(2)

Army Aviation: Does It Provide an Answer to Operational Manuever in the Central Region?

A Monograph
by
Major James E. Simmons
Aviation

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

Second Term, AY 89/90

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1a. REPORT SECURITY CLASSIFICATION UNCLASSIFIED	1b. RESTRICTIVE MARKINGS
2a. SECURITY CLASSIFICATION AUTHORITY	3. DISTRIBUTION/AVAILABILITY OF REPORT Approved for public release; distribution unlimited
2b. DECLASSIFICATION/DOWNGRADING SCHEDULE	
4. PERFORMING ORGANIZATION REPORT NUMBER(S)	5. MONITORING ORGANIZATION REPORT NUMBER(S)
6a. NAME OF PERFORMING ORGANIZATION School of Advanced Military Studies, USACGSC 6b. OFFICE SYMBOL (If applicable) ATZL-SWV	7a. NAME OF MONITORING ORGANIZATION
6c. ADDRESS (City, State, and ZIP Code) Fort Leavenworth, Kansas 66027-6900	7b. ADDRESS (City, State, and ZIP Code)
8a. NAME OF FUNDING/SPONSORING ORGANIZATION 8b. OFFICE SYMBOL (If applicable)	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER
8c. ADDRESS (City, State, and ZIP Code)	10. SOURCE OF FUNDING NUMBERS PROGRAM ELEMENT NO. / PROJECT NO. / TASK NO. / WORK UNIT ACCESSION NO.

11. TITLE (Include Security Classification)
Army Aviation: Does It Provide an Answer to Operational Maneuver in the Central Region? (U)

12. PERSONAL AUTHOR(S)
Major James E. Simmons, USA

13a. TYPE OF REPORT	13b. TIME COVERED	14. DATE OF REPORT (Year, Month, Day)	15. PAGE COUNT
MONOGRAPH	FROM _____ TO _____	90/03/11	56

16. SUPPLEMENTARY NOTATION

17. COSATI CODES			18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)
FIELD	GROUP	SUB-GROUP	operational maneuver, attack helicopter, heavy corps, corps aviation, movement of corps, movement of aviation

19. ABSTRACT (Continue on reverse if necessary and identify by block number)

This monograph examines a theoritical aviation formation to determine if it offers the operational commander advantages over the heavy corps in maneuver. The aviation formation consists of three attack helicopter brigrades, one air assault brigade, and one general support brigade.

The study uses a scenario that requires the organizations to move 300kilometers and deploy into combat against a three tank division Operational Maneuver Group. A comparison is made to the time required to move the heavy corps to the time required to move the aviation formation. Additionally, the aviation formation is evaluated in its ability to inflict sufficient damage on the Operational Maneuver Group to force it to halt.

Conclusions of the study indicate that the aviation formation offers the operational commander advantages in movement over the heavy corps. The study also indicates that the aviation formation has potential to halt the OMG.

20. DISTRIBUTION/AVAILABILITY OF ABSTRACT	21. ABSTRACT SECURITY CLASSIFICATION	
☐ UNCLASSIFIED/UNLIMITED ☐ SAME AS RPT ☐ DTIC USERS	UNCLASSIFIED	
22a. NAME OF RESPONSIBLE INDIVIDUAL Major James E. Simmons	22b. TELEPHONE (Include Area Code) (913) 684-2138	22c. OFFICE SYMBOL ATZL-SWL

DD Form 1473, JUN 86 *Previous editions are obsolete*

SCHOOL OF ADVANCED MILITARY STUDIES

MONOGRAPH APPROVAL

Major James E. Simmons

Title of Monograph: Army Aviation: Does It Provide an Answer to Operational Maneuver in the Central Region?

Approved by:

Lieutenant Colonel Gordon Atcheson, MA — Monograph Director

Colonel William H. Janes, MA, MMAS — Director, School of Advanced Military Studies

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

Accepted this 7th day of June 1990

ABSTRACT

Army Aviation: Does It Provide an Answer to Operational Maneuver in the Central Region? by Major James E. Simmons, USA, 56 pages.

This study examines a theoretical aviation formation to determine if it offers the operational commander in the Central Region of NATO advantages over a conventional heavy corps in operational maneuver. The aviation organization consists of three attack helicopter brigades, one air assault brigade, and one general support brigade.

The study uses a scenario that requires the organizations to move 300 kilometers and deploy into combat against a three tank division Soviet Operational Maneuver Group. A comparison is made to the time required to move the heavy corps to the time required to move the aviation formation. Additionally, the aviation formation is evaluated in its ability to inflict sufficient damage on the Operational Maneuver Group to force it to halt.

Conclusions of the study indicate that the aviation formation offers the operational commander advantages in movement over the heavy corps. The study also indicates that the aviation formation has the potential to inflict sufficient damage on the Operational Maneuver Group to force it to halt.

Table of Contents

INTRODUCTION

This study examines a theoretical aviation organization to determine if it offers the operational commander advantages in maneuver over conventional heavy formations. The paper answers the question: To what extent can a multi-brigade corps aviation formation execute operational maneuver in the Central Region of NATO? For the purpose of this paper corps aviation is defined as: An aviation unit that is subordinate to a US corps. The unit consists of three attack helicopter brigades, one air assault brigade, and one general support brigade.

The study examines the ability of this organization to maneuver at the operational level of war. The operational level of war is a bridge between strategy and tactics. Operational art is the broad category that defines the activities at the operational level of war. Operational art is defined in the 1986 edition of FM 100-5, Operations, as: "the employment of military forces to attain strategic goals in a theater of war or theater of operations through the design, organization, and conduct of campaigns and major operations. A campaign is a series of joint actions designed to attain a strategic objective in a theater of war."[1]

This study is focused on the Allied Forces Central Europe (AFCENT) theater of operations. In the paper, AFCENT is involved in a mid-to-high intensity conflict with a Soviet

lead force.

The AFCENT campaign plan is organized around three phases. Phase I deploys the forces that have been designated to fight under the control of AFCENT to their initial defensive positions that are located on suitable terrain forward in sector. Phase II is a defensive operation primarily conducted by the two army groups that are subordinate to AFCENT. Included in this phase are branches and sequels called contingency plans (CONPLANS) that are offensively oriented maneuvers designed to defeat Soviet penetrations in either army group sector. These operations will be conducted under the direction of AFCENT. Phase III is a general counteroffensive that is planned to commence when the Soviet force has reached its offensive culminating point. This operation is designed to restore the original borders in the AFCENT region. The particular events examined in this study involve the contingency plans in Phase II.

Since this paper examines operational maneuver, it is appropriate to establish the parameters which define operational maneuver. FM 100-5 defines maneuver as: "the movement of forces in relation to the enemy to secure or retain positional advantage. Maneuver provides the commander the means to concentrate forces at the critical point to achieve the surprise, psychological shock, physical momentum, and moral dominance which enable smaller forces to defeat larger ones".[2] Operational maneuver is practiced on a larger scale

and seeks a decisive impact on the conduct of a campaign. This form of maneuver attempts to gain advantage of position before battle and to exploit tactical successes to achieve operational results. Operational maneuver is different from tactical maneuver primarily in scope and impact. A key point in the difference between the two is that operational maneuver requires anticipation of friendly and enemy actions well beyond the current battle, the careful coordination of tactical and logistical activities, and the movement of large formations to great depths.[3]

A method used to overcome numerical deficiency is to shift combat power more quickly than your opponent. This is referred to as agility in FM 100-5 and is one of the tenets of our doctrine.[4] Such quickness permits the rapid concentration of friendly strength against enemy vulnerabilities. At the tactical level, this must be done repeatedly so that the enemy continues to react to your actions rather than gain his own initiative. When a unit has a marked agility potential over an adversary and that unit has the capability to inflict significant damage on the enemy, the commander employing such a force has a significant advantage over his opposing commander.[5]

Using the above definitions of operational maneuver and tactical agility, this paper examines the theoretical corps aviation formation's ability to rapidly shift the balance of combat power at the operational level of war through

operational maneuver and the ability to destroy the enemy forces through tactical agility and combat power. If this organization is capable of successfully carrying out both tasks, it offers the operational commander a valuable tool in the conduct of his campaign.

The following information is provided as background to acquaint the reader with the organization and the current situation. The aviation formation presented in this paper is assigned to a US Corps that is successfully defending against a Soviet supporting attack in the 12th Army Group sector. The basis for the organization is a study currently being conducted by the Combined Arms Center (CAC) but modified by the author for the purpose of this paper.[6] The force structure is created by consolidating the aviation assets that are currently located in the subordinate divisions of the corps. The major difference between the CAC proposal and the formation studied in this paper is the inclusion, by the author, of three light infantry battalions in the assault helicopter brigade.[7] The author has renamed this organization the air assault brigade. The rationale for this difference will be explained in Chapter Two. The paper assumes that this organization is part of the Army force structure and that it is trained to Army standards. The unit is commanded by a major general. He is assisted by one brigadier general and a general staff.

Two criteria will be used to determine if this formation

can maneuver at the operational level of war. The criteria are:

1. Can the aviation formation examined in this paper maneuver 300 kilometers and enter into combat more quickly than the combat elements of the heavy corps? The standard for this evaluation is a comparison of the time required to move the aviation unit to the time required to move the combat formations of the heavy corps.

2. Does the aviation formation have sufficient tactical agility and combat power to stop the advance of a three division Soviet operational maneuver group? The standard for this evaluation is a comparison of the killing power of the aviation unit with the loss ratios expected in a helicopter versus an armored vehicle engagement. The conclusion will be based on the ability of the aviation formation to halt the advance of the OMG.

The halting of the Soviet OMG does not in itself constitute operational maneuver. It is used as a criteria in this paper as a measure of the ability of the aviation formation. This measure is necessary because the operational commander does not gain any advantage if the force he employs can execute the maneuver but does not have the combat power necessary to affect the outcome.

Because of the large numbers of supplies involved in aviation operations, the study also includes a brief examination of the corps aviation's ability to support operations.

