and the nonavailability of the U.S. CENTAF staff during DESERT SHIELD/DESERT STORM. Nevertheless, these exercises reflect performance in two unified commands. Based upon the evidence available,

it is possible to conclude that they are reasonably representative.

In summary, analysis has revealed shortfalls in all areas:

Command and Control

- Lack of air commander communication with his staff and the land component commander
- Overly flexible joint doctrine structure allowing wide latitude for theater commander's organization
- Apparent lack of senior leadership drive to ensure full support for exercises

Training Methods

- Not all the right people are trained as component commanders and staffs
- Training not always current
- Operational art, though discussed and advocated, is not adequately supported by explanatory notes in doctrinal references
- Not all tactical air support missions are equally supported or popular
- Exercises are often diminished in value by lack of support

Budget Allocations

- Inadequate range instrumentation led to cancellation of Air Force participation at NTC
- Shortages of deployed equipment and air activity degraded battle management staff training during exercises

Institutional Bias

- We lose the fight when accused of poor support to the Army if we do not understand the doctrine and systems well enough to recognize misperceptions and to communicate our issues to those who may not, but need to understand

Doctrinal Validity

- Doctrinal mission priorities are correct, but there is doubt concerning our suggested capability to do them all at once

- Viewed in terms of operational art
  - -- Thinking is misoriented on targets instead of operational objectives
  - -- Apportionment can appear to be a mechanical distribution of sorties

Based upon my research, the answer to my original research question, "With respect to tactical air utilization at the theater level, are we, in fact, training as we expect to fight?" is NO.

What does all this mean to the U.S. Air Force and our support for the U.S. Army?

CONCLUSION AND IMPLICATIONS

If these trends continue, what may occur? A further question one might ask is, so what? The "so what" is **winning in combat.** If we do not win, we have failed our national leaders and failed those who work for us. In this final section an attempt is made to address both questions.

Command and Control

In the Performance Review section, weaknesses were identified in the air component commander's communication and coordination. The U.S. Army's Training and Doctrine Command and the U.S. Air Force's Tactical Air Command have jointly produced "The Air Attack Plan--Operational Concept" which should produce significant improvements.

The Plan leads off with a discussion of the importance of "top-down guidance".[93] The JFC must clearly state his plan and intentions for the employment of air. Using this clear guidance, the air and land component commanders develop their plans. Key to this direction is the land component commander's (LCC) communication of the air direction to his subordinate commanders before they develop maneuver and fire support plans. This "top-down guidance" should cover proper employment of CAS and Battlefield Air Interdiction (BAI) missions with the understanding that air is generally more effective if not mixed in with merged forces. Further, BAI should be fully integrated and synchronized with other fires.[94]

The Plan suggests that at the theater level, improved communication must occur between the land and air component commanders. The LCC must very clearly indicate to the ACC what he plans to do with air and

articulate the expected result if that support is not received. The ACC must likewise clearly communicate to the LCC just what resources are expected to be available. Based upon this current exchange, the two commanders will be much better equipped to provide an air apportionment recommendation to the JFC. The "top-down" decisions will also aid the target planners as they jointly work "high payoff targets" produced by the cooperation and communications at the highest level.[95]

As we strive to fill the system with qualified people, we ought to establish a Special Experience Identifier (SEI) that indicates that they are BLUE FLAG battle management staff-trained and have attended Air Ground Operations School (AGOS). That SEI also should have a currency linked to it to ensure that experience is recent and up-to-date. Attendance at Air Ground Operations School in 1974 should not require or even suggest that an individual ought to be able to function effectively or credibly within the Tactical Air Control System (TACS) in 1990. Too many things change within the profession to depend upon out-of-date background knowledge.

