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# DETERMINING THE OPTIMUM AVIATION ORGANIZATION FOR THE OPERATIONAL LEVEL OF WAR

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

MASTER OF MILITARY ART AND SCIENCE

by

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ABSTRACT

DETERMINING THE OPTIMUM AVIATION ORGANIZATION FOR THE OPERATIONAL LEVEL OF WAR

by MAJ Carlton L. Hood, USA, 180 pages.

This thesis examines the U.S. Army's aviation organizational structure from a corps perspective to determine the optimum aviation organization and employment level for operational warfare. Existing doctrine, organizations, and employment concepts have left a void in the procedures by which U.S. Army Aviation intends to execute "AirLand Battle" doctrine at the operational level. This study examines three alternatives for organization and employment of Army Aviation on the mid-intensity European battlefield. The primary focus of this study is on determining the feasibility of further developing the concept of an "AirMechanized" Division as proposed by General Doctor Ferdinand M. von Senger und Etterlin, Brigadier (retired) Richard E. Simpkin, and Colonel Wally Franz. The methodology through which this study was undertaken involves a series of four analyses: an historical overview of U.S. Army Aviation doctrinal and organizationl development, a brief examination of NATO and Soviet aviation doctrine and organizational concepts, the use of wargaming analysis to describe the available options to current aviation force structure, and the performance of a cost-effectiveness survey.

Research reveals that an AirMechanized Division is a viable operational combat force that needs to be incorporated into the U.S. Army's total force structure. The primary advantages of fielding such a force are evident in its strategic mobility, flexibility, responsiveness, and maneuverability. The U.S. Army and its NATO Alliance armed forces must evaluate their capabilities and potential of fielding a combined AirMechanized Division that can support the overall defense plan of Western Europe and decide if they are willing to fund that organization for employment at the field army level.

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# CHAPTER 1

# INTRODUCTION

## PURPOSE AND SCOPE.

The primary purpose of this study is to determine the optimal aviation organization at the operational level of warfare for the United States Army. This is accomplished by examining three options for aviation force structure design: one is the Corps Aviation Brigade as it is currently structured under the J-series Table of Organization and Equipment; another is the substitution of an AirMechanized Division for the Corps Aviation Brigade; a third considers the creation of an aviation operational maneuver division for a field army. The concept of an "AirMechanized" Division was suggested initially by German General Doctor F. M. von Senger und Etterlin and Brigadier (retired) Richard E. Simpkin, in 1982. The AirMechanized Division is built around an aviation base with a light, highly mobile, anti-armor ground attack force complementing the firepower and maneuverability of attack helicopters.[1] The genesis of this study is founded on the premise that the aviation organizational structure at the operational level must possess sufficient combat power and maneuverability to meet the requirements of the US Army's new operational doctrine, referred to as the "AirLand Battle" Doctrine. This study is confined to identifying the optimum characteristics and force design for an aviation operational maneuver organization in the Central European Theater, or AFCENT.

This study was undertaken originally from a US Army corps perspective, with emphasis on the heavy corps and division aviation brigades. These two organizations represent the preponderance of aviation assets available for operational and tactical employment, and the organizations most frequently and currently under revision. Furthermore, the Corps Aviation Brigade represents

the US Army's most ambitious effort to date to modernize force structure and doctrine in light of the high technology available. However, as this study evolved, it became clear that the study must examine the problem from the field army perspective as well.

Considerations for the selection of evaluation criteria were restricted to those affecting conventional operations, and ranged over aspects that were relevant to mechanized infantry and armored divisions. A general study encompassing the employment of corps and division aviation assets was conducted in order to focus on the capabilities which these elements now possess, or the ones they will have in the near future, to achieve their aims on the modern battlefield. A secondary purpose of this paper is to offer some observations concerning the factors that have influenced aviation organization, operations, and doctrine within the US Army. Throughout this study, the enemy organization and operational doctrine were based primarily on the Soviet model.

Defining Operational Warfare:

A basic premise of the US Army's operational doctrine, otherwise known as the "AirLand Battle" Doctrine, is that battles and campaigns are fought and won at the operational level, as well as tactical level. If the term "tactics" is synonymous with the execution of a prescribed scheme of maneuver, then the term "operational" must apply to the level where strategy is converted into tactics. Perhaps one of the best definitions of operational level of warfare is provided by Edward Luttwak:

> "In theater strategy, political goals and constraints on one hand and available resources on the other determine projected outcomes. At a much lower level, tactics deal with specific techniques. In the operational dimension, by contrast, schemes of warfare such as blitzkreig or defense-in-depth, evolve or are exploited. Such schemes seek to attain the goals set by theater strategy through suitable combinations of tactics."[2]

BACKGROUND.

Since 1978, the US Army has been planning to meet the numerically superior and increasingly sophisticated Soviet threat of the 1985-1995 decade through improved tactical concepts and the introduction of advanced materiel systems. In order for advances achieved from these new tactics and systems to be of the greatest value, they had to be incorporated into organizations that could fully exploit their capabilities. The magnitude of the potential changes in warfare brought about by those capabilities, and the logistics and training to support them, demanded a new organizational framework, so that an orderly transition could be made from current units to those of the mid-1980's. While serving as a means of transition, that organizational framework had to produce the most combat effective and strategically mobile division that could counter the significantly increased threat that the Army would face on the battlefield of the future. The instrument through which the various doctrinal and organizational proposals were made was the ARMY 86, which evolved into the "Army of Excellence," Force Modernization Plan. The purpose of the modernization plan was to develop units that could facilitate the integration of operational concepts, human resources, and new advanced materiel systems into the Army.[3]

Force designers were confronted with a narrowing set of parameters within which the total force structure had to fit. Ground combat vehicle technology, although continuing to make evolutionary improvements in firepower and armored protection, appeared to be approaching the upper limits of useful operational mobility.[4] Budgetary and manpower constraints were significantly altering the Active-to-Reserve Component force ratio. Excessively high materiel and equipment costs amplified an already apparent composition enigma. The "Army Aviation Mission Area Analysis (AAMAA) Level II Final Report" provides a detailed list of the major design principles of this reorganization action:

1) proposed organizations could not exceed current major end item budgetary constraints (no significant equipment increases);

2) limited Active Component manpower increases (optimize Reserve Component roundout and augmentation of Active Component units);

3) manpower and equipment authorizations enhance strategic mobility;

4) organizational designs must incorporate fielded or anticipated major end items, such as the Advanced Attack and Scout Helicopters (AAH and ASH);

5) where technology had increased systems capabilities, reductions in manpower and equipment authorizations;

6) Reserve Component authorizations must be fully integrated into the Total Army force structure;

7) company-size units should be single-task oriented, where possible, with emphasis on decentralized control, simplified logistics requirements, and sufficiently small in size to accommodate battlefield dispersion, camouflage, cover, and concealment;

8) the restructured organizations should expand command opportunities to accommodate unit cohesion, assignment stability, and career progression.[5]

Identifying the Task:

The primary task that faces the US Army's force designers is to develop an aviation organization that incorporates these reorganization principles and meets the objective of countering the Soviet threat on the AirLand battlefield. To understand the threat, one must be cognizant of Soviet operational doctrine. Foremost to the Soviet style of offensive combat is the theory and operational technique of "echelonment." As depicted in Figure 1-1, echelonment provides the Soviet military commander with the means to achieve mass, momentum, and continuous combat (Soviet Principles of War).[6] The operational function of echelonment is tactical flexibility and initiative at all command levels. To defeat the Soviet operational and tactical employment doctrine, the US Army

corps commander must accomplish three separate but interrelated tasks on the integrated battlefield:

1) provide subordinate maneuver commanders the forces to accomplish their missions in the covering force and main battle areas;

2) prevent or delay the employment of follow-on forces by the enemy sufficiently to allow forces in contact to maintain the forward defense;

3) unhinge or disrupt the integrity of the enemy's operational scheme sufficiently to seize the initiative, go on the offensive, and force the enemy to ground or destroy him completely.[7]

A fourth task, that of providing rear area security and conducting associated combat operations, is of primary operational concern to the corps commander but is not directly attributable to echelonment. Accomplishing these tasks in the "time windows" posed by Soviet doctrine demands simultaneous undertakings that must be rigorously and unhesitatingly applied when hostilities commence.

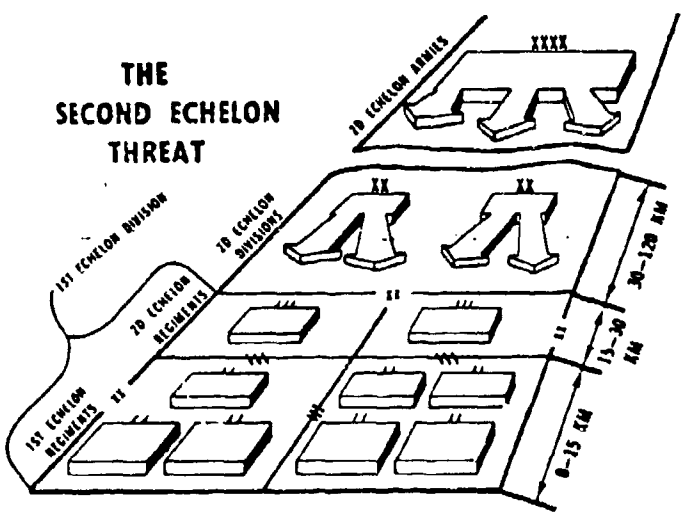


FIGURE 1-1: An Illustrated Portrayal of Soviet Echelonment Doctrine[8]

Finding a Solution:

As early as 1932, British Major General J. F. C. Fuller published a series of lectures which grappled with the problem of how to repel and defeat armor. Reasoning that armored columns can penetrate a defensive line and maneuver in all directions, General Fuller advanced the tactical proposition that:

> "The types of defenses required are such as will either prevent a breakthrough or stop an exploitation. They should be as deep as possible, not only in order to frustrate penetration, but if is effected, to make it as costly as possible."[9]

Historical studies and battlefield analyses since World War Two have tended to validate Fuller's thesis, concluding that the fulcrum of anti-tank defense rests on the ability to destroy enemy armor at the greatest possible distance from friendly positions and to engage the surviving armor with an increasing number of anti-tank weapons.[10] It follows that a concerted effort using every available system must be made by division and corps commanders to engage second echelon threat forces at long ranges to disrupt and delay their arrival into the main battle area. The immediate objective is to wrest the initiative from the opposing commander by disorienting his effort, disrupting his forces, and imposing maximum attrition upon his combat elements. Attacking his echelons in depth precludes the forward-deployed brigade troops from having to face overwhelming numerical superiority and permits the defeat of the enemy forces resulting from piecemeal commitment.[11]

In regard to this conclusion, one must analyze the methodology by which US Army doctrinal thinking intends to accomplish the task at hand. For most, the tank still represents the basic building block for any anti-armor defense. For others, the mechanized anti-tank guided missile system and the dismounted infantryman armed with panzerfausts or some other type lightweight anti-tank weapon have made the tank obsolete. However, for a few visionaries, aviation

possesses one of the greatest potentials for exploiting firepower and mobility on the AirLand Battlefield. Actively supporting this renewed interest in Army Aviation, General William E. Richardson, Commanding General, US Army Training and Doctrine Command (TRADOC), stated at the annual convention of Army Aviation Association of America (AAAA):

> "The Army that can harness the lethality and exploit the mobility of helicopters in the next war will gain and maintain a big advantage. [We can] begin by taking the lead in developing doctrine and tactics to employ attack helicopters, air cavalry, and air assault in new and innovative ways."[12]

**Battlefield Requirements:**

The US Army's operational doctrine, as described in Field Manual 100-5, identifies the essential elements of combined arms warfare as maneuver, firepower, and movement. It also emphasizes tactical flexibility, initiative, spirit of the offensive, interservice cooperation, and speed. This concept of maneuver warfare implies the application of three mechanisms: delay, disrupt, and destroy. Figure 1-2 provides an illustration of the application of these three mechanisms on the AirLand Battlefield.

THE PROBLEM

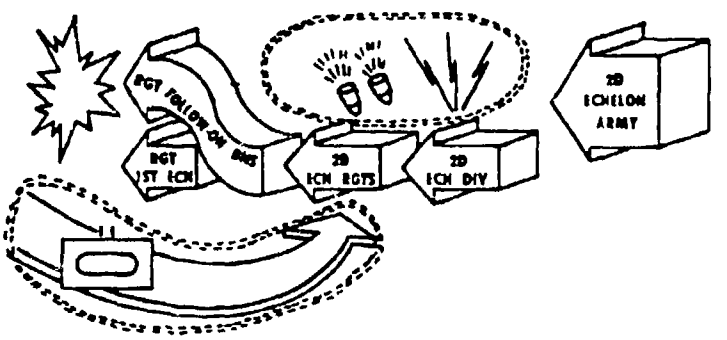


FIGURE 1-2: Delay, Disrupt, and Destruct Mechanisms of AirLand Battle[13]

The delay mechanism seeks to attack the enemy's mechanized forces before they have time to marshall and deploy, and attempts to slow the arrival of the second echelon forces into the main battle area. Its objective is to prevent follow-on forces from overloading the units defending on the Front Line of Own Troops (FLOT), and to open a "time and space window" between the echelons to allow defending forces an opportunity to destroy the enemy's leading echelon. The disrupt mechanism seeks to eliminate the enemy's advantage of offensive action by attacking throughout the depth of his operational formations to deny him the ability to reinforce or maneuver. The objective of disruption is to aid the commander in seizing the initiative away from the attacker and making him vulnerable to the defender's operational scheme of maneuver. Destruction is simply the means whereby the attacking force is contained and neutralized, attrited, or destroyed by the use of firepower and maneuver. Firepower is orchestrated to achieve the maximum synergistic effect, eliminating as many soldiers and systems as possible. Maneuver is first used to counter enemy thrusts, preventing them from penetrating the defenses and exploiting a breakthrough. Subsequent applications of maneuver will vary according to the character of the transition from defensive to offensive operations.

## PROBLEM STATEMENT.

By recognizing the need for an organization that contains the force structure to execute delaying, disruptive, and destructive maneuver at the operational level, one must consider Army Aviation as a prime candidate to perform that battlefield function. Therefore, the question remains: What is the optimal US Army aviation organization at the operational level of war?

## HYPOTHESIS.

When one discusses operational level of warfare, it is assumed that one of three organizations are being considered: the corps, the field army, or the

army group. With the focus of this study at the corps and field army level, no attempt will be made to determine the feasibility of an aviation maneuver force that could be employed at the army group level. Historical analysis and study of the threat initially indicate three possible organizational solutions to the stated problem. The first solution is the Corps Aviation Brigade as it is proposed under the J-series Table of Organization and Equipment. Another possible solution is to organize an AirMechanized Division as the corps aviation force. Third, assuming that the AirMechanized Division is a practical organization, it should be fielded as the field army aviation maneuver force, while retaining the Corps Aviation Brigade at its present design strength.

## ORGANIZATION OF THE STUDY.

This study attempts to answer the stated questions by conducting four analyses. The first analysis, contained in Chapter 2, is an historical overview and evaluation of the organizational and doctrinal development, missions, and roles of Army Aviation since 1947, with particular emphasis on aviation as an operational maneuver force. It examines the creation of the 11th Air Assault Division and 6th Cavalry Brigade (Air Combat) in response to the Howze Board, and the use of aviation to achieve tactical and operational mobility, firepower and surprise, especially during the US's involvement in Vietnam. New trends in aviation organization and employment are presented in the final portion of the chapter. Chapter 3 examines aviation organization and doctrinal trends on the European continent. It provides a comparative analysis of NATO and Soviet heliborne forces, with emphasis on linking defense policy and military doctrine to organizational structuring and aircraft design. It first examines countries of the North Atlantic Treaty Organization (NATO) and non-aligned nations, and then takes a look into the Soviet doctrine concerning heliborne operations. Chapter 4 provides a comparative analysis of the Corps Aviation Brigade and the "AirMechanized" Division. The evaluation of these units is conducted using a

narrative wargaming simulation which compares three organizational models. Model A represents a standard Army corps organized with an organic Aviation Brigade. The basic organizational structure of this model is in accordance with the J-series Table of Organization and Equipment. Model B represents an otherwise standard US Army corps except that it has an organic "AirMechanized" Division in lieu of the Corps Aviation Brigade. The organization has an Attack Cavalry Brigade, a Light Attack Brigade consisting of a Light Attack Anti-Armor Regiment and an Air Assault Infantry Regiment, and a Field Artillery Brigade. Model C represents a standard US Army Corps having an organic Corps Aviation Brigade, and the "AirMechanized" Division located at the field army level (in this case, Central Army Group, Europe). Each unit is organized as previously stated. Evaluation criteria are:

1) be immediately responsive to the field army and corps commander;

2) complement the field army and corps commanders' schemes of maneuver;

3) be capable of simultaneously conducting three dimensional combat - the deep battle, the close-in battle, and rear area combat operations - without detriment to committed divisions;

4) be capable of conducting and sustaining independent cross-FLOT combat operations for a period of 48-72 hours;

5) minimize battlefield signature through dispersion;

6) be capable of massing combat power quickly at the decisive point and time across the field army and corps sectors;

7) be capable of conducting combat operations under all environmental conditions (terrain and weather) indigenous to the area of operations;

8) retain a high degree of mobility for anti-tank ground maneuver forces in the absence of heliborne lift assets.

Chapter 5 provides a cost and operational effectiveness survey and comparative analysis of the "AirMechanized" Division to an armored division. The evaluation criteria for this analysis are operational mobility, firepower, protection, and

cost, both procurement and operating. Chapter 6 summarizes the study, restates conclusions drawn, and makes recommendations as to current and future US Army aviation organizations.

## ASSUMPTIONS AND LIMITATIONS.

### Assumptions:

The first assumption is that the same budgetary constraints imposed upon the "Army of Excellence" force design apply to the alternative proposal. This results in prohibiting any significant equipment or manpower increases. The second assumption is that Reserve Component forces must be integrated into the proposed organization. A third assumption states that the alternative force structure must incorporate the same design principles as the aviation brigade:

1) reduce tasks, simplify training and logistics requirements;
2) reduce battlefield signature;
3) optimize cohesion, stability, and career progression;
4) maintain strategic mobility capability.

The fourth assumption states that no overriding technological breakthroughs will occur during the near-term to mid-term period, inclusive of this study. Equipment considerations will include those major end items that have been fielded, are being fielded, or will be fielded in the 1985 - 1995 decade.

### Limitations:

The primary limiting factor to this study is the number of alternative proposals that may be analyzed. Due to resource constraints, only three models representing organizational concepts will be evaluated. A second limitation is the lack of a computer-assisted wargaming simulation to assist in the retrieval of data to aid in the evaluation process. As a result, the wargaming analysis is conducted using a Warsaw Pact Attack-European Conflict Scenario created by the author. Command and General Staff College publication RB 100-9, A Guide to

the Application of the Estimate of the Situation in Combat Operations, is used as a guide to direct the comparative analysis effort. A third limiting factor is the requirement to establish a "cut-off" date beyond which further modification to the "Army of Excellence" force structure can no longer be assessed. That date is established as 1 December 1983. Although this precludes the inclusion of subsequent modifications for analysis and assessment, any impact they might make upon the conclusions of this study will be addressed in the final chapter of this study.

## RESEARCH STRATEGY.

The methodology used for acquiring information concerning this research paper combines the use of three techniques: the examination of open literature, interviews with selected individuals from both inside and outside the aviation community, and the distillation of information from classified and unclassifed documentation. Essentially, all of the historical information concerning the evolution of Army Aviation employment doctrine, organizations, and operational concepts has been retrieved from classified material. Most of the classified documents surveyed contained large quantities of unclassified material; however only the unclassified test has been assimilated into this study. A fundamental purpose of the interviews is to bridge the gap between conceptual designs for which no documentation is available. They were used also to solicit opinions of personnel whom the proposed aviation force structure could directly affect.

## SIGNIFICANCE OF THE STUDY.

This study is attempted mainly to enhance the collective professional knowledge of the non-aviation community to appreciate the operational maneuver capabilities of Army Aviation, and to be used when considering the design of future US Army force structures, regardless of their orientation. A secondary purpose of this paper is to stimulate the aviation community into considering

new methods and techniques whereby aviation can be used as the arm of decision on the "AirLand" battlefield. This paper may have an application on force structure designing and doctrinal development involving the United States and its NATO allies. The observations, tests, and studies selected for inclusion in this paper are by no means exhaustive. They were selected because of their impact on fundamental or parochial issues, and were of current interest. Many questions concerning the employment of the Corps Aviation Brigade on the three dimensional battlefield should be answered through the wargaming simulation.

CHAPTER 1

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# CHAPTER 2

# HISTORICAL REVIEW OF ARMY AVIATION

## PURPOSE AND SCOPE.

To analyze the US Army's heavy corps operational aviation force structure design properly, one must be knowledgeable of the historical evolution of Army Aviation doctrine and organization. This historical synopsis provides a brief overview of the doctrine, battlefield functions, and missions of Army Aviation: the doctrine which grew out of combat experience and technological advancements and the battlefield functions, roles, and missions (with their related tactical organizations) which evolved from studies, tests, and fiscal constraints. What should become obvious is that aviation force structuring has been focused, for the most part, on providing the ground tactical commander with a source of supplemental firepower, as well as providing administrative and logistical support. Only the air cavalry combat brigade and the air assault/ airmobile division have been excursions into the realm of force designing for operational warfare. Consequently, one could present the argument that Army Aviation is on a course of development parallel to that of the Tank Corps.

This study traces the evolution of Army Aviation from its rebirth in the early 1950's as a result of American involvement in the Korean War through the current proposals affecting the heavy corps of the "Army of Excellence." The focus of this brief summary is on the evolution and development of air cavalry, air assault/airmobile, and attack helicopter organizations. Special attention is given to the formation of the 11th Air Assault Division, for it is here that doctrine and force structure combined to form a single, integrated operational entity. Discernable is an embryonic "concept-based requirements system" which

had its origin as early as 1952. Most evidence indicates that a cyclic flow of Roles - Concepts - Equipment Design - Doctrine was methodically enjoined, with doctrine lagging behind technology, and the limiting factor being "addressable" battlefield functions. Recognition is given to the interweaving of four major themes around which Army Aviation developed: 1) the issue of close air support, to include the development of attack helicopters; 2) the issue of duplication of effort with respect to aerial logistics and transport support; 3) the issue of aerial reconnaissance and surveillance; and, 4) the issue of air defense target acquisition and engagement systems and air traffic control. Since this study is focused primarily on the employment of helicopters in an operational role, only the first two issues will be addressed. No attempt is made to try and reconcile the Army-Air Force battlefield support issue. However, it is introduced in recognizing its impact on the development of aviation doctrine, tactics, and systems design. The final portion of this chapter addresses new innovative approaches to aviation organization, as presented by General Doctor F.M. von Senger und Etterlin, Richard E. Simpkin, and Colonel Wally Franz.

## THE EARLY YEARS: 1947 - 1954.

The "rebirth" of Army Aviation came as a result of the National Security Act of 1947, which formally established Army Aviation as a separate entity. Sensing the undercurrent of Army Aviation expansionism, the Air Force and Army Chiefs of Staff attempted to define the Army's aviation battlefield tasks in the Key West Agreement of 1948. This effort was characteristic of interservice attempts to support the growth of Army Aviation without infringing upon the Air Force's mission responsibilities.[1] Published in 1949, the Joint Army and Air Force Regulation 5-10-1 set forth the utilization criteria for Army aircraft and imposed weight limitations on fixed-wing and rotary-wing aircraft that could be organically assigned to the Army. It must be noted that during this

period Army aviation air assets were procured through Air Force channels. The responsibilities and procedures contained in the joint service regulation were the subject of continual debate. The basic problems were the limited scope within which the Army was permitted to operate and the corresponding failure of the Air Force to provide the requested support or equipment requirements.[2]

As early as 8 September 1950, General J. Lawton Collins, the Army Chief of Staff, proposed experimenting with a provisional airmobile infantry assault battalion and an airmobile field artillery battery. In response, Army Field Forces Board Number One was convened which produced two significant proposals. It recommended that aviation assets in airborne, infantry and armored divisions be consolidated within their respective division to form an organic aviation company; and, second, it recommended the formation of an Army Aviation Corps. Although neither of these proposals were carried, they did establish the framework for future organizational considerations. In a third study, the US Army Field Forces Board determined that the decentralized organization of Army Aviation as it existed was uneconomical and inefficient.[3]

On 2 October 1951, with the signing of a joint service "Memorandum of Understanding", Secretary Pace succeeded in redefining the missions and functions of Army Aviation to ensure that his service could employ aircraft necessary for its own requirements without infringing upon functions assigned to the Air Force. Army Aviation was to operate as "an integral part of its component for the purpose of expediting and improving combat and logistical procedures within the combat zone." It was restricted from duplicating the functions of the Air Force in providing tactical reconnaissance, close air support, aerial photography, interdiction, and assault transport.[4]

In 1952, Army Aviation entered a period of rapid expansion. By the end of 1954, the aviation program had assumed the form that it would retain until the development of the airmobility concept in the early 1960's. The need for additional clarification of the Army and Air Force viewpoints on Army Aviation required intercession by the service secretaries again. On 4 November 1952, a second "Memorandum of Understanding" was concluded by the Army and Air Force which superseded the agreement reached just thirteen months previous. Although favoring the Army's point of view, it re-imposed weight restrictions on fixed-wing aircraft, while retaining the functional definition for helicopters. A feature of this latest memorandum was the clear delineation made between the functions allocated to Army Aviation and those performed by the Air Force. Aerial transport of supplies, personnel, and equipment within the combat zone became the primary function of Army Aviation. The boundaries delineating the "combat zone" were extended out to a distance of 75 miles in depth from either side of the line of contact.[5]

Born out of the improvisations of World War II, Army Aviation expanded its role from artillery observation and liaison-courier flights to encompass aerial battlefield transport and emergency medical evacuation. Examination of historical records of the waning days of 1953, reveal that the helicopter was a key factor in the sudden expansion of Army Aviation. As concluded by the Army Field Forces Review in 1953, the assignment of aviation assets to using units within US Army divisions was the best means of assuring that a unit commander retained operational control over these limited resources. Nevertheless, those who saw heliborne maneuver units as the "new wave of the future" continued to be subjected to the "repression campaign" being conducted by the Air Force.

THE DEVELOPMENTAL YEARS: 1954 - 1962.

Following the Korean War a series of strategic decisions were presented, known collectively as the "New Look". The basic premise for this policy was defined by John Foster Dulles, Secretary of State, in his "massive retaliation" speech of 12 January 1954.[6] For the Army, this policy meant that both men and money would be hard to comeby, thus neutralizing the development of new missions and tactical concepts. Rapid advances in technology and implications of the use tactical nuclear weapons required a more flexible organization than was possible with the triangular divisions which had been used in World War II and Korea. A primary consideration in the design of new divisions was that any massing of troops or units during atomic operations would be disasterous. New units would have to be powerful, self-sustaining, and small; success in combat would depend upon devastating firepower, rapid and efficient communications, and a high degree of mobility.[7]

Directed by the Army Chief of Staff, General Matthew B. Ridgway, a study was initiated in April 1954, to improve the combat-to-service support manpower ratio. The immediate problem was to develop organizational concepts that would permit formation of combat units with increased mobility and less vulnerability to atomic attack. Known as the "Atomic Field Army-1 1956" (ATFA-1), this study coincided with parallel research being performed by a John Hopkins University team. It was one of many studies provided that assisted in the preparation of the "Pentagonal Atomic - Nonatomic Army" (PENTANA) study. The universal-type PENTANA division would contain five integrated combat groups, a general support artillery battalion, and other combat support and combat service support units. From this study emerged the PENTOMIC divisions, the 101st Airborne Division being the first unit to reorganize under this concept in November 1956.[8]

During the Korean conflict, divisions found it necessary to consolidate their separate aviation sections into provisional aviation companies. These provisional units provided supervision and control of aircraft maintenance and supply, coordinated and controlled aircraft use, and developed and implemented an integrated retraining program. US Army aviation elements were consolidated into company-size units at division, corps, and army levels. Although the consolidation of aviation assets into company-size units greatly improved the utilization of Army aircraft, the necessity for other programs became apparent. These organizational changes did not always provide the immediate aviation support previously enjoyed by certain elements of the division. To a great extent this problem was aggravated by excessive maintenance requirements and the inadequate allocation of aviation resources. The need for continuous aviation support quickly outstripped the availability of assets. New studies indicated that divisions could make full use of from 90 to 100 aircraft, including 20 organic transport helicopters.[9]

It was during the early stages of that same decade that the Army began to realize that helicopters offered the possibility of providing a more versatile, flying weapons-platform. As early as 1954, Colonel Jay D. Vanderpool, Chief of Combat Developments, US Army Aviation School, was pioneering armed helicopter operations. However, this conceptual use of Army aircraft on the battlefield for mobility and aerial fire support revived the controversy with the Air Force over responsibilities and missions of Army Aviation. On 4 September 1954, the Army Chief of Staff, General Ridgway, directed that an extensive review of the Army Aviation Program be conducted as a first step in preparing a comprehensive Army Aviation Plan. In response to General Ridgway's directive and in spite of vehement opposition by the Air Force, Colonel Vanderpool provided the framework for three significant developments:

1) the creation of a provisional "Sky Cavalry" Platoon, which evolved into the Aerial Combat Reconnaissance Platoon (the predecessor of the Air Cavalry Troop);

2) the preliminary development of a "flying tank destroyer"; and,

3) the conceptualization of an "Armair" Brigade and Division, which would become the air cavalry combat brigade and the airmobile division.[10]

In April 1954, concurrent with the development of the PENTOMIC division, Major General James M. Gavin, the Army Staff G-3, published an article in Harper's Magazine entitled "Cavalry, And I Don't Mean Horses", which was to have a profound effect on military thinking during the next few years. General Gavin stated that armor was not sufficiently mobile to properly execute the missions associated with cavalry. To achieve the required mobility on the 'modern' battlefield, General Gavin advocated a new type of cavalry:

> "I mean helicopters and light aircraft, to lift soldiers armed with automatic weapons and hand-carried antitank weapons, and also lightweight reconnaissance vehicles, mounting antitank weapons . . .
> "Today, even a most casual awareness of the historical lesson should suggest that in ground combat the mobility differential we lack will be found in the air vehicle. Fully combined with the armored division, it would give us real mobility and momentum."[11]

In the next few years, three distinct versions of "Sky Cavalry" emerged. The Intelligence Corps visualized "sky cavalry" in a completely passive target acquisition role, using such devices as infrared sensors, radar and television. The Armor Center developed a "sky cav" concept which provided for augmentation of existing division armored reconnaissance battalions with a light helicopter company and a few fixed-wing aircraft. The armored division's "sky cavalry" would provide an additional means for gathering combat intelligence through aerial surveillance, observation, and reconnaissance. The Aviation School's

version of "sky cavalry" was to be a completely airmobile, fast moving, hard hitting, flexible means of searching out and fixing the enemy and of performing the traditional cavalry missions at an accelerated rate.[12]

It was the Armor Center's "Sky Cavalry" version that was field-tested in Louisiana, from 31 October to 15 December 1955, during Exercise SAGEBRUSH, the largest exercise conducted in the continental United States since World War II. As a result of problems encountered, it was recommended that "Sky Cav" units not be used to replace or become components of the mechanized reconnaissance units of divisions, corps, and field armies.[13] Undaunted by these initial failures, in early 1956, Major General Hamilton H. Howze formulated his operational concept of "airmobility." Influenced by Gavin's "sky cavalry" concept and the demonstrated potential of armed helicopters, General Howze, Director of Army Aviation, described "airmobility" in the following manner:

> "In the more distant future looms the probability of large, completely airmobile units - sky cavalry. The possibilities for its employment in the fluid phase of the ground struggle excite the imagination: as covering forces operating in front of heavier ground elements, protecting long, vulnerable flanks of the main forces of the field army, striking enemy formations from unexpected directions with maximum surprise. We are just beginning to investigate these ideas, haltingly and with some trepidation, but with hope." [14]

Subsequent attempts to nurture the fledgling Army Aviation Development Program were subjected to an additional curtailment by the issuance of a third joint memorandum, which focused on redefining the Army and Air Force areas of responsibility. On 26 November 1956, Charles E. Wilson, Secretary of Defense, stipulated new restrictions on fixed-wing and rotary-wing aircraft.[15]

Despite herculean efforts by some staff planners, the "Sky Cav" concept was further nullified by the SKY CAV II troop tests, conducted in the Louisiana

Maneuver Area from 6 - 16 May 1957, hence referred to as Exercise SLEDGEHAMMER. The test's final report was extremely critical of the "sky cavalry" concept and concluded that the divisional 'recon' squadron could neither operationally nor logistically support it. In spite of these setbacks, and against overwhelming opposition by the Air Force, the Fort Rucker version of "Sky Cavalry" was soon redesignated as an Aerial Combat Reconnaissance Platoon; and, on 24 March 1958, the platoon was expanded to a full company-size unit.

With an eye cast towards French helicopter operations in North Africa, General Howze continued to campaign for an expanded role for Army Aviation on the battlefield. On 15 November 1957, the US Army Aviation School published its final report entitled "Operational and Organizational Concepts for the 1958-1965 Armair Brigade." This new conceptual organization was an expanded version of the "Sky Cav" unit and provided for a completely airmobile combined arms organization with the capability for sustained operations. The "Armair" Brigade's advantages of flexibility, faster reaction time, high mobility, and direct fire support were offset by maintenance and logistical deficiencies and the high vulnerability of aircraft to enemy small arms fire and weather.

