WILL UNITED STATES ARMY ATTACK AVIATION BE A RELEVANT COMBAT MULTIPLIER IN FUTURE CONFLICTS?

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As the U.S. Army transforms, in terms of (1) a lighter, more rapidly deployable force and (2) its doctrine, significant criticism has been cast as to the effectiveness and relevance of attack helicopters. Critics of attack aviation have raised doubts based on the performance of attack aviation during Operations Enduring Freedom and Iraqi Freedom. While it would be foolish to argue that attack aviation is the answer to every situation and is a perfect force multiplier, it by no means is irrelevant and ineffective. Based on lessons learned from both Operation Enduring Freedom and Operation Iraqi Freedom, Army attack aviation will adjust its tactics, techniques and procedures and will continue to be an effective and relevant force on the future battlefield.

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ABSTRACT

WILL UNITED STATES ARMY ATTACK AVIATION BE A RELEVANT COMBAT MULTIPLIER IN FUTURE CONFLICTS? by MAJ Douglas L. Brockhard Jr., 82 pages.

As the U.S. Army transforms, in terms of (1) a lighter, more rapidly deployable force and (2) its doctrine, significant criticism has been cast as to the effectiveness and relevance of attack helicopters. Critics of attack aviation have raised doubts based on the performance of attack aviation during Operations Enduring Freedom and Iraqi Freedom. While it would be foolish to argue that attack aviation is the answer to every situation and is a perfect force multiplier, it by no means is irrelevant and ineffective. Based on lessons learned from both Operation Enduring Freedom and Operation Iraqi Freedom, Army attack aviation will adjust its tactics, techniques and procedures and will continue to be an effective and relevant force on the future battlefield.

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I would like to acknowledge the brave aviators who courageously answer the call in the harshest of environments, far away from home everyday. Without the men and women in our armed forces, we could not live the lives we lead.

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ACRONYMS

AAR	After-Action Review
AASLT	Air Assault
ABN	Airborne
AHR	Attack Helicopter Regiment
AMCOM	Aviation and Missile Command
ATACMS	Army Tactical Missile System
AVN	Aviation
BDE	Brigade
CCA	Close Combat Attack
DIV	Division
FM	Field Manual
ID	Infantry Division
JSTARS	Joint Surveillance Target Attack Radar
km	Kilometer
MLRS	Multiple Launched Rocket System
mm	Millimeter
OEF	Operation Enduring Freedom
OIF	Operation Iraqi Freedom
OPCON	Operational Control
RPG	Rocket Propelled Grenade
SEAD	Suppression of Enemy Air Defense
TM	Technical Manual
TRADOC	Training and Doctrine Command

UA	Unit of Action
UAV	Unmanned Aerial Vehicle
UE	Unit of Employment

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CHAPTER 1

INTRODUCTION

The Darkest Day

23 March 2003, has been described as the darkest day for the US Army during Operation Iraqi Freedom. On that day the 507th Maintenance Company was ambushed after it became lost resulting in the deaths of eleven soldiers and the capture of seven others. It was also on the night of 23 March that the 11th Attack Helicopter Regiment (AHR) and V Corps conducted a deep attack against the Medina Division south of Baghdad. This mission resulted in most of the aircraft being damaged by enemy fire including one shot down and its crew taken prisoner. It was this deep attack that ignited a controversy about the future relevance of Army Aviation, specifically Army attack aviation.

While the results of the 23 March deep attack cannot be disputed, one has to consider all of the facts about attack aviation before jumping to conclusions about its relevance on the future battlefield. This paper will analyze the results of AH-64A/D Apache employment in Operations Enduring Freedom and Iraqi Freedom. It will also discuss the impacts that technology and the Future Force may have on attack aviation in order to answer the primary thesis question: Will U.S. Army attack aviation will be a relevant combat multiplier in future conflicts?