Exercise COBRA GOLD 90 revealed problems inherent in the joint doctrine. This may allow the theater commander too much latitude in structuring his organization. In the situation reviewed the JFACC was so designated, but was expected by his theater commander

to function as a member of the commander's staff. Although within the commander's authority, it was unusual and certainly unexpected. The JFACC was not equipped with the necessary staff to deal reasonably with this demand and his position caused problems with his perceived authority as the air component commander.[96] While latitude and flexibility are desirable, studies ought to be conducted to set reasonable limits. Within those limits there would be consistency in organization between theaters allowing component commanders to deploy to any theater without finding that one is radically different from another.

COBRA GOLD 90 highlighted the importance of providing all elements of the joint structure during an exercise.[97] A "showstopper" list for use during exercise planning would be useful. "Showstopper" refers to those element(s) or item(s) which, if absent, will have a significant adverse impact on the exercise. In combat, it truly would be a showstopper because the commander would not want to be without it. An exchange of information between commands would enhance the shared knowledge of those items. Final approval to conduct an exercise with any of these apparent showstoppers present would require approval at the highest level of the sponsoring commands. As we look next at training methods, we will see the great value of exercises like COBRA GOLD.

Training Methods

Experiences during COBRA GOLD 90 indicated the value of a familiarization period in an exercise. Many participants are simply not up to speed on the Tactical Air Control System, basic terminology, airpower employment, targeting, apportionment, and many other details which they must understand to operate effectively within the system.[98] Some of that initial training and familiarity will be accomplished through training suggested by the plan discussed earlier.

Programs and courses at service schools will be revised to reflect changes brought about by the USAF Tactical Air Command and U.S. Army Training and Doctrine Command Air Attack Action Plan. Their exercises and air employment curricula will "reflect a more top down [sic], proactive approach to planning and an intimate information exchange".[99] The Plan also focuses on joint air training. The intent will be to seek opportunities to train, such as interconnecting training activities like Exercise BLUE FLAG with Command and General Staff College exercises.[100] All key planners in the Army and Air Force would be required to attend the Air Ground Operations School.[101] The major concern is that

> Changes in planning, TACS/Army Air Ground System reorganization, FAC operations, and publishing manuals will not change mind sets or create understanding. Only full participation of each Service in the other's exer-

cises will accomplish this goal.[102] This will provide great improvements, but to practice operational art in the right atmosphere, we must expand exercises along the model of SAND EAGLE in order to allow commanders to worry more about operational decisions and less about their officer performance reports. We must strike a delicate balance in exercises and evaluations to allow commanders the expanded freedom to make decisions without threats to their careers. This single change will allow concentration on lessons learned and the performance of roles and missions, rather than on report cards.[103]

When we do exercise, we need to exercise all echelons and functions of the TACS. If not able to provide all elements, certainly it would be beneficial to set up effective simulation cells to put all the pieces together, creating conditions as close to combat as possible for the players. During the exercise planning, more effort should be devoted to developing the CPX flow and integrating both air and ground activity in any computer simulations.[104]

We must support and sustain a continuing education program, both institutional and personal, to support the operational-level view of warfighting. As air advocates, we must concentrate on what we do and reduce our focus on the more familiar how.[105] One does not come to this broader understanding easily. The ability to function at the operational level does not suddenly

occur and does not come as a function of higher rank. We recognize the need for this ability, but Air Force differences to JCS Pub 3-0 reveal that we look for further guidance. If the guidance on operational art is not clearly provided in a joint publication, such as JCS Pub 3-0, where else might it be found for the practitioner? We cannot rest our future success on such poor guidance and solutions.

When we fight in the future, more than likely it will be jointly; we must support every opportunity to seek advanced military education with and for our sister-services. Our presence provides valuable insights for the Air Force and the host service.

Finally, emphasizing the suggested "top-down" approach, leaders must follow General McPeak's lead and support close air support.[106] Support must go beyond statements. This support must be active and continuous. We need to track what we accomplish and hold ourselves accountable for missed training opportunities. Experience in DESERT STORM has demonstrated just how easily troops can be lost to friendly fire. We must practice close air support regularly in order to provide support to ground forces and to avoid fratricide resulting from a mutual lack of proficiency and appreciation of the associated risks and hazards. There never seems to be enough time, resources, or range space. This is especially true of money.