> "Although the Armair Brigade proposal never received the troop test and evaluation necessary to properly evaluate and develop the concept, the study is significant in the history of Army Aviation. In this 1956 study appear many of the concepts that were to be fully developed in the air assault division tests and organization of the airmobile division in the 1960's and the development of the air cavalry combat brigade in the 1970's."[16]

On 13 December 1957, General Howze proposed to the Continental Army Commander, General Wyman, a concept for establishing an armed helicopter unit at Fort Bragg, North Carolina. This provisional unit would be designated an "air cavalry squadron" and would be considerably less than an infantry battalion in personnel strength. In forwarding his recommendation to the Department of the

Army, General Wyman went further to suggest that an "aerial infantry battalion" be activated at Fort Benning, Georgia. Its mission would be to validate the use of armed helicopters in close coordination with assault aircraft, and to develop organizational data, tactics, and techniques of employment for these two complementary forces.[17] Consequently, on 2 July 1958, the Department of the Army requested US Continental Army Command (CONARC) to prepare a study that would develop initial concepts for employment of Army aircraft in conjunction with ground combat forces during the period, 1958-1970. In summary, the study group concluded that aircraft with a suppressive fire capability could be employed to increase the mobility of ground forces. It also recommended that an aerial combat reconnaissance platoon be included in the cavalry squadrons of infantry and armored divisions and that an aerial combat reconnaissance company be organic to the corps armored cavalry regiment.[18]

Concurrent with the "Air Cavalry" studies, on 22 July 1959, CONARC sent the Army Aviation School a study directive for aerial vehicle weapon systems requirements for use on Army aircraft in the 1960 to 1965 time frame. This evaluation process was to consider six missions: aerial combat reconnaissance, aerial tactical troop movement, anti-personnel, anti-tank, anti-material, and defense against low performance aircraft. The "Army Aerial Vehicle Weapons Systems Requirements Study" was approved by Department of the Army in December 1959, marking the first approval for standard armament on Army helicopters. This development was to completely change the orientation of Army Aviation. Previously limited to a role of logistical support and aerial observation, the emphasis had shifted to combat operations.[19]

In October 1959, Lieutenant General Arthur G. Trudeau, US Army Chief of Research and Development, initiated the Army's Aircraft Development Plan. To

implement his plan, General Trudeau prepared three broad development objectives which were referred to as "Army Study Requirements." They were designed to enable civilian aviation industries to explore technical approaches to meet the Army's requirements. Subsequently, on 15 January 1960, the Army Chief of Staff established the Army Aircraft Requirements Review Board, chaired by Lieutenant General Gordon B. Rogers, the Deputy Commanding General of the Continental Army Command, to manage the Aviation Development Plan and to review the industries' proposals. This effort was significant in that it was the first time that most major aircraft companies took official notice of the aviation potential within the Army.[20] The Rogers Board discussed the battlefield roles and missions of Army aviation, conducted assessments, and outlined plans for improvements that involved three related categories. First, they made recommendations regarding the classification of aircraft into three categories: observation, transport, and surveillance. Next, they recommended that a policy be established whereby each model of aircraft would be replaced at least every ten years, or sooner if warranted by operational requirements or technical advances. Finally, it was recommended that an indepth study be prepared to determine whether the concept of "air fighting" units was practical. In summary, the Rogers Board provided essential guidance for the development and procurement of aviation materiel and for personnel planning for the future.[21]

The decision to shift emphasis in the Department of Defense from nuclear to non-nuclear warfare during the spring of 1961 led to the abandonment of the PENTOMIC organization. The US Continental Army Command had been directed, in December 1960, to undertake yet another study to develop an optimum infantry, mechanized infantry, and armored division organization for the period, 1961 to 1965. This new study, "Reorganization Objective Army Division (ROAD) 1965," was submitted to Department of the Army on the first of March 1961, and was

approved by General George H. Decker, the Army Chief of Staff, one month later. Shortly thereafter, Secretary of the Army Elvis J. Stahr, Jr., recommended the abandonment of the PENTOMIC organization and the adoption of the ROAD concept. Following approval by the President, the conversion began in early 1962.[22]

The "RODAC-70 Study," an extension of the ROAD Study, emphasized corps and field army organizations and restructured the corps aviation elements and the field army aviation transportation units into their respective aviation groups. Surveillance and drone aircraft were organized into a surveillance company at corps level and into a surveillance squadron at field army. Noteworthy was the formation of two new organizations that were added to the corps aviation group: a tactical aviation battalion and an airmobile battalion.[23]

The Howze Board:

Secretary of Defense Robert S. McNamara issued a memorandum on 19 April 1962, directing the Army to reexamine and re-evaluate its requirements for land warfare mobility through 1975, placing particular emphasis on greater use of air vehicles. He believed that the Army's predicted requirements were inadequate and insufficient in every category of aircraft. Secretary McNamara felt that the Army's stated requirements fell short of meeting even existing contingencies despite the planned use of obsolescent airframes. The Army Chief of Staff delegated the overall responsibility and direction for this project to General Herbert B. Powell, US Continental Army Commander, who in turn appointed Lieutenant General Hamilton H. Howze as the study chairman. During the entire study, General Howze continued to act in his routine capacity as the Commanding General, US Strategic Army Corps (STRAC), and as the Commanding General, XVIII Airborne Corps and Fort Bragg.[24]

The US Army Tactical Mobility Requirements Board, otherwise known as the Howze Board, sought new ways and means of freeing the ground soldier from the restrictions of battlefield movement by replacing conventional ground transportation with aircraft in as many cases as possible. The results of three large-scale tests (STEW-62, KILL QUICK-62, and PUSAN-62) indicated that Army aircraft could enhance combat effectiveness in both conventional and counter-guerrilla warfare. As stated by Lieutenant General John J. Tolson, and others:

> "The most significant major activity of the Board throughout its deliberations was the investigation, testing, and evaluation of the organizational and operational concepts of airmobility."[25]

Perhaps influenced as much by the strategic policy of "flexible response" and volatile foreign affairs in Western Europe (most notably the Berlin Crisis) as by the gradual escalation of US military involvement in Southeast Asia, the Howze Board submitted its final report on 20 August 1962. After analyzing five separate plans for force modernization, the Howze Board selected Alternative 3. This program recommended an increase in the number of aircraft organic to ROAD divisions and called for the creation of an air assault division, an aviation brigade for each corps, field army air transport brigades, and an army-level air cavalry combat brigade. It also proposed the creation of a special warfare aviation brigade and further recommended the increased use of aviation warrant officers and a quantitative/qualitative Army aviation personnel improvement program. The air assault division would provide an enhanced and more rapid reconnaissance capability, increased mobility, a more flexible and responsive fire support capability, and an improved system of logistical resupply and force sustainment. It could be quickly tailored and deployed to meet global requirements, such as a "show-of-force," mobile defense, civic action,and nation building projects.[26]

Summary:

In retrospect, this period in Army Aviation history was characterized by the expanding tactical use of Army aviation as reflected in the organizations of the combat field elements. As Army divisions evolved from their triangular organization of World War II and Korea, through the ATFA-1/PENTANA concept and PENTOMIC divisions, and finally into the ROAD divisions, the aviation component in the division structure steadily increased. In addition to this expansion, aviation units were created in response to technological improvements and new employment concepts. Army Aviation stood poised, ready to enter a new era in aerial and land warfare. By early 1962, all the ingredients needed to give the Army an airmobility capability had been assembled.

THE EXPANSION YEARS: 1962 - 1973.

The decade of the Sixties was marked by the restructuring of the Army into ROAD divisions and the incorporating of related modifications in doctrine and tactics. Military formations required greater dispersion, and employments were along broader frontages. As the concepts of "area" and "mobile" defense took root, the offense was no longer considered the primary means of destroying the effectiveness and organization of the enemy's forces. Doctrine oriented on the attrition of enemy forces rather than on maneuver, especially in the context of a European scenario. America's "mass and firepower through mobility" doctrine lent itself to little modification as US forces became more grossly entangled in the web of political and military intervention in Southeast Asia. Organizations originally designed for a mid-intensity NATO battlefield were thrust into the jungled, counter-insurgent arena of Vietnam, Laos, and Cambodia. The employment of massive firepower became the dominant characteristic of US Army tactical operations.

Following General Maxwell D. Taylor's Southeast Asian "situation survey" in early 1961, President John F. Kennedy approved recommendations made by his personal military advisor and took steps to increase United States involvement in Vietnam, Laos, Thailand, and Cambodia. Knowledge that the infrastructure was inadequate to support military, political, and economic operations resulted in the dispatching of US Army helicopter units, of which the first arrived in Saigon port aboard the aircraft carrier USNS CORD on 11 December 1961. This decision would mark the first step in a series of escalatory actions that would cause the Southeast Asian umbrella to overshadow military doctrine, tactics, and equipment developments throughout the next decade.[27]

By February 1963, Army Aviation development had assumed two separate but parallel tracks. On the one hand, the air assault concept was taking shape, with the activation of a test air assault division at Fort Benning, Georgia. Concurrently, new developments in aircraft capabilities and mission assignments further agitated an already strained relationship between the Army and Air Force concerning close air support or CAS. For clarity, these two developments will be examined independently rather than in chronological sequence.[28]

Air Assault/Airmobility Developments:

On 7 January 1963, the Army's Deputy Chief of Staff for Operations issued an initial plan for the organization, training, and testing of an air assault division and an air transport brigade. Just five weeks later, on 15 February, companies and battalions were being activated which would form the nucleus for the 10th Air Transport Brigade, commanded by Colonel Delbert L. Bristol, and the 11th Air Assault Division, commanded by Brigadier General Harry W. Kinnard. By May, limited testing was being conducted by both units. Within a year, the airmobility idea had matured sufficiently for the Army to conduct feasibility

tests to determine air assault capabilities for all standard Army units. Later that same year, when comparing the capabilities of the air assault division to those of an air transportable infantry division, General Harold K. Johnson, the Chief of Staff of the Army,, would remark:

> "I had the rare privilege of seeing the 11th Air Assault Division one week and the other concept at the early part of the following week, and I would make a comparison of perhaps a gazelle and an elephant. The two are not comparable."[29]

Upon completion of the "Performance Effectiveness Comparison of the Air Assault Division with the ROAD and Other Proposed Divisions" by the Planning Research Corporation the "Aviation Requirements for the Combat Structure of the Army (ARCSA I) Study" in March 1965, a tentative decision was made to convert the 11th Air Assault Division to an approved-TOE force authorization.[30] On 1 July 1965, at Fort Benning, Georgia, the combined elements of the 11th Air Assault Division and the 2nd Infantry Division were redesignated as the 1st Cavalry Division (Airmobile). The 1st Cavalry Division, stationed in the Republic of Korea, was redesignated as the 2nd Infantry Division. Within two months, the newly activated airmobile division would be field-tested under actual combat conditions in the Republic of Vietnam.[31]

America's role during the next seven years in Vietnam resulted in the stagnation of doctrinal thought involving the employment of Army aviation, although, tactically, the United States made a quantum leap in the application of massive combat power. Strategically and politically, the war in Vietnam was a gigantic mobile defense. However, on the tactical level it was typified by offensive "search and destroy" techniques aimed at regional pacification while combating an elusive counterinsurgent. Allied efforts were typically multi-directional and non-linear, with the preponderance of resources devoted largely to brigade, battalion, and company size operations. The North Vietnamese and

Viet Cong ability to operate at night under the concealment of darkness often served to nullify an overwhelming firepower advantage of American combat units. For the Americans and South Vietnamese, combat was primarily attrition-oriented due to the enemy's own superior mobility and his great unpredictability, which often frustrated Allied efforts. Operatively, their energies were focused on "finding, fixing, fighting, and finishing" the enemy.[32] In the words of the United States Army's Field Forces Commander, General William C. Westmoreland:

> "During 1966, airmobile operations came of age. All maneuver battalions became skilled in the use of the helicopter for tactical transportation to achieve surprise and outmaneuver the enemy."[33]

Tactically, Army aviation achieved new dimensions. The OV-1 "Mohawk", a reconnaissance and surveillance aircraft, doubled in a close air support role with rocket pods and bomb rails mounted under each wing. The assault support medium lift CH-47 was modified to perform as a "bomber", a "flying tank", and as a "Go-Go Bird", armed with twin 20mm Gatling guns, a 40mm grenade launcher, and a .50 caliber machinegun. On 1 September 1967, the first AH-1G "Cobra" arrived in Vietnam, thus optimizing the requirement for an integrated aerial fire support system.

The second Army-wide aviation review was completed on 28 March 1967. The "Aviation Requirements for the Combat Structure of the Army II (ARCSA II) Final Report" became a cornerstone for the ARMY 70 Concept Program. A number of shortcomings in existing and proposed aviation force designs were identified. Additionally, the study also addressed the disposition of the AH-1 (once the AH-56 "Cheyenne" was fielded), stating that it would be designated as the next follow-on scout aircraft. Emphasis was placed on organic, rather than pooled, aircraft allocations. Significantly, it further recognized the need for anti-armor combined arms teams.[34]

Shortly after the publication of the ARCSA II Study, the US Army Aviation School hosted the 1968 Army Aviation Instructors Conference. This group was selected to determine the optimum mix of aircraft to support each of five force models through the use of division-level gaming techniques. The significance of this conference was twofold. First, the methodology used in examining the requirements was unique, dividing aviation missions into three categories: combat, combat support, and combat service support. It went on to define each task, estimated the total number of tasks to be performed, and determined the percentage of the total number of occurrences for each task. Second, and of greater importance, was the demonstrated requirement for an increase in the total number of aircraft organic to each division over that recommended by the ARCSA II Study. The recommendations made by the committee provided a departure point for the "Aviation '75-Basic Derivative Study."[35]

The anti-armor requirement for armed helicopters went unheeded for almost fifteen years, until Operation LAMSON 719. American and Vietnamese thrusts in to Laos, which began on 8 February 1971, marked the first allied encounter of Soviet-built armor in the Southeast Asian war. Describing the limitations of the then-current armed helicopter against the PT-76, an armored reconnaisance vehicle, Brigadier General Sidney B. Berry, Jr., Assistant Division Commander for Operations, 101st Airborne Division (Airmobile), continued to remark:

> "We now need tank-defeating armed helicopters . . . I am absolutely convinced that the US Army must field immediately an armed helicopter with an effective tank-killing capability."[36]

In the latter years of America's involvement in Vietnam, there were enough aviation assets available to satisfy almost every requirement for airmobility, as evidenced in the 1st Aviation Brigade, which, as of 31 July

1968, reached a strength of 25,181 men. The personnel were formed into four aviation groups of fourteen combat aviation battalions, three air cavalry squadrons and a separate aviation battalion.

America's withdrawal from the mobile war of Southeast Asia was punctuated by the mediocre pursuit of alternative aviation organizations. The 1st Cavalry Division, stationed at Fort Hood, Texas, would reorganize its 2nd Brigade into an air cavalry combat brigade and test that concept along with the conceptual triple-capability (TRICAP) division. By September 1973, the TRICAP concept was dead, but the air cavalry combat brigade would survive for another decade.[37]

The Close Air Support Issue:

The dispute between the Army and Air Force over responsibility for close air support was rejuvenated by the creation of the ROAD divisions in the mid-1960's. Increased concern was expressed by senior members of the Air Force Staff, who objected to the Army's expanding reliance on and acquisition of rotary-wing aircraft. Their primary objection concerning the Army's concept of "air mobility" was one of possession and control of close air support assets. Responding to the sensitivity of this issue, Secretary of Defense Robert S. McNamara directed that a joint Army and Air Force Close Air Support Board be established as a measure towards reconciliation. This renewed "confrontation" was directly attributable to Secretary McNamara's six-point memorandum of April 1962. In it, he chastised the Army for not being innovative and for being too conservative in its conceptual employment of helicopters on the battlefield. Nevertheless, it served to demonstrate McNamara's insight into organizational and doctrinal changes which would be forthcoming as a result of technological advancements.[38]

Upon reviewing the findings of the Close Air Support Board, the Chief of Staff of the Army reiterated that the Army was not seeking to assume the close air support mission of the Air Force, but was seeking renewed assurances that ground maneuver forces would receive responsive and effective close air support whenever and wherever needed. For the Army Chief of Staff, historical evidence supported the proposition that the Air Force had been neither willing nor able to provide adequate close air support because other missions, such as counter-air and interdiction, had assumed a higher priority. Ironically, the Chief of Staff of the Army nonconcurred with the Board's recommendation for a single-mission Air Force aircraft dedicated to the close air support mission when he forwarded his comments to the Secretary of the Army. [39]

Secretary of the Army Cyrus Vance directed that a special Army study group be formed to further investigate the close air support issue and to develop an Army position on the tactical employment of helicopters. Under the direction of Lieutenant General Dwight Beach, "The Army and Aviation" (TAAA) Study was completed during August 1963, receiving an endorsement from Secretary Vance:

> " . . . the integration of aviation in the ground environment is a logical step in the evolution of mobility. All aviation that operates continually in the ground soldier's environment should be responsive to his immediate command and should therefore be organic to the Army." [40]

His comments incorporated the philosophy that armed helicopters should be an asset organic to and controlled by the maneuver commander. On 14 October, General Earle G. Wheeler, the Army Chief of Staff, followed Secretary Vance's leadership with a letter to all major US Army commands stating that units from the other services would conduct "close air support" with aircraft that could deliver large volumes of ordnance. Accordingly, Army aircraft would conduct

"aerial fire support" with assets capable of delivering "discriminatory" firepower in close proximity to ground combat forces. Central to General Wheeler's thesis was the concept that Army aviation was simply an extension into the air of those functions that were intrinsic to land warfare. [41]

In April 1966, as tensions grew over the close air support issue, the Army and Air Force Chiefs of Staff attempted to resolve their differences by signing into effect a joint resolution. The major provisions were: 1) the Army would surrender its fixed- wing, intra-theater airlift assets and missions; 2) the Air Force agreed not to pursue the control of all helicopters designed and operated for intra-theater transport, fire support, and resupply of Army units; 3) both services would jointly pursue research and development of a vertical/ short field takeoff and landing aircraft (V/STOL). This conciliatory gesture was rendered obsolete when Secretary of Defense Secretary McNamara made the decision to procure the AH-56A. With an airspeed in excess of 200 knots and mounting a sophisticated weapons system, the "Cheyenne" was considered by the Army to be an enhanced armed helicopter, whereas the Air Force purported that it was a venerable, new "close air support" system.[42]

However, the AAFSS Project seemed plagued from the beginning. On 12 March 1969, the program suffered one in a series of major setbacks as a result of a fatal test flight. Compounded by financial constraints which precluded major program corrections, this event lead to the termination of the contract with Lockheed for default on 19 May 1969. However, Sikorsky and Bell kept the AAFSS program alive for two more years with the submission of their respective prototypes for Army evaluation. Nonetheless, neither the Sikorsky S-67 "Black Hawk" nor the Bell "King Cobra" would prove reliable enough to preclude the program's termination on 9 August 1972. Consequently, the Army announced its redesigned

Advanced Attack Helicopter (AAH) Program on 17 August 1972; it would culminate in the fielding of the Hughes AH-64A "Apache" almost eleven years later.[43]

Regardless of the functional capabilities, ordnance packages, design, or speed of any given aerial platform, the close air support issue has persisted through the decades, even to the present. No lasting solution has been reached as each party grapples with concepts and terminology that serves to fortify the other's point of view. Analysis indicates that seemingly little importance has been given to the elements of responsiveness, engagement results or command and control; service parochialism has pervaded the issue and, in all probability, will continue to do so.

Summary:

The expansion of Army Aviation during the decade of the Sixties was both horizontal and vertical. The very inspiration for this growth was articulated in the McNamara Memorandum of 19 April 1962, which prompted the formation of the Howze Board. To the dedication and perseverance of just a few men, we credit the conceptual design for the air transport brigade, the air cavalry combat brigade, and the air assault division. On the mid-intensity European battlefield, Army aviation would provide fire support, reconnaissance and surveillance, logistical resupply, emergency medical evacuation, and the elements of surprise, flexibility, and mobility. A few men like Hamilton Howze and Harry Kinnard envisioned Army aviation as something more than just a combat support field service providing firepower augmentation to the ground maneuver commander. These visionaries saw aviation as a versatile maneuver arm that could be employed in harmonious synchronization with armored, infantry, and mechanized forces to enhance the operational commander's overall plan or scheme of maneuver. It was on the battlefields of Southeast Asia where "air mobility"

would be combat-tested, however. In harsh reality, as that conflict drew to a close, so did the minds of many of the doctrinal thinkers, as few could foresee any significant role for "air mobile" divisions in the future. To a degree, their mindset would be reinforced by the events of the next year in the desert sands of the Sinai.

## THE DECADE OF UNCERTAINTY: 1973 - 1983.

As early as 1968, with a declared policy of systematic withdrawal from Southeast Asia, US military doctrinalists began shifting their focus back to the plains of Central Europe. In response to the requirement for an extremely accurate, high rate of fire, mobile anti-tank weapons system, force designers placated tacticians by introducing the TOW-firing attack helicopter (a concept that would receive only limited validation testing in Vietnam, Cambodia, and Laos almost three years later). Attrition-oriented force structure models required the massing of attack helicopter fires with those of the infantry anti-tank forces, armor, and precision munitions to defeat a Warsaw Pact armored thrust. This concept of an anti-armor heliborne force had originated in the minds of Colonel Vanderpool and his associates fifteen years previous and would become the focal point around which doctrine, tactics, and materiel development plans would gravitate for the next ten years.

### The Arab-Israeli War, 1973:

Consequently, proponents of anti-armor attack helicopters were subjected to a major dilemma in October 1973: the issue of vulnerability weighed heavily against the attributes of firepower and mobility. The War of Atonement, or Yom Kippur War, established a new combat power equation with the proliferation of sophisticated air defense weapons systems on the battlefield. Coupled with the extensive use of anti-tank guided missiles, the new precision munitions nearly

eliminated the heretofore battlefield dominators, the jet fighter and the tank. Comparatively, only the Battle of Kursk, on the Eastern Front during the Second World War, approached the tremendous loss ratio experienced with tanks in such a short period. Concurrently, the employment of mobile air defense systems, such as the ZSU-23-4, the SA-6 "Gainful", and the SA-7 "Strela" or "Grail", presupposed certain destruction for heliborne maneuver forces.

Large-scale helicopter operations were never successfully conducted out from under the safety of the local air defense "umbrella." For the most part, helicopter operations were limited to liaison and courier flights, resupply, recovery and rescue operations, and emergency medical evacuation. A marginal effort at helicopter patrolling was exerted by both the Egyptians and Israelis on their respective side of the Suez Canal. Only a single airmobile operation met with any success: a four-ship heliborne insertion of Syrian commandos onto Mount Hermon, in the Golan Heights, at the initiation of Operation BADR. Subsequent attempts, such as the planned Egyptian attacks on Sharm-El-Sheikh and Balzna, resulted in the catastrophic loss of both men and aircraft.[44]

Returning to the United States from the Middle East where he had been an observer, General William E. DePuy, Commanding General, US Army Training and Doctrine Command, pronounced his "See-Hit-Kill" axiom with respect to weapons lethality. But, it was his conclusions drawn with regard to expanding the role of Army Aviation that served to produce an apparent paradox. First, it was noted that the Israeli Army did not get the close air support that it wanted or needed from their dual purpose Air Force aircraft: less than ten percent of the total air sorties flown were in a close air support role. And, second, it was concluded that, whether defending or attacking, mobility and maneuver were paramount to success. As stated by General DePuy:

> "To win when fighting outnumbered, it is necessary to concentrate forces at the critical point and at the critical time on the battlefield . . ." [45]

The helicopter provided lateral and in-depth movement across the battlefield and a highly mobile, versatile weapons platform. As deduced by General DePuy, there were three essential elements to success: firepower, shock effect, and mobility. And, an integrated combined arms team, with the attack helicopter as the cornerstone, provided those ingredients.[46]

## The Proliferation of Organizational Studies:

In the mid-1970's, it became clear that the ROAD organizations, despite modernization including stronger armor components, could no longer efficiently harness the combat power of the existing and near to mid-term future weaponry. Seizing the initiative, the Modern Army Selected Systems Test, Evaluation, and Review Activity (MASSTER) began a series of tests at Fort Hood, Texas, to investigate and compare various organizational and operational concepts for an attack helicopter squadron and an air cavalry combat brigade. The nucleus for these tests was formed by the 2nd Brigade, 1st Cavalry Division (Airmobile), recently returned from Vietnam. Although the recommendation for organic infantry was not favorably considered, the resulting organization would dominate the helicopter community for the next seven years. It was triangular in configuration; the "attack platoon" was the base unit with four OH-58 "scout" and seven AH-1 "attack" aircraft in each. Each attack helicopter company was composed of three "attack platoons"; three attack companies formed a battalion/squadron, and three attack squadrons formed the combat strength of the air cavalry combat brigade. Within two years, the 6th Air Cavalry Combat Brigade (ACCB) was activated, consisting of two attack helicopter squadrons, an air cavalry squadron, a combat support battalion, and a signal support company.

In May 1979, the 6th Air Cavalry Combat Brigade was redesignated as 6th Cavalry Brigade (Air Combat), or 6th CBAC. Constituting the US Army's only operational attack helicopter maneuver force, the 6th CBAC is scheduled for deactivation within the next two years.[47]

By 1974, eight years had elapsed since the Army had last conducted a comprehensive study of its aviation requirements. Sensing the need for an updated assessment, Department of the Army directed the "Aviation Requirements for the Combat Structure of the Army III" (ARCSA III) Study, which was paralleled by the US Army, Europe and Seventh Army "Aviation Reorganization Study." Both analyses were initiated for the purpose of evaluating and developing requirements for an aviation force structure that would strengthen the combat posture of Army aviation and integrate its tactical and logistical support potential into the combined arms team. The primary consideration of both studies was the most effective use of attack helicopters. Published in 1977, these two studies concluded that an anti-armor helicopter force was more cost effective than its related ground systems. They recommended increasing the attack helicopter strength in each division by one company and forming a three-company attack helicopter battalion for each US Army corps in Europe. Moreover, the ARCSA III Study concluded that an enhanced attack helicopter capability was needed to combat an increasing Warsaw Pact armored threat. Additionally, the Combat Aviation Battalion concept, characterized by the pooling of divisional aviation assets under one headquarters, was field-tested during REFORGER 75 and later adopted Army-wide. The REFORGER 75 experience also demonstrated that medium-lift helicopter capabilities were in critical need of extensive upgrade. Heavy division medium-lift requirements were assessed to be a minimum of two sixteen-ship CH-47 helicopter companies.[48]

A Department of the Army Special Task Force was created to conduct a follow-up study to the ARCSA III Study. Particular attention was given to the evaluation of logistical mission requirements. The April 1977 HELILOG Report, "Helicopter Requirements to Support the Army Logistic Mission in Europe," recommended that medium-lift helicopter capabilities be retained at corps, but that a three-company medium-lift helicopter battalion be formed for each corps: each company would be organized into three platoons of eight CH-47 helicopters.

Responding to the recommendations of the ARCSA III and USAREUR studies, the Office of the Secretary of Defense inquired into the possible elimination of divisional air cavalry troops in order to justify the recommended increase in the number of attack helicopter companies. The rationale for their proposal was that the attack helicopter company had clearly emerged as a more effective "tank-killer" than its air cavalry counterpart and fiscal constraints would not permit the funding of both organizations. As a matter of priority, the USAREUR commanders were willing to trade off the six organic air cavalry troops for the proposed third attack helicopter company and corps attack helicopter battalion. However, the Army's requirement for standardization effectively eliminated this proposal. Even if adopted, the proposal would not have produced an operational maneuver force for the corps.[49]

Two additional studies were completed in April 1979, that addressed issues raised in the ARCSA III Study. The "Attack Helicopter Organization" (ATHELO) Study was commissioned to examine the combat effectiveness of attack helicopter organizations, while the "Air/Ground Cavalry 1980-1985 Study" sought to analyze the requirements for a cavalry organization in a mid-intensity, high threat, European scenario. The ATHELO Study was initiated in October 1977, in response to an inquiry made by the Office of the Secretary of Defense. The results of

battle simulations using the CARMONETTE model reinforced arguments for existing attack helicopter company organization.[50] The Air/Ground Cavalry Study examined the conceptual requirement for cavalry organizations, the need for a mix of air and ground components, and the preferred balance of air and ground components in a European environment. Both divisional and corps cavalry organizational structures were evaluated according to a prescribed set of battfield functions. Confirming the basic need for an organic cavalry unit at both levels, the study concluded that the optimum cavalry squadron should consist of one air cavalry troop and three ground cavalry troops. The screen mission was the only one of five standard battlefield operations that air cavalry was considered capable of performing without ground cavalry support. These studies had a direct impact on the decision-making process affecting the "Army of Excellence" force structure design.[51]

Defining the Army of 1986:

Between April 1976 and March 1977, under the tutelage of General William E. DePuy, US Army Training and Doctrine Command conducted its first division restructuring study since implementing the ROAD organizations. However, upon assuming command of TRADOC, General Donn A. Starry expressed dissatisfaction with the results of the study, stating that it had been done too quickly, by too few people, on a basis of too little critical analysis. In August 1978, with the US Army TRADOC Commander's Conference scheduled to convene at the end of the month, General Starry initiated development of an operational concept for restructuring the Army, using the heavy division as the base organization. For General Starry, the most critical mission for the heavy corps and divisions in the decades that lay ahead was to carry out their offensive and defensive tasks as part of a US commitment to Central Army Group (CENTAG) or Northern Army Group (NORTHAG) within the North Atlantic Treaty Organization Alliance.

The target year, 1986, was the year for which the best estimates of the Warsaw Pact threat were available. It was also the year in which major new weapons would be available in quantity to the US Field Forces. Force designers concentrated their focus on divisional operational concepts which were considered to be the framework for organizational design and the medium for force structuring trade-off analysis.[52]

The "Division Restructuring Evaluation," conducted from December 1978 to April 1979, resulted in a proposed division combat aviation battalion strength of 1,131 soldiers, a substantial increase over the previous authorized strength of 632 personnel. An essential element for mission accomplishment was "target servicing." Force developers concluded that an infantry or armored battalion, defending in the "breakthrough" area, would be confronted by 200 to 250 targets (tanks, armored personnel carriers, and self-propelled artillery) within the first ten minutes of battle. Central to the design and development phase of an enhanced maneuver force model was the combat power multiplier formula:

| | | | |
|---|---|---|---|
| MOMENTUM = | MASS | + | VELOCITY |
| [Reduction Factors] | Degrade<br>Attrit<br>Destroy | | Disrupt<br>Delay<br>Impede |

For the heavy corps and divisions, Army aviation would effectively reduce the "mass" and "velocity" components of the equation by providing acquisition and counter-fire against known enemy targets, air defense, suppression of enemy air defenses (SEAD), logistical support and emergency medical evacuation, airborne command-control-communications, and an integrated force-mobility capability. With personnel strength capped at 18,000 per division, force planners used data provided by the ARCSA III and the USAREUR Aviation Reorganization Studies as a point of departure for examining aviation organizations and capabilities with

respect to accomplishing critical tasks derived from the 'Central Battle' and 'Force Generation' modules.[53]

Meanwhile, the US Army Armor School, located at Fort Knox, Kentucky, took an innovative approach to solving the division aviation restructuring problem. They recommended the creation of a dual-capable organization, the "Air Cavalry Attack Brigade," which consolidated cavalry and attack helicopter battlefield functions into a single unit. The base organization was the Air Cavalry Attack Troop (ACAT); three air cavalry attack troops combined to form an Air Cavalry Attack Squadron (ACAS). The Air Cavalry Attack Brigade was formed by grouping three air cavalry attack squadrons and a combat support aviation battalion into one organization. The Air Cavalry Attack Brigade force structure incorporated recommendations from at least five studies:

1) "Aviation Requirements for the Combat Structure of the Army III";

2) "USAREUR Aviation Reorganization Study";

3) "Attack Helicopter Organization 1985" (ATHELO);

4) "Air/Ground Cavalry, 1980-1985 Study";

5) "USAREUR Logistics Requirements for Helicopters (HELILOG) Study".

Sensing the need for a reduction in the personnel and equipment strengths of the previous two proposals, Brigadier General John W. Woodmansee, Assistant Deputy Chief of Staff for Combat Developments, US Army Training and Doctrine Command, proposed an alternative aviation brigade for the heavy division. The "Woodmansee organization" incorporated a reduction in the number of aircraft, from a high of 193 to 112, and personnel, from as many as 1,464 down to 1,000. His version of the air cavalry attack brigade, although retaining the combat support aviation battalion, consisted of only two air cavalry attack squadrons, each with four organic troops having an assigned strength of five 'scout' and six 'attack' aircraft. General E. C. Meyer, the Chief of Staff of the Army,

concurred wih the organizational concepts but chose to consolidate selected elements from both proposals when approving the FY 79 Objectve Division.

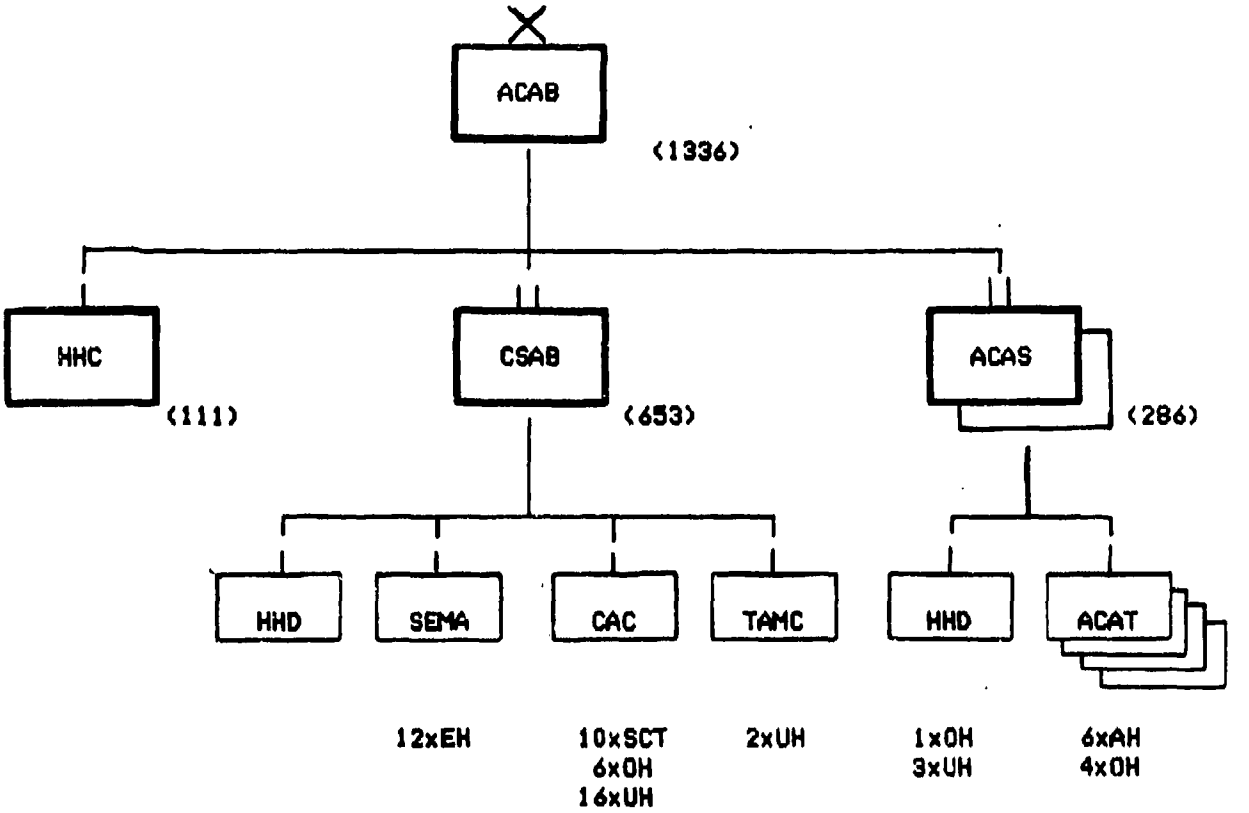


FIGURE 2-1: FY 79 "Objective Division" Organizational Diagram [54]

By mid-1980, the Air Cavalry Attack Brigade had experienced its first (and most important) of four force structure alterations. Primarily, three changes occured: 1) the deletion of the "air cavalry attack squadron" concept in favor of a single mission oriented attack helicopter battalion; 2) the alignment of battlefield functions with organizational category (aviation units were either combat, combat support, or combat service support); and, 3) the assimilation of the division's reconnaissance squadron into the aviation brigade organization. This version of the air cavalry attack brigade, as depicted in Figure 2-2, had an assigned strength of 2,008 personnel with organic aircraft numbering 146.

