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AIR INTERDICTION: Joint Coordination Issues for the United
States Army and Air Force Conducting Coalition Warfare Within the
NATO Theater of Operations

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by

Major Michael H. Vernon

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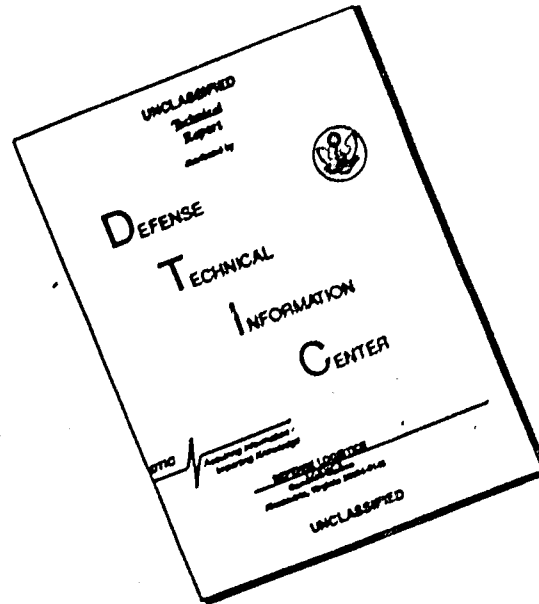
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ABSTRACT

AIR INTERDICTION: JOINT COORDINATION ISSUES FOR THE UNITED STATES ARMY AND AIR FORCE CONDUCTING COALITION WARFARE WITHIN THE NATO THEATER OF OPERATIONS, by Major Michael H. Vernon, USA, 38 pages.

This study examines whether current joint US Army and Air Force doctrine adequately supports the coordination of air interdiction (AI) efforts, at the operational level, within NATO in Central Europe.

The considerations for and the procedures used in the employment of air interdiction missions by US and NATO forces are examined. The systems are compared and significant procedural differences are highlighted. Finally, implications for current and future operations are considered. The focus of the investigation is the procedures as outlined in the Joint Attack of the Second Echelon (J-SAK) and in NATO MAS ATP-27(B) and 33(A). Issues at the operational level of war are examined, and considerations for employment within the AirLand battle framework are presented.

The study concludes that the framework of joint and combined doctrine supports coordination of interdiction efforts at the operational level. However, refinement is needed in both the US and NATO systems to insure an effective meshing of planning and coordination. Specific areas that require attention are the definitions of air missions, particularly battlefield air interdiction (BAI) as a subset of AI or offensive air support (OAS); the establishment of joint planning procedures in the US battlefield coordination element (BCE); the adoption of a reconnaissance and interdiction planning line (RIPL) by US forces; and the increased use of mission orders by US and NATO forces.



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TABLE OF CONTENTS

SECTION	PAGE
I. Introduction	1
Background	1
Statement of the Problem	2
Outline of the Paper	3
II. Air Interdiction: The United States View of Missions and Procedures	4
Objective of AI	4
Objective of BAI	5
J-SAK	6
ACC/LCC	8
AI Request Procedures	9
Key Features of J-SAK	11
Remaining Problems	11
III. Air Interdiction in Central Europe: The NATO View of Missions and Procedures	13
Offensive Air Support	14
BAI As Part of OAS	14
AI	15
Land Air Battle Planning Lines	16
NATO Force Structure	17
NATO Air Mission Procedures	18
IV. Air Interdiction: A Comparison of J-SAK and NATO Missions and Procedures	20
Joint Planning and Coordination Agencies..	21
Coordination and Planning Procedures	22
Mission Orders	23
V. Air Interdiction, US and NATO: Implications for Current and Future Operations	25
Role of Air Power	25
Recommendations	26
Conclusions	28
Endnotes	30
Bibliography	34

INDEX TO FIGURES

FIGURE NUMBER		BETWEEN PAGES
1	JFC-ACC-LCC Relationships	8 - 9
2	Channels for Planning and Coordinating AI and BAI	9 - 10
3	Summary of US Air Missions and Procedures	9 - 10
4	Land Air Battle Planning Lines	15 - 16
5	General NATO Structure	17 - 18
6	Allied Air Force Central Europe (AAFCE) Structure	17 - 18
7	Summary of NATO Air Missions and Procedures	18 - 19
8	Differences in Air Apportionment Between J-SAK and NATO	21 - 22
9	US - NATO Comparative Summary	24 - 25

GLOSSARY

AAFCE - Allied Air Forces Central Europe
ACC - Air Component Commander
ACOC - Air Command Operations Center
AFCENT - Allied Forces Central Europe
AI - Air Interdiction
AOR - Area of Responsibility
ARLO - Air Reconnaissance Liaison Officer
ASCE - Air Support Coordination Element
ASOC - Air Support Operations Center
ATAF - Allied Tactical Air Force
ATO - Air Tasking Order
ATOC - Allied Tactical Operations Center

BAI - Battlefield Air Interdiction
BCE - Battlefield Coordination Element

CA - Counter Air
CAS - Close Air Support
CENTAG - Central Army Group
CRAOC - Central Region Air Operations Center

FLOT - Forward Line of Own Troops
FSCL - Fire Support Coordination Line
FSE - Fire Support Element

GLD - Ground Liaison Officer

JCOC - Joint Command Operations Center
JFC - Joint Force Commander
JOC - Joint Operations Center
J-SAK - Joint Attack of the Second Echelon

LCC - Land Component Commander

NATO - North Atlantic Treaty Organization
NORTHAG - Northern Army Group

OAS - Offensive Air Support

RIPL - Reconnaissance and Interdiction Planning Line

SACEUR - Supreme Allied Commander Europe

TACC - Tactical Air Control Center
TACP - Tactical Air Control Party
TACS - Tactical Air Control System
TAR - Tactical Air Reconnaissance
TOC - Tactical Operations Center

SECTION I

INTRODUCTION

Confrontation between Warsaw Pact forces and those of the NATO Alliance in Central Europe presents the most serious threat of high-intensity war to the forces of NATO. Such confrontation has critical consequences for many other nations of the world as well. To counter this threat successfully, the military forces of the United States and NATO must be able to employ all available resources effectively in order to accomplish the established political goals of the alliance. This means that the United States Army must be able to conduct warfare effectively at the operational level. The operational level of war is defined as that level of warfare that involves the employment of large units, normally corps and larger, to wage campaigns designed to "attain a strategic objective in a theater of war."¹ A crucial element for success at the operational level is the employment of air power in the form of interdiction in order to "delay, disrupt, divert, or destroy an enemy's military potential before it can be brought to bear effectively against friendly forces."² Air interdiction (AI) is an operational level activity, because the flexibility of air power permits the theater commander to shift an extremely influential fire power asset to the most critical area within the theater. This rapid shifting of air power allows him to influence battlefield actions

and sequence tactical events to win campaigns.

Engaging in coalition warfare at the operational level requires close cooperation and coordination among the various NATO forces and also among services within those forces. For US forces in NATO, and particularly in Central Europe, this cooperation and coordination is most crucial between the US Army and US Air Force. Both services have attempted to solve some of these problems through the establishment of a number of Joint Service Agreements and Memoranda of Understanding. The recent publication of the Joint Army and Air Force pamphlet General Operating Procedures for Joint Attack of the Second Echelon (J-SAK) is of particular interest, because it establishes the conceptual framework for how the US Army and Air Force are to plan and coordinate the attack of Soviet-style second echelon forces.

The problem to be investigated is the question of whether current joint US Army and Air Force doctrine adequately supports, at the operational level, the coordination of AI efforts within NATO in Central Europe. The study is significant because, to be successful against Warsaw Pact forces in Central Europe, NATO forces must have the combined effort of all services and forces. Air power provides one of the most flexible and powerful tools that the theater commander has at his disposal. The US Army and Air Force must have joint procedures established that are capable of being employed in all theaters with a full degree of

understanding and cooperation. Recent joint agreements may have created problems for employment of AI assets in NATO. Some of these problems include the procedures outlined for the employment of AI, the management of air assets, and the designation of elements that coordinate and consult but do not plan jointly. The US Army and Air Force need to address and solve these problems, so they do not lessen the capability to wage combined warfare at the operational level in NATO, Central Europe.

In the next two sections of this paper considerations for and procedures used in the employment of air interdiction missions by US and NATO forces are examined. In the following section these systems are compared, and significant procedural differences are highlighted. Finally, implications for current and future operations are considered.

SECTION 11

AIR INTERDICTION: THE UNITED STATES VIEW OF MISSIONS AND PROCEDURES

The missions of the United States Air Force describe broad military objectives to be attained by the use of air power. These interdependent missions, designed to produce specific effects, are strategic aerospace offense, strategic aerospace defense, counter air (CA), air interdiction (AI), close air support (CAS), special operations, airlift, and aerosurveillance and reconnaissance.³ The missions that may be of the most immediate concern to the United States Army and NATO land forces are AI and CAS. Air power, particularly AI with its inherent flexibility, provides the means for the theater commander to accomplish the ends intended by the campaign plan.

The objective of AI is to delay, disrupt, or divert an enemy force before it can harm friendly forces. Although generally an independent effort, AI is normally coordinated between the air and surface force commanders. AI efforts are designed to limit the enemy's mobility and his capability to maneuver forces, to force him into high rates of consumption, and to create opportunities for friendly forces to exploit the vulnerabilities presented by interdiction efforts. The weight, phasing, and perhaps most importantly, the timing of interdiction attacks, provide the theater commander the opportunity to seize the

initiative while denying that opportunity to the enemy.⁴ Thus, AI becomes one of the primary instruments of combat power at the operational level.