Budget Allocations

Although money is always a limitation, the best solution to realistic training and correct utilization of air, short of real war, would be large unit field exercises such as REFORGER and TEAM SPIRIT. If several divisions were fielded then the Air Force would also field an ASOC and likely a TACC to integrate all the air activity. This would allow the proper and full interaction of all the players. Also, the effort could be shifted from unit to unit allowing each to see the massed air effort consistent with "larger-than-battalion scheme of maneuver and fires."[107] It has been suggested that such large unit exercises are not likely in the future.[108] If correct, we must seek suitable alternatives, as suggested in the Air Attack Action Plan, through computer simulations and integration of major exercise programs at geographically separated professional military education centers.

With the ever increasing groundswell to reduce forces, we must concentrate on every means to create maximum synergistic effects. We must innovatively plan our activities with emphasis on jointness to get the most out of every dollar received for training.

Institutional Bias

An increased emphasis on ground support roles will

improve our image with ground forces and reduce adverse bias. We need to better educate our leaders in joint and Air Force doctrine. Bias can best be controlled, understood, and if necessary countered through knowledge of the governing service and joint doctrines, recognition of misperceptions, and an awareness of other service sensitivities. This orientation will naturally lead to a broader perspective. Rather than thinking in terms of an air campaign or ground campaign, commanders need to think of a "single campaign" in which the contributions of air and ground power can be synergistically integrated.[109]

Doctrinal Validity

We must develop and validate a working doctrine which we can credibly support and that will withstand both the test of history and the most rigorous wargaming efforts. Doctrine must realistically address limitations on the simultaneous conduct of missions such as air superiority, air interdiction, and close air support. It must provide clear and detailed discussions on the conduct of operational art for the airman. Air doctrine must be coordinated and integrated with the courses of instruction at our sister-service schools of professional military education. Careful integration in the joint arena will reduce misuse and misunderstanding of our capabilities.

Success on the modern battlefield depends upon doing it smarter and doing it right the first time. We can do that if we train as we expect to fight. Top-level support for our commitment to the Army and appropriate follow up will make all the difference.

ENDNOTES

1. Air Force Manual 1-1, Basic Aerospace Doctrine (Washington, D.C.: 1984), p. 4-7.

2. Since completion of Undergraduate Pilot Training in 1972, the author has flown the F-4 (C, D, and E/Leading Edge Slat models), OV-10A, and Harrier (Mark GR-3, during a USAF/Royal Air Force Exchange Program). Duty included service as an air liaison officer to the 28th Republic of Korea (ROK) Army Infantry Division in 1975 and as an instructor pilot in the OV-10 and F-4C aircraft. Most recently, he served as the Deputy Commander for Operations, 27th Tactical Air Support Squadron, George Air Force Base, California. The squadron's primary mission was to provide 57 battalion air liaison officers to U.S. Army maneuver units in Europe and the United States.

3. Battalion air liaison officer reports from the 27th Tactical Air Support Squadron were forwarded for review and disposition to the 602d Tactical Air Control Wing, Davis-Monthan Air Force Base, Arizona. Office of Primary responsibility: DOY.

4. Ibid.

5. JCS Pub 3-0 (TEST PUB), Doctrine for Unified and Joint Operations (Washington, D.C.: 1990), p. x.

6. AFM 1-1, p. A-1.

7. Ibid., p. 2-12.

8. Ibid., p. 2-12.

9. Ibid., p. 2-14.

10. John A. Warden III, The Air Campaign Planning for Combat (Fort Lesley J. McNair: National Defense University Press, 1988), p. 92.

11. Ibid., p. 2-15.

12. Ibid., p. 97.

13. AFM 1-1, p. 2-15.

14. Ibid., p. 2-15.

15. Warden, Air Campaign, p. 105.

16. Ibid., p. 111.

17. Ibid., p. 64.

18. Michael J. Dugan, General, USAF, "AIR POWER Concentration, Responsiveness and the Operational Art," Military Review 69 (July 1989), p. 14.

