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**Attack Helicopters: Airland Battle Future's
Sword of Vengeance**

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APR 14 1992
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**A Monograph
by
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Aviation**



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First Term AY 90-91

Approved for Public Release; Distribution is Unlimited

92-09170



REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.

1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE 30/01/91		3. REPORT TYPE AND DATES COVERED MONOGRAPH	
4. TITLE AND SUBTITLE ATTACK HELICOPTERS : AIRLAND BATTLE FUTURE'S SWORD OF VENGEANCE				5. FUNDING NUMBERS	
6. AUTHOR(S) MAJ EDWARD J. SINCLAIR, USA					
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) SCHOOL OF ADVANCED MILITARY STUDIES ATTN: ATZL-SWV FORT LEAVENWORTH, KANSAS 66027-6900 COM (913) 684-3437 AUTOVON 552-3437				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSORING/MONITORING AGENCY REPORT NUMBER	
11. SUPPLEMENTARY NOTES					
12a. DISTRIBUTION / AVAILABILITY STATEMENT APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED				12b. DISTRIBUTION CODE	
13. ABSTRACT (Maximum 200 words) SEE ATTACHMENT					
14. SUBJECT TERMS ATTACK HELICOPTERS ARMY AVIATION		DEEP BATTLE AIRLAND BATTLE FUTURE AIR ATTACK DIVISION		15. NUMBER OF PAGES 49	
				16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT UNCLASSIFIED	18. SECURITY CLASSIFICATION OF THIS PAGE UNCLASSIFIED	19. SECURITY CLASSIFICATION OF ABSTRACT UNCLASSIFIED	20. LIMITATION OF ABSTRACT UNLIMITED		

NSN 7540-01-280-5500

Standard Form 298 (Rev. 2-89)
Prescribed by ANSI Std. Z39-18
298-102

92 4 09 006

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MONOGRAPH APPROVAL

Major Edward J. Sinclair

Acquisition For	
NTIS GRA&I	<input checked="" type="checkbox"/>
DWES TAB	<input type="checkbox"/>
Announced	<input type="checkbox"/>
Justification	
By _____	
Distribution/	
Availability Codes	
Dist	Avail and/or Special
A-1	

Title of Monograph: Attack Helicopters, AirLand Battle Future's
Sword of Vengeance



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Accepted this 28th day of January 1991

ABSTRACT

ATTACK HELICOPTERS. AIRLAND BATTLE FUTURE'S SWORD OF VENGEANCE, by MAJ Edward J. Sinclair, USA, 39 pages.

With the current fielding of the AH-64 Apache and the Light Helicopter (LH) on the horizon, Army aviation will possess some of the finest tools of war ever known to mankind. To capitalize on our quality equipment, we must develop sound doctrine with organizations capable of performing required missions. AirLand Battle Future (ALBF), the concept which prescribes how the Army will fight battles into the 21st century, proposes consolidating heavy corps attack helicopter assets into an aviation division. The proposed aviation division represents a major leap in the evolution of attack helicopter organizational models. This study analyzes how that proposed organization meets the requirements of the AirLand Battle Future "deep battle." Specifically, what tactical implications on the deep battle arise if we consolidate attack helicopter assets of a heavy corps into an aviation division?

The effort to determine the best aviation organization to conduct deep battle in concert with the ALBF concept begins with an outline of the fundamental theoretical issues of deep battle. Second, evaluation of historical examples of the successful employment of attack helicopters in a nonlinear battlefield aid in developing insights that may be applicable to the ALBF concept. Third, a critical comparison of current, decentralized attack helicopter organizations and the centralized attack helicopter organization of the proposed ALBF aviation division determines their strengths and weaknesses. Each will be evaluate in a southwest Asia scenario against the Battlefield Operating Systems of maneuver, command and control, intelligence, and combat service support. Finally, conclusions will be drawn from the analysis and appropriate recommendations made.

This monograph finds that while providing a better alternative than the current organizational model, the proposed aviation division has many shortcomings for conducting deep attacks under the ALBF concept. The nonlinear battlefield and extended area of operations provide unique challenges. This study identifies many areas of concern such as lack of fire support and a ground maneuver force. After a detailed analysis of both organizational models, neither truly meets the requirements of the ALBF concept.

Conclusions of this study indicate that the Army should continue to study the consolidation of attack helicopters into an air attack division as it appears to offer tactical advantages over the current attack helicopter force structure or the proposed aviation division. Employing the air attack division, the corps commander will be able to use decisive aerial maneuver to destroy enemy forces and shape the close fight. For the first time, the corps commander has the opportunity to employ sufficient organic aerial maneuver forces to fight and win the deep battle.

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I. Introduction

"Future operations must exploit Army aviation's ability to perform maneuver in the third dimension of the battlefield."¹ With the current fielding of the AH-64 Apache and the Light Helicopter (LH) on the horizon, Army aviation will possess some of the finest tools of war ever known to mankind.² To capitalize on our quality equipment, we must develop sound doctrine with organizations capable of performing required missions. AirLand Battle Future (ALBF), the concept which prescribes how the Army will fight battles into the 21st century, proposes consolidating heavy corps attack helicopter assets into an aviation division. This study analyzes how that proposed organization meets the requirements of the AirLand Battle Future "deep battle." Specifically, what tactical implications on the deep battle arise if we consolidate attack helicopter assets of a heavy corps into an aviation division?

As a prelude to the point at issue, the leading ideas of the ALBF concept bear brief summary. The ALBF concept links projected national interests with future Army force capabilities. A Soviet invasion of Europe no longer poses the major threat. The Soviets are realigning their forces in a more defensive orientation because of internal influences within the U.S.S.R. While this may lead to sharp reductions of forward-deployed U.S. Army units in Europe, the potential for numerous conflicts continue to grow throughout the remainder of the world. The insecurity of world relations, coupled with budgetary problems within our own government, requires a reevaluation of how the Army will fight future conflicts. Global-oriented, contingency operations become the primary focus of the Army. ALBF provides a tactical concept enabling the U.S. to capture the benefits of our technology while at the same time accommodating the changed threat and complying with evolving fiscal and political constraints.³ This newly prioritized mission focus requires

equipment, organizations, and doctrine quite different from today's European-oriented Army.

Current AirLand Battle conceptual ideas, the tenets and imperatives, and the battlefield framework identified in FM 100-5 apply to the ALBF concept. Increased emphasis on operations in depth signify their criticality to the success of the ALBF concept. The 1986 Field Manual 100-5, Operations, describes deep operations as "activities directed against enemy forces not in contact designed to influence the conditions in which future close operations will be conducted."⁴ ALBF relies on deep attacks with indirect, air, and ground fires to heavily degrade enemy forces and gain the tactical advantage. Only with a successful deep attack can the enemy forces be attrited to a state allowing their complete destruction in the close battle.

On the expanded, nonlinear battlefield envisioned in the ALBF concept, attack helicopters provide an ideal weapons system to fight the deep battle. Aviation forces can carry the fight to the enemy at the decisive place and time. A helicopter is not stopped by minefields, rivers or refugee columns. Supported by electronic warfare (EW) assets, Multiple Launch Rocket Systems (MLRS), and Battlefield Air Interdiction (BAI) sorties, attack helicopters possess the ability to infiltrate deep into the enemy's rear, surprise him, and strike with devastating firepower. Attack helicopters, characterized by their advanced technologies and inherent mobility advantages, bring a significant capability to the battlefield. They provide the commander with a flexible and offensively postured force increasing the unit's physical and mental agility.⁵ In Carl von Clausewitz's terms, they can truly be the "flashing sword of vengeance" on the future battlefield.

Authors of the ALBF concept have tailored an organizational model for an aviation division that they feel meets the requirements of a future battlefield. However, is the proposed aviation division properly organized to ensure maximum combat effectiveness? Is the proposed organization the *best possible* to support the ALBF concept? These are

the critical questions. While this study centers on the deep battle, the tactical implications of synchronizing attack helicopters into all frameworks of the battlefield will be considered. Answering these questions requires an analysis of a broad body of knowledge to include current deep attack doctrine, ALBF case studies conducted by the U.S. Army Combined Arms Development Activity at Fort Leavenworth, data from the Concept Developments Branch at Fort Rucker, previous theses concerning attack helicopters in the deep battle, and interviews with senior Army aviation officers.

A four part methodology will be used to determine the best aviation organization to conduct deep battle in concert with the ALBF concept. First, I will identify fundamental theoretical issues of deep operations. Beginning with the writings of Carl von Clausewitz, the evolution of deep operations theory will be traced to the 1920's and 1930's focusing upon the writings of Soviet Field Marshal Mikhail Tukhachevskiy and British theorists Basil H. Liddell Hart and J.F.C. Fuller. Developments of the 1980's espoused by General Crosbie E. Saint, British Brigadier Richard E. Simpkin, and German General Doctor F.M. von Senger und Etterlin will also be examined. Second, I will evaluate historical examples from the Israeli Operation PEACE FOR GALILEE and the Iran-Iraq War to develop an insight into attack helicopters successful employment in a nonlinear battlefield deep attack. I will also examine U.S. Army lessons learned from the use of attack helicopters in deep attacks during National Training Center rotations and Exercise REFORGER 87. Third, I will conduct a critical comparison of current, decentralized attack helicopter organizations and the centralized attack helicopter organization of the proposed ALBF aviation division to determine their strengths and weaknesses. I will evaluate each in a southwest Asia scenario against the Battlefield Operating Systems of maneuver, command and control, intelligence, and combat service support. Finally, I will draw conclusions from the analysis and make appropriate recommendations.

II. Theory of Deep Battle Conducted by Aviation Units

Deep battle is not a new concept. It evolved from a simple raid by a small ground force in the early 1800's described by Carl von Clausewitz in On War to complex operations in the 1990's requiring synchronization of indirect fires, EW assets, BAI sorties, and attack helicopters.⁶ Technological advances greatly aided this evolution. Deep battle has proven decisive in shaping the battlefield by destroying or disrupting enemy forces enroute to the main battle area.

Clausewitz identified the importance of attacking the enemy's rear area. He wrote that the impact of a force could be substantially increased if directed at the enemy's flanks or rear. "A threat to the rear can make a defeat *more probable*, as well as *more decisive*."⁷ Clausewitz further advocated the use of a "small group of skillful raiders who must move daringly in small detachments and attack boldly, assailing the enemy's weaker garrisons, convoys, and minor units on the march."⁸ Technological advances in weaponry and means of movement enhanced the capability to conduct deep attacks over the next 100 years.

Even though some evolution occurred during the American Civil War, it was not until the 1920's and 1930's that significant advances in deep attack theory appeared. In 1926 Soviet Field Marshal Mikhail Tukhachevskiy presented a new form of deep attack using aerial assets to transport motorized detachments into the enemy's rear area.⁹ In addition to the demoralizing effect, Tukhachevskiy saw the deep attack disrupting enemy formations enroute to the front, command and control headquarters, and logistical operations.

