

AIR MOBILITY AND THE DEVELOPMENT OF ATTACK AVIATION
DURING THE VIETNAM WAR FROM 1965-1967

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Military History

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ABSTRACT

AIR MOBILITY AND THE DEVELOPMENT OF ATTACK AVIATION
DURING THE VIETNAM WAR FROM 1965-1967, by MAJ Kristopher T. Gillett,
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During the Vietnam War, the U.S. Army fielded the first designed attack helicopter to fulfill its emerging tactical reliance on close air support in 1967. Prior to the addition of organic attack aviation, the Army had deployed the first air mobility unit, the 1st Cavalry Division (1st CAV), in the midst of the Vietnam War in 1965. Using helicopters as a mobility asset was in its initial stages of military tactical deployment when it was thrust into the spotlight in Vietnam. The premature deployment of 1st CAV forced the Army to become reactive to the tactical needs of conducting airmobile operations. The tactical needs of air mobility during the Vietnam War influenced and in many ways, expedited the U.S. Army's development of organic attack aviation between 1965 and 1967.

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ACRONYMS

AAFSS	Advanced Aerial Fire Support
ARA	Aerial Rocket Artillery
CAS	Close Air Support
CAV	Cavalry
EKIA	Enemy Killed in Action
FM	Field Manual
LZ	Landing Zone
MACV	Military Assistance Command, Vietnam
NVA	North Vietnamese Army
TTP	Tactics, Techniques, and Procedures
U.S.	United States
USAF	United States Air Force
USMC	United States Marine Corps
VC	Viet Cong

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CHAPTER 1

INTRODUCTION

The helicopter was the “Ugly Duckling” of aviation in the mid 1950s. But there are a few who dared to think of it as a weapons system and the key to successful airmobile operations. Today there are few who would think of going into combat without the helicopter.

— Colonel Jay D. Vanderpool, *Aviation Digest*

During the Vietnam War, the U.S. Army fielded its first attack aviation helicopter designed to fulfill its need for organic Close Air Support (CAS). Prior to the addition of organic attack aviation in 1967, the Army had deployed the first air mobility unit, the 1st Cavalry Division (1st CAV) to Vietnam in 1965. The concept of employing helicopters as a mobility asset was in its infancy when 1st CAV deployed to Vietnam. The premature deployment of the 1st CAV forced the Army to respond to the tactical needs of conducting air mobility operations during the war. It is important to investigate how air mobility’s implementation during the Vietnam War influenced the development of organic attack aviation. Identifying one of the contributing factors that led to the development of attack aviation will help demonstrate how an overarching concept such as air mobility can influence tactical changes in other warfighting functions. Before assessing the dynamics that influenced the development of attack aviation, it is necessary to discuss the historical background and context that led to the development of air mobility during the Vietnam War.

Genesis of Air Mobility

Employment of helicopters for military purposes had its genesis during the Korean War. Their use became more prevalent during the Vietnam War. The need to

support tactical combat operations conducted in severely restrictive terrain linked with the innovation of air mobility transformed Army aviation during the Vietnam War. Historians have compared the integration of rotary-wing aviation during the 1960s to the Army's earlier transition from horses to motorized vehicles in the 1930s. Similar to the transition to motorized travel, the use of helicopters was an innovation the U.S. military attempted to exploit in order to gain a tactical advantage over its enemies. Air mobility received its first test in Vietnam; however, the concept would not have come to fruition without key military and political decisions prior to the war.¹

During the Korean War, the U.S. military used helicopters as transportation assets for supplies and casualty evacuation. The initial mobility capabilities of helicopters surfaced as the U.S. Army operated in the more restrictive mountainous terrain of Korea. The difficult terrain on the Korean peninsula provided predictable avenues of approaches for mechanized forces and severely restricted the maneuver speed of ground forces. The armistice in 1953 prevented complete integration of rotary-wing aviation into combat operations; however, Major General James Gavin envisioned the concept of future helicopters operations in 1954. Gavin explored the concept of using air assets, both light planes and helicopters, to transport soldiers into battle. The use of air transportation for troops to the front line would provide a maneuverable force unhindered by terrain limitations. As senior leaders examined the lessons from the Korean War, some explored operations with air mobility assets to determine what advantages could have existed under the same conditions.² As senior officials began to see the advantages helicopters provided to the battlefield, support for an air mobility concept gained momentum.

Helicopter manufacturers such as Bell and Sikorsky patiently waited for the Army to decide what future role helicopters would play in warfare. Aeronautical engineers produced many unsuccessful designs and the Army's unwillingness to commit to the concept impeded the development process. The Army wanted helicopters; however, it was unsure of the requirements or parameters necessary for air mobility. Between the Korean War and the Vietnam War, the Department of Defense allocated research and development funds for the first time to helicopter aeronautic programs because the concept sparked some interest related to tactical exploration. The dedication of funds in 1957 generated innovations in airframe designs, aerial weapon capabilities testing, and potential tactics and techniques that formed the base doctrine for Field Manual (FM) 57-35 *Airmobile Operations* November 1960. Despite the initial developments and research in air mobility, Congress remained unconvinced that it should fund such an uncertain concept. The Army reacted by initiating a review board to marshal all of the testing and ideas associated with air mobility to convince Congress that the Army knew what it was doing in this area.³

In January 1960, the Army Aircraft Requirement Review Board, chaired by Lieutenant General Gordon B. Rogers, deliberated about the direction of air mobility. Rogers recommended three specific aircraft mission designs: observation, surveillance, and transportation. It is important to note that the Roger's board had not yet identified the need for attack helicopters to support Army air mobility operations.⁴ The board's recommendations provided focus for both the Army and the helicopter industry. It essentially reenergized the development of air mobility.

McNamara's Influence

President John F. Kennedy appointed Robert S. McNamara Secretary of Defense in 1961 as tensions in Vietnam continued to build. McNamara brought enthusiasm and innovative ideas to the Kennedy administration, just as he did as President of Ford Motor Company. As McNamara adjusted to his new responsibilities, he became interested in the air mobility concept. In September 1961, after reading the Rogers' Board report, McNamara expressed concern regarding the Army's proposed use of helicopters in mobile warfare. Wanting to know what other capabilities helicopters could provide, McNamara sent a memorandum to Secretary of the Army, Elvis Stahr, stating that the current plan for helicopters was too conservative.⁵

McNamara believed the Army had not fully exploited the potential of technological advancements necessary to transform the Army from its surface mobility mentality. The Army knew the types of airframes it desired, but McNamara wanted to explore the effectiveness of helicopters in combat. In other words, McNamara wanted a new review board to reevaluate the Army's use of helicopters through multiple lenses and explore all facets of air mobility opportunities. He specifically outlined the need to look at aerial artillery and weapon platform concepts, helicopter CAS roles, and maximized field tests and exercises to provide proof of concept validity.⁶ McNamara was the first political official to support the concept of air mobility publically and to provide clear guidance on expectations.

The new review board would be different from the Rogers' board. For one thing, McNamara handpicked the president and other key board members. McNamara built a panel that supported the air mobility concept and employed senior officials who were

enthusiastic about the concept's potential. The board reported directly to McNamara to avoid any conservative filters within the Army or the Office of Secretary of Defense. The board had less than four months to deliver results and recommendations on the future of air mobility. McNamara stressed that he would be disappointed if the findings lacked unconventional or creative concepts in air mobility that would radically change the Army's notions of mobility.⁷

Howze Board

McNamara selected Lieutenant General Hamilton H. Howze as the President of the U.S. Army tactical mobility requirements board on May 3, 1962. Howze was instrumental in the early development of Army aviation doctrine and possessed the enthusiasm McNamara sought to support the integration of helicopters into mobility warfare. With only four months to report its recommendations, Howze focused the board's efforts on accomplishing the task. After 11,000 flight hours utilizing 125 helicopters and 25 fixed-wing aircraft, the Howze board concluded the test program and delivered its final report to McNamara. The board recommended developing airmobile units up to the division level, primarily equipped with helicopters and fixed-wing aircraft in lieu of surface vehicles.⁸

The recommended air assault division consisted of 459 transport helicopters capable of transporting one-third of an infantry division into combat. The number of transport helicopters would also resolve the Air Lines of Communication gap that previously existed between the advanced airheads and forward ground forces.⁹ Prior to helicopters, the Air Lines of Communication transitioned to a Ground Lines of Communication from the airhead in order for ground forces to provide sustainment

operations to forward units. Connection of the Air Lines of Communication from the airhead to the forward tactical unit enabled a sustainment efficiency that provided a huge tactical advantage in combat. In order to maintain a light force, the recommended artillery assets for the division were strictly 105mm howitzers because of the weight and sling-load capability. When compared to other light infantry divisional artillery assets, the airmobile division would lose twelve 155mm Howitzers that ranged deeper targets up to 14,600 meters. To offset the lack of available firepower, Howze recommended 24 Mohawk fixed-wing aircraft and 36 UH-1 Huey helicopters armed with 2.75-inch rockets. This was one of the first public recommendations from the Army to pursue arming helicopters to support air mobility operations. The board's final recommendation called for a test division at Fort Benning, Georgia.¹⁰

The Howze board findings sparked mixed reactions from Office of the Secretary of Defense and the sister services. Although they supported the air mobility concept, the United States Air Force (USAF) vehemently contested the board's recommendations. The disagreement focused on the use of helicopters as weapons platform and the Mohawk as an organic asset for the division. Senior USAF officers proclaimed that the Air Force possessed air assets that provided more effective fire support. Spending additional funds on a redundant capability, from their perspective, would be a waste of taxpayer dollars. The USAF argued that it should be the centralized manager of all air assets. The USAF conducted its own air mobility review board headed by Lieutenant General Gabriel Disosway. The Disosway board's findings recommended the Air Force maintain command and control of all CAS assets. USAF assets could perform all combat aviation functions, and the board argued tactical air functions were best for forces

equipped and trained for those specific missions. The Kennedy administration wanted to develop a flexible response force in lieu of a largely nuclear one. Therefore, McNamara dismissed the Disosway board's suggestions and approved the Howze board recommendation to develop a provisional test air assault division over the next two years.¹¹

In February 1963, the Army created the 11th Air Assault (Test) Division to begin assessing the airmobile division concept. The 11th Air Assault Division successfully tested doctrine and weapon capabilities for almost two years at Fort Benning, Georgia. Meanwhile, more U.S. forces deployed to South Vietnam and the need for CAS increased as the troop numbers rose. These increases provided additional impetus for the 11th Air Assault Division. Faced with the dilemma of fighting a war in rugged terrain that restricted airborne, armor, and mechanized forces mobility, the Army sought viable options to resolve these challenges. General William Westmoreland, commander of U.S. Military Assistance Command-Vietnam (MAC-V), suggested that the Army deploy the 11th Air Assault Division to his command to provide the necessary mobility to win in Vietnam. Airmobile units could deliver maneuver forces necessary to support the attrition strategy through search and destroy operations that began in 1965. Despite its lack of combat training, the Army reflagged the 11th Air Assault Division as the 1st Cavalry Division (Airmobile) on July 1, 1965; it had 90 days to deploy to Vietnam.¹²

From Major General Gavin's early vision to the Howze board recommendations, the Army had realized its desire to use helicopters for air mobility. The Army did not know, however, what the impact of deploying the 1st CAV during the early stages of its development would have on the unit and on the war.

¹John Tolson, *Airmobility, 1961-1971* (Washington, DC: Government Printing Office, 1973), vii.

²*Ibid.*, 3-4.

³*Ibid.*, 5-7.

⁴*Ibid.*, 8.

⁵*Ibid.*, 17.

⁶*Ibid.*, 18-19.

⁷*Ibid.*

⁸J. A. Stockfish, *The 1962 Howze Board and Army Combat Developments* (Santa Monica, CA: RAND, 1994), 15-16.

⁹*Ibid.*, 13.

¹⁰*Ibid.*, 23.

¹¹*Ibid.*, 25-26.

¹²*Ibid.*, 27-28.

CHAPTER 2

AIR MOBILITY GOES TO WAR-1965

Fully aware of the proud traditions of the 1st Cavalry Division, I knew that our new Division, conceived in the heritage of Cavalry firepower and mobility, would glory in the name of THE FIRST TEAM and would add new laurels to the glorious record of the Division.

— Major General Harry Kinnard, *Interim Reports of Operations*

Major General Harry Kinnard, commanding general of the newly formed 1st Cavalry Division, hastily weighed his options in early July 1965 of what training needed to be accomplished prior to his division's deployment to Vietnam. Kinnard faced the daunting task of transforming a unit manned and trained as an Army test unit into a division size force capable of conducting air mobility operations in the jungles of Vietnam. The 1st CAV's ability to train, equip, and deploy during an abbreviated wartime train-up was one of many accomplishments the unit experienced during 1965.

Re-organization and Deployment Training

The unit's transition from the 11th Air Assault (Test) Division to the 1st CAV yielded a unit barely above 50 percent of its authorized personnel strength. With shortfalls of 500 officers, 400 warrant officers and 5,000 enlisted personnel, the 1st CAV had to train new personnel in a short time with limited resources.¹ In order to meet the deployment timeline, soldiers of 1st CAV worked six-days per week with the seventh day as a make up for any missed training. Division leaders and staff officers worked seven-day workweeks to meet training requirements and to continue planning the unit's upcoming deployment.² The Army's inability to assign a mission or designate a geographical location for the future deployment, however, hindered effective planning.

Despite the lack of specific guidance, 1st CAV focused on essential airmobile training to meet both operational and tactical needs in Vietnam.³

In order to meet the compressed deployment timeline, 1st CAV requested assistance from the aviation training school at Fort Rucker, Alabama. The 1st CAV conducted simultaneous deployment training at Fort Benning, Georgia and Fort Rucker, Alabama. With over 300 newly assigned aviators arriving to 1st CAV, the unit focused on aviator readiness level training versus collective training based on the number of aircraft available to train the division. Readiness level training was a higher priority because it prepared aviators to operate at a proficiency level required to operate helicopters effectively in combat. The aviator training included air-to-ground suppressive fires, air-to-ground gunnery, escape and evasion, unit terminal guidance teams (pathfinders), and individual aircrew readiness training. Even with the assistance from Fort Rucker, 1st CAV deployed to Vietnam with nearly 50 aviators that had not completed their required training.⁴

With an extremely compressed deployment timeline, General Kinnard had to accept some operational risk, especially in combined arms training. Newly arrived personnel to the 1st CAV had not conducted any combined arms training prior to the unit's deployment. Kinnard based his decision on two factors: the commitment of aerial resources to individual aviator training and the need for modification work orders to prepare the aircraft for combat. The 1st CAV recognized the lack of available air assets in the training plan and acknowledged the risks of inadequate combined arms training prior to deployment. In lieu of pre-deployment training, the division leaned heavily on experienced senior officers and non-commissioned officers from the test division to train

new arrivals in Vietnam. Relying on experienced personnel to train new soldiers was a familiar task for an Army comprised of both volunteers and draftees.⁵ Although air mobility training was a new concept, the idea of relying on experienced leaders to assist in development of a combat force was a familiar task.