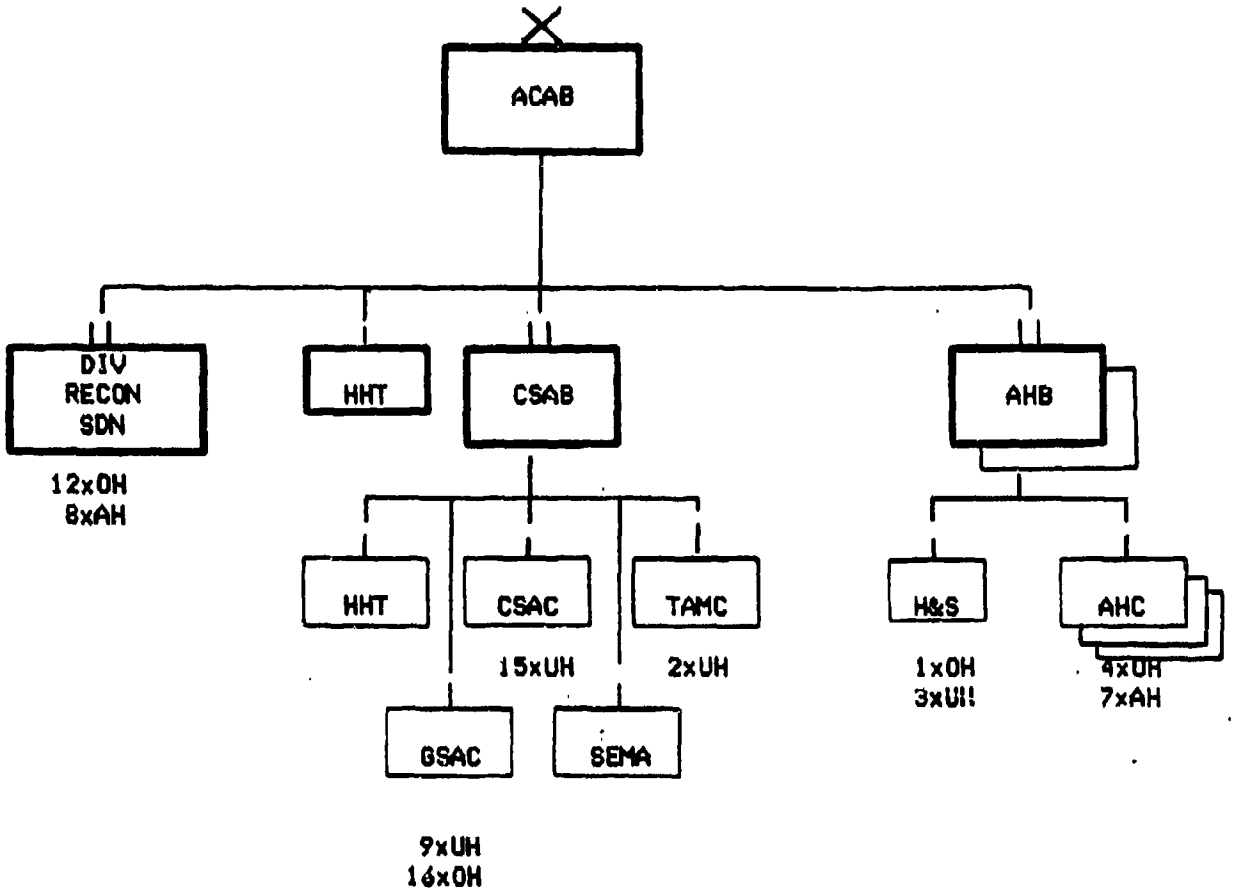


FIGURE 2-2: Approved C-Series Air Cavalry Attack Brigade [55]

Adjustments to the above organization, involving the Combat Support Aviation Battalion and the Division Reconnaissance Squadron, continued until December 1983, when the current organizational design was accepted. Previously referred to as the Cavalry Brigade (Air Attack), the newest edition of the division's aviation structure has been designated as the Combat Aviation Brigade, or CAB. Figure 2-3 is an organizational schematic of the approved CAB organization:

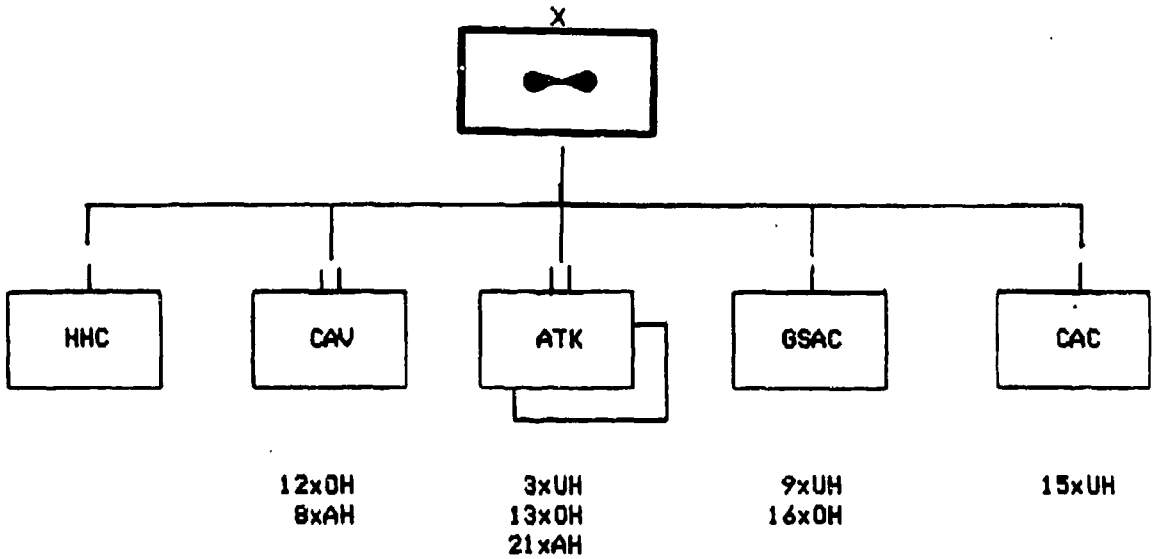


FIGURE 2-3: Division 86 Combat Aviation Brigade (as of December 1983) [56]

The development of US Army corps aviation organizations has not been a deliberate process. The primary premise that corps aviation is founded upon is that if the divisions need it, but manpower and fiscal restrictions will not permit their getting it, then put it in corps. This corps "grap bag" mentality is present in the "Army of Excellence" Corps Aviation Brigade, but not quite as pronounced as in the past history of corps organizations. Though not adhering to the "concepts based requirements systems" philosophy, the new Corps Aviation Brigade does provide a measure of operational mobility and flexibility. Close study reveals that the original proposals for the divisional Air Cavalry Attack Brigade have been vested in the corps organization. Where three attack helicopter battalions were recommended originally for the division aviation force structure and only two were approved, the third battlion has been elevated to corps. The three heavy corps (Third, Fifth, Seventh) have relatively similar aviation brigade structures, though each is designed exclusively for its parent organization. Figure 2-4 provides a universal schematic of their organization:

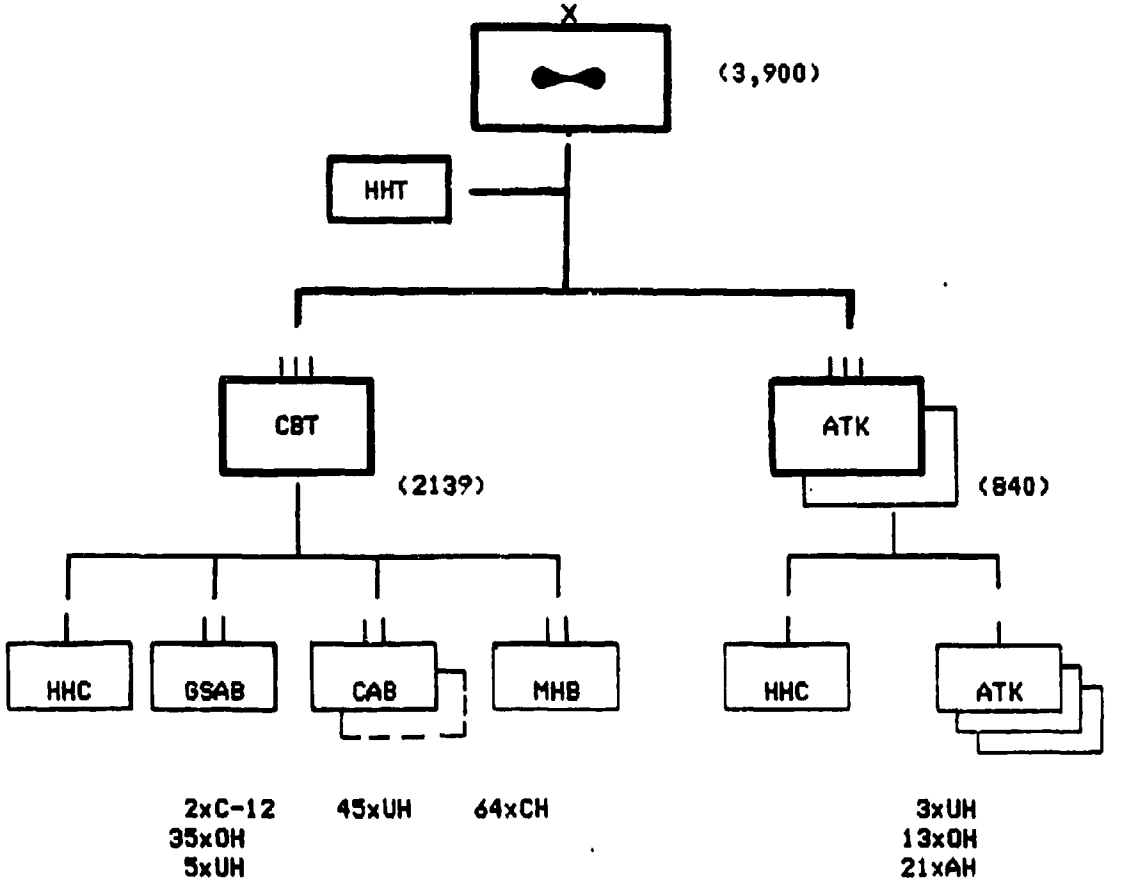


FIGURE 2-4: ARMY 86 Heavy Corps Aviation Brigade Organizational Diagram [57]

With corps organizations limited by a "gap plugging" concept, the employment considerations that drove the organizational configuration were almost totally tactical in nature. Operationally, employment concepts included striking deep against the first echelon divisions of the enemy's second echelon army to delay and disrupt his commitment cycle and performing airlift and airstrike tasks in support of the corps Rear Area Combat Operations Brigade.

From the outset of the ARMY 86 Force Structure Modernization Program, the aviation resource planning community has focused on the tactical, rather than operational, employment of aviation assets. Though being touted as a fourth maneuver brigade headquarters, the only added dimension possessed by the Combat

Aviation Brigade is that of an additional planning headquarters not previously possessed by the ROAD Combat Aviation Battalion. In like manner, the Corps Aviation Brigade was not designed conceptually for employment as an operational unit but rather as a resource pool, wherein division commanders would dip (on a priority basis) for combat power and battlefield mobility augmentation.

## EXAMINING NEW TRENDS.

When discussing new developments in aviation organizations and employment concepts, three people come to mind almost immediately: Brigadier (retired) Richard E. Simpkin, General Doctor Ferdinand M. von Senger und Etterlin, and Colonel Wallace P. Franz. Unlike most of their contemporaries, these men have suggested significant changes to the manner in which aerial platforms should be employed on the future battlefield. All three understand the historical significance and implications of superior mobility and firepower to the field army commander, and further acknowledge that tactical and operational success has been virtually incontrovertible for the battlefield commander who capitalized on both components concurrently. For these futurists, the maximum application of mobility and firepower translates into an independent "air-mechanized" unit.

The frontrunner in creative military doctrine and organization is Richard Simpkin, a noted author and retired Brigadier of the British Royal Tank Corps. Simpkin proposed two divergent concepts for the use of aerial platforms in his publications on the "airmechanization" of warfare. In his book, ANTITANK, An Airmechanized Response to Armored Threats in the 90s, he suggests the use of helicopters as a mobility generator employed in consort with "light anti-armor attack vehicles." This theme is not too dissimilar to the TRICAP division, except that selected airframes are upgraded to transport lightly armored troop carriers and mechanized anti-tank systems. However, by the summer of 1983, he

altered his concept for employing Army aviation on the modern battlefield. At that time, Simpkin envisioned an independent "airmechanized" heliborne force, which incorporates a unique organization and employment concept. Essentially, his concept of an "airmechanized" brigade provides reconnaissance, air defense, anti-helicopter, and anti-armor capabilities for the operational commander. This "airmechanized" brigade conceptually operates independent of mechanized land forces, countering an earlier proposal for heavy-lift helicopters to provide operational mobility for a mechanized force composed mainly of "light mobile protected guns" (LPMGs). Recognizing the constraints placed upon aerial operations by limited visibility and weather, Simpkin concluded that of more value was the helicopter's ability to overcome the elements of "mobiquity" and "trafficability." He defined mobiquity as the ability to cross soft and broken or rough ground, to include natural and man-made obstacles, and trafficability as the ability to use narrow routes of low military load classification (MLC) and man-made passages through otherwise impassable terrain, and [58]

General Doctor Ferdinand M. von Senger und Etterlin is another prominent figure in the military organizational concepts community. Preceding retirement from military service with the Federal Republic of Germany, General von Senger und Ettrlin occupied the position of Commander-in-Chief, Allied Forces Central Europe. His efforts were instrumental in shaping inter-operability mechanisms and defense strategy for the North Atlantic Treaty Alliance. On 2 February 1983, General von Senger presented a lecture at the Royal United Services Institute for Defense Studies entitled "New Operational Dimensions." It was subsequently published in the Institute's quarterly journal, RUSI. The central theme of his presentation was the exploration of an alternative concept for the defense of Central Europe while remaining within the limit of current equipment fielding plans and cost-effectiveness. Following the same line of reasoning as

Richard Simpkin, General Doctor von Senger und Eterlin used a statement made by General Summerall, the US Army Chief of Staff in 1930, to show the military's historical inability to "perceive an opportunity to combine firepower and mobility in a decisive and battle-winning way." His basic contention is that the tank and the helicopter are simply instruments of combat that need an integrated employment concept, independent of conventional combined arms tactics. Envisioning the creation of a universal aerial platform referred to as a "Main Battle Air Vehicle" or MBAV, he proposes the consolidation of divisional and corps aviation resources into a tactically and logistically autonomous "AirMechanized" Division.

The basic formation of the "AirMechanized" Division is the AirMechanized Brigade, organized into specialist company-size units to provide intelligence and reconnaissance, air defense, and anti-helicopter protection. Two attack helicopter battalions of 28 MBAVs each form the nucleus of the combat strength for the brigade. Tactical autonomy of the AirMechanized Brigade is achieved by its independence from any ground forces. An Airmobile Brigade complements the AirMechanized Brigade and counter-balances its vulnerability to infantry and armored threats in its staging areas. Mobility for the Airmobile Brigade is provided by an AirTransport Brigade, which also serves to provide the airlift necessary for logistical support. Figure 2-5 provides an illustration of this proposed "AirMechanized" Division.[59] Organizationally, the "AirMechanized" unit is similar to the 101st Airborne Division (Airmobile). However, rather than there being just one type-unit in a country's armed forces, he suggests manning and equipping an "airmechanized 'operational maneuver' division" for each corps, similar to the Soviet "Operational Maneuver Group" concept.

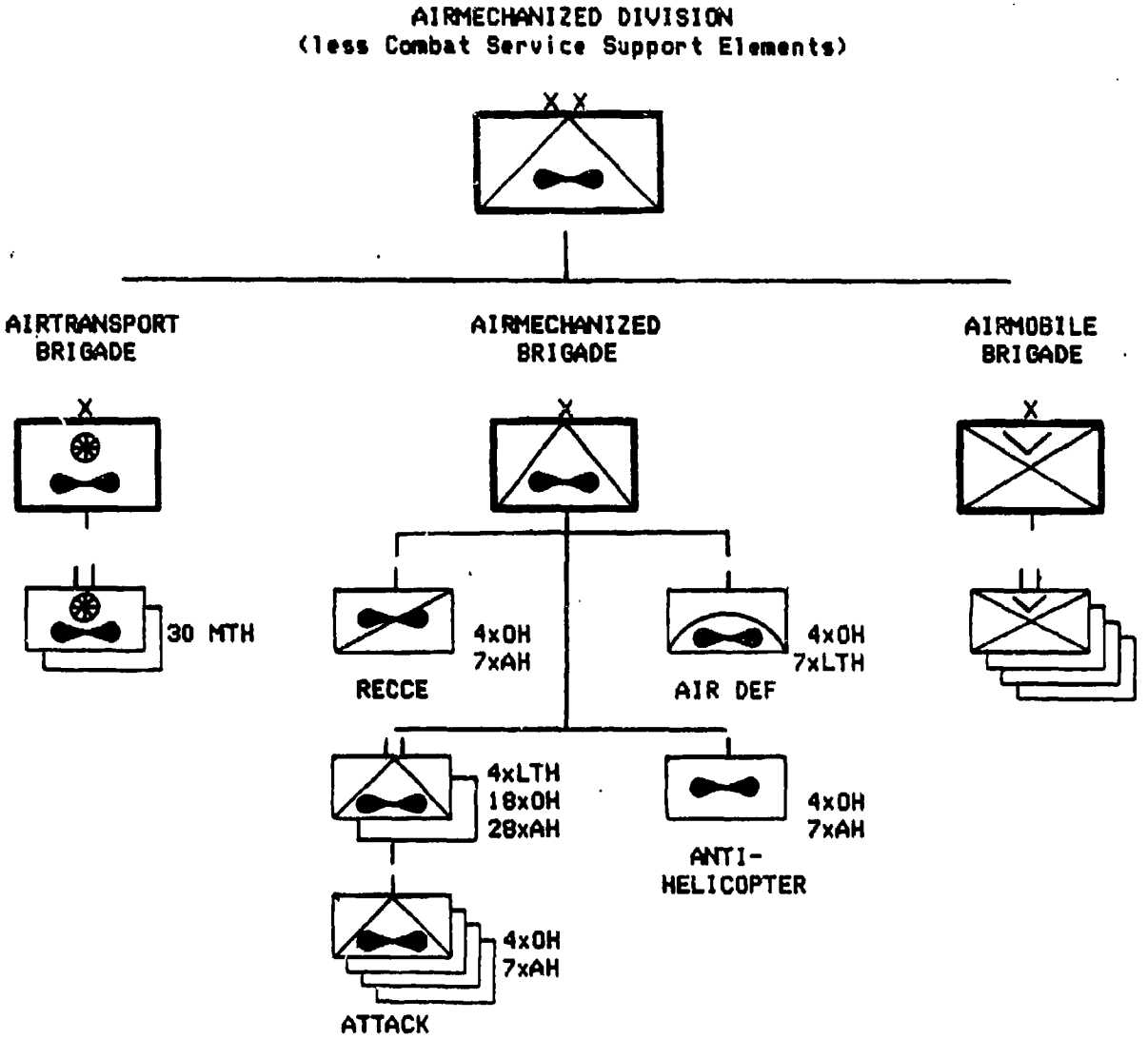


FIGURE 2-5: General von Senger "Basic AirMechanized Division" Model

The third individual whose concepts in operational warfare merit close examination is Colonel Wallace P. Franz, USAR. Colonel Franz, like von Senger and Simpkin, recognizes mobility and firepower as two decisive characteristics of maneuver warfare. But, he takes it one step further by adding flexibility and responsiveness to the equation. Colonel Franz also sees the same parallels

in the development of armored (tank) warfare and the operational employment of heliborne forces. And, as previously articulated by Simpkin and von Senger, he concludes that now is the decision break-point where operational concepts take precedence over tactical ones in the force modernization process. In surmising that current (and proposed) heavy divisions are too cumbersome and inflexible to conduct operational warfare using the tenets of "initiative, depth, agility, and synchronization," Colonel Franz proposes the creation of an "Air Assault Corps," composed of five to seven air assault divisions, an air cavalry combat brigade, an air-transportable artillery brigade, and other corps troops. Once in the objective area, ground mobility would be provided by "hi-tech" equipment such as the Light/Fast Attack Vehicle (L/FAV). Franz uses a recent historical example of opposing armored forces in Somalia to emphasis his argument:

> "Soviet General Vasily Petrov, using Cuban and Ethiopian units, conducted a successful air mobile maneuver against the Somali in the OGADEN in 1978. He employed a mixed helicopter and light armor force in the rear of the Somali Army defending the Kara Marda Pass. This [Somali] army was completely destroyed within three days. As an example of the magnitude of the operation, seventy ASU-57s (self-propelled assault guns) were lifted into the LZ." [60]

SUMMARY:

The implication of the proposals mad by these three "futurists" is that Army Aviation should step beyond its concentration on tactical employment of helicopters and focus on their operational employment. All three gentlemen understand the historical implications of superior mobility and firepower, and acknowledge that operational success has been virtually incontrovertible for the battlefield commander who capitalized on both components simultaneously. Accordingly, an integrated heliborne force provides the operational commander with the instrument to fight the deep battle. Its employment serves to degrade and neutralize the enemy commander's flexibility, and forces him to divert his attention from the primary battle along the FLOT. In this manner, the enemy is

forced to alter his operational plan from a purely offensive orientation to one that must be defensive, as well. Consequently, the defender can seize the initiative and transition into offenive operations. These AirMechanized forces function to seal off the forces in the main battle area, denying resupply and reinforcement, thus facilitaing the defeat of the enemy's close-in combat forces in detail.

In the succeeding chapter, an analysis is made of heliborne tactical and operational employment doctrine and organizations as they apply to countries of the North Atlantic Treaty Alliance and to the Soviet Union. Primarily, the focus is on examining how defense policy is translated into military doctrine and organizational force structures, as they relate to the aviation component of a nation's armed forces.

CHAPTER 2

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# CHAPTER 3

## ASSESSING EUROPEAN AND SOVIET HELICOPTER EMPLOYMENT CONCEPTS

### PURPOSE AND SCOPE.

The purpose of this chapter is to compare and contrast the Army Aviation helicopter employment doctrines and tactical organizations of Western European countries and the Soviet Union with those of the United States, as presented in Chapter 2. Using those countries in Western Europe that are either non-aligned or are members of the North Atlantic Treaty Organization (NATO) Alliance as a point of departure, this chapter explores the use of heliborne aviation as a means through which strategic and operational objectives may be achieved; in the second half of this chapter, the Soviet "way-of-war" is examined.

A fundamental premise shaping the direction of this assessment involves the relationship of the military establishment to that of a country's political structure. According to the Prussian theorist, Carl von Clausewitz, war is a continuation of national policy by other means. A variation of this concept is offered by the Russian political theorist, V.I. Lenin, who notes that political and military elements of government are inseparable, with war holding an equal status with negotiation.[1] From this perspective, it follows that national objectives prescribe policy; policy dictates national defense strategy; defense strategy seeks to secure strategic aims or goals; and, military operations are a means whereby strategic goals may be realized. By acknowledging this process for linking military doctrine and organizations directly to national policy and objectives, a comparison of European and Soviet heliborne forces is made. This study evaluates national defense postures and strategies against national will, collective security agreements, the operational environment and the threat. For this analysis, Europe is divided into a Northern, Central, and Southern region.

## WESTERN EUROPE

### AN OVERVIEW

Before the end of World War Two, all of Europe had come to realize the preeminence of two world superpowers: the Soviet Union and the United States. The bi-polarization of global political philosophies led to the creation of a buffer zone, namely Western Europe and non-Soviet members of the Warsaw Pact. Post World War hemispheric affairs saw Europe enter into loose confederations of nations which were as politically and economically oriented as they were defensive in nature. Their objectives were to reconstruct and revitalize a war-torn continent, and to restore peace and prosperity. Western Europe saw an increasing need for countering the expanding presence of Soviet hegemony. To a "free" Europe, Communist Russia was exporting a political philosophy of class struggle through armed intervention.

According to Sherwood S. Cordier, in his monograph entitled CALCULUS OF POWER Western Europe today does not possess the fundamental political unity which a military capability of continental dimensions demands.[2] The overwhelming factor in the creation of a unified European defense strategy has been national self-preservation. Emanating from the melting pot of national will, cultural disposition, historical experience, and geographical location is the essence of national defense policy. From its peculiar point of reference, each nation perceives the "threat" somewhat differently. Thus, each contributes to the region's collective security effort only that quantifiable amount deemed critical for the preservation of its national sovereignty and objectives.

For Europe and her NATO allies, the greatest threat to national security lies with the Soviet Union and her potential for military intervention in the Central Region. As a result of this central focus, the Scandinavian peninsula has been spared direct involvement in East-West tensions. In the South, only

the Turkish Straits present a strategically-significant objective for Soviet power projection. Objectively, it would be ludicrous for either region to suppose a land-oriented defensive posture when the probable threat is Soviet incursions into their territorial waters or airspace. Consequently, national defense policies and military doctrine and organizations mirror this notion of peripheral involvement. Hence, an overview of the circumferential regions is warranted without making a detailed comparative analysis.

## EUROPE'S NORTHERN REGION

The four countries making up this region are Denmark, Finland, Norway and Sweden. Significantly, only Finland shares a border with the Soviet Union, a factor contributing to her 1948 treaty of friendship, cooperation, and mutual assistance with the USSR. However, she maintains a foreign policy of strict neutrality. Similarly, while Norway and Denmark conclude that membership in NATO is vital to their national security, they both place limits on their involvement by stipulating that foreign troops are not to be permanently based on their territory, and that no nuclear weapons are to be stationed in their countries. Meanwhile, Swedish military concerns are for the protection of her neutrality. Swedish defense policy has two primary objectives: to maintain the ability to destroy any invading force should it attack; and to safeguard the integrity of Swedish soil, territorial waters and airspace, thus ensuring that the country's neutrality is respected.

The ability of the Nordic countries to limit superpower involvement in their region has been as a direct result of a lack of immediate interest by the Americans or Soviets. Close examination of regional armed forces indicates a predisposition toward naval and air power projection, with their conscript land forces concerned primarily with the neutralization of an amphibious or airborne invasion force. Heliborne capabilities focus mainly on anti-submarine warfare

(ASW) and search-and-rescue (SAR) missions. Army helicopter operations provide aerial resupply and troop transport, with airmobility of infantry units being secondary. Specifically, Danish brigades are the smallest formation in any European army to be accorded that distinction. With a total inventory of only sixteen helicopters, Danish Armed Forces are described as scarcely providing a credible coastline defense and constituting the weak link in NATO's chain of defenses.[3] Finnish national defense relies heavily on tanks and anti-armor ATGM systems. The helicopter is not recognized as a critical national defense item, although its ability to provide an added measure of battlefield mobility and flexibility is acknowledged.[4] Norway's regional commitment for defense numbers 18,000 troops, of which 15,000 soldiers are 12-month conscripts. She does not boast of any helicopters in her Armed Forces. Finally, Sweden relies on her aerial force of 50 helicopters for command and control and transport. None of these countries uses the helicopter in an attack or anti-armor role nor envisions heliborne maneuvers forward of the FLOT.[5]

## EUROPE'S CENTRAL REGION

Six NATO countries operate combat helicopters in Europe's Central Region: Belgium, France, Great Britain, The Netherlands, West Germany, and the United States. Canada, whose NATO commitment includes a mechanized brigade group, maintains a Canadian-based airmobile battalion as part of the Allied Commander Europe (ACE) Mobile Force-Land. Only Luxembourg, who maintains a nominal army of one 550-man light infantry battalion, is without a helicopter component.

Neither the Belgians nor the Dutch possess an armed-attack helicopter capability. The Belgian Army owns and operates three independent helicopter squadrons and a composite squadron under the command of 1st Belgian Corps, which also provides two of its four active brigades to NATO's Northern Army Group. Belgian vertical lift assets are dedicated to providing support for

Forward Air Control (FAC), Field Artillery Aerial Observation (FAAO) and aerial resupply. Influenced by 40 years of peace and a rising socialist faction, Belgian political and social sentiments do not favor a strong forward-deployed military posture, as is evidenced in its meager defense budget (slightly over 1% GNP) and the recall of its third brigade from West Germany. The Dutch, on the other hand, are more dependent upon NATO for their security. Therefore, they have forward-based most of their armed forces, with only a few ground units retained locally for territorial defenses. The Dutch Air Force operates some 100 Alouette-III and BO-105 helicopters in support of Army operations. Though they provide only aerial reconnaissance, field artillery spotters, forward air control teams, and aerial transport, the three helicopter squadrons are being complemented by the formation of an attack helicopter unit which will provide an anti-armor counterattack capability.[6]

Traditionally, the most important of Britain's political and military objectives has been to command the seas surrounding the British Isles, and to maintain the European balance of power. Great Britain seeks to avoid major land-force involvement in a European war while bearing the brunt of naval and amphibious operations. With respect to its NATO land-force commitment to West Germany, the British Army of the Rhine has a unique arrangement concerning its helicopter force: it is the only NATO country that splits rotary-wing combat operations into two distinct parts. The Army Air Corps is responsible for five battlefield functions: 1) observation and reconnaissance; 2) armed action (close air support, anti-tank fires, suppressive fires, SEAD); 3) aerial field artillery observers and forward air controllers; 4) command and control, and liaison; and, 5) limited movement of men and materiel. The Royal Air Force completes the total force equation by providing helicopter support for air mobility and aerial resupply. It performs these functions with two squadrons of "Puma's."[7]

Aerial battlefield operations are conducted by five Attack Helicopter Regiments, each composed of an attack squadron and a 'recon' squadron. While each regiment is organic to an armored division, they can be regrouped by the Corps Commander and placed under the operational control of the Corps Aviation Officer. Using the dual-purpose "Lynx" as their primary attack aircraft, the British feel they increase their operational capacity due to weather conditions which make a dedicated anti-tank helicopter ineffective approximately 25% of the time in Europe. Their concept for employment has the Attack Helicopter Regiments being held in reserve or used as a counterattack force. The lift capability provided by the "Lynx" permits forward displacement of mobile tank-killer teams which may operate independently or in conjunction with the attack aircraft.

France maintains an "independent" defense policy based on a diminished confidence in the United States' commitment to invoke its deterrent force on behalf of a European ally. As a result, France relies on three categories of defense organization: Strategic Forces, Forces of Maneuver, and Territorial Defense Forces. The mission of the Forces of Maneuver is to contain a nuclear or conventional attack inside or outside Europe. The First French Army (known in World War II as Armee du Rhin et Danube) pursues the mission with three Army Corps and an Army Air Corps, or Aviation Legere de l'Armee de Terre (ALAT).[8]

The French military positions concerning the use of helicopters in combat form a dichotomy. The French Army Chief of Staff General DeLaunay sees rotary-wing assets in a "support and protection" role, operating to the rear of French troops, with their anti-armor capability directed mainly at blunting an enemy penetration. An opposing position is maintained by the French Army Air Corps (ALAT) Commander, Brigadier General Herve Navereau, who envisions light (4 ton)

anti-armor and anti-air helicopters patrolling and controlling the "land sky." Navereau's notion of "land sky" considers heliborne operations as an integral part of the land force scheme of maneuver, with helicopters simply providing mobility, speed, and maneuver through a vertical extension of the battlefield. Both generals also hold opposing ideas as to the type of helicopter that should be in the French inventory. General DeLaunay favors the multi-purpose aircraft exemplified by the Soviet "Hind" and "Hip" or the British "Lynx." In contrast, General Navereau advocates the integration of single-function aircraft similar to the Alouette II and III and the BO-105. His argument is based on the need for quantities and the premise that technical sophistication in multi-purpose helicopters translates into increased weight, reduced performance, a loss of endurance, a degradation in field-maintainability, and an overall posture of non-affordability, thus leaving a substantial gap in operational defenses.[9]

The French Army Air Corps, or ALAT, supports each of three French Army Corps with one or more Combat Helicopter Regiments (RHC) and a Light Helicopter Group (GHL). The assignment of aviation assets against the Corps is as listed:

<u>I Corps (HQ - Metz)</u>
1st RHC - Phalsbourg, Moselle
3rd RHC - Etain-Rouvres, Meuse
11th GHL - Nancy

<u>II Corps (HQ - Baden, FRG)</u>
2nd RHC - Friedrichshafen, Frieburg
12th GHL - Trier, Forhen

<u>III Corps (HQ - Yvelines)</u>
6th RHC - Compiegne
13th GHL - Les Mureaux, Yvelines

<u>General Reserves</u>
5th RHC - Pau (attached to 11th Abn Div for external operations)

Each Combat Helicopter Regiment (RHC) has 72 helicopters assigned: 20 Light Alouette II's and SA-341 Gazelles, 30 Alouette III's and SA-342 Gazelle-HOT's, and 22 SA-330 Pumas (tactical transports that carry 15 men or 2.5 tons). The Light Helicopter Groups (GHL) are composed mainly of Alouette II and III's and SA-341 Gazelles. The French, like their neighbors, do not envision employing large formations of helicopters across the FLOT although they have experimented

with a 'composite' raiding party of two SA-342 Gazelle-HOT's and a SA-330 Puma. Figure 3-1 provides an organizational diagram of a Combat Helicopter Regiment.