In England during this same time period Basil H. Liddell Hart and J.F.C. Fuller developed theories building upon Tukhachevskiy's proposed use of aviation in deep attacks. Liddell Hart's "indirect approach" maximized the capabilities of the aircraft as it conducted aerial maneuver.¹⁰ An aircraft could rely on mobility and speed to avoid the enemy's strengths while attacking his weaknesses. Aviation's inherent ability to maneuver in three

dimensions, coupled with the increased lethal firepower, provided an excellent means to execute the "indirect approach" against numerically superior forces. Fuller advocated "a theory founded on a new degree of movement."¹¹ Tanks and aircraft combined to create this new movement. The efforts of Tukhachevskiy, Fuller, and Liddell Hart provided a basis for the conduct of war during World War II.

In the 1980's vast technological advances in the helicopter provided an opportunity to redefine deep battle. Facing a numerically superior Warsaw Pact in Europe, the U.S. Army determined that to win it must attack the enemy throughout the depth of the battlefield. This realization led to the development of AirLand Battle (ALB) doctrine, which, even if not a true "maneuver" doctrine, certainly centers on maneuver as the primary element.¹² Exploitation of the aerial dimension, especially the capabilities of the AH-64, represented a formidable potential maneuver capability to conduct ALB deep attacks.

In 1985 General Crosbie E. Saint, then III Corps Commander at Fort Hood, formed the first consolidated AH-64 attack helicopter brigade at corps level and broke new ground in developing methods of conducting deep attacks. Based on the Intelligence Preparation of the Battlefield (IPB), General Saint assigned missions to attack helicopter units "to disrupt or destroy enemy forces to a depth of 150 kilometers as the enemy repositions for integration into the close battle."¹³ He integrated long range indirect fires, EW assets, and BAI sorties into the deep attack whenever possible. Attack helicopter units conducting deep operations became an integral part of the ground commander's scheme of maneuver to shape the battlefield. AH-64 units conducted deep attack missions at night to maximize the aircraft's capabilities and take advantage of the enemy's lack of night fighting technology. The attack helicopter units truly became, in Clausewitz's term, "a small group of skillful raiders." The success of the deep battle provided a crucial link to fulfill ALB doctrine.

The American effort to develop the deep battle using attack helicopters did not go unnoticed in Europe. General Doctor F.M. von Senger und Etterlin of West Germany and Brigadier Richard E. Simpkin of Great Britain contributed greatly to the idea. In 1983 von Senger und Etterlin delivered a lecture to the Royal United Services Institute in which he warned the audience against "not taking advantage of the technological advances of attack helicopters."¹⁴ As Commander-in-Chief Allied Forces Central Europe where Warsaw Pact forces greatly outnumbered NATO forces, he predicted a battlefield dominated by a Main Battle Air Vehicle (MBAV) which possessed superior mobility and firepower over ground forces.¹⁵ His "Airmechanization" concept employed the MBAV and associated airmobile forces in deep attacks 200-300 kilometers from an assembly area.¹⁶ Command of these forces would be at the operational level of corps and army group levels while control would be decentralized to brigade and battalion levels. Brigadier Simpkin also became an advocate of the MBAV and "Airmechanization" concepts. He believed that by the late 1990's NATO's defense would hinge on an MBAV type weapon system and large armor formations would become obsolete as a result.¹⁷

III. Historical Examples

The importance of attack helicopters has increased significantly during recent years. The advantages and potential of attack helicopters to conduct deep attacks have been demonstrated in both combat and training. Although no combat examples exist where helicopters were used in a high threat air defense environment, they have been successfully used in such environments during numerous rotations at the National Training Center and during several REFORGER exercises. Some critics consider deep attacks with attack helicopters excessively vulnerable, complicated and costly; however, if properly planned and synchronized such missions can be successfully accomplished with minimal

losses. Examples from the Israeli Operation PEACE FOR GALILEE and the Iran-Iraq War demonstrate how effective such operations can be.

A. Operation PEACE FOR GALILEE

The 1982 Israeli war in Lebanon witnessed the first time in history that during a full scale conventional war attack helicopters conducted deep attacks. While attack helicopters saw action in Vietnam and the Iran-Iraq War, the Lebanon war was the first time they were used by a truly sophisticated and well trained military force in an antitank role throughout the depth of the battlefield.¹⁸ Both the Israelis and the Syrians conducted successful deep attacks with centralized command and decentralized control. The terrain, characterized by deep gorges, wadis, and mountains, provided an ideal environment by furnishing excellent cover with natural ingress and egress routes for the attack helicopters.

The Israelis, anxious to stem the tide of rapidly moving Syrian armor formations, used attack helicopters to delay enemy forces. The Israelis used AH-1 "Cobras" and the Hughes 500MD "Defenders" to frequently attack 50 kilometers into enemy territory. Favorable terrain and the low noise signature, especially of the Hughes 500MD, allowed them to cross the Forward Line of Own Troops (FLOT) undetected and interdict reinforcing Syrian tank formations. Israeli reports state that "60% of the tanks and thin-skinned vehicles killed in the war were killed by attack helicopters."¹⁹ Some observers suggest this total is exaggerated, however, they agree that the Israelis used the attack helicopters very effectively.

The Israelis did note some major problems in conducting deep attacks. The attack helicopter units lacked vital battlefield intelligence. Enemy air defense sites as well as enemy armor concentrations often were inaccurately reported.²⁰ This shortfall required the attack helicopter units to "search" for the enemy in his territory and as a result

suffered unnecessary aircraft losses. Another major problem focused on training. The Israeli pilots, unlike their American counterparts, received no training in adjustment of artillery thus preventing them from suppressing enemy air defense sites or adding the firepower of artillery to the battle once they engaged the main enemy forces.

The Syrians also gained success sending attack helicopters deep. They used French-made "Gazelle" helicopters armed with the High subsonic speed, Optically guideded, and Tube Launched (HOT) antitank missiles. Since the Israelis enjoyed air superiority, the Syrian Gazelles had to avoid air defense radars as they penetrated deep into Israeli-held territory. They surprised Israeli columns moving through the Chouf Mountains causing moderate losses.²¹ Great confusion resulted in the remainder of the column greatly delaying their arrival to the main battle area. Even though official Syrian reports are unavailable the Israeli commanders stated the Syrian helicopter attacks were "very effective."²²

B. Iran-Iraq War

During the early stages of the Iran-Iraq war, attack helicopters were used quite conservatively and in practical roles. Iran employed 250 Cobras in Khuzestan during the first three weeks to delay an Iraqi advance and allow time for the Iranian ground forces to prepare defensive positions.²³ Iraq was slower to discover the worth of attack helicopters and began to employ them only after Iran's successes. Neither side gained a marked advantage from their use during the first two years of the war due to a variety of coordination and employment problems. By mid-1982 Iraq consolidated their attack helicopters into an Army Air Corps to "introduce order and coordination into the Iraqi operations."²⁴ This new organization exerted a significant influence on the further course of the war.

After carefully observing the Israeli and Syrian successes using attack helicopters in the deep attack, Iraq adopted similar tactics. The new Iraqi doctrine mirrored American

and Soviet views of employment of attack helicopters to include integrating them throughout the depth of the battlefield. By June 1984, under the leadership of General al-Rashid, Iraq had developed the capability to mount attacks up to 75 kilometers into Iranian territory with formations of 50 Soviet built Hind-D helicopters.²⁵ The Iraqis' use of Hind-D's during the Al Faw campaign in April 1988 was so effective that the Iranians charged that the U.S. had intervened in the war by employing American attack helicopter units.²⁶

The high loss rate of Iranian air force assets forced the concentration of their attack helicopters primarily into a close air support role. They pioneered a unique concept using attack helicopters in a "deep attack type mission" against tankers and other shipping in the Persian Gulf. After obtaining night vision goggles for their pilots in June 1986, the Iranians began attacking international shipping at night with AS-12 wire guided missiles fired from AB-212 helicopters.²⁷ They operated from forward assembly areas like offshore oil platforms and the Iranian held island of Abu Musa near Dubai and proved very effective as they hit a Greek freighter and a British tanker.²⁸ However, they were never able to fully exploit this innovation because of the lack of centralized mission planning and continued shortages of aviation maintenance parts and ammunition.

C. National Training Center

Many deep battle lessons have emerged from the National Training Center (NTC) even though offers only a training environment focused at brigade and lower level with limited maneuver space for attack helicopters. NTC experience has shown that deep battle will be effective only with detailed planning, dedicated preparation, and rehearsals.²⁹ The importance of centralized command with decentralized control, continuously updated IPB, synchronization of battlefield operating systems, and flexibility have become standard

lessons. Attack helicopter units proficient at deep attacks have become a significant combat multiplier on the battlefield.

Deep attacks at night with OH-58D's and AH-64's have added a new dimension to the battlefield at the NTC. The OH-58D possesses the command and control links to effectively integrate all facets of the operation and synchronize the various battlefield operating systems into the battle. Linked to intelligence, indirect fire, maneuver, and air force assets, the OH-58D integrated these multiple systems into a single deep engagement. The OH-58D's advanced optics located targets at 8 kilometers at night and 15 kilometers in the day and adjusted conventional and copperhead artillery fires onto the enemy formations while maneuvering the attack helicopters into battle positions.³⁰ The OH-58D also provided a remote laser designation platform for the Hellfire missile fired from the AH-64's allowing the attack helicopters to engage from distances well beyond the range of enemy air defense systems thus enhancing their survivability.

The OH-58D's and AH-64's also combined with U.S. Air Force assets to conduct deep attacks. Both helicopters used laser designators to direct Air Force tactical aircraft on targets increasing the effectiveness of Joint Air Attack Team (JAAT) attacks. The potential of engagements using laser designation for target acquisition that increases accuracy and survivability during joint operations, especially at night in deep attacks, is unlimited.

D. Exercise REFORGER 87

REFORGER 1987 tested General Saint's concept of using attack helicopter units consolidated at corps level to conduct deep attacks as an integral part of the ALB doctrine. Under the watchful eyes of many skeptical observers, III Corps deployed two AH-64 battalions to northern Germany to participate in a force-on-force corps level maneuver. The exercise area replicated normal distances that a corps could expect to conduct deep

attacks. III Corps integrated the use of the attack helicopters in deep attacks into the commander's scheme of maneuver very effectively.

Based on the IPB and his vision of the battlefield, General Saint assigned missions to the attack helicopter units to disrupt or destroy the enemy reserve forces as they repositioned for integration into the close battle. These attacks were executed against a Belgian armored brigade more than 100 kilometers beyond the FLOT. The missions proved very successful as a result of extensive planning that exercised the command and staff elements of the attack helicopter units to the greatest degree. The tremendous capabilities of the OH-58D combined with the lethal weapon systems of the AH-64 to surprise the enemy brigade with cataclysmic effect. General Saint's successful use of AH-64's during Exercise REFORGER 87 announced the arrival of the attack helicopter as a viable weapon system for deep battle.