Logistics also hindered the unit's deployment training plan. Division leaders found themselves simultaneously balancing unit reorganization, division combat training, and the deployment logistical operations. At times, units trained on newly fielded equipment only to pack it in containers bound for Vietnam days later. The second week in August, the division focused exclusively on loading ships with the final cargo required for deployment. The following week, personal and aircraft began the month long journey to Vietnam. The logistics of deploying a division to Vietnam impeded potential training opportunities that already were minimal due to the compressed deployment timeline. By August 21, 1965, the entire 1st CAV Division had set sail for Vietnam.⁶

In order to mitigate limited training time and logistic challenges, 1st CAV developed a compressed training plan. The troops would train while on board the transports and continue training once they arrived in Vietnam. This process continued until the unit accepted responsibility for an area of operations. During the nearly three week long transit, units conducted country and area orientation briefs, individual weapons firing, operations and intelligence updates, and other training requirements that units were unable to accomplish stateside.⁷

Around mid-September, the advance party from 1st CAV focused on establishing the training infrastructure that would allow the division to transition to combat. The priorities were establishing division ranges and firing areas and a country orientation

program hosted by the experienced 1st Brigade 101st Division. The initial logistical requirement focused on unloading ships and testing the functionality of weapons systems and equipment. The orientation and firing areas provided 1st CAV an opportunity to hone its aerial gunnery skills and allow for an easier transition from training to combat operations.

Once the equipment was operational, senior aviators and aircrew members flew combat missions with units from the 101st Division as a ride along orientation program. After completing a successful local area orientation, aviators and aircrew members of 1st CAV began to support 101st Division missions with their organic aircraft. They provided over 95 combat sorties, resupply, and medical evacuation missions. Supporting 101st Division operations afforded more combat experiences for aircrews prior to conducting their own airmobile operations. On September 28, 1965, 1st CAV accepted responsibility for the An Khe area of operation, also known as Camp Radcliff, after only being formally reflagged 91 days earlier.⁸ (See figure 1)

Pleiku Campaign

Within a month of operating in the An Khe area, 1st CAV began its first search and destroy operation in Pleiku province, an area roughly 2,500 square kilometers.⁹ This was the first opportunity for 1st CAV to validate the air mobility concept. The Pleiku campaign also demonstrated the capabilities of aerial fire support to combat operations and the reliability of gunship support to ground maneuver forces. Prior to the Pleiku campaign, the Department of the Army FM 1-100, *Army Aviation*, barely mentioned armed helicopter employment. After the campaign, FM 1-100 included an entire chapter dedicated to doctrine on the employment of armed helicopters.¹⁰

The most notable air mobility battle during the Pleiku campaign was the battle of the Ia Drang valley. The battle would be the first large engagement of U.S. forces against North Vietnamese Army (NVA) forces. It also validated the airmobile concept. On November 14, 1965, 1st CAV air assaulted 1-7 CAV into the Ia Drang valley to conduct a search and destroy mission against NVA forces in vicinity of the Chu Pong hills. Severely outnumbered by NVA forces, 1-7 CAV found itself in the middle of the most intense firefight to date in the Vietnam War. While air mobility proved its worth in maneuvering forces and supplies in support of 1-7 CAV, air mobility's reliance on CAS and Aerial Rocket Artillery (ARA) took center stage during the battle.

The inherit risks assumed performing air mobility operations at Ia Drang began before ground forces ever landed. Commanders knew that the helicopter's semi-monocoque frame covered with thin sheet metal was vulnerable to small arms and heavy machine gun fire. The most vulnerable time was during the low-level approach to landing zones (LZs) and unloading—loading operations. In order to mitigate the tactical risks, ground commanders relied heavily on artillery, CAS, and ARA to support the rapid movement of air mobility operations. The first concern during Ia Drang was establishing an initial LZ that became the infamous LZ X-Ray. With a limited number of aircraft and suitable LZs to insert 1-7 CAV troops, the recommended course of action was to conduct multiple lifts of troops into the valley. The first troops would be responsible for LZ security in order to build up the necessary combat power to conduct the operation with follow on lifts. The first lift was at risk because of the superior numbers of NVA that could overrun their position.

In response to the threat, the 1st CAV developed a technique of using artillery fires in and around the LZs usually about five minutes prior to the first lift landing. These indirect fires would disrupt any enemy movement around the LZ and simultaneously destroy any manmade or natural obstacles on the LZ. After the completion of indirect fires, aerial gunships provided ARA around LZ X-Ray just prior to the first lift of troops landing. The ARA's purpose was to disrupt enemy forces around the LZ and often performed as a reconnaissance-by-fire to determine enemy locations near the LZ. The gunships remained on station in a nearby orbit for on-call missions after the insertion of ground forces. As UH-1 aircraft approached LZ X-Ray, door gunners provided suppressive fires in the jungle line and high grass to cover the vulnerable dismounting troops as they exited the helicopters.¹¹

Prior to any soldier setting foot on the ground, air mobility demonstrated its tactical reliance on organic fire support assets to ensure success and to mitigate tactical risks. Many of the tactics, techniques, and procedures (TTPs) for LZ preparation emerged during the unit's testing periods as the 11th Air Assault (Test) Division. However, one TTP did emerge from the initial missions flown in Vietnam. The 1st CAV integrated reconnaissance-by-fire techniques to locate NVA forces in the dense vegetation into its standard operations procedures. The dense vegetation hindered intelligence gathering thereby limiting knowledge of NVA force disposition. Soldiers conducted search and destroy missions without the benefit of actionable intelligence. In an attempt to gather intelligence on NVA or Viet Cong (VC) forces, troops fired into suspected enemy positions to determine enemy force locations. The 1st CAV conducted 105 reconnaissance-by-fire missions achieving a 35 percent success rate.¹² At the time, there

was no baseline to determine effectiveness, but one out of every three attempts found the enemy and provided early warning to landing aircraft. In essence, reconnaissance-by-fire became a mitigation TTP designed and employed to reduce the tactical risks of employing helicopters in a combat environment. Despite previously established TTPs developed during the 11th Air Assault (Test) Division phase, 1st CAV's reorganization and deployment timeline forced them to develop aerial asset TTPs in country. Regardless of the testing and experiments conducted prior to deployment, nothing could have determined the NVA's reaction to the Army's use of air mobility.

With troops of 1-7 CAV on the ground in the Ia Drang Valley, the stage was set to display the actual capabilities of aerial fire support under combat conditions. The only organic aerial fire support available to 1st CAV was UH-1 helicopters armed with 2.75-inch rockets and two M-60 machine guns manned by door gunners. The organic division gunships remained under tactical control of the ground commander and provided ARA in support of the ground scheme of maneuver. During the Ia Drang Valley battle, gunships provided calls for fire, illumination, observation of indirect fires, escort of medical evacuation aircraft, and close air support to 1-7 CAV. Operational summaries from the campaign highlighted the ground commanders' appreciation of the tactical control because of the flexibility and responsiveness it provided as the battle developed. Vietnam's terrain and dense vegetation prevented many fire observers from observing artillery rounds for adjustments. During the battle of Ia Drang, gunships observed and called in indirect fires until ground forces could observe the rounds.

Commanders benefitted from having gunships that could observe their own ARA fires and quickly make their own adjustments to destroy designated targets. Gunships

also provided exact locations of friendly troops to ground commanders.¹³ TTPs developed to mark friendly locations during Ia Drang included smoke grenades and makeshift c-ration cans, ammo cans and artillery canisters filled with sand and gasoline lit to mark friendly positions at night.¹⁴ Utilization of markings that identified friendly positions allowed for quick and accurate fire support from both air and ground assets. Employment of markings allowed gunships to provide 24-hour aerial fire support. Reports from the battle of Ia Drang documented ARA within 100m of friendly positions as the NVA desperately tried to close within friendly forces in order to discourage the use of fire support assets.¹⁵ As the fighting ensued, ground troops gained confidence in requesting ARA even within dangerously close ranges. In one day of fighting in the Ia Drang, gunships fired nearly 2,000 rockets along with 6,000 rounds of artillery. This was a remarkable display of air mobility's support to combined arms.¹⁶

Non-organic support played a vital role in the battle of Ia Drang as well. USAF CAS went beyond the ranges of artillery and it integrated well with the rapid maneuver of air mobility operations in Vietnam.¹⁷ Fixed-wing aircraft, just like rotary-wing, can easily reposition without impediments of terrain. Fixed-wing aircraft maneuver at high speeds and it is easier to reposition an aircraft versus moving a 105mm howitzer to a new firing position. At one point during the Ia Drang battle, the USAF had 48 hours of continuous overhead coverage averaging a target run every 15 minutes.¹⁸ The continuous coverage was advantageous in the dense jungle because it was easier to use firepower that could rapidly reposition. Even the strategic bombers such as the B-52 were under the tactical control of ground forces for CAS.¹⁹ USAF aircraft were at times more effective in destroying targets in the thick vegetation and against dug-in NVA positions than any

organic asset available to the 1st CAV. USAF CAS operations used the same marking TTPs ground troops had established to support continuous CAS. Commanders were so impressed with USAF support that after action reviews recommended that airmobile units should plan for and rely on USAF support.²⁰ In order to support fast moving air mobility operations, the Army recommended that the USAF maintain fighters and bombers on alert for on call tactical support. The amount of air assets allocated to the Military Assistance Command, Vietnam (MACV), however, could not support the levels of on-call aircraft necessary for tactical support. The Air Force had additional missions that received higher apportionment based on strategic and operational priorities. The impressive USAF aerial support left the ground forces in awe of its CAS capabilities. Army leaders were determined to maintain such a capability for future operations.

Ia Drang was the culminating battle in the Pleiku campaign. Air mobility had passed its first test. After 30,000 flight hours supporting the first major campaign of the war, 1st CAV validated the air mobility concept. Even though the search and destroy concept did not require the retention of terrain in Vietnam, U.S. forces did uproot the NVA from their previously hidden sanctuaries, even if it was only temporarily. If the measure of effectiveness was body count in an attrition-based strategy, 1st CAV contributed to this effort by achieving an average of 100 Enemy Killed in Action (EKIA) per day during the 35-day campaign. The 1st CAV successfully countered the NVA threat in the Pleiku province and temporarily disrupted the enemy's ability to operate in the highlands. The aerial fire support throughout the campaign demonstrated organic gunship ARA capabilities. The 1st CAV conducted over 175 ARA missions throughout the campaign. An after action review from the campaign observed that as ground

commanders became acquainted with ARAs flexibility and immediate response. Its increased use over traditional artillery fires during missions became commonplace.²¹

In sum, the Pleiku campaign generated two doctrinal shifts in the Army during the Vietnam War. The first was an obvious preference for air mobility forces. The second emphasized the reliance on organic gunships to support airmobile operations. In a press conference following the campaign, Secretary of Defense McNamara stated that air mobility had made unparalleled achievements in Vietnam and declared there would be more air cavalry divisions.²² (See figure 1 for complete 1965 campaigns)

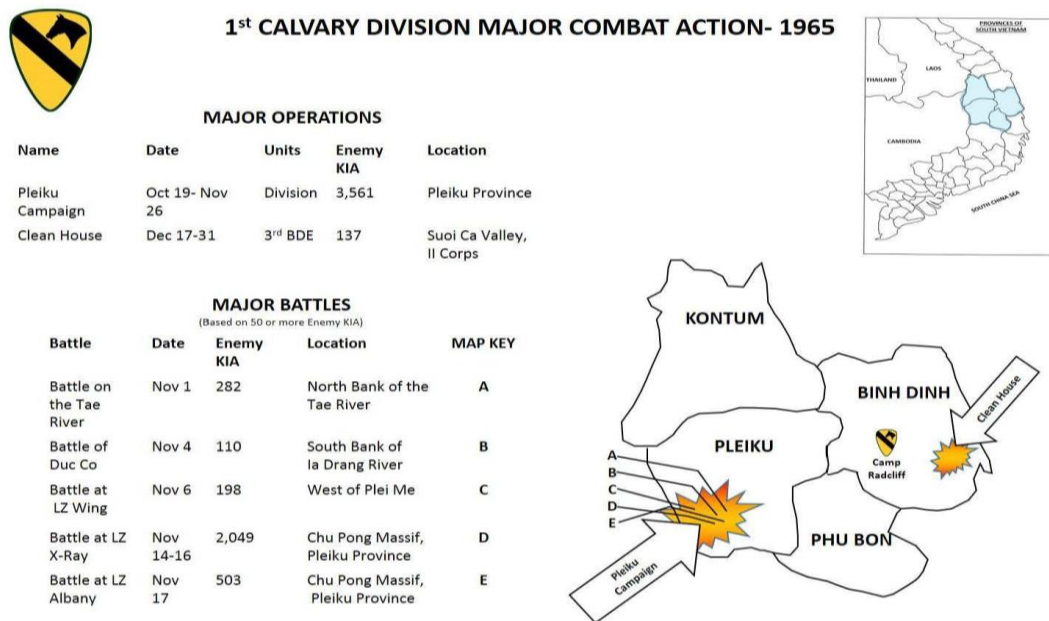


Figure 1. Major Combat Action 1965

Source: Created by author using information from United States, *1st Air Cavalry Division: Memoirs of the First Team, Vietnam, August 1965-December 1969* (Paducah, KY: Turner Publishing Company, 1995), 203-212.

¹Headquarters 1st Cavalry Division (Airmobile), Lessons Learned Headquarters 1st Cavalry Division (Airmobile), Quarterly Report December 1965, <http://www.dtic.mil/get-tr-doc/pdf?AD=AD0390502> (accessed December 20, 2013), 6.

²Ibid.,10.

³Ibid.,13.

⁴Ibid., 11-12.

⁵Ibid.

⁶Ibid., 13-15.

⁷Ibid., 12.

⁸Ibid., 23.

⁹Headquarters 1st Cavalry Division (Airmobile), Lesson Learned Headquarters 1st Cavalry Division (Airmobile), Quarterly Report January 1966, <http://www.dtic.mil/get-tr-doc/pdf?AD=AD0390501> (accessed December 20, 2013), 19.

¹⁰Department of the Army, FM 1-100, *Army Aviation* (Washington, DC: Government Printing Office. June 1963).

¹¹Ibid., 49-50.

¹²Ibid.

¹³Ibid., 19.

¹⁴Texas Tech University, The Vietnam Center and Archive, Operations Report: Lessons Learned, Report 3-66, 10 May 1966, Folder 01, Box 02, Elias A. Cuevas Collection, <http://www.vietnam.ttu.edu/virtualarchive/items.php?item=0600201001> (accessed December 20, 2013), 161.

¹⁵Ibid., 107.

¹⁶Ibid., 112.

¹⁷Ibid. 13.

¹⁸Ibid., 112.

¹⁹Ibid., 13.

²⁰Headquarters 1st Cavalry Division (Airmobile), Lesson Learned, Quarterly Report January 1966, 38.

²¹Texas Tech University, The Vietnam Center and Archive, Operations Report: Lessons Learned, May 1966, 9.

²²Ibid., 157.

CHAPTER 3

AIR MOBILITY ADAPTATION-1966

I believe that when the Vietnam War is concluded, the rapid evolution of close air support will emerge as the outstanding airpower achievement of the war.

— Benjamin Franklin Cooling,
Case Studies in the Development of Close Air Support

After the introduction of air mobility during the Vietnam War in 1965, the concept required some fine-tuning. The 1966 campaign in Vietnam spurred adaptations in unit organization, doctrinal changes, and equipping of helicopters. Additionally, the lack of a doctrinal foundation for attack aviation operations encouraged units to share lessons learned from combat operations. The initial application of air mobility in Vietnam generated tactics, techniques, and procedural adaptations necessary to fight both a conventional and unconventional force. Further influencing the transformation of aviation during Vietnam was the inter-service rivalry that originated with the National Security Act of 1947. The establishment of an independent air force generated friction between the Army and Air Force that was exacerbated throughout the Vietnam War. Air mobility and inter-service rivalry were the two driving forces that transformed both services concept of aviation support to the Army in 1966.