This portion of the study will determine the requirement for external support.

To begin examining the evidence, it is appropriate to determine the capability for operational maneuver by the currently organized heavy corps. This evaluation is the basis of comparison between the currently fielded heavy corps and the theoretical corps aviation formation.

CHAPTER ONE

MOVEMENT CAPABILITY OF THE HEAVY CORPS

The heavy corps that is used for comparison in this paper is based on the model used in instruction at the United States Army Command and General Staff College. The structure is based on "J" series Tables of Organization and Equipment and was taken from the troop lists in Student Text 100-3, Battle Book.[8]

10th (US) Corps is a forward deployed, fully equipped, trained organization that consists of two mechanized infantry divisions, one armored division, one separate mechanized infantry brigade, a cavalry regiment, an aviation brigade, corps artillery, and a corps support command.

Because of the large number of vehicles in the Corps and the time required to move those vehicles, CINCCENT and Commander 12th Army Group decide to commit only a part of the corps to execute one of the contingency plans developed to support Phase II of the campaign plan. The remainder of the corps continues an economy of force operation in the corps' current sector under the operational control of the adjacent I (GE) Corps. The organizations designated for the move consist of one mechanized infantry division, one armored division, one cavalry regiment, elements of the corps artillery, and a portion of the combat support and combat service support units sufficient to support combat operations. A total of 13,594 wheeled vehicles and 4,657 tracked vehicles move

the 300 kilometer distance to conduct a counterattack into the flank of a Soviet breakthrough.[9]

Because of the need to support the remaining Army Group forces in sector, CINCCENT only gives 10th Corps four routes to move through the AFCENT rear. This means that approximately 3,399 wheel and 1,165 track vehicles move over each of the routes. The plan calls for the cavalry regiment to lead over each of the four routes. The regiment is followed by the armored division on the eastern two routes and the mechanized division on the two western routes. The remainder of the corps units are split over the four routes. Elements of the Corps Support Command (COSCOM) preposition at the check points along the route to provide maintenance and fuel.

The movement is the AFCENT number one priority . The planning has been centralized at AFCENT and the order issued directly to 10th Corps with Commander, 12th Army Group concurrence. One day planning time has been allocated to the corps and one day to the major subordinate units of the corps. Additionally, CINCCENT has granted one day to prepare in the forward assembly areas prior to the counterattack. Using these constraints, it will take the corps approximately six days to actually make the movement and cross the line of departure for the attack.[10]

The reader may ask the question; Does this move constitute operational maneuver? Using the definitions in FM

100-5, it does.[11] As part of the contingency plans of Phase II of the AFCENT campaign plan, this move is designed to gain positional advantage over the enemy prior to combat and exploit tactical success to achieve operational results. The successful completion of this maneuver and the tactical defeat of the Soviet OMG will eventually result in the Soviet force reaching its offensive culminating point. Once the Soviet force reaches that culminating point, AFCENT will be able to move to Phase III of the campaign plan and launch its own counteroffensive to restore the original borders.

The following information is provided to the reader to show the methodology used to develop the time table for moving the corps. D Day is the day of the attack and H Hour is the time to cross the line of departure. Since the majority of decisions in any headquarters today are made during a staff briefing to the commander, the decision for committing the corps is made at the morning staff briefing to the CINC. The staff briefs CINCCENT beginning at 0800 on D-6. At 0900 on D-6, CINCCENT approves the plan. The plan is handcarried through the Commander 12th Army Group and arrives at 10th Corps by 1200 D-6.

Since the commander is forward conferring with the two division commanders who are to make the movement, the chief of staff directs the assistant chief of staff operations (G3) and the assistant chief of staff logistics (G4) to continue planning and issue a warning order to the major subordinate

commands (MSC) that specifies the planned start times of the movement.[12] The corps staff completes planning by 2400 D-6 and the corps commander approves the plan by 0200 D-5. The corps dispatches couriers with the plan to the major subordinate headquarters and all commands have the plan by 0500 D-5.

The major subordinate commands begin their planning and approval cycle immediately. The plans are completed by 1500 on D-5. Their commanders approve the plans and the orders are issued to the units. All units receive their orders by 1700 D-5. The unit staffs complete their plans, issue orders, conduct reconnaissance, move to assembly areas, and conduct resupply and maintenance. The units are prepared to cross the start point by 0600 D-4. COSCOM units have already moved and are in position to support the move from the checkpoints on each route. COSCOM is also prepared to replenish fuel issued by units after their arrival in the forward assembly areas. The march tables call for the cavalry regiment to cross the start point at 0800 D-4. The actual road movement requires approximately 42 hours. The move is made in 18 serials on each of the four routes. Each serial consists of 10 march units of approximately 25 vehicles per march unit. The routes consist of a start point, five checkpoints, and a release point. A rest halt of 30 minutes is planned at the first checkpoint to conduct a maintenance check on the vehicles. A 10 minute halt is planned at checkpoints two through five with no halt at the release

point. Military police will be used at the release points to guide units into their assembly areas.[13] Assembly areas have been designated for each serial.[14] Units will accomplish fueling and precombat checks in their assembly areas prior to the attack. Based on these parameters, the last units will close into the forward assembly areas at 1849 D-2. This gives the units 35 hours to complete final preparations for the attack at 0600 on D Day.[15]

Since it is difficult to predict the enemy's actions as well as the location and combat capability of friendly forces six days into the future, the following paragraphs examine the move for possible time savings that would allow the CINCCENT to delay his decision to commit the corps. Since the movement time itself can only be reduced by increasing the rate of march, it is not reasonable to look at this segment to save time.[16] The remaining segments that offer potential saving are staff planning time and organization and preparation time in the forward assembly areas.

For those who have participated in large unit movements, this will seem to be an optimistic calculation. For experienced staff officers at the brigade and battalion level, doubts will exist about the ability of the higher staffs to complete their plans and, in particular, transmit or deliver those orders to the units.

Automation has made the calculation of unit moves much less complicated than in the past.[17] By using portable

computers, the calculation of a movement such as this can be accomplished in a matter of hours. Getting the information to subordinate units with a degree of security is perhaps more difficult and time consuming. The author has attempted to calculate the time required for the orders to be transmitted to the subordinate units based on normal unit locations in a defensive situation. Based on those calculations, the author believes the time portrayed in this particular scenario is the minimum staff planning time and therefore offers no time savings.

If there is time to be saved, it is on the arriving end of the movement. Since the major combat formations are the leading elements of the march units, it is possible to commit those units to the attack 24 hours after their arrival in the assembly areas, while the combat support and combat service support elements complete their movement. If this is the requirement, the cavalry regiment and the two divisions, with limited artillery and engineer support, can attack at 0600 hours on D-1.[18] This reduces the time to five days and assumes a near perfect move.

In summary, 10th Corps can cross the line of departure in five or six days and attack into the enemy penetration. The move requires accurate anticipation of the enemy's plans and rate of advancement and the accurate anticipation of friendly force's capabilities in both army group sectors. The movement itself requires detailed planning with par-

ticular emphasis on the logistical aspects of the move. To decrease the movement time, the author planned this move to continue during daylight hours. Moving during the day increases the vulnerability of the force to attack by enemy air, as well as, exposing the force to enemy intelligence collectors.

The time involved in this movement compares closely to the movement times of General Patton's Third Army during operations in the Ardennes in 1944.[19] While Patton's III Corps only moved about 160 kilometers, the march rates of the two formations were approximately the same. This appears to be a direct result of the increased size of our currently fielded corps. The author took great liberties in developing rates of movement and in tailoring the force to increase the movement speed, but was still unable to achieve a capability that greatly exceeds that of our ground formations of nearly 50 years ago. The following chapters will examine the organization, movement capability, and lethality of the aviation formation that is the subject of this study. While it is not envisioned that aviation forces would ever replace ground combat forces, it is important to examine methods of movement that increase our current capability to maneuver over the capabilities of the Army that existed nearly 50 years ago.

CHAPTER TWO

ORGANIZATION OF CORPS AVIATION

10th Corps Aviation provides a full range of aviation support to the corps and the subordinate divisions. The organization is designed to give the corps commander the ability to weight the fight within his corps to achieve decisive tactical victory within his area of responsibility. The total authorized strength of the organization is 8,687.[20] (See Annex A)

CORPS AVIATION HEADQUARTERS

10th Corps Aviation is commanded by a major general. The deputy commander is a brigadier general. The staff is organized around the chief of staff with assistant chiefs of staff in the areas of Personnel (G1), Intelligence (G2), Operations (G3), and Logistics (G4). The headquarters and headquarters company (HHC) has a total strength of 200 personnel and is one hundred percent mobile.[21]

GENERAL SUPPORT BRIGADE

The general support brigade consists of a HHC, one medium lift battalion, one air traffic control battalion, and one command aviation battalion. The unit is commanded by a colonel and has a staff sufficient to employ the subordinate battalions of the brigade. The unit has a total personnel strength of 1,550.[22] (See Annex B)

HEADQUARTERS AND HEADQUARTERS COMPANY

The headquarters and headquarters company provides com-

mand, control and communications for the brigade and organic mess, maintenance, and personnel support to the personnel assigned to the HHC. Total strength for HHC is 100.[23]

MEDIUM LIFT BATTALION

The medium lift battalion is organized with a HHC and three medium helicopter companies each with sixteen CH-47D aircraft. The organization is designed to provide aerial logistic capability to the corps.[24] The unit is capable of maintaining a 75% operational readiness rate which translates into a total of 36 aircraft available each day. Each CH-47D is capable of carrying an external load of 20,000 pounds. The normal cruising speed of the aircraft is 285 kilometers per hour with an internal load and 185 kilometers per hour with an external load. The aircraft has a fuel endurance of two hours and thirty minutes at normal cruising speed.[25] This gives the battalion the capability to move 720,000 pounds of supplies or 108,000 gallons of fuel 185 kilometers in a four hour period.[26] Total personnel strength is 650.[27]