E. Future Evolution of Deep Battle with Attack Helicopters

The attack helicopter has proven that it can survive in a deep battle and be an effective combat multiplier in the commander's concept of operation. With its high speed, mobility, and firepower, the attack helicopter has proven the weapon *par excellence* for the deep battle. In the near future the AH-64 will integrate the LONGBOW system of millimeter wave radar weapons guidance and the Automatic Target Handover System (ATHS) to further enhance its destructive capability as well as its own survivability.³¹ Refinement of the deep attack continues today as the full potential of the AH-64 is realized and other technological advances such as Advanced Tactical Munitions (ATACMs), the Light Helicopter (LH), and Joint Service Target Acquisition System (JSTARS) reach the field. New methods of conducting deep attacks will also evolve as warfare changes and technological advances appear. While close operations will always retain primacy, deep attacks will continue to provide the commander the ability to shape the battlefield and seize the initiative.

IV. Concept of AirLand Battle Future

An understanding of the ALBF battlefield is required before a critical analysis of organizational structures can be made.³² ALBF establishes the framework for evolving the Army to the future using current ALB doctrine as the foundation. Although the evolving threat and dynamic geopolitical relations appear to be pushing the battlefield towards nonlinearity, there will be situations which suggest one mode of operation over the other based on mission analysis of METT-T (Mission, Enemy, Time, Terrain - Troops available). Current ALB doctrine envisions linear warfare that becomes nonlinear when opposing forces become intermingled. ALBF envisions forces employed initially in a nonlinear configuration. The central idea of the ALBF concept is to use technologically advanced sensors to find, track, and target the enemy for destruction by massed indirect fires followed by fast-moving combined arms teams to complete the destruction of the attrited forces.³³ The operations will be conducted in four phases: (1) detection and verification of the enemy forces, (2) attack with massed indirect, air, and ground fires, (3) rapid maneuver of air and ground units to complete the destruction of enemy units, and (4) recovery and the preparation for continued operations.³⁴ These phases overlap during continuous combat operations.

After assignment of an area of operations (AO), the corps commander decides where he wants to destroy the enemy force. Strategic and operational level reconnaissance and surveillance assets are focused during Phase 1 to locate, track, and target enemy formations moving into the corps AO. Additional intelligence gathering assets target the enemy as intelligence and warning indicators increase. The corps deploys its organic intelligence assets to verify and confirm the intelligence gathered from the higher level assets. The corps commander establishes a combined arms reconnaissance force that attempts to identify the enemy's main effort and destroy his reconnaissance and forward

detachments. These multi-echeloned and multi-disciplined assets work as a team to develop information about the enemy forces, terrain, and targeting data for future combat operations. Of specific interest to the deep battle planners is the echelonment of enemy forces and the developing disposition of the enemy air defense umbrella.

During Phase 2 the corps commander develops the situation to set conditions for future maneuver. The deep battle becomes critical. Enemy forces are engaged at extended ranges by all available fire assets. The corps commander may commit attack helicopter units throughout the depth of the battlefield to maximize their mobility, speed, and firepower advantages. These attacks, synchronized with BAI, EW, and ATACM fires, engage targets in depth to degrade the enemy formations and separate them in time and space before they enter the close battle area.

Combined arms teams complete the destruction of the attrited enemy forces during Phase 3. Maneuver forces initially dispersed out of enemy indirect fire systems range are committed when the enemy formations are vulnerable to a decisive defeat. Tailored to ensure overwhelming combat power at the decisive time and place, maneuver units are given the missions to attack, destroy, exploit, or pursue the enemy forces. As in Phase 2 the corps commander commits attack helicopter units throughout the depth of the battlefield.

Friendly forces recover to dispersed assembly areas and prepare for continued operations after the destruction of the enemy forces. During Phase 4 logistical efforts surge. Logistics will be projected forward on the extended battlefield. Tailored logistical units provide responsive, flexible support to resupply expended supplies and prepare for future operations.

In summary, ALBF places primary emphasis on the destruction of enemy forces rather than terrain. The nonlinear battlefield places a greater premium on offensive operations and provides the maneuver commander the opportunity to exercise initiative. Many traits

of ALB doctrine such as the tenets and the imperatives remain valid but they may vary in importance based on METT-T. With this understanding of the ALBF concept, a critical analysis of the attack helicopter organizational models can be made.

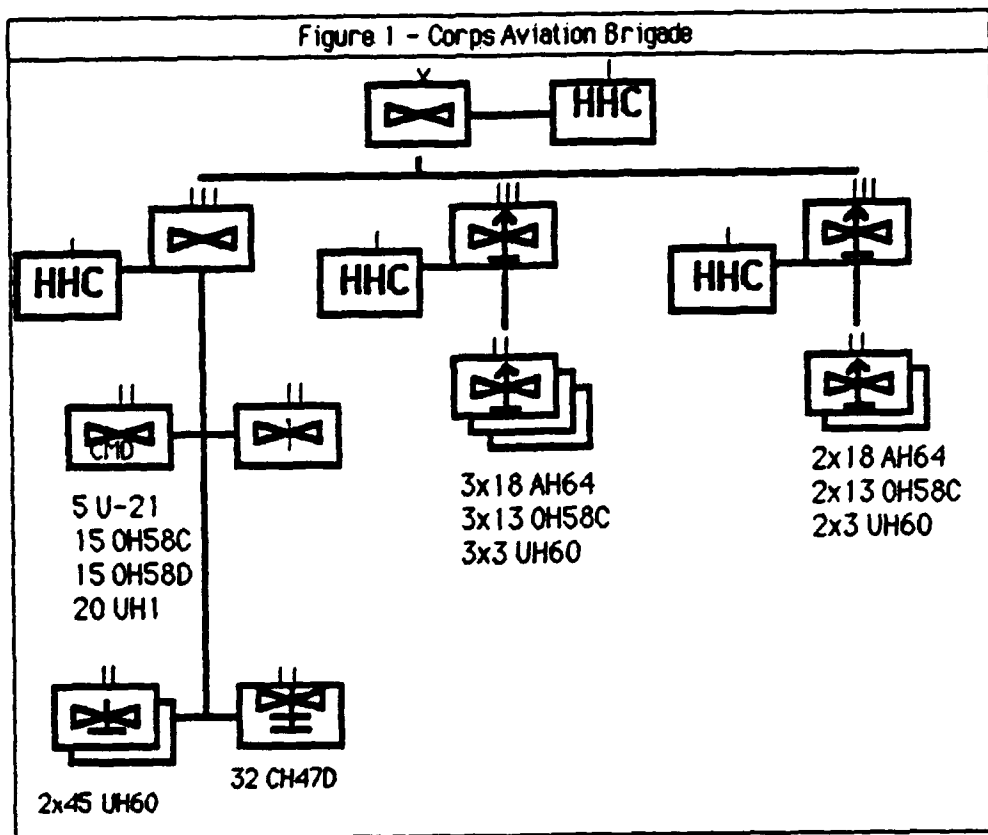
A. Organizational Models

To determine the best attack helicopter organizational structure to fight the deep battle on the ALBF battlefield, the proposed aviation division must be compared with the current attack helicopter organizations in a heavy corps. While both organizations have strengths and weaknesses, this comparison should determine which model *best* supports the ALBF deep battle.

Current Attack Helicopter Organizations

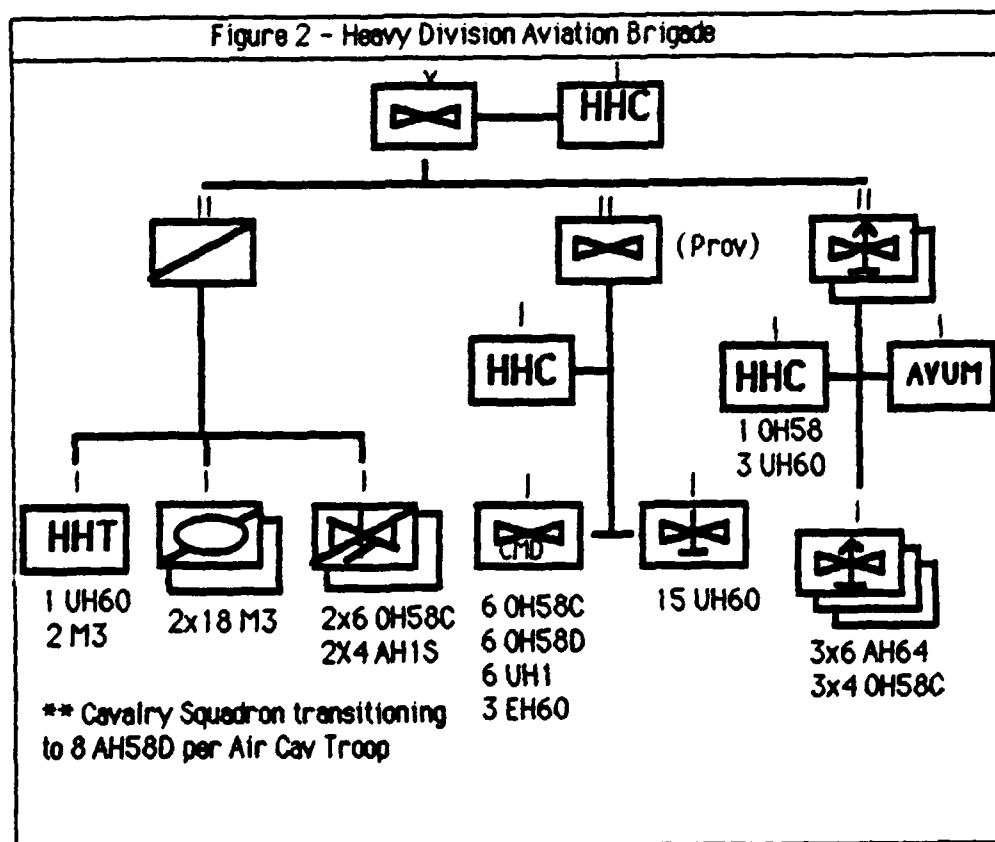
Attack helicopter units are currently assigned to aviation brigades at echelons above corps (EAC), corps, and division levels. Individual brigades differ in structure based on higher headquarters, units available, and location. The mission of aviation brigades at all levels is basically the same. They conduct a full range of maneuver, combat support (CS), and combat service support (CSS) functions. The remainder of this study will focus on those aviation brigades in a heavy corps since the proposed ALBF aviation division will be assigned only to a heavy corps.

The corps aviation brigade's mission is to plan, coordinate, and execute aviation and combined arms operations in support of the corps scheme of maneuver.³⁵ Attack helicopter units find, fix, and destroy the enemy through fire and maneuver. Utility and medium lift helicopter units provide CS and CSS in coordinated operations as an integral member of the combined arms team. Other organic assets provide command, control, communication, and intelligence (C³I) functions for the commander. The diverse capability of the aviation brigade allows the corps commander to exploit the third dimension of the battlefield.