Battlefield air interdiction (BAI) is a subset of AI. It is focused against enemy forces and targets which are in a position to have a near-term effect (not yet in close proximity) on the operations or scheme of maneuver of friendly forces. BAI is executed by the air component commander (ACC) as an integral part of a total AI effort. Because of the nature of the targets and the influence on the land component commander's (LCC) operations, BAI attacks require joint coordination at the component (ACC/LCC) level during the planning phase and may require coordination during the execution phase. The primary difference between BAI and the rest of the AI effort is the near-term effect on the enemy forces in support of the LCC's scheme of maneuver.⁵

CAS, a separate air mission category, is distinguished from AI and BAI because of its immediate effect on enemy forces and its employment in close proximity to friendly forces. CAS missions require detailed coordination and integration with the fire and maneuver plans of friendly land forces. The flexibility of CAS enhances surface force operations by providing the capability to concentrate massed firepower at critical points on the battlefield.⁶

In the early 1980's, the US Army developed the AirLand battle doctrine. Implicit in this doctrine is the understanding

that, "to defeat even first echelon opposing forces, US forces must alter their approach to warfare by stressing maneuver and fighting in depth."⁷ The problem this presents, particularly in Central Europe, is that often there is not enough depth to allow the necessary standoff distance from the enemy to gain the advantage of maneuver. The capability of giving up ground to allow the enemy to go past his natural culminating point is often not only physically impossible because of the terrain, but also, in NATO, it is contrary to the strategy of forward defense. Therefore, in order to gain the necessary depth to shape the land battle to the advantage of the friendly force, air power must be employed.⁸ The recognition of the need to gain depth through the application of air power led to the joint development and publication by the US Army and Air Force of the General Operating Procedures for Joint Attack of the Second Echelon (J-SAK).

From the viewpoint of the US Army, J-SAK enhances AirLand battle doctrine by assisting land commanders to fight battles in depth and by looking for attacking enemy forces well beyond the forward line of own troops (FLOT).⁹ The procedures outlined in J-SAK provide a means for targets to flow up from divisions to corps and eventually to the Air Force in the tactical air control center (TACC) at the ACC's headquarters. The consultation and coordination required to synchronize interdiction and ground actions takes place at the TACC with the participation of army

officers assigned to the collocated battlefield coordination element (BCE).¹⁰

The view of the US Air Force is that close combat and general support are provided to the land forces to win the battle. Close combat support is provided in the form of CAS and general support by AI and CA. General support includes interdiction of enemy units and attainment and maintenance of air superiority. Also included is the attack of enemy echelons to the depths allowed by the employment capabilities of tactical air resources.¹¹ In J-SAK, the enemy second echelon is defined as those enemy ground formations that are not engaged in combat at the FLOT and are positioned behind the forces in contact as a reserve force, a Soviet-style second echelon, an operational maneuver group, or follow-on forces. The primary purpose of these forces is to maintain the momentum of the attack, so as to insure and exploit the success of the engaged echelons, and to strengthen defensive belts to counter enemy force attacks.¹²

The senior air commander in the joint force is designated as the ACC, and, as such, he exercises command of all assigned air forces through the tactical air control systems (TACS) and its senior control element, the TACC. The ACC is responsible for planning and executing the interdiction effort. He also develops an air apportionment recommendation and submits it to the joint force commander (JFC) for approval.¹³ Additionally, according to J-SAK, the senior land commander in the joint force is designated

as the LCC. As such, he is responsible for planning and executing land force operations. He exercises control over assigned forces through a tactical operations center (TOC). A tactical air control party (TACP) is normally located with the fire support element (FSE) of the supported headquarters, generally at corps level and below. The primary function of the TACP is to provide air advice to the commander of the supported land force unit and to assist in fire support coordination and integration. All land assets are controlled and directed through the land component, field army, corps, and division headquarters. The LCC outlined in J-SAK for various force levels is as follows:

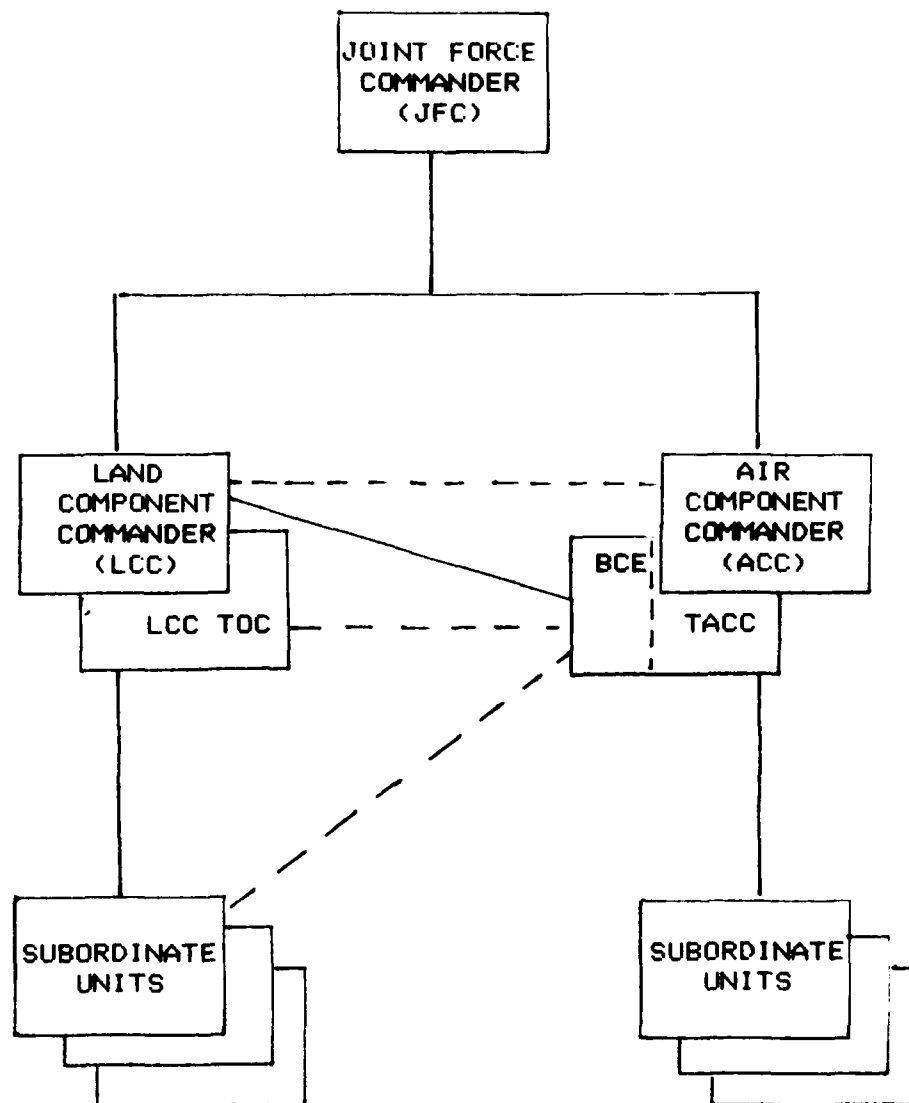
single corps environment- a corps commander may be the LCC, provided there is no land echelon above corps established with an operational mission.

more than one corps- a field army commander may be designated to command subordinate corps and function as LCC, or one of the corps commanders will be designated as LCC.

multi-field army environment- an army group commander may be designated to command subordinate field armies and function as LCC.

Generally, the LCC referred to in J-SAK is the field army commander with several corps. The LCC establishes a BCE as his representative in the ACC's TACC.¹⁴ FIGURE 1 shows the command and coordination relationships of the JFC, ACC, LCC, TACC, BCE, and subordinate units.

The general procedures outlined for AI requests are depicted in FIGURE 2. In this example, the ACC is responsible for the AI effort that supports the JFC's theater campaign plan. The