19. Ibid., p. 16.

20. JCS Pub 3-0, p. xi.

21. Air Force Manual 2-7, Aerospace Operational Doctrine, Tactical Air Force Operations--Tactical Air Control Systems (TACS) (Washington, D.C.: 1979), p. 1-3.

22. Ibid., p. 1-3.

23. Warden, Air Campaign, pp. 8-9.

24. Ibid., p. 9.

25. AFM 2-7, p. 2-1.

26. JCS Pub 3-0 (TEST PUB), p. xi.

27. TAF Pamphlet, JFACC Concept of Operations (Final Draft) (Langley Air Force Base, Virginia: 1990), p. 11.

28. Department of the Air Force, Headquarters Twelfth Air Force, Talking Paper to SOUTHCOM on Joint Force Air Component Commander (JFACC) (Bergstrom Air Force Base Texas: Unpublished internal correspondence by Major Dunham, 12th Air Force DOXJ, no date), unnumbered pages. Note: sections within quotation marks are direct quotes from this reference. For ease of citation, only one endnote is used. The term "preponderance of air assets" is usually used to describe the air commander with the most assets involved.

29. Talking Paper to SOUTHCOM on Joint Force Air Component Commander (JFACC).

30. Ibid., previous Note applies.

31. Warden, Air Campaign, p. 104.

32. General Charles L. Donnelly Jr. (USAF Retired), "An Air Commander's View of Operational Art," Military Review 70 (September 1990), p. 79.

33. JCS Pub 3-0, p. xiv.

34. Ibid., p. III-7.

35. Ibid., p. III-10.

36. General Donnelly, "An Air Commander's View of Operational Art," pp. 81-82.

37. TAC Manual 2-1, Aerospace Operational Doctrine: Tactical Air Operations (Langley Air Force Base, Virginia: 1978), p. 3-2.

38. Ibid., p. 3-4.

39. Ibid., p. 4-39.

40. Ibid., p. 1-1.

41. AFM 1-1, p. 2-2.

42. TACM 2-1, pp. 10-2 and 10-8.

43. AFM 1-1, p. 4-7.

44. Ibid., p. vii.

45. Ibid., p. 4-3.

46. Department of the Air Force, Headquarters Twelfth Air Force, Final Draft SAND EAGLE 89-2 After-Action Report 3 - 18 March 1989 (Bergstrom Air Force Base, Texas: 1989), p. 6.

47. Ibid., p. 7.

48. Ibid., pp. 34-35.

49. Ibid., p. 32.

50. Department of the Air Force, Headquarters Pacific Air Forces, Summary - COBRA GOLD 90 FINAL REPORT (Hickam Air Force Base, Hawaii: 1990), p. 1.

51. Ibid., pp. 8-9.

52. Department of the Air Force, Headquarters United States Air Force. Considerations When Designating the Joint Force Air Component Commander (JFACC) (Washington, D.C.: Unpublished Background Paper by Lt Col Mick Luers, USAF/XOXFP, April 1988), pages not numbered.

53. Billy W. Stephan Jr., Major, USAF, written response to request for information by author (U.S. Army Command and General Staff College/Air Force Section, Fort Leavenworth, Kansas: October 1990), pages not numbered. Original on file with author. Major Stephan is currently serving as an instructor at the Command and General Staff College and has extensive experience

as an air liaison officer/forward air controller with the 82d Airborne Division, Fort Bragg, North Carolina.

54. Ibid. Author's note: Although Major Stephan's remark about the Commander's Day is essentially correct, it is interesting to note that the program has evolved to allow the commander to take the day off even if goals are not fully met, if in his his judgment a down day is justified. For this reason, the terminology has changed from what was originally called a Goal Day to a Commander's Day.