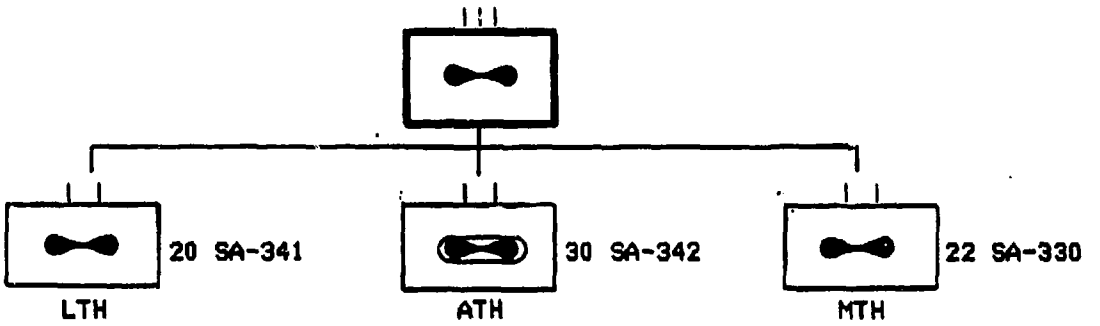


FIGURE 3-1: Corps Combat Helicopter Regiment, French Army

The Federal Republic of Germany, or West Germany, shares a 1700 kilometer border with East Germany and Czechoslovakia. In some locations, this lies as near as 150 kilometers of the Rhine River, the operational and strategic line of demarcation for the defense of Western Europe. NATO's problem for European defense is essentially how to stop a westward thrust by Soviet forces before they reach the Rhine. West Germany's dilemma is how to contribute to the defense of this key area without assuring the devastation of its own national integrity. The aim of battle is to stop Soviet aggression by collapsing his will and ability to continue combat, by restoring the integrity of the defense and territory, and by retaining freedom of action for the NATO Alliance.[10]

There is no overall military command structure in the German Armed Forces nor an operational command larger than a corps, because they have chosen to operate as an integrated component of the combined NATO Army. West Germany has three Army Corps consisting of 36 brigades which are formed into 12 divisions. Each corps has an organic aviation brigade, and each division has a subordinate aviation company. German Army Aviation is a pure helicopter force. In order

of priority, its primary tasks are to provide: 1) aerial transport of men and materiel; 2) liaison and courier service; 3) terrain and combat reconnaissance; 4) battlefield surveillance; and, 5) anti-tank operations. Its five types of helicopters are divided into four categories according to battlefield function: observation, utility, cargo, and anti-tank. German Army Aviation combat power resides at corps level, since the divisional aviation company has only 10 light observation helicopters assigned, an exception being the 6th Mech Div (LANDJUT) in Schleswig-Holstein which has an assigned aviation regiment.[11]

The employment of the helicopter in the German Armed Forces began on a major scale only after the Arab-Israeli War of 1973. Advocates of using the helicopter as a weapons platform argued that, helicopters, protected against detection by extreme low level flight and long-range target acquistion and engagement systems, would be well suited to accomplish missions which otherwise could not be accomplished or which could be accomplished only with a far greater effort. West Germany's decision to jointly finance the production of an attack helicopter with the French had financial and political justification. As an interim measure, Germany has fielded the HOT-equipped PAH-1 (BO-105). The fact that the delivery of the PAH-1 to the regiments did not begin until 1980, and will not end before 1984, may have many administrative as well as economic and budget policy reasons, the end result of a developmental process which was characterized by a dispute over authority and by decisions that were postponed time and time again.[12]

Over the past three years, the German Army Aviation organizational focus has elevated from division to corps. As recent as 1981 during Exercise SCHARFE KLINGE (Sharp Knife), the concept of a corps aviation regiment was first placed into being and employed in the field. This organization replaced the previous two anti-tank helicopter squadrons assigned to each division headquarters. The

Corps Aviation Regiment was composed of four Anti-Tank Squadrons, each assigned fourteen PAH-1's. The smallest tactical operating unit was the "Half-Squadron" which consisted of seven anti-tank helicopters. Since then, the Corps Aviation Regiment has evolved into a Corps Aviation Brigade, with the aviation regiment redesignated as an Anti-Tank Helicopter Regiment. It should be noted that the anti-tank helicopter is not an "attack" helicopter. It is a single-purpose aircraft employed as an anti-tank weapon as a part of an integrated combined arms effort. The German Army decided that it did not need a specialized scout helicopter, partly because their crews could not see far enough forward without a stabilized sighting system. Also, with an exclusive commitment to fight a home defense battle on very familiar home ground, the German Army does not envision the need for a "scout."

The primary subordinate units within the Corps Aviation Brigade are an Anti-Tank Helicopter Regiment, a Light Transport Helicopter Regiment, and a Medium Transport Helicopter Regiment. Each regiment within the Corps Aviation Brigade has independent sub-units to look after the functions of command and communications, field resupply, aircraft organzaional and intermediate-level maintenance, and ground defense. The following criteria are used for assigning the preponderance of aviation assets to Corps:

a. Due to resource constraints, the Army could not afford to have both divisional and corps aviation combat and combat support organizations.

b. It was determined that corps can see broader combat frontages and in greater depth, and can therefore influence the battle with massed firepower.

c. "Economy of Resources" determined that by consolidating assets at corps, maximum usage of limited resources would be effected. Consolidation translates into fewer MTOE equipment and maintenance personnel requirements. Figure 3-1 provides an organizational diagram of the German Corps Aviation Brigade, reflecting only major subordinate units.[13]

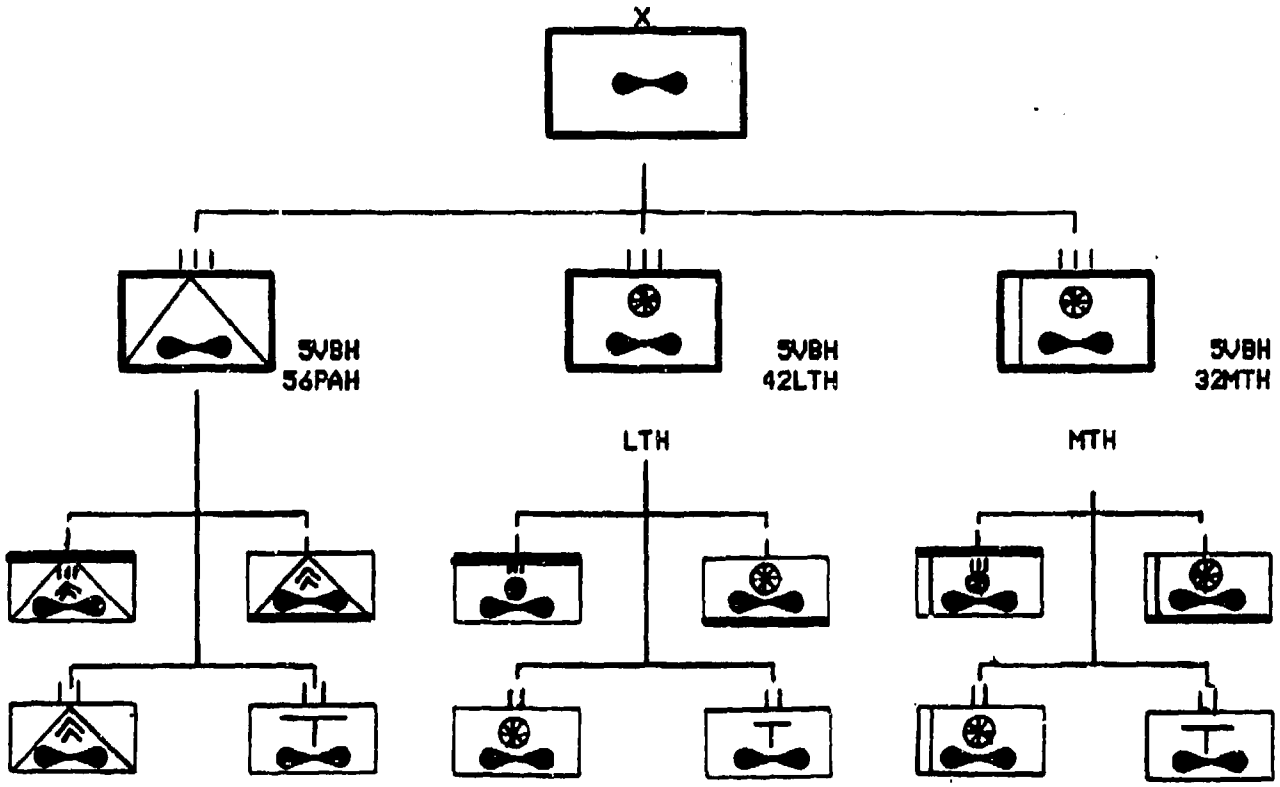


FIGURE 3-2: Corps Aviation Command, West German Army

The Anti-Tank Helicopter Regiment normally employs a squadron in support of a division. Usually, a company is not placed 'opcon' to headquarters below brigade level. The squadron co-locates its Forward Assembly Area and Forward Area Rearm/Refuel Point in the division's rear area, and displaces it only once per day, normally at night. Much depends on how flexible and responsive this forward combat base system proves to be. Most combat missions are preplanned the day before, with mission briefings conducted at regimental headquarters upon completion of the day's missions and debriefings. The German employment concept directs that all heliborne operations will be conducted in conjunction with friendly troops and:

> ". . . they should be employed only over friendly terrain and should not penetrate into enemy-controlled areas."[14]

EUROPE'S SOUTHERN REGION

Austria, Switzerland, Italy, Greece, and Turkey constitute that area designated as Europe's Southern Region. Interestingly, only Turkey shares a border with the Soviet Union. Even though sitting astride Western Europe's historical "southern invasion route," Austria seeks to maintain a position of perpetual neutrality. Meanwhile, Italy, Greece, and Turkey are members of the NATO Alliance, albeit their resolve to resist Soviet expansion through military participation in NATO's defense alliance is questionable, at best.

On 26 October 1955, Austria declared a position of permanent neutrality in her Constitution. The intent was to create another Switzerland, a task most difficult in that she shares borders with NATO and Warsaw Pact countries. The Austrian Constitution provides that she will never join any military alliance and will not permit the establishment of any foreign military base on her land. Consequently, the primary objective of Austria's defense policy is to organize the national will to defend her neutrality so that an aggressor will choose to avoid, rather than violate, her territory. Austria's helicopter force, which totals 74 airframes, is assigned to the Air Force and supports the Army with command-and-control and liaison flights, transport and resupply missions, and mobility for anti-tank teams. Her military defense strategy calls for "defense in depth" through the use of successive battle positions and anti-armor "kill zones" which are designed to inflict maximum attrition, delay his advance, and disrupt his battle plan. The Austrians hope to delay a westward thrust up to five days, long enough to permit Central Army Group-Europe's (CENTAG) southern flank sufficient time to mobilize a counter-stroke. Currently, Austria's Army is in a state of flux, and the outcome can not be determined. However, as the Austrian government looks into the 1990's for revitalization of its national defense program, "plans are being considered to transfer the emphasis in land operations . . . to helicopters."[15]

Since the 19th Century, Switzerland has been the most determined and consistently neutral nation in the world. Swiss national defense is entrusted to a militia, in which service is universal and compulsory for males over 20. Swiss defense strategy is based essentially on the concept of deterrence thru demonstrated readiness. Swiss Air Force maintains a fleet of 96 helicopters (Alouette II and III) in seven Light Aircraft Squadrons. Their mission is to provide communications relay, command-and-control/liaison flights, observation and reconnaissance, and search-and-rescue (SAR). Swiss military helicopters are not configured in an anti-armor role, and operational employment concepts do not envision flights beyond the FLOT.[16]

Italy is one of the four major contributors of military forces to NATO and, together with Greece and Turkey, forms the southern flank of the Alliance. In sharp contrast, no Italian forces are stationed outside national boundaries. The Italian Army is essentially a northern creation foisted onto the center and south by the process of political unification, and it has never been properly assimilated. The primary role of the Army, in collaboration with NATO, is the defense of Italy's northeastern frontier. Italy's Army is organized into three corps, a total five divisions and twelve separate brigades. Each Italian Corps is supported by an aviation squadron of approximately 18 helicopters; divisions and separate brigades are supported by an organic flight detachment of 10 to 12 aircraft. Rotary-wing assets provide aerial platforms for command-and-control, liaison flights, observation and reconnaissance, transport, and a limited anti-armor capability. There is no organizational mechanism whereby large-scale heliborne operations can be planned and executed.[17]

Greece and Turkey form the "Bosporus-Dardenelles Chokepoint" in NATO's southern defensive belt. Although both are members of the NATO Alliance, their

shared animosity and overt hostilities toward one another have almost dissolved their tenuous partnership. Although a strong socialist-communist influence is present in both countries, their primary national defense concern is countering Soviet hegemony. Greece identifies Bulgaria as its greatest threat to internal security, while Turkey experiences pressure from Bulgaria and the Soviet Union, the latter with whom it shares a 300 mile border.

Greek national defense policy calls for a strong forward defense to deter Soviet expansionism through its Bulgarian proxy and for cooperation and coordination with Turkey in controlling the Bosporus-Dardenelles sea lane. To achieve this goal, the Grecian Army has three corps with eleven infantry divisions and one armored division. The Army's air arm, Aeroporia Stratou, is headquartered at Megara and controls a composite wing of aircraft, including 67 helicopters. As evident in the composition of the rotary-wing fleet, heliborne operations provide priority support for troop transport and aerial resupply. Helicopter armament consists primarily of door-mounted 7.62mm machineguns; an anti-armor capability is not provided. Greek helicopter employment doctrine and concepts do not favorably consider large-scale operations conducted across the FLOT.[18]

Turkey is strategically located at the world's crossroads, thus making it an objective of numerous military campaigns since ancient times. Historically, Russia has been an enemy of Turkey for several centuries. Because of this, the Turkish Army maintains three field armies of two corps each, enlisting nearly 400,000 soldiers. One field army is stationed in European Turkey, protecting the northern approach to the Turkish Straits; a second field army is positioned in Western Anatolia, concentrated near the Asiatic side of the Straits; and, a third field army is located in Eastern Anatolia, concentrated near the Soviet border. Turkish Army Aviation, or Kara Ordusu Havacilioi (KOH), is responsible

to Turkish Ground Forces Command and is controlled by the Central Army Aviation Establishment. Though Turkey has only 150 helicopters, each field army, corps, and division maintains its own flying unit and airfield. The primary function of the heliborne forces is to provide aerial transport, observation, liaison, and extremely limited aerial fire support. However, none of Turkey's aviation assets have an anti-armor capability. As the other states in Europe's Southern Region, Turkey does not possess a proactive vertical-mobility doctrine.[19]

## EUROPE'S PERIPHERAL STATES

Three members of the North Atlantic Treaty Alliance merit only nominal discussion: Iceland, Portugal and Spain. Iceland maintains no military forces, although it does have an internal security police force and a Coast Guard with six vessels. Iceland provides its NATO allies with air and radar bases on its territory. Currently, Portugal and Spain do not provide military land forces for the defense of Europe's vulnerable Central Region. Maintaining a conscript defense structure of slightly less than 60,000 soldiers and an inventory of 40 helicopters owned and operated by its Air Force, Portugal does not subscribe to a proactive helicopter employment doctrine. The Spanish Army consists of three divisions, of which one brigade in each comprises a cadre formation. Described by Spain's greatest modern historian Salvador de Madariaga as "utterly useless" the Army is essentially a force for stability rather than for action.[20]

## SUMMARY

This survey of defense concepts, doctrines, and organizations has demonstrated that, with possibly only one exception - Italy, Europe's Central Region is the only area where land forces are prepared to conduct heliborne anti-armor warfare. Further, it is evident that none of the countries in Western Europe has the mechanism through which to execute a proactive defense doctrine. Air assault operations were restricted because military doctrine was reactive in

nature, failing to develop opportunities to seize the initiative. Excepting the few occasions where raids or ambushes were planned, few attempts were made to execute across-FLOT heliborne operations. No doctrinal concepts planned for the conduct of large-scale air assault operations deep (100 Km or more) behind enemy lines. Heliborne forces are relegated traditional battlefield functions without regard for their technological and combat capabilities. Independent air assault operations to disrupt or destroy critical nodes were not planned.

## THE SOVIET UNION

### AN OVERVIEW

The Soviet military presence in East Germany resembles a massive phalanx in the heart of Europe. Since the end of World War II, Eastern Europe has been under the dominance of the Soviet Union. In 1955, under the guise of creating a security alliance against its greatest potential enemy NATO, the Soviet Union entered into a mutual security pact with East Germany, Czechoslovakia, Hungary, Bulgaria, Poland, and Romania. The Warsaw Pact armed forces were placed under Soviet command and their role was mainly defensive. Since that time, Soviet military forces have been used primarily in a counter-insurrection role, first against Hungary in 1956, then against Czechoslovakia in 1968, and on numerous lesser occasions against Polish demonstrations.

The Soviet Union has two major strategic aims: the domination of Western Europe; and the eventual neutralization of the United States as an obstacle to Soviet world domination. The non-Communist world has only recently awakened to the fact that the Soviet Union's unconcealed expansionism constitutes a grave threat to world peace. The Soviet Union does not seek global parity; it seeks a permanent imbalance of power - absolute military superiority. To the Soviet Union, peace can only be guaranteed if it and the Communist bloc can so tip the balance of power ("correlation of forces") in their favor as to ensure that the

Western alliance can never hope to challenge them. The more the "correlation of forces" favors the Soviets, the less danger there is in global war; but more capable are the Soviets to spread their influence throughout the world.[21]

The Soviet armed forces are expanding at an unprecedented rate, and older weapon systems which were clearly inferior to their Western contemporaries are being replaced by new weapons which match the best Western products. From an histrical perspective, with more than 200 helicopters (Mi-2, Mi-6, and Mi-8) already presen in the Group of Soviet Forces Germany's (GSFG) 16th Air Army, the Soviets introduced the Mi-24 "Hind" into Frontal Aviation's inventory in 1973. The presence of this aircraft in the forward area added a new dimension to theater warfare. During 1978, the United States became concerned over the rapid buildup of the helicopter fleet in the Soviet Union. By early 1980, the Soviets were able to build more helicopters than the US Army would build during the entire span of the AH-64 "Apache" and UH-60 "Black Hawk" program. Armed as an anti-tank and fire support weapon, the Mi-24 "Hind A" was probably designed and created primarily for the heliborne assault operation. Although the latest version of the Mi-24, the "Hind E," is capable of carrying an 8-man squad, the Soviet's primary tactical transport helicopter is the Mi-8 "Hip," with a troop-carrying capacity of 35 men. Reports indicate a new, larger assault helicopter under development, possibly a heavy-lift model or a replacement for the Mi-8. With an inventory of over 4,000 helicopters, the Soviets have a unique concept for operational employment of heliborne forces that requires examination.[22]

## SOVIET MILITARY DOCTRINE

The cornerstone of the Soviet Army is military doctrine, the officially approved system for perceiving and analyzing the nature of war, how it will be waged, and with what weapons. Soviet military doctrine assumes a significantly different perspective in the political and social order of business from that

of its Western counterpart. Soviet political policy and military strategy are inseparably intertwined: Party strategy is determined by a political-military assessment of the "correlation of forces." Once doctrine is decided upon, it cannot be questioned except at the highest political-military levels or through indirect routes. Soviets have no doubt that war is a continuation of politics, and define it in terms of social and economic revolution. Accordingly, their military doctrine provides the mechanism through which the five-service armed forces implement Soviet policy by means of war. The two key elements of Soviet military doctrine are surprise and high speed advance in depth, which call for continuous day and night operations.[23]

Soviet military doctrine is distinguished from military science and art, each being a different and precise entity. Military science is a "system of knowledge concerning the nature, essence, and content of armed conflict." It is based on empirical data which is gathered through maneuvers and experiments, and from historical study. A main task of Soviet military science is to study the doctrine, strategy, and tactics of the enemy in order to better understand how a war might begin, and thus to become better prepared to win it. Military art, a subset of military science, is "the theory and practice of combat," from the highest to the lowest echelons, being divided by its scope into strategic, operational and tactical levels.[24]

Historically, all significant Soviet combat operations have been large-scale land battles in which air or sea power have played merely a subsidiary role. For this reason, the Soviets have one common strategy for all services, essential for their integration into a single fighting force. The objective in any war is to win. The Politburo carries that notion further by declaring that it has no intention of conducting war-termination negotiations with an opposing government that was in power at the beginning of the war. In implementing this

concept, military strategy subscribes to four basic tenets:

1) The conduct of war must be quick and decisive;

2) The nature of war will be conventional, if possible;

3) The execution of war will be from an offensive posture; and,

4) The Party must be convinced of the military's ability to achieve speed and surprise, and to win. [25]

OPERATIONAL WARFARE (OPERATIVNOE ISKUSSTVO)

Each of the five branches of the Armed Forces has its own operational art. For the Ground Forces operational art (Operativnoe Iskusstvo) deals with combat by theater level forces - armies and fronts. A front (equivalent to a US field army or army group) is the basic operational formation, normally referred to as a military district during peace. Divisions and regiments are considered to be tactical units. Nine principles of operational art govern both operational and tactical level Soviet units on the battlefield. While different sets of these principles may appear in literature, and their precise application may slightly vary, operational thought is guided by:

1) Speed, shock, and maneuver;

2) Concentration of the main effort to achieve superior mass at the decisive place and time;

3) Surprise and security;

4) Aggressiveness in battle;

5) Preservation of combat effectivenss;

6) Realistic planning;

7) Coordination and cooperation of all arms and services;

8) Simultaneous action against the enemy throughout the entire depth of his deployment;

9) Primacy of the "offensive." (The celebration of the offensive in Soviet military texts is a ritual litany.)[26]

The objective of offensive operations is to neutralize the machinery of national and international politics before the opponent has an opportunity to mobilize its national, military, and industrial might or finalize its nuclear release procedures. Colonel V.Y. Savkin describes the implications of Soviet operational warfare in The Basic Principles of Operational Art and Tactics:

> "The goal of the attack lies in the total defeat of the defending enemy and the capture of vital areas of his territory. Only a decisive attack conducted at high tempos and to a great depth ensures total victory over the enemy."[27]

This glimpse into the Soviet mind provides the essence of offensive military power application. From their point of view, operational warfare is described as the conduct of conventional war in the framework of a nuclear war. Hence, the element of "concentration" becomes a question of timing and mobility, i.e., bringing together the required mass only briefly, breaking through or bypassing the defense and then rapidly dispersing. This approach is valid regardless of whether or not nuclear weapons are employed. For the Soviet operational force commander, a swift and sudden blow creates favorable conditions for economizing manpower and equipment, destroying the enemy piecemeal, and achieving a quick and uninterrupted advance through his operational depths. By employing every available asset (manpower, materiel and intelligence), he creates a "window of vulnerability" in the enemy's combat formations and uses it to attack him when and where he least expects it.[28]

In order to achieve surprise, speed, shock and superior mass throughout the enemy's operational depth, Soviet military doctrine relies on a combined effort of armored thrusts and air assault operations. To switch the focus of the fighting from the forward defensive positions to the rear and to achieve operational depth on the battlefield, the Soviets have employed the concept of

"deep operations." First presented by the Soviet author V.K. Triandafillov in in his book Basic Operations of Modern Armies, the theory postulates that "deep operations" is an operational technique:

> ". . . whereby the enemy is quickly defeated by rapid, concentrated armored thrusts and coordinated air strikes penetrating deep into his territory in order to undermine his defense, neutralize his war economy, and shatter the fabric of his society."[29]

Soviet preoccupation with the enemy's rear area is based upon the fundamental role it assumes in war, that of providing mobilization, deployment, an sustainment. The term "rear area" refers to that both the actual terrain and the military and political organization therein that stretches from the forward lines of combat troops back to the national capital. Soviet priority on rear area operations is demonstrated in the near "spectacular" growth of its combat helicopter inventory. The importance of air assaults by airborne and heliborne forces is stressed by Soviet writers who emphasize that the airlifted unit must be sufficient in size to disrupt the cohesiveness of NATO's forward defense and to divert command attenion and combat resources to defend the rear area. Rear area operations are not of themselves sufficient to bring about victory; their purpose is to reduce the enemy's capacity to resist, thus making it easier for the main forces to carry out their task. The primary mobility and firepower instrument for tactical air support and conducting "deep operations" is the combat helicopter.[30]

## SOVIET COMBAT HELICOPTER OPERATIONS

One of the primary tenets of Soviet operational art is the principle of mobility, which along with maneuverability, is an indispensable ingredient in planning military operations. Helicopters are an outstanding example of the USSR providing its armed forces with technology and equipment to optimize their capability to apply long-standing principles of operational are. Unlike their

Western counterpart, however, Soviet forces do not have an Army Aviation. All combat helicopters are organized into independent helicopter regiments as part of a Tactical Air Force. The Tactical Air Force (TAA) has two or three combat helicopter regiments assigned which are placed under the operational control of a front commander. Helicopter regiments, either in whole or in part, may be further subordinated to army or division level, or lower for special missions. Helicopter regiments are designated as either assault or transport, although there is no distinct delineation between the two functions. Assault regiments are usually composed of five squadrons - three attack and two transport. The task of aerial transport is assigned to the Mi-8; the attack role is assumed by the Mi-24, although both systems are capable of performing either mission. Figure 3-3 provides an organizational diagram of the Soviet Frontal Aviation's Independent Helicopter Regiments.[31]

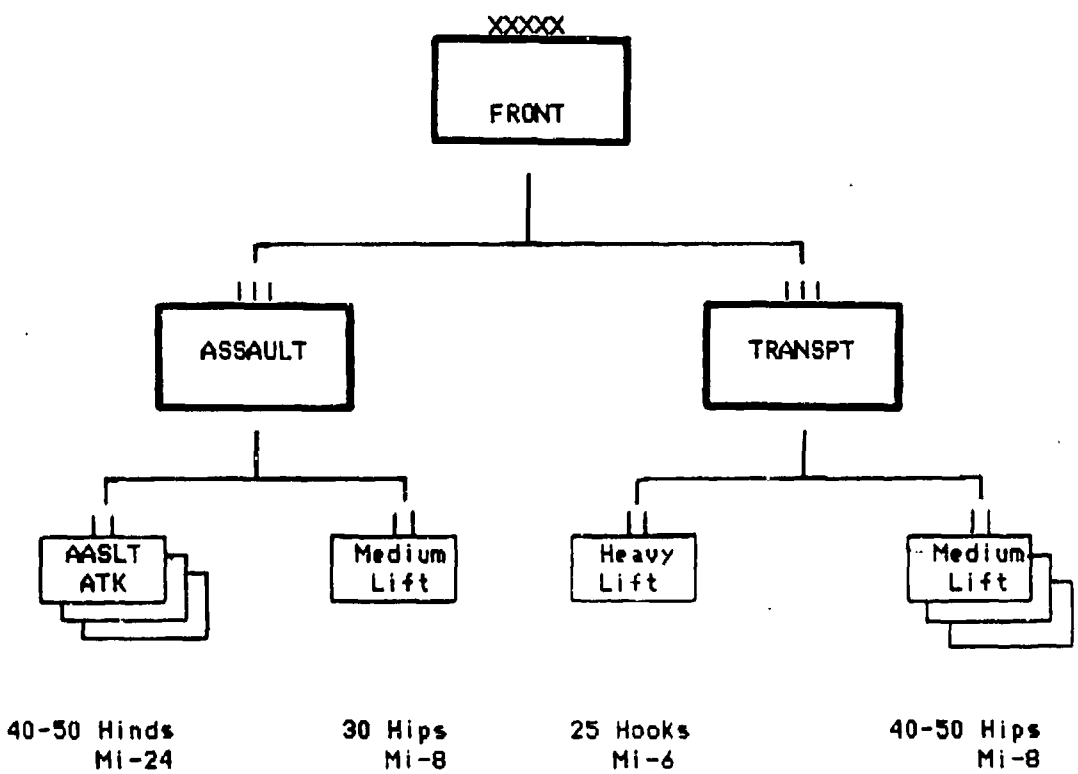


FIGURE 3-3: Soviet Front Independent Assault and Transport Helicopter Regiments

Soviet attack helicopters support heliborne assaults, desants, and other special operations, providing flexible tactical airpower and close air support. Much of what the Soviets have written about airborne/air assault presupposes the possession of air superiority or supremacy. Also, attack helicopters can attack ground targets in the same manner as fighter-bombers, and aid in target acquisition for other weapon systems. Their primary role is the destruction or neutralization of enemy armor and helicopters and the suppression of anti-tank weapon systems (especially ATGMs). Transport helicopters provide airmobility and movement for troops and supplies. Their primary function is to provide troop lift and fire support for heliborne assault operations, although they do allow Soviets to transport high-priority cargo quickly and resupply forces beyond the capability of wheeled transport.[32]

The priority of the main effort in airmobility operations is directed against the most dangerous operational threat. For the Soviet commander, that equates to nuclear weapon sites and their delivery means (missile silos, air bases, and storage sites), command-and-control centers, and air defense sites. Additional objectives include seizing, securing and isolating river crossing sites, neutralizing airfields, disrupting lines of communication, and seizing critical and key terrain (to include man-made features). According to Soviet operationalists, the advantages of heliborne assaults are: 1) requires minimal specialized training - operations can be executed on short notice; 2) troops are landed in good order, closer together; 3) facilitates command and control, and deployment into action; 4) troops are landed much closer to the objective; and, 5) organic aerial fire support accompanies airlanded troops. An added dimension of the assault transport helicopter is its use in heliborne assault or airborne operations with an Operational Maneuver Group (OMG). The extensive use of assault transport helicopters in Ethiopia and Afghanistan demonstrates the importance that the Soviets attach to this combat multiplier.[33]

## SUMMARY

Soviet combat helicopter operations are characterized by speed, surprise, security, and concentration of mass and firepower. They support and complement the operational commander's scheme of maneuver and are employed indepth against the enemy's critical nodes and assist in the overall disruption and destruction of the enemy's defenses. The Soviet system of locating their aviation assets at the highest operational command level emphasizes the notion of criticality of mass to support 'grand' operations. Soviet assault and transport operations are integrated into the operational and strategic plan. The offensive design of Soviet assault helicopters is optimized when they are used in conjunction with Operational Maneuver Groups. Soviet employment concepts ensure optimum utilization to satisfy battlefield functions; their retention at front level permits maximum flexibility, operability, and sustainability.

## CONCLUSION

The character of the battlefield during the next European war will be shaped decidedly by the presence of armed attack and air transport helicopters. Both opponents, the Warsaw Pact and the NATO Alliance, maintain an appreciation for helicopter operations. Consequently, the political and military objectives of these adversaries are reflected in the mission design of their respective heliborne assets. For the vast majority of NATO's Armed Forces, a defense doctrine based upon "attrition" dictates small, quick anti-tank helicopters that can be economically produced in large quantities. For the Soviet Union, strategy and operational warfare drive the requirement for offensive weapons of warfare. Hence, their heliborne assets are designed for integrating heliborne assault and organic aerial fire support. Figures 3-4 and Figure 3-5 provide a comparison of NATO and Soviet battlefield helicopters.

NATO BATTLEFIELD HELIBORNE ASSETS

| AIRCRAFT | ORIGIN | CREW | PAXS | SPEED | RANGE | ENDURANCE | ARMAMENT |
|---|---|---|---|---|---|---|---|
| WG-13 (LYNX) | UK | 2 | 10 | 160 kts | 709 km | 3.5 hrs | variety of MG rkts, cannon |
| SA-330 (PUMA) | UK | 2 | 16 | 150 kts | 630 km | 3.0 hrs | unarmed |
| SA-319 (Alouette) | FR | 1 | 3 | 110 kts | 540 km | 3.0 hrs | 1x7.62mm MG or 1x20mm cannon or 2x68mm rkt pd or 2xAS-12 ATGM |
| SA-321 (Super Frelon) | FR | 2 | 30 | 150 kts | 820 km | 3.5 hrs | unarmed |
| SA-330 (Puma) | FR | 2 | 16 | 150 kts | 630 km | 3.0 hrs | unarmed |
| S[illegible]-342 [illegible]zelle) | FR | 2 | 5 | 170 kts | 375 km | 2.0 hrs | 1x20mm cannon or 2X68mm rkt pd or 4XAS-12 ATGM |
| SA-365 (Dauphin) | FR | 2 | 10 | 136 kts | 898 km | 4.0 hrs | variety of MG rkts, cannon |
| BO-105 (PAH-1) | GE | 2 | 3 | 120 kts | 575 km | 2.6 hrs | 6xHOT ATGM or 8xTOW ATGM |
| SH-53 (Sea Stallion) | GE | 3 | 55 | 170 kts | 500 km | 2.7 hrs | unarmed |
| UH-1D (Huey) | GE | 2 | 10 | 110 kts | 475 km | 2.5 hrs | 2x7.62mm MG (door mtd) |
| AH-1S (Cobra) | US | 2 | -- | 170 kts | 550 km | 2.2 hrs | variety of MG rkts, ATGM |
| AH-64 (Apache) | US | 2 | -- | 204 kts | 689 km | 2.6 hrs | 30mm cannon, rkts, HELLFIRE |
| CH-47 (Chinook) | US | 3 | 33 | 145 kts | 550 km | 3.5 hrs | unarmed |
| OH-58 (Kiowa) | US | 2 | 2 | 120 kts | 680 km | 3.5 hrs | unarmed |
| UH-1H (Huey) | US | 2 | 12 | 110 Kts | 511 km | 2.5 hrs | 2x7.62mm MG (door mtd) |
| UH-60 (Black Hawk) | US | 3 | 14 | 145 kts | 650 km | 3.5 hrs | unarmed |

Figure 3-4: NATO Helicopter Characteristics [34]

SOVIET BATTLEFIELD HELIBORNE ASSETS

| ACFT | NATO NAME | CREW | PAXS | SPEED | RANGE | ENDURANCE | ARMAMENT |
|---|---|---|---|---|---|---|---|
| Mi-2 | Hoplite | 2 | 8 | 115 kts | 306 km | 2.0 hrs | 4x12.7mm MG<br>or 4x16 57mm rkt<br>or 4xAT-2 ATGM |
| Mi-4 | Hound | 2 | 14 | 120 kts | 463 km | 2.5 hrs | 1x12.7mm MG<br>4x16 57mm rkt<br>4xAT-2 ATGM |
| Mi-6 | Hook | 5 | 65 | 165 kts | 612 km | 3.0 hrs | 1x12.7mm MG<br>(nose mtd) |
| Mi-8 | Hip | 3 | 32 | 135 kts | 480 km | 2.5 hrs | 1x12.7mm MG<br>6x32 57mm rkt<br>4xAT-4 ATGM<br>or 4x250 kg bomb<br>or 2x500 kg bomb<br>or 1,000 kg bomb |
| Mi-24 | Hind | 2 | 8 | 170 kts | 480 km | 2.5 hrs | 4x12.7mm MG<br>4x32 57mm rkt<br>4xAT-6 ATGM<br>or 4X250 kg bomb<br>or 2x500 kg bomb<br>or 1,000 kg bomb |
| Mi-28 Havoc | (INFORMATION IS LISTED AS CLASSIFIED) | | | | | | |

FIGURE 3-4: Soviet Helicopter Characteristics [35]

CHAPTER 3

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# CHAPTER 4

## DESCRIBING THE OPTIONS: A WARGAMING ANALYSIS

In the previous two chapters, an historical overview of Army Aviation and an introduction to European and Soviet aviation were provided. Emphasis was on determining the characteristics of Army Aviation that suggest its employment as an operational maneuver force. This chapter attempts to answer two questions: does the need exist for an AirMechanized Division; and, if so, at what level of operational warfare should it be employed. The method used to answer those questions is a European Conflict Scenario wargaming analysis, comparing three organizational models. Model A represents a standard US Army corps organized with an organic Corps Aviation Brigade, and an armored division designated as the army reserve. Model B represents a US corps having an AirMechanized Division in lieu of the aviation brigade. And, Model C represents a standard US Army corps with an AirMechanized Division designated as the army reserve. The operational setting for this evaluation is the Central Army Group (CENTAG) Area of Operations, Allied Forces Central Europe (AFCENT). Because of the nonavailability of a force-on-force computer-assisted simulation model, the evaluation process is conducted using the narrative format of the "War Gaming Analysis" as provided in Chapter 2 of RB 100-9, A Guide to the Application of the Estimate of the Situation in Combat Operations, published by the US Army Command and General Staff College.[1]

### METHODOLOGY OF COMPARISON

The wargaming analysis compares and evaluates three organizational models against a single set of criteria under identical combat conditions, initially. However, it must be recognized that divergent courses of action occur when one organization possesses a greater operational capability than the others. Under

this circumstance, the wargaming continues along the appropriate course with additional commentary provided in the summary. Under no circumstance is any battlefield task that is required of the Corps Aviation Brigade organization (Model A) precluded from evaluation by the two notional organizations: Corps AirMechanized Division (Model B) and an Army AirMechanized Division (Model C). The criteria for this comparison and evaluation are:

1) be immediately responsive to the field army and corps commander;

2) complement the field army and corps commander's scheme of maneuver;

3) be capable of simultaneously conducting three dimensional combat - the deep battle, the close-in battle, and rear area combat operations - without detriment to committed divisions;

4) be capable of conducting and sustaining independent cross-FLOT combat operations for a period of 48-72 hours (until link-up is effected or forces fight back through to friendly lines);

5) minimize battlefield signature through dispersion;

6) be capable of massing combat power quickly at the decisive point and decisive time across the field army and corps sector;

7) be capable of conducting combat operations under all environmental conditions (terrain and weather) indigenous to the area of operations;

8) retain a high mobility factor for anti-tank ground maneuver forces in the absence of heliborne lift assets.