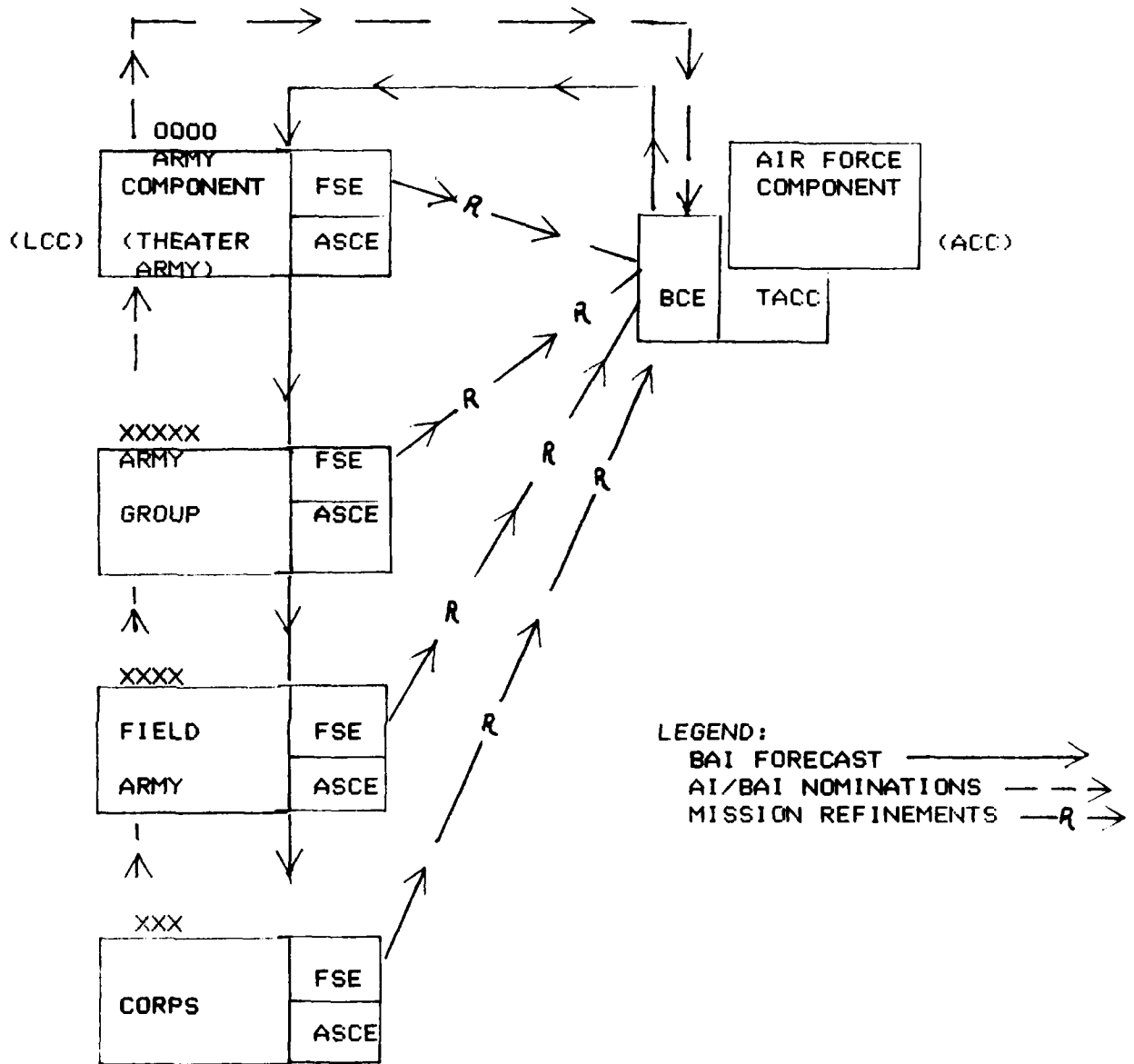
JFC-ACC-LCC RELATIONSHIPS 15

FIGURE 1

S-A

theater army commander, as LCC, identifies to the ACC those interdiction missions he sees as critical to the success of the land effort. The LCC also plans for the employment of those weapons systems under his control that will aid in the interdiction effort. The BCE, in consultation and coordination with the TACC, forecasts the BAI effort to the LCC for planning. The LCC provides a similar forecast to his subordinate units. Separate AI and BAI target lists and missions are analysed, prioritized, deconflicted, and monitored at each successive echelon to insure compliance with the commander's concept and intent. The LCC's requirements are passed to the ACC through the BCE and TACC. The TACC consolidates all requests, integrates the separate AI and BAI target lists, deconflicts targeting, programs requirements against resources, notifies the BCE of any shortfalls, and incorporates sorties into the air tasking order (ATO). Any refinements to the ATO are passed from the various FSEs to the BCE directly.¹⁷ FIGURE 3 summarizes the relationship of CAS, BAI, and AI and outlines the procedures used for each mission.

The operational linkage of this system occurs in the apportionment and allocation process. It is here that the synchronization of the air interdiction and the land efforts occur. At the corps air support operations center (ASOC), the corps commander nominates and prioritizes those BAI targets that he cannot affect through his systems. He also nominates any



CHANNELS FOR PLANNING AND COORDINATING AIR INTERDICTION (AI) AND
BATTLEFIELD AIR INTERDICTION (BAI) 16

FIGURE 2

	CAS	BAI	AI
CATEGORY	SEPARATE AIR MISSION	SUBSET OF AI	SEPARATE AIR MISSION
SUPPORT OF LAND FORCE CMDR	CLOSE COMBAT	GENERAL SUPPORT ATTACK MISSIONS	
TARGET AREA	CLOSE PROXIMITY	NOT GEOGRAPHICALLY DEPENDENT	
TARGET AFFECT	IMMEDIATE	NEAR-TERM	LONGER-TERM
COORD. AGENCY	ASOC/CORPS JFC APPORTIONS, ACC ALLOCATES, IN PRIORITY, TO CORPS	TACC/BCE	
PLANS	CORPS CDR NOMINATES THRU ASOC	LCC NOMINATES AND PRIORITIZES	LCC NOMINATES, ACC DECIDES
CONTROL, COORD., REQUIRED	INTEGRATION INTO FIRE & MOVEMENT PLAN OF FRIENDLY UNIT	CONSULT & COORD DURING PLANNING, MAY COORD DURING EXECUTION	DETAILED INTEGRATION WITH GROUND PLAN NOT REQUIRED
TYPE ORDER	TARGET-ORIENTED	MISSION-ORIENTED	

SUMMARY OF US AIR MISSIONS AND PROCEDURES

FIGURE 3

9B

targets he believes necessary due to their long-range effect on his plans. The LCC, in this example a field army commander, prioritizes the targets nominated from the corps in his area of responsibility (AOR), nominates targets of interest to his plan, and in consultation with the ACC (this takes place at the TACC/BCE), determines targets for the interdiction effort. The JFC has already been informed of the intentions and plans of the LCC and ACC and has developed his apportionment plan, which is the determination by the JFC of the total expected tactical air effort by percentage or priority that should be devoted to the various tactical air operations or geographic areas for a given time.¹⁸ In some instances, the JFC may chose to subapportion BAI missions, which is a process of expressing, by percentage, that portion of the AI effort projected to be flown against BAI targets.¹⁹ Based on the JFC's apportionment, the ACC allocates (translates the apportionment into total numbers of sorties by aircraft type available for each operation or task)²⁰ the tactical air assets to the mission to be performed. Air power, as an operational level asset, allows the theater commander to weight the air effort in order to sequence tactical battles to accomplish campaign objectives. The synchronization of the air and land efforts permits sequencing to occur.²¹

Some of the key features of J-SAK are as outlined below.

- The JFC is charged with the responsibility of establishing theater-level guidance for the interdiction effort and is able to influence his campaign objectives through his apportionment decision.

- The LCC and ACC consult and coordinate as coequal commanders through the collocated TACC/BCE.
- Force-oriented missions and objectives are stressed as opposed to target-oriented missions.
- Target areas are force-related and not tied to a specific geographical area.
- BAI is a subset of AI.
- The LCC nominates and prioritizes BAI, and he nominates AI targets. The ACC, consistent with the guidance of the JFC, decides which targets to attack. The ACC provides feedback to the LCC, who may then appeal omissions to the ACC or JFC.²²

In spite of the significant planning and coordination improvements made by the US Army and Air Force through J-SAK, problems still exist that require resolution. Some of the shortcomings identified by other critics are outlined below.

- Throughout the discussion of AI procedures the terms air and land effort have been used; the terms in J-SAK are air and land campaigns. In a theater, there should be only one campaign, the theater campaign, joint or combined.²³
- Currently, the US Army, Air Force and Marine Corps recognize an ACC and LCC. The Navy continues to recognize service component commanders.
- In a theater with many competing requirements for air resources, not all corps will receive the air assets they request. This point is not clearly stated in J-SAK.²⁴
- Consultation and coordination is accomplished at the TACC/BCE, not joint planning.²⁵
- Some degree of confusion exists as to who is and who is not an LCC.²⁶
- J-SAK is a non-theater specific doctrine for global application. As written, it presents some difficulties when applied to coalition warfare.

Air power is a tremendous resource that allows the theater commander to sequence activities and synchronize battlefield

actions at the operational level of war. When properly employed, it is one of his primary instruments for synchronization. The US Army and Air Force have taken significant steps forward to assist air and land commanders in the employment of combat power. Some problems still exist, but for the most part they are solvable, given the proper degree of education, understanding, and compromise. The acid test comes when the system is employed in a combined theater that has developed solutions to similar problems which are institutionalized and accepted by the rest of the alliance. This is the case in NATO, specifically in Central Europe.

SECTION III

AIR INTERDICTION IN CENTRAL EUROPE: THE NATO VIEW OF MISSIONS AND PROCEDURES

The employment of military forces in NATO presents opportunities for successful planning and operations in a joint and combined environment. There are also some unique problems presented because of the need to integrate larger ground units, i.e. corps, which fight according to their respective national doctrines.²⁷ These doctrines must mesh fairly well, or the alliance will experience major obstacles in campaign planning. The Supreme Allied Commander, Europe (SACEUR), as the theater commander, must link multi-national and strategic aims with the tactical military means and objectives. He affects this linkage at the operational level of war by sequencing battles and operations, in consonance with his theater campaign plan, to reach the desired military outcome. One of the means he has available to accomplish this is the employment of air power. Air power has the inherent flexibility necessary to concentrate combat power at the critical point and time.