55. AFM 1-1, p. 4-7.

56. Robert F. Simpson, Lt Col, USAF, written response to request for information by author (Headquarters Pacific Air Forces/DOX, Hickam Air Force Base, Hawaii: Received 9 October 1990) pages not numbered. Original on file with author.

57. Lt Col Mick Luers, Considerations when Designating the JFACC

58. Ibid.

59. Tactical Air Command Pamphlet 50-39, *Beacon* Multi-Service Radar Beacon Operations (Langley Air Force Base, Virginia: 1990), p. viii.

60. Fred White, Major, USAF, Deputy Commander for Operations, 712th Air Support Operations Center, Bergstrom Air Force Base, Texas. Telephone conversation with author, 9 November 1990.

61. These details are from the author's own experience while serving on the 9th Air Force Headquarters staff between 1983 and 1986.

62. JCS Pub 3-0, pp. E-1 and E-2.

63. Donnelly, "An Air Commander's View of Operational Art", p. 79.

64. Ibid., p. 79.

65. Lee Ewing, "McPeak outline AF-Wide reorganization," Air Force Time, 5 November 1990, p. 69.

66. Gary L. Dikkers, Lt Col, USAF, "Overcoming poor attitude is key to effective CAS," Air Force Times, 3 December 1990, pp. 23 and 61. Note: Citation covers entire paragraph, including quoted portion.

67. Summary - COBRA GOLD 90 Final Report, p. 3.

68. Ibid., p. 4.

69. Stephan.

70. Ibid.

71. Ibid.

72. Final Draft SAND EAGLE 89-2, p. 2.

73. Summary - COBRA GOLD 90 Final Report, pp. 3,12-13.

74. Simpson.

75. Simpson.

76. Simpson.

77. Ibid.

78. Author's personal anecdote, based upon a conversation with a classmate during trip to Washington, D.C. for Deparment of the Army orientation.

79. Warden, Air Campaign, p. 104.

80. William V. Backlund Jr., Major, USAF, "Can the Army Take Over CAS With Its Organic Aircraft?", Unpublished Research Report, Air Command and Staff College, Air University, Maxwell Air Force Base, Alabama, 1985, p. 4.

81. Ibid., p. 2.

82. AFM 2-7, p. 1-3.

83. Harold T. Gonzales, Lt Col, USAF, "Tactical Air Support of Ground Forces in the Future," Research Report No. AU-ARI-89-7, Airpower Research Institute, Air University Press, Maxwell Air Force Base, Alabama, 1990, p. 23.

84. Ibid., pp. 3-18.

85. Ibid., pp. 30-32.

86. Ibid., p. 37.

87. Ibid., pp. 49 and 81.

88. Douglas Pasternak, "Technology's other payoff," U.S. News & World Report, 11 February 1991, p. 27.

89. Warden, The Air Campaign, p. 17.

90. Ibid., p. 37.

91. Ibid., p. 46.

92. Ibid., pp. 71-72.

93. ALFA Agency, "Air Attack Action Plan -- Operational Concept," Air Land Bulletin No. 90-2/3 (30 September 1990): pp. 4-5.

94. Ibid., pp. 4-5.

95. Ibid., p. 5.

96. Summary - COBRA GOLD 90 Final Report, pp. 8-9.

97. Ibid., pp. 12 and 13.

98. Ibid., p. 4.

99. AlFA Agency, "Air Attack Action Plan," p. 9.

100. Ibid., p. 23.

101. Ibid., p. 18.

102. Ibid., p. 17.

103. Final Draft SAND EAGLE 89-2, p. 32.

104. Summary - COBRA GOLD 90 Final Report, pp. 12 and 13.

105. Gonzales, pp. 42-43.

106. See ALFA Agency, "Air Attack Action Plan," pp. 4-5; and Ewing, "McPeak outlines AF-wide reorganization," pp. 3 and 69.