Army Transformation

The United States Army, along with all of the services in the Department of Defense, is undergoing a transformation. The underlying objective of this transformation, within the Army, is to create a “force that will be more responsive, deployable, agile,

versatile, lethal, survivable, and sustainable than the current force. These characteristics stretch across all of the Army's core competencies including: prompt response, forcible entry operations, and sustained land dominance" (U.S. Army War College 2003, 2). Throughout this transformation, the senior leaders within the Department of Defense (DoD) and the U.S. Army have sought to find suitable replacements for aging equipment. This new equipment must be lighter, faster, and more rapidly deployable. In order to transform the force, senior leaders have also identified that a change in the doctrine must occur to be able to fight and win battles and wars across the spectrum of Army operations including offensive, defensive, stability, and support operations (FM 3-0, 2001, 1-15).

Since the end of the Cold War, the U.S. armed forces have seen a significantly more complex role for the military. The sole function of the military "to fight and win the nation's wars" is no longer entirely true. The U.S. military has been involved in conflicts ranging from two major wars in Kuwait and Iraq, peacekeeping and peace-enforcement in Europe, humanitarian operations in Haiti and Somalia to disaster relief and fighting fires in the continental United States. It can be argued that the U.S. military has been in only one conflict against a symmetrical threat- Desert Shield and Desert Storm. However, the vast majority of the Army's training and doctrine continues to focus on fighting a Cold War era threat in the open desert, on the Korean peninsula or on the plains of Germany.

As the Army transforms its doctrine to address asymmetrical threats and becomes a more rapidly deployable force, while staying within budgetary constraints, serious questions and arguments have been raised as to what this transformed Army will look like and what roles and missions it will have. The extent to which the Army transforms in

force structure and doctrine will depend largely on analysis of past conflicts and future threats. In order to transform, inevitably the functions of some branches in the Army will be reduced while the functions of others will be expanded. In response to reducing the functions of some branches many senior leaders within the Department of Defense are looking for what systems can be eliminated from this Future Force.

From those lessons learned from past conflicts and operations, theories will be developed, doctrine implemented and force structured adjusted. As the U.S. Army transforms, in terms of: (1) a lighter, more rapidly deployable force and (2) its doctrine, significant criticism has been directed at the effectiveness and relevance of attack helicopters. As a result of the failed deep attack by the 11th AHR in the late night hours of 23 March 2003, considerable doubt has arisen regarding the relevance of Army attack aviation as a whole. Critics of attack aviation base their concerns on a perception of poor performance by attack aviation during operations in Afghanistan and Iraq. In order to ensure that the Army evolves into the correct force structure and applies the correct doctrine, it is imperative that is known what it is that attack aviation brings to the battlefield and that its capabilities and limitations are understood.

Definitions

FM 101-5-1, *Operational Terms and Graphics,* and Joint Publication 1-02, *Department of Defense Dictionary of Military and Associated Terms,* provide the definitions for most of the terminology used throughout the paper. However there are a few definitions that may assist the reader if addressed here.

Air Interdiction (AI): Air operations conducted to destroy, neutralize, or delay the enemy's military potential before it can be brought to bear effectively against friendly

forces at such distance from friendly forces that detailed integration of each fire and movement of friendly forces in not required (JP 1-02 2001, 21).

Close Combat Attacks (CCA): A hasty or deliberate attack, conducted by attack helicopters, in support of ground units engaged in close combat. During a CCA, armed helicopters engage enemy units with direct fire that impacts near friendly forces. Targets may range from a few hundred meters to a few thousand meters. Close Combat Attack is coordinated and directed by a team, platoon or company-level ground unit using standardized CCA procedures in unit SOPs (FM 3-04.111 2003, Q-15).

Close Operations: Involves forces in immediate contact with the enemy and the fighting between the committed forces and the readily available tactical reserves of both combatants (FM 101-5-1 1997, 1-28).

Deep Operations: Those operations directed against enemy forces and functions that are not in contact at the forward line of troops (FLOT), line of departure, or friendly perimeter and are between the FLOT or perimeter and the forward boundary of the unit conducting the operation. These operations employ long-range fires, air and ground maneuver, and command and control warfare to defeat the enemy by denying him freedom of action; disrupting his preparation for battle and his support structure; and disrupting or destroying the coherence and tempo of his operations (FM 101-5-1 1997, 1-46).