Summary of 1966 Air Mobility Campaigns

The search and destroy missions continued for U.S. forces throughout 1966. To discuss each operational success or failure is beyond the scope of this thesis. Therefore, this chapter focuses on air mobility operations related to major campaigns of the 1st CAV.

The 1st CAV launched a series of search and destroy campaigns related to pursuit operations. Search and destroy operations needed to find the enemy and to provide a maneuver force to destroy or attrite that enemy force immediately. The operational strategy sought to push NVA forces out of South Vietnam and to pursue the enemy as he retreated, enveloping the enemy with airmobile forces. Air mobility provided the flexibility to destroy a retreating enemy by utilizing airmobile units to block possible escape routes. This approach stressed aerial vice traditional ground blocking mechanisms. The 1st CAV deployed to Binh Dinh Province along the east coast of Vietnam to prevent NVA forces from splitting the country in two. Success favored air mobility operations since the enemy lacked a robust anti-aircraft defense and they could not challenge U.S. air superiority. Pursuit operations conducted in the Binh Dinh Province included Masher/White Wing, Jim Bowie, Davy Crockett, Crazy Horse, Thayer I, Irving, and Thayer II.¹ (see figures 4,5,6,7,8,9)

Maintaining the momentum from the Pleiku Campaign, 1st CAV launched Operation Masher/White Wing on 25 January and continued operations through March 6, 1966. The operation was a success for air mobility because 1st CAV efforts uprooted several NVA strong points in Binh Dinh. The 1st CAV delivered a psychological message to NVA forces that air mobility could attack at anytime, anywhere, and there would be no sanctuary. However, 1st CAV discovered an important limitation unique to Vietnam that directly affected its ability to conduct operations. According to several after action reports, there were numerous operational delays due to weather. The NVA and VC exploited bad weather through enhanced freedom of maneuver. As the monsoon season began in Vietnam, air mobility faced the harsh reality of weather impacts on combat

operations. With low cloud ceilings and reduced visibility, aircraft were unable to take off and insert troops safely in the mountainous terrain of the Central Highlands. Due to the risk of aircraft crashing into mountains, 1st CAV delayed several large-scale air assaults until more favorable conditions existed.

During the campaign, CAS, ARA, and artillery proved to be a combat multiplier to the ground commander. All three accounted for one-third of the division's EKIA during Operation Masher/White Wing. ARA was responsible for 40 percent of the NVA body count.² The Air Force provided 600 sorties of which 210 were immediate request missions. Reaction times for the immediate requests ranged from 15 to 30 minutes from the initial request to bombs on target.³ Ground commanders commented that the Air Force's ability to conduct CAS was once again responsive to the ground commander's demands.⁴

The UH-1s flew over 59,000 sorties during the campaign, flying over 19,000 flight hours in support of 1st CAV operations. The increased number of helicopter sorties, however, had a tactical cost. The lack of armored helicopters created a vulnerability during the campaign. The 1st CAV had 241 aircraft hit with small arms and heavy machine fire that resulted in 14 aircraft shot down.⁵ In attempts to deter surface-to-air fires on helicopters, 1st CAV conducted leaflet drops warning of consequences for firing at aircraft.⁶ Unfortunately, NVA forces had gained confidence in their ability to counter the helicopter threat, thus making it even more important for U.S. forces to mitigate tactical risk with organic and non-organic fires during air mobility operations.

The ARA outperformed all organic fires assets available to 1st CAV during Operation Masher/White Wing. The 2nd Battalion, 20th Artillery (Aerial Rocket), the

primary aerial rocket artillery support to 1st CAV, provided three batteries (12x UH each) of UH-1 Gunship support armed with 2.75-inch aerial rockets. The ARA battalion, in comparison to normal Huey roving gunships, had a two-minute alert status from a position that allowed a rapid response to ground forces call for fire support. ARA fulfilled the ground forces request within minutes and it did not need an observer since the aircrew on board the gunship could observe and adjust fires. When compared to indirect fires from tube systems, ARA proved to be more lethal and accurate.⁷ During the Masher/White Wing Campaign, 1st CAV's available organic tube artillery consisted of 105mm, 155mm, 8inch, and 175mm howitzers. Ground artillery conducted 11,436 fire missions firing 108,340 rounds of various artillery shells resulting in 152 EKIA. ARA conducted 611 fire missions firing 24,851 rockets (2.75in) resulting in 170 EKIA.⁸ Despite only firing five percent of the division's call for fire missions and expending three quarters less ammunition, ARA was clearly the most effective asset. ARA effectiveness convinced ground commanders to request ARA support rather than tube artillery. In response to this trend, artillery commanders resorted to coaching ground commanders to get them to use tube artillery in support of their operations instead of ARA fire support. Of note, airmobile units did not possess the same amount of heavy artillery as a normal division. In 1st CAV, however, the ARA consistently outperformed tube artillery throughout the 1966 campaigns.⁹

Evidence from the campaign also supports the fact that air mobility operations tended to rely on the organic fire support assets instead of the non-organic assets. When comparing the 210 immediate requests for CAS to the 611 ARA calls for fire requests, one could conclude that the Army preferred the use of organic assets. ARA had a distinct

advantage because of the shortened approval chain and the fact that it was organic to the approval authority. Despite CAS's ability to meet the ground commander's needs, ARA appeared to be the Army's most desired fire support asset. A valid argument could be that CAS and call for fire missions are two separate categories for fire support. The 1st CAV's use of UH-1 gunships to provide ARA support to ground forces, however, fulfilled the same role that CAS did. In order to deflect charges of duplication, the Army used different terminology to mask air mobility's CAS capability.

Throughout the other major 1966 campaigns, the tendency to use organic ARA and helicopter gunships over non-organic air assets continued. The 1st CAV ended the year with Operation Thayer II completing its long year of pursuit of NVA and VC forces in South Vietnam. While not all campaigns were operationally successful, one positive outcome from 1966 was the evolution of organizational and doctrinal changes to air mobility. The pursuit operations disorganized and reduced the control of NVA forces in the coastal region but success came at a heavy cost to the U.S. forces suffering over 19,000 casualties. As the NVA retreated into Cambodia and Laos, the U.S. continued to build combat power in preparation for clearing operations campaigns in 1967.¹⁰

Organizational and Doctrine Changes-1966

Since its reflagging in July of 1965, the 1st CAV saw very few organizational changes during the Vietnam War. One major organizational concern focused on sustainment operations needed to maintain over 400 helicopters. The complications of maintaining helicopters tested air mobility's maintenance capabilities in an austere environment. Missing from an airmobile unit's organizational chart were the new equipment test teams and civilian maintainers that provided support to keep the aircraft

flying. Testing a new concept with newly developed equipment required civilian support to observe and provide engineer expertise to respond to unforeseen developments as the Vietnam War continued.¹¹

The initial task organization (see figure 10) of an airmobile division supported the operational tempo during the earlier years of Vietnam. As the only airmobile division in Vietnam, 1st CAV had the luxury of having its own organic aircraft. Other non-airmobile divisions had an aviation battalion equivalent (usually two companies and one air cavalry troop) attached to the MACV. The MACV determined where Army aviation assets were deployed within South Vietnam. As the operational and tactical situation changed, so did the location of aviation assets.¹² In addition to assignment to support a division, aviation battalions would also receive tasks from the division to dedicate aviation companies to brigades distributed throughout Vietnam. Supporting combat operations across Vietnam strained the command and control structure and the logistical support for the aviation battalions. The placement of companies across Vietnam disrupted standardization and operational procedures for aviation operations. Without a higher headquarters present to provide command and control, aviation companies began developing their own TTPs. Differences in conducting combat operations prevented these units from providing standard support to ground forces. While under MACV's control, aviation units adapted to new command structures, terrain, and operational procedures when assigned to new units and locations in Vietnam. The constant relocation of these units hampered the attempts of non-airmobile aviation units to formalize a standardized working relationship. Early in 1966, Army leadership decided that in order to operate army aviation outside

standard airmobile units, there should be a higher headquarters to provide standardization, training and standard operational procedures.¹³

On May 1, 1966, MACV created the provisional 1st Aviation Brigade. The brigade provided centralization of aviation units and created a manager to oversee the growing number of aviation assets in Vietnam. An aviation brigade also signified that the Army was attempting to solidify Army aviation's permanent support role. Initially, the 1st Aviation Brigade consisted of two aviation groups, six combat aviation battalions, and three support aviation battalions. It quickly blossomed to nearly the size of two divisions with more than 1,900 aircraft and 23,000 officers and enlisted amongst its ranks. Brigadier General Allen M. Burdett, Jr. commanded the aviation brigade and developed its organizational structure while deployed in Vietnam.¹⁴ By the end of 1968, the organization of 1st Aviation Brigade consisted of four aviation groups, 16 combat aviation battalions, and 83 companies operating more than 4,000 aircraft with 27,000 aviation soldiers assigned (see figure 9). The aviation brigade was much larger than most country's Air Forces.¹⁵ The primary mission of the aviation brigade was to provide better command and control of aviation assets in Vietnam but had less operational control of its organic units. During a typical month, the 1st Aviation Brigade averaged 2,800 EKIA, over 3,500 damaged or destroyed enemy structures, and 1,650 enemy sampans destroyed.¹⁶ This organizational change supported MACV's strategy of attrition against NVA and VC forces in South Vietnam.

The 1st Aviation Brigade provided the necessary command structure needed to operate in a decentralized military environment. The brigade forces were spread

throughout approximately 40 geographic locations by the end of 1966. The combat aviation brigade was a notable aviation organizational change during 1966.¹⁷

Organizational changes were not the only noteworthy changes for Army aviation during 1966. Minor doctrinal changes occurred in the November 1966 version of FM 1-100, *Army Aviation Utilization*. The changes included a new chapter that described the fundamentals of Army aviation employment. The 1966 update further defined the missions, concepts, capabilities, and limitations of Army aviation generated from lessons learned from 1964 to 1966.¹⁸ While the base doctrine for the fundamentals of Army aviation received minor changes, the Army also introduced a new field manual dedicated to employment of armed helicopters.

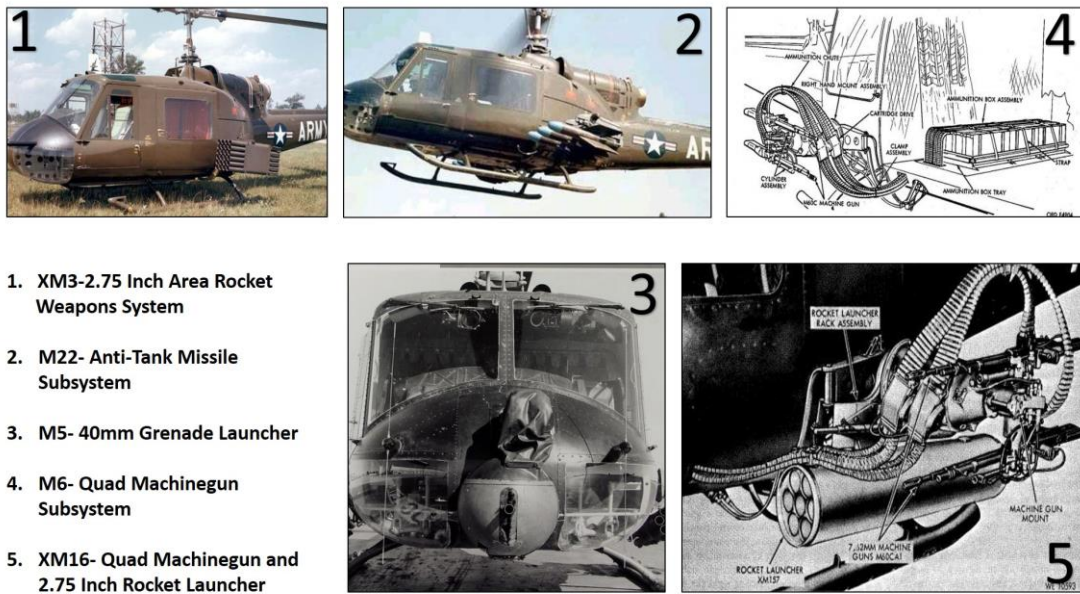
In July 1966, the Department of the Army published FM 1-110, *Armed Helicopter Employment*, to establish principles, tactics, and techniques of employing armed helicopters in support of ground forces. Only two months after the Johnson-McConnell agreement, which codified the Air Force's agreement to relinquish all claims on Army helicopters to include armed helicopters, the Army published FM 1-110. The inter-service rivalry section of this chapter defines and discusses the impacts of the Johnson-McConnell agreement. The introduction of FM 1-110 highlighted the use of helicopters in a fire support role and was meant to supplement and extend firepower availability. The use of helicopters was not intended to substitute for other fire support means.¹⁹ In other words, it was not intended to replace CAS or ground based tubed artillery but to extend firepower availability to the ground commander by filling the firepower gap that existed between ground-based weapons and CAS.

Knowing employment of armed helicopters was still in its formative stage, the Army focused on codifying known or proven principles. FM 1-110 identified specific armed helicopter roles. These included escort, reconnaissance, security, screens, deception, suppressive fires, raids, patrol actions, and anti-tank operations. The manual highlighted the importance of the armed helicopter's ability to augment the ground commander's combat power and capabilities to conduct airmobile operations.²⁰ FM 1-110 further explained the development of attack operation fundamentals such as methods of attack, techniques of engagements, and attack patterns that are still used today. Appendix IV is an example of an armed helicopter Standard Operating Procedure in support of airmobile operations in Vietnam. The sample Standard Operating Procedure provided a current view how the 1st CAV employed armed helicopter mutual supporting formations and escort formations.²¹ Doctrine dedicated to armed helicopters illustrated the Army's steady reliance on armed helicopters not only to support airmobile divisions but to non-airmobile divisions in combat operations - thus foreshadowing the need to develop a dedicated helicopter designed for attack helicopter operations.

Prior to the fielding of a dedicated attack helicopter, FM 1-110 described the existing weapon systems used in 1966. While numerous armament systems were used on various rotary and fixed-wing organic Army assets, the UH-1B was the primary focus of the armament systems discussion because it served as the base airframe design for the development of an attack helicopter. Arming the UH-1B eliminated its capability to lift troops due to the weight of the armament systems. A typical UH-1B could only carry two pilots and two door gunners based on the airframe's maximum allowable gross weight. With the airframe operating at or near its maximum gross weight, the UH-1B maximum

airspeed was only 80 knots. The UH-1B's current design was unable to handle heavy armament loads due to weight restrictions and added profile drag to the airframe while in flight. Until the army could develop a dedicated attack helicopter airframe to handle such loads, the Army fielded smaller weapon subsystems that inflicted less structural stress on the UH-1B airframe.²²

The armament systems utilized on armed helicopters during 1966 included the M6, XM3, M22, M5, and the XM16 (see figure 2). The array of weapon systems provided gunships with both an area and point weapon system. Area weapons systems such as the M6, XM3, M5, and XM16 enabled gunships to range between 300 to 9,300 meters. Area weapon systems provided dispersion to a large area of coverage. They were typically unguided versus a point weapon system designed for precision. The only point weapon system available to gunships was the M22 anti-tank guided missile system. The wire-guided systems fired AGM-22B missiles capable of destroying tanks, armored vehicles, bunkers, and bridges from a distance of 500 to 3,500 meters.²³



1. XM3-2.75 Inch Area Rocket Weapons System
2. M22- Anti-Tank Missile Subsystem
3. M5- 40mm Grenade Launcher
4. M6- Quad Machinegun Subsystem
5. XM16- Quad Machinegun and 2.75 Inch Rocket Launcher

Figure 2. Armament Systems on UH-1 Hueys

Source: Created by author, Pictures from http://www.afwing.com/aircraft/bell-uh1-huey-iroquois-part1_5.html (accessed May 1, 2014); http://www.afwing.com/aircraft/bell-uh1-huey-iroquois-part1_4.html (accessed May 1, 2014); <http://www.laguerreduvietnam.com/pages/materiel-1/les-helicopteres-americains.html> (accessed May 1, 2014).