AIR TRAFFIC CONTROL BATTALION

The air traffic control battalion (ATC) is designed to provide assistance to the corps aviation commander in the management of air traffic within the corps area. The ATC battalion is capable of maintaining and operating five instrumented airfields within the corps area. This gives the command the capability to conduct recovery operations in instrument flying conditions and limited air traffic management

in the corps area.[28] Total strength of the battalion is 400 personnel.[29]

COMMAND AVIATION BATTALION

The command aviation battalion consists of an HHC, a command aviation company, a target acquisition company, a light observation company, and a command and control company. The battalion is responsible for providing command and control aircraft for the corps and corps aviation. The organization also provides target acquisition for corps artillery. The unit is equipped with five U-21 aircraft for utility and radio relay use, fifteen OH-58D for target acquisition, fifteen OH-58C for corps aviation command and control, and thirty UH-1H for corps and corps aviation command and control.[30] The battalion has a total personnel strength of 400.[31]

AIR ASSAULT BRIGADE

The air assault brigade consists of a headquarters, three light infantry battalions, and three assault helicopter battalions. The mission of the brigade is to conduct air assault operations to seize and hold critical terrain necessary for successful corps aviation operations. The aviation portion of the brigade is also capable of conducting supply operations in support of the brigade and the corps. The brigade is commanded by an infantry colonel. The deputy is an

aviation lieutenant colonel. The staff includes a S1 (Personnel), S2 (Intelligence), S3 (Operations), and S4 (Logistics). The brigade has a total strength of 3,637.[32] (See Annex C)

HEADQUARTERS AND HEADQUARTERS COMPANY

The headquarters and headquarters company provides command, control and communications for the brigade and organic mess, maintenance, and personnel support for the personnel assigned. The headquarters is 100% mobile. Total personnel strength is 150.[33]

LIGHT INFANTRY BATTALION

The light infantry battalions are organized with a headquarters, three light infantry companies, one 105mm artillery battery, and one air defense battery. They are organized and equipped to conduct combat operations against light enemy forces. When transported by the brigade's organic aircraft, the battalions are capable of seizing key terrain and facilities for use by the corps or corps aviation. Additionally, the battalions are capable of providing security to key logistics facilities when conducting operations across the forward line of friendly troops. The battalions can also seize key terrain and conduct linkup operations with other combat forces in the corps. Total strength of the battalion is 754.[34]

ASSAULT HELICOPTER BATTALION

The assault helicopter battalions are organized with a

headquarters and two or three assault helicopter companies. The battalions are capable of conducting air assault operations in support of the light infantry battalions and supply operations in support of the corps and corps aviation. Two of the three battalions are equipped with 45 UH-60 aircraft organized in three companies. One battalion is equipped with 30 UH-60 aircraft organized in two companies. The battalions are capable of maintaining a 75% operational readiness rate which translates into 90 aircraft available in the brigade each day. This gives the brigade the capability to air assault the combat and combat support elements of the three light infantry battalions simultaneously.[35]

In normal configuration, the UH-60 is capable of carrying 6,000 pounds of personnel or supplies at a normal cruise speed of 270 kilometers per hour. If supplies are carried externally, the aircraft is capable of sustaining a cruise speed of 185 kilometers per hour. This gives the brigade the capability to move 540,000 pounds of supplies or 90,000 gallons of fuel 185 kilometers in a four hour period.[36] The assault helicopter battalions have either 425 or 375 personnel assigned.[37]

ATTACK HELICOPTER BRIGADE

There are three attack helicopter brigades assigned to the corps aviation. The brigades are organized with a HHC

and varying numbers of attack helicopter battalions. Two of the three brigades are organized with three attack helicopter battalions. The third brigade is organized with four battalions. Each brigade is commanded by a colonel and assisted by a staff. The total personnel strength of the brigades varies between 1000 to 1300 depending on the number of attack battalions assigned. (See Annex D)

HEADQUARTERS AND HEADQUARTERS COMPANY

The HHC provides command and control for the subordinate battalions assigned. The unit is one hundred percent mobile and has 100 personnel assigned.[38]

ATTACK HELICOPTER BATTALION

Each battalion is organized with a HHC and three attack helicopter companies. The battalion is equipped with 15 AH-64 attack helicopters, 10 OH-58D helicopters, and 3 UH-60 helicopters.[39] The battalions are capable of maintaining a 75% operational readiness rate which translates into 11 or 12 AH-64s available for operations each day. The aircraft in the battalion carry a variety of weapons to include the Hellfire missile, 2.75 inch rockets, and 30mm cannon. They can cruise at 270 kilometers per hour and have an endurance in Europe of two hours and thirty minutes.[40]

CHAPTER THREE

MOVEMENT OF THE CORPS AVIATION

In the scenario presented in this chapter, CINCCENT decides to commit the corps aviation of 10th US Corps to move 300 kilometers north and counterattack into the expected flank of the breakthrough.

As in the discussions about the heavy corps in Chapter One, this movement and counterattack constitute operational maneuver as defined by FM 100-5.[41] The successful completion of the maneuver will result in the halting of the OMG and eventually lead to the Soviet force reaching their offensive culminating point. Once this occurs CINCCENT will execute Phase III of the campaign plan by conducting the counteroffensive to restore the borders.

The following paragraphs are a detailed examination of the movement of the corps aviation. The CINCCENT decision is passed to 12th Army Group. Commander, 12th Army Group passes the mission to Commander, 10th Corps and informs Commander, 12th Allied Tactical Air Force of the planned movement to provide time to deconflict airspace and air defenses. 10th Corps passes the mission directly to the corps aviation commander for planning and execution. One day planning is allocated to the corps aviation staff. Additionally, CINCCENT has authorized one day planning time in the forward assembly areas prior to the attack. [42]

Corps aviation will move 383 aircraft and 542 wheeled

vehicles.[43] Because of congestion in the 12th Army Group sector, three air and three ground routes will be used.

Based on these restrictions, 10th Corps Aviation will be able to complete the move and attack in four days. The movement is organized in the manner the commander of the corps aviation intends to fight the force. He has task organized his force into three brigade size task forces. Each task force is commanded by the commander of one of the attack helicopter brigades. The brigade task forces consist of attack helicopter battalions, air assault battalion task forces (each task force consists of one light infantry battalion, one assault helicopter battalion, one artillery battery, one medium lift platoon, and one battery of air defense artillery).[44]

The commander of the air assault brigade is a contingency planning headquarters for the operation. He has been given the mission to plan for an attack on key command and control facilities of the OMG. Although his forces have currently been placed under the operational control of the attack helicopter brigades, they are capable of rapid concentration through the use of their organic aircraft. Therefore for planning purposes, he has been allocated the organic forces of his brigade plus three attack helicopter battalions. This contingency will be executed at the direction of the commander corps aviation.

Each of the three brigade size units have been given one

air and one ground route from their current assembly areas to the forward assembly areas. The forward assembly areas are outside the range of enemy indirect fires, but are not under friendly control. Because of ground support requirements (refueling and maintenance), the commander plans for the ground support elements to arrive in the assembly area prior to the arrival of the main aviation assets. The commander plans for the ground support elements to arrive in time to set up refueling operations and prepare for the arrival of the attack helicopters.

Prior to the arrival of the ground support elements, the air assault task forces that are under the operational control of the attack helicopter brigades will secure the assembly areas. This step is necessary because the ground support elements lack the personnel and weapons to secure the assembly areas and set up maintenance and logistics operations. As mentioned earlier, the assembly areas are located outside the expected range of enemy artillery, but in a area that is not physically occupied by friendly forces. It is possible that the areas could even be occupied by reconnaissance elements of the enemy. The bottom line is that on a non-linear, fluid battlefield, it is necessary to secure the base of operations prior to committing major combat elements to the attack.

The air assault brigade, or as in this case, its separate battalion task forces, is ideally suited for such

operations. The aircraft give the battalions rapid mobility and when equipped with modern effective antitank, infantry, indirect fire, and air defense systems, the force is capable of securing the assembly areas against enemy reconnaissance or infantry units.

As the reader can see, the movement of the ground elements, air assault elements, and attack helicopter elements requires coordination and synchronization if the separate units are to arrive in the assembly areas according to the desires of the commander. The following paragraphs explain the methodology of the actual move.

The actual movement portion of the entire force requires only nine hours and twenty five minutes. The ground movement requires seven hours and thirty seven minutes for all elements to close into the assembly area.[45] The aircraft require one hour and fifty two minutes to close using 185 kilometers per hour ground speed.[46] The commanders allow for one hour and thirty minutes from arrival of the ground elements in the assembly areas for set up of refueling operations prior to the arrival of the attack helicopters, thus accounting for the total time of the move.[47]

The same assumptions apply to this move that applied to the movement of the heavy corps. Those assumptions are: The AFCENT staff has anticipated the need to move forces to the north and has given warning orders and preliminary plans to the 12th Army Group staff.

Once again, D-Day is the day of the attack and H-Hour is the time of the attack. CINCCENT makes the decision to commit 10th Corps Aviation at 0900 on D-4. The plan is hand carried to Commander, 10th Corps Aviation and arrives at 1200 D-4. The plan has the concurrence of Commander, 12th Army Group and Commander, 10th Corps. Since there are fewer units to move, less staffs to coordinate with, and simpler planning because of the air movement, the staff is completed with their planning in twelve hours. The commander approves the plan at 2400 D-4 and the subordinate units receive their orders by 0300 D-3. They complete their planning and issue orders by 1500 D-3. The first units cross the SP at 0650 D-2 and the ground movement is completed by 1427 D-2. The air assault elements cross their start point at 1035 D-2 and secure the assembly areas prior to the arrival of the ground elements. The remainder of the aviation elements cross the start point beginning at 1423 D-2 and the air movement is completed by 1615 D-2. The unit completes reconnaissance and planning on D-1 and attacks at H-Hour on D-Day.