This evaluation concentrates on four situations that represent "windows" in time. Each situation describes a critical point in the battle, causing the army or corps commander to make a decision with regard to the commitment of his aviation and ground combat maneuver resources. Each decision is then evaluated using the RB 100-9 wargaming format as a guide, beginning first with the corps organization having an organic aviation brigade (Model A). This is followed by the evaluation of a corps having an AirMechanized Division as its aviation unit

(Model B). Thirdly, the corps is evaluated, only with the field army having an AirMechanized Division as its reserve (Model C). Upon the completion of each event, a summary of the resulting action is provided. There is no effort made to concoct a "How To Fight" manual in the course of this chapter. Hence, an allocation of resources against a prescribed target is assumed to disrupt, neutralize, or destroy that target as indicated in the supporting narrative.

## DEFINING THE WARGAMING ANALYSIS MODEL

This comparison and evaluation process uses a near "realistic" European conflict scenario, supposing a Warsaw Pact attack against NATO forces in West Germany. The development of this European war scenario is the product of both a conceptual and an operational assessment of the Warsaw Pact threat. The conceptual assessment is governed by the knowledge that the United States and the Soviet Union have reached a position of relative strategic nuclear parity. As a consequence, the United States realizes that without a credible conventional option, the defense of Western Europe is totally dependent upon a theater or strategic nuclear response. Many theorists and world leaders recognize that such a response only invites mutual destruction. Accordingly, the conventional forces contained in the flexible response posture have renewed attention.[2]

Current operational assessments of the Soviet-led Warsaw Pact seem to indicate that their operational plans are based on a short campaign to attack and break through the NATO defenses, and to seize objectives deep in Western Europe rapidly. The execution of this plan would be characterized by large armored forces employed in mass. The effectiveness of the armored forces, in turn, would be enhanced and protected by the integration of a highly sophisticated air defense system and independent air operations. Consequently, the fundamental concern confronting NATO in a mid-intensity European conflict is the problem of providing for an effective anti-armor defense.[3]

A prior-warning, conventional war scenario is used based upon the assumption that a "no-notice", "standing start" attack would not occur due to its implied need for the preemptive employment of tactical and theater nuclear weapons. This scenario assumes a two week buildup of combat forces, materiel, and equipment by the Soviet Union in East Germany, Hungary, and Czechoslovakia. A corollary response by NATO results in the forward positioning of combat units in accordance with the European General Defense Plans (GDP), and the deployment of three divisions from the United States to West Germany. NATO forces are postured commensurate with an alert status of "Imminent Attack."[4] Soviet organization for combat and posturing of forces is in accordance with CGSC publication RB 100-35, Tactics Reference Data, Harriet and William Scotts's The Armed Forces of the USSR, David Isby's Weapons and Tactics of the Soviet Army, and Joseph Douglass' Soviet Military Strategy in Europe. The US Army organization for combat is commensurate with the ARMY 86/"Army of Excellence" corps and divisional force structure and equipment fielding plans as provided in CGSC RB 101-1, Organizational Data for the Army in the Field, General Robert Close's Europe Without Defense, and articles by Dr. Jeffrey Record, Richard K. Betts, and Lieutenant Colonel Waldo Freeman, Jr.[5]

As a means of clarifying the operational disposition of combat forces at the beginning of the scenario, six figures are provided. Figure 4-1 provides a notional NATO order of battle aligning US corps and divisions within the CENTAG Area of Operation. Figure 4-2 provides a list of frontages, depths, distances and march speeds assocated with Soviet forces. Figure 4-3 provides a notional order of battle for the four Groups of Soviet Forces and non-Soviet Warsaw Pact armed forces, postulating that the Warsaw Pact attacks across the Inter-Zonal Border (IZB) on three Fronts. It is felt that the armed forces of East Germany (DDR) and Czechoslovakia are the only non-Soviet combat forces in any of the

first echelon armies; other Warsaw Pact forces constitute second echelon armies and reserves. Figure 4-4 provides an initial array of forces on a European map for both the Warsaw Pact and AFCENT armed forces. Although the peacetime areas of operation of the two American corps are used as a point of reference to lend credibility to the scenario, any similarity to the actual General Defense Plan (GDP) boundaries and troop displacements of NATO forces is purely coincidental. Figures 4-5 and 4-6 provide organizational diagrams for the Corps Aviation Brigade and AirMechanized Division, respectively.

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Under NATO, European Armed Forces are divided into three theaters of operation: Allied Forces Northern Europe (AFNORTH), Allied Forces Central Europe (AFCENT), and Allied Forces Southern Europe (AFSOUTH). AFCENT forces are further divided into Northern Army Group (NORTHAG) and Central Army Group (CENTAG).

## ORDER OF BATTLE FOR CENTAG GROUND COMBAT FORCES

II (GE) Corps - occupies defensive sector in NORTHAG adjacent to CENTAG

| V (US) Corps | VII (US) Corps |
|---|---|
| 11th Armored Cavalry Regiment | 2nd Armored Cavalry Regiment |
| 3rd Armored Division | 12th Panzer Division |
| 8th Infantry Division (Mech) | 1st Armored Division |
| 1st Infantry Division (Mech) | 3rd Infantry Division (Mech) |
| | 4th Infantry Division (Mech) |

III (GE) Corps - CENTAG's southern corps; occupies sector adjacent to AFSOUTH

2nd Armored Division constitutes CENTAG's reserve in Model A; in Model B and Model C, is deployed into III (US) Corps sector.

FIGURE 4-1: Order Of Battle For NATO's Central Army Group's Ground Forces

## SOVIET FORCES FRONTAGES, DEPLOYMENTS DISTANCES AND MARCH SPEEDS

| Description | Regiment | Division | Army | Front |
|---|---|---|---|---|
| Attack Sector | 5 - 10 | 20 - 40 | 100 - 200 | 200 - 500 |
| Main Frontage | 4 - 7 | 10 - 15 | 40 - 80 | 80 - 250+ |
| Depth (Immediate Obj) | 8 - 15 | 20 - 30 | 100 - 150 | 250+ |
| Depth (Subsequent Obj) | 20 - 30 | 50 - 70 | 200 - 250+ | 300 - 500 |
| Distance Between Echelons (Attacking) | 5 - 15 | 20 - 30 | 30 - 35 | 40 - 80+ |

March Speed (Day) 30-40 km per hr
(Limited Visibility) 20-30 km per hr

Meeting Engagements: The first battles of the next war in Europe will probably be meeting engagements. A division's Reconnaissance Battalion is approximately one day's march (50-100 km) out in front of the division main body, and the lead regiment's reconnaissance company is out in front a half-day's march (20-50 km), spread over a 10-15 km sector. It will take 60-90 minutes for the main body of a regiment, which can stretch from 28 to 50 kilometers in length, to come up to the point of contact. The Soviets will use this time to position regimental and divisional artillery. Both direct and indirect artillery fire will support a regimental attack, with an artillery offensive lasting from 10-20 minutes to 30-40 minutes. As an additional point of information, battalions always stay on one route; regiments on one or two; divisions have up to four primary routes.

FIGURE 4-2: Soviet Frontages, Deployment Distances and March Speeds[6]

## ORDER OF BATTLE FOR WARSAW PACT GROUND COMBAT FORCES

### NORTHWESTERN FRONT

**1st ECHELON**

4th Combined Arms Army
- 51st MRD — 13th TkD
- 12th TkD
- 53rd MRD — 52nd MRD

2nd Guards Army
- 94th GMRD — 8th GMRD
- 16th GTkD
- 32nd MRD — 9th GTkD

**2nd ECHELON**

30th Combined Arms Army (Pole)
- 71st MRD — 64th TkD
- 72nd MRD — 66th TkD

### CENTRAL FRONT

**1st ECHELON**

3rd Shock Army
- 207th MRD — 11th MRD
- 1st MRD
- 47th TkD — 10th GTKD

8th Guards Army
- 9th TkD — 20th GTkD
- 4th MRD
- 57th GMRD — 27th GMRD

**2nd ECHELON**

20th Tank Army
- 12th GTkD — 6th GMRD
- 14th MRD
- 7th GTkD — 25th TkD

11th GTkD (Independent)

### SOUTHWESTERN FRONT

**1st ECHELON**

1st Guards Army
- 39th MRD — 6th GTkD
- 5th GTkD
- 79th GMRD — 17th TkD

98th Combined Arms Army (Czech)
- 81st MRD — 75th TkD
- 83rd MRD — 79th MRD

**2nd ECHELON**

16th Combined Arms Army (Czech)
- 22nd MRD — 33rd TkD
- 24th MRD — 35th TkD

Soviet Forces are divided into five (5) services: Strategic Rocket Forces, Ground Forces, Air Forces (Long Range Aviation and Transportation Aviation), Navy, and Troops of National PVO. They are divided into four Groups of Soviet Forces abroad and sixteen Soviet Military Districts, which include Soviet combat forces other than the Strategic Rocket Forces and Troops of National Air Defense. Armed forces of the Soviet Union also include the Border Guards and Internal Troops as well as Troops of the Tyl (rear services) and Civil Defense Troops.

FIGURE 4-3: Order of Battle for Warsaw Pact Combat Forces[7]

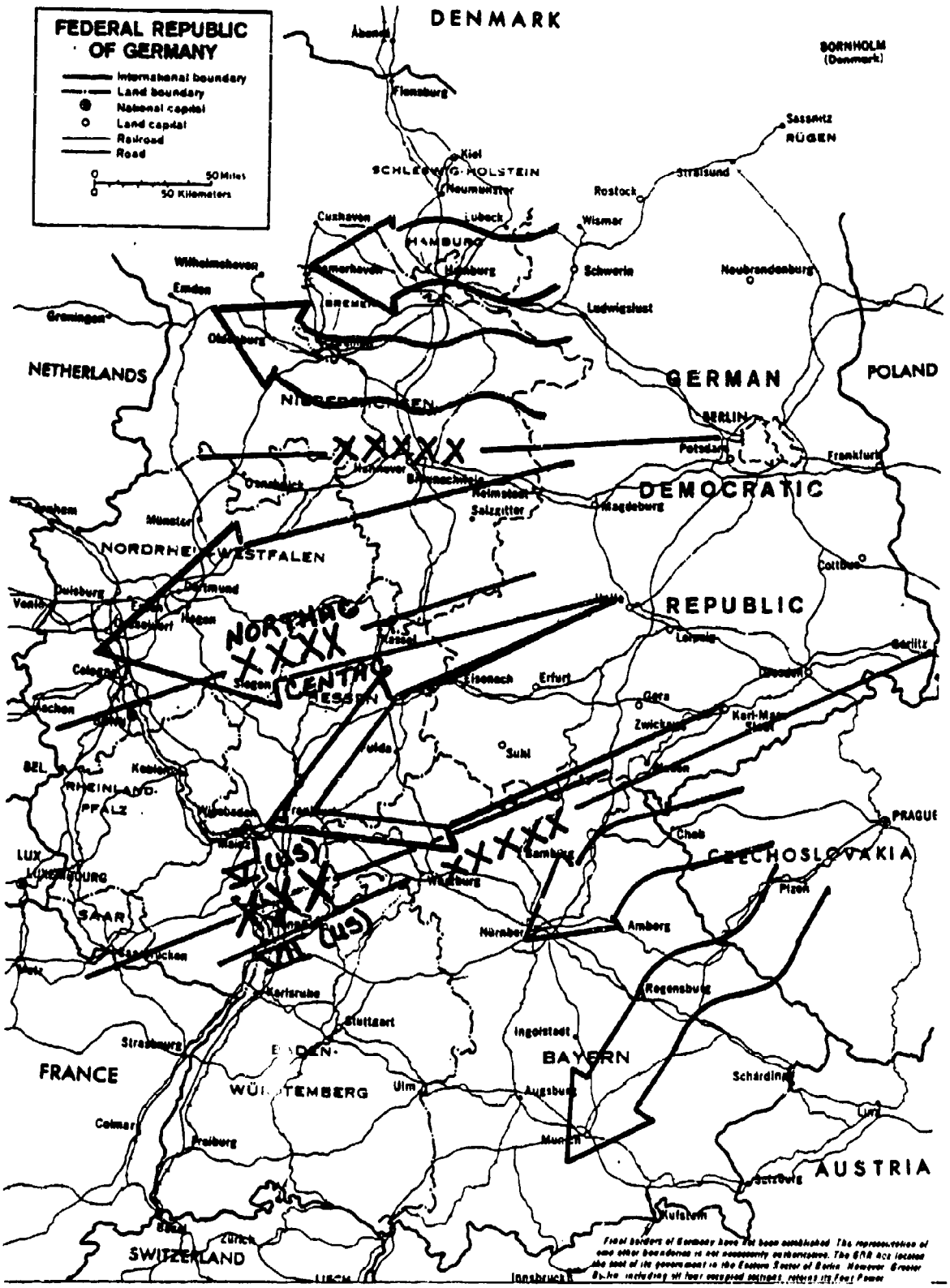


FIGURE 4-4: Operational Map of Central Europe at Beginning of War Game Analysis

"ARMY OF EXCELLENCE" CORPS AVIATION BRIGADE

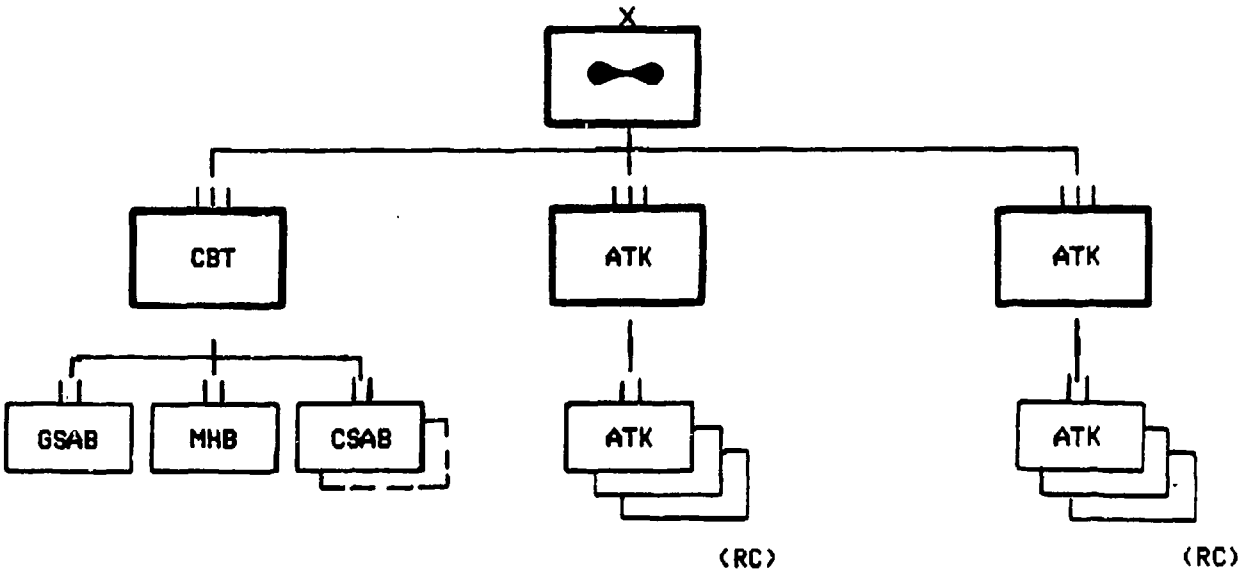


FIGURE 4-5: Organizational Diagram for Corps Aviation Brigade

PROPOSED AIRMECHANIZED DIVISION

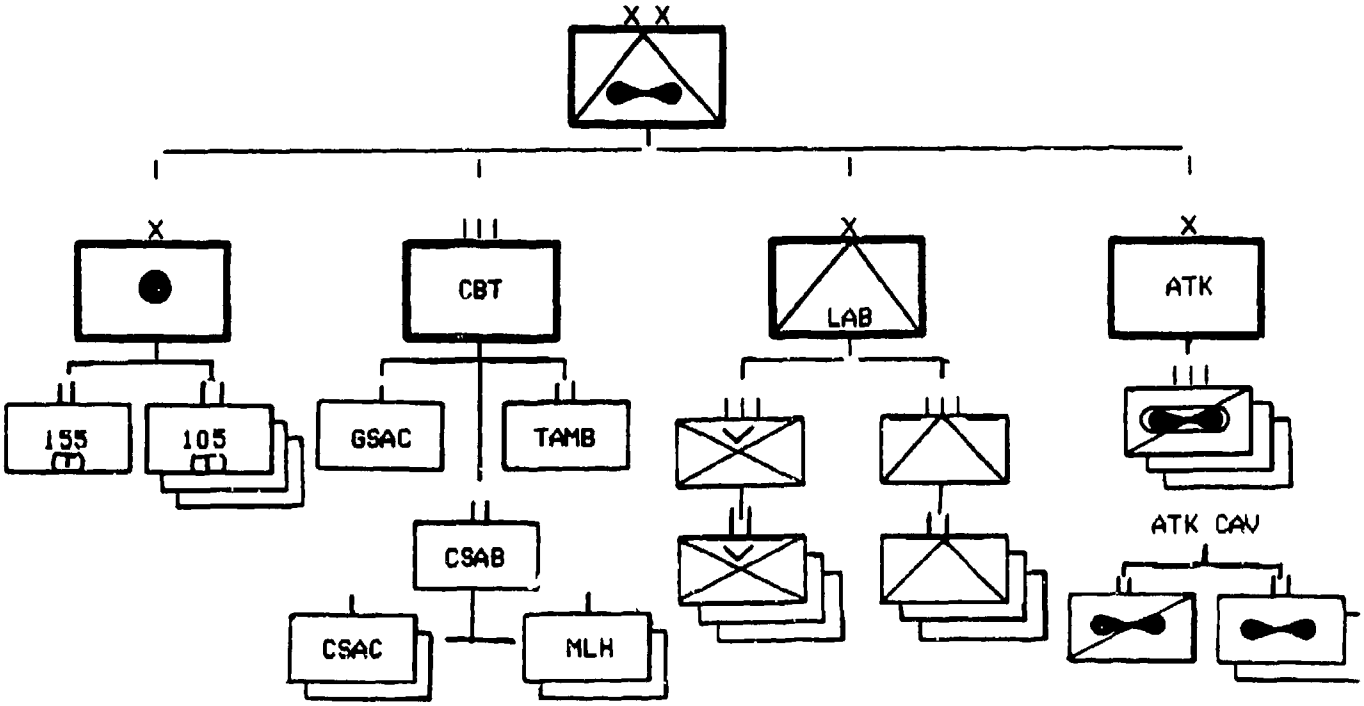


FIGURE 4-6: Organizational Diagram for AirMechanized Division

BUILDING THE SCENARIO: The Soviet strategic plan directs an attack across the West European inter-zonal border with three Fronts. The Northwestern Front is to conduct a supporting attack along two axes: the northern axis lies in the direction of SCHWERIN-HAMBURG-BREMERHAVEN; the southern axis follows the line WITTENBERGE-BREMEN-EMDEN. The Northwestern Front objectives are to neutralize major NATO sea ports of debarkation, jeopardize CENTAG's northern flank by disrupting NORTHAG's defense plan, and cause the early withdrawal of Danish, Dutch, and Belgian combat forces and their corresponding political and economic support. The primary Soviet offensive effort is conducted by the Central Front which attacks on two major axes. The northern axis is identified by the line MADGEBURG-PADERBORN-WUPPERTAL-COLOGNE, and the southern axis is along the GOTHA -FULDA-WIESBADEN Corridor. The principle objective of this offensive is the Rhine River-Ruhr Valley industrial sprawl that lies from Frankfurt north to the Cologne-Diesburg area. The Southwestern Front conducts limited supporting attacks in southern West Germany on two axes of advance to secure the southern flank of the Central Front and to prevent the Seventh US Corps from influencing the main effort. Its primary axis of advance is the HOF-NURENBURG Corridor, with a secondary effort south along the FURTH-REGENSBURG-MUNICH Approach.

By 18 December 198_, the US National Intelligence Agency had compiled sufficient indicators and intelligence to alert field forces of an impending cross-border attack by Warsaw Pact forces. Soviet military forces were in the process of positioning combat units well forward of their normal training areas and massive quantities of war stocks, ammunition, petroleum products, engineer materiels and electronics equipment were being moved into army and divisional supply depots. Along the West German-East German-Czechoslovakian Border (IZB), Soviet combat units were in an increased vigilance posture in preparation for offensive operations. The United States National Command Authority elected to deploy the 1st Infantry Division (Mech), the 4th Infantry Division (Mech), and

the 2nd Armored Division to Germany under the auspices of Exercise WINTEX 8_. Furthermore, a Presidential 100,000-man Call-Up was promulgated and announced publically as a response to increased tensions in the Middle East.

As of 30 December 198_, the three American divisions have completed their deployment to West Germany and joined their respective US Corps. NATO forces in Western Europe are on alert posturing, with all units deployed and occupying their initial General Defense Plan (GDP) battle positions. Evacuation of nonessential non-combatants has been completed. The German Territorial Army has been able to minimize the effects of demonstrations and refugee movements. The few sabotage/clandestine operations have created only minimal disruptions to the forward displacement of forces and combat service support operations.

As of 2400, 31 December 198_, the situation is as depicted in Figure 4-4. In CENTAG, the Fifth and Seventh US Corps are positioned in sector with their respective armored cavalry regiments (reinforced) conducting covering force operations and their divisions deployed in defensive positions in accordance with the GDP. The 1st Infantry Division and the 4th Infantry Division are designated as their respective corps reserve/counterattack force. However, prior permission must be received from CENTAG before each of these divisions can be committed in a force larger than brigade-size. For Model A, the 2nd Armored Division constitutes the CENTAG reserve; for Models B and C, it has been deployed into the Third (US) Corps sector. The Third German Corps is defending in CENTAG's southern sector with each division controlling its own covering force. Its reserve consists of one Panzer (armored) division.

<u>Disposition of Corps Aviation Brigade (Models A and C):</u> In both US Corps, the corps commanders have placed one attack helicopter regiment of the Corps Aviation Brigade under the operational control (opcon) of the Covering Force

commander, with an "on order" mission to provide an attack helicopter battalion 'opcon' to each of two forward deployed American divisions once the covering force battle has been handed off to the divisions in the Main Battle Area (MBA). The Seventh US Corps Commander has decided to attempt to shape the battle in his sector by permitting a "controlled penetration" in the south to facilitate his counterattack plan.

Disposition of AirMechanized Division (Model B): In the Fifth US Corps, the AirMechanized Division has been directed to place one of its three attack helicopter regiments 'opcon' to the Covering Force Task Force commander and given the additional requirement to plan for a cross-FLOT attack against the leading regiments of the enemy's second echelon division, to be executed on order. In addition, upon completion of the covering force battle, one attack helicopter battalion is to be released 'opcon' to each of the forward deployed American divisions and the remaining force reverts back to divisional control. In the Seventh US Corps, the commander's operational plan calls for developing and shaping a "controlled penetration" in the southern portion of his sector to be followed by a massive counterattack to destroy the enemy forces in pocket while simultaneously attacking deep to delay and disrupt follow-on forces. For this plan, the corps commander has elected to retain the integrity of the notional AirMechanized Division once the covering force battle has been handed off to the divisions in the Main Battle Area.

D-DAY, THE WARSAW PACT INVASION.

At 0400, 1 January 198_, the Warsaw Pact launched its invasion of Western Europe with seventeen divisions in the first echelon of three Soviet Fronts. Due to massive Soviet air attacks and independent air operations, NATO's Air Forces have been unable to apportion attack aircraft against the Battlefield Air Interdiction (BAI) campaign. The USAF A-10 was considered too vulnerable

to be flown in a Close Air Support (CAS) role. In CENTAG, the V (US) Corps faces one division of the 3rd Shock Army and three divisions of the 8th Guards Army. The VII (US) Corps defends against three divisions of the 1st Guards Army, and the III (GE) Corps is opposed by two divisions from the 98th Combined Arms Army (Czech).

SITUATION 1 (D-Day, H+8): (Figure 4-7, Situation Map)

Although the covering force battles in the VII (US) and III (GE) Corps were extremely successful, with enemy first echelon regiments being rendered combat ineffective, the tactical situation in V (US) Corps sector is somewhat tenuous. Successive artillery barrages from long-range cannon fires dislodged the northernmost armored cavalry squadron of the Covering Force from its initial defensive positions and disrupted its rearward movement into secondary battle positions. Dismounted motorized infantry, supported by MI-8 "Hip" helicopters, provided accurate anti-tank fires against the cavalry's adjacent armor battalion which attempted to shift laterally to plug the gap. The battle in the corps' south has been characterized by numerous air-to-air engagements between Soviet Mi-28 "Havoc" and Mi-24 "Hind" helicopters and the cavalry's AH-64 "Apache" attack helicopters. The Covering Force commander has committed one attack helicopter battalion in the north in an effort to balance the combat power ratio so that a coherent defense might be reestablished. He committed two attack battalions in the south (Model B: one air cavalry squadron and one attack battalion) in an air-to-air combat role, supporting the forces in the center of sector with his remaining two attack helicopter battalions (one from each of the two forward division's combat aviation brigades). The corps commander is faced with making a decision concerning the applicaton of combat forces to develop the battlefield, strike deep, and seize the initative from the attacking force. Table 4-1 lists the dispositon of the V (US) Corps combat forces available for planning purposes.

FIGURE 4-7: Situation Map (V (US) Corps)

TABLE 4-1: V (US) CORPS DISPOSITION OF COMBAT FORCES (as of D-Day, H+8)

| UNIT | (LAND) BATTALION MECH | ARMOR | (AIR) ATK/CAV | DISPOSITION |
|---|---|---|---|---|
| 3rd Armd Div | | | | |
| 1st Bde | 2 | 2 | | defend position |
| 2nd Bde | 1 | 2 | | defend position |
| 3rd Bde | 1 | 1 | | reserve assy area |
| Div Cav | | 1 | | screens corps flank |
| CAB | | | 2 | 1-CFA, 1-reserve |
| 8th Inf Div (M) | | | | |
| 1st Bde | 2 | 2 | | defend position |
| 2nd Bde | 2 | 2 | | defend position |
| 3rd Bde | 1 | 1 | | reserve assy area |
| Div Cav | | - | | screens corps flank |
| CAB | | | 2 | 1-CFA, 1-reserve |
| 11th Armd Cav Regt | | | | |
| Armd Cav Sqdn | | 3 | | committed in CFA |
| Air Cav Trp | | | 1 | committed in CFA |
| Atk Hel Co | | | 1 | committed in CFA |
| 1st Infantry Division (Corps reserve) | | | | |
| AVIATION ASSETS | | | | |
| (Model A) | | | | |
| Corps Aviation Brigade | | | | |
| 1st Atk Hel Regt | | | 3 | committed in CFA |
| 2nd Atk Hel Regt | | | 3 | reserve assy area |
| (Model B) | | | | |
| AirMechanized Division | | | | |
| 1st Atk Hel Regt | | | 3 | committed in CFA |
| 2nd Atk Hel Regt | | | 3 | reserve assy area |
| 3rd Atk Hel Regt | | | 3 | reserve assy area |
| Light Atk Bde | 3 (AAslt) | 3 (LAV) | | reserve assy area |
| (Model C) | | | | |
| Corps Aviation Brigade | | | | |
| 1st Atk Hel Regt | | | 3 | committed in CFA |
| 2nd Atk Hel Regt | | | 3 | reserve assy area |

Courses of Action (Model A, Corps Avn Bde):

Option #1: Commit additional attack helicopter battalion(s) into Covering Force battle. This would provide additional combat power to the endangered cavalry squadron and its adjacent armored battalion in the north.

Option #2: Commit all or a portion of the 3rd Armored Division reserve to assist in the Covering Force battle. This could be accomplished by conducting a limited attack into the left flank of the enemy's penetration or by deploying forward into alternate battle positions to support by fire.

Option #3: Withdraw the Covering Force elements in front of the 3rd Armored Division and continue to fight the Covering Force battle in front of the 8th Infantry Division.

Option #4: Withdraw the entire Covering Force and assume the battle in the Main Battle Area by the forward deployed brigades in position.

Decision: The V (US) Corps commander adopts Option #3 as his course of action, withdrawing the Covering Force in front of the 3rd Armored Division while continuing to fight the Covering Force battle in front of the 8th Infantry Division. Due to the lack of depth in the Covering Force Area, the corps commander assessed this course of action as possessing the least amount of risk while retaining flexibility to respond to subsequent enemy activities. Even though the Covering Force had the mission to defend in sector, it was considered too early in the battle, with coordination and time requirements too excessive, to commit additional or reserve forces. As a part of his decision,

the corps commander decides to place the attack helicopter battalion from the Corps Aviation Brigade already in sector 'opcon' to the 3rd Armored Division, increasing the number of attack helicopter battalions in that sector to three.

Courses of Action (Model B, Corps AirMechanized Division):

Option #1: Commit additional attack helicopter battalion(s) into Covering Force battle. This would provide additional combat power to the endangered cavalry squadron and its adjacent armored battalion in the north.

Option #2: Commit all or a portion of the 3rd Armored Division reserve to assist in the Covering Force Battle. This could be accomplished by conducting a limited attack into the left flank of the enemy's penetration, or deploying forward into alternate battle positions to support by fire. As a variation to this option, the corps commander could employ a Light Attack Battalion (LAB) from the AirMechanized Division to provide additional combat power to the Covering Force without disrupting the division's defense plan.

Option #3: Withdraw the Covering Force elements in front of the 3rd Armored Division and continue to fight the Covering Force battle in front of the 8th Infantry Division.

Option #4: Withdraw the entire Covering Force and assume the battle in the Main Battle Area by the forward deployed brigades in position.

Decision: The corps commander adopts Option #3 as his course of action, as well. Although the Light Attack Battalion could provide additional firepower and mobility to restore the original FLOT, the commander does not assess the

risk in front of the 3rd Armored Division proportionate to the coordination requirements necessary to employ this force. Furthermore, the corps commander has directed that a plan be written for a spoiling attack to be conducted by the AirMechanized Division against the leading regiments of the second echelon division on D+1.

Courses of Action (Model C, CENTAG AirMech Div): Since the corps force structure is the same as Model A, the corps commander is presented with the same options and makes the same decision. Model C provides the CENTAG Commander with a unique asset for which he must make the decision as to when, where and how it will be committed. At this time, no requirement exists for its employment.

Results of Action Taken:

V (US) Corps Sector: As of D-Day, H+16, elements of the corps Covering Force in front of the 3rd Armored Division have withdrawn through the division's defenses. The disrupted armored cavalry squadron is now screening the corps northern boundary with the II (GE) Corps, and the armored battalion has moved into the 3rd Brigade's assembly area as a part of the division's reserve. Defending forces in the main battle area are engaged in heavy combat and are being subjected to intense artillery barrages. The penetration in the 8th Infantry Division's sector was blunted, but at a severe cost in attack helicopters. The Covering Force (-), having suffered moderate to heavy losses, was forced to withdraw through the 8th Infantry Division. First echelon divisions of the 8th Guards Army continue to press the attack.

VII (US) Corps Sector: The Covering Force continues to delay and defend in sector against the first echelon divisions of the 1st Guards Army; losses are judged to be light to moderate. The corps commander continues to shape the

battlefield and plans to execute a limited counterattack with the 4th Infantry Division against the second echelon 6th Guards Tank Division once the enemy's first echelon has been committed into the "controlled penetration" zone. No other significant activities have occurred.