Prior to the M22, the first successful firing of a missile and rocket system from a helicopter in combat occurred during Operation Masher/White Wing. The 2-20th ARA from 1st CAV was the first to fire a wired guided SS-11 missile and rocket. Prior to Operation Masher/White Wing, gunships carried either missiles or rockets. Having an armament platform that allowed the use of multiple weapons systems enhanced ARA lethality.²⁴ With proven combat tested weapons systems, the Army had plenty of data to decide what armament and weapon systems best suited an attack helicopter. However, before they could pursue an attack helicopter, army aviation needed to settle its long-standing rivalry with the Air Force that began in 1947.

Agree to Disagree-Inter-Service Rivalry

The rivalry began with the National Security Act of 1947 and the formation of an independent Air Force. Despite organizing a separate Air Force, the Army continued to develop and produce organic aircraft to include rotary-wing aircraft. With the possibility of infringing on the USAF's support role, the air staff aimed to stop the Army before it produced a more air capable force. In May 1949, the two services' chiefs of staff signed the Bradley-Vandenburg agreement. The accord prevented the Army from acquiring aircraft that could outperform any aircraft organic to the Air Force. The agreement applied weight restrictions on Army-owned fixed-wing and rotary-wing aircraft. An airplane could weigh no more than 4,000 lbs empty weight and rotary-wing assets had a maximum weight of 2,500 lbs. The Bradley-Vandenburg agreement inadvertently formalized a duplication of roles between the Air Force and Army by allowing the Army to maintain both types of airframes.²⁵

With the weight restrictions in place, the Air Force focused on its number one priority, nuclear deterrence. After dropping the atomic bombs, strategists focused on the capabilities the Air Force could provide during the nuclear age. With the drawdown of forces after World War II, the defense budget cuts affected all services. With the national strategic focus on nuclear deterrence, the Air Force received the largest amount of funding. With a limited peacetime budget, the Army had to decide how it resourced research and development in aviation technology. That all changed in 1950 with the outbreak of the Korean War. During the Korean War, the Army nearly doubled its inventory from 1,721 to 2,392 aircraft as war spending made these assets readily available.²⁶ The Korean War strengthened the Army's desire to continue developing

helicopters after its successful performance in the rugged terrain of Korea. As the Air Force watched the Army inventory of organic air assets double, senior Air Force officers voiced their concern over Army encroachment on Air Force roles and missions. The Secretaries of the Air Force and Army agreed to a compromise in October 1951 with the signing of the Pace-Finletter memorandum of understanding.

The Pace-Finletter memorandum of understanding provided a clear definition of Army roles and indicated that the Army would not duplicate existing Air Force capabilities. Specific Air Force capabilities during 1951 included reconnaissance, interdiction, close air support, and troop airlift. The agreement restricted the Army's use of air assets to conduct airlift of supplies, equipment, and personnel only within the combat zone. There was no mention of any restriction to aerial fire support, so the Army continued to use helicopters as observation platforms. The Air Force's compromise in the agreement increased the allowable weight of the army's fixed-wing and rotary-wing aircraft. The Air Force also agreed to allow the service secretaries to review increasing future weight restrictions based on technological developments in powertrains, avionics, and aerodynamic airframe improvements.²⁷

The Pace-Finletter Agreement did not appease the services for very long. With another round of post-war budget cuts, the two services continued to argue over who should receive more funding based on roles and missions. This triggered Secretary of Defense Charles E. Wilson to issue a memorandum on clarification of roles and missions to improve the effectiveness of Department of Defense operations. Wilson limited the Army's organic air assets to four roles. These included observation, airlift, medical

evacuation, and liaison operations. The memorandum highlighted the Army was not to provide CAS and limited airlift operations to small sized ground units.²⁸

The Army would have to rely on the Air Force to fulfill its CAS needs. Army studies conducted from 1959 to 1961 revealed that the Army needed adequate CAS in order to build a flexible response force.²⁹ In 1959, the Joints Chiefs of Staff signed a “Unified Service Document” that charged the Air Force with the development of equipment, tactics, and techniques for CAS operations. An Army Command and General Staff College study in 1961 identified four factors must be present in order to have successful CAS operations. They must have joint planning, allocated resources dedicated to CAS, operational control to the ground commander, and CAS aircraft designed to support ground attack as its primary mission.³⁰

During this period, the Air Force’s priorities still revolved around nuclear warfare. The Army’s focus on conventional warfare was at best a secondary concern. CAS was low on the Air Force’s priorities and would remain a source of friction during the early years of the Vietnam War. Within the USAF, the Strategic Air Command was the primary focus. MACV had no direct control of Strategic Air Command bombers that operated out of Guam and Thailand. Strategic Air Command argued that the bombing North Vietnam could achieve the nation’s objectives in Vietnam.³¹ However, the constraints of conducting a limited war eventually raised CAS to a higher priority.

In addition to the specified roles of Army aviation dictated in Secretary of Defense Wilson’s memorandum, the Army fixed-wing aircraft had to weigh less than 5,000 lbs and rotary-wing could weigh up to 20,000 lbs. The restriction on fixed-wing aircraft persuaded the Army to focus majority of its efforts on development of rotary-

wing aircraft.³² The Air Force focused its efforts on nuclear war capabilities until about 1960. As the unconventional war evolved in Vietnam, the Air Force was ill prepared to fight such as war with aircraft that were developed for nuclear delivery, air superiority, and aerial reconnaissance.³³

Once the Kennedy administration took office, U.S. military strategy shifted toward flexible response operations. The Kennedy administration sought a general-purpose force to address operational gaps that existed between nuclear and conventional warfare. A majority of senior Air Force leaders believed that the current tactical fighters in the fleet could provide multiple roles associated with the flexible response strategy. The Air Force focused on three missions counter-air, interdiction, and CAS operations. The mission priorities shifted based on the tactical situation and resources available. The primary mission of any Air Force campaign would be air superiority and the Air Force required centralized control of tactical air resources to ensure mission success.³⁴ Tactical control of air assets between the Army and Air Force remained a source of intense debate for years to come.

From 1961 to 1963, the inter-service rivalry escalated as the Army began to explore air mobility. In 1961, Secretary of Defense Robert McNamara reviewed the Army's development of aviation. He was not satisfied with its efforts to investigate the full potential of helicopter warfare. McNamara requested that the Army relook its study on air mobility and find new innovative ways to employ an airmobile force. In 1962, the Howze board began to test potential capabilities of helicopters in conventional warfare by developing the first airmobile division. General Howze's recommendation to McNamara was concise: "Adoption of the Army of the airmobile concept—however imperfectly it

may be described and justified in this report—is necessary and desirable. In some respects the transition is inevitable, just as was that from animal mobility to motor.”³⁵

The Air Force responded to the Howze board findings with its own board to determine if the Air Force could provide the capability the Army sought. Within a month of the Army recommendations, the Air Force convened the Disosway board. The Disosway board’s findings recommended the Air Force maintain command and control of all CAS assets, Air Force air assets perform all combat aviation functions, and argued that forces equipped and trained for those specific missions are the best for tactical air functions. The findings suggested that if a weapons system had wings and could fly, then the Air Force controlled and performed the associated mission. The Disosway board supported the concept of air mobility and wanted the Army to become more mobile. However, the board believed that under the current fiscal constraints developing the Howze board vision of an air assault force was impossible. The board also commented on the development of armed helicopters. Armed helicopters would infringe on USAF CAS capabilities and the Department of Defense would be wasting funds duplicating a pre-existing capability. The Air Force also claimed that helicopters were extremely vulnerable in a high-threat environment based on helicopter designs. The Disosway board concluded that the Army had not explored all the capabilities the Air Force could provide in support of ground troops.³⁶

McNamara approved the Army’s initiative to continue to test the air mobility concept. He believed that the Army should have organic air assets to support its operations, to include armed helicopters. This effort was also congruent with Kennedy’s flexible response guidance. In February 1963, the 11th Air Assault (Test) Division

activated and continued to test the air mobility concept. It was clear during the early testing of air mobility that a reliance on firepower would be necessary. CAS capabilities would fill the firepower gap that existed between small arms fire and tubed artillery. The Army recommended four CAS ideas that would work well in the air mobility concept. The first stressed land component commanders' maintenance of operational control over their air support. The second suggested that Army organic aircraft could provide CAS along front lines. The third called for the Air Force to create a specific aircraft designed for CAS operations. The last demanded that the Air Force provide quantitative resources dedicated for CAS.³⁷ The Army recommendations conflicted with the Disosway board findings and neither service was willing to compromise.

The different viewpoints on CAS employment inspired McNamara to order a joint Army and Air Force examination of CAS. McNamara clearly outlined that he wanted the services to exam tactics, techniques and procedures, training and doctrine, resources, command relationships, and type of aircrafts required to conduct CAS.³⁸ The joint examination yielded few agreements despite its high visibility. The points of contention were command relationships, control of aircraft, and the type of aircraft needed to conduct CAS operations. Since the services failed to reach a consensus, no decision was made until further studies could be conducted. Pending a clear settlement on CAS operations, each service continued to pursue its own agenda as the war in Vietnam escalated in 1964.

The Air Force proposed to pursue a single manager approach and the Army wanted a dedicated number of CAS assets under the ground commander's tactical control. The Army requested that the Air Force provide a quantitative measure of

dedicated daily sorties to allow the Army to plan its operations. With increasing reality of a potential ground war in Vietnam, the Army decided to accept the Air Force's proposal. In April of 1965, the Army and Air Force Joint Chiefs of Staff signed the *Concept for Improved Joint Air-Ground Coordination*. The agreement formalized procedures for requesting and operating tactical air resources. The Army would be allocated specific number of CAS aircraft to plan for missions and the Air Force would have one single air manager to control its tactical air assets. The joint commander would determine the number of sorties allocated for CAS, counter-air, and interdiction attacks on a daily basis. The subordinate commands were then notified of how many sorties they were to receive for planning purposes. The tactical control of the assets dilemma was also resolved when the Air Force agreed to provide advisers to the Army. The Air Force agreed to provide tactical air control parties consisting of forward air controllers and air liaisons down to the battalion level. The ground commanders now had direct access to Air Force personnel who could plan for and control tactical air assets. The new agreement set the stage for CAS operations as American ground forces entered the war.

Long before 1st CAV entered the war in September of 1965, the Air Force had supported the South Vietnamese Army with CAS for years. The Air Force's high performance jets available for CAS operations included AH-1 Skyraider, A7D Corsair II, F-5 Tiger, F-100 Super-Sabre, B-57 Canberra, F-4 Phantom, and A-37 Dragonfly (see figure 3). The jets were designed to fight a conventional force and as the VC increased guerilla tactics in South Vietnam, the Air Force found itself with less than optimal CAS airframes. The jets had shorter loiter times due to the amount of fuel consumed during flight when compared to rotary-wing aircraft. A capability tradeoff for shorter loiter times

was the jet's faster response time to troops in contact, usually anywhere between 15 to 30 minutes. High-speed flight, however, brought additional challenges of target acquisition and engaging targets. Pilots found it difficult at times to acquire targets, especially in Vietnam's dense jungle. Without a specifically designed aircraft to support CAS operations, the Air Force began to modify existing aircraft that could meet the ground commander's needs.³⁹

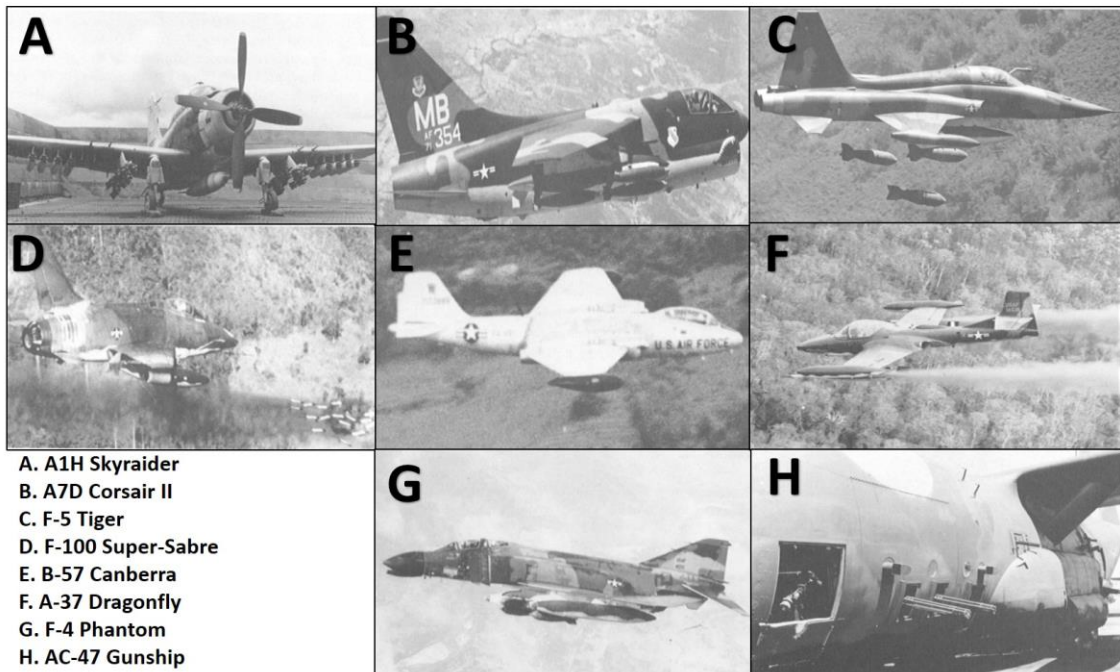


Figure 3. Available Close Air Support Aircraft

Source: Benjamin F. Cooling, *Case Studies in the Development of Close Air Support* (Washington, DC: Office of Air Force History, 1990), 442-447.

The Air Force began to look into slower moving aircraft that could acquire targets and provide longer loiter times while maintaining a rapid response time to troops in contact. Transport aircraft satisfied the requirements and the Air Force began modifying

them into gunships. The AC-47 became the first transport aircraft to receive modifications with flares and three SUV-11A mini-guns to provide a direct fire system for CAS operations. The puff of smoke that resulted from firing the mini-guns earned the gunship the nickname, "Puff the Magic Dragon." Transport gunships enhanced CAS effectiveness by increased rates of firepower and slower airspeeds to acquire targets. However, transport aircraft were less maneuverable and more vulnerable to enemy air threats when compared to jets. That is why the majority of the flight hours flown by the AC-47 gunship were at night. The transport gunship was successful during its first year of operation. It single handedly defended over 500 combat outposts against NVA forces. The performance inspired the Air Force to continue the use of transport gunships and would eventually lead to the AC-130 Spectre Gunship in 1969.⁴⁰ The lack of a CAS specific airplane in the Air Force weakened CAS operations in Vietnam and the Army was happy to emphasize the shortfall. The development of transport gunships was only a temporary bridge to the existing CAS operational gap.