A typical heavy corps aviation brigade, as illustrated in Figure 1, is composed of one headquarters and headquarters company, one aviation group, and two attack helicopter regiments. The aviation group has two assault helicopter battalions (UH-60), one medium lift helicopter battalion (CH-47), one command aviation battalion, and one air traffic control battalion. The attack helicopter regiments vary in size with up to three attack helicopter battalions each. Budgetary constraints limit the number of attack helicopter units actually fielded. For this study, one attack helicopter regiment will have three attack helicopter battalions and the other will have two battalions. A coordinating staff plans the multiple missions required of the brigade. The subordinate attack helicopter regiments and the aviation group also have tactical planning headquarters elements that coordinate and execute aviation and combined arms operations.

The corps aviation brigade, considered a maneuver headquarters for specific missions, receives a variety of doctrinal missions throughout the depth of the battlefield. In the close battle the corps aviation brigade executes counterattacks or conducts security operations. Subordinate battalions may be placed OPCON to a division to assist in the division's close battle. In deep operations the corps aviation brigade combines with indirect fires, EW assets, and BAI to provide the corps commander a means of shaping the close battle. In rear operations it provides responsive, mobile combat power to counter significant threats.



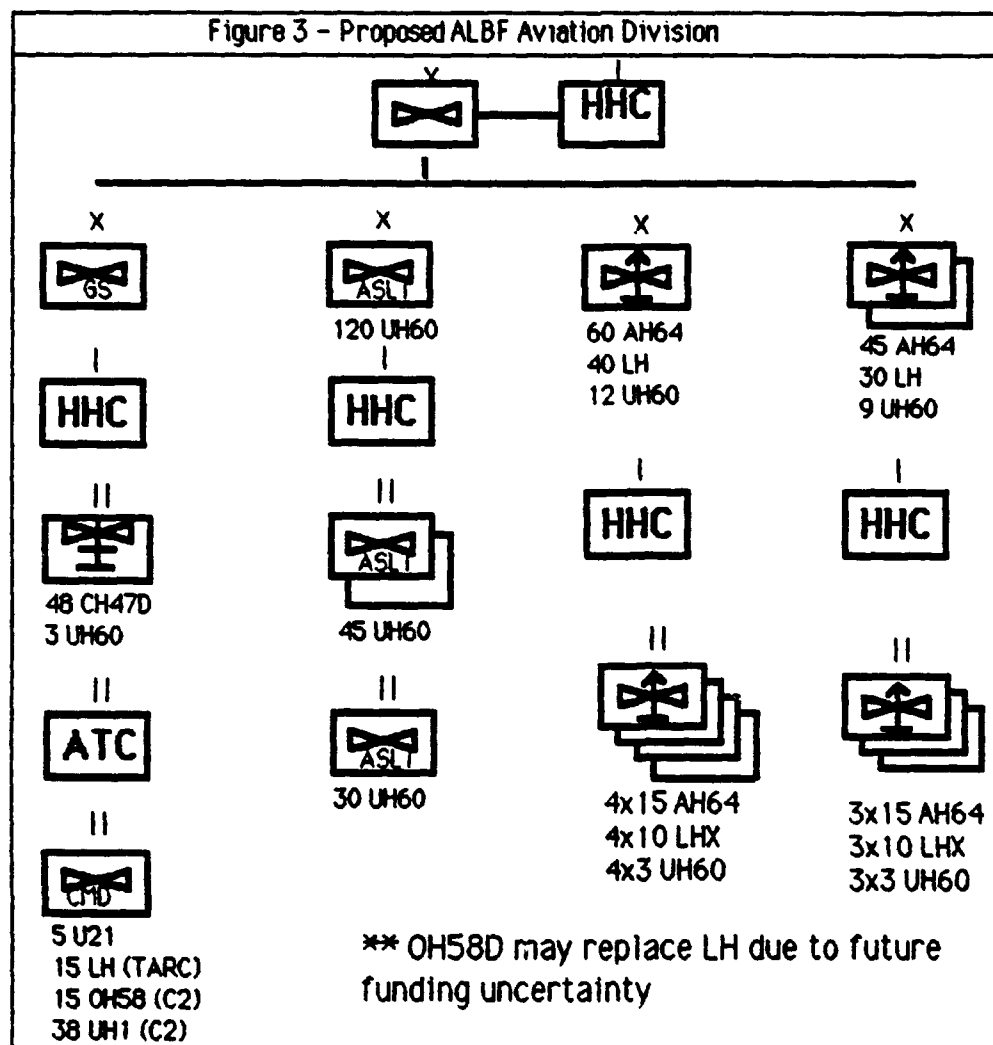
The heavy division aviation brigade, as illustrated in Figure 2, is composed of one headquarters and headquarters company, one cavalry squadron, two attack helicopter battalions (CONUS based divisional aviation brigades have only one attack helicopter

battalion), one assault helicopter company, and one command aviation company.³⁶ In July 1990 the Chief of Staff of the Army approved a provisional battalion headquarters for command and control of the separate companies.

Each division in a heavy corps possesses an organic aviation brigade to enhance the division's ground scheme of maneuver. The aviation brigade provides the division commander a potent anti-armor force as well as the capability to shape the battlefield for ground maneuver. It also provides the division with a fourth maneuver brigade, when augmented, allowing greater flexibility. The brigade is capable of planning and coordinating maneuver, CS, and CSS operations.

Proposed ALBF Aviation Division

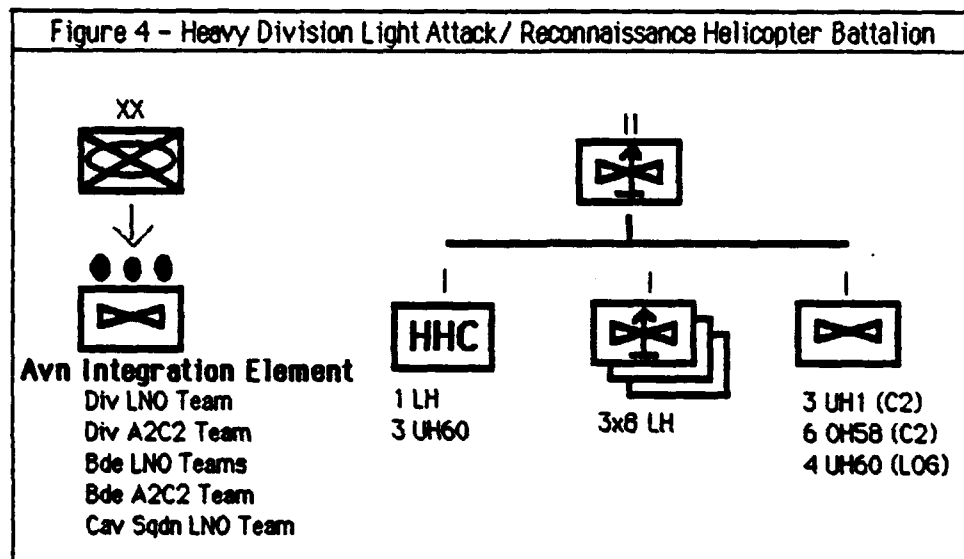
The proposed aviation division continues to provide a full range of maneuver, CS, and CSS support to the corps and the ground maneuver divisions. The aviation division, as illustrated in Figure 3, consists of three heavy attack helicopter brigades, an air assault brigade, and a general support brigade.³⁷ Each of the attack brigades is staffed as a maneuver organization enabling the corps commander to employ these assets as part of the aviation division, as an independent brigade, or as a support element by placing them OPCON to a ground maneuver division. The general support brigade is essentially unchanged from the current aviation group of a corps brigade. The assault helicopter brigade is composed of three assault helicopter battalions.



Proposed Heavy Division Light Attack/Reconnaissance Helicopter Battalion

The proposed ALBF structure of attack helicopter assets at the division level creates a light attack/reconnaissance helicopter battalion.³⁸ This smaller and more agile organization provides only minimal essential, habitually required organic aviation support to the division. The battalion, as shown in Figure 4, is formed primarily from assets of the current cavalry squadron and command aviation company and consists of three light attack/reconnaissance companies and a general support aviation company.

The staff of the divisional battalion is larger than a normal battalion. The additional personnel perform as airspace management teams, aviation liaison officers, and a planning and integration cell. Since all of the heavy attack helicopter assets, most of the assault helicopter support, and most of the aviation maintenance support will be provided by corps, the planning and integration cell will perform vital tasks to ensure the successful employment of aviation assets at the divisional level.



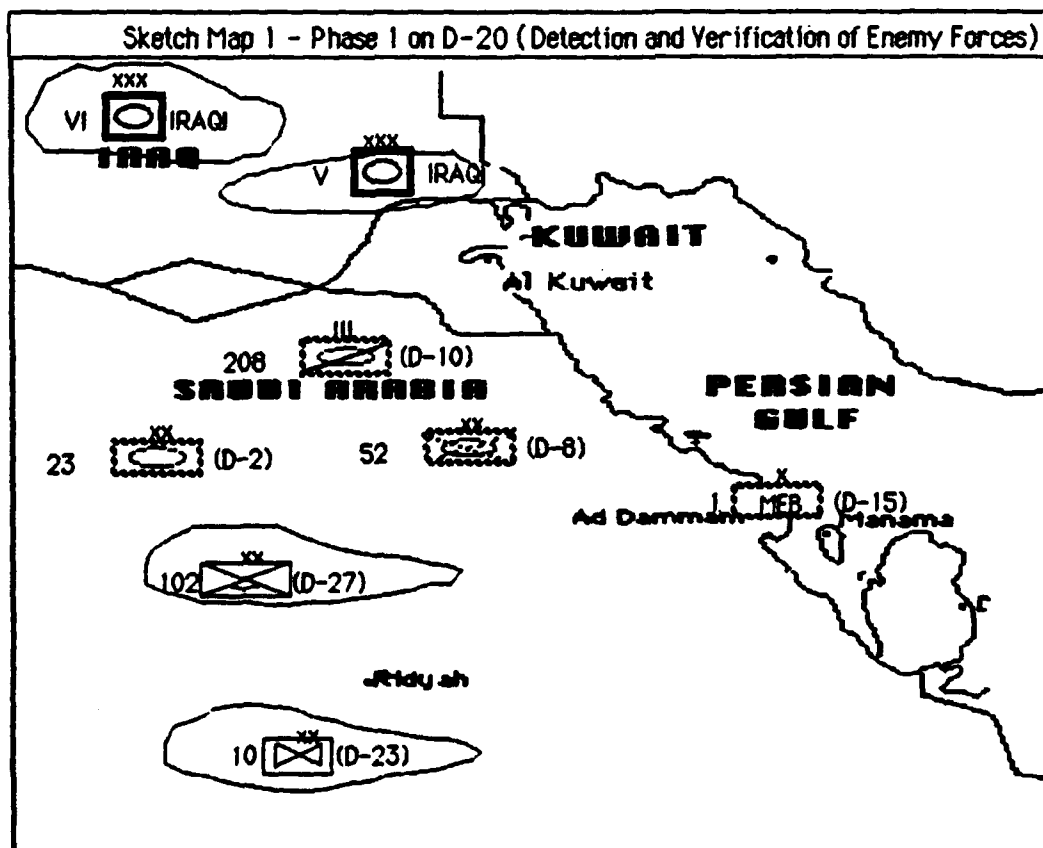
B. The Scenario

A southwest Asia defensive scenario using the ALBF concept will provide the setting to evaluate the tactical effectiveness of the current attack helicopter organizations versus the proposed aviation division.³⁹ The year is 1998 to accommodate the implementation of the ALBF concept and integration of advanced systems into the inventory. The situation parallels the Iraqi invasion of Kuwait in August 1990. In this scenario, however, the Iraqi forces continue south into Saudi Arabia. The objectives of the Iraqi attack are to seize the Saudi oil production facilities and the ports of Al Kuwait, Ad Damman, and Al Jubail. Seizure of these ports delay the debarkation of a heavy U.S. force sent to Saudi Arabia.