As in the previous movement, the combat elements can complete the movement more quickly than the support elements. However, 10th Corps Aviation cannot save a day by committing its combat forces prior to the arrival of the support elements. This is true because of the relatively short time in which the aviation units consume their on board fuel and ammunition. The force could, however, attack with

less than twenty four hours allotted for reconnaissance. If they used the morning hours of D-1 for reconnaissance, the force could attack by 1200 hours on D-1. This would make the total time to complete the movement and cross the line of departure slightly over three days.

Very important in the consideration of such a move is the logistics involved and whether or not the force has the capability to support itself, or if it must be supported by a higher headquarters. While 300 kilometers represents a major distance for a ground unit to move, this is considered only an intermediate move for the aviation formation. This is because each vehicle involved in the movement is capable of making the move without refueling and still have some reserve. The battalions are replenished from organic stocks carried by the support platoons of the battalions. The support platoons must then be replenished for the unit to sustain itself. This aspect of logistics will be discussed in the following chapter. To summarize, the organic vehicles and aircraft of the corps aviation have the ability to move 300 kilometers without refueling, organic support platoons can replenish the aircraft and vehicles for the attack, but the support platoons then require replenishment prior to corps aviation continuing the operation.

Based on the capabilities and limitations discussed in this chapter, it is clear that 10th Corps Aviation has the ability to move 300 kilometers and enter combat in four

days. This time can be reduced by eliminating some time reserved for planning and reconnaissance at the forward assembly area. The minimum time required is just over three days.

The heavy divisions and cavalry regiment of 10th Corps require six days to complete the move and cross the Line of Departure. This time can be reduced by committing the force to the attack prior to the arrival of some of the combat support and combat service support elements. The minimum time required for the commitment of this force is just over five days.

Based on this comparison, the aviation force studied in this paper has the ability to move 300 kilometers in two thirds the time required for the ground force that is depicted.[48] This speed of movement offers the operational commander considerable flexibility. First, it does not require that the commander or his staff look as far into the future to make decisions about the commitment of combat power. Second, if the commander makes a mistake and commits the corps aviation against an enemy force that will not yield operational results, this movement capability gives the commander a chance to recover, concentrate his forces, and strike the enemy in a location that will yield the desired results.

Additionally, because of the speed of the actual movement (9 hours and 25 minutes for the corps aviation to 41 hours and 53 minutes for the heavy corps), the commander has

the option of making the movement during the hours of darkness.[49] This increases security and surprise for the counterattack.

This movement capability is only important if the force has the capability to inflict significant damage on the enemy force. The following chapter will examine the combat power potential to determine if 10th Corps Aviation has the ability to delay or stop the advance of a three division operational maneuver group.

CHAPTER FOUR

COMBAT POWER OF 10TH CORPS AVIATION

The preceding chapter demonstrated the movement capability of 10th Corps Aviation. This movement capability is of little use to the operational commander, however, if the unit does not possess the combat power necessary to accomplish the desired end state. In this case, 10th Corps Aviation has been deployed 300 kilometers north of its previous location to stop the advance of a three division Soviet operational maneuver group. [60]

It is important to determine what is required to stop the advance of a Soviet operational maneuver group. It is generally accepted that Soviet formations will continue to attack as long as there is sufficient combat power to continue movement. Once the unit suffers 60% losses or more it is speculated that the unit will halt and assume a hasty defense while awaiting the follow on Soviet forces to pass through and continue the attack.[61]

In this particular study, the Soviet force consists of three tank divisions. These three divisions have approximately 2,175 armored vehicles.[62] The paper assumes that the Soviets have 85% of their vehicles operational.[63] This equates to 1,848 armored vehicles in the operational maneuver group. The aviation force has to kill 1,108 of these vehicles to meet the 60% requirement for forcing a Soviet force to assume the hasty defense. The remainder of this chapter

will examine the capability of 10th Corps Aviation to inflict such damage while remaining a viable combat force.

The primary striking force for 10th Corps Aviation is the 10 attack helicopter battalions and the 3 infantry battalion task forces. These battalions have a total of 150 AH-64 attack helicopters, 24 artillery pieces, 27 air defense guns, 72 air defense missiles, and 1,500 highly trained infantrymen. The force is capable of maintaining a daily operational readiness rate of 75% for its aircraft. This gives the commander the capability to conduct the first attack with 113 aircraft on D-Day.[54]

Two important figures will determine the outcome of this study. The first figure is the kill to loss ratio. For the purpose of this paper that ratio will be 13 armored vehicles killed to 1 attack helicopter lost to combat action.[55] It is important to note that this paper assumes that neither side will be able to return any of these systems to action during the time period examined. Two factors give the attack helicopter such a significant advantage over the armored vehicle. The first of these factors is the tactical agility advantage that the attack helicopter enjoys over the armored vehicle. This agility advantage allows the helicopter to traverse terrain that forces the armored vehicle to slow down or forces the use of engineer assets. The second factor is the stand off capability of the helicopter's weapon systems.

The second figure is the probability of hit/kill for

the launch of the Hellfire missile. For this paper, that number will be 35%.[56] This means that for each missile fired there is a 35% probability that the missile will fly to a target, hit that target, and cause enough damage to the equipment or crew that the vehicle is no longer able to continue in the fight.

The study will examine two important areas to determine if the capability exists to stop the operational maneuver group. The first is actual capability to destroy enough targets. The second is the capability to support the force logistically while that destruction is taking place.

The primary weapon system employed in this operation is the AH-64 attack helicopter. Each AH-64 is capable of carrying various combinations of weapons for each mission. The mix of weapons includes Hellfire missiles for the destruction of armor systems, 2.75 inch rockets for suppression fires, and 30mm cannon for close in self protection of the aircraft.[57] If the aircraft is in a situation where artillery or other aircraft can suppress enemy fires, the aircraft can carry more missiles and reduce or eliminate the rockets. In this scenario, the aircraft will not be supported by any system other than the OH-58D to provide target designation and air defense for the attacking helicopters. This means that the AH-64 will only carry eight Hellfire missiles instead of the maximum number of sixteen. The additional eight missiles will be replaced with thirty eight 2.75 inch rockets

that will provide suppression against infantry and optically sighted air defense systems.[58]

The AH-64 normally operates in conjunction with a scout helicopter. The scout helicopter locates the enemy force, designates targets for the attack helicopters, and provides security for the organization while the attack helicopters engage the enemy.[59] The scout helicopter employed in this operation is the armed version of the OH-58D. The armed version of the OH-58D is also capable of carrying a variety of munitions. These include Hellfire missiles, 2.75 inch rockets, .50 caliber machine guns, and Stinger air to air missiles.[60] This gives the aircraft the capability to protect itself against armored vehicles while accomplishing its primary mission of designating targets for the AH-64. In this study the OH-58D will not carry the Hellfire, but will carry the Stinger missile to provide air defense and 2.75 inch rockets for immediate suppression against infantry and ADA, while accomplishing the designation tasks in support of the attack helicopters.

Using these parameters, the following explains the methodology for the corps aviation to destroy enough armored vehicles to halt the OMG. Using the eight Hellfire per AH-64 and the 35% probability of kill, the aviation force requires five engagements to destroy 1,154 armored vehicles which is 46 more than required to halt the advance of the Soviet operational maneuver group.[61] The aviation force will fire

3,296 Hellfire missiles to accomplish this task while losing 89 of its 150 AH-64s to combat action.[62] (See Annex E)

The question remaining is whether or not the force has the ability to logistically support itself while accomplishing the desired end state. To begin the study of logistics for this operation, the paper must address three key areas. First is maintenance. The paper has already assumed that the force will maintain a 75% operational readiness rate with the aircraft that are physically available for the operation.[63] Second is the ability to supply the force with fuel. Third is the ability to supply the force with ammunition. The best method to determine the requirements for the force is to determine the requirements for the battalions conducting operations and then examine the ability of the force to provide for those requirements.

An engagement is defined in this paper as the completion of firing eight Hellfire missiles at hostile targets by each aircraft in the force. The five engagements that are necessary to halt the advance of the OMG may require more than one sortie per aircraft to launch all eight missiles per engagement.[64] A sortie is defined as one aircraft departing a location, completing a mission, and returning to a location on one fuel load. The requirement to fly more than one sortie to complete an engagement is based on the ability of the scouts to locate the targets, the ability to keep a good energy source on the targets for the seekers to identify, chance,

and the normal fog and friction of the dirty battlefield. [66]

This study will assume that each engagement requires each aircraft to fly an average of two sorties.[66] Each sortie will require one hour and thirty minutes of flight time from the time the aircraft departs the forward arming and refuel point (FARP) until it returns to a FARP.[67] This will provide a point to develop the fuel and ammunition figures necessary to determine the logistics of the operation.

The first logistical area the study will examine is the fuel requirements for the force. Since the main effort is being made by the 10 attack helicopter battalions, the study will first determine their requirements.

Each AH-64 consumes 900 pounds of fuel for each hour it is in operation. Using this as the base line figure and two sorties of one hour and thirty minutes (1.5 hrs) as the requirement for an engagement, it will require 1,104,300 pounds or 169,892 gallons of fuel for the attack battalions to complete the five engagements necessary to halt the advance of the OMG.[68]

The attack battalions each have the capacity to carry 12,500 gallons in the support platoons of the HHC.[69] This gives the force a total of 125,000 gallons at the beginning of the operation. This fuel would have initially been used to fuel the aircraft after the movement north. This move required approximately two hours of flight time and would have consumed 31,300 gallons of fuel.[70] This would have left

93,700 gallons of fuel on hand for the start of the operation. This is a short fall of 76,191 gallons for the total operation. This means that the entire fleet of fuelers must be replenished prior to the second engagement. [71]

The aircraft of the medium lift and assault helicopter battalions have the ability to move approximately 200,000 gallons of fuel 185 kilometers during a given four hour period.[72] If only a portion of the assets are committed to this task more time will be required, but the capability exists to supply the fuel portion of the operation by air.