Regardless of the Army's repeated requests for a dedicated CAS airplane, Air Force CAS was effective. When challenging the effectiveness of CAS in Vietnam, examination of performance measures must be through the lens of guerilla warfare. In conventional warfare, one could simply measure the effectiveness by the amount of ground gained; however, in unconventional warfare one must examine individual battles. Combat after-action reports during individual battles of major campaigns recorded that ground commanders believed that CAS was adequate and effective. The Air Force conducted a study and found that Army ground commanders began to call on the nearest gunship company for immediate support of troops in contact. A congressional

subcommittee even mentioned that “it is obvious to the most casual observer that the Army’s armed helicopters have, in fact, been heavily relied upon to provide what is essentially close air support for friendly forces on the ground.”⁴¹ So why did the Army want to use armed helicopters as CAS assets during 1966?

The Army characterized the claim of the armed helicopter “intrusion” into the CAS domain as a misunderstanding. Organic helicopters were readily available to the Army to provide immediate response to ground commanders. The Army insisted that armed helicopters filled the gap that existed between artillery and CAS in air mobility operations, and would not replace traditional artillery or CAS support during ground operations. McNamara, in a memorandum to the Secretary of the Air Force, addressed the concerns of the arming Army aircraft. Simply put, he said any service that operates in battle has the right to arm itself not only for self-defense but also in a way that could contribute to the success of U.S. forces. McNamara had also said that he refused to fund two separate air forces, so the Army decided to coin a new term to diffuse the debate. To make gunship support sound distinct from CAS, the Army created the term, Direct Aerial Fire Support. The Army defined Direct Aerial Fire Support as fires delivered by aerial vehicles organic to land forces against surface targets and in support of land operations. Direct Aerial Fire Support complemented ground forces firepower and was not a substitute for artillery or CAS. Recognizing the possibility of armed helicopter intrusion on CAS was a contentious issue, the Air Force shifted its focus to gain control of all fixed- wing aircraft.⁴²

On April 6, 1966, the Chiefs of Staff of the Army and Air Force reached a compromise. The Johnson-McConnell agreement was not ideal for either service and

many disagreed with the agreement, but it allowed both services to focus on the war effort instead of arguing service philosophy issues. The Army agreed to relinquish all claims to organic fixed-wing assets, including future developments, to the Air Force. The Air Force agreed to relinquish all claims to helicopters and rotary-wing future developments. The Air Force still had to provide tactical airlift to the Army and still maintained possession of rotary-wing aircraft used for special air warfare, search and rescue, and administrative mission support. Many senior Army leaders felt that the Army was handing over a proven tactical airlift capability for an unproven rotary-wing aircraft lift capability. The Johnson-McConnell agreement allowed both services to focus on one air support asset during the Vietnam War and with the hope of future inter-service cooperation.⁴³

Despite the agreement, the Air Force still had concerns about the Army's shift towards using armed helicopters in a CAS role. In June of 1966, Air Force Chief of Staff General John P. McConnell ordered a study to focus on what areas of CAS fell short of Army standards. He wanted to determine if a gap existed, and give recommendations to develop, test, and procure the type of equipment needed to fulfill the CAS requirement. The study proved that the Air Force was fulfilling CAS requirements and the Army was sometimes substituting armed helicopters in a CAS role. The study further identified a gap in performing escort and suppressive fires for airmobile units, a role better suited for armed helicopter gunships. One recommendation to fill the gap was to develop joint doctrine for both rotary-wing and fixed-wing aircraft to support airmobile operations until a dedicated CAS aircraft existed in the Air Force's fleet. The Air Force finally came to agreement with the Army in developing a dedicated CAS aircraft better suited to

support ground troops. General McConnell directed the development and procurement of a CAS aircraft that eventually became the A-10 which made its first flight in October of 1975.⁴⁴

The continued inter-service disagreements on tactical control, the role of armed helicopters, and a need for a dedicated CAS aircraft took nearly 30 years to resolve. The pressure to cooperate during a war was a factor in negotiations; however, several other factors forced resolution of the conflicts. The Air Force's strategic focus on nuclear deterrence capability during the Cold War retarded the development of operational and tactical aviation until the Vietnam War. The introduction of air mobility increased tensions between the USAF and the Army over control of the air domain. The arming of air mobility assets, such as the UH-1B, infringed on a capability that the Air Force considered its responsibility. To avoid providing a duplicate capability, the Army changed its terminology and suggested it was a complimentary resource to the Air Force's CAS capability. Air mobility requirements in Vietnam forced both services to reach an agreement that would be beneficial to both. The Johnson-McConnell Agreement of 1966 was necessary to allow both services to focus on the Vietnam War instead of complaining to the Secretary of Defense. Now that the Army was the sole proponent for rotary-wing aircraft, it began to develop the first designed attack helicopter in July 1966. The result was the Advanced Aerial Fire Support System (AAFSS) program.⁴⁵



1st CALVARY DIVISION MAJOR COMBAT ACTION- 1966



MAJOR OPERATIONS

Name	Date	Units	Enemy KIA	Location
Masher/White Wing	Jan 25-Mar 6	Division	1,744	Binh Dinh Province
Lincoln	Mar 25-Apr 8	1 st & 3 rd BDE	453	Chu Pong Massif, II Corps
Davy Crockett	May 4-10	3 rd BDE	374	NE Binh Dinh Province
Crazy Horse	May 16-Jun 5	1 st BDE	501	Area between Vinh Thanh and Suoi Ca Valleys
Nathan Hale	Jun 19- Jul 1	1 st & 3 rd BDE	459	Phu Yen Province
Paul Revere II	Aug 1-25	2 nd & 3 rd BDE	809	Ia Drang-Chu Pong Area
Byrd	Aug 25-Jan 30	TF 2/7	849	Binh Thuan and Phan Thiet
Thayer I	Sep 13-Oct 1	1 st & 2 nd BDE	231	Kim Son Valley
Irving	Oct 2-24	1 st & 3 rd BDE	681	South China Sea Coast, Binh Dinh
Thayer II	Oct 25-Feb 12	Division	1,757	Bong Son, East Binh Dinh Province
Paul Revere IV	Oct 31-Dec 27	2 nd BDE	977	Ia Drang-Chu Pong Area

Figure 4. Major Operation 1966

Source: Created by author using information from United States, *1st Air Cavalry Division: Memoirs of the First Team, Vietnam, August 1965-December 1969* (Paducah, KY: Turner Publishing Company, 1995), 203-212.



1st CALVARY DIVISION MAJOR COMBAT ACTION- 1966

MAJOR BATTLES (Based on 50 or more Enemy KIA)				
Battle	Date	Enemy KIA	Location	MAP KEY
Battle with the Quy Tan Regiment	Jan 29-30	81	Binh Dinh Province	A
Battle of the An Lao Assault	Feb 7	57	An Lao Valley	B
Battle of the Iron Triangle	Feb 18-21	312	12 miles south of Bon Son	C
Battle near Chu Pong Massif	Mar 30-31	197	Chu Pong Massif	D
First Battle of Crazy Horse	May 16-17	132	Vinh Thanh Mountains	E
Battle at Position Eagle	Jun 22	134	Tuy Hoa	F
Battle at Darlac Province	Aug 8	106	la Drang Valley	G
Battle at Hill 534	Aug 14-15	138	Chu Pong Massif	H
Battle of Hoa Hoi	Oct 2-3	233	Hoa Hoi Village	I
Battle of Phan Thiet	Oct 25	52	Phan Thiet	J
Battle of Charlie, 1 st of the 5th	Nov 21	145	Chu Pong Massif	K
Battle in 506 Valley	Dec 17-19	95	Highway 506	L
Battle at LZ Bird	Dec 27-31	266	Kim Son Valley	M



Figure 5. Major Battles 1966

Source: Created by author using information from United States, *1st Air Cavalry Division: Memoirs of the First Team, Vietnam, August 1965-December 1969* (Paducah, KY: Turner Publishing Company, 1995), 203-212.



1st CALVARY DIVISION MAJOR COMBAT ACTION- 1966

MAJOR BATTLES MAP

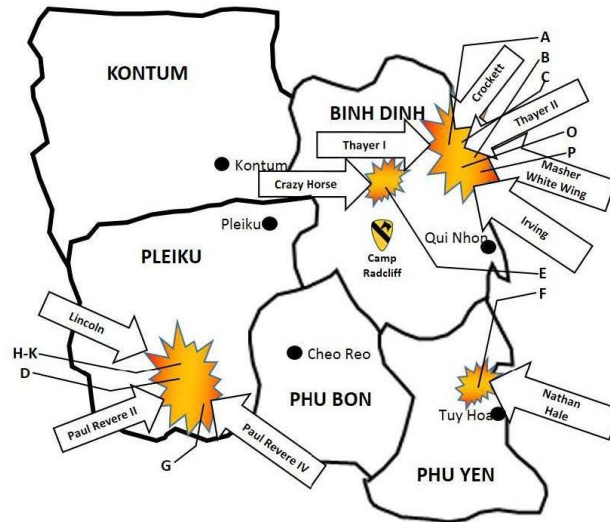


Figure 6. 1966 Major Battles Map

Source: Created by author using information from United States, *1st Air Cavalry Division: Memoirs of the First Team, Vietnam, August 1965-December 1969* (Paducah, KY: Turner Publishing Company, 1995), 203-212.



1st CALVARY DIVISION MAJOR COMBAT ACTION- 1967

MAJOR OPERATIONS

Name	Date	Units	Enemy KIA	Location
Pershing	Feb 12-Jan 21	Division	5,401	Eastern Binh Dinh Province
LeJeune	Apr 7-22	2 nd BDE	181	Quang Nhai Province
Song Re	Aug 1-20	3 rd BDE	149	Song Re Valley, Quang Nhai Province
Wheeler/Wallowa	Oct 2-Jan 25	3 rd BDE	3,188	Que Son Valley, Quang Nhai Province



MAJOR BATTLES

(Based on 50 or more Enemy KIA)

Battle	Date	Enemy KIA	Location	MAP KEY
Battle East of Bong Son	Jan 27	72	Bong Son Plain	A
Battle of Bullseye V	Jan 30	104	NE Bong Son Plain	B
1 st Battle of Tuy AU	Feb 18-19	68	W Bong Son Plain	C
Battle of Hoa Tanh	Mar 6-7	81	Hoa Tanh Village, Binh Dinh Province	D
1 st Battle of Tam Quan	Mar 19-21	121	Tam Quan. Bong Son Plain	E
Battle of An Lao Valley	Apr 4	78	An Lao Valley	F

Figure 7. Major Combat Action 1967

Source: Created by author using information from United States, *1st Air Cavalry Division: Memoirs of the First Team, Vietnam, August 1965-December 1969* (Paducah, KY: Turner Publishing Company, 1995), 203-212.



1st CALVARY DIVISION MAJOR COMBAT ACTION- 1967

MAJOR BATTLES (continued) (Based on 50 or more Enemy KIA)

Battle	Date	Enemy KIA	Location	MAP KEY
Battle of An Qui	May 30- Jun 1	96	An Qui, Bong Son Plain	G
Battle Near Highway 1	May 31	90	W of Highway 1, Binh Dinh Province	H
Battle of Dam Tra-O	Jun 21	84	Dam Tra-O Lake	I
2 nd Battle of Tuy Au	Jul 2-3	86	W Bing Son	J
Battle of LZ Pat	Aug 9	73	Song Re Valley	K
2 nd Battle of Tam Quan	Dec 6-20	650	Tam Quan, Bong Son Plain	L



Figure 8. Major Combat Action 1967 (cont)

Source: Created by author using information from United States, *1st Air Cavalry Division: Memoirs of the First Team, Vietnam, August 1965-December 1969* (Paducah, KY: Turner Publishing Company, 1995), 203-212.



1st CALVARY DIVISION MAJOR COMBAT ACTION- 1966

MAJOR BATTLES MAP

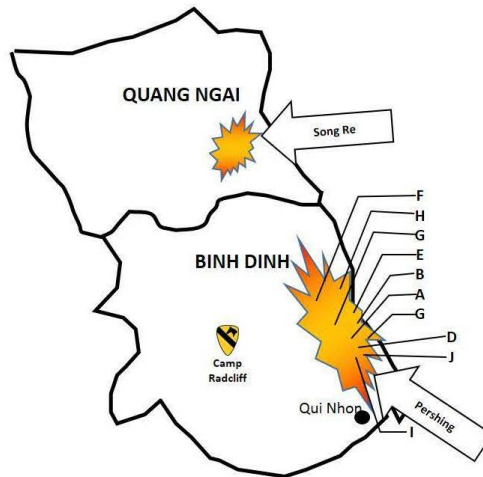


Figure 9. Major Battles Map 1967

Source: Created by author using information from United States, *1st Air Cavalry Division: Memoirs of the First Team, Vietnam, August 1965-December 1969* (Paducah, KY: Turner Publishing Company, 1995), 203-212.

1st CAVALRY DIVISION (AIRMOBILE) ORGANIZATION-1965

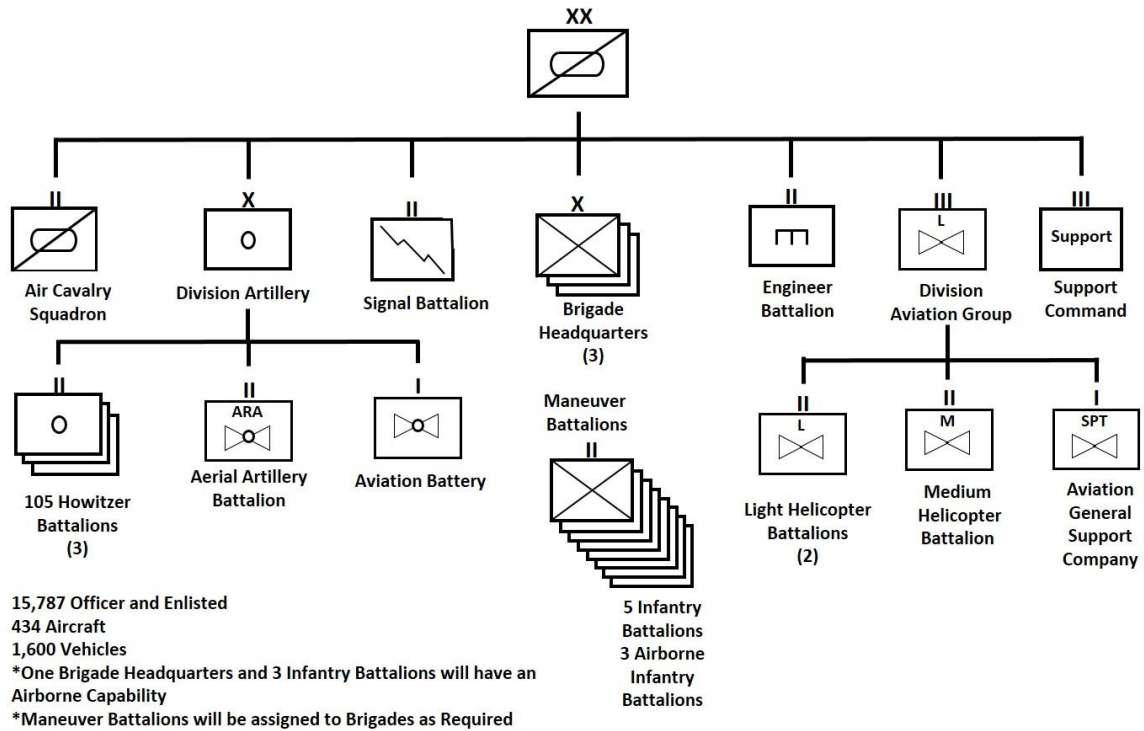


Figure 10. 1st CAV Task Organization 1965

Source: John T. Tolson, *Airmobility, 1961-1971* (Washington, DC: Government Printing Office, 1973), 73.