The importance of air power in NATO operations is expressed as follows:

Although NATO is a defensive alliance and concedes the initiative to a potential aggressor, the reaction of NATO forces should be geared to gaining the offensive. Therefore, early reaction to aggression should be to blunt the enemy thrust while organizing for a counter-attack to seize the initiative. Tactical air power is inherently tailored for both these tasks.²⁸

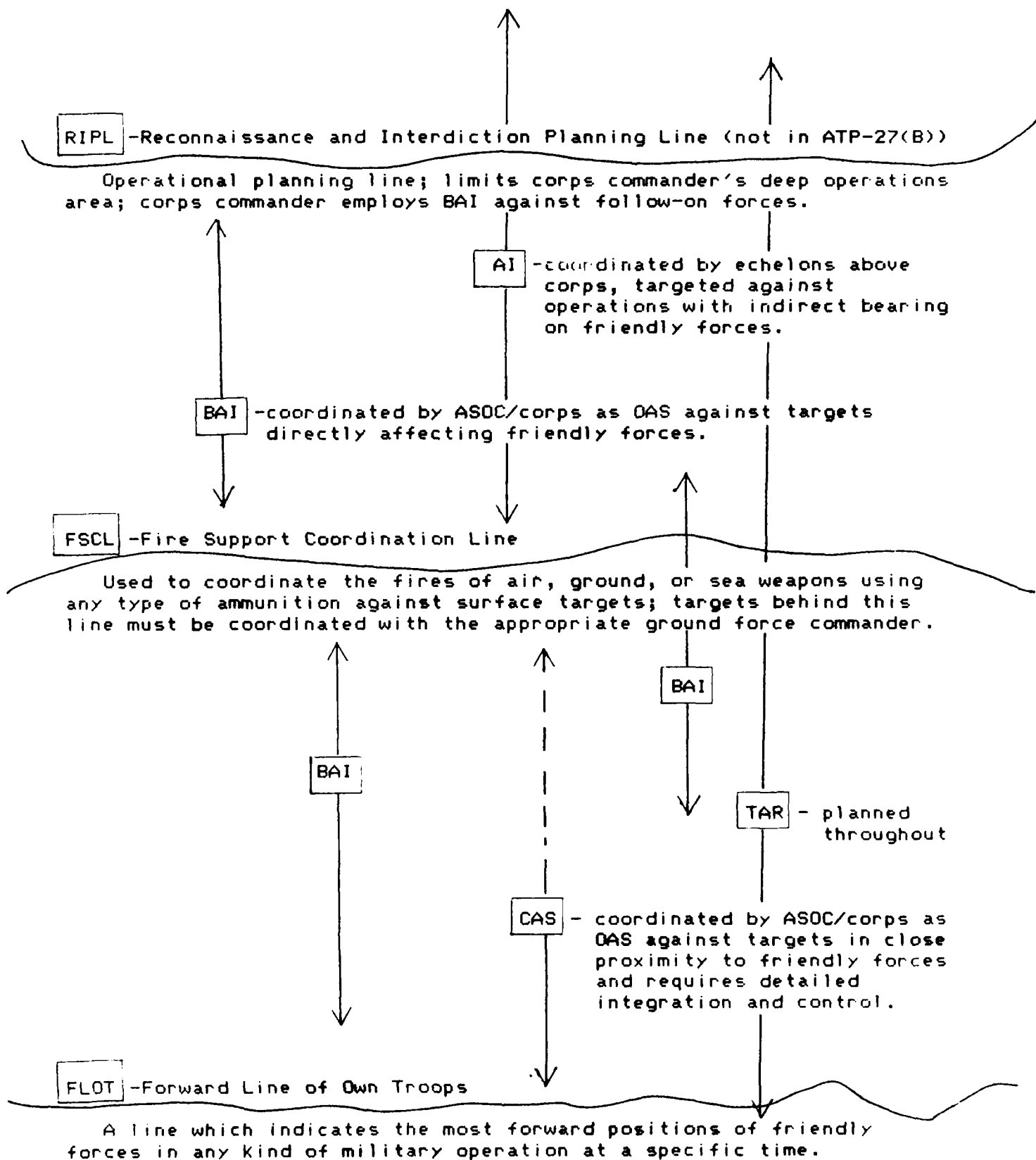
Tactical air operations (land) include counter air (CA), air interdiction (AI), tactical air reconnaissance (TAR), offensive air support (OAS), and tactical air transport.²⁹ Of particular interest to the theater commander, at the operational level of war, is the employment of OAS and AI. OAS includes TAR, BAI, and CAS. In NATO, BAI is not a subset of AI. TAR is considered essential in all tactical air operations and, therefore, is both a separate category of tactical air operations and a subset of OAS.

"The objective of OAS operations is to directly support land force combat operations."³⁰ CAS, directed against hostile forces in close proximity to friendly forces, requires detailed integration with the fire and movement of those forces. BAI, focused against enemy targets that are in a position to directly affect friendly forces, requires joint planning and continuous coordination; however, that coordination may not be required during execution.³¹ The primary differences between CAS and BAI are the proximity to friendly forces and the control arrangements required. CAS missions are responsive to the land commander during all phases of execution. BAI, even though requested by the land commander, may be conducted entirely under air force direction with only normal coordination procedures in effect between the forward line of own troops (FLOT) and the fire support coordination line (FSCL).³² Additionally, BAI is directed against enemy forces not yet engaged with friendly

forces to delay, destroy, or neutralize them in the battlefield area.³³

Air interdiction is a separate category of tactical air operations. Its purpose is to delay, destroy, or neutralize enemy forces before they can be brought to bear on friendly forces. It is conducted at such distances from friendly forces that detailed integration of each air mission with the fire and movement of friendly forces is not required.³⁴ Targets which affect an enemy's military potential include those forces not engaged in close combat, supplies destined for forces in combat, and the means by which the unengaged forces and supplies are transported. AI operations are primarily directed at preventing or interfering with the enemy's movement into, within, and out of the battle area. Carefully planned and executed AI efforts can reduce the enemy's personnel and material resources to such levels that they may seriously impair his capability to continue fighting.³⁵

The relationship of CAS, BAI, TAR, and AI to land air battle planning lines are depicted in FIGURE 4. Two planning lines, the FLOT and the FSCL, are used to facilitate joint planning for the use of air to ground weapons systems.³⁷ CAS occurs closer to troops in contact, while BAI is targeted farther from the FLOT but on either side of the FSCL. The FSCL is a line established by the appropriate ground commander to insure coordination of fires not under his control which may affect current tactical



LAND AIR BATTLE PLANNING LINES 36

FIGURE 4

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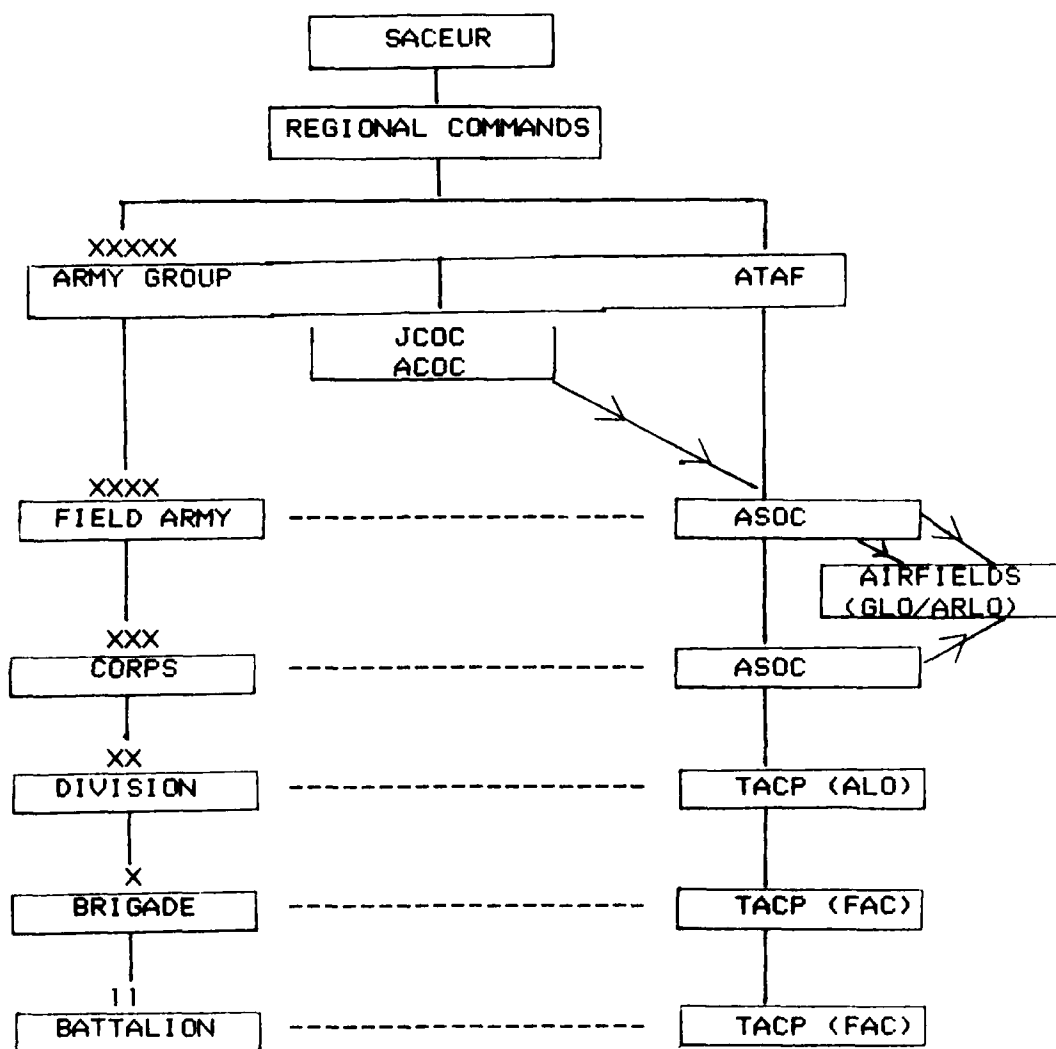
operations. It follows well defined terrain features and indicates the line beyond which supporting fires may be delivered without prior coordination.³⁸

From a US point of view, the corps' deep battle area falls in the area short of the reconnaissance and interdiction planning line (RIPL) and forward of the division area of responsibility (AOR). In this area of deep operations, the corps commander employs BAI with the major objective of attacking follow-on forces to disrupt their progress and to reduce their strength during their approach to the area of close operations.³⁹ It is within this area that the corps commander attempts to shape the anticipated battle to his advantage by synchronizing his combat power resources and directing them against enemy vulnerabilities. If any conflicts arise between commanders over target attack coordination, they will be solved at the army group/ATAF level.⁴⁰