The attack battalions will fire 3,296 Hellfire missiles, 15,542 rockets, and approximately 100,000 rounds of 30mm ammunition during the operation.[73] They will make the initial deployment with 904 missiles, 4,294 rockets, and 56,500 rounds of 30mm loaded on the deploying AH-64s.[74] The remaining ammunition will be deployed on the HEMMTs of the support platoons and aircraft of the medium lift battalion and assault helicopter battalions. In this particular case, the size of the ammunition and its packing material causes the vehicles (both air and ground) to reach a space capacity prior to exceeding the weight carrying capacity of the machines involved. The result is that the HEMMTs can carry enough ammunition for engagements three and four, while the CH-47s and UH-60s carry the ammunition for engagement five. This is made somewhat less difficult by the decreasing requirement for ammunition as helicopter numbers are lower af-

ter each engagement.

The corps aviation force structure examined in this chapter has the theoretical capability to stop the advance of a Soviet operational maneuver group. It has both the killing power and sufficient assets to maintain, fuel, and supply the force.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

This paper has examined a theoretical aviation formation to determine if it offers the operational commander advantages in maneuver over conventional heavy forces. Specifically, the study was designed to answer the question: To what extent can a multi-brigade corps aviation formation execute operational maneuver in the Central Region of NATO?

The study used two criteria to determine if the aviation formation offered potential at the operational level of war. These criteria were:

1. Can the aviation formation examined in this paper maneuver 300 kilometers and enter into combat more quickly than the combat elements of the heavy corps? The standard for this evaluation was a comparison of the time required to move the aviation formation to the time required to move the combat formations of the heavy corps.

2. Does the aviation formation have sufficient combat power to stop the advance of a Soviet operational maneuver group? The standard for this evaluation was a comparison of the killing power of the aviation formation with the loss ratios expected in a helicopter versus armored vehicle engagement. The conclusion was based on the ability of the aviation formation to halt the advance of the operational maneuver group.

The study concludes that the aviation formation can

conduct the 300 kilometer move more quickly than the combat elements of the heavy formation. The ability to conduct this movement offers the operational commander a considerable advantage in maneuver at this level and can play an important role in the positioning of forces.

The evidence presented in this study indicates that the aviation formation can move 300 kilometers in 66% of the time required of the two division formation that was used as a basis of comparison. In fact, the author was forced to reduce the size of the heavy formation used for evaluation to present a more balanced appraisal. The total number of vehicles evaluated in this study represented an attempt to move only those vehicles absolutely necessary to conduct and support combat operations. While this study used 13,594 wheel and 4,657 track vehicles, a similar study used 17,988 wheel vehicles and 5,772 tracks.[78]

The author has used similar planning time for the staffs involved, but actually used much less time in computing the move for the aviation formation. This is a direct result of the large difference in the total number of vehicles moved and the fewer layers of staffs and headquarters that the planning has to go through. If this is taken into consideration, the aviation formation can actually move the 300 kilometers in approximately 23% of the time required of the heavy formation.[78]

The study concludes that the aviation formation has the

combat power to halt the advance of the Soviet operational maneuver group. The reader may question the conclusion by asking: How will the OMG commander know he is at 60% strength and what makes the author sure the Soviet commander will halt even if the commander can determine the OMG is at 60% strength? The answer to this question is difficult. First, the author has assumed that the Soviet force will make the normal reports associated with military operations and that the Soviet commander will have an understanding of his organizational strength. Second, the author has assumed that the Soviet commander will adhere to normal offensive norms while conducting the operation. Third, even if the force does not stop, its lacks the combat power to effect an operational result such as dividing NATO.

The reader may also ask: Would a NATO commander commit the aviation formation knowing that the force will lose over 60% of its attack helicopters during the operation? Again the answer is difficult. The risk of such a loss must be considered, but the author believes that if the operational results of such a maneuver would significantly contribute to the commander's end state that the loss of the aviation force is justifiable.

The study concentrated on the attack helicopter battalions and did not consider the effect of the air assault brigade on the enemy's command and control systems. This unit is a definite asset even in the limited role it played in

this study. The security of the assembly area and forward arming and refueling points is currently the mission of the ground support crews that must maintain the aircraft and armament systems. The air assault brigade provides for the security of both of these critical locations.

Finally, the formation has sufficient logistic movement capability to support both its fuel and munitions requirements. This is based on a combination of the ground capability found in the HEMMT fuel truck, HEMMT cargo truck, and the air capability of the CH-47D and UH-60.

RECOMMENDATIONS

1. The Army should continue to study the consolidation of aviation assets at the corps level to determine if it does offer tactical and operational advantages over the current force structure. That force structure should be robust enough to conduct 24 hours a day operations. It should also have an infantry force of sufficient size to conduct security operations and air assault operations necessary to disrupt the enemy's operational tempo.

2. The Army must reduce the size of its heavy formations while increasing their lethality. A very detailed examination should be conducted to determine why a heavy division requires 5,000+ vehicles. Part of that study should be an analysis of how many passengers are currently being transported during exercises by the UH-60 assault helicopter company assigned to the current aviation brigade in the divi-

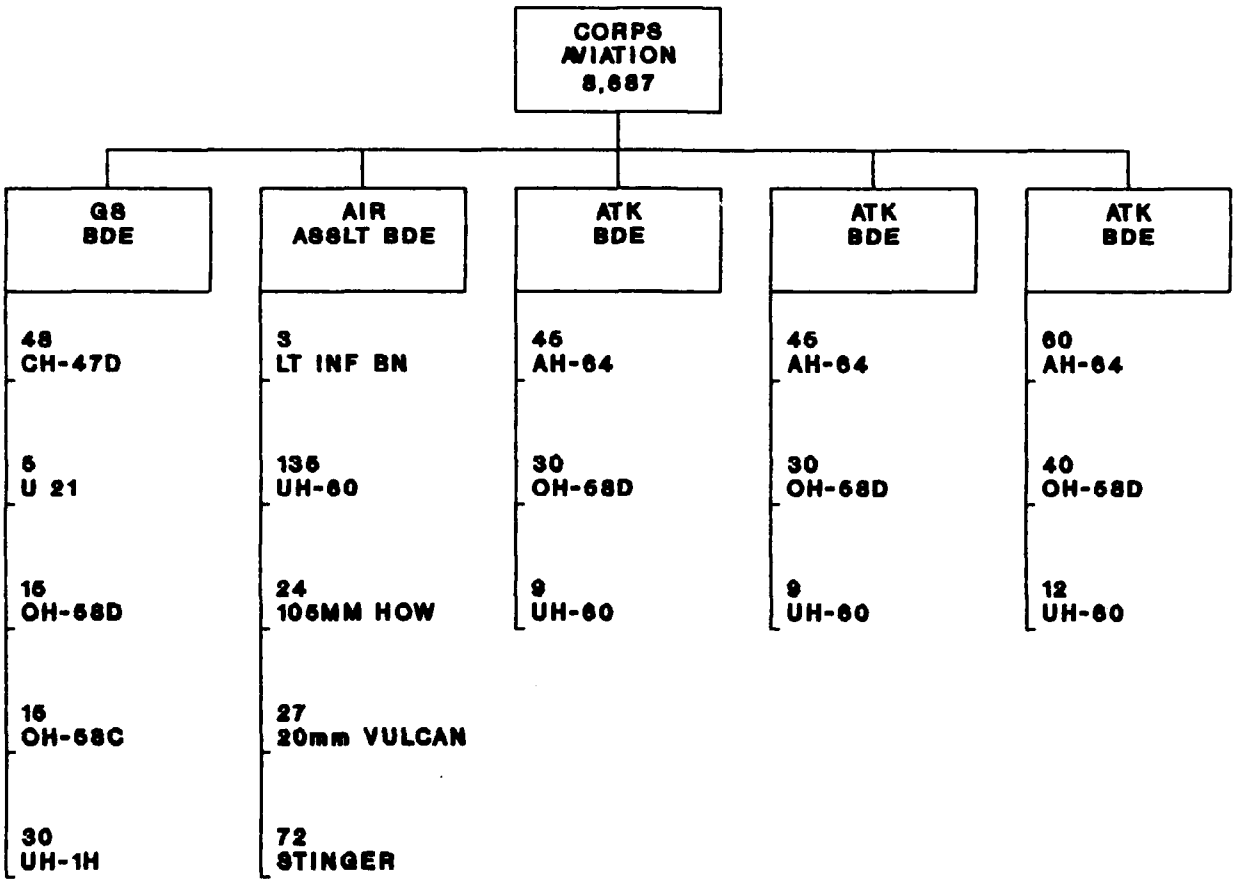
sion. While there are large numbers of vehicles in the divisions, the corps units also require examination.

There will be much debate in the near future about force structure and which combat systems should be funded and which should be placed on the shelf. This paper does not advocate replacing ground units with aviation forces. What it does advocate is the utilization of all the combat forces of our Army to their fullest potential. The units fielded must possess the best combat capability and offer the best potential for our units to fight and win. If the consolidation of aviation forces at the corps level gives the Army an increased capability, that is where we should locate those assets. If future studies indicate that better combat potential results from aviation formations remaining at the division level, they should remain at that level.

The caution is that campaigns, and ultimately wars, are won and lost at the operational level of war. Any study that examines the Army of the future must include an evaluation of our units' ability to function at that level of war. This study indicates that a corps level multi-brigade aviation formation offers considerable potential to operate successfully at this level.