1st AVIATION BRIGADE TASK ORGANIZATION- 1966

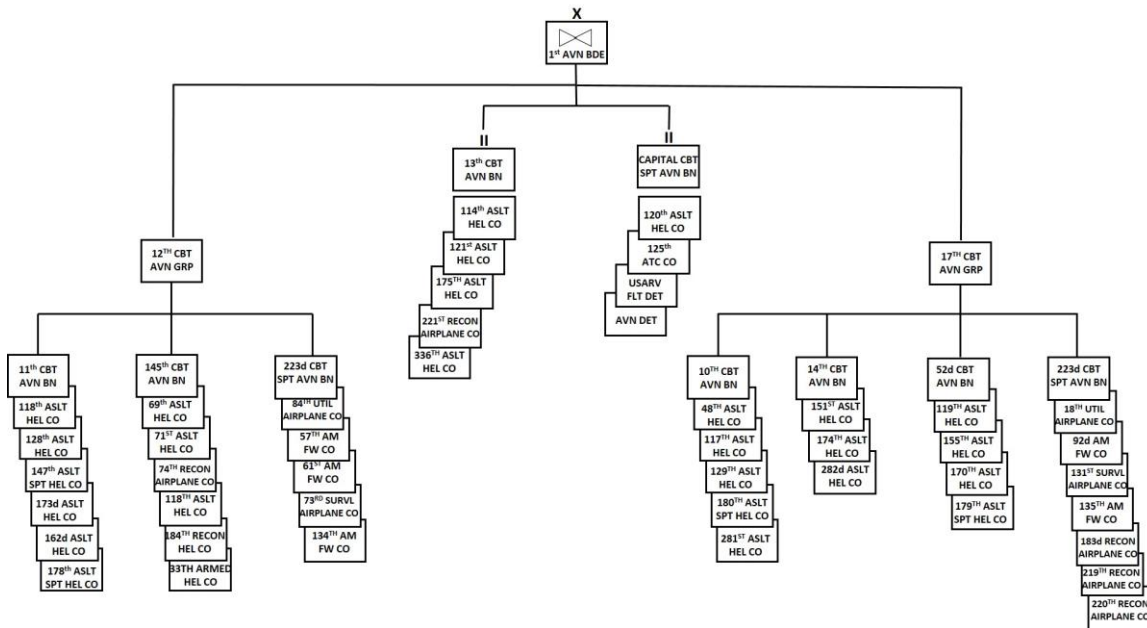


Figure 11. 1st Aviation Brigade Task Organization 1966

Source: Texas Tech University, The Vietnam Center and Archive, Charts of the 1st Aviation Brigade. Folder 02, Box 01, Vietnam Helicopter Pilots Association (VHPA) Collection: Unit Histories–1st Aviation Brigade, <http://www.vietnam.ttu.edu/virtualarchive/items.php?item=3030102011> (accessed February 21, 2014).

¹Shelby L. Stanton, *Anatomy of a Division: The 1st CAV in Vietnam* (Novato, CA: Presidio Press, 1987), 70.

²1st Cavalry Division (Airmobile), Combat After Action Report, Operation Masher, 25 Jan-3 Feb 66, Operation White Wing, 4 Feb-6 Mar 66, 1966, <http://cgsc.contentdm.oclc.org/cdm/ref/collection/p4013coll11/id/2018> (accessed January 13, 2014), 45.

³Ibid., 13.

⁴Headquarters Pacific Air Forces, CHECO Division, *Project CHECO Southeast Asia Report: Operation Masher and White Wing*, <http://www.dtic.mil/get-tr-doc/pdf?AD=ADA486953> (accessed January 13, 2014), 18.

⁵1st Cavalry Division (Airmobile), Combat After Action Report Operation Masher/White Wing, 44.

- ⁶Ibid., 61.
- ⁷Tolson, *Airmobility 1961-1971*, 122.
- ⁸1st Cavalry Division (Airmobile), Combat After Action Report Operation Masher/White Wing, 45.
- ⁹Tolson, *Airmobility 1961-1971*, 122.
- ¹⁰Stanton, *Anatomy of a Division*, 90.
- ¹¹Tolson, *Airmobility 1961-1971*, 204.
- ¹²Phillip D. Chinnery, *Vietnam: The Helicopter War* (Annapolis, MD: Naval Institute Press, 1991), 64.
- ¹³Tolson, *Airmobility 1961-1971*, 116.
- ¹⁴Texas Tech University, The Vietnam Center and Archive, 1st Aviation Brigade –Record of MACV Part 1, Folder 0143, Box 0009, Vietnam Archive Collection, <http://www.vietnam.ttu.edu/virtualarchive/items.php?item=F015800090143> (accessed February 5, 2014), 1.
- ¹⁵James W. Williams, *A History of Army Aviation, from its Beginnings to the War on Terror* (New York: iUniverse, 2005), 136.
- ¹⁶Texas Tech University, The Vietnam Center and Archive, 1st Aviation Brigade–Record of MACV Part 1, 1.
- ¹⁷Texas Tech University, The Vietnam Center and Archive, 1st Aviation Brigade: Operational Report–Lessons Learned for 4th Quarter Year 1966, 14 February 1967, Folder 06, Box 01, Vietnam Helicopter Pilots Association (VHPA) Collection: Unit Histories–1st Aviation Brigade, <http://www.vietnam.ttu.edu/virtualarchive/items.php?item=3030106032> (accessed February 17, 2014), 2.
- ¹⁸Department of the Army, Field Manual (FM) 1-100, *Army Aviation Utilization* (Washington, DC: Government Printing Office, November 1966), 17-26.
- ¹⁹Department of the Army, Field Manual (FM) 1-110, *Armed Helicopter Employment* (Washington, DC: Government Printing Office, July 1966), 1.
- ²⁰Ibid., 1-2.
- ²¹Ibid., 61-65.
- ²²Tolson, *Airmobility 1961-1971*, 33.

- ²³Department of the Army, FM 1-110, 51-60.
- ²⁴United States, *1st Air Cavalry Division: Memoirs of the First Team, Vietnam, August 1965-December 1969* (Paducah, KY: Turner Publishing Company, 1995), 136.
- ²⁵Ian Horwood, *Interservice Rivalry and Airpower in the Vietnam War* (Ft. Leavenworth, KS: Combat Studies Institute Press, 2006), 21.
- ²⁶*Ibid.*, 22.
- ²⁷*Ibid.*, 23.
- ²⁸*Ibid.*, 27.
- ²⁹Benjamin F. Cooling, ed., *Case Studies in Development of Close Air Support* (Washington, DC: Office of Air Force History, 1990), 413.
- ³⁰*Ibid.*, 414.
- ³¹Marshall L. Michel III, *The Eleven Days of Christmas: America's Last Vietnam Battle* (New York: Encounter Books, 2002), 11-12.
- ³²Horwood, *Interservice Rivalry and Airpower in the Vietnam War*, 27.
- ³³Cooling, *Case Studies in the Developments of Close Air Support*, 411.
- ³⁴*Ibid.*, 413.
- ³⁵Stanton, *Anatomy of a Division*, 21.
- ³⁶Cooling, *Case Studies in the Developments of Close Air Support*, 415-416.
- ³⁷*Ibid.*, 415.
- ³⁸*Ibid.*, 416.
- ³⁹*Ibid.*, 444-445.
- ⁴⁰*Ibid.*
- ⁴¹*Ibid.*, 455.
- ⁴²Alfred Goldberg and Donald Smith, *Army-Airforce Relations: The Close Air Support Issue* (Santa Monica, CA: The RAND Corporation, 1971), 32-33.
- ⁴³*Ibid.*, 30.

⁴⁴Ibid., 32-33.

⁴⁵Horwood, *Interservice Rivalry and Airpower in the Vietnam War*, 132.

CHAPTER 4

DEVELOPMENT OF ATTACK

AVIATION IN 1967-1968

[T]he evolution of a set of principles governing the helicopter employment cannot wait for the perfection of the craft itself, but must proceed concurrently with that development.¹

— Colonel Victor H. Krulak, USMC, 1948
Marines and Helicopters 1946-1962

The Army began developing its first dedicated attack helicopter in the summer of 1966. The Army was not the first service to identify the need to explore new innovative means of using helicopters for military purposes. The United States Marine Corps (USMC) use of attack aviation during the Korean and Vietnam Wars was significant. Like the Army, the USMC is a ground force that relies heavily on air support during its operations. The Marines' effective use of gunships during Vietnam generated momentum for the development of attack aviation. The Marines' focus on developing airmobile doctrine preceded the Army's pursuit of the air cavalry concept.

United States Marine Corps Influence on Attack Aviation

The Marines developed an initial concept of conducting an operational envelopment with airmobile troops in 1948.² The Marines also envisioned arming helicopters, but delayed this initiative until a more stable helicopter became available for testing. Once the Korean War began in 1950, the Marines pioneered the development of armed helicopters by arming the CH-19. They armed the CH-19s to protect the helicopter as it approached a LZ or to respond to enemy fire during a medical evacuation mission.

The armed CH-19s conducted observation, medical evacuation, and liaison missions during the war. The notion of arming helicopters gained momentum during the Korean War, but the French were the first to develop the concept during the Algerian War.³ In 1955, the French armed helicopters with fixed rockets and machine guns. At first, their helicopters were unarmed but with the increasing *Front de Libération Nationale* attacks on helicopters, the French sought a self-protection capability. Initial arming ideas were very primitive and early French ideas placed a soldier strapped to the skid of the helicopter armed with a machine gun to protect the aircraft.⁴ Through trial and error, the French eventually developed a capability to fix armament configurations to helicopters to enable accurate firing. USMC advisors in Algeria noticed the French efforts. They observed the French use of armed helicopters for self-protection and for fire support.

These French initiatives motivated the Marines efforts to develop their own-armed helicopters in 1959. Unfortunately, the national defense budget inhibited their initiatives. The Marines received the smallest amount of the defense budget compared to what the Army, Air Force, and Navy. Having to manage their interwar period budget closely helped the opposition's argument in delaying rotary-wing developments in order to concentrate on fixed-wing assets capable of fighting in the nuclear age.

The Marines also monitored the Army's armed helicopter developments at Fort Rucker, Alabama. The USMC liaison officer at Fort Rucker observed the testing of a helicopter firing rockets from the ground in the early sixties. The Army conducted limited testing in shooting various machine guns and rockets from helicopters while on the ground to determine the impacts of weapons systems on the airframe prior to actually flight. The ground test also served as an experiment to see if helicopters could be used as

a ground-based mobile artillery platform. Later experiments tested armed helicopters firing from a hover and eventually during forward flight. The Marines observation of the testing allowed them to record concepts and designs that were successful but at the Army's expense.⁵

The USMC's primary helicopter prior to Vietnam was the Sikorsky UH-34. Originally designed for anti-submarine warfare, the Marines used the airframe primarily for logistical support, troop movement, and medical evacuation missions. After two Army companies of CH-21s deployed to Vietnam in December of 1961 to conduct lift support, the Marines also assisted on-going operations. The Marine Medium Helicopter Squadron, HMM 163, deployed to Vietnam in April 1962 and began Operation Shufly. From 1962 to 1965, the majority of the Marines armed helicopter combat experience came from Operation Shufly.⁶ The operation assisted Army CH-21s in providing mobility support to the South Vietnamese forces that were previously restricted to poor road networks and the harsh dense jungles. Vietnam's harsh environmental conditions reduced the CH-21's lift capability, so the U.S. provided the more capable UH-34 to assist. Not knowing how the enemy would react to helicopters, the Marines initially deployed their helicopters unarmed. Nine days into Operation Shufly, the Marines realized they needed fire support or escort against the VC.⁷

Marine doctrine required fixed-wing aircraft provide protection for helicopters during combat operations. Unlike the Army, the Marines had organic fixed-wing fighter capabilities but did not deploy fixed-wing assets until 1965.⁸ South Vietnamese Air Force T-28s attempted to provide escort; however, the language barrier and lack of assets available frustrated the Marines lift operations. Instead, the Marines relied on the M60

machine gun mounted in the doorway of the UH-34 and automatic weapons carried by the crew chiefs for protection. The rules of engagement during 1962 restricted aircrews to self-defensive fires. U.S. aircrews had to wait for the enemy to fire first before they could engage, ceding the initiative to the enemy. The placement of the M60 at the UH-34's doorway hindered troop loading and unloading. The mount location for the machine gun on the helicopter constricted the azimuth and elevation coverage area to a small suppressive cone of fire. Door gunners used the mounted machine gun to provide suppressive fires as aircraft approached the LZ. The mount azimuth restriction could not fire to the immediate front or rear of the helicopter, giving the helicopter gaps in coverage for suppressive fires during the most vulnerable time. The Marines learned in order to cover the LZ effectively, the use of another helicopter orbiting overhead during approaches into the LZ would solve the problem.⁹

The Marines initially attempted to provide escort with armed UH-34s during Operation Shufly. As the operation continued, a realization for a more capable weapons platform to put effective suppressive fires surfaced. The Marines wanted an aircraft capable of providing more firepower than a small caliber round used in the machineguns. Without dedicated CAS platforms or helicopter gunships, the Marines explored tactical employment options first. One solution attempted to reduce the amount of time spent on the ground versus armament alternatives. Through rehearsed and expedited loading and unloading procedures, the Marines attempted to minimize time spent in and around the LZ. Reduced time on the LZ gave the enemy a limited opportunity to engage the vulnerable helicopters but did not provide the desired security.