The definitions and procedures used in NATO for apportionment and allocation are the same as those described for US forces in Section II. A third term, allotment, is defined as "the temporary change of assignment of tactical air forces between subordinate commands."⁴¹ Tasking is defined as "the process of translating the allocation into orders, and passing those orders to the units involved. Each order normally contains sufficient detailed instructions to enable the executing agency to accomplish the mission successfully."⁴²

The general structure of NATO forces and the various coordination agencies is shown at FIGURE 5. The two allied tactical air forces (ATAFs), 2ATAF and 4ATAF, are assigned to Allied Air Forces Central Europe (AAFCE), the assets of which may be allotted by the the AFCENT commander as required. The joint command operations center (JCOC), an allied joint operations center, located at the army group/ATAF level, allocates air resources based on AFCENT's apportionment. The air command operations center (ACOC) is the allied air operations air center at army group/ATAF. In some regions, a joint operations center (JOC) is employed as a joint agency at field army/tactical air force level. When these headquarters are collocated, its functions are similar to the JCOC. The air support operations center (ASOC) is the air agency subordinate to the ACOC and is collocated at the field army/corps or highest army formation deployed. It is often responsible for tasking the air effort allocated to OAS. In NATO, TACPs, as air support control agencies, are normally located at division level and below.⁴⁴ The specific arrangements for Allied Air Forces Central Europe (AAFCE) is shown at FIGURE 6. It includes the Central Region Air Operations Center (CRAOC), which is the operations element for AAFCE and has overall operational control of all Central Region air forces.⁴⁶

The allied tactical operations center (ATOC) exercises tactical air control over the air assets allocated from the ACOC

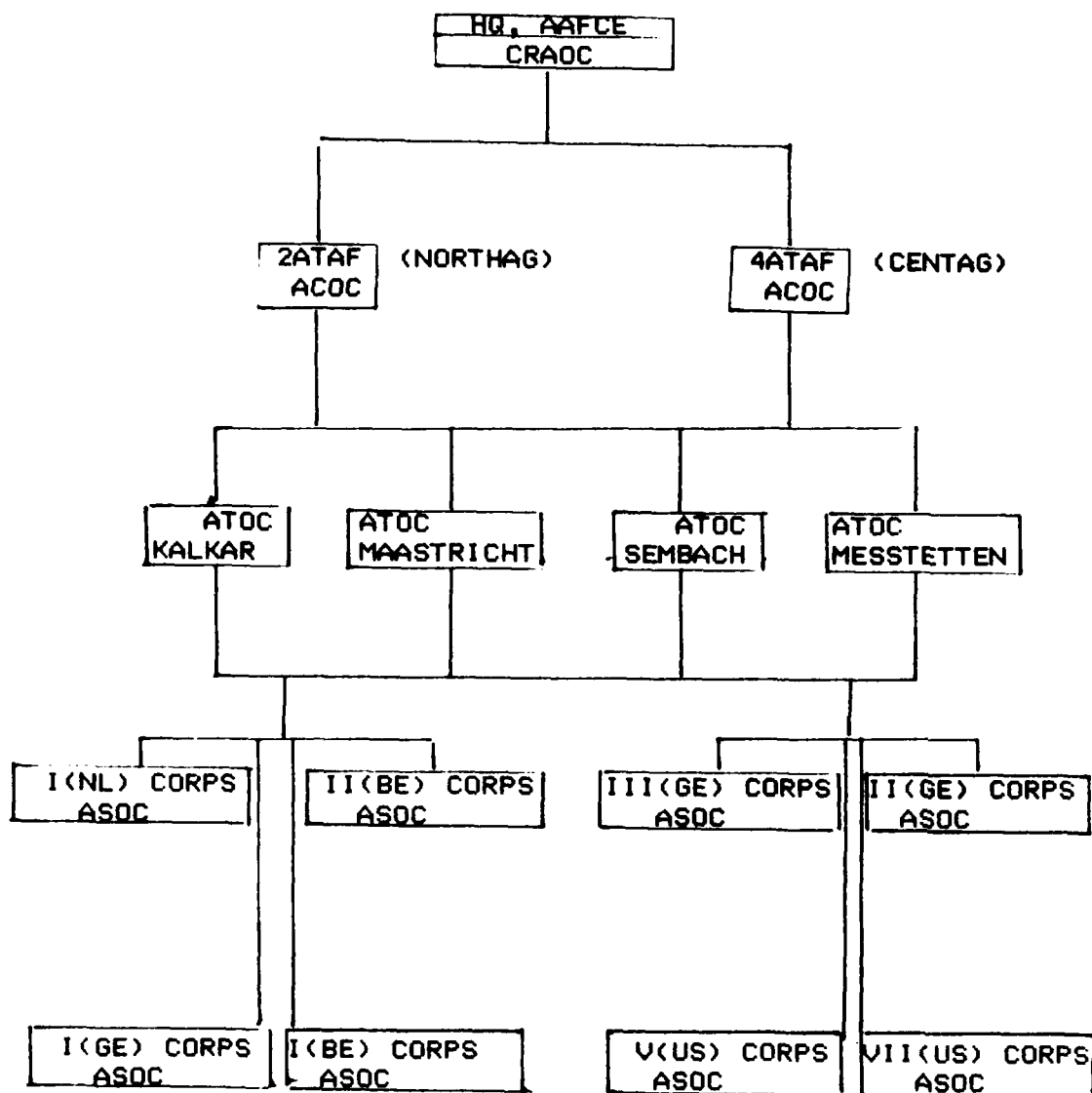


LEGEND:
 Operational Command _____
 Joint Command and Coordination - - - - -
 Tasking _____

GENERAL NATO STRUCTURE 43

FIGURE 5

17A



ALLIED AIR FORCE CENTRAL EUROPE (AAFCE) STRUCTURE 45

FIGURE 6

and is subordinate to its respective ATAF. Because of the extremely difficult command and control problems associated with air operations in Central Europe, the ATOC has often functioned as an air controller and aircraft dispatcher, rather than functioning as the director of OAS warfighting efforts.⁴⁷ Acting in coordination with other ATOCs, the ATOC commander needs to be fully responsible for executing day-to-day operations. Based on the mission and forces available, he should have the same flexibility as ground commanders to make all operational decisions, including changing specific missions of aircraft to respond to operational necessities.⁴⁸

A summary of the relationships of selected air missions and procedures is shown at FIGURE 7. Some features of the NATO system are as follow:

- BAI and CAS are a subset of OAS and are considered in direct support to the land force commander.
- The battlefield appears to be divided according to land air planning lines that are geographically oriented.
- Orders are specific target or target array (as opposed to mission) oriented.
- A joint/combined planning and coordination element has been formed through the collocation of army group and ATAF elements.
- AAFCE manages AI efforts, primarily beyond the RIPL with increased control of BAI efforts in the hands of the corps commanders.

NATO forces in Central Europe at the army group/ATAF level have examined numerous options available to the corps and army

	CAS	BAI	AI
CATEGORY	SUBSETS OF OAS		SEPARATE AIR MISSION
SUPPORT OF LAND FORCE CMDR	DIRECT SUPPORT		GENERAL SUPPORT
TARGET AREA	CLOSE PROXIMITY OR CONTACT	EITHER SIDE OF FSCL BUT NOT IN CLOSE PROXIMITY	BEYOND FSCL
TARGET AFFECT	DIRECTLY AFFECTS FRIENDLY OPERATIONS		INDIRECT BEARING
COORD AGENCY	ASOC/CORPS		ABOVE ASOC/CORPS
PLANS	TACP TO ASOC	ASOC	AAFCE
CONTROL, COORD., REQUIRED	DETAILED INTEGRATION INTO FIRE & MOVEMENT PLANS; POSITIVE/PROCEDURE CONTROL IN EXECUTION	JOINT PLANNING AND COORDINATION	
TYPE ORDER	SPECIFIC TARGETS		SPECIFY TARGETS

SUMMARY OF NATO AIR MISSIONS AND PROCEDURES 49

FIGURE 7

18A

group commanders. They have developed procedures and collocated planning elements to facilitate the synchronization of joint efforts required at the operational level of war. In doing so, they have made significant strides forward in coordinating the procedures that allow the concentration of combat power at critical points. As shown in Section II, the US Army and Air Force have attempted to accomplish similar objectives. Some differences remain between J-SAK and NATO procedures that may cause problems for US forces that are deployed to fight in Europe. Some of these issues are examined in the next section.

SECTION IV

AIR INTERDICTION: A COMPARISON OF J-SAK AND NATO MISSIONS AND PROCEDURES

When comparing the J-SAK and NATO systems, it must be remembered that J-SAK is a non-theater specific doctrine and is designed to be flexible enough to be adapted globally with minor modifications. The NATO system has evolved as a product of plans for multi-nation, multi-corps coalition warfare, in which each major land force follows national warfighting doctrine. Adherence to national doctrine presents unique aspects in the prosecution of the theater campaign plan. Two of the more critical areas involve the definition of air missions, particularly the approach to BAI as a subset of AI or OAS, and the management of air assets in general.