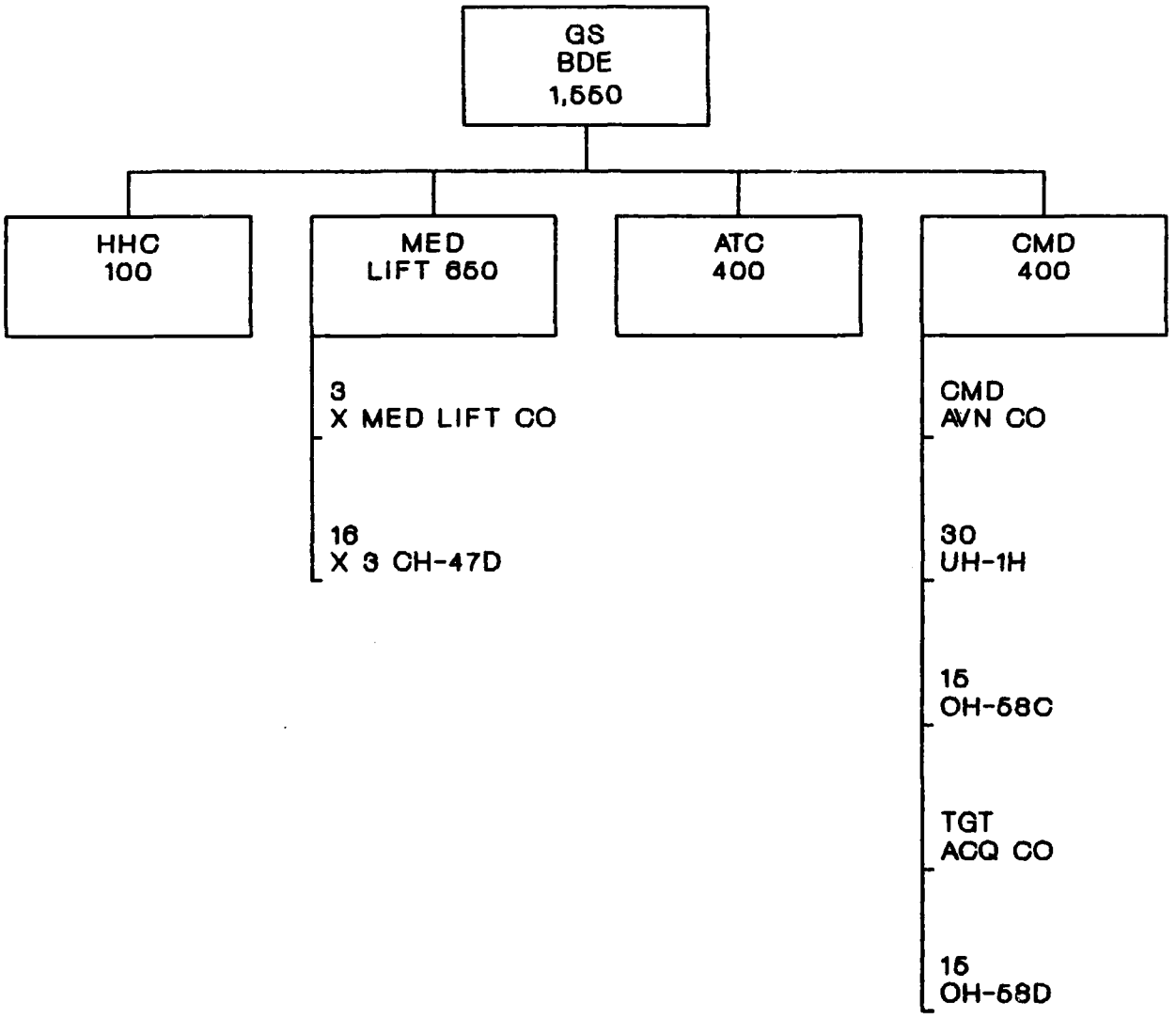
There is no doubt that Army Aviation offers advantages to commanders at all levels. It is important that this valuable resource be applied when and where it yields the best dividend.

HEAVY CORPS AVIATION



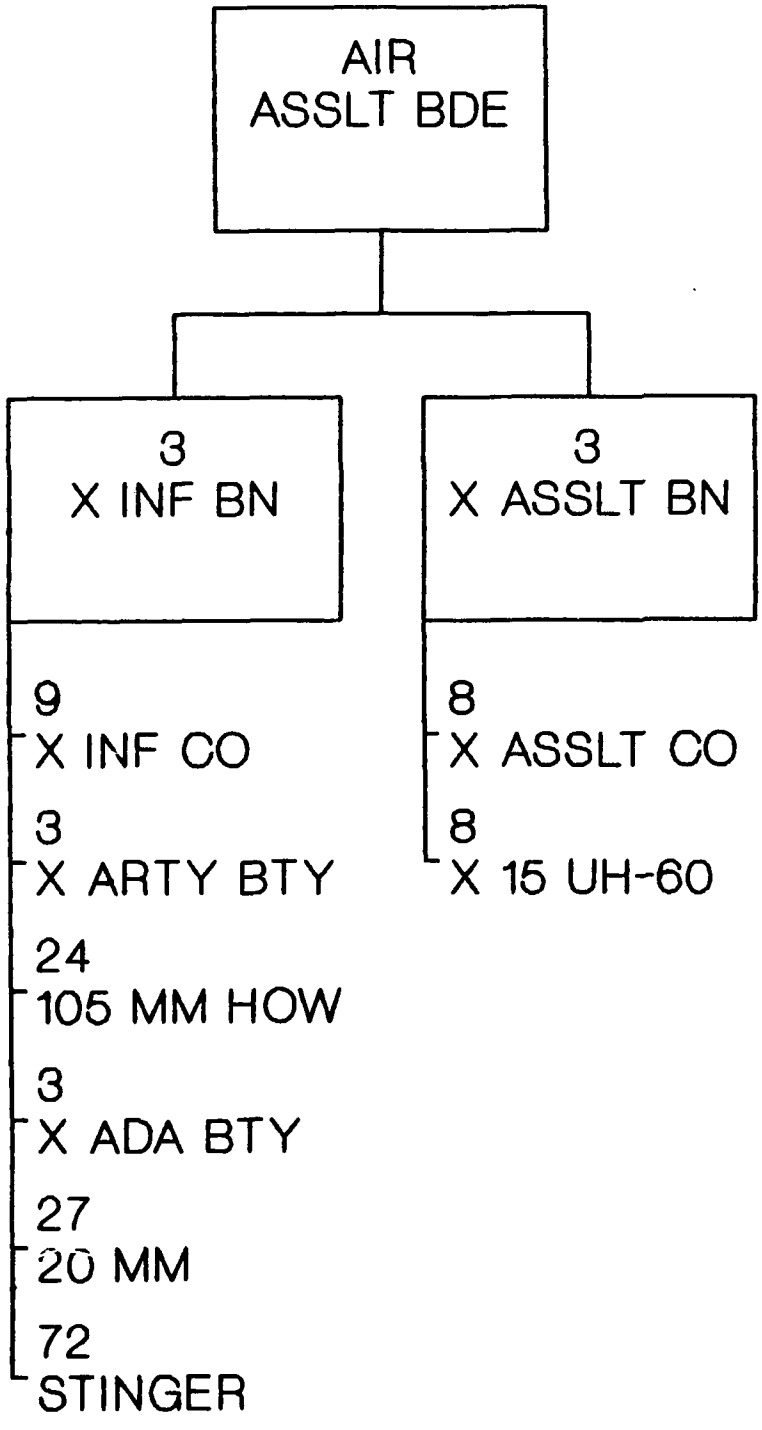
ANNEX A

GENERAL SUPPORT BRIGADE



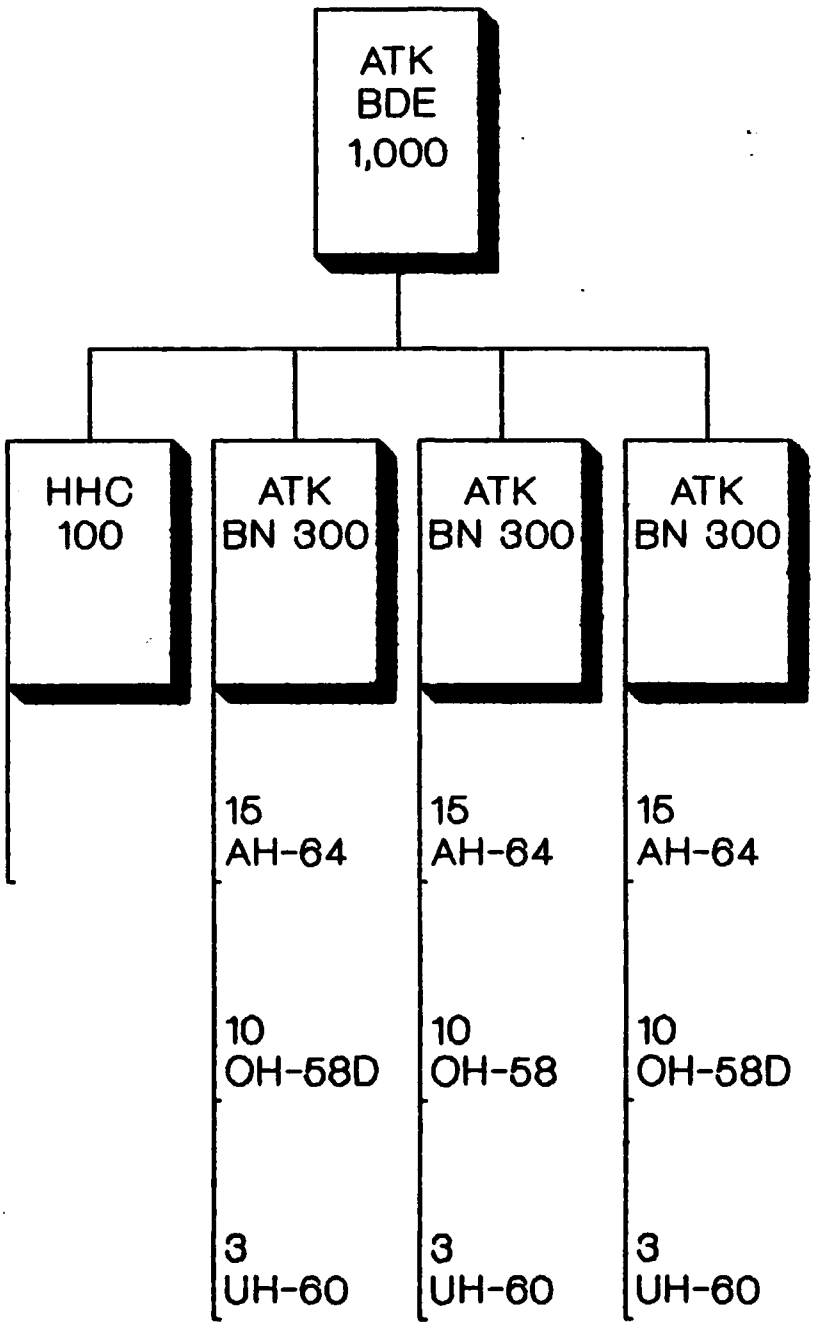
ANNEX B

AIR ASSAULT BRIGADE



ANNEX C

ATTACK HELICOPTER BRIGADE



ANNEX D

KILL TO LOSS RATIO

AIRCRAFT AVAILABLE	MISSILES FIRED	VEH HITS	HELO LOSSES
ENGAGEMENT ONE			
113	904	316	24
ENGAGEMENT TWO			
95	760	266	20
ENGAGEMENT THREE			
80	640	224	17
ENGAGEMENT FOUR			
67	536	188	14
ENGAGEMENT FIVE			
57	456	160	12

AIRCRAFT AVAILABLE = AIRCRAFT ASSIGNED X .75

ENDNOTES

1. Field Manual 100-5, Operations, Department of the Army, Washington D.C., 5 May, 1986, p. 10.

2. Ibid., p. 12.

3. Ibid.

4. Ibid., p. 16.

5. Ibid.

6. Keller, Robert L., AirLand Battle Future White Paper (Draft), U.S. Army Combined Arms Combat Developments Activity, Fort Leavenworth, Kansas, 5 February, 1990, p. 5.