<u>III (GE) Corps Sector:</u> The corps continues to defend against the two first echelon divisions of the 98th Combined Arms Army (Czech), whose attack stalled out along the forward edge of the main battle area (FEBA). The corps commander decided not to launch an early spoiling attack or counterattack until the disposition of the second echelon Army is clearly identified.

<u>SITUATION 2 (D+1):</u> (Figure 4-8, Situation Map)

<u>V (US) Corps Sector:</u> During the night, the second echelon divisions of the 3rd Shock Army and 8th Guards Army attacked through the remnants of their first echelon divisions. The relentless pressure applied by continuous artillery bombardments and close-in fighting caused the withdrawal and repositioning of the 3rd Armored Division into secondary defensive positions. It is currently defending against the 10th Guards Tank Division and 20th Guards Tank Division. The 8th Infantry Division continues to defend against the second echelons of the 4th and 57th Motorized Rifle Divisions. Commitment of the first echelon regiments of the 27th Guards Motorized Rifle Division has been delayed by the employment of attack helicopters from corps. A regiment of the 14th Motorized Rifle Division conducted a heliborne assault, resulting in the capture of the Amoneburg Heights. A battalion-size airmobile insertion was conducted into the rear of the 3rd Armored Division, in the vicinity of Giessen, which has been contained by elements of the division's reserve. A second battalion-size air assault was conducted into the rear of the 8th Infantry Division, near the town of Schlichtern; it has been contained by that division's rear area combat force also. OV-1D SLAR and satellite reconnaissance have identified the movement of

the 11th Guards Tank Division (Independent) into the corps area. Indications are that it will try to link-up with the regiment in Amoneburg and continue its advance toward the city of Giessen. At this point the corps commander is faced with another critical decision. He must decide which unit to commit against the rear area threat in Amoneburg, and the time and place to attack the 11th Guards Tank Division. Forces available to the corps commander for planning purposes are listed in Table 4-2.

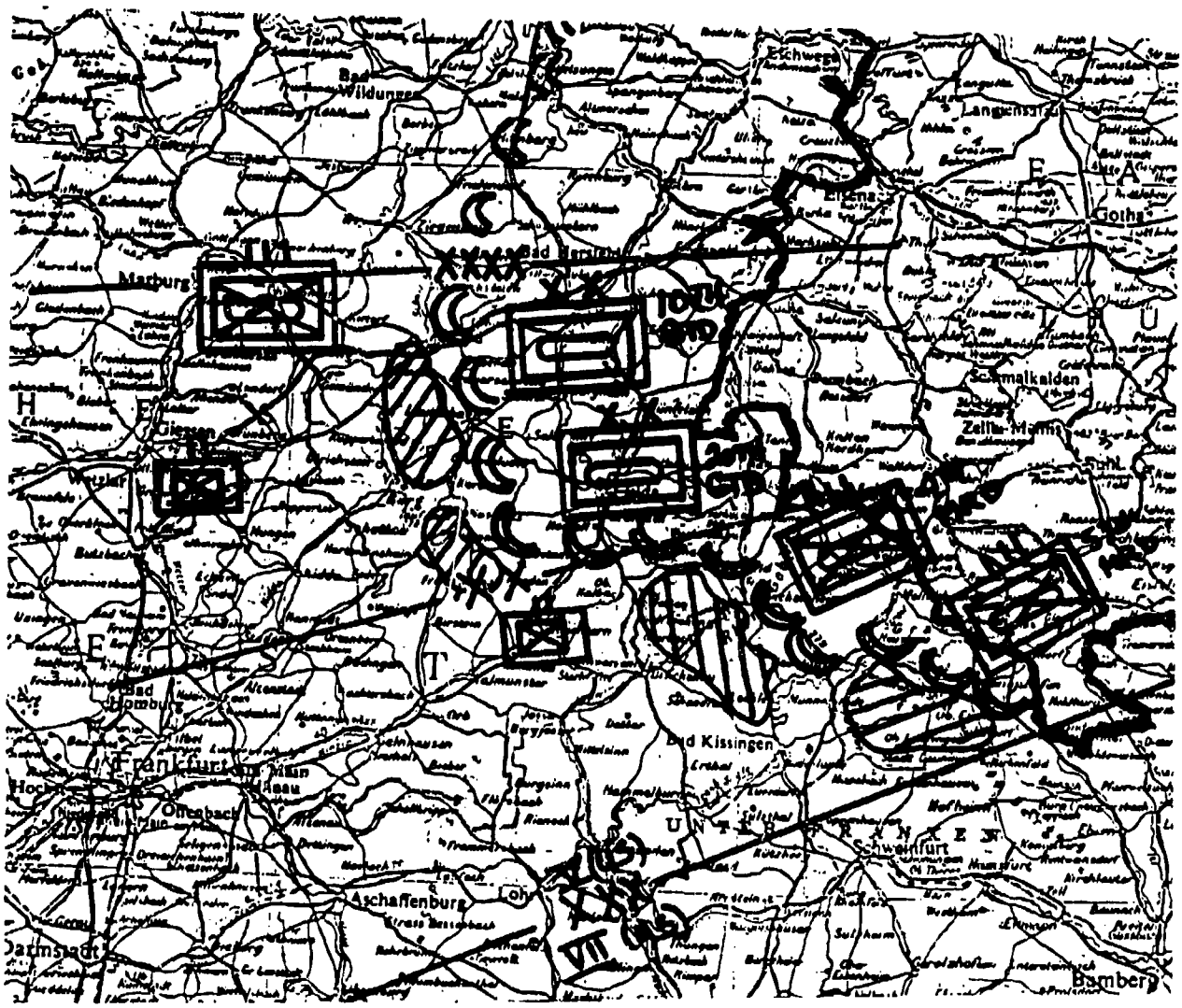


FIGURE 4-8: Situation Map [V (US) Corps]

TABLE 4-2: V (US) CORPS DISPOSITION OF COMBAT FORCES (as of D + 1)

| UNIT | (LAND) BATTALION MECH | ARMOR | (AIR) ATK/CAV | DISPOSITION |
|---|---|---|---|---|
| 3rd Armd Div | | | | |
| 1st Bde | 2 | 2 | 2 | in combat |
| 2nd Bde | 2 | 2 | 2 | in combat |
| 3rd Bde | 1 | 1 | | reserve assy area |
| Div Cav | | 1 | | RACO - Giessen |
| CAB | | | - | opcon 1st/2nd Bdes |
| 8th Inf Div (M) | | | | |
| 1st Bde | 2 | 2 | 1 | in combat |
| 2nd Bde | 2 | 2 | 1 | in combat |
| 3rd Bde | 1 | 1 | | reserve assy area |
| Div Cav | | 1 | | RACO - Schlichtern |
| CAB | | | - | opcon 1st/2nd Bdes |
| 11th Armd Cav | | | | |
| 1st Cav Sqdn | | - | | reserve assy area |
| 2nd Cav Sqdn | | 1 | | screen northern flank |
| 3rd Cav Sqdn | | 1 | | combat loss |
| Air Cav Trp | | | - | combat loss |
| Atk Hel Trp | | | - | combat loss |
| 1st Infantry Division (Corps reserve) | | | | |
| (Model A) | | | | |
| Corps Aviation Brigade | | | | |
| 1st Atk Hel Regt | | | - | 2 opcon 3AD, 1 loss |
| 2nd Atk Hel Regt | | | 3 | reserve assy area |
| * * * * * * * * * * * * * * * * * * * * * * * * * * | | | | |
| (Model B) | | | | |
| AirMechanized Division | | | | |
| 1st Atk Hel Regt | | | - | 2 opcon 3AD, 1 loss |
| 2nd Atk Hel Regt | | | 3 | reserve assy area |
| 3rd Atk Hel Regt | | | 3 | reserve assy area |
| Light Atk Bde | 3 (AAslt) | 3 (LAV) | | reserve assy area |
| * * * * * * * * * * * * * * * * * * * * * * * * * * | | | | |
| (Model C) | | | | |
| Corps Aviation Brigade | | | | |
| 1st Atk Hel Regt | | | - | 2 opcon 3AD, 1 loss |
| 2nd Atk Hel Regt | | | 3 | reserve assy area |

Courses of Action (Model A, Corps Avn Bde):

Option #1: Contain the regiment at Amoneburg with a Task Force under the command and control of the Corps Aviation Brigade; plan for a counterattack against the 11th Guards Tank Division with the 1st Infantry Division.

Option #2: Contain the regiment at Amoneburg with a Task Force under the command and control of the 11th Armored Cavalry Regiment. This unit must be reinforced since it has only one uncommitted battalion Conduct a deep attack with the Corps Aviation Brigade to delay and disrupt the 11th Guards Tank Division.

Option #3: Contain the regiment at Amoneburg with a Task Force under the command and control of a brigade from the 1st Infantry Division. Use the Corps Aviation Brigade to delay and disrupt the 11th Guards Tank Division until the 1st Infantry Division counterattacks into its flank.

Decision: The corps commander adopts Option #2 as his course of action. By using the 11th Armored Cavalry Regiment, the corps commander is able to optimize his span of control and still not overburden his subordinate headquarters. The commander orders one attack helicopter battalion from the Corps Aviation Brigade be placed 'opcon' to the 11th Armored Cavalry Regiment, creating a two-battalion Task Force, and directs the Aviation Brigade (-) to conduct a "deep attack" against the 11th Guards Tank Division to delay its entry into the main battle area, disrupt its scheme of maneuver, and confuse the enemy's command and control functions. The corps commander anticipates the arrival of the 20th Tank Army into the MBA to be within twenty-four hours and elects to retain the integrity of the 1st Infantry Division so that it can be

committed in force against the lead regiments. The commander estimates that the Corps Aviation Brigade (-) will be capable of delaying the 11th Guards Tank Division long enough for the 3rd Armored Division to finish the close-in battle in its sector and shift its main effort against that division.

Courses of Action (Model B, Corps AirMech Div):

Option #1: Contain the regiment at Amoneburg with a Task Force from the AirMechanized Division. Employ the AirMechanized Division (-) in a delay and disrupt role against the 11th Guards Tank Division.

Option #2: Contain the regiment at Amoneburg with a Task Force using the 11th ACR as the controlling headquarters. Conduct a counterattack with the AirMechanized Division against the 11th Guards Tank Division before it has an opportunity to close into the main battle area.

Option #3: Contain the regiment at Amoneburg with a Task Force from the 1st Infantry Division. Leave the remnants of the 11th Armored Cavalry Regiment in place to reconstitute and continue to occupy a blocking position between the two divisions on line. Use the AirMechanized Division to "attack deep" against the 11th Guards Tank Division.

Decision: The corps commander adopts Option #2 as his course of action. H reacts quickly to the rear areathreat by dispatching a Light Attack Battalion, an airmobile infantry battalion (in an air assault mode), and an attack helicopter battalion to contain the enemy's regiment at Amoneburg while the 11th Armored Cavalry Regiment deploys its headquarters, supporting artillery, and its armored cavalry squadron into the area. Upon arrival of the 11th Armored Cavalry Regiment, command and control is transferred to the regiment, and the attack helicopter battalion and Light Attack Battalion become 'opcon' to it.

Concurrently, the corps commander tasks the AirMechanized Division to execute a deep attack against the 11th Guards Tank Division to delay, disrupt and destroy the division before it can enter the corps' main battle area and influence the close-in battle. By committing this force early, he has seized the initiative by not permitting the enemy's tank division the opportunity to determine the time and place of commitment nor its direction of attack.

Courses of Action (Model C, CENTAG AirMech Div): Since the corps force structure is the same as Model A, the corps commander is presented with the same options and makes the same decision. The CENTAG Commander does not see the requirement to commit the AirMechanized Division in any sector at this point.

Results of Action Taken (Model A and Model C): The corps was able to seal off the enemy force by committing its Rear Area Combat Operations (RACO) force (the regimental task force), but was unable to dislodge the enemy from the natural defenses afforded by the dominant terrain. The time required to deploy the task force provided the enemy regiment an opportunity to reinforce its hasty defense. Soviet "Hip" and "Hind" close air support has been ineffective due to a concentrated air defense effort by "Stinger" teams, and the attack helicopter battalion from corps.

Results of Action Taken (Model B): The arrival of the Light Attack Battalion and attack helicopter battalion at Amoneburg was early enough to disrupt the enemy regiment. Accurate direct and indirect artillery fires harassed the enemy's efforts to reinforce his hasty defensive positions. The mobility and firepower of the Light Attack Battalion and attack helicopter battalion combined to orchestrate a tactical "minuet," causing the enemy to constantly shift his orientation. A combined effort of aerial rocket, missile, and artillery

attacks against the southern fortress wall created an assailable flank in the enemy's defense. The arrival of the armored cavalry squadron gave the Task Force commander sufficient combat power to successfully assault the Amoneburg Heights and create a break in the enemy's defense. Currently the Regimental Task Force is conducting a clearing operation in the city. The AirMechanized Division is engaged in decisive combat against the 11th Guards Tank Division in the vicinity of Bad Hersfeld. As the air and ground mobile forces continue to delay, disrupt, and attrit the enemy's forces, the infantry battalions are preparing company-size anti-armor ambush sites along probable enemy avenue of aproach. By continuously attacking the flanks and rear of the first echelon regiments, the division commander is shaping the enemy's route of advance into the prepared "kill zones."

<u>VII (US) Corps Sector:</u> At 2300, D+1, the corps commander withdrew his Covering Force under immense pressure, and the battle was handed off to the three divisions defending forward in the main battle area. The 1st Guards Army resumed the offensive by attacking with its second echelon forces, the 6th Guards Tank Division and 17th Tank Division. The 12th Panzer Division (German) is opposed by two regiments of the 6th Guards Tank Division; and, the 1st Armored Division defends against a regiment of the 6th Guards Tank Division and two regiments of the 17th Tank Division. The 3rd Infantry Division is subject to only light to moderate pressure, being opposed by remnants of the 79th Guards Motorized Rifle Division and a regiment from the 17th Tank Division. OV-1D SLAR had detected the forward movement of the 16th Combined Arms Army (Czech), the Southwestern Front's second echelon Army. The corps commander plans to execute the counterattack against the 22nd Motorized Rife Division on D+2, using the 4th Infantry Division.

III (GE) Corps Sector: The corps continues to defend against the remnants of the two first echelon divisions of the 98th Combined Arms Army and the leading regiments of two second echelon divisions. Intelligence reports indicate the movement of the 24th Motorized Rifle Division into the corps "deep battle" area. No other significant activities have occurred in this sector.

SITUATION 3 (D+2):

The CENTAG Commander has identified the Central Front's main effort as being against the V (US) Corps. Intelligence reports indicate first echelon regiments of the 20th Tank Army, Central Front's second echelon Army, are within 30 kilometers of the Front Line Of Own Troops (FLOT). Though elements of the 24th Infantry Division (Mech) are arriving in the European Theater, it will not be available for commitment as a divisional force under CENTAG control prior to D+6. The 4th Allied Tactical Air Force (4ATAF) continues to conduct offensive-air and counter-air operations in an attempt to gain air superiority. It is still unable to commit any Air Force assets to battlefield air interdiction (BAI), although it has made available 50 sorties of A-10's for close air support (CAS). The CENTAG Commander has given priority of close air support to V (US) Corps, allocating 25 sorties.

V (US) Corps Sector (Model A): (Figure 4-9) The corps commander is faced with the dilemma of how to conduct the "deep battle" without the benefit of Air Force BAI. The only uncommitted force in the corps area of operations is the 1st Infantry Division. Even though the 11th Guards Tank Division and two divisions of the 20th Tank Army are within range of his conventional "Lance" missiles, the corps commander is hesitant to employ this weapon system for fear that a retaliatory "launch on warning" nuclear response might be forthcoming by the Soviets. Furthermore, he must decide how and where to provide a strong, coherent defense against the 20th Tank Army. The mission of the corps is to

defend forward of Phase Line ROMEO to prevent enemy forces from further penetrating the corps sector and to delay, disrupt and attrit the first echelon divisions of the 20th Tank Army until the 2nd Armored Division (CENTAG's reserve) is in position to support V Corps operations. Table 4-3 lists the forces available to the corps commander for planning.

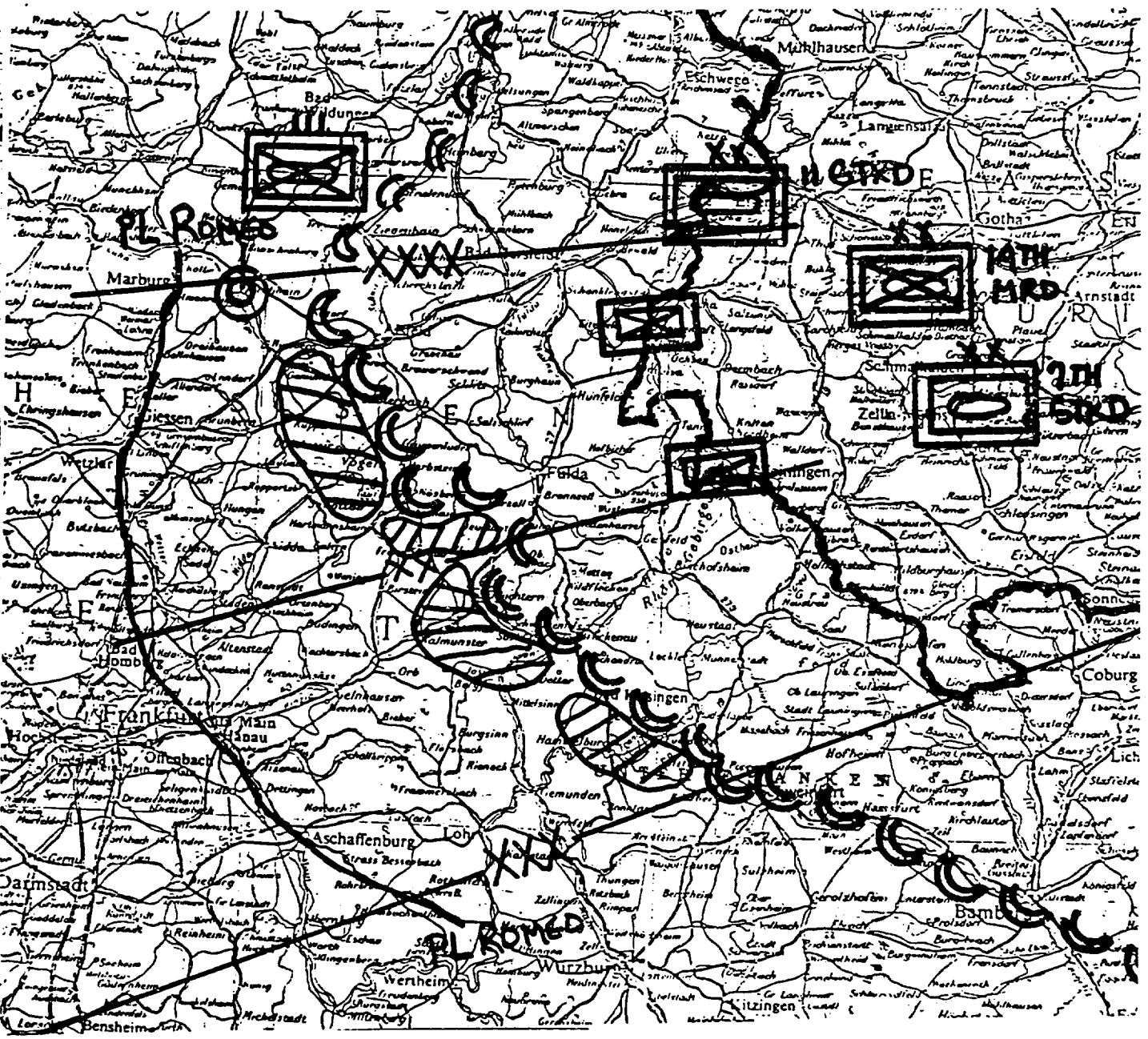


FIGURE 4-9: Situation Map [V (US) Corps]

## TABLE 4-3: DISPOSITION OF V (US) CORPS FORCES (as of D+2)

| UNIT | (LAND) BATTALION MECH | ARMOR | (AIR) ATK/CAV | DISPOSITION |
|---|---|---|---|---|
| 3rd Armd Div | | | | |
| 1st Bde | 2 | 3 | 2 | in combat |
| 2nd Bde | 2 | 2 | 2 | in combat |
| 3rd Bde | 1 | 1 | | in combat |
| Cav Sqdn | | 1 | | reserve assy area |
| CAB | | | - | opcon 1st/2nd Bdes |
| 8th Inf Div (M) | | | | |
| 1st Bde | 2 | 2 | 1 | in combat |
| 2nd Bde | 3 | 1 | 1 | in combat |
| 3rd Bde | 1 | 2 | | in combat |
| Cav Sqdn | | 1 | | screening rt flank |
| CAB | | | - | opcon 1st/2nd Bdes |
| 11th Armd Cav Regt | | | | |
| 1st Armd Cav | | 1 | | screening n. flank |
| 2nd Armd Cav | | 1 | | RACO - Amoneburg |
| 3rd Amd Cav | | - | | combat loss |
| Air Cav Trp | | | - | combat loss |
| Atk Hel Co | | | - | combat loss |
| 1st Inf Div (M) Strengths remain unchanged from Table 4-1 (Uncommitted) | | | | |
| (Model A) | | | | |
| Corps Aviation Brigade | | | | |
| 1st Atk Hel Regt | | | - | 2 opcon - 1 cbt loss |
| 2nd Atk Hel Regt | | | 3 | 1 RACO - 2 in combat |
| (Model B) | | | | |
| AirMechanized Division | | | | |
| 1st Atk Hel Regt | | | - | 2 opcon - 1 cbt loss |
| 2nd Atk Hel Regt | | | 3 | 1 RACO - 2 in combat |
| 3rd Atk Hel Regt | | | 3 | in combat |
| Lt Atk Bde | 3 (AAslt) | 3 (LAV) | | 1 RACO - 2 in combat |
| (Model C) | | | | |
| Corps Aviation Brigade | | | | |
| 1st Atk Hel Regt | | | - | 2 opcon - 1 cbt loss |
| 2nd Atk Hel Regt | | | 3 | 1 RACO - 2 in combat |

Courses of Action (Model A):

Option #1: Continue to defend in sector with the 3rd Armored Division and 8th Infantry Division. Conduct a counterattack with the 1st Infantry Division against the 11th Guards Tank Division and continue through to disrupt and destroy forces of the 20th Tank Army.

Option #2: Continue to defend in sector with the 3rd Armored Division and 8th Infantry Division. Execute an "absorbed penetration" between the 3rd Armored Division and 8th Infantry Division, and counterattack with the 1st Infantry Division against leading regiments of the 20th Tank Army in the "penetration zone". Assume that the 3rd Armored Division (reinforced with attack helicopter battalion) can decisively defeat the attritted 11th Guards Tank Division.

Option #3: Employ the 1st Infantry Division on line with 3rd Armored Division and 8th Infantry Division, either in a defensive position north of 3rd Armored Division, or in position between the two divisions.

Option #4: Conduct a counterattack with the 1st Infantry Division forward of the FLOT, using an axis of advance either around the left flank of 3rd Armored Division, or through the center of the corps' sector between the two divisions on line.

Decision: The corps commander choses Option #1 as his course of action. He feels that the 11th Guards Tank Division can be defeated in detail prior to penetrating the main battle area and that the 3rd Armored Division and the 8th Infantry Division could finish the close-in battles in their sectors prior to the arrival of the follow-on regiments of the 14th Motorized Rifle Division (-)

and the 7th Guards Tank Division. Using surprise to maneuver against the flank of the 11th Guards Tank Division, the corps commander envisions a short, very violent battle against the disrupted and attritted first echelon regiments of that division. The 1st Infantry Division passes its uncommitted brigade south of the battle to intercept and disrupt the leading regiment of the 14th Motorized Rifle Division (-). By continuing to press the attack with two brigades, the 1st Infantry Division should be able to finish the battle by the morning of D+3 and join the 3rd Brigade in its attack against the 14th Motorized Rifle Division (-). The corps commander feels confident that 3rd Armored Division and 8th Infantry Division can successfully defend against the 7th Guards Tank Division, if its attack can be delayed until the morning of D+3. The corps commander also recognizes that if he choses to counterattack through divisions in contact, the requirement would exist for massive artillery and aerial fire support to create a penetration zone in the enemy's combat formations. The shoulders of this penetration would have to be held open for an extended period of time, which means that he would lose an unafforadably large percentage of his combat strength just in securing the unit's arrival into the target area before having an opportuniy to engage the objective forces.

<u>V (US) Corps (Model B, Corps AirMechanized Division):</u> (Figure 4-10)

The AirMechanized Division continues to conduct a successful counterattack against the 11th Guards Tank Division in vicinity of Bad Hersfeld. The corps commander has determined that success depends upon slowing the advance of the leading regiments of the 14th Motorized Rifle Division (-) and the 7th Guards Tank Division. He feels confident that the AirMechanized Division will be able to finish the fight with the 11th Guards Tank Division within eight hours and can redirect its main effort against the 14th Motorized Rifle Division (-).

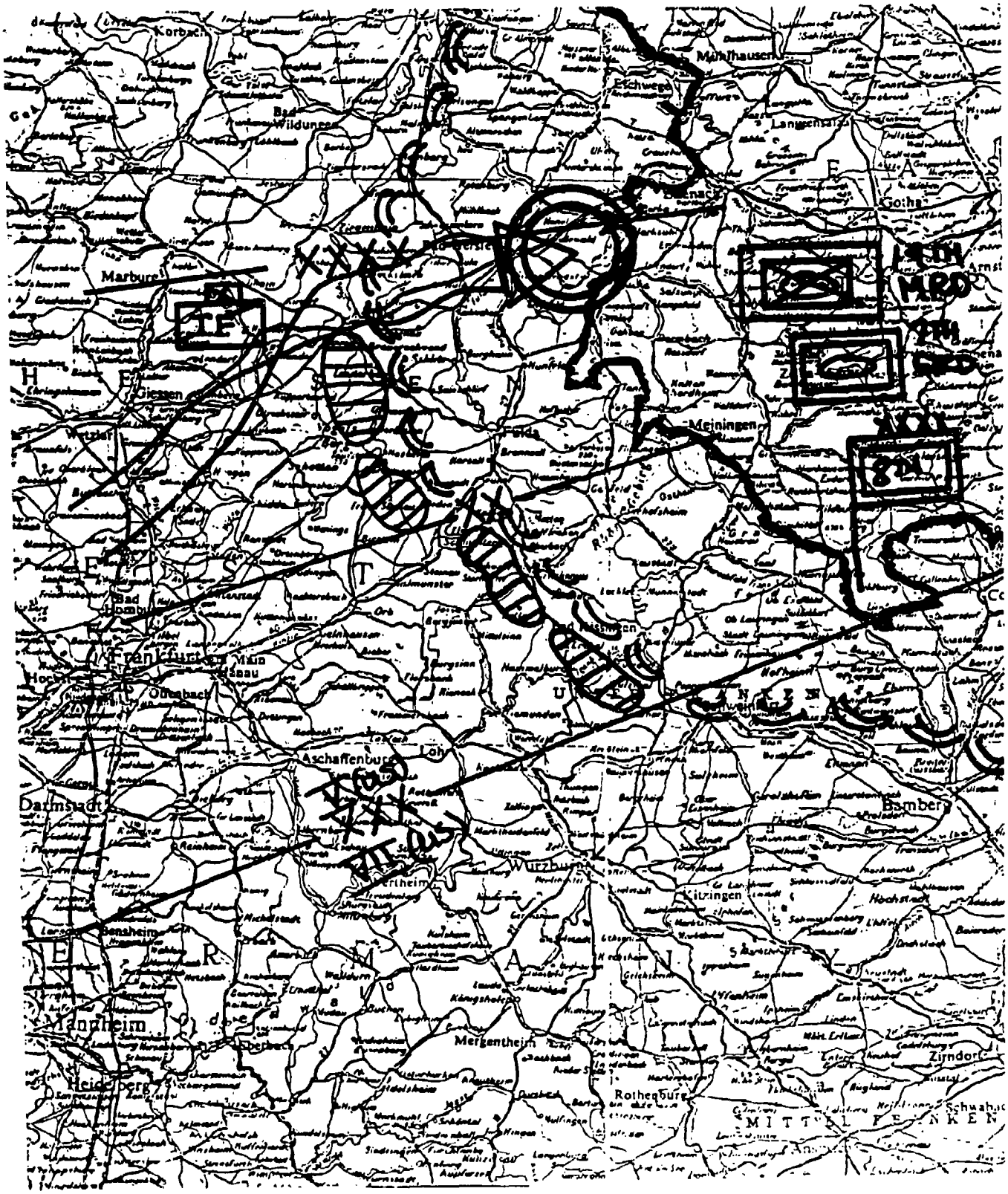


FIGURE 4-10: Situation Map [V (US) Corps]

Courses of Action (Model B):

Option #1: Have the AirMechanized Division attack the 14th Motorized Rifle Division (-) once it has finished the battle against the 11th Guards Tank Division at Bad Hersfeld. Absorb the attack of the 7th Guards Tank Division and counterattack into its flank with the 1st Infantry Division to destroy enemy forces in contact and follow-on regiments.

Option #2: Counterattack with the 1st Infantry Division against the 14th Motorized Rifle Division (-), while the AirMechanized Division continues its fight with the 11th Guards Tank Division. Defend against the 7th Guards Tank Division with the two divisions that are currently on line in the corps sector.

Decision: The corps commander selects Option #1 as his course of action. He feels that the greatest threat to his defenses is posed by the 7th Guards Tank Division. As such, he wants the division to commit its first echelon regiments initially before counterattacking with the 1st Infantry Division. This permits a greater degree of flexibility and less risk than attacking the 7th Guards Tank Division before it reaches the FLOT. It also serves to narrow the axis of advance and slows the movement of the 14th Motorized Rifle Division (-), which can then be engaged later by the AirMechanized Division.

V (US) Corps Situation and Course of Action (Model C): The corps commander was faced with the same tactical situation and possible courses of action as represented in Model A. In this case, however, the CENTAG Commander responds to a request by V (US) Corps commander to commit the AirMechanized Division in a deep counterattack against 7th Guards Tank Division. This permits the two major threats against the corps/CENTAG vital area to be simultaneously engaged

and defeated. This course of action is dissimilar to the options in Model A in that the CENTAG Commander recognizes that (in Model A) the 2nd Armored Division can not be committed into the battle at the decisive point due to the lack of response time required to conduct the 60 kilometer road march necessary prior to commitment. This action differs only slightly from that of Model B. Most important, it permits both threat divisions to be engaged "simultaneously." The AirMechanized Division provides the flexible, rapid response necessary for the CENTAG Commander to influence the battle.

Results of Action Taken (Model A): The 1st Infantry Division launched its counterattack in the direction of Giessen-Neukirchen-Bad Hersfeld against the 11th Guards Tank Division. Having been warned by the reconnaissance elements in the vicinity of Amoneburg, the enemy division was prepared for the counter-attack. The 1st Infantry Division lost the element of surprise and a major battle has been raging all night in the vicinity of Bad Hersfeld with both divisions suffering heavy losses. The 1st Infantry Division has effectively stopped the advance of the 11th Guard Tank Division and rendered it combat ineffective. However, due to its own losses, it is unable to continue the attack to support its 3rd Brigade which had swung south to engage the two regiments of the 14th Motorized Rifle Division. The CENTAG Commander has released the 2nd Armored Division 'opcon' to V (US) Corps to supports its defense against the 7th Guards Tank Division.

Results of Action Taken (Model B): The AirMechanized Division was able to strike swiftly and decisively with overwhelming combat power against the 11th Guards Tank Division. The battle is being waged sporadically by the remnants of the Soviet division as a withdrawal under pressure is being executed. The 1st Infantry Division has successfully launched its counterattack into the flank of the 7th Guards Tank and continues to delay, disrupt, and attrit his

forces. The 3rd Armored Division has finished the close-in battle by the time the 14th Motorized Rifle Division (-) arrives in the main battle area, and continues to attrit the enemy forces along the FLOT. First echelon divisions of the 20th Tank Army have been stopped in the V (US) Corps sector; and the movement of the 2nd echelon division indicates reorientation to the north into the II (GE) Corps sector.

Results of Action Taken (Model C): The 1st Infantry Division has met the same fate in the north as portrayed in Model A. However, the division commander was able to maintain the integrity of his forces without having to divert a brigade in the fight against the 14th Motorized Rifle Division (-). The AirMechanized Division continues to battle against the 7th Guards Tank Division, and has committed a composite Task Force to delay, disrupt and attrit the 14th Motorized Rifle Division, which is now occupying hasty defensive positions. The CENTAG Commander was able to operate within the Soviet Army Commader's decision cycle and seize the initiative from him. The 3rd Armored Division and 8th Infantry Division have finished their close-in battles, and are preparing to displace forward along the original forward defense line. First echelon divisions of the 20th Guards Tank Army have been stopped in the V (US) Corps sector, and the movement of the second echelon division indicates a reorientation north into the II (GE) Corps sector.

Addendum: In both Model B and Model C, the CENTAG and Corps Commanders were able to influence the campaign by having a combat maneuver force that could be committed forward of the main battle area at the decisive point and time. The AirMechanized Division has demonstrated the capability to respond rapidly and with adequate combat power to execute the decisive engagement.

VII (US) Corps Sector: omitted

III (GE) Corps Sector: omitted

SITUATION 4 (D+4)

For Model A, the campaign continues. The CENTAG Commander has committed his reserve, the 2nd Armored Division, into the V (US) Corps sector to counter-attack against the second echelon regiments of the 7th Guards Tank Division which has penetrated the gap between 3rd Armored Division and the 8th Infantry Division. Due to the fluidity and confusion of the battlefield, the CENTAG Commander was unable to identify the main axis of advance of 7th Guards Tank Division early, giving the 2nd Armored Division only ten hours to move into position and prepare a hasty defense. Upon receipt of the order, it took the division four hours to move into the designated defensive sector, and another four hours to prepare hasty defensive positions. The 7th Guards Tank Division has made a break in the defenses between the 3rd Armored Division and the 8th Infantry Division which is being contained by the 2nd Armored Division. The 25th Tank Division continues to press its attack against the weakened 3rd Armored Division, and second echelon forces are beginning to filter through gaps in the defenses. The CENTAG Commander and Corps Commander have no further forces to commit.