Air Missions and Procedures

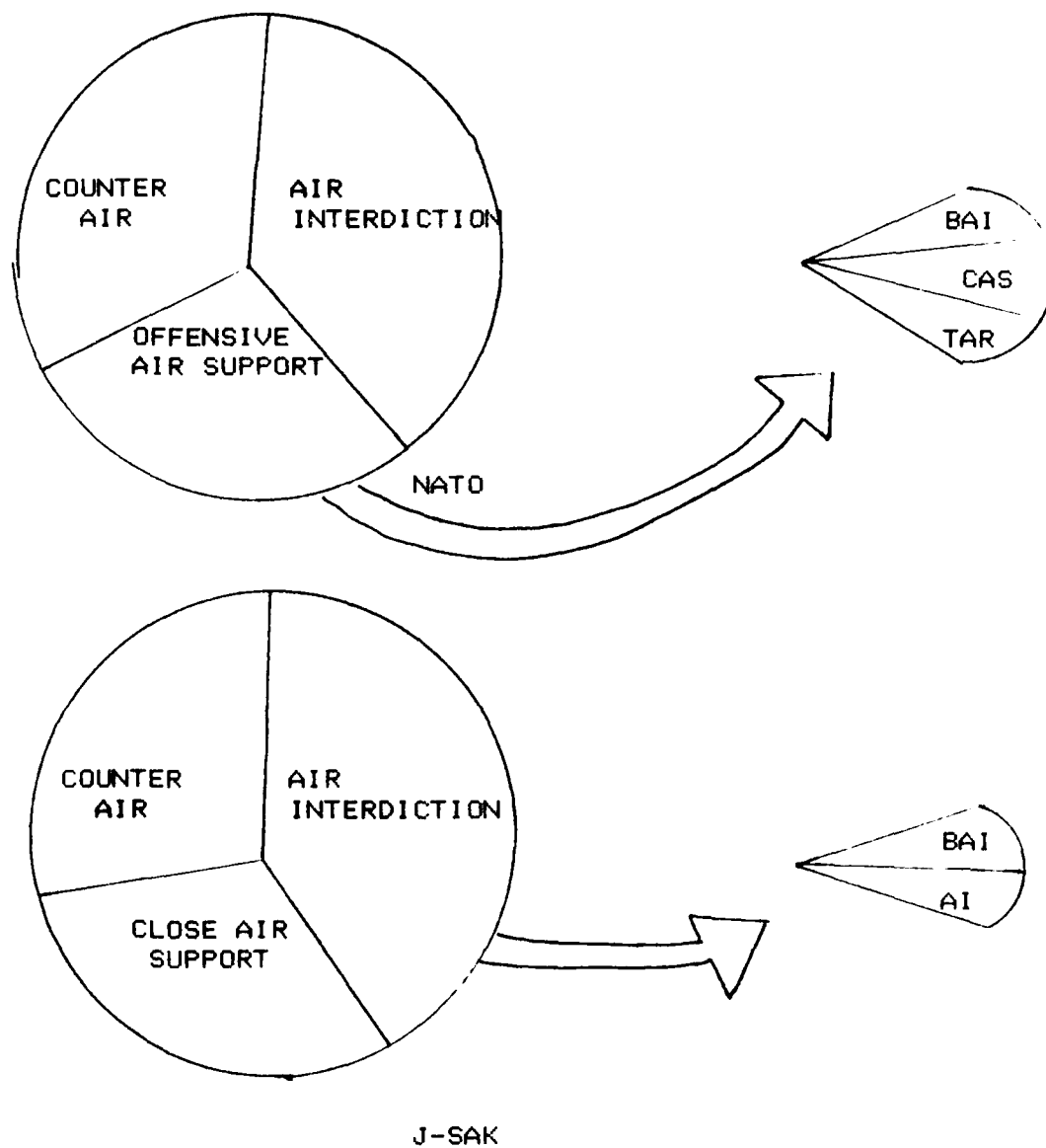
Under the US concept as outlined in J-SAK, direct combat support is provided to the land forces through CAS. General support is provided through CA and AI. BAI is a subset of AI, and as such, is part of the JFC's AI effort. Under the NATO concept, AI is a separate category of air missions as is OAS, which is considered as direct combat support and includes BAI, CAS, and TAR. BAI missions are flown for corps commanders, but control is retained by the theater air commander, AAFCE, through

the ATAFs. FIGURE 8 represents the differences between J-SAK and NATO in approaching the problem as provided through the apportionment of air assets.

The critical element in the BAI discussion is where and how it is coordinated in support of the theater campaign plan. Current procedure outlined in J-SAK suggests that this coordination occurs at the BCE/TACC to enable the commander to synchronize combat power resources in shaping the battlefield. In NATO, this synchronization takes place at the army group level, where the ATAF has the capability to allocate OAS to the corps.⁵¹ The corps commander needs air assets, particularly BAI, but his needs must be in consonance with the theater campaign plan. Therefore, not all corps will receive an equal, or in some areas adequate share of the BAI requested. This requires joint planning and coordination by the air and land commanders in the context of both the air and land plans.⁵²

Joint Planning and Coordination Agencies

The coordination and consultation of AirLand activities, as outlined in J-SAK, occurs at the TACC/BCE in the ACC's headquarters. There is no TACC/BCE in NATO doctrine. Recognizing the criticality and importance of having collocated joint planning headquarters, both army groups and their respective ATAF's, CENTAG/4ATAF and NORTHAG/2ATAF, have collocated air and land elements for planning. This arrangement is, in essence, a TACC/BCE and a joint/combined planning and



DIFFERENCES IN AIR APPORTIONMENT BETWEEN J-SAK AND NATO 50

FIGURE 8

21A

coordination cell. This element goes beyond J-SAK in recognizing the importance of joint planning at the headquarters involved in the operational level of war.⁵³

Coordination and Planning Procedures

The establishment of coordination measures and procedures, particularly the FSCL, appears to cause some degree of confusion. The FSCL is often misinterpreted as delineating the division commander's area of responsibility (AOR) beyond the close battle.⁵⁴ The FSCL is a permissive fire support coordination measure established by corps. There is a tendency to view an FSCL as a division RIPL or as a maneuver control measure. It is intended to fulfill no other purpose than as a fire support coordination measure. The corps commander uses BAI to disrupt and destroy enemy forces, echeloned in depth, that are approaching the area of close operations. He focuses his BAI efforts on either side of the FSCL short of the RIPL. The area beyond the RIPL is the province of echelons above corps. U.S. doctrine does not recognize a RIPL. This presents an education problem for US forces not familiar with NATO procedure. Consideration should be given to incorporating the RIPL concept into U.S. doctrine. Use of the RIPL would allow the commander to shape the battlefield in accordance with the mission, what he wants the enemy force to do, and what he can accomplish to influence the successful outcome of the battle. The distance

from the FLOT would depend on the range of intelligence gathering systems and weapon delivery means.

Mission Orders

Finally, to make this entire system work, commanders and planners must be able to respond rapidly to changing battlefield conditions and to combine air and land assets effectively in the pursuit of operational aims. Anticipating requirements and concentrating combat power at the critical point and time requires a clear understanding of the mission and the commander's intent. The discipline of thought and action required by commanders and staff officers in the development and issuance of mission orders results in a clearer understanding of mission and intent. Mission orders also facilitate an appreciation for how the commander anticipates the flow of the battle and what he envisions the end result "looking like." J-SAK encourages the use of mission orders such as, "Delay advance of Division X - prevent battalion or larger size units from crossing the BQ 40 grid line from 271200Z until 281200Z Feb 86."⁵⁵ In contrast, current NATO procedures encourage the nomination of specific targets and target arrays. This issue may prove to have the most far-reaching effects, requiring significant reorganization of planning and coordination elements and requiring considerable education efforts for all concerned. The US Army and Air Force need to continue their efforts to institutionalize the use of mission orders within the US systems. Our military forces must

continue to learn how our allies use mission orders and encourage others to do the same. Mission orders are essential to the practice of the operational art; they forge the link between the air and land commanders' missions, because they require a clear understanding of the theater campaign plan as well as individual service plans.⁵⁶

FIGURE 9 represents a comparative summary of selected US and NATO air missions and procedures of interest to the operational level commander. A clear understanding of the conduct of air and land operations in the NATO coalition environment is necessary for effective planning and coordination. Differences must be resolved to cause the various systems to function in harmony and concentrate effectively all available resources at those critical points affecting current and future operations. Planners must be able to adapt to a number of differing national doctrines and procedures, adopt the best of each, and structure the battle in accordance with the theater campaign plan. To accomplish this, the development of common procedures, common terminology, and a common understanding of the battlefield in any theater of war must be pursued.⁵⁷

		CAS	BAI	AI
CATEGORY	U S	SEPARATE	SUBSET OF AI	SEPARATE
	N A T O	SUBSETS OF OAS		SEPARATE
SUPPORT OF LAND FORCE CMR	U S	CLOSE COMBAT	GENERAL SUPPORT ATTACK MISSIONS	
	N A T O	DIRECT SUPPORT		GENERAL SUPPORT
TARGET AREA	U S	CLOSE PROXIMITY	NOT GEOGRAPHICALLY DEPENDENT	
	N A T O	CLOSE PROXIMITY OR CONTACT	EITHER SIDE OF FSCL, NOT IN CLOSE PROXIMITY	BEYOND FSCL
TARGET AFFECT	U S	IMMEDIATE	NEAR-TERM	LONGER-TERM
	N A T O	DIRECTLY AFFECTS FRIENDLY OPERATIONS		INDIRECT BEARING
COORD. AGENCY	U S	ASOC/CORPS	TACC/BCE	
	N A T O	ASOC/CORPS		ABOVE ASOC/CORPS
PLANS	U S	CORPS CDR NOMINATES	LCC NOMINATES AND PRIORITIZES	LCC NOMINATES ACC DECIDES
	N A T O	TACP TO ASOC	ASOC	AAFCE
CONTROL, COORD., REQUIRED	U S	DETAILED INTEGRATION	CONSULT & COORD DURING PLANNING	NO REQ'T FOR DETAILED GRD INT
	N A T O	DETAILED INTEGRATION-PLAN; POSITIVE PROC IN EXECUTION	JOINT PLANNING AND COORDINATION	
TYPE ORDER	U S	TARGET-ORIENTED	MISSION-ORIENTED	
	N A T O	SPECIFIC TARGETS		SPECIFY TARGETS