7. O'Keefe, John J. Colonel, AirLand Battle Force Designs, Combined Arms Combat Development Activity, Fort Leavenworth, Kansas, 6 December, 1989. This document is a message to force structure agencies that describes the basic concepts behind the future force structure study that is being conducted by CADA. The aviation force structure consolidates the majority of aviation assets that currently exit in division and corps formations and consolidates those forces at corps. The author has included three light infantry battalions in this academic examination of this structure to make it more survivable while conducting independent operations in support of a headquarters above the corps.

8. Student Text 100-3, Battle Book, U.S. Army Command and General Staff College, Fort Leavenworth, Kansas, 1 April, 1989, Chapter Three.

9. The 1989 Advanced Operational Studies Fellows, Operational Maneuver in Europe, School of Advanced Military Studies, U.S. Army Command and General Staff College, Fort Leavenworth, Kansas, 28 February, 1989, p. c-4-3.

10. Command Control Analysis Division USACAORA, MOVEPLAN, U.S. Command and General Staff College, Fort Leavenworth, Kansas. This is a computer program that the author used to develop the movement data for the units involved. The movement is made over four routes using 18 serials per route. Each serial consists of 10 march units. Each march unit is the approximately the size of a company size unit. Max pace for the movement is 50 kilometers per hour (31 miles per hour). The vehicle interval is 100 meters with five kilome-

ters between march units and five kilometers between serials. The route consists of a start point (SP), five check points (CP), and a release point (RP). A thirty minute halt is planned at the first check point and a ten minute halt at two through five. The units do not halt at the RP. The length of each column would be 1,376 kilometers if all vehicles were on the road at the same time.

Planning time actually consumes more time than the actual move. This is a result of the layers of headquarters involved in the decision and planning to commit the corps.

11. FM 100-5, Operations, p. 12.

12. This is an assumption by the author. Normal staff practices would have alerted 10th Corps about the possibility of conducting the attack.

13. Student Text 100-3, Battle Book, U.S. Command and General Staff College, Fort Leavenworth, Kansas, 1 April, 1989, p. 3-1.

14. Operational Maneuver in Europe, p. 81.

15. MOVEPLAN. All information presented in reference to the movement of the heavy corps is based on the author's computation of the move. That computation is based on the computer program MOVEPLAN.

16. Movement was computed using 50 kilometers per hour (31 mph) to maximize the movement capability of modern equipment. Study by Kindsvatter and Operational Fellows used a slower rate of march. Conclusion is that 50 kph is probably the very upper end of capability for modern units to conduct movement.

17. Author used four hours to compute the movement of 10th Corps.

18. MOVEPLAN. Combat units close on assembly areas by 0628 on D-2. This allows 23+ hours for combat units to complete necessary actions in preparation for the movement to the Line of Departure.

19. Kindsvatter, Peter S. An Appreciation for Moving the Heavy Corps--The First Step in Learning the Art of Operational Maneuver, School of Advanced Military Studies, U.S. Army Command and General Staff College, Fort Leavenworth, Kansas, 16 May, 1986, p. 16.

20. This number is the result of the author's modification of the revised base case found in the AirLand Battle Future White Paper dated 5 February, 1990. The modification creates an air assault brigade by adding three modified light infantry battalions to the structure of the assault helicopter brigade and by changing the commander from an aviation Colonel to an infantry Colonel. The information for the light infantry battalions was found in FM 7-72, Light Infantry Battalion, March, 1987 p. 1-7 and TM 101-10-1, Staff Officer's Field Manual Organizational, Technical, and Logistical Data Planning (Volume I), October, 1987, Chapter two.

21. Airland Battle Future White Paper, p. VI 32. Personnel strength has been modified by the author. White Paper calls for total personnel strength of 50 in the corps aviation headquarters. This is based on the normal support functions of the headquarters being performed by the headquarters of the general support brigade. Author does not believe this will produce the fighting headquarters that is required in this paper. The number of 200 is based on a comparison of the tasks performed in a division headquarters which is authorized 350 in the White Paper and those required for the corps aviation on this operation.

22. Ibid, p. VI 32.

23. Ibid.

24. Student Text 101-6, G4 Battle Book, U.S. Army Command and General Staff College, Fort Leavenworth, Kansas, 1 June, 1989, p. 10-7.

25. Ibid, p. 2-14.

26. Ibid. Basic weight of aircraft is 22,499 pounds, weight of crew and their equipment is 960 pounds, weight of fuel for a two hour and thirty minute (2+30) mission is 6,695 pounds. Results in a load carrying capability of 20,000 pounds at take off. Total amount of fuel that can be carried is limited to six 500 gallons fuel drums per aircraft. Computation is based on the number of aircraft available flying 185 kilometers per hour enroute with six fuel drums or 20,000 pounds of cargo each. Return flight would be at normal cruise speed of 250+ kilometers per hour. Author has attempted to factor in time to rig equipment, refuel aircraft, and maintenance failures.

27. AirLand Battle Future White Paper, p. VI 32.

28. Ibid.

29. Ibid.

30. Ibid.

31. Ibid.

32. Ibid. Structure modified by author as explained in endnote 22.

33. Staff Officer's Field Manual Organization, Technical, and Logistical Data (Volume I), p. 3-149-150. Final strength was determined by combining the duties of the air assault brigade headquarters and the combat aviation brigade headquarters. Total personnel strength may be to high.

34. Light Infantry Battalion, p. 1-7. Author added one field artillery battery and one air defense battery to the battalion.

35. All movement data for the air assault was computed using the information located in the Air Assault Handbook, printed by the 101st Airborne Division. This document lists the combat load for troops as 20. This requires the removal of the troop seats from the aircraft. Mathematical conclusion is that 90 UH-60 aircraft carrying 20 personnel each have the capability to move 1,800 personnel in a single assault. CH-47D aircraft will move artillery and air defense equipment.

36. G-4 Battle Book, p. 2-14. Aircraft basic weight is 10,984 pounds, weight of crew and their equipment is 960 pounds, weight of fuel for a 2+30 mission is 2,353 pounds. This leaves a useful load of 6,000 pounds. Aircraft is limited to sling loading two 500 gallon fuel drums per aircraft.

37. AirLand Battle Future White Paper, p. VI 32.

38. Ibid.

39. Ibid. White Paper calls for the fielding of the Light Helicopter Experimental (LHX) but acknowledges that the OH-58D may have to fill the role because of funding constraints. Author has chosen the OH-58D as the worst case scenario.

40. Ibid.

41. FM 100-5, p. 12.

42. The author applied the same basic rules as used in the movement of the heavy corps.

43. Aircraft numbers are based on 75% operational readiness rate on the day of the movement. Wheel vehicles include those required for the operation of maintenance facilities, C2 facilities, and logistics operations.

44. MOVEPLAN. Ground movement computed using the same parameters as the ground movement of the heavy corps. Air movement based on air craft flying at 185 kilometers per hour. This speed is well below the cruise speed of most of the aircraft but is the normal speed used when conducting external load operations for the UH-60 and CH-47. Author chose to move the entire fleet at the slower speeds to account for fog and friction that would be present on a move of this size.

45. Ibid.

46. Ibid.

47. Mowery, James L. Lieutenant Colonel, Standard Operating Procedures, 2d Battalion, 3rd Aviation Regiment, 3rd Infantry Division, Giebelstadt, Federal Republic of Germany, 15 April, 1986, p. 3. Minimum training allows support platoons within aviation battalions to set up refueling operations in less than thirty minutes.

48. MOVEPLAN. Mathematical conclusion based on 168 hours to move the corps and 96 hours to move the aviation formation. Time includes movement and planning.

49. MOVEPLAN. These numbers represent the actual time involved in moving vehicles and aircraft.

50. The author has avoided using the terms defeat or destroy in relation to the enemy force. This was done because of the difficulty in evaluating these terms in relationship to the enemy. Instead, the author has chosen to halt the advance of the OMG. This is more easily evaluated due to the norms established by the Soviets.

51. FM 100-2-1, The Soviet Army, Operations and Tactics, July 1984, p. 5-40 and Rezenchinko, V.G., Tactics, 1987. These two manuals explain the parameters under which a Soviet force will assume a hasty defense. Both books recognize the special mission status of the OMG. The author has concluded from these reading and earlier discussions with Professor Jim Schneider on the moral aspects of war that a Soviet OMG that has had 60% of its armored vehicles destroyed will assume a hasty defense short of its planned objective.