For Model B and Model C, the first battle of the Central European Campaign has been completed. Enemy first and second echelon armies have been defeated or contained. The original FLOT has been reestablished and extensive preparations are being made to defend against the Belorussian Front, estimated to be in the CENTAG Area of Influence within the next 24 to 48 hours. The advantages of mobility, flexibility, responsiveness, and firepower have contributed to the defeat of the enemy's forces and the restoration of the Inter-German Border.

## CONCLUSION.

The purpose of this chapter has been to answer two fundamental questions. First, does a need exist for the US Army to develop an AirMechanized Division? And second, if the need exists, at what operational level should it be formed? The method used for answering these questions was the conduct of a wargaming scenario, using a Central European Conflict Scenario. For this analysis, three models were presented for evaluation and compared against eight criteria:

1) be immediately responsive to the field army and corps commander;

2) complement the field army and corps commander's scheme of maneuver;

3) be capable of simultaneously conducting three dimensional combat;

4) be capable of conducting and sustaining cross-FLOT combat operations

5) minimize battlefield signature through dispersion;

6) be capable of massing combat power quickly at the decisive point and decisive time across the field army and corps sector;

7) be capable of conducting combat operations under all environmental conditions (terrain and weather) indigenous to the area of operations;

8) retain a high mobility factor for anti-tank ground maneuver forces in the absence of heliborne lift assets.

Results of the wargaming analysis indicate that an AirMechanized Division is an essential operational maneuver organization that should be organized as a component of the US Army's total force structure. It further demonstrates that the optimum operational level at which this organization should occur is field army (in Central Europe, CENTAG). The rationale for this decision is based upon three primary factors. First, the requirement exists at corps level for a dedicated medium-lift helicopter battalion to perform combat service support missions, as determined in the "HELILOG Study," conducted in Central Europe in 1977, and reinforced by subsequent REFORGER Exercises.[8] The AirMechanized Division is not designed or equipped to provide that dedicated support. And,

to integrate the additional airframe requirements into the proposed divisional structure would make the organization cost-prohibited. Figure 4-11 provides a cost comparison of the AirMechanized Division to the Corps Aviation Brigade. Second, although the Corps Aviation Brigade provides an effective operational capability on the "AirLand" battlefield, it does not possess the equivalent combat power, mobility, or battlefield endurance of the AirMechanized Division. Third, and possibly the most significant factor, is the advantage that the Air-Mechanized Division possesses attributed to its inherent speed and flexibility. The AirMechanzed Division can respond quickly to the commander's operational requirements to commit a combat maneuver force in depth at the decisive point and time on the battlefield, unencumbered by the effects of terrain and, in part, weather.

The presence of an AirMechanized Division on the battlefield permits the army commander to influence the outcome of a battle through the application of maneuver and firepower. Thus, an operational commander can engage the threat's second echelon divisions before they have an opportunity to become entangled in the close-in battle, thereby permitting the commander to seize the initiative. In summary, the AirMechanized Division embodies the tenets of the US Army's operational doctrine: initiative, depth, agility, and synchronization.

During the course of the wargaming analysis, the effectiveness of the field army's reserve armored division may have appeared subjected to "aviator bias." The succeeding chapter provides an operational combat effectivenss and relative cost appraisal, using the J-series armored division as a basis of comparison for the AirMechanized Division.

J-SERIES CORPS AVIATION BRIGADE MAJOR END ITEMS OF EQUIPMENT

| TYPE UNIT | C-12 | AH-1 | AH-64 | OH | UH-1 | UH-60 | CH-47 | TOTAL COST |
|---|---|---|---|---|---|---|---|---|
| GSAB | 2 | | | 35 | 5 | | | $ 16,679,963 |
| MDM HEL BN | | | | | | | 64 | 364,031,552 |
| CSAB | | | | | 45 | | | 208,935,000 |
| ATK HEL REGT (2) | | | | | | | | |
| AHB (4) | | | 72 | 52 | | 12 | | 627,814,690 |
| AHB (R/O) (2) | | 42 | | 26 | | 6 | | 67,778,134 |
| DIVISION TOTAL | | | | | | | | $ 1,285,239,339 |

AIRMECHANIZED DIVISION - MAJOR END ITEMS OF EQUIPMENT

| TYPE UNIT | AH | CH | OH | UH | LAV | 105mm | 155mm | MISC | TOTAL COST |
|---|---|---|---|---|---|---|---|---|---|
| ATK CAV REG (3) | | | | | | | | | |
| AIR CAV (3) | 36 | | 54 | 6 | | | | | $ 319,560,492 |
| AHB (6) | 126 | | 78 | 18 | | | | | 1,082,122,044 |
| AVN SPT GRP | | | | | | | | | |
| GSAC | | | 16 | 9 | | | | | 17,766,592 |
| CSAB | | 32 | | 30 | | | | | 321,305,776 |
| TAMB | | | | 6 | | | | | 27,858,000 |
| DIV ARTY | | | | | | | | | |
| 105T BN (3) | | | | | | 54 | | | 6,804,864 |
| HMMWV | | | | | | | | 54 | 1,749,600 |
| 155T BN | | | | | | | 24 | | 4,992,000 |
| M548 | | | | | | | | 24 | 2,554,200 |
| LT ATK REGT | | | | | | | | | |
| LT ATK BN (3) | | | | | 81 | | | | 2,349,000 |
| DIVISION TOTAL | | | | | | | | | $ 1,787,062,568 |

NOTE: (*) Major End Item costs are extracted from SB 700-20, dated 1 March 1984; see Appendix 2 for an itemized list of procurement costs.

The major difference in the cost of these two organizations is the programmed use of the AH-1 in lieu of the AH-64 in the Reserve Component Attack Helicopter Battalion, for a difference of $267,929,214. Additionally, the US Army plans to organize a second Combat Support Aviation Battalion in the mid-term. This raises the procurement cost of the Corps Aviation Brigade to over $1,494,000. If one of the Attack Cavalry Regiments were to be constituted with the AH-1S in lieu of the AH-64 as a "round-out" unit, there would be minimal difference in procurement/acquisition cost.

FIGURE 4-11: Comparison of Procurement Costs, AirMechanized vs Armored Division

CHAPTER 4

END NOTES

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# CHAPTER 5

## A COST-EFFECTIVENESS COMPARISON: AIRMECHANIZED VERSUS ARMORED

An essential element of this study is determining the cost-effectiveness of organizing and fielding an AirMechanized Division. The purpose of this cost and effectiveness analysis is to demonstrate the affordability and feasibility of developing an AirMechanized Division for use as an army reserve in Central Europe. As a point of departure, the analysis is made using the AirMechanized Division and an armored division equipped with the M1 "Abrams" Main Battle Tank and the M2/M3 "Bradley" Fighting Vehicle (J-series Table of Organization and Equipment). This comparative analysis is conducted in two areas: one examines the combat effectiveness of the two organizations by comparing operational and systems capabilities; the other compares procurement and operating costs. The criteria established for effectiveness are operational mobility, firepower, and protection. The cost comparison examines base operating costs and a baseline procurement, or acquisition, cost.

### MOBILITY.

Operational mobility may be defined as the capability of a combat unit, and its associated combat support and combat service support elements, to move across the battlefield and concentrate sufficient combat power in a critical area to enable it to defeat another force. The object of operational mobility is to focus maximum strength against the enemy's weakest point, thus gaining a strategic advantage.[1] Undoubtedly many factors affect operational mobility. For a comparative analysis, only those variables that reflect a significant difference between a ground-oriented force and an air-mobile force should be considered. These factors include response time, speed of movement, combat radius, and endurance in the objective area.

Response Time.

It appears intuitively obvious that the armored division is capable of responding quicker within a set "time window" than the AirMechanized Division. This observation holds true when one compares strictly "mission receipt time" to the "start movement time." However, when one examines the other element of response time, arrival time in the objective area, the disparity is not quite as profound. Arrival time in the objective area is directly proportionate to the distance to be traveled. For distances not exceeding 50 kilometers, the armored division possesses a distinct advantage. For distances greater than 50 kilometers out to 75 kilometers, the response times for the divisions are relatively equal. Furthermore, for distances greater that 75 kilometers, the AirMechanized Division has a greater capacity to influence the action earlier. This comparison is made on three assumptions: 1) that the cross-country speed of the armored division averages 25 kilometers per hour; 2) that it takes the AirMechanized Division approximately two hours to assemble subordinate elements to deploy; and 3) that the "preflight inspections" of the organic aircraft have been previously conducted. (If preflight inspections have not been conducted previously, the AirMechanized Division requires an additional hour to deploy.) Given these parameters, the armored division possesses a slight advantage over the AirMechanized Division in the category of response time.[2]

Speed of Movement.

Speed of movement is influenced by the variables of weather, terrain, obstacle clearance, and equipment design. Though the armored division's speed of movement is not directly affected by weather, it is affected by the difficulty of terrain. For the purposes of comparative analysis, the M1 Main Battle Tank and the AH-64 Advanced Attack Helicopter are used as the optimum representative for their respective operational and organizational category.

The Main Battle Tank: The optimum speed of the M1 Tank is listed as 48 miles per hour, where the engine and the transmission work most efficiently. Under cross-country conditions, which are expected to be the norm in combat, the M1's optimum speed is reduced significantly. Cross-country speed may be further degraded as a result of terrain modification due to weather and the effects of weapons. Examination of vehicle reference data indicate the following vehicle restrictions applicable to ground-vehicle operations:

1) on most terrain where the gradient or slope exceeds eight percent, vehicle performance is limited by power (drive train) availability;

2) in the majority of terrain types and in most tactical situations, acceleration and agility are limited strictly by power availability;

3) when operating in terrain where surface tension is reduced (for example, in mud or sand), the greatest percentage of total available power is consumed in overcoming the forces of resistance and making the vehicle move;

4) the relationship of cross-country mobility and speed of movement are inversely proportionate to the difficulty of the terrain. As terrain becomes more hindering, speed of movement and agility are decrimentally reduced.[3]

Regarding obstacle clearance, the movement of the M1 Main Battle Tank is further constrained. The M1 has a maximum horizontal clearance of 2.75 meters and a maximum vertical obstacle clearance of only 1.25 meters, with a fording depth limited to only 1.22 meters without preparation. Man-made obstacles such as towns, cities, railroads, destroyed bridges, bomb craters, and minefields significantly impede the M1's speed of movement. When integrated with such natural terrain obstacles as the heavily wooded areas, mountains, streams, and rivers that are indigenous to Central Europe, the ability of the M1 to optimize its mobility potential is uncertain.[4]

The Attack Helicopter: The AH-64 "Apache" totally eliminates the effect of terrain and obstacle clearance on the speed of movement that plagues the M1. Because of its aerial mode of operations, it has reversed the ageless problem of terrain and obstacle clearance. By its inherent ability to operate in the "land sky" environment, the attack helicopter makes the terrain work for it. Due to its independence of the ground, the helicopter can optimize its cruising speed of 170 miles per hour. Even if forced by enemy air defenses to fly nap-of-the-earth (NOE), a survival altitude that generally follows the contours of the earth as close as vegetation or obstacles permit, its movement is still at a speed of 40 miles per hour.[5]

Weather is the only environmental variable that can adversely affect the mobility of the attack helicopter. Ceilings of less than 100 feet and visibility of less than one-quarter mile restrict the pilot's flight capabilities, and visibility of less than one mile limits its ability to engage enemy targets at a safe stand-off distance. Also, winds in excess of 40 miles per hour or wind gusts in excess of 30 miles per hour may result in a "no fly" condition. The operational combat radius and payload of the attack helicopter may also be decreased as a result of altitude, atmospheric pressure and temperature.[6]

The "Tactical Helicopter Employment Study (THES)" and "Attack Helicopter Organization Study (ATHELO)" reveal that the impact of weather upon the AH-64's capabilities may be overstated. In the "Tactical Helicopter Employment Study," meterological data was gathered over a ten year span from sixteen locations dispersed throughout Western Europe to determine the impact of weather on the operational capabilities of attack helicopters. This study revealed that the minimum flying conditions for the AH-1 "Cobra" could be met 91 percent of the time, even during the worst weather months of November and December. Thus, a greater percentage of heliborne operations can be conducted throughout the year

in Central Europe than has been generally accepted. Results of recent REFORGER Exercises indicate that during limited duration field exercises, Army and Air Force aircraft were flown an average of eight hours per day.[7]

Combat Radius and Endurance.

Combat radius is a function of operating range, endurance in the battle area, and the location of rearm/refuel sites. Endurance is determined by the variables of fuel consumption rate with regard to the quantity of fuel onboard, and ammunition expenditure rate with regard to the amount of ammunition carried by the weapon systems. Combat service support vehicles are restricted by fuel consumption rates only. Figure 5-1 provides a comparison of fuel capacity and consumption, range, endurance and speed of different aviation and ground combat systems. The element of speed is provided for reference purposes, but is not a function of combat radius or endurance.

Examination of Figure 5-1 indicates that the AirMechanized Division has a combat radius slightly greater than that of an armored division, but it does not have the endurance in terms of fuel consumption. An AirMechanized Division must recycle through a rearm/refuel site every 2 hours and 30 minutes. For continuous, sustained combat, the "one-third" technique may be applied, where one regiment or battalion is in the target area while the other two units are either rearming and refueling or enroute back to the battle area. This method, although maintaining pressure on the enemy, provides for only 33 percent of the AirMechanized Division's combat power to be applied at any one time. Even with the additional firepower of the light attack anti-tank vehicles, that component never exceeds 50 percent for an extended period. Another limiting factor of battlefield endurance that applies more to aviators than to "tankers" is the element of "crew rest." Whereas the tank crew lives with its combat machine and sustains operations for sixteen to twenty hours per day, the aviator is

restricted from flying more than eight to ten hours per day. Although this restriction may be waived, the risks involved which may result in a substantial number of non-combat losses are exponentially increased.[8]

| SYSTEM | SPEED Km/hr | RANGE in Km | FUEL CAP in gal | CONSUMPTION gals/hr | ENDURANCE (fuel only) |
|---|---|---|---|---|---|
| AH-1S (NOE) | 266 ( 83) | 550 (183) | 262 | 112 | 2.2 hrs |
| AH-64 (NOE) | 265 ( 83) | 689 (216) | 812 | 312 | 2.6 hrs |
| CH-47 (Low) | 241 ( 70) | 550 (210) | 1034 | 345 | 3.0 hrs |
| OH-58 (NOE) | 222 ( 55) | 680 (192) | 72 | 20 | 3.5 hrs |
| UH-1H (NOE) | 185 ( 60) | 511 (150) | 209 | 81 | 2.5 hrs |
| UH-60 (NOE) | 266 ( 70) | 650 (245) | 362 | 103 | 3.5 hrs |
| M1 MBT (x-c) | 72 (25) | 440 (115) | 260 | 45 | 6.1 hrs (4.6) |
| M2/3 BFV (x-c) | 64 (25) | 680 (180) | 157 | 15 | 10.4 hrs ( 7.1) |
| M109 (155 SP) (x-c) | 56 (20) | 390 (100) | 121 | 17 | 7.1 hrs (5.0) |
| DIVAD (x-c) | 50 (18) | 450 (165) | 345 | 31 | 11.1 hrs ( 9.1) |
| M88 (VTR) (x-c) | 42 (12) | 360 (100) | 358 | 33 | 10.9 hrs (8.4) |

FIGURE 5-1: Comparison of Combat Radius and Endurance of Major Systems[9]

Note: The acronym NOE represents Nap-of-the-Earth, a flight mode where air speed and altitude are varied according to terrain and threat. (Low) represents Contour flight, where airspeed is constant but altitude varies according to terrain and threat. (X-C) represents cross-country.

Summary:

Both the armored division and the AirMechanized Division are capable of responding rapidly to operational requirements, within their respective force design characteristics. The armored division is designed to engage in combat operations under all weather conditions; but it is severely limited by manmade obstacles and natural terrain restrictions. An AirMechanized Division, on the other hand, has the ability to operate almost totally independent of terrain, but is detrimentally affected by the effects of adverse weather conditions. Even though the heliborne forces of the AirMechanized Division operate with a degree indifference to terrain profile or alteration and have a cruise speed that gives a marked advantage over their contemporary counterpart, the armored division possesses a clear and distinct advantage in the area of battlefield endurance. As illustrated in Table 5-1, neither organization has an advantage in the overall rating of operational mobility. Essentially, both type units possess an equivalent operational mobility effectiveness rating.

TABLE 5-1: Mobility Effectiveness Matrix

| PERFORMANCE VARIABLES | WEIGHT | RATING ARMD DIV | | RATING AIRMECH | |
|---|---|---|---|---|---|
| OBSTACLES | | | | | |
| Ability to cross water obstacles | 1 | (.1) | .1 | (.9) | .9 |
| Ability to negotiate vertical obstacles | 1 | (.1) | .1 | (.9) | .9 |
| Ability to pass through urban sprawl | 1 | (.3) | .3 | (.7) | .7 |
| Ability to surmount minefields/barriers | 1 | (.2) | .2 | (.8) | .8 |
| TERRAIN | 2 | (.3) | .6 | (.7) | 1.4 |
| WEATHER | 2 | (.7) | 1.4 | (.3) | .6 |
| HIGH SPEED MOVEMENT | 1 | (.3) | .3 | (.7) | .7 |
| RESPONSE TIME | 2 | (.6) | 1.2 | (.4) | .8 |
| COMBAT RADIUS | 3 | (.7) | 2.1 | (.3) | .9 |
| ENDURANCE IN OBJECTIVE AREA | 3 | (.7) | 2.1 | (.3) | .9 |
| OVERALL MOBILITY EFFECTIVENESS RATING: | | | 8.4 | | 8.6 |

FIREPOWER.

Firepower is decisive since the achievement of battlefield superiority is dependent upon the ability to paralyze the enemy's source of fire before it can be employed. When combined with maneuver, these two represent the fundamental elements of combat. In both the AirMechanized Division and armored division, firepower and maneuver are integrated and executed simultaneously. For the AirMechanized Division, the attack helicopter and the light attack anti-tank vehicle provide firepower and maneuverability. For the armored division, the "Abrams" tank and "Bradley" fighting vehicle provide decisive combat power on the battlefield. The greatest differential in firepower potential between the two organizations is reflected in the character of their primary weapon system. For the armored division, it is the M1 Main Battle Tank; for the AirMechanized Division, it is the AH-64 Advanced Attack Helicopter. The variance is assessed by comparing the performance variables of lethality, accuracy, time of flight, rate of fire, number of rounds carried, and total number of weapon systems on the battlefield for a given period of time.

Lethality: The main armament of the M1 is the 105mm rifled gun (scheduled to be upgraded to a 120mm gun in some models), and the main armament of the AH-64 is the HELLFIRE anti-tank guided missile (ATGM). As depicted in Figure 5-2, the probability of kill (Pk), given a random hit on an enemy tank by either round, is constant at all ranges out to 3,000 meters with neither weapon system having an advantage. However, beyond 3,000 meters, the probability of the tank projectile scoring a "kill" drops off sharply, due in part to the expenditure of energy. Therefore, in terms of lethality, the AH-64 achieves a slight edge, though both systems retain an acceptable level of kill probability to defeat enemy armor throughout their range interval.

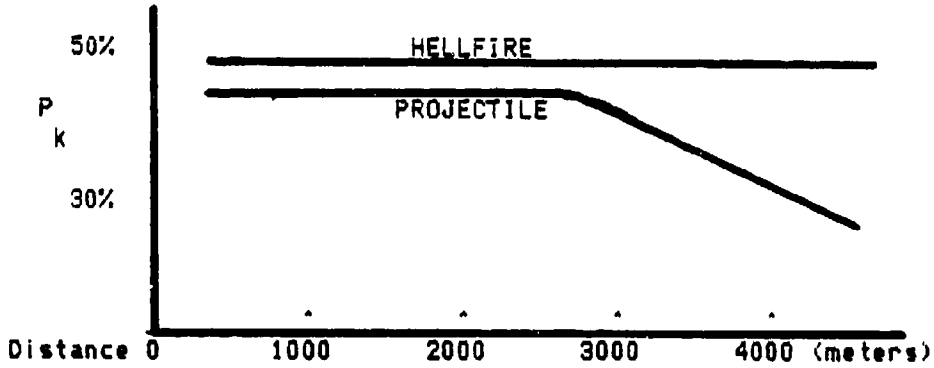



FIGURE 5-2: Probability of Kill ($P_K$) Given a Random Hit On A Tank[10]

Accuracy: The results of numerous tests and firings of the HELLFIRE anti-tank guided missile and 105mm main gun projectile are shown below in Figure 5-3. In assessing the probability of hit as a function of range, it is apparent that the HELLFIRE has a relatively higher first round hit probability than the 105mm projectile. The higher probability of hit is derived from two factors: 1) that within a range of 4,000 meters the accuracy of the HELLFIRE remains relatively constant; and, 2) in contrast, the accuracy of the 105mm projectile does not remain constant. Where, at approximately 1,500 meters the HELLFIRE and the 105mm round have a 1:1 ratio of probability of hit, the probability of hit for the HELLFIRE, as compared to the 105mm projectile, is increased to a ratio of nearly 2:1 when the target engagement range reaches out beyond 2,500 meters. Relative accuracy is subject to the factors of crew training, artillery fires, battlefield obscuration, and terrain undulations. Both an advantage and a disadvantage of the 105mm projectile is the fact that it is a "fire-and-forget" system. Consequently, a hit or miss is dependent upon the sight picture at the time of firing. At long ranges, this is a significant disadvantage in that it does not allow for the tank gunner to compensate for changes in target speed or direction. The most significant advantage of the HELLFIRE system is that it allows the delivery system to be completely concealed from its target by the employment of air/ground mobile "Target Acquisition - Laser Designating Teams."

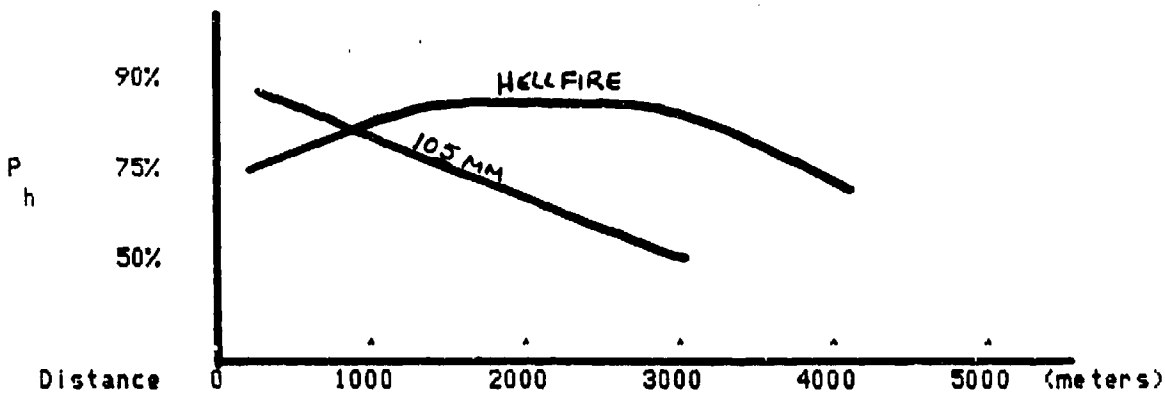



FIGURE 5-3: Probability of Hit ($P_H$) Given an Unknown Distance to a Target[11]

Time of Flight: The third firepower performance variable to be examined is time of flight from weapon system to target. In this regard, a significant difference exists between the HELLFIRE and the 105mm main gun round, although the HELLFIRE has considerably improved the time of flight component over that of the TOW anti-tank guided missile. While the flight time for the 105mm projectile remains relatively constant at all ranges, the flight time for the HELLFIRE increases sharply with range. As a result, the flight time for the HELLFIRE, at a range of 3000 meters, is approximately nine seconds, six seconds slower than the 105mm projectile. This differential in time, assuming combat conditions, constitutes a shortcoming that serves to degrade the overall ability of the attack helicopter to engage enemy armor. An off-setting quality of the AH-64 is that two targets may be engaged simultaneously, using the integral guidance system on the helicopter and a "lasing team."[12]

Rate of Fire: Implicit in the time of flight variable is the rate of fire. Rate of fire represents the number of rounds that can be fired by a weapon system in a prescribed time, and includes the total time to acquire the target, perform firing sequence, firing the round, and reloading the weapon. The times to fire for guns and missiles are nominally the same for the initial discharge of the round. In this regard, a significant disparity exists between the two

systems since the HELLFIRE must, of necessity, include time of flight. Due to this factor, the maximum sustained rate of fire for the HELLFIRE at 3000 meters is approximately three rounds per minute. In comparison, the maximum sustained rate of fire for the 105mm gun is six rounds per minute, or twice as much. As mentioned above, an off-setting characteristic of the AirMechanized Division is the air-ground engagement team which permits the AH-64 to engage two targets simultaneously. In that subsequent firing is almost immediate and target acquisition enhanced through the presence of another observer, the shortcoming associated in tracking the missile is minimized. In this assessment, neither system possesses a decided advantage over the other.[13]

Number of Rounds Carried: Sustained rate of fire, a component of battlefield endurance, is dependent upon the number of rounds of ammunition carried by a particular weapon system. This variable represents the greatest source of disparity between the firepower of the main battle tank and the advanced attack helicopter. While the M1 carries a total of 55 main gun rounds, the AH-64 can maximize its anti-tank punch with just sixteen HELLFIRE missiles. This single factor, coupled with the previously considered factor of fuel consumption rate, rather obviously establishes the fact that the M1 has a far greater battlefield endurance than the advanced attack helicopter.

Battlefield Density: The number of weapon systems on the battlefield at any given time applying effective fires onto the target is the definition of battlefield density. As illustrated in the mobility effectiveness matrix, the AirMechanized Division has a substantial disadvantage in battlefield density due specifically to the fuel capacity/fuel consumption ratio of the attack helicopter. The joint employment of the Light Attack Anti-Tank Regiment does provide continuous firepower on the battlefield, but it lacks overhead and armored protection, thus making it vulnerable to enemy suppressve fires.

Summary: It is apparent that these organizations have associated shortcomings and desirable characteristics. The stand-off distance and indirect fire mode of the HELLFIRE anti-tank guided missile has a significant advantage on the battlefield where General Starry's "See-Hit-Kill" axiom comes to life. On the other hand, the "fire-and-forget" advantage of the 105mm main gun projectile allows for a higher rate of fire, greater accuracy at closer engagement ranges, and endurance on the battlefield. Table 5-2 provides a firepower effectiveness comparison for the AirMechanized Division and the J-series armored division.

TABLE 5-2: Firepower Effectiveness Matrix

| PERFORMANCE VARIABLES | WEIGHT | RATING ARMD DIV | | RATING AIRMECH | |
|---|---|---|---|---|---|
| LETHALITY | 2 | (.4) | .8 | (.6) | 1.2 |
| ACCURACY | | | | | |
| Long Range | 2 | (.3) | .6 | (.7) | 1.4 |
| Short Range | 1 | (.6) | .6 | (.4) | .4 |
| TIME OF FLIGHT | 1 | (.5) | .5 | (.5) | .5 |
| RATE OF FIRE | 2 | (.5) | 1.0 | (.5) | 1.0 |
| TARGET ACQUISITION | 2 | (.3) | .6 | (.7) | 1.4 |
| ROUNDS CARRIED | 2 | (.7) | 1.4 | (.3) | .6 |
| BATTLEFIELD DENSITY | 3 | (.7) | 2.1 | (.3) | .9 |
| OVERALL FIREPOWER EFFECTIVENESS RATING: | | | 7.6 | | 7.4 |

PROTECTION.

In a non-nuclear, mid-intensity environment, three types of protection are essential: chemical, ballistic and electromagnetic pulse (EMP). Although the ballistic protection of armored vehicles in a tank division is vulnerable to anti-tank rounds or missiles, it inherently possesses all-around protection from all calibers of small arms, light cannon fire and artillery fragmentation.

On the other hand, the helicopter and light attack vehicles of an AirMechanized Division provide ballistics protection from only small arms fire for the crew and some degree of increased protection for critical components. Both armored vehicles and attack helicopters possess an over-pressure air filtration system which precludes contamination of the crew compartments by toxic gases, but the crews of the light attack vehicles must wear appropriate chemical protective outergarments and masks. All weapon systems are equally susceptible to the effects of non-nuclear electromagnetic pulse which can "fry" transistorized or computerized components.[14]

Survivability: The Soviet tactical threat spectrum is depicted in Figure 5-4 for the anti-armor threat, and Figure 5-5 for the air defense threat. The air-to-air threat posed by the Mi-24 and Mi-28 are not portrayed because they encompass a broad spectrum of weapon systems and engagement tactics, of which some are classified.

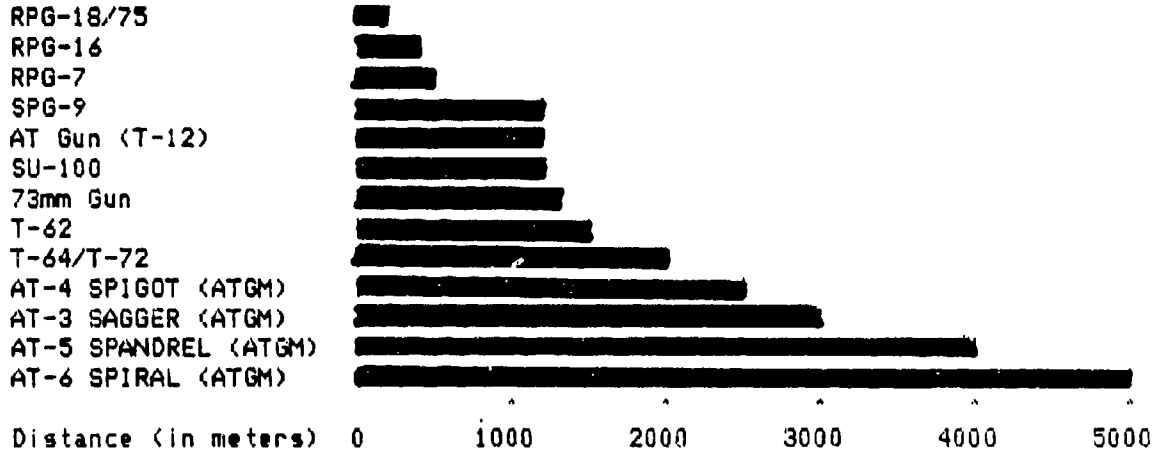
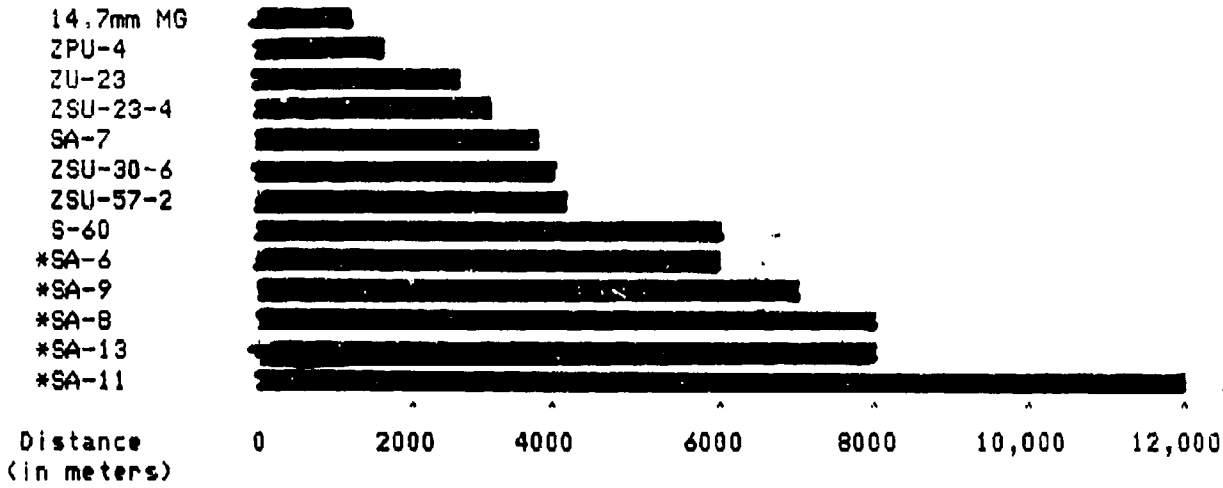



FIGURE 5-4: Spectrum of Soviet Threat Anti-Armor Weapon Systems[15]




Note: Asterisk (*) denotes engagement envelopes for helicopters at altitudes below 200 feet.

FIGURE 5-5: Spectrum of Soviet Threat Air Defense Weapon Systems[16]

One can see that the AirMechanized Divison is exposed to a wider variety of threats than the armored division. The threat systems present on the modern battlefield designed to combat the air threat possess a significantly greater range and probability of hit due to terminal homing guidance. When this spectrum of threat is coupled with the fact the AirMechanized Division has a greater vulnerability to the effects of the ballistics threat, it appears that the armored division possesses a greater survivability potential. However, the numbers of threat systems on the battlefield that are dedicated to engaging the helicopter in its operational environment are significantly less that the total number portrayed in Figure 5-5. The stand-off target acquisition and indirect fire engagement components of the attack helicopter act to balance the variable of system vulnerability. As the survivability of an organization on the modern battlefield is a product the sum of the components of systems vulnerability and the ability to extract a favorable kill ratio, a final variable of protection is considered, that of combat agility.

Combat Agility: Combat agility is defined in terms of those attributes that decrease (or increase) the likelihood of being hit by a projectile fired from an opponent's weapons system. Basically, the attributes that permit a system to avoid enemy fire are related to its ability to start, stop, maneuver quickly and move from position to position. A variable that influences susceptibility to engagement by the enemy is the passive factor of mobility bias. This is a term used to denote the difference between where the enemy gunner aims at the time of fire and where the target is at the time of impact. Mobility bias is a function of the speed of the target and range from which the target is engaged. In both instances a helicopter-oriented AirMechanized Division has an advantage over the armored division by virtue of its freedom of movement and its normal stand-off target engagement ranges. Survivability becomes synonymous with mobility, in that ability to operate at extended ranges with greater speed and acceleration potential increases the mobility bias of the enemy gunner.