The Marines even explored armoring vulnerable areas of the aircraft in an attempt to shield the aircraft from attacks. Knowing they could not always effectively suppress the enemy around the LZ, the Marines experimented with putting armor on vulnerable areas of the aircraft necessary for flight. The additional armor did protect areas like the engines and gearboxes from small arms fire but reduced the carrying capacity due to the added weight. Despite all attempts, the Marines believed the tradeoff for up armoring the UH-34 was not worth the gains. The HMM 163 requested further developments in arming troop-carrying helicopters to suppress enemy fire around LZs.¹⁰ USMC leadership continued to delay rotary-wing advances in order to focus its limited budget on the fixed-wing fleet. Some leaders within the Corps viewed Vietnam as a lesser conflict and funding should focus on other more important functions within the Marine Corps. Reflecting on past observations of the Army, the Marines knew the Army was well ahead in the development of armed helicopters and turned to it for support.¹¹

The Army was ahead of the Marines in development of armed gunships. Previous Army-Air Force agreements restricting the Army from improving fixed-wing aircraft allowed the Army to focus strictly on helicopter development. Unlike the Marines, the Army could focus on research and development toward one airframe versus the Marines attempts of managing two. Answering the call to escort Marine helicopters operating in Vietnam was the Utility Tactical Transport Helicopter Company out of Okinawa, Japan in October of 1962. It was the first armed UH-1 helicopter company in the Army armed with M-60 machine guns and 2.75-inch rockets mounted on the skids. To validate the concept, the Army deployed an Army Concept Team to conduct an evaluation from October 1962 to March of 1963. The team monitored the gunships support to Army

aircraft prior to allowing support the Marine UH-34s. The evaluation focused on the impacts of armed escort helicopters on the enemy. During that time, the study identified a 25 percent decrease in escorted helicopters hit by enemy fire and while unescorted aircraft received twice as much enemy fire when compared to escorted helicopters.¹² Armed helicopters proved to be a viable option to help reduce enemy fire on helicopters. On April 13, 1963, a Utility Tactical Transport Helicopter Company platoon began supporting Marine combat operations in Vietnam. The Marines used armed helicopters for escort missions only and still relied on fixed-wing CAS for preparatory fires and strikes around LZs.¹³

With the Army having the newly developed UH-1B, the Marines in Vietnam continued to push for an equal or better rotary-wing capability. Further experiments with armament configurations proved unsatisfactory. In August 1963, the Marines mounted the HMX-1 kit consisting of two M-60s and two 2.75-inch rocket pods to the UH-34. The HMX-1 resulted in a slower aircraft unable to shoot accurately due to the unstable rotor system. The kits added 1,000 pounds to the airframe that contributed to profile drag resulting in slower airspeeds. The armed UH-34s flew only 15 percent of the total UH-34 allocated flight time but they accounted for 85 percent of the aircraft receiving battle damage. This was primarily due to its slower maneuverability. The UH-1's success as a gunship led to the Marines procurement of the UH-1E in 1963. In the meantime, the Marines began to borrow Army UH-1Bs until the UH-1Es were combat ready.¹⁴

The first UH-1E equipped Marine unit arrived in Vietnam on March 9, 1965, and the new unit took over the escort mission. The UH-1E's arrival gave the Marines its first organic armed helicopter capable of escorting other helicopters. After two years of

operation in Vietnam, Marine senior leaders noticed the amount of hours gunships were flying in support of ground troops. The Marines focused on analyzing whether Marine helicopters should focus on gunship support or reconnaissance for ground forces. Briefings to the Pentagon showed that nearly two-thirds of missions flown were with armed helicopters in support of ground operations. Ground commanders, much like the Army, began to appreciate organic gunships responsiveness, capabilities, and accessibility to the ground commander.¹⁵ Marine leadership accepted blame for allowing helicopters to deviate from their doctrinal role as a reconnaissance and lift asset. Early combat operations during the Vietnam War had inadvertently developed an ad hoc support arrangement with organic armed helicopters. The ease of internal coordination was far less complex than going through CAS air request channels. Due to the lack of fixed-wing support, the Marines duplicated a capability already resident within its organization. Luckily, for the Marines, they could debate the fixed-wing versus rotary-wing support roles within their service. The Marines, like the Army, claimed that gunships were complimentary and not competitive fire support assets.¹⁶ Unlike the Army, the Marines could resolve their air power disputes within the Department of the Navy without Secretary of Defense intervention.

One inter-service debate did influence the Marines directly during Vietnam. The long-standing debate between the Army and Air Force over roles and missions impeded the Marines' use of organic fixed-winged aircraft. The *Concept for Improved Joint Air-Coordination* permitted General William C. Westmoreland, MACV commander, to assign a single air manager for fixed-wing assets. The inter-service rivalry centered on the Army and Air Force, but it involved any service that owned fixed-wing aircraft in

Vietnam. Although the Marines did not have any roles or missions issues, they now had to request the use of their fixed-wing assets from the Air Force. The Marines submitted tactical requests through the Air Force who then would determine the priorities of support for the entire theater. The Marines felt that a single-manager failed to respond to the needs of the ground commander, especially since the Marines already developed their own doctrine to incorporate all organic air and ground forces in combat. On a typical day, Marine commanders would submit 172 air requests while receiving only 64 approvals. Of the 64 approvals, only 31 targets were actually attacked due to the diversion of Marine aircraft to higher priority missions.¹⁷ The Marine's frustrations with the single air manager concept reinforced its habit of using armed helicopters to support ground forces instead of requesting CAS through the appropriate channels. The mounting frustration explains the increase in use of UH-1E armed helicopters during Vietnam, since it was one of the few air assets over which the Marines maintained tactical control.

The Marines developed a tactical dependency on gunships. Despite having different organizational structures, both the Army and Marines enjoyed tactical control of air assets supporting its ground forces. The Marines first conceived of arming helicopters prior to the Korean War but the Army was the first to develop the concept. The various inter-service agreements and boards also guided the Army's research and development efforts arming rotary-wing aircraft. The Army continued to lead all services in the armed helicopter development that culminated in the AH-1 Cobra, the first dedicated attack helicopter in the world.

Developing an Attack Helicopter

The Howze Board identified the need for a helicopter that was capable of destroying enemy vehicles. The board researched the possibility of developing a multipurpose aircraft that could fulfill both a lift and attack role. When not configured for an attack role, the helicopter could maximize its lift role with less gross weight. The board also explored designing a helicopter specifically for the attack role but the idea met resistance from some board members. How could an attack helicopter support an Army during peacetime or in a garrison environment? Despite the questions on the validity of an attack helicopter, Bell Inc. proposed an attack helicopter called the Iroquois Warrior. The members of Howze Board decided that the intended purpose of the board was to focus on air mobility, so the concept of designing an attack helicopter waited until 1964 when the Army reconsidered the concept.¹⁸

In 1964, the Army announced its requirements for the AAFSS. Lockheed's AH-56 Cheyenne won the developmental contract because it met all the Army's requirements. The Army wanted a helicopter capable of ferry flight from California to Hawaii, approximately 2,100 nautical miles without refueling. In addition to the ferry flight capability, the Army focused on utilizing emerging technology. The rapid advances in technology reinforced the Army's objective to develop a helicopter that would remain relevant for the coming decades. The Army embraced the innovations in computers and requested the helicopter industry to explore using computers to develop advance control systems for flight and infrared night vision systems for use in an attack helicopter. Lockheed hoped to have a prototype ready no later than the late 1960s.¹⁹

As the war intensified in 1965, General Westmoreland requested that the Pentagon expedite the AAFSS program or find an interim solution for an attack helicopter. The Army decided to do both, and continued with the AAFSS as scheduled while searching for an interim attack helicopter. The Army appointed a committee to consider five proto-type helicopters: the Sikorsky S-61A, Kama UH-2 Tomahawk, Boeing Vertol ACH-47A, Piaseck Model 16H, and the Bell Model 209. The Army closely monitored the two-month comparative testing conducted at Edwards Air Force Base, California during November 1965. At the conclusion of the testing, Bell Helicopters received the contract and began building the first 100 ordered Bell Model 209s. Following Bell's heritage of World War II designed warplanes, the Model 209s became the AH-1G Cobra.²⁰

The AH-1G Cobra received the contract because of its airframe performance and its ease of maintenance. With the airframe based on the Huey, the Cobra was already set for rapid production to meet the Army's shortened timeline. All main aircraft components were already available in the Army's supply inventory eliminating a need for fielding or build-up of parts stock. Additionally, the Huey airframe and components removed the need to retrain maintainers. The only time-consuming training was the required training to transition pilots from the Huey to learning to fly the Cobra. The Cobra's flight characteristics were entirely different from the Huey based on its unique tandem cockpit design. Despite having the same basic weight as the Huey, the Cobra's aerodynamic airframe enabled cruise airspeed of 150 knots and 190 knots in a dive.

The increased speed solved previous gunships' inability to cover faster moving lift helicopters such as the Chinook. The increased airspeed is partially due to 60 percent

less frontal area than the Huey, but the primary reason was the placement of stub wings or wing stores on the airframe. Wing stores increase maneuverability as a helicopter increases forward airspeeds and the wing stores begin to provide additional lift. Additional lift reduces rotor loading and increases power available to the engine to support enhanced airspeeds.²¹ Despite some aerodynamic improvements to the airframe, the real purpose of wing stores on a helicopter is to give attack helicopters pylons to carry weapon systems. Installation of pylons allowed the Cobra to carry rocket pods, 7.62mm mini-guns, and anti-tank missiles. The Cobra was the most maneuverable and lethal helicopter of its day. The Army was pleased with the addition to its helicopter fleet, but the Air Force was not.

Secretary of the Air Force, Harold Brown, questioned both the Cobra and AAFSS programs based on the helicopter's attack role. Brown claimed both helicopters were CAS assets that violated earlier service agreements. The USAF wanted to avoid mission duplication and asked to compare the CAS capabilities of Air Force aircraft to the attack helicopters. The addition of wing stores to helicopters was also controversial. Wing stores encroached on the fixed-wing rights of the Air Force based on the recent McConnell-Johnson agreement. The Cobra had both a rotor system and wings and therefore it was a hybrid aircraft and not a helicopter according to the Air Force. Despite these arguments, the Secretary of Defense approved the continuation of all attack helicopter programs and the A-X CAS aircraft. Eventually the Army cancelled the AAFSS program but the program later became the AH-64 development program.²²

While Bell continued to produce the Cobra at slightly higher cost than the Huey, the Army eagerly awaited deployment of the first attack helicopter in combat. The Army

continued to field the UH-1C gunship knowing that it would take years to replace all Huey gunships in the fleet. On August 26, 1967, the Cobra new equipment teams arrived in Vietnam with a complement of instructor pilots and maintainers to begin fielding the first Cobra unit. The 334th Armed Helicopter Company, originally the Utility Tactical Transport Helicopter Company that deployed to Vietnam in 1962, received the first AH-1G Cobras. Just over a month after its arrival, the Army's first attack helicopter company launched its first two-ship mission destroying four heavily bunkered enemy fortifications and 14 sampans in support of ARVN infantry operations.²³ After years of debate, the Army had finally introduced its first attack helicopter in Vietnam.

AH-1G Performance in Vietnam

From February to September of 1968, the Department of the Army deployed a concept team to evaluate the AH-1G Cobra in Vietnam. Only six months after the Cobra's debut, the Army impatiently decided to analyze the Cobra's performance during combat operations. The primary research question asked whether attack helicopters were value added to all maneuver operations.²⁴ The Cobra's performance would determine if the Army should continue to pursue future attack helicopters.

The Cobra's primary mission was security. Security missions focused on providing escort to lift helicopters, support of ground forces maneuver, and interdiction of enemy lines of communication.²⁵ As a helicopter specifically designed for attack operations, Cobras provided direct fire support, armed escort, and an armed reconnaissance capability. The aircraft flew in teams of two in order to provide mutual support and allow for division of labor of tactical responsibilities. A flight of two could divide communication responsibilities of monitoring different radio frequencies to

maintain more situational awareness on the battlefield. For example, one aircraft had the radio responsibilities of talking to the ground unit and the other aircraft was responsible for all reports to higher headquarters. Dividing radio responsibly freed up a radio so the team had internal frequencies to talk amongst themselves. The Cobra's avionics package provided the necessary communications to operate in Vietnam but not all components worked as advertised.

Components of the aircraft navigation and weapon systems proved unreliable and they degraded the Cobra's overall effectiveness. The static pressure from firing weapon systems caused the altimeter to display a false altitude. Pilots were less confident during nighttime operations while conducting diving fire tactics due to the inaccurate readings of the altimeter. Altitude readings are particularly more important at night due to the loss of visual references to height above ground. To fix the problem, the Army suggested installing a radar altimeter to give accurate altimeter settings without the use of ambient pressure.²⁶ In addition to the altimeter errors, the Cobra had an unreliable attitude indicator as well. During marginal weather conditions, such as the monsoon season, aircrews were cautious to fly without reliable flight instruments. Utility helicopters were the only aircraft equipped with Instrument Flight Rules equipment because the Cobra was restricted to Visual Flight Rules in order to engage targets.²⁷ In other words, the utility helicopters could fly in clouds whereas the Cobra could not. The degraded instrument package on the Cobra limited the aircraft's operations, especially during monsoon seasons when the weather grounded the Cobras. But then again, how effective could the Cobras have been flying in such conditions. The lack of Instrument Flight Rules equipment forced the Cobra to fly below all cloud ceilings making it a great target for

anti-aircraft artillery, rocket propelled grenades, heavy machine guns, and small arms fires.

The number of helicopters receiving battle damage from heavy and small arms fire raised concerns. The Cobra's design improved survivability because of its speed, agility, and thin profile. Engineers built armor plating in key locations around vital engine components and inside the cockpit. The fuel tanks increased survivability with the development of self-sealing fuel tanks from large caliber rounds. Additionally, engineers designed external parts to take up to a .30 caliber round and survive.²⁸ Despite the added protection and increased maneuverability compared to the Huey, the Cobra still received battle damage from enemy fire.

Most of the battle damage can be attributed to learning how to best employ the attack helicopter. Nearly 62 percent of successful hits on the Cobra came at altitudes of five hundred feet or below. Pilots enjoyed flying Nap-of-the-Earth during combat because it afforded the enemy minimal time to target helicopters as they passed over. The tactical trade-off made the aircraft more susceptible to small arms fire. Statistics suggested that the higher the altitude, the less likely helicopters were to incur battle damage. Cobra helicopters that flew above 1,500 feet received only 3.5 percent of battle damage.²⁹ Initially, pilots avoided higher altitudes due to the vulnerability to surface-to-air missiles, particularly the SA-7 infrared missile. Bell engineers designed a deflective exhaust system that reduced the engine's heat signature.³⁰ Despite developments to reduce the SAM threat, no major innovations to defend against small arms fire emerged.

Pilots avoided the "Dead Man's Zone" altitude of 50 to 100 feet above ground level.³¹ Most aircrew flew 1,500 feet and above and engaged targets from 500 to 1,500

feet above the target.³² A Project CHECO case study conducted during the Vietnam War revealed that a helicopter was shot down once every 13,000 sorties and the Cobra once every 5,700 sorties. Fixed-wing aircraft flying during Vietnam were shot down once every 3,000 sorties.³³ When comparing rotary-wing and fixed-wing statistics, it appears to support the argument of helicopters were not as vulnerable as predicted. However, when the definition of a sortie is examined, the argument is weakened. A helicopter sortie occurred every time helicopters touched the ground during a mission. Fixed-wing sorties constituted one takeoff and landing. The helicopters had multiple sorties during a mission window therefore skewing the statistics and making the argument of vulnerability debatable.

While avoiding the “Dead Man’s Zone,” Cobra pilots understood the limitations of the two person aircrew concept. Aircrews immediately felt the impact of losing two additional sets of eyes and ears. Pilots could not hear the audible noises of small arms fire from the enclosed canopy. Additionally, the Cobra lacked the Huey gunship crew chief’s ability to hear and see small arms fire and provide pilots with a talk-on to enemy locations or provide immediate suppressive fire. Cobra pilots had to adjust from the previous dependency on crew chiefs onboard gunship helicopters. Cobra pilots now faced the complex task of identifying threats and providing accurate fires for self-protection.³⁴ With the control of a flexible gun turret and tandem-seating cockpit, aircrews were able to provide immediate effective fires. During the study, the only notable weakness in the weapon systems involved insufficient firepower against fortified targets. Army ground units reported that Cobra helicopters lacked the “boom” of Air Force fighters. Cobras attacked 1,177 bunkers with only 5 percent reported destroyed.³⁵ Despite the Cobra’s

ability to carry 75 percent more ordnance than Huey gunships, it could not compare to any fixed-wing destruction capabilities of hardened targets.³⁶ Despite the Cobra's shortcomings in destruction of hardened targets, numerous case studies showed it was effective against soft targets.