U.S. national intelligence sensors identify a massing of forces in southern Iraq at D-30. Intelligence indicators point toward an imminent attack. Upon request from the Saudi Arabian government, the President directs the CENTCOM Commander to deploy elements to Saudi Arabia as a defensive shield and to protect vital U.S. interests. The Xth (US) Corps is identified to conduct this contingency operation.⁴⁰ The President authorizes the use of military force to defeat the Iraqi forces in defense of Kuwait and Saudi Arabia.

Phase 1 - Detection and Verification of Enemy Forces

The Xth (US) Corps commander immediately initiates Phase 1 at D-30 by establishing a "detection zone." Advanced sensors, to include JSTARs and Unmanned Aerial Vehicles (UAVs), locate and track the enemy forces as they continue to mass in assembly areas in southern Iraq. The sensors positively identify the Vth and VIth Iraqi corps.



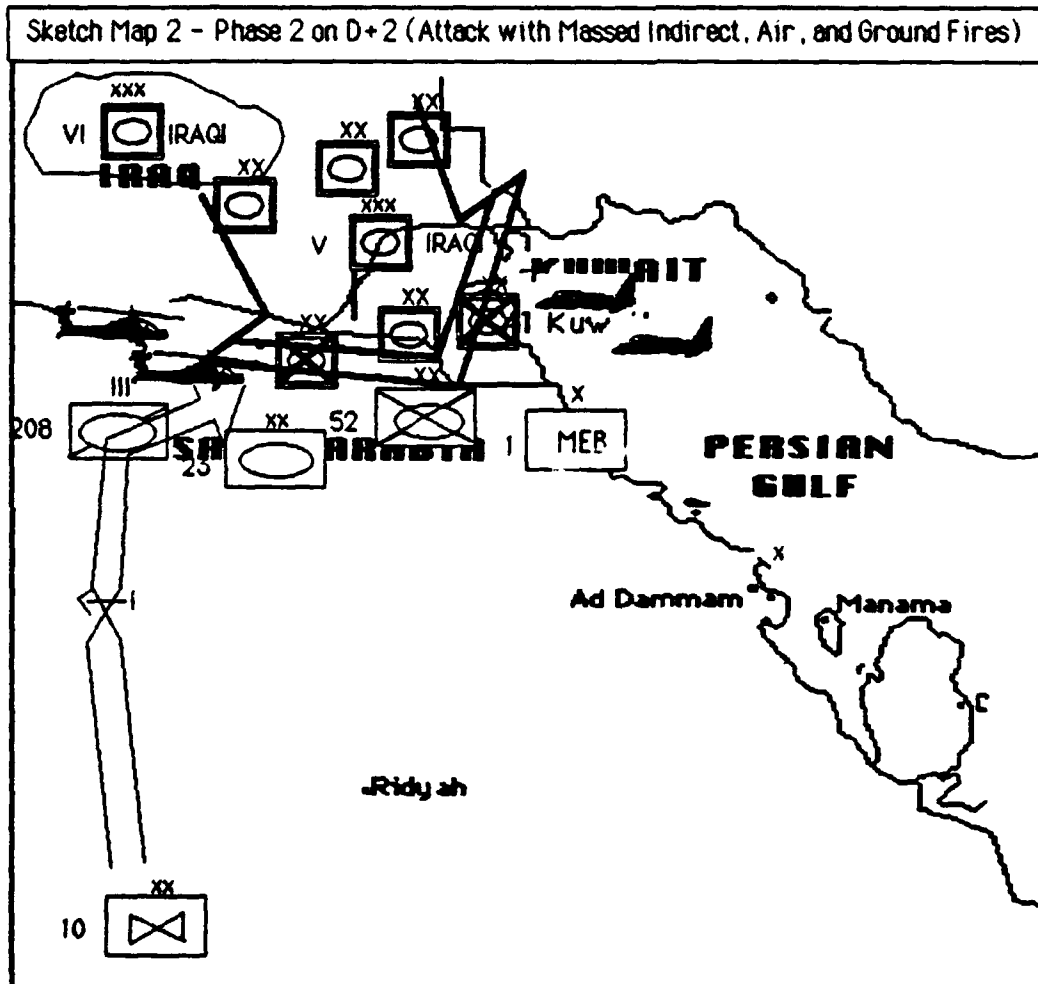
As depicted in Sketch Map 1, the Vth Iraqi Corps consists of four armor and two mechanized divisions and occupies staging areas just north of Kuwait. The VIth Iraqi Corps consists of three armor and one mechanized divisions and occupies staging areas to the northwest. Based on the IPB and deployment times of the heavy forces, the Xth (US) Corps commander determines that the battle area where he intends to defeat the enemy will be in northern Saudi Arabia.

While intelligence assets continue to develop the target, the initial elements of the 102d Airborne Division arrive in the vicinity of Khalid Military City on D-27. Other early arrivals include the divisional and corps attack helicopter assets on D-24 and a MLRS battalion on D-23. The 102d Airborne Division establishes a screen along the Iraqi border with Kuwait and Saudi Arabia on D-17. While Xth (US) Corps heavy forces deploy from CONUS, a Marine Expeditionary Brigade (MEB) arrives at Al Jubayl on D-15 to secure the port for their arrival. Advanced parties build tactical support areas anticipating the arrival of the 208th ACR on D-10, 52d Mechanized Division on D-8, and the 23d Armored Division on D-2. These forces close into dispersed assembly areas outside Iraqi indirect fire range and begin preparations for combat. On D-2, JSTARs detects three divisions preparing to attack south into Kuwait. On D-Day, Vth Iraqi Corps attacks into Kuwait with two mechanized divisions and an armored division in the first echelon. Three armored divisions compose the second echelon. The VIth Iraqi Corps remains in assembly areas but prepares to follow Vth Corps as a second operational echelon.

Phase 2 - Attack with Massed Indirect, Air, and Ground Fires

By D+2 the Vth Iraqi Corps seizes Kuwait and its lead elements approach the Saudi border. 102d Airborne Division and Kuwaiti forces fight a delay, but they are no match for the heavy Iraqi forces. While intelligence assets continue to target the Vth Iraqi Corps,

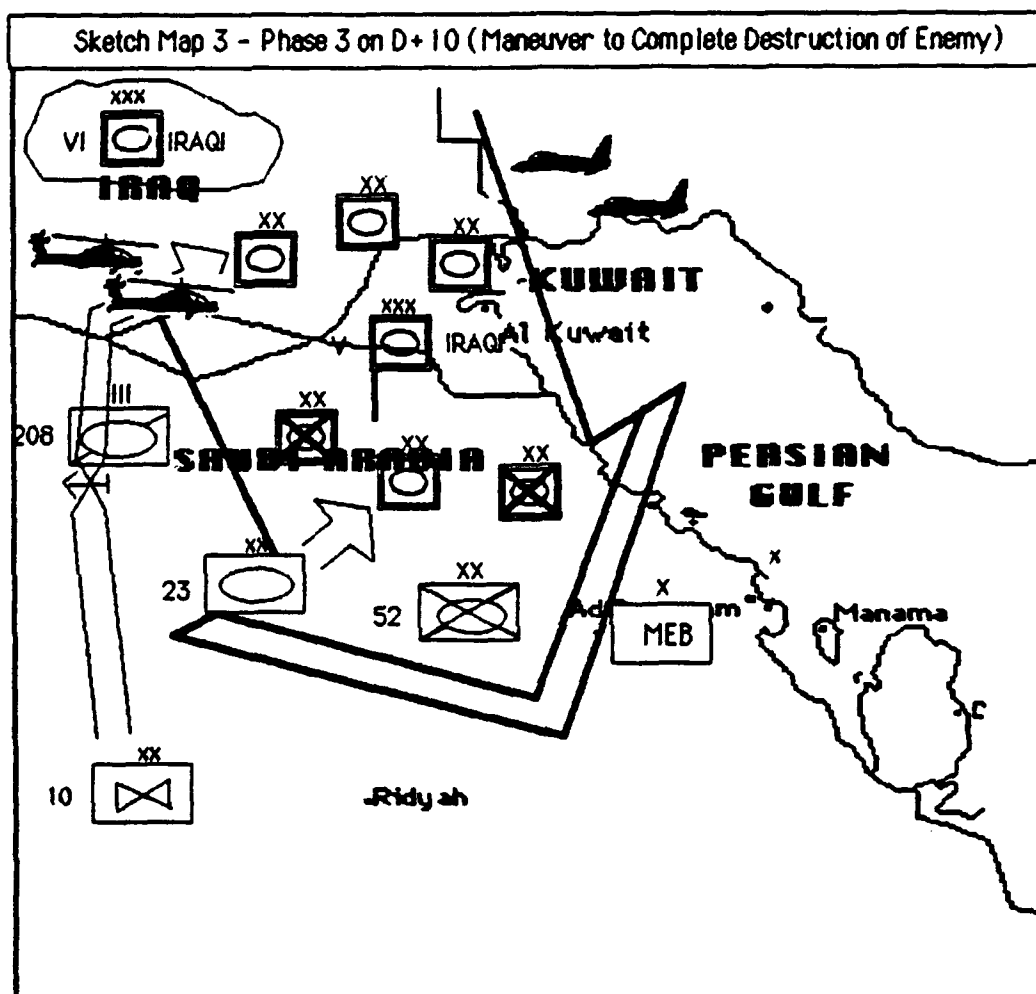
fires are conducted against enemy high value targets throughout the depth of the battlefield. Air Force and Navy aircraft attack the Iraqis as they continue to move south. The Vth Iraqi Corps comes within range of corps deep attack assets as they cross the Saudi border. As illustrated in Sketch Map 2, synchronized deep attacks by the corps attack helicopter units, BAI, EW, and ATACMs engage them.



Phase 3 - Maneuver of Air and Ground Units to Destroy the Enemy

Once conditions are set for the successful defeat of Vth Iraqi Corps, the Xth (US) Corps commander commits maneuver forces to complete the destruction of the enemy in the preselected battle area. As depicted in Sketch Map 3, the ground maneuver forces

concentrate on the three lead divisions while the corps aviation assets attack the second echelon divisions. Synchronized fires and maneuver continue throughout the enemy's depth.