US - NATO COMPARATIVE SUMMARY

FIGURE 9

24A

SECTION V

AIR INTERDICTION, US AND NATO: IMPLICATIONS FOR CURRENT AND FUTURE OPERATIONS

US military forces in NATO live and operate in a joint/combined environment. The nature of coalition warfare demands flexibility in the application of national doctrine. To conduct warfare in NATO, Central Europe, the air and land efforts must be mutually supporting. It is through the application of air power, particularly AI and BAI directed against follow-on echelons, that land forces are able to gain depth and time to maneuver effectively. It is the synchronization of joint actions that provides depth through air power, positional advantage through maneuver, and concentration of combat power at critical points. This process allows NATO forces to seize and maintain the initiative over the first strategic echelon Warsaw Pact forces. The theater commander, executing his campaign plan, is in the best position to direct the critical functions of AI, CA, reconnaissance, and land maneuver toward accomplishment of the strategic and operational goals.⁵⁸ The corps commander needs the help of the air force to shape close operations by the interdiction of enemy reserves or follow-on echelons moving toward him. In this way he can win the battle in his AOR, in accordance with the needs of the theater commander.⁵⁹

Coalition warfare requires coherence between national

doctrinal procedures and NATO procedures. This is often difficult to do. In the case of a US corps, national doctrinal procedures for the employment of BAI differ from those of NATO. In this instance, the US national procedures must be balanced against the need for world-wide employment and the operational necessities of NATO. NATO doctrine must provide for an air allocation focus on the most critical theater effort.⁶⁰ It must also retain the flexibility to reinforce battles in support of the campaign plan, and at the same time be capable of concentrating decisive air power to attack deep to destroy follow-on echelons.⁶¹ Daily allocation procedures in NATO often do not allow enough reaction time for the corps to adjust their plans to the receipt or non-receipt of air requests. The solution requires an earlier allocation notification system that may not exist in NATO or US procedures at this time.⁶² It is interesting to note that a difference in the interpretation of time periods exists between the theater army level and corps and below. A 24-hour planning cycle may be acceptable at theater army, and yet the same 24-hour period may be extremely short in the eyes of those at corps and below. For planners, the realization of the differences in time clocks at each level of command is critical.

The framework of joint US Army and Air Force doctrine to support the coordination of interdiction efforts at the operational level of coalition warfare exists separately in J-SAK and NATO procedures. However, refinement is needed in both

systems to insure an effective meshing of planning and coordination considerations. AI efforts enhance the capabilities of large land maneuver forces to win battles in critical areas and to weight efforts in other areas to sequence actions in support of the theater campaign plan.⁶³ Specific areas that require attention are the definitions of air missions, particularly BAI as a subset of AI or OAS and its role in the theater interdiction effort. The NATO system seems to be more efficient because of the coordination and planning actions that take place at the army group level. The management of air assets in general also needs further refinement. Specific attention should be given to joint planning considerations that go beyond coordination and consultation.

A fundamental discontinuity exists between the US Army's view of the role of air power and that of the US Air Force. The US Army, because its collective experience is primarily at division level and below, views air power as another form of artillery. As such, it responds to the immediate needs of the ground commander in attacking "six-digit" grid coordinate locations. US Air Force doctrine recognizes air power as another "maneuver arm" capable of rapid concentration throughout the theater. US Army planners, especially at the operational level, must realize that air power is capable of attacking enemy forces and accomplishing maneuver missions. Air power represents more than another means to deliver ordnance. Air power is a valuable

warfighting asset. It requires a delicate balance in its employment. Too much of any one type of mission will upset the balance and contribute to defeat because of the opportunity costs involved.

The adoption by US forces of the concept of a RIPL could assist in the synchronization of air and land efforts and allow the corps commander to shape his close battle area. Joint planning, as opposed to coordination and consultation, at the TACC/BCE or army group/ATAF level, could enhance the operational linkage required in the planning and execution of a theater campaign. The ability to use mission orders for air and land planning requires that both elements have a clear understanding of their separate missions and their various commanders' intent both for current and future operations. In addition, because they are involved in a common endeavor, the land and air commander must understand each other's mission. Moreover, both must understand the theater commander's mission and intent.⁶⁴

The US Army and Air Force will have to solve these problems as coequal partners in a joint environment before refinement and resolution can be expected in a combined environment. The basis for the development of joint and combined doctrine exists, but it requires education, understanding, appreciation for service and national interests, and the capability to take the best of all systems and develop US national doctrine that is flexible enough

for non-theater specific, global application and yet is able to be readily adapted to a coalition environment such as in NATO.

Joint service issues converge at the operational level of war. It is also at the operational level that the difficult problems presented by coalition warfare, specifically in NATO, Central Europe, must be anticipated. It is imperative that practitioners of operational art understand theater specific doctrine as well as their own national doctrine, so they can be flexible enough in a coalition environment to apply national doctrine within the framework of coalition doctrine. Plans must be made and coordination effected to overcome problems, and the actions of all participants must be synchronized to insure the accomplishment of campaign objectives. In warfare, success rests not only with the forces that make the fewest mistakes, but also with the forces that effectively employ all the tools and instruments of available combat power to pursue the "object of all operations, which is to impose our will upon the enemy - to achieve our purposes."⁶⁵

ENDNOTES

1 Operations, Department of the Army Field Manual (FM) 100-5 (Final Draft), (Ft. Leavenworth: Command And General Staff College, 28 October 1985), p. 2-2.

2 Basic Aerospace Doctrine of the United States Air Force, Department of the Air Force Manual (AFM) 1-1, (Washington: Government Printing Office, 1984), p. 3-3.

3 Ibid., p. 3-2.

4 Ibid., pp. 3-3, 3-4.

5 FM 100-5, pp. 3-51, 3-52.

6 AFM 1-1, p. 3-4.

7 Essays On Strategy. "Deep Attack in Defense of Central Europe: Implications for Strategy and Doctrine," (Washington: National Defense University Press, 1984). This article appeared in the readings for the School of Advanced Military Studies, Course 5, Readings in Theater Operations NATO, Academic Year 1985-86, Ft. Leavenworth, KS: CGSC, pp. 197-245.

8 COL Huba Wass de Czege, A letter to the editor of Military Review commenting on COL Thomas A. Cardwell III's article "AirLand Battle Revisited," which appeared on pp. 4-15, of the Sep 1985 issue of Military Review. Military Review. Jan 1986, pp. 84-87.

9 General Operating Procedures for Joint Attack of the Second Echelon (J-SAK), TAC-TRADOC Pam 525-45, (HQs, USAF Tactical Air Command, and US Army Readiness Command, 31 Dec 1984), p. 2-6.

10 Wass de Czege, p. 86.

11 J-SAK, p.1-2.

12 Ibid.

13 Ibid., p. 2-5.

14 Ibid., p. 2-4.

15 Ibid., p. 2-3.

16 Theater Army, Army Group, and Field Army Operations, Department of the Army Field Circular (FC) 100-16-1, (Ft. Leavenworth: Command and General Staff College, 1984), p. B-3.

17 Ibid., pp. 3-32, 3-33.

- 18 J-SAK, p. 2-7.
- 19 Joint Service Agreement for the Attack of the Second Echelon, (Washington: HQs, Departments of the US Army and Air Force, Nov 1984), p. 2.
- 20 Department of Defense Dictionary of Military and Associated Terms, Joint Chiefs of Staff (JCS) Pub 1, (Washington: Government Printing Office, 1984), p. 24.
- 21 COL Thomas A. Cardwell, "AirLand Battle Revisited," Military Review, (Sep 1985), p. 11.
- 22 MAJ Stephen T. Rippe, "An Army and Air Force Issue: Principles and Procedures for AirLand Warfare," MMAS Thesis (Ft. Leavenworth: US Army Command and General Staff College, 1985), p. 49.
- 23 Wass de Czege, p. 87.
- 24 Ibid.
- 25 Rippe, p. 119.
- 26 Wass de Czege, p. 86.
- 27 Essays, p. 216.
- 28 NATO Tactical Air Doctrine, NATO MAS ATP-33(A), (HQ NATO, 1980), p. 4-1.
- 29 Ibid.
- 30 Offensive Air Support, NATO MAS ATP-27(B) (w/ chg. 1), (HQ NATO, 1983), p. 2-1.
- 31 NATO Tactical Air Doctrine, NATO MAS ATP-33(B) (Preliminary Draft), (HQ NATO, 1984), p. E-105.
- 32 ATP-27(B), p. 4-2.
- 33 ATP-33(A), p. 4-9.
- 34 ATP-33(B), p. E-103.
- 35 ATP-33(A), pp. 4-5, 4-6.
- 36 ATP-27(B), p. 2-7.
- 37 Ibid., p. 2-5.

- 38 Essays, p. 217.
- 39 GEN Glen K. Otis, "Some Thoughts on Battlefield Air Interdiction," (HQs, US Army Europe, and Seventh Army, 2 Nov 1984), p. 2.
- 40 Offensive Air Support, Allied Air Forces (AAFCE) Manual 80-2, (HQ, AAFCE, 1982), p. 3-2.
- 41 ATP-33(B), p. E-104.
- 42 Ibid.
- 43 ATP-27(B), p. 5-6.
- 44 Ibid., p. 5-5.
- 45 AAFCE 80-2, p. 12.
- 46 Rippe, p. 53.
- 47 Ibid.
- 48 Otis, p. 3.
- 49 ATP-27(B), p. 2-6.
- 50 MAJ David Hamilton, "Close Air Support and Battlefield Air Interdiction in the AirLand Battle," MMAS Thesis (Ft. Leavenworth: US Army Command and General Staff College, 1983), p. 56.
- 51 Essays, p. 216.
- 52 Otis, p. 1.
- 53 Ibid., p. 3.
- 54 Essays, p. 217.
- 55 J-SAK, p. 5-5.
- 56 Otis, pp. 3-4.
- 57 Ibid., p. 1.
- 58 GEN William R. Richardson, "FM 100-5: The AirLand Battle in 1986," Military Review, (Mar 1986), p. 7.
- 59 Wass de Czege, p. 87.