The UH-1C remained the backbone of armed helicopters until the early 1970s when production met the tactical needs in Vietnam.³⁷ The 1st CAV replaced all Huey Gunships in 1969 with twelve AH-1G Cobras per battery. A study from February 1968 to April 1969 analyzed the effectiveness of Cobras versus Hueys. The study monitored 703 armed helicopters, 34 percent were Cobras. The Cobra proved to be a far superior armed helicopter than the Huey gunship. Despite only accounting for about one-third armed helicopters in Vietnam, the Cobra killed 44 percent more enemy and damaged 83 percent more structures per sortie than Hueys did. Gunships, as a whole, accounted for nearly 26 percent of EKIA. On a typical day, gunships flew 1,229 hours, expended 480,000 rounds of 7.62mm, 4,970 2.75-inch rockets, and 5,324 rounds of 40mm. The expenditure in ordnance produced 73 EKIA and 132 structures damaged or destroyed.³⁸ The specifically designed attack helicopter increased lethality proficiency and was a better helicopter to support the attrition strategy employed in Vietnam.

Ground commanders appreciated the tactical control of gunships and the effective support they provided. A helicopter specifically designed for attack operations in support of ground troops proved to be extremely effective during combat. The AH-1G was more responsive and capable in providing direct fire support than Huey gunships. When compared to CAS fixed-wing aircraft, the Cobra lacked destructive capability but it was more responsive to the ground commander's needs. The Army, however, praised the Air

Force's ability and effectiveness of providing CAS. It is unfair to compare the CAS accomplishments to the Cobra's accomplishments during Vietnam. It would be like comparing apples to oranges, however, everyone should agree that both services did the best with what they had. The addition of the AH-1G Cobra during the Vietnam War set the foundation for future development of additional attack helicopters.

¹LTC Eugene W. Rawlins, USMC, and MAJ William J. Sambito, USMC, *Marines and Helicopters 1946-1962* (Washington, DC: Headquarters, US Marine Corps, History and Museums Division, 1976), v.

²Horwood, *Interservice Rivalry and Airpower in the Vietnam War*, 25.

³Bill Siuru, *The Huey and the Huey Cobra* (Blue Ridge Summit, PA: Tab Books Inc., 1987), 71.

⁴John Everett-Heath, *Helicopters in Combat: The First Fifty Years* (New York, NY: Sterling Publishing, 1992), 50-51.

⁵William R. Fails, *Marines and Helicopters 1962-1973* (Washington, DC: Government Printing Press, 1978), 85-86.

⁶*Ibid.*, 81.

⁷Chinnery, *Vietnam: The Helicopter War*, 4-12.

⁸Fails, *Marine and Helicopters 1962-1973*, 82.

⁹Everett-Heath, *Helicopters in Combat: The First Fifty Years*, 70.

¹⁰Chinnery, *Vietnam: The Helicopter War*, 12.

¹¹Fails, *Marine Helicopters 1962-1973*, 86.

¹²Everett-Heath, *Helicopters in Combat: The First Fifty Years*, 71.

¹³*Ibid.*, 16.

¹⁴Siuru, *The Huey and the Huey Cobra*, 74.

¹⁵Fails, *Marine and Helicopters 1962-1973*, 111.

¹⁶*Ibid.*, 91.

¹⁷Cooling, *Case Studies in the Case Studies in Development of Close Air Support*, 459-461.

¹⁸Siuru, *The Huey and the Huey Cobra*, 43-44.

¹⁹*Ibid.*, 49-50.

²⁰*Ibid.*, 51.

²¹*Ibid.*, 55.

²²Horwood, *Interservice Rivalry and Airpower in the Vietnam War*, 132-134.

²³Chinnery, *Vietnam: The Helicopter War*, 86.

²⁴Department of the Army, Army Concept Team in Vietnam: Final Report, Evaluation of the AH1G Helicopter, <http://www.dtic.mil/get-tr-doc/pdf?AD=ADA486953> (accessed February 27, 2014), I-2.

²⁵Headquarters Pacific Air Forces, CHECO Division, *Project CHECO Southeast Asia Report: Army Aviation in RVN*, <https://www.dtic.mil/DTICOnline/downloadPdf.Search?collectionId=tr&docId=ADA486929> (accessed February 11, 2014), 20.

²⁶Department of the Army, Army Concept Team in Vietnam: Final Report, Evaluation of AH1G Helicopter, III-10.

²⁷*Ibid.*, II-3.

²⁸Siuru, *The Huey and the Huey Cobra*, 57-58.

²⁹Department of the Army, Army Concept Team in Vietnam: Final Report, Evaluation of the AH1G, II-6.

³⁰Siuru, *The Huey and the Huey Cobra*, 62.

³¹Headquarters Pacific Air Forces, CHECO Division, *Project CHECO Southeast Asia Report: Army Aviation in RVN*, 22.

³²*Ibid.*, 45.

³³*Ibid.*, 42-43.

³⁴Chinnery, *Vietnam: The Helicopter War*, 86.

³⁵Department of the Army, Army Concept Team in Vietnam: Final Report, Evaluation of the AH1G, III-10.

³⁶Headquarters Pacific Air Forces, CHECO Division, *Project CHECO Southeast Asia Report: Army Aviation in RVN*, 42.

³⁷*Ibid.*, 19.

³⁸*Ibid.*, 42-44.

CHAPTER 5

CONCLUSION

It is not simply the weapons one has in one's arsenal that give one flexibility, but the willingness and ability to use them.

— Mao Tse-tung, *Greenhill Dictionary of Military Quotations*

The advent of air mobility in Vietnam spurred a chain of events that culminated in the first helicopter designed solely for attack operations. The Army's tactical need for accessible aerial firepower during air mobility operations spurred the Army's transformation of armed helicopters to gunships early in the war. Additionally, the deployment of an airmobile unit to Vietnam forced the Air Force and the Army to resolve a long-standing inter-service rivalry over air assets. Both services were willing to negotiate on historically hard-line issues in order to focus on the war effort. Ultimately, the character of warfare in Vietnam accelerated the development of the first attack helicopter, the AH-1G Cobra.

Although the Cobra was a temporary solution while the Army continued research and development on the AAFSS, its performance inspired other nations to develop their own attack helicopters. The Soviets began development of the MI-24 Hind and later the Ka-50 Black Shark to maintain helicopter parity with the U.S. The AAFSS project became the Advanced Attack Helicopter that later produced the first AH-64 Apache helicopter in 1986. Less than five years after its introduction, the Apache proved its worth. The Apaches were the weapon of choice to fire the first shots during the initial stages of ground operations associated with Desert Storm in February 1991.

The decades of research and development dedicated to AH-64 Apache paid off with the airframe's exceptional performance during Desert Storm. Had the Cobra failed as an attack platform during Vietnam, politicians and military leaders might not have had the patience to wait for the finished product. Nonetheless, the Apache solidified the attack helicopter's importance in modern warfare. Since Desert Storm, attack helicopters have participated in every major conflict for U.S. forces and they continue to provide armed escort for air assault operations and ground support. The role of today's attack aviation continues to focus on deep operations as well as close combat attacks for ground troops. Close air support from the Air Force is still as important today as it was during the Vietnam War.

The Army and the Air Force have resolved many of their airpower-related tensions associated with ground support since the implementation of the National Security Act of 1947. The services have developed joint doctrine that integrates air power of both services. Joint Air Attack Team operations in today's conflicts illustrate the resolution of these earlier disagreements and highlight the capabilities of the U.S. Armed Forces to function as a team. A recent update to the Joint Publication 1-02, *Department of Defense Dictionary of Military and Associated Terms*, shows how the services have focused on the application of airpower vice who owns specific assets and missions. The joint definition of close air support as an air action by fixed- and rotary-wing aircraft against hostile targets that are in close proximity to friendly forces is an indication of changing attitudes. The change signifies an end to the long struggle attack aviation has undergone to gain Air Force acceptance, an effort that dates back to the Howze Board of 1962.

The Big So What

August 20, 2012, marked the fiftieth anniversary of the Army's Tactical Mobility Requirements Board, commonly known as the Howze Board. The invention of the helicopter brought about a revolution in military affairs by inspiring the concept of air mobility that came of age during the Vietnam War. One could argue who was the first to champion the concept of using helicopters to transport troops, but the primary lesson is about the vision military leaders pursued to maintain and develop mobility capabilities. Mobility in warfare dates back over 5,000 years ago when horses enabled swift movement across a battlefield. The Army's use of helicopters for mobility filled an important capability that neither fixed-wing aircraft nor ground maneuver elements could provide.

Helicopters fulfilled the traditional cavalry mission to "saddle up" and go when ground forces were under duress. While limited in the Korean War, army aviation matured during the Vietnam War. The need to deploy ground forces rapidly to various hot spots in conventional and unconventional conflicts persists. Moreover, air mobility required armed escort as the Vietnam War demonstrated. The notion of armed helicopters in support of ground troops came to fruition when the 1st CAV began combat operations in the fall of 1965. The division's immediate successes facilitated army efforts to develop an attack helicopter first envisioned by the Howze Board in 1962. The UH-1 Huey Gunship and AH-1 Cobra were the first rotary-wing aircraft to fulfill these vital missions, but they also established the blueprint for future attack aviation.

The Army adapted the concept of air mobility to the circumstances that existed in Vietnam. The original concept envisioned deploying soldiers in a nuclear battlefield to

allow depth in offensive operations and keep availability to disperse units quickly in case of a pending nuclear attack. While forcing the square peg in the round hole, the Army became more reactive in learning how best to deploy airmobile units in Vietnam, a war that that was both a conventional and unconventional war. The validity of airmobile operations depends on one's perspective. Initial air mobility doctrine did not aim to seize and hold ground or terrain. Air mobility units helped support MACV's search and destroy mission by finding, fixing and destroying the enemy. Historically, measuring the tactical success of an operation depended on the amount of ground gained. In that context of tactical success, air mobility had temporary successes because units would retrograde only after a week or two of conducting the operation. Airmobile doctrine afforded the enemy an opportunity to regain the ground previously lost unopposed. This explains why numerous battles in Vietnam took place in the same battle space. What determines if an air mobility operation was a success? Airmobile operations clearly aided MACV's attrition strategy. Given the attrition-based strategy employed in Vietnam in 1966, these airmobile operations contributed to the primary measure of success in conflict—the body count.

Airmobile units were essentially light forces used to conduct rapid movement throughout the battlefield. Air mobility relied on firepower to support its scheme of maneuver. From a broader perspective, artillery, rotary-wing, and fixed-wing fire assets provided the means necessary for the army to conduct ground support operations. The NVA and VC ground forces adapted to air mobility capabilities by closing the distance with U.S. ground forces. The “grab them by the belt” mentality complicated ground commanders' decisions to the risk of fratricide. Ground commanders during the Pleiku

Campaign realized that helicopters were the best-suited aircraft to provide accurate and close fires due to their slow airspeeds, altitude, self-adjustments, reliability, and availability. The ground commander came to trust and rely upon the UH-1's gunships ARA and suppressive fires capabilities. The UH-1's success in a gunship role triggered the development of a helicopter specifically designed for attack operations.

Rotary-wing aviation revolutionized the tactical operational capability of the U.S. military, especially during the Vietnam War. Without the concept of air mobility and the experienced gained from Vietnam, one might speculate if the Army would have pursued the development of an attack helicopter. Understanding how air mobility further encouraged the development of attack aviation demonstrates how military innovation can influence war-fighting functions, especially during a war. Today, attack helicopters provide support in all aspects of Unified Land Operations. From the Ia Drang Valley in 1965 to the mountains of Afghanistan in 2014, soldiers can attest to the attack helicopter's value in all types of conflict.

What If, Further Research and the Future

Counterfactual debates regarding the Vietnam War have intrigued both historians and military professionals. What if President Kennedy had not been assassinated, would the war still have escalated, or would he have withdrawn U.S. support? Most "what ifs" focus on the Vietnam War never taking place. Without the war, would the Army have a valid argument to design, develop, and deploy attack helicopters? Prior to the war, the Army had already begun to explore, at least on paper, the concept of air mobility. The Kennedy administration's emphasis on flexible response would have continued the development of air mobility, but to an unknown extent. However, without the Vietnam

War, the Army might have lost the fight in developing organic attack aviation. The budget constraints during an interwar period would have crippled the Army's argument because the support necessary for air mobility operations already existed in the Air Force. Without the war, the Army would have a weak case arguing that armed helicopters provide better aerial fire support than fixed-wing aircraft. Additionally, without a living, breathing enemy to fight, air mobility would have only been a validated test concept versus a combat proven idea. The war in Vietnam provided the necessary environment to validate the concept and adapt the aerial firepower support necessary to operate in unconventional as well as conventional war.

This study examined air mobility and the development of attack aviation from 1965 to 1967, but other areas deserve further research. To trace the origins of armed helicopters from an international perspective, one could study the French during the Algerian War. The USMC contributions are also an important area needing additional investigation. What lessons were learned, what observations did the Marines use in their development, and why? Another area is the research and development efforts at Fort Rucker during the late 1950s in arming helicopters and training of aviators to use weapon systems on rotary-wing aircraft. Researching this topic would allow a deeper understanding of how the Army began to see value in arming the helicopter after the Korean War. In respect to air mobility, a comparative study of the 1st CAV and the 101st Airborne Division during Vietnam would provide a broader insight to the development of airmobile units from 1965 to 1967. Comparing 1st CAV's deployment in 1965 to 101st deployment in 1967 could identify the differences in training, task organization, doctrine, and tactical operation during the Vietnam War. Lastly, it is important to observe the

viewpoint from all sides of the conflict. Researching the NVA and VC adaptation and response to both air mobility and attack aviation throughout the course of the war would help assess Army Aviation's effectiveness during the Vietnam War.

It is also equally important to research and understand developments in today's conflicts. If there is one thing the military is good at, it is being wrong at predicting future conflicts. Maintaining flexibility and adaptability is critical in today's military operating environment wherever the fight may lead. With the continued development in Unmanned Aircraft Systems, the Joint Force will continue to struggle with the reality of introducing another CAS-capable platform into ground operations. Much like the Army and Air Force inter-service rivalry during Vietnam, the new rivalry will be between manned and unmanned aircraft supporters. Additionally, similar to the gradual arming of helicopters, Unmanned Aircraft Systems platforms are becoming more heavily armed or they are being designed to carry more ordnance.

Unmanned Aircraft Systems threaten to duplicate the capabilities of manned reconnaissance and CAS. With budget cuts and personnel drawdowns, the Army and Air Force have announced the retirement of the OH-58D, an observation helicopter, and the A-10, the USAF's primary CAS aircraft. The retirement of these aircraft presents a window of opportunity for Unmanned Aircraft Systems to dominate the CAS domain. History appears to be repeating, but only time will tell what role Unmanned Aircraft Systems will play in CAS operations. Understanding the history and evolution of attack helicopters provides a useful framework to understand the ongoing evolution of weapons systems to support CAS operations.

ILLUSTRATIONS



Army Helicopters

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FarFromGlory.com, “American Aircraft,” <http://farfromglory.com/aircraft.htm> (accessed May 10, 2014). First discussed: CH-21 Shawnee (Photo 2) on page 50, UH-34 Seahorse (Photo 3) on page 50, and UH-1 Huey (Photo 4) on page 5 of this thesis.

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1. CH-19 Chickasaw
2. CH-21 Shawnee
3. UH-34 Seahorse
4. UH-1 Huey
5. AH-1 Cobra
6. AH-64 Apache



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