Phase 4 - Recovery and the Preparation for Continued Operations

After the defeat of Vth Iraqi Corps, the maneuver forces return to assembly areas. Combat power is reconstituted and units prepare for follow-on operations against the Vth Iraqi Corps. A new detection zone is established to target the Vth Corps and the ALBF cycle begins again.

C. Critical Analysis of Attack Helicopter Organizational Models Conducting Deep Attacks

The ALBF concept requires attack helicopter organizational changes to meet the demanding requirements of the new battlefield.⁴¹ Organizations will need to conduct autonomous operations as they operate over the greater depth and breadth of a nonlinear battlefield. ALBF places more emphasis on offensive operations requiring flexible and agile logistics. Because of the expanded battlefield, the unit's dependence upon advanced communications and data transmissions increases. A stronger command structure results from the autonomy of operations, complexity of mission, and synchronization of assets.

An analysis of deep attacks conducted by attack helicopters on the 2d echelon divisions of the Yth Iraqi Corps will determine which organizational model is the most combat effective. The attack helicopter units targeted the 2d echelon divisions because of their influence on the close battle within 72 hours, the time required to concentrate friendly forces, attack the enemy, and disperse to assembly areas.⁴² The Battlefield Operating Systems of maneuver, intelligence, command and control, and combat service support provide comprehensive criteria.

Maneuver

Maneuver is the movement of forces in relation to the enemy to secure or retain positional advantage.⁴³ The nonlinear battlefield creates conditions which require mobility and firepower for effective deep maneuver. The exploitation of mobility and firepower relies on the principle of war, Mass. To achieve success in the ALBF deep battle, mass must be concentrated at the decisive time and place. Massing attack helicopters on a nonlinear battlefield is quite similar to massing them on a linear battlefield. Massing quickly to fight a highly synchronized battle requires great flexibility and agility.

The commander of Xth (US) Corps fights the deep battle and maneuvers his attack helicopters, augmented by ATACMs, EW, and BAI, to destroy the enemy second echelon divisions. Helicopters maintain an obvious mobility advantage with greater physical agility and flexibility over the ground maneuver force. The ability to capitalize on these maneuver advantages is decisive in the deep battle. Deep attacks are most effective when attack helicopters penetrate into the enemy rear area and engage armored vehicles moving on roads and in open terrain, especially at night. These very complex and risky attacks require accurate near real-time intelligence to ensure the attack helicopters arrive at the engagement area when the targeted enemy forces are there. To protect the attack helicopters, enemy air defense artillery and other counterair capabilities must be suppressed or destroyed. All of these facets of deep battle must be synchronized to allow the attack helicopters to maneuver and return safely.

Before the firepower aspect of maneuver can be analyzed, it is necessary to determine what is required to stop the advance of the Vth Iraqi Corps 2d echelon divisions. It is assumed that the Iraqi formations will continue to attack as long as they maintain sufficient combat power to continue movement. Once a unit suffers 60% losses, they will halt and assume a hasty defense awaiting VIth Iraqi Corps forces to pass through them and continue the attack.⁴⁴ In this particular scenario, the three 2d echelon armored divisions each have 750 armored vehicles assigned totalling 2,250 armored vehicles.⁴⁵ Based on an operational readiness rate of 90%, the 2d echelon divisions attack with 2,025 armored vehicles. As a result, the objective of the deep attack is to kill 1,215 armored vehicles to force the 2d echelon into a hasty defense.

The current aviation organizations provide the corps commander with one aviation brigade to conduct deep attacks. The brigade consists of two regiments totalling five battalions. Each battalion is equipped with AH-64's and maintains an operational readiness rate of 75%. Using eight Hellfires per AH-64 and the 70% probability of kill, after five

engagements the attack brigade kills 1,227 vehicles while losing 65 aircraft.⁴⁶ While the combat multipliers of ATACMs, BAI, and EW are not calculated in this analysis, it is doubtful whether their combined effects could destroy the remainder of the 2d echelon forces.

The proposed aviation division allows the corps commander a significant capability of "weighting" the deep battle.⁴⁷ The three attack helicopter brigades consist of nine AH-64 battalions. After only three engagements, compared to the five engagements required by the current organization, the aviation division destroys 1,618 enemy armored vehicles making the 2d echelon divisions combat ineffective while losing 87 aircraft.⁴⁸ The combat effectiveness further increases with the fielding of the LH. An LH equipped aviation division, using the same criteria except for a .9 survivability rate, destroys 1,900 enemy armored vehicles while losing only 33 aircraft.⁴⁹

The synergistic effect of massing attack helicopters to conduct the deep attack provides the difference of combat effectiveness. The corps commander has 162 attack helicopters available throughout the corps. He cannot afford to permanently assign 72 of them to divisions which may not be engaged with the enemy. These 72 attack helicopters can make a decisive difference on the outcome of the deep battle. The synergistic effect of massing attack helicopters will further increase enemy losses while increasing the survivability of friendly aircraft.

This study concludes that the proposed aviation division can mass enough effective combat power to halt the advance of the 2d echelon divisions but will suffer significant losses. The reader might question whether the corps commander would commit the aviation division to such a mission knowing it would lose a significant portion of its combat power? However, a corps commander deciding to commit the attack helicopters to a deep attack implies that the objective is his highest priority target and commitment of attack helicopters will produce results that can not be achieved by any other means such as BAI or

indirect fires.⁵⁰ He takes a calculated risk in an effort to wrest the initiative from the enemy and produce decisive results.

Based on maneuver, the aviation division appears more favorable than current decentralized organizations when conducting deep operations, but several problems surface. The aviation battalion at division level provides only minimal attack helicopter support for the division's close and rear battles. If a ground maneuver division requires attack helicopters to defeat an armor threat in the close or rear battles, battalions or brigades from the aviation division can be placed OPCON to the ground division for a specific mission or until the threat is defeated. Initially this may cause problems since the attack helicopter units will not be completely familiar with the ground maneuver division's operating procedures, capabilities, and limitations. The reverse will also be true as the ground division may not fully understand the attack helicopter unit's operating procedures, capabilities, and limitations. Establishing standardized procedures and habitual peacetime training relationships become essential and will aid in minimizing this problem. However, the possibility of friction intervening in any operations will always exist.

Another problem is the lack of dedicated fire support to the attack helicopter units conducting the deep attacks. The corps tasks artillery units throughout the corps sector to provide fire support for the deep battle, but they seldom task any units to provide direct support fires for the aviation assets. This problem could best be solved by placing MLRS assets in a direct support relationship to the aviation division.⁵¹ Placing a MLRS brigade in direct support of an aviation units is controversial and differs from current doctrine, however several issues support doing so. The MLRS brigade headquarters would provide a centralized planning headquarters for joint suppression of enemy air defenses (J-SEAD). MLRS units firing ATACMs possess the capability to range throughout the corps sector thus negating the requirement for a complex deep battle fire support plan executed by numerous

units and enhancing the survivability of both Army and Air Force aircraft conducting attacks across the FLOT. The MLRS brigade, instead of the corps staff who have higher priorities, would coordinate the fires of other corps artillery units required to fire localized and complementary suppression of enemy air defense systems. The MLRS brigade would also provide deep fires on enemy formations in coordination with the attack helicopters and Air Force assets. When not providing direct support fires for the aviation division, the MLRS units would provide general support (GS) fires throughout the depth of corps sector.

A major limitation of attack helicopter units concerns their inability to seize or hold terrain. Situations may arise in a deep battle which require key terrain to be seized or held. This type mission requires ground maneuver forces. No such capability exists in the current or proposed organizational models. The addition of an air assault brigade to the aviation division would fulfill this mission. While not degrading the aviation division's mobility advantage, the air assault brigade could conduct operations allowing the aviation division to seize and hold the vital terrain for short periods of time.⁵² The air assault brigade, equipped with antitank weapon systems, would make the deep battle a true combined arms operation. When not employed in a maneuver role, the air assault brigade could provide effective local security for the valuable aviation and MLRS assets. The addition of an air assault brigade would greatly enhance the effectiveness of the aviation division to fight the deep battle.

In summary, the proposed ALBF aviation division has the mobility and firepower to mass on the 2d echelon divisions and degrade them to a level that forces a hasty defense. Current aviation organizations available to the corps commander cannot accomplish this mission. The corps commander cannot afford attack helicopters decentralized to division level to sit idle. Centralization of attack helicopters under one headquarters increases combat effectiveness and eases the synchronization of maneuver. The addition of fire support and

ground maneuver forces would further enhance the effectiveness of the aviation division in the deep attack.

Intelligence

The requirement for accurate and timely intelligence information has always been important and this requirement will not change for ALBF. What will change is the technology that will be available to acquire this information and transform it into usable intelligence. The ALBF concept assumes accurate, near real-time intelligence. Using redundant, complementary, and overlapping sources, "we will know where significant enemy forces are almost all the time."⁵³ Significant enemy forces include all battalion-size elements and larger.⁵⁴ Intelligence assets will also be able to target and confirm locations of enemy air defense units. The accuracy and timeliness of such intelligence is especially important for attack helicopters in the deep battle. Intelligence support to gather this myriad of information includes Army and cross-service aerial surveillance, remote sensors, tactical air reconnaissance, long range surveillance elements, interrogation personnel, special operating forces, and national level intelligence.⁵⁵

The collection effort must support the proactive deep attack process of decide-detect-deliver because of the large number of possible targets and the extended area of operation. After making the decision to conduct a deep attack against the Vth Iraqi Corps 2d echelon divisions, the commander establishes the focus and priorities for intelligence collection management. The collection plan focuses on named areas of interest (NAI) and target areas of interest (TAI). The NAIs and TAIs combine with continuously updated IPB to trigger several actions and decisions in the deep battle such as indirect fires and launching of attack helicopters.

Accurate and timely intelligence focused at the corps level provides the key to the success of the attack helicopter assets in the deep battle. The decision cycle of the attack

helicopter commander is greatly shortened if he receives near-real time intelligence. The current decentralized aviation organizations possess few means of acquiring such intelligence in a timely manner. The corps aviation brigade may receive the intelligence because of their relationship to the corps, however the divisional aviation brigades must work through at least two layers of headquarters to receive the required intelligence. This obviously takes extra time and yields outdated information. As a result, divisional attack helicopter units rarely conduct deep attacks with adequate intelligence.

The proposed aviation division shortens the deep attack decision-making cycle by streamlining the flow of intelligence. The aviation division commander and staff provide integral input in the "decide" step of the deep attack process. Based on the corps commander's scheme of maneuver, they can focus on a specific target and provide the corps G-2 with their priority intelligence requirements allowing corps intelligence analysts to focus on key indicators. Near real-time intelligence can then be provided to the attack helicopter units conducting deep attacks greatly enhancing their success rate.

The intelligence operating system contributes to the accomplishment of the deep attack with situation development, target development, and providing near real-time intelligence. Collection assets available at corps level provide the accurate, timely information required to conduct deep attacks. The fusion and dissemination of the myriad of intelligence takes a considerable amount of time. The proposed aviation division shortens the time to distribute intelligence to units. The division provides a direct input to the collection management process at corps level and provides a direct flow of intelligence to the units actually conducting the missions. In summary, the proposed ALBF aviation division provides a unity of effort for the intelligence operating system in the deep battle.