60 Essays, p. 221.

61 Ibid., p. 234.

62 Ibid., p. 220.

63 Wass de Czege, p. 84.

64 Otis, p. 4.

65 FM 100-5, p. 2-13.

BIBLIOGRAPHY

Books

- Wesley, On Strategy. "Deep Attack in Defense of Central Europe: Implications for Strategy and Doctrine." Washington: National Defense University Press, 1984. This article appeared in the readings for the School of Advanced Military Studies, Course 5, Readings in Theater Operations NATO, Academic Year 1985-86, Ft. Leavenworth, KS: CGSC, pp. 197-245.
- Wick, William F. U.S. Ground Forces and the Defense of Central Europe. Washington: The Brookings Institution, 1983.
- Wimer, GEN William W. Air Power in Three Wars. Washington: Department of the Air Force, 1978.
- von Mellenthin, F.W. and Stolfi, R.H.S. NATO Under Attack. Durham, NC: Duke University Press, 1984.
- Wright, Russell Frank. Eisenhower's Lieutenants. Bloomington: Indiana University Press, 1981.

Government Documents

- Allied Air Forces Central Europe (AAFCE) Manual 80-2, Offensive Air Support (NATO Restricted). Ramstein, Germany: HQ, AAFCE, 1982.
- Department of the Air Force Manual (AFM) 1-1, Basic Aerospace Doctrine of the United States Air Force. Washington: Government Printing Office, 1984.
- Department of the Army Field Manual (FM) 100-5 (Final Draft), Operations. Ft. Leavenworth: Command and General Staff College, 28 October 1985.
- Department of the Army Field Manual (FM) 100-15 (Final Draft), Corps Operations. Ft. Leavenworth: Command and General Staff College, 1985.
- Department of the Army Field Circular (FC) 100-15-1, Corps Deep Operations. Ft. Leavenworth: Command and General Staff College, 1985.
- Department of the Army Field Circular (FC) 100-16-1, Theater Army, Army Group, and Field Army Operations. Ft. Leavenworth: Command and General Staff College, 1984.

Department of the Army Field Circular (FC) 100-26, Air-Ground Operations. Ft. Leavenworth: Command and General Staff College, 1984.

Joint Chiefs of Staff (JCS) Pub. 1, Department of Defense Dictionary of Military and Associated Terms. Washington: Government Printing Office, 1 Apr 84.

North Atlantic Treaty Organization (NATO) Military Agency for Standardization (MAS), ATP-27(B), Offensive Air Support. HQ NATO, 1980.

NATO MAS ATP-27(B) (w/ chg. 1), Offensive Air Support. HQ NATO, 1983.

NATO MAS ATP-33(A), NATO Tactical Air Doctrine. HQ NATO, 1980.

NATO MAS ATP-33(B) (Preliminary Draft), NATO Tactical Air Doctrine. HQ NATO, 20 Jan 1984.

DAG-TPADOC Pam 525-45, General Operating Procedures for Joint Attack of the Second Echelon (J-SAK). HQs, USAF Tactical Air Command, and US Army Readiness Command, 31 Dec 1984.

US Army and US Air Force, Joint Service Agreement for the Attack of the Second Echelon. Washington: HQs, Departments of the Army and Air Force, Nov 1984.

Articles and Periodicals

Alberts, LTC Donald J. "An Alternative View of Air Interdiction." Air University Review. Jul-Aug 1981, pp. 31-44.

..... "A Call from the Wilderness." Air University Review. Nov-Dec 1976, pp. 35-45.

Allen, GEN Lew Jr. "U.S. Air Power." U.S. Military Power in the 1980's. London: McMillian Press LTD, 1983, pp. 115-119.

Bagnell, Sir General Nigel. "Concept of Land/Air Operations in the Central Region: I." Journal of the Royal United Services Institute for Defense Studies (RUSI). Sep 1984, pp. 59-62.

Candwell, COL Thomas A., III. "AirLand Battle Revisited." Military Review. Sep 1985, pp. 4-13.

- _____. "Extending the Battlefield." Air University Review. Mar-Apr 1983, pp. 86-93.
- _____. "Follow-On Forces Attack: Joint Interdiction By Another Name." Military Review. Feb 1986, pp. 4-11.
- _____. "Managing Theater Air Assets." Military Review. May 1983, pp. 40-45.
- _____. "One Step Beyond-AirLand Battle, Doctrine Not Dogma." Military Review. Apr 1984, pp. 45-53.
- Dodge, COL (Ret) Griffin N. Letter to the editor of Military Review commenting on COL Thomas A. Cardwell III's article "AirLand Battle Revisited," which appeared on pp. 4-15, of the Sep 1985 issue of Military Review. Military Review. Jan 1986, pp. 82-84.
- Doerfel, LTC John S. "The Operational Art of the AirLand Battle." Military Review. May 1982, pp. 3-10.
- Galvin, LTG John R. "Warrior Preparation Center, USAF/Army Hammer Out Close Cooperation." Field Artillery Journal. Mar-Apr 1985, pp. 48-50.
- Hanne, COL William G. "Doctrine, Not Dogma." Military Review. Jun 1983, pp. 11-25.
- McPeak, LTG Merrill A. "TACAIR Missions and the Fire Support Coordination Line." Air University Review. Sep-Oct 1985, pp. 65-72.
- Machos, MAJ James A. "Air-Land Battles or AirLand Battle." Military Review. Jul 1983, pp. 33-40.
- Owen, CPT Thomas A. "The Battlefield Coordination Element: The Key to AirLand Synchronization." AirLand Bulletin. Bulletin No. 85-4, 31 Dec 1985, pp. 20-23.
- Parkes, Wing Commander Alan. "Air Interdiction in a European Future War." Air University Review. Sep-Oct 1976, pp. 16-18.
- Powell, MAJ Jon S. "AirLand Battle: The Wrong Doctrine for the Wrong Reason." Air University Review. May-Jun 1985, pp. 15-22.
- Rasmussen, COL Robert D. "The Central European Battlefield." Air University Review. Jul-Aug 1978, pp. 2-20.

Richardson, GEN William R. "FM 100-5: The AirLand Battle in 1986." Military Review. Mar 1986, pp. 4-11.

_____. "Winning on the Extended Battlefield." ARMY. Jun 1981, pp. 35-42.

Rogens, GEN Bernard W. "Sword and Shield: ACE Attack of Warsaw Pact Follow-On Forces." NATO's Sixteen Nations. Feb-Mar 1983, pp. 16-26.

Stanny, GEN Don A. "Extending the Battlefield." Military Review. Mar 1981, pp. 31-50.

van der Vlis, COL Arie. "AirLand Battle in NATO." Parameters. Summer 1984, pp. 10-14.

Wass de Czege, COL Huba. Letter to the editor of Military Review commenting on COL Thomas A. Cardwell III's article "AirLand Battle Revisited," which appeared on pp. 4-15, of the Sep 1985 issue of Military Review. Military Review. Jan 1986, pp. 84-87.

Westenhoff, CPT Charles M. "Audacity in the Air War." Military Review. Dec 1981, pp. 2-7.

Theses and Other Papers

Beal, LTC Richard H. "Strategy, High Technology, and the AirLand Battle." Research Report. Maxwell Air Force Base, AL: Air War College, 1982.

Busico, MAJ Roger P. "Battlefield Air Interdiction: Air Power for the Future." MMAS Thesis. Ft. Leavenworth: CGSC, Jun 1980.

Goel, MAJ Mark P. "The Field Artillery in Support of Deep Offensive Missions." MMAS Thesis. Ft. Leavenworth: CGSC, May 1985.

Hamilton, MAJ David. "Close Air Support and Battlefield Air Interdiction in the AirLand Battle." MMAS Thesis. Ft. Leavenworth: CGSC, Jun 1983.

Henderson, MAJ James B., Jr. "The 'Air' in the AirLand Battle." MMAS Thesis. Ft. Leavenworth: CGSC, Jun 1982.

- Hightower, MAJ Charles D. "The History of the United States Airborne Forward Air Controller in World War II, Korea, and Vietnam." MMAS Thesis. Ft. Leavenworth: CGSC, Jun 1984.
- Otis, GEN Glen K. "Some Thoughts on Battlefield Air Interdiction." Headquarters, United States Army, Europe, and Seventh Army, APO 09043. Personal letter from GEN Otis to GEN William R. Richardson, Commander, U.S. Army Training and Doctrine Command, dated 2 Nov 1984.
- Rader, COL William K. "Targeting Air Interdiction in Support of AirLand Battle." Student Essay. Carlisle Barracks: Army War College, 1985.
- Redden, LTC Joseph J. "AirLand Battle - The Global Doctrine?" Study Project. Carlisle Barracks: Army War College, 1983.
- Reeves, LTC John M. "Rethinking the Application of the Army-Air Force Team on the Modern Battlefield." Study Project. Carlisle Barracks: Army War College, 1978.
- Rippe, MAJ Stephen T. "An Army and Air Force Issue: Principles and Procedures for AirLand Warfare." MMAS Thesis. Ft. Leavenworth: CGSC, May 1985.