52. U.S. Army Pamphlet, Soviet Tactical Planning Factors, Fort Leavenworth, Kansas, May 1989, p.2-1 thru 2-11.

53. This number was established subjectively by the author. It is based on the enemy suffering a 15% degradation of combat power based on maintenance failures and combat losses prior to the engagement of the corps aviation.

54. The corps aviation commander does not attack with 113 aircraft. He conducts the attack with attack helicopter brigades comprised of attack helicopter battalions. The total number of attack helicopters employed by the attack helicopter battalions is 113.

55. Number is based on an interview with Major Doug Fletcher, Project Leader for VIC, TRAC, Fort Leavenworth, Kansas. The numbers used generally represent lower capabilities than are being represented by computer assisted war gaming. Author chose to use the lower numbers to account for multiple hits on the same targets, dirty battlefield, and chance.

56. Ibid.

57. Technical Manual 55-1520-238-10, Operator's Manual AH-64, Depatment of the Army, Washington, D.C., 15 May, 1987, Chapter Three.

58. Ibid.

59. FM 100-5, p. 12.

60. Huey, James T. Colonel, Army Aviation, 'AHIP: The Army's Multi-Purpose Light Helicopter', Westport, CT, 28 February, 1990, pp. 17-18.

61. Engagement is defined as one aircraft launching 8 Hellfire missiles. Each sortie will not result in each aircraft firing 8 missiles. Some units will locate the enemy immediately and complete their engagements rapidly. Some units may not locate the enemy or may not be able to gain a positional advantage to launch their missiles without suffering heavy losses. This will result in a average. The numbers chosen in this paper are an assumption by the author but have been judged as reasonable by wargaming specialists at TRAC.

62. Mathematical conclusion reached by applying the following formula: AIRCRAFT ASSIGNED X OPERATIONAL READINESS RATE = AIRCRAFT AVAILABLE FOR MISSION X NUMBER OF MISSILES CARRIED ON EACH AIRCRAFT = TOTAL NUMBER OF MISSILES FIRED PER ENGAGEMENT X PROBABILITY OF KILL = NUMBER OF ARMORED VEHICLES DE-

STROYED DIVIDED BY RATIO OF HELICOPTER LOSSES TO TANK LOSSES = NUMBER OF HELICOPTERS LOST. This number is then subtracted from the number of helicopters assigned to determine number of aircraft assigned for the next engagement. The following calculations indicate the five engagements discussed in this paper.

AC ASSG OR AC AV MS TM Pk TKS DES THR HEL DES
150 X .75= 113 X 8= 904X.35= 316 / 13 = 24.

150-24=126
126 X .75= 95 X 8= 760X.35= 266/ 13 = 20.

126-20=106
106 X .75= 80 X 8= 640X.35= 224/ 13 = 17

106-17=89
89 X .75= 67 X 8= 536X.35= 188/13=14

89-14=75
75 X .75= 57 X 8= 456X.35=160/13=12

TOTALS AFTER FIVE ENGAGEMENTS: MISSILES LAUNCHED 3,296

ARMORED VEHICLES DESTROYED 1,154
HELICOPTERS DESTROYED 89

63. Army Regulation 220-1. 75% is operational readiness designed into the aviation maintenance program. Aircraft and maintenance organizations are designed to function in peacetime and combat at this rate.

64. Mathematical conclusion. See endnote 60.

65. Simmons, James E. Major, The Attack Helicopter Battalion: Ready For the 60's or the 90's, School of Advanced Military Studies, US Army Command and General Staff College, Fort Leavenworth, Kansas, 11 December, 1989, pp. 30-31.

66. This is an assumption by the author based on experience in three different attack helicopter battalions.

67. The Attack Helicopter Battalion: Ready For the 60's or the 90's, pp. 30-31.

68. Student Text 101-6, p. 14.

69. FM 101-10-1, Each battalion has five HEMMT fuel trucks each with capacity for 2,500 gal of fuel.

70. ST 101-6, p. 14. Each aircraft uses 900 lbs of fuel per hour x 113 aircraft x 2 hours / 6.5 (wt of fuel) = 31,300 gal.

71. Mathematical conclusion based on difference of fuel consumed and amount of fuel on hand.

72. ST 101-6, p. 14. CH-47s can carry 108,000. UH-60 can carry 90,000.

73. Rockets and 30mm are base on author's assumption.

74. Mathematical conclusion based on each aircraft deploying with 8 missiles, 38 rockets and 500 rounds of 30 mm.

75. Operational Maneuver in Europe, p. c-4-3.

76. Mathematical conclusion based on the actual time of movement (9.5 hours for air 42 hours for ground).

BIBLIOGRAPHY

BOOKS

Simpkin, Richard E. Race to the Swift. London: Brasseys Defence Publishers, 1986.

MANUALS

Field Circular 100-26, Air Ground Operations. Fort Leavenworth, KS: US Army Command and General Staff College, 1984.

Field Manual 1-100, Army Aviation in Combat Operations. Washington D.C.: HQ Department of the Army, 1989.

Field Manual 1-111, The Aviation Brigade. Washington D.C.: HQ Department of the Army, 1985.

Field Manual 1-112, The Attack Helicopter Battalion. Washington D.C.: HQ Department of the Army, 1986.

Field Manual 1-140, Helicopter Gunnery. Washington D.C.: HQ Department of the Army, 1986.

Field Manual 100-2-1, Soviet Army. Washington D.C.: HQ Department of the Army, 1984.

Field Manual 100-2-2, Sovie Army. Washington D.C.: HQ Department of the Army, 1984.

Field Manual 100-2-3, Soviet Army. Washington D.C.: HQ Department of the Army, 1984.

Field Manual 100-5, Operations. Washington D.C.: HQ Department of the Army, 1986.

Field Manual 100-15, Corps Operations. Washington D.C.: HQ Department of the Army, 1988.

Field Manual 100-103, Army Air Space Command and Control in a Combat Zone. Washington D.C.: HQ Department of the Army, 1987.

Field Manual 55-1, Army Transportation Services in a Theater of Operations. Washington D.C.: HQ Department of the Army, 1984.

Field Manual 7-72, Light Infantry Battalion. Washington D.C.: HQ Department of the Army, 1987.

Field Manual 17-95, Cavalry Operations. Washington D.C.: HQ Department of the Army, 1986.

Field Manual 101-5, Staff Organizations and Operations.

Washington D.C.: HQ Department of the Army, 1984.

Field Manual 101-5-1, Operational Terms and Graphics. Washington D.C.: HQ Department of the Army, 1986.

Field Manual 101-10-1/1, Staff Officers' Field Manual Organizational, Technical, and Logistical Data. Washington D.C.: HQ Department of the Army, 1987.

Field Manual 101-10-1/2, Staff Officers' Field Manual Organizational, Technical, and Logistical Data Planning Factors. Washington D.C.: HQ Department of the Army, 1987.

Technical Manual 55-1520-238-10, Operator's Manual AH-64, Washington D.C.: Department of the Army, 27 May, 1987.

Student Text 100-3, Battle Book. Fort Leavenworth, KS: US Army Command and General Staff College, 1989.

Student Text 101-1, Organizational and Tactical Reference Data for the Army in the Field. Fort Leavenworth, KS: US Army Command and General Staff College, 1987.

Student Text 101-3, Selected Tables of Organizations. Fort Leavenworth, KS: US Army Command and General Staff College, 1988.

Student Text 101-6, G4 Battle Book. Fort Leavenworth, KS: US Army Command and General Staff College, 1989.

Couch, Jacob B., Aviation Liason Officer's Guide (Air Assault Handbook), Fort Campbell, KY: HQS 101st Aviation Brigade, 101st Airborne Division (Air Assault), 28 January, 1987.

Mowery, James L. and Simmons, James E., Standard Operating Procedures, Giebelstadt, FRG: HQ 2nd Battalion, 3rd Aviation Regiment, 15 April, 1986.

U.S. Army Pamphlet, Soviet Tactical Planning Factors, Fort Leavenworth KS: U.S. Army Command and General Staff College, 1989.

REPORTS

Cushman, John H. Organization and Operational Employment of Air/Land Forces. Carlise Barracks, Pennsylvania: US Army War College, 1984.

Curry, Ronald E., Dudley, Robert M., Dunigan, John P., Hepler, John F., Holt, Jimmie F., Purvis, Joseph H., Thiessen, Gerald R., and Young, David F., Operational Maneuver in Europe. Fort Leavenworth, KS: School of Advanced Military Studies, US Army Command and General

Staff College, 1989.

Keller, Robert L., AirLand Battle Future White Paper (Draft), Fort Leavenworth, KS: U.S. Army Combined Arms Combat Development Activity, 5 February, 1990.

THESIS

Bendyx, John C., Detailed Planning Considerations for Divisional Attack Helicopters in the Division Deep Battle: A Defensive Operation Perspective. Fort Leavenworth, KS: US Army Command and General Staff College, 1989.

Kindsvatter, Peter S., An Appreciation for Moving the Heavy Corps--The First Step in Learning the Art of Operational Maneuver. Fort Leavenworth, KS: School of Advanced Military Studies, US Army Command and General Staff College, 1986.

Mowery, James L., The Division Aviation Brigade: Operational or Tactical? Fort Leavenworth, KS: School of Advanced Military Studies, US Army Command and General Staff College, 1987.

Baribeau, Stephen, R., US and Soviet Rotary Wing Aviation at the Operational Level of War. Fort Leavenworth, KS: School of Advanced Military Studies, US Army Command and General Staff College, 1986.

Simmons, James E., The Attack Helicopter Battalion: Ready for the 60's or the 90's?, Fort Leavenworth, KS: School of Advanced Military Studies, U.S. Army Command and General Staff College, 11 December, 1989.

MESSAGES

O'Keefe, John J., AirLan Battle Force Designs, Fort Leavenworth KS: Combined Arms Development Activity, 6 December, 1989.

PROGRAMS

Command Control Analysis Division, USACAORA, MOVEPLAN, Fort Leavenworth, KS: U.S. Army Command and General Staff College.

MAGIZINES

Harris, William R., Editor, Army Aviation, Westport CT: 28 February, 1990.