Command and Control

Command and control is defined as "the exercise of authority and direction by a properly designated commander over assigned forces in the accomplishment of the mission."⁵⁶ The command and control process is designed to find out what is happening, decide what actions to take, issue instructions, and supervise the execution. It includes the four functions of planning, coordinating, directing, and controlling forces.⁵⁷ The continuous and interactive process is determined by the mission and the situation.

Planning for a deep battle begins with the receipt of a mission. The corps commander provides planning guidance on what target should be attacked and how the attack should be synchronized. The commander's intent must be clear and understandable. The staff is then charged with planning, coordinating, and synchronizing a plan to accomplish the mission. The final plan must be simple and concise.

Current attack helicopter organizations do not have the capability to plan deep attacks as envisioned by the ALBF concept. The austere staffs of current aviation organizations can barely fulfill this task on today's ALB battlefield; however, the increased requirements caused by a nonlinear battlefield and an extended area of operation exceed their capabilities both in number of personnel and equipment.

The proposed aviation division simplifies the command and control of attack helicopters in the deep battle. It provides a centralized headquarters to plan this very complex mission. Additionally, the aviation division possesses the personnel and resources to coordinate with multiple agencies throughout the corps sector. The aviation division's more robust staff ensures synchronization occurs from units throughout the corps area. They also ensure all facets of the attack are closely coordinated for maximum effect.

Attack helicopter units must expect decentralized execution when conducting deep attacks. This requires the attack helicopter brigade and battalion commanders to understand the overall mission and commander's intent at least two levels above their own.

Sound judgment, initiative, responsible leadership, and standardized operating procedures (SOPs) increase the probability of success in decentralized deep attacks.

Many problems must be solved to ensure complete command and control of ALBF deep attacks either by current organizations or the proposed aviation division. Effective command and control of a deep attack requires secure, jam-resistant communication systems that have reduced signatures. Enhanced multi-route systems with increased automation will contribute to command and control by increasing agility. Data link transmissions provide the near real-time intelligence that a deep attack requires and allows the commander to make rapid decisions. Communications must be reliable to a range of at least 200 kilometers due to the extended battlefield. Command posts (CPs) must operate on-the-move. Mobile CPs with redundant communications ensure survivability and continuous command and control throughout the operation.

The cornerstone of the successful execution of a deep attack by attack helicopters is command and control. The commander is the key. The proposed aviation division allows mission-oriented command and control. While providing more command personnel to plan, coordinate, and synchronize deep attacks, the aviation division allows for less control as subordinate commanders use their judgment and initiative to accomplish the mission. The proposed ALBF aviation division increases the agility, initiative, and synchronization of command and control of attack helicopters in the deep battle.

Combat Service Support

Massing attack helicopters to defeat the threat with a deep attack requires minimum forward movement of logistic support. Class III, Class V, and forward maintenance support teams must deploy into forward areas from which they can support the mission. While the extended area of operations magnifies the sustainment problem of deep attacks,

the organic UH-60's and CH-47's assigned to both organizational models can easily transport the required amount of supplies to support the mission.

The ALBF focus of sustainment shifts to unit mission support rather than the ALB area support concept. The "push" system provides predictive logistics based on real-time logistical data flow. The unit mission support concept reduces the logistics burden on the maneuver commander by providing task organizable and packageable support teams that provide both cyclical and continuous sustainment.⁵⁸

Sustainment of deep attacks with attack helicopters does pose some concerns. Arming, fueling, fixing, and providing medical support to these units provide unique challenges. The most critical aspect of this support is maintenance of secure lines of communication (LOC), either air or ground, to ensure timely and responsive support is provided well forward in the area of operations. Current aviation organizations and the proposed aviation division both possess the capability to sustain themselves during deep attacks. Organic support elements provide adequate maintenance, fueling, and arming capabilities from forward arming and refueling points (FARPs). Medical support requires aerial evacuation of casualties from a deep battle engagement area. Current procedures evacuate the casualties directly to rear area medical facilities because of speed of evacuation and increased medical support capabilities.

The major difference in sustainment capabilities between current organizations and the proposed aviation division centers on the ability to "surge" maintenance for a deep attack. The current decentralized organizations have limited ability to surge. Even with a successful surge effort only minor increases in combat strength result. A maximum increase of eight to ten AH-64's available for a mission would result from such an effort.⁵⁹ The aviation division enhances the results of surge maintenance. Using centralized control of echeloned aircraft maintenance and float aircraft, an increase of 14

to 19 AH-64's would be available for a deep attack after a surge effort in an aviation division.⁶⁰

Both organizational models possess the capability to sustain deep attacks; however, the proposed ALBF aviation division provides greater flexibility based on its ability to surge maintenance. The centralization of assets provides a greater density of attack helicopters with which to manage the maintenance flow. This proves invaluable not only in the short term surge for the deep attack, but also in the long term maintenance flow. The "push" system of logistical support is based on unit mission support versus area support and reduces the commander's sustainment concerns. A system of echeloned aviation maintenance, perhaps through a Division Support Command (DISCOM), would further enhance the proposed aviation division's combat service support capabilities.

V. Conclusions

Theoretical and historical evidence suggest that the concept of conducting deep attacks can be decisive. While close operations always retain primacy, deep attacks provide the commander the ability to shape the battlefield and seize the initiative. The concept evolved from a "small group of skillful raiders" in Clausewitz's day to today's very complex and complicated combined arms mission requiring the detailed synchronization of the battlefield operating systems. The development of Army aviation, especially the capabilities and potential attack helicopters, has established it as the primary means of conducting deep attacks. The use of aviation has itself evolved from a basic concept of aerial movement to the enemy rear area envisioned by Mikhail Tukhachevskiy to a combined arms attack practiced by the U.S. Army of the 1990's. Massed attack helicopter units capitalizing on their high speed, mobility, and firepower have proven that they can effectively fight the deep battle and enhance the commander's overall scheme of maneuver.

Deep attack theory and methods continue to evolve as technological advances increase capabilities. Current U.S. Army ALB doctrine and the ALBF concept have brought a renewed interest and a requirement to plan and execute deep attacks.

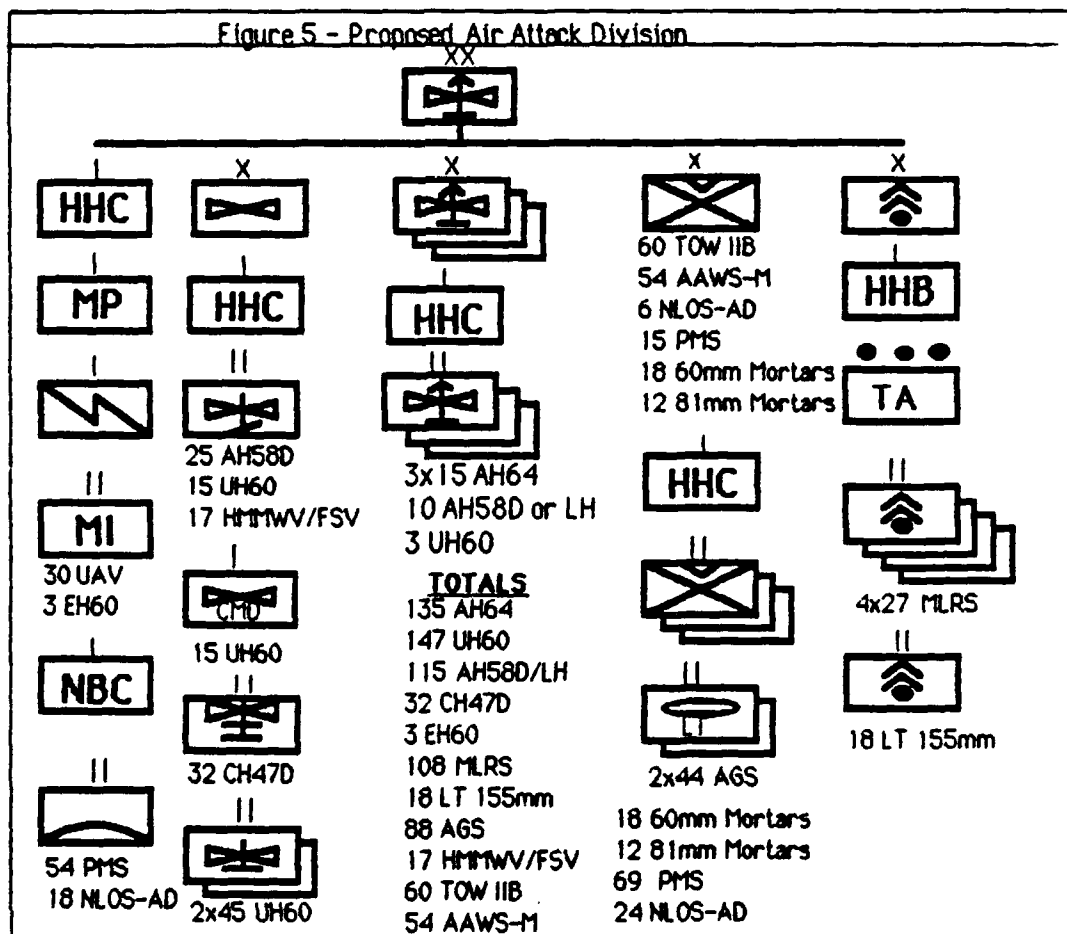
In the southwest Asia scenario and the two organizational models presented, the proposed aviation division can best accomplish the deep attack mission to destroy the 2d echelon divisions of the Vth Iraqi Corps. Mission accomplishment demands accurate and timely intelligence, effective command and control, and logistical supportability. The aviation division possesses the capability to plan, coordinate, and execute the ALBF deep attack with organic assets. The centralization of attack helicopters into an aviation division provides the corps commander with a "flashing sword of vengeance" to fight and win on the ALBF battlefield. On the other hand, the current corps aviation brigade requires substantial augmentation to plan, coordinate, and execute such a mission.

While providing a better alternative than the current organizational model, the proposed aviation division has many shortcomings for conducting deep attacks under the ALBF concept. The nonlinear battlefield and extended area of operations provide unique challenges. This study identified many areas of concern such as lack of fire support and a ground maneuver force. After a detailed analysis of both organizational models, I feel neither truly meets the requirements of the ALBF concept. Additional concerns will surface and must be answered. The ultimate questions are "Whether the proposed aviation division is the best possible organization to meet the ALBF challenges?" and "Are there organizational models that can reduce the significant combat losses while still successfully accomplishing the deep attack?"

VI. Implications.

The Army should continue to study the consolidation of attack helicopters into an aviation division as it appears to offer tactical advantages over the current attack helicopter force structure. Employing the aviation division, the corps commander will be able to use decisive aerial maneuver to destroy enemy forces and shape the close fight. For the first time, the corps commander has the opportunity to employ sufficient organic aerial maneuver forces to fight and win the deep battle. Employment of the aviation division has several implications that deserve mention.