107. Stephan.

108. James M. Dubik, Lt Col, USA (Advanced Operational Studies Fellow, School of Advanced Military Studies, U.S. Army Command and General Staff College, Fort Leavenworth, Kansas: April 1990). Comment made following a review of an interim draft of this paper.

109. Gonzales, "Tactical Air Support of Ground Forces in the Future," p. 80.

BIBLIOGRAPHY

BOOKS

Warden, John A., III. The Air Campaign Planning for Combat. Fort Lesley J. McNair: National Defense University Press, 1988.

MILITARY MANUALS

Air Force Manual 1-1, Basic Aerospace Doctrine. Washington, D.C., 1984.

Tactical Air Command Manual 2-1, Aerospace Operational Doctrine: Tactical Air Operations. Langley Air Force Base, Virginia, 1978.

Air Force Manual 2-7, Aerospace Operational Doctrine, Tactical Air Force Operations--Tactical Air Control Systems (TACS). Washington, D.C., 1979.

TAF Pamphlet, JFACC Concept of Operations (Final Draft). Langley Air Force Base, Virginia, 1990.

Tactical Air Command Pamphlet 50-39, *Beacon* Multi-Service Radar Beacon Operations. Langley Air Force Base, Virginia, 1990.

Joint Chiefs of Staff Pub 3-0 (TEST PUB), Doctrine for Unified and Joint Operations. Washington, D.C., 1990.

REPORTS AND PUBLIC DOCUMENTS

ALFA Agency. "Air Attack Action Plan -- Operational Concept." Air Land Bulletin No. 90-2/3, 30 September 1990.

Backlund, William V. Jr. "Can the Army Take Over CAS With Its Organic Aircraft?" Unpublished Research Report, Air Command and Staff College, Air Univer-

sity, Maxwell Air Force Base, Alabama, 1985.

Department of the Air Force, Headquarters Pacific Air Forces. Summary - COBRA GOLD 90 Final Report. Hickam Air Force Base, Hawaii: 1990.

Department of the Air Force, Headquarters Twelfth Air Force. Final Draft SAND EAGLE 89-2 After-Action Report 3 - 18 March 1989. Bergstrom Air Force Base, Texas: 1989.

Department of the Air Force, Headquarters United States Air Force. Considerations When Designating the Joint Force Air Component Commander (JFACC). Unpublished Background Paper by Lt Col Mick Luers, USAF/XOXFP. Washington, D.C., April 1989.

Department of the Air Force, Headquarters Twelfth Air Force. Talking Paper to SOUTHCOM on Joint Force Air Component Commander (JFACC). Unpublished internal correspondence by Major Dunham, 12th Air Force DOXJ. Bergstrom Air Force Base, Texas, no date.

Gonzales, Harold T. "Tactical Air Support of Ground Forces in the Future." Research Report No. AU-ARI-89-7, Airpower Research Institute, Air University Press, Maxwell Air Force Base, Alabama, 1990.

ARTICLES AND INTERVIEWS

Donnelly, Charles L. Jr. "An Air Commander's View of Operational Art." Military Review, September 1990.

Dikkers, Gary L. "Overcoming poor attitude is key to effective CAS." Air Force Times, 3 December 1990.

Dugan, Michael J. "AIR POWER Concentration, Responsiveness and the Operational Art." Military Review, July 1989.

Ewing, Lee. "McPeak outlines AF-wide reorganization."

Air Force Times, 5 November 1990.

Pasternak, Douglas. "Technology's other payoff," U.S. News & World Report, 11 February 1991.

Telephone interview with Major Fred White, USAF, Deputy Commander for Operations, 712th Air Support Operations Center, Bergstrom Air Force Base, Texas, November 1990.

Written response to request for information by Major Billy W. Stephan, USAF, U.S. Air Force Section, U.S. Army Command and General Staff College, Fort Leavenworth, Kansas, October 1990.

Written response to request for information by Colonel Robert F. Simpson, Director Operations Plans, Headquarters Pacific Air Forces, Hickam Air Force Base, Hawaii, October 1990.