Summary:

As depicted in Table 5-3, both the AirMechanized Division and the heavy armored division are provided an equivalent sum of battlefield protection, even though the means of achieving that protection are significantly different. The armored division relies on its inherent characteristic of shielding armor for protection, while the AirMechanized Division relies on combat agility, speed, and stand-off distances. Each division possesses unique characteristics that set it apart from the other. However, neither can survive alone on the modern battlefield. This idea of complementary systems was best expressed by Major General Thomas M. Tarpley, then the Commandant of the US Army Infantry School:

> "We firmly believe the vulnerability of any system must be considered in relation to its contribution to the destruction of the enemy and its must be compared to the vulnerability of other means accomplishing the same mission."[17]

TABLE 5-3: Protection Effectiveness Matrix

| PERFORMANCE VARIABLES | WEIGHT | RATING ARMD DIV | | RATING AIRMECH | |
|---|---|---|---|---|---|
| PROTECTION | | | | | |
| Chemical | 1 | (.6) | .6 | (.4) | .4 |
| Non-Nuclear EMP | 1 | (.5) | .5 | (.5) | .5 |
| Ballistic | 2 | (.7) | 1.4 | (.3) | .6 |
| SURVIVABILITY | | | | | |
| Vulnerability | 1 | (.6) | .6 | (.4) | .4 |
| Combat Agility | 3 | (.3) | .9 | (.7) | 2.1 |
| TOTAL PROTECTION EFFECTIVENESS RATING: | | | 4.0 | | 4.0 |

SUMMARY OF ANALYSIS.

Operational effectiveness of an AirMechanized Division is demonstrated by comparative analysis using an effectiveness matrix for evaluating categories of mobility, firepower, and protection. The numerical value assigned to variables and weights were assessed by the author. A more exact effectiveness rating can be determined by subjectin the models to a more extensive computer-assisted war gaming simulation designed to retrieve the specified data. Table 5-4 shows that neither the AirMechanized Division nor an armored division possesses a distinct advantage over the other. In effect, their effectiveness ratings are equal. In conclusion, the AirMechanized Division and the armored division are designed for specific operational purposes, functions, and objectives. The responsibility of today's maneuver commander is to optimize the capabilities and limitations of each organization by employing them in such a manner as to optimize their synergistic effect.

TABLE 5-4: Overall Operational Effectiveness Rating (Armd - AirMech)

| | | |
|---|---|---|
| MOBILITY | 8.4 | 8.6 |
| FIREPOWER | 7.6 | 7.4 |
| PROTECTION | 4.0 | 4.0 |
| TOTAL EFFECTIVENESS RATING: | 20.0 | 20.0 |

## COST

All too frequently the argument is used in countering the suggestion for fielding an aviation maneuver division that it is not economically feasible in terms of equipment and manpower. Undoubtedly, many variables affect the cost of putting a US Army division in the field. However, for comparative analysis only those factors that impact upon procurement and operations costs should be considered. One other factor, mobilization and deployment cost, can not be determined within the scope of this study and is therefore omitted.

### Procurement Cost:

In general, procurement or acquisition cost is concerned with fielding of major end items of equipment and the accompanying Integrated Logistics Support (ILS). Additional costs are associated with new equipment fielding. However, these are not included in the acquisition computations in that all of the items are currently being procured by the US Army. The focus of this comparison is strictly on those major end items of equipment that significantly impact on the differences between an air-mobile force and a ground-oriented force. It is suggested that a division currently fielded in the US Army's Master Plan could be reorganized under the AirMechanized concept without any major additional base operations costs. Nevertheless, it is acknowledged that any major change in the US Army's Materiel Acquisition Plan has a significant impact on the myriad of agencies that are responsible for equipment fielding, logistical support, and training. Figures 5-6 and Figure 5-7 provide a cost summary of an armored division organized under the J-series TOE (Table of Organization and Equipment) and a notional AirMechanized Division, respectively. Combat service support requirements for the conceptual AirMechanized Division have not been determined. Therefore, this element of divisional force structuring is not included in the cost comparison.[18]

| MAJOR END ITEMS OF EQUIPMENT - ARMORED DIVISION | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| TYPE UNIT | M1 | M2 | M3 | ITV | M125 | AH | OH | UH | MISC | TOTAL COST |
| ARMD BN (6) | 348 | | 42 | | 36 | | | | | $ 706,707,612 |
| MECH BN (4) | | 216 | 28 | 48 | 24 | | | | | 435,260,016 |
| CBT AVN BDE | | | | | | | | | | |
| AHB (2) | | | | | | 42 | 26 | 6 | | 360,707,348 |
| GSAC | | | | | | | 16 | 9 | | 17,766,592 |
| CSAC | | | | | | | | 15 | | 69,645,000 |
| CAV SQDN | | | 41 | | 6 | 12 | 8 | 1 | | 136,603,426 |
| DIVARTY | | | | | | | | | | |
| 155 SP BN (3) | | | | | | | | | 72 | 20,520,000 |
| DIV SPT | | | | | | | | | | |
| REC VEH (M88) | | | | | | | | | 32 | 26,768,384 |
| AVLB | | | | | | | | | 16 | 9,556,224 |
| CARRIER, CMD POST | | | | | | | | | 125 | 23,055,250 |
| DIVISION TOTAL | | | | | | | | | | $ 1,816,589,852 |

FIGURE 5-6: Acquisition Cost of A Type Armored Division, J-Series TOE
(See Appendix 1 for an itemized cost summary.)

| MAJOR END ITEMS OF EQUIPMENT - AIRMECHANIZED DIVISION | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| TYPE UNIT | AH | CH | OH | UH | LAV | 105mm | 155mm | MISC | TOTAL COST |
| ATK CAV REG (3) | | | | | | | | | |
| AIR CAV (3) | 36 | | 54 | 6 | | | | | 319,560,492 |
| AHB (6) | 126 | | 78 | 18 | | | | | 1,082,122,044 |
| AVN SPT GRP | | | | | | | | | |
| GSAC | | | 16 | 9 | | | | | 17,766,592 |
| CSAB | | 32 | | 30 | | | | | 321,305,776 |
| TAMB | | | | 6 | | | | | 27,858,000 |
| DIV ARTY | | | | | | | | | |
| 105T BN (3) | | | | | | 54 | | | 6,804,864 |
| HMMWV | | | | | | | | 54 | 1,749,600 |
| 155T BN | | | | | | | 24 | | 4,992,000 |
| M548 | | | | | | | | 24 | 2,554,200 |
| LT ATK REGT | | | | | | | | | |
| LT ATK BN (3) | | | | | 81 | | | | 2,349,000 |
| DIVISION TOTAL | | | | | | | | | $ 1,787,062,568 |

FIGURE 5-7: Acquisition Costs for a Notional AirMechanized Division
(See Appendix 2 for an itemized cost summary.)

NOTE: (*) Major End Item costs are extracted from SB 700-20, dated 1 March 1984

As illustrated, the procurement cost of an Airmechanized Division is not prohibitive, when compared to that of a J-series armored division. Moreover, the AirMechanized Division provides for six attack helicopter battalions, three light attack anti-tank battalions and three airmobile infantry battalions for a total of twelve maneuver battalions, equal in number to that provided by an armored division. Furthermore, no degradation in artillery fire support is apparent, as the division's artillery brigade is both ground and air mobile.

Operating Cost:

Operating costs consist of a multitude of factors which include direct and indirect costs, as well as recurring and non-recurring costs. For the purposes of this study, only recurring costs will be evaluated. Since the AirMechanized Division is conceptual and cost factors have not been developed, the operating cost of an air assault division will be utilized. Figure 5-8 provides a cost comparision of operating costs for the division increments of a type armored division and air assault division using both CONUS-based and Europe-based data. Base operating cost data for the 1st Cavalry Division, 2nd Armored Division, 9th Infantry Division, and 101st Airborne Division (Air Assault) was provided by Mr. Mel O'Quinn, FORSCOM Comptroller's Office, for comparison and validation of the planning costs listed in Figure 5-8.

| | ARMORED DIVISION | | AIR ASSAULT DIVISION | |
|---|---|---|---|---|
| | CONUS | EUROPE | CONUS | EUROPE |
| Direct Cost | $57,085,000 | $67,541,000 | $72,206,000 | $77,019,000 |
| Indirect Costs | | | | |
| Pgm 2 (Base Ops) | 31,523,000 | 42,361,000 | 36,167,000 | 48,601,000 |
| Pgm 7 (Supply) | 12,062,000 | 47,726,000 | 13,839,000 | 54,756,000 |
| Pgm 7 (Maint) | 34,919,000 | 34,919,000 | 15,754,000 | 15,754,000) |
| TOTAL COST | $135,589,000 | $192,547,000 | $137,966,000 | $196,130,000 |

FIGURE 5-8: Comparison of Division Force Equivalent Annual Operating Cost[19]

Summary:

As one might expect, the operating cost for an air assault division is greater than that for an armored division, although the difference is less than two percent. The greatest variance lies between the operating cost of a CONUS division vis a vis a European-based division. However, associated deployment costs, if determined, might offset the skewed appraisal. The creation of an AirMechanized Division should not be delayed solely on the basis of procurement and operating costs. It has been demonstrated that the AirMechanized Division can be fielded and operated for a near equivalent cost to that of an armored division organized under the J-series Table of Organization and Equipment.

CONCLUSION

The results of the combat effectiveness and cost analysis indicate that the AirMechanized Division is comparable in operational mobility, firepower, protection, and cost to a J-series armored division. Nevertheless, the armored division and the AirMechanized Division have their own place on the modern battlefield. Although the AirMechanized Division has fewer major end items of equipment, it can deliver devastating firepower against an enemy force. While the armored division possesses staying power, the AirMechanized Division can strike deep to delay, disrupt, and destroy the enemy's vulnerable second echelon forces, optimizing its speed, firepower, and maneuverability. More significantly, the AirMechanized Division possesses an advantage over the armored division in that it has a capability to operate within a two-corps Army sector, relying on its characteristics of speed and range. Unlike any other force on the field of combat, the AirMechanized Division can transition between corps in a matter of hours rather than days. The combat power and mobility of three Attack Cavalry Regiments and the Light Attack Briade establishes the AirMechanized Division as a formidable opponent against any enemy formation. And its versatility and flexibility provide for a venerable response to nearly

every combat need. As an Army reserve, the AirMechanized Division can operate from bases well to the rear of a corps rear boundary and decisively influence the battle within minutes. Moreover, independent helicopter operations are on the US Army's doctrinal horizon. Helicopters provide mobility, speed, agility and firepower; offensive and defensive action becomes almost instantaneous. The dynamics of the "AirLand" battlefield demand quick assessments and decisive actions followed by exploitation of success. The tempo of warfare will hasten to the coalition of attrition and disruption. Possibly only the helicopter may be capable of responding in mass to the overall requirements of the future.

CHAPTER 5

## END NOTES

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# CHAPTER 6

# CONCLUSIONS AND RECOMMENDATIONS

## REVIEW OF THE STUDY

This study was undertaken in an effort to determine the optimum US Army Aviation organization for operational warfare. It began as an examination of an alternative force structure for the Corps Aviation Brigade and evolved into a study which assessed the plausibility of creating an aviation-based maneuver division subordinate to the field army commander. To answer the questions of force strength and employment level, it became necessary to understand the mechanisms through which the Soviet "operationally echeloned" forces could be defeated; they were identified as delay, disrupt, and destroy. The methodology through which this study was undertaken involved a series of four analyses: an historical overview of US Army Aviation, a brief examination of NATO and Soviet aviation doctrine and organizational concepts, the use of a wargaming analysis to describe the available options to current aviation force structure, and the performance of a cost-effectiveness survey.

First, in Chapter 2, an historical overview of Army Aviation was conducted to determine the system through which change is affected and what criteria have been established for developing aviation organization and doctrine. The result of this survey indicates that US Army Aviation doctrine has evolved from the bottom up, and that field organizations provided input to the doctrine writers, rather than doctrine directing "concepts-based organizational requirements."[1] The overview also identified an absence of operational orientation for aviation units since the creation of General Hamilton Howze's 11th Air Assault Division. Apparent in the design of the "Army of Excellence" Corps Aviation Brigade is a tendency for aviation organizational designers to use the corps as a "grab bag"

for units deemed essential to the divisional force structure but not included due to imposed manpower ceilings.[2] Of particular interest to this study is the parallel proposal made by three military operationalists, Brigadier Richard E. Simpkin, General Doctor F.M. von Senger und Etterlin, and Colonel Wallace P. Franz, that some type of aviation operational maneuver division be created.[3]

In Chapter 3, Army Aviation employment doctrines and organizations on the European continent were examined. Focusing on the NATO Alliance, a correlation was made between defense policy, military strategy, and aviation doctrine. In the majority of Western European countries, the helicopter is viewed solely as a tactical transporter or tank-killer with limited consideration for cross-FLOT heliborne operations into the enemy's operational depth. Concentrating on the employment of single-purpose aircraft, the "continental" members of NATO tend to organize aviation assets into specialized aviation modules, forming units no larger than a brigade, which are usually committed in squadron (company) size strength. This piecemeal approach precludes the operational commander from massing overwhelming combat power at the decisive point and time on the battlefield and neutralizes the helicopter's advantages of maneuverability, speed, surprise, and depth.[4]

The Soviets and Warsaw Pact, on the other hand, have capitalized on the operational capabilities of the helicopter and consider heliborne forces an essential ingredient in their operational scheme of maneuver. A significant decision made by the Soviets is reflected in their policy to employ helicopter battalions at the division level, as well as maintain their Independent Assault Helicopter Regiment's under Frontal Aviation command.[5] This decision appears to be remarkably similar to the US decision to enhance the combat power of the Corps Aviation Brigade. However, a significant difference is evident in Soviet helicopter employment doctrine at the operational level of warfare, which far

exceeds any attempt made by the United States or any other NATO member. They have addressed the problem of battlefield endurance, although in an elementary manner, by having the assault helicopters carry additional bulk fuel in their cargo compartments, extending their operating radius by almost 50 percent.[6] The critical difference between Soviet and NATO heliborne doctrine is in its orientation. Most of NATO's armed forces are restricted to fighting defensive battles with little operational depth on either side of the FLOT. The Soviets, in contrast, seek to prosecute the deep and close-in battles simultaneously. And, assault aviation is the primary means through which their operational doctrine of "deep battle" is translated into combat operations.[7]

In Chapter 4, the third analysis was performed, that of determining the operational capabilities of an AirMechanized Division (Figure 6-1), and whether this conceptual organization should be employed at the corps or field army level. The method used to arrive at a conclusion was the "wargaming analysis." It compared the operational capabilities of three organizational models, using an hypothetical Central European Conflict Scenario in the Central Army Group (CENTAG) Area of Operations. Model A represented a standard US Army corps organized with an organic aviation brigade. The basic organizational structure of this model was in accordance with the J-series Table of Organization and Equipment. Model B represented an otherwise standard US Army corps except that it had an organic AirMechanized Division in lieu of the Corps Aviation Brigade. This division has an Attack Cavalry Brigade, a Light Attack Brigade consisting of a Light Attack Anti-Armor Regiment and an Air Assault Infantry Regiment, a Field Artillery Brigade, and a Support Aviation Group. Model C represented a standard US Army corps having an organic Corps Aviation Brigade, with the AirMechanized Division located at the field army level (in this case, CENTAG). The evaluation criteria for comparative analysis were:

1) be immediately responsive to the field army and corps commander;

2) complement the field army and corps commander's scheme of maneuver;

3) be capable of simultaneously conducting three dimensional combat - the deep battle, the close-in battle, and rear area combat operations - without detriment to committed divisions;

4) be capable of conducting and sustaining independent cross-FLOT combat operations for a period of 48-72 hours;

5) minimize battlefield signature through dispersion;

6) be capable of massing combat power quickly at the decisive point and time across the field army and corps sector;

7) be capable of conducting combat operations under all environmental conditions (terrain and weather) indigenous to the area of operations;

8) retain a high degree of mobility for anti-tank ground maneuver forces in the absence of heliborne lift assets.

AIRMECHANIZED DIVISION

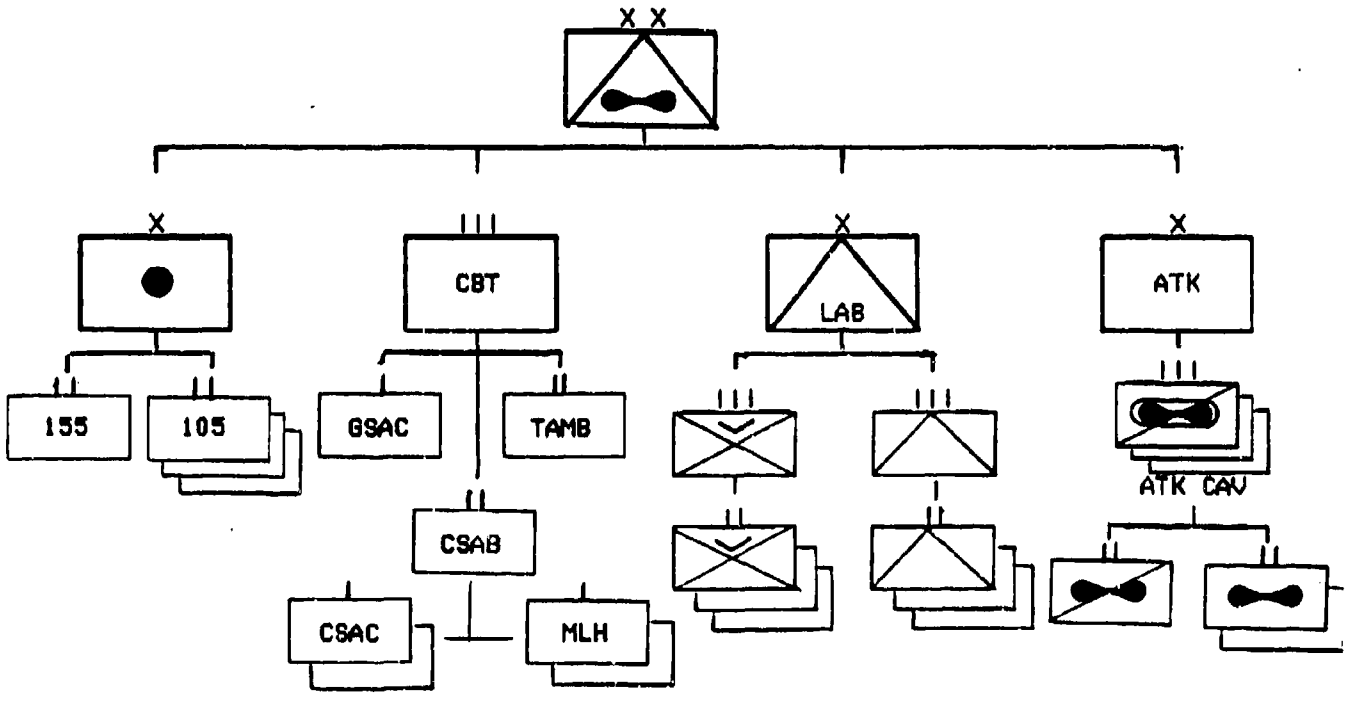


FIGURE 6-1: Organizational Diagram for an AirMechanized Division

The wargaming simulation model progressed through a series of decision cycles which were designed to determine the optimum maneuverability and fire-power requirements for an operational aviation organization. By analyzing each organization at a subsequently higher level, the AirMechanized Division was determined to possess all the necessary components for an aviation operational maneuver force; and, the optimum level of employment was determined to be at the field army level. Though comparable in cost to the Corps Aviation Brigade, the conceptual AirMechanized Division was considered not to be an appropriate alternative to that organization, primarily because it was not designed to perform the combat service support missions relegated to the Corps Aviation Brigade. Instead, the conceptual AirMechanized Division was designed as an operational maneuver force, capable of striking deep and sustaining combat in all three dimensions of the AirLand battlefield.

Chapter 5 determined the operational and cost effectiveness of a J-series armored division equipped with the M1 "Abrams" Main Battle Tank and the M2/3 "Bradley" Fighting Vehicle and the AirMechanized Division. An armored division was selected as the base unit for analysis because it most closely proximates the firepower and mobility of the AirMechanized Division. The results of the three effectiveness analyses are shown below.

| CRITERIA | ARMORED (DIV) | AIRMECH |
|---|---|---|
| Mobility | 8.4 | 8.6 |
| Firepower | 7.6 | 7.4 |
| Protection | 4.0 | 4.0 |
| TOTAL EFFECTIVENESS RATING: | 20.0 | 20.0 |

Although neither organization has a demonstrated advantage in the battlefield environment, both have the capability to exploit a given situation in which the

other would be considerably less effective. With respect to procurement and operating costs, the AirMechanized Division, again, is comparable to a J-series armored division. Therefore, the results of the cost-effectiveness analysis should dispel any immediate supposition that an aviation-oriented operational maneuver division is not affordable, either in terms of mission performance or acquisition and operating costs.

## CONCLUSIONS

The results of the wargaming and cost-effectiveness analyses indicate that the AirMechanized Division is the optimal aviation force structure design for employment at the operational level of warfare. This study infers that a pure aviation organization does not possess the relative combat power and battlefield endurance necessary to make it a viable independent maneuver force. Given the requirement to conduct combined operations with a ground force, the AirMechanized Division optimizes the capability of aviation by incorporating light, air transportable, highly mobile forces which are designed to complement the firepower and mobility of the attack helicopter. By operating in the "land sky" environment, the AirMechanized Division overcomes the mobility inhibitors of terrain and battlefield density. The field commander can influence the deep battle, confuse the enemy, and seize the initiative through the optimal use of the AirMechanized Division's speed and operating range.

The concept of an AirMechanized Division is feasible and needs to be assimilated into the US/NATO's total force structure. The division provides a separate maneuver headquarters through which operations deep into the enemy's follow-on echelons can be conducted. By relying on its speed to mass forces, the AirMechanized Division can be dispersed throughout a corps' rear area and still be responsive to the commander's battlefield requirements. The division also has the capability to operate in nearly all environmental conditions and

provides an enhanced level of battlefield sustainability. The AirMechanized Division possesses the capability to execute all three mechanisms of AirLand battle within its three dimensions.

In terms of combat effectiveness, the AirMechanized Division shares a comparable rating to that of an armored division. Nevertheless, it must be understood that the attack/assault helicopter is not a panacea for defeating a sophisticated enemy force which possesses an overwhelming superiority in battlefield systems, firepower, and manpower. No single system is capable of defeating, or even neutralizing, the Warsaw Pact threat in Central Europe. That task requires the synergistic effect of combined arms employed at the decisive time and place. And, the AirMechanized Division accomplishes this task by effectively coordinating airpower and land-based firepower. The disadvantage of the helicopter in its limited battlefield endurance is offset by the presence of the Light Attack Brigade. The vulnerability of the helicopter to air defense systems is reduced by employing Target Acquisition and Laser Designator Teams which can direct missile engagements without causing the aircraft to expose itself. And air transportability equates to responsiveness, speed, and flexibility on the battlefield.

The AirMechanized Division is an affordable organization in terms of both procurement and operating costs. The cost effectiveness analysis demonstrated that the AirMechanized Division is as expensive to operate as a type armored division, whose procurement cost and combat effectiveness it approximates. Equally important is the cost of conducting combat operations. With the exception of missile/projectile costs, the AirMechanized Division and armored division demonstrate an equitable combat operating cost, based on component replacement costs and fuel consumption data.

The AirMechanized Division is best employed at the field army level. First, this dictates that the AirMechanized Division would not be committed piecemeal into the battle or have assets diverted to conduct mission support operations, an inclination historically exhibited if assigned to the corps. Significantly, as a field army reserve, the AirMechanized Division can be dispersed in the rear area of two corps and be able to mass quickly. This reduces its vulnerability to interdiction and maximizes its characteristic of speed. Third, the AirMechanized Division can attack through operational depth of the opposing commander's formations by virtue of its combat radius, and, as an attribute of speed, can do it much more quickly than a ground-oriented force. Finally, the field army possesses the logistical base necessary to coordinate support requirements for the AirMechanized Division as it conducts battle at the operational level.

## RECOMMENDATIONS

The combat effectiveness of the AirMechanized Division should be validated through the use of a computer-assisted wargaming simulation. The essential factors that need to be assessed are "protection" and "battlefield endurance." The primary issue that needs to be resolved focuses on combat sustainability as it relates to continuous combat power in an objective area. The result of achieving protection through mobility needs to be more exactly determined with regard to systems' vulnerability. The computer simulation should also be used to examine variations of the AirMechanized Division to determine the optimal organizational structure. For example, where the author proposed the formation of a Combat Support Aviation Battalion composed of two UH-60 "Black Hawk" companies and two CH-47 "Chinook" companies, the optimum organization may have three of one type company and one, two, or three of another type. Then, the resultant organization should be subjected to another cost-effectiveness

analysis to determine if the acquistion and operating costs fall within the parameters for fielding such an organization.

The AirMechanized Division concept should be field-tested using the 9th Infantry Division as the test bed. It could be deployed to the Fort Irwin National Training Center (NTC) and evaluated in a force-on-force analysis against the "OPFOR" Red Forces. The accumulated computer-assessed battle damage and loss data should be examined with regard to organizational capabilities and limitations, the overall feasibility of the concept, and the aviation employment doctrine. The use of the 9th Infantry Division is suggested because its current organization closely proximates that of the AirMechanized Division.

The AirMechanized Division should be favorably considered for development and employment at the field army level in NATO. Specifically, one unit should be employed in CENTAG, and another possibly employed in NORTHAG. In order to reduce the acquisition/procurement, training, and operating costs, a composite division could be formed under the command of joint headquarters. Each country could provide either a brigade, regiment, or battalion to the organization. For example, in CENTAG, the United States could provide the division base and two of the Attack Cavalry Regiments and the West Germans could provide the third Attack Cavalry Regiment and one company each of light and medium helicopters for the composite Combat Support Aviation Battalion. The West Germans could also provide two battalions of light infantry and two Light Attack Battalions.

A final recommendation is that the Combined Arms Center's AirLand Battle Study Group should examine the conceptual AirMechanized Division as an instrument for the operational field commander to execute the deep battle. Current organizations under considerations do not include a US Army aviation-based

organization. The proposed AirMechanized division also addresses the issue of executing Battlefield Air Interdiction (BAI) without the availability of US/NATO Air Force assets.

## IMPLICATIONS

The nature of warfare is dramatically changing. For more than two decades, Army Aviation has provided mobility and fire support to the ground commander. The extension of the battlefield into the aerial dimension is not a profoundly new concept, but the role and missions that Army Aviation assumes may be revolutionized. As aerial-launched precision guided missiles increase the vulnerability of large armored formations, helicopters are filling the void created by the operational requirements of the US Air Force to devote a large share of its combat resources to the counter-air campaign. The definition of the "combat zone" is expanding to include the division's entire zone or sector as aircraft eliminate the restrictions of terrain. What before was considered as hindering terrain now requires only minutes to negotiate. The army that can exploit the capabilities of the aviation dimension of the combined arms team has a decided advantage. Furthermore, aerial heliborne combat is a facet that now confronts the battlefield commander as a result of the proliferation of aviation assets. The US Army must be prepared to meet this challenge with new doctrine, organizations, and tactics.

The proliferation of aircraft over the battlefield establishes the requirement for a more intensified airspace management program. The term, "joint-use," becomes even more of a reality as multi-echeloned commands inundate the airspace over the battlefield with mortar artillery rounds, rockets, missiles, and aircraft. Within a single corps sector, more than 300 combat aircraft could be airborne simultaneously, excluding US Air Force close air support assets. The conduct of airmobile operations could increase this

number by well over 100 assault support aircraft. And to conduct cross-FLOT operations, airspace corridors must be affected for ingress and egress of combat and combat support helicopters. New methods and techniques of airspace management need to be conducted in the immediate future.

Finally, the issue of strategic mobility requires redefinition as helicopters are being equipped with auxillary fuel tanks that allow them to deploy non-stop for distances in excess of 1000 nautical miles. This means that many of the organic aircraft of an AirMechanized Division would not require US Air Force or Navy strategic mobility assets. And, fewer strategic lift assets would be required to transport the light, mobile ground combat vehicles and combat infantry soldiers of the Light Attack Brigade. Also, the number of strategic heavy-lift assets would be minimized, which broadens the number of possible embarkation and debarkation aerial and sea ports. The overall result is that combat power can be deployed into a theater of operations quicker and employed more rapidly.

## SUMMARY

Winning on the AirLand battlefield means defeating the enemy's operational plan. To achieve victory, one must synchronize the elements of firepower and maneuver into an harmonious, devastating, offensive stroke. Delay, Disrupt and Destroy are the three mechanisms the combined arms commander seeks to employ to influence the battle or campaign decisively. Their collective effort is used to defeat the Soviet Army's operational employment doctrine of "echelonment." The cornerstone for each of these mechanisms is firepower and mobility. The terrain-oriented combat vehicle has almost achieved its upper limit, with respect to mobility. Therefore, the battlefield commander must look elsewhere to locate the arm of decision through which to execute his operational scheme of maneuver. Detailed analysis of the general concepts advanced by General

Doctor F.M. von Senger und Etterlin, Brigadier (retired) Richard E. Simpkin, and Colonel Wally Franz have demonstrated that: 1) the AirMechanized Division is a feasible model for futrue combat organizations; 2) the optimal employment of this AirMechanized Divison in Europe would be at the field army level; and, 3) a comparative analysis of the AirMechanized Division with an armored divison shows that their overall cost-effectiveness ratings are equal. According to General William R. Richardson, Commanding General, United States Army Training and Doctrine Command, ". . . Army Aviation embodies more of the principles of AirLand Battle than any of the other Combat Arms." [8]

## CHAPTER 6

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# APPENDICES

APPENDIX 1

ITEMIZED COST SUMMARY - ARMORED DIVISION

| TYPE UNIT | EQUIPMENT | NO/BN | X BNS | TOTAL | UNIT COST | TOTAL COST |
|---|---|---|---|---|---|---|
| ARMD BN | M1 MBT | 58 | 6 | 348 | $ 1,817,000 | $ 632,316,000 |
| | M3 CFV | 7 | 6 | 42 | 1,609,972 | 67,618,824 |
| | M125 Carr | 6 | 6 | 36 | 188,133 | 6,772,788 |
| | | | | | | $ 706,707,612 |
| MECH BN | M2 IFV | 54 | 4 | 216 | $ 1,609,972 | $ 347,753,952 |
| | M3 CFV | 7 | 4 | 28 | 1,609,972 | 67,618,824 |
| | M125 Carr | 6 | 4 | 24 | 188,133 | 4,515,192 |
| | ITV | 12 | 4 | 48 | 320,251 | 15,372,048 |
| | | | | | | $ 435,260,016 |
| CBT AVN BDE | | | | | | |
| AHB | AH-64 | 21 | 2 | 42 | $ 7,800,000 | $ 327,600,000 |
| | OH-58 | 13 | 2 | 26 | 201,898 | 5,249,348 |
| | UH-60 | 3 | 2 | 6 | 4,643,000 | 27,858,000 |
| | | | | | | $ 360,707,348 |
| GSAC | OH-58 | 16 | 1 | 16 | $ 201,898 | $ 3,230,368 |
| | UH-1H | 6 | 1 | 6 | 922,704 | 5,536,224 |
| | EH-60 | 3 | 1 | 3 | 3,000,000 | 9,000,000 |
| | | | | | | $ 17,766,592 |
| CSAC | UH-60 | 15 | 1 | 15 | $ 4,643,000 | $ 69,645,000 |
| CAV SQDN | M3 CFV | 41 | 1 | 41 | $ 1,609,972 | $ 66,008,852 |
| | M125 Carr | 6 | 1 | 6 | 188,133 | 1,128,798 |
| | AH-64 | 8 | 1 | 8 | 7,800,000 | 62,400,000 |
| | OH-58 | 12 | 1 | 12 | 201,898 | 2,422,776 |
| | UH-60 | 1 | 1 | 1 | 4,643,000 | 4,643,000 |
| | | | | | | $ 136,603,426 |
| DIV ARTY | M109 155 SP | 24 | 3 | 72 | $ 285,000 | $ 20,520,000 |
| DIV TRPS | M88 VTR | | | 32 | $ 836,512 | $ 26,768,384 |
| | AVLB | | | 16 | 597,264 | 9,556,224 |
| | M577 Carr Cmd | | | 125 | 184,442 | 23,055,250 |
| | | | | | | $ 59,379,858 |
| DIVISION TOTAL | | | | | | $ 1,816,589,852 |

## APPENDIX 2

### ITEMIZED COST SUMMARY - AIRMECHANIZED DIVISION

| TYPE UNIT | EQUIPMENT | NO/BN | X BNS | TOTAL | UNIT COST | TOTAL COST |
|---|---|---|---|---|---|---|
| ATK CAV BDE | | | | | | |
| ATK HEL BN | AH-64 | 21 | 6 | 126 | $ 7,800,000 | $ 982,800,000 |
| | OH-58 | 13 | 6 | 78 | 201,898 | 15,748,044 |
| | UH-60 | 3 | 6 | 18 | 4,643,000 | 83,574,000 |
| | | | | | | $ 1,082,122,044 |
| AIR CAV SQ | AH-64 | 12 | 3 | 36 | $ 7,800,000 | $ 280,800,000 |
| | OH-58 | 18 | 3 | 54 | 201,898 | 10,902,492 |
| | UH-60 | 2 | 3 | 6 | 4,643,000 | 27,858,000 |
| | | | | | | $ 319,560,492 |
| AVN SPT GP | | | | | | |
| GSAC | OH-58 | 16 | 1 | 16 | $ 201,898 | $ 3,230,368 |
| | UH-1H | 6 | 1 | 6 | 922,704 | 5,536,224 |
| | EH-60 | 3 | 1 | 3 | 3,000,000 | 9,000,000 |
| | | | | | | $ 17,766,592 |
| CSAB | UH-60 | 30 | 1 | 30 | $ 4,643,000 | $ 139,290,000 |
| | CH-47 | 32 | 1 | 32 | 5,687,993 | 182,015,776 |
| | | | | | | $ 321,305,776 |
| TAMB | UH-60 | 6 | 1 | 6 | $ 4,643,000 | 27,858,000 |
| DIV ARTY | | | | | | |
| HOW BN | M102 105mm | 18 | 3 | 54 | $ 126,016 | $ 6,804,864 |
| | HMMWV | 18 | 3 | 54 | 32,400 | 1,749,600 |
| HOW BN | M198 155mm | 24 | 1 | 24 | $ 208,000 | 4,992,000 |
| | M548 | 24 | 1 | 24 | 106,425 | 2,554,200 |
| | | | | | | $ 16,100,664 |
| LT ATK BDE | | | | | | |
| LT ATK REGT | HMMWV | 27 | 3 | 81 | $ 29,000 | $ 2,349,000 |
| DIVISION TOTAL | | | | | | $ 1,787,062,568 |

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