First, formation of aviation divisions will require altering of perceptions of how attack helicopter units conduct missions. Army aviation is now, and will remain in the future, an integral member of the combined arms team. However, in the future ground maneuver commanders will not have attack helicopters available on a daily basis. The corps commander will prioritize missions for the aviation division that best support his overall scheme of maneuver. All the attack helicopters assigned to the corps may be tasked to conduct a deep attack, fight in an aviation division sector, or concentrate in one ground maneuver division's sector on any given day based on METT-T. Ground division commanders will often have to fight without the benefit of attack helicopter support except for their organic light attack/reconnaissance helicopter battalion. Control of attack helicopter assets must be retained by the aviation division and integrated into the battle from a centralized headquarters. As aviation assets are centralized and not as readily available to ground commanders the "fragile, yet trusting and supporting relationship that Army aviation has established with ground maneuver commanders may be jeopardized."⁶¹ A strong, trusting relationship must be established between ground maneuver divisions and the aviation division. Habitual peacetime training relationships between attack helicopter brigades and battalions are key to the success of this challenge.



Second, an air attack division organizational model, as illustrated in Figure 5, should be considered and tested. Neither the current organizations or the proposed aviation division meet the requirements of the ALBF concept. With the acceptance of aviation as a maneuver arm, there is a growing potential for ground maneuver elements to be assigned to an aviation headquarters. Several scenarios exist in the ALBF concept which may require the deep battle forces to seize or hold key terrain such as mountain passes, chokepoints, or bridges to allow time for ground maneuver forces to concentrate and fight the close battle. The addition of an air assault brigade and a direct support artillery brigade would greatly enhance the aviation division's ability to conduct such missions. An air attack

division appears more capable than either the current organizations or the proposed ALBF aviation division of fighting the deep battle under the ALBF concept.⁶²

Third, the aviation division must develop the potential to sustain continuous operations. Advanced technologies now allow attack helicopters to fight at night and in marginal weather. Attitudes and training must coincide with the technological advances. Tough, realistic training opportunities will build aviation units' confidence in their ability to conduct continuous operations as a maneuver headquarters.

Fourth, the command and control of the aviation division in high-tempo maneuver will be challenging. One unique aspect relative to the ground maneuver divisions is that the aviation division must have a different perspective of the entire battlefield, since their area of operation coincides with the entire corps sector. Both the aviation division and attack helicopter brigade staffs will require adequate battle staffs supported by appropriate communications equipment. Aviation officers must train to control both air and ground maneuver forces. This task becomes more difficult as attack helicopter units are further removed from the ground maneuver level.

Fifth, and most important, the aviation division must be approached as a ground maneuver division and not that of a close air support headquarters. Realizing the limitations of aviation assets, the division must be treated as a full member of the combined arms team. It is vital that a distinct separation does not develop between ground and air maneuver divisions because of centralization of assets. The emerging capabilities of an aviation division can greatly contribute to victory on the battlefield.

The aviation division provides both a challenge and an opportunity for the Army and Army aviation. While the ALBF concept presents many challenges that must be overcome, it provides an opportunity to move aviation, particularly attack helicopters, into the predominant force on the future battlefield. The window of opportunity is open for attack

helicopters and it must be exploited. While Army aviation is important today, it can and will be even more important on the ALBF battlefield.

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31. Ostovich, "Army Aviation : Lethal, Versatile, Deployable," p. 23.
32. Summary of the ALBF concept taken from AirLand Battle Future : Alternate Base Case Study (Phase I), p. III-2.
33. AirLand Battle Future : Alternate Base Case Study (Phase I), p. III-2.
34. Evolution of the Army Using Insights from: AirLand Battle Future (Fort Leavenworth, KS: U.S. Army Combined Arms Center, 11 September 1990), p. 19.
35. Information on the Corps Aviation Brigade taken from Field Manual 1-111, The Aviation Brigade (Washington DC: HQ Department of the Army, 1985), p. 1-6. Organizational diagram taken from Figure 1-2, p. 1-7.
36. Information on the Heavy Division Aviation Brigade taken from Field Manual 1-111, The Aviation Brigade (Washington DC: HQ Department of the Army, 1985), p. 1-8. Organizational diagram taken from Figure 1-3, p. 1-9.

37. Information on the Proposed ALBF Aviation Division taken from AirLand Battle Future: Alternate Base Case Study (Phase I), pp. VI-30 to VI-32. Organizational diagram taken from p. VI-32.

38. Information on the Proposed ALBF Divisional Light Attack/Reconnaissance Helicopter Battalion taken from AirLand Battle Future: Alternate Base Case Study (Phase I), pp. VI-33 to VI-35. Organizational diagram taken from p. VI-35.

39. Ideas for the southwest Asia scenario were taken from discussions with LTC Joseph W. McKinney, the CTAC ALBF Project Officer and AirLand Battle Future Concept - Southwest Asia Scenario (Fort Leavenworth, KS: U.S. Army Combined Arms Center, 2 July 1990).

40. Student Text 100-3, Battle Book (Fort Leavenworth, KS: U.S. Army Command and General Staff College, 1 April 1989), Appendix E.

41. These requirements identified in AirLand Battle Future: Alternate Base Case Study (Phase I), p. VII-2.

42. Field Manual 100-15, Corps Operations (Washington D.C.: HQ Department of the Army, 15 November 1988), p. 3-18.

43. Field Manual 100-5, Operations, p. 12.

44. Field Manual 100-2-1, The Soviet Army, Operations and Tactics (Washington D.C.: HQ Department of the Army, July 1984), p. 5-40.

45. AirLand Battle Future Concept - Southwest Asia Scenario, Threat Strengths Chart.

46. These figures are derived from applying criteria (expected survival rates for deep attacks are .5 for OH58/UH1/AH1, .7 for AH64, and .9 for the LH) published in "Fielding a Light Helicopter is Vital to Future Army", Army (Alexandria, VA: Association of the U.S. Army, August 1990), pp. 27-38, to a formula determined by James E. Simmons, Army Aviation: Does It Provide an Answer to Operational Maneuver in the Central Region? (Fort Leavenworth, KS: School of Advanced Military Studies, U.S. Army Command and General Staff College, 7 June 1990), p. 51.

Aircraft Assigned x Operational Readiness Rate = Aircraft Available for Mission x Number of Hellfire Missiles Carried per Aircraft (8) = Total Number of Hellfires Fired per Engagement x Probability of Kill (70%) = Number of Armored Vehicles Destroyed
Helicopters Destroyed = (1.0-Expected Survival Rate for Deep Attacks)x#AC Available for Mission.

AC ASSG x OR = AC AVAIL	x # MSL	= TOT MSLS	x Pk	= TKS DES	HEL DES
90 x .75 = 68	x 8 =	544	x .7 =	381	20
90-20=70					
70 x .75 = 53	x 8 =	424	x .7 =	297	16
70-16=54					
54 x .75 = 41	x 8 =	323	x .7 =	230	12
54-12=42					
42 x .75 = 32	x 8 =	256	x .7 =	179	9
42-9=33					
33 x .75 = 25	x 8 =	200	x .7 =	140	8
TOTAL LOSSES:	TANKS DESTROYED = 1,227		HELICOPTERS (AH64) DESTROYED = 65		

47. AirLand Battle Future : Alternate Base Case Study (Phase I), p. VI-30.

48. Based on formulas as noted in Endnote 44 using AH64 criteria.

<u>AC ASG</u>	<u>x OR</u>	<u>= AC AVAIL</u>	<u>x</u>	<u>* MSL</u>	<u>= TOT MSLs</u>	<u>x Pk</u>	<u>= TKS DES</u>	<u>HEL DES</u>
162	x .75 =	122	x	8 =	976	x .7 =	683	37
162-37=125								
125	x .75 =	94	x	8 =	752	x .7 =	526	28
125-28=97								
97	x .75 =	73	x	8 =	584	x .7 =	409	22

TOTAL LOSSES: TANKS DESTROYED= 1,618 HELICOPTERS (AH64) DESTROYED = 87

49. Based on formulas as noted in Endnote 44 using LH criteria.

<u>AC ASG</u>	<u>x OR</u>	<u>= AC AVAIL</u>	<u>x</u>	<u>* MSL</u>	<u>= TOT MSLs</u>	<u>x Pk</u>	<u>= TKS DES</u>	<u>HEL DES</u>
162	x .75 =	122	x	8 =	976	x .7 =	683	12
162-12=150								
150	x .75 =	113	x	8 =	904	x .7 =	633	11
150-11=139								
139	x .75 =	104	x	8 =	832	x .7 =	584	10

TOTAL LOSSES: TANKS DESTROYED = 1,900 HELICOPTERS (LH) DESTROYED = 33

50. Corps Deep Operations Tactics, Techniques and Procedures Handbook (1990) (Fort Leavenworth, KS: U.S. Army Combined Arms Combat Developments Activity, April 1990), p. 10.

51. This concept is not in accordance with current doctrine for use of MLRS. The Field Artillery School opposes this concept while the Aviation School endorses it. It has been discussed at the ALBF General Officer Workshops (GOWS) at Fort Leavenworth. The ALBF writers are split in their support for the idea. I support the concept because of the need for responsive SEAD as well as fires in the engagement areas which are well beyond the range of tube artillery.

52. This concept is not in accordance with current doctrine, however, most of the ALBF writers approve of the idea. The Aviation School endorses the concept and the Infantry School is continuing to study the concept. At a recent ALBF GOWS General Foss stated that his only concern with such a concept was that he did not want the mobility of the aviation division tied to an infantry brigade. The aviation division has enough organic resources to move the brigade so that does not appear to be a major problem. A key point of this concept that shouldn't be overlooked is the security this brigade would provide to the aviation and MLRS assets on a nonlinear battlefield. This concept also provides a self-contained reaction force for rear area operations when the division is not employed as a maneuver division.

53. AirLand Battle Future : Alternate Base Case Study (Phase V) (Fort Leavenworth, KS: U.S. Army Combined Arms Combat Developments Activity, 18 June 1990), p. 11-8.

54. This statement taken from a class to the School of Advanced Military Studies on AirLand Battle Future Concept presented by COL Stephen Kempf on 5 September 1990.

55. Field Manual 100-15, Corps Operations, p. 3-45.

56. Ibid., p. 3-52.

57. Field Manual 101-5, Staff Organization and Operations (Washington D.C.: HQ Department of the Army, May 1984), pp. 5-6 to 5-7.

58. AirLand Battle Future : Alternate Base Case Study (Phase V), p. IV-30.

59. These figures based on surge maintenance decreasing the number of operational aircraft 35-45% increase.

60. Ibid.

61. Interview with Thomas R. Greene, Chief of Combat Developments Branch, U.S. Army Aviation School, Fort Rucker, AL conducted on 7 August 1990 at Fort Leavenworth, KS.

62. The Air Attack Division was first proposed in September 1990 by the U.S. Army Aviation Center, Concept Developments Branch, Fort Rucker, AL.

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