Units of Action (UA): Tactical level organizations that are currently represented by brigade-sized units. Units of Action are designed as modular organizations that can be combined and integrated as the basic building blocks of combined arms power to form larger organizations (TRADOC 2003, 6). These organizations will have fewer combat

maneuver forces but will have more combat support and combat service support assets assigned. The theory is that these organizations will be able to perform the same functions as a brigade sized unit, under the current force structure.

Units of Employment (UE): Highly tailorable, higher-level echelons that integrate and synchronize Army forces for full spectrum operations at the higher tactical and operational levels or war/conflict. The UE will be capable of command and control of all Army, joint, and multinational forces. In historical terms, UE represents the field army, corps, and division (TRADOC 2003, 6).

Limitations

It is possible that the Department of Defense and the U.S. Army's study of the results and lessons learned from both Operation Enduring Freedom and Operation Iraqi Freedom will take years to fully understand and comprehend. As a result, I will limit the scope of this paper to the AH-64A/D Apache involvement in Operation Enduring Freedom and Operation Iraqi Freedom. In terms of Operation Enduring Freedom, I will limit my discussion to Operation Anaconda because that was the specific operation that aroused critics of Army attack aviation. I will limit discussion of Operation Iraqi Freedom to the combat operations that took place prior to 1 May 2003; the date President George W. Bush announced the end of major combat operations within Iraq. More specifically, I will limit my discussion to the V Corps and the 11th Attack Helicopter Regiment, the 3rd Infantry Division (Mechanized) and the 101st Airborne Division (Air Assault) since only those units employed the AH-64A/D Apache during combat operations prior to 1 May 2003.

Because of the likely lengthy period necessary to study Operation Iraqi Freedom and officially publish the findings, my research will rely heavily on published articles and the immediate, undigested collection of lessons learned from units that participated in these operations. Additionally, I will utilize personal experiences while serving with the 101st Airborne Division (Air Assault) during the planning and execution of combat operations in Operation Iraqi Freedom to support some assertions.

Chapter 2 will provide a summary of the research conducted on the two opposing views of attack aviations.

CHAPTER 2

LITERARY REVIEW

The Critics

On the night of 23 March 2003, the 11th Attack Helicopter Regiment (AHR) was given the mission to attack the Medina Division north of the city of Karbala. The 11th AHR sent two attack helicopter battalions to conduct a deep attack to destroy elements of that division of the Republican Guard. The end result was that almost every aircraft that launched on the attack returned to the Assembly Area damaged from enemy fire. As a result of this mission, critics have risen to criticize Army Aviation and specifically Army attack aviation. This criticism was fast in reaching one of the highest ranking aviation generals in the Army today, the Army G3, Lieutenant General Richard Cody. As a result, the Aviation community began addressing the critics and defending what had been accomplished during Operation Iraqi Freedom (personal recollection, April 2003). Despite the efforts of commanders in the field and advocates of Army Aviation, this criticism reached the political decision makers in Congress in short order (O'Rouke 2003, 35-37).

In the April 23, 2003 issue of *The Slate*, contributing author Fred Kaplan wrote an article entitled "Chop the Chopper." Along with most, if not all, of the critics of Army attack aviation he cited Operation Anaconda and the failed mission conducted by the 11th AHR on 23 March 2003. Kaplan notes that during Operation Anaconda the Apache helicopters engaged Taliban fighters and, as a result of damage received by small arms fire and rocket-propelled grenades (RPGs), five out of seven were characterized as "non-mission capable." In the OIF case he highlights that most of the Apaches received

damage as a result of enemy fire with one shot down and its crew taken prisoner. He states that the Apache is "too dangerous to the pilots who fly it and not dangerous enough to the enemy it's designed to attack." He asserts that, following that mission, Army attack aviation was relegated to less important and less dangerous missions, like reconnaissance or "firing at small groups of armored vehicles." He also claims that, as a result of the failed mission, attack aviation was rarely allowed to conduct operations in front of ground troops or without Air Force participation. To further support his argument, the author cites the decision not to employ Apaches in combat operations during the air war in Kosovo. He states that commanders made that decision because the helicopters would be at too great a risk of getting shot down by enemy air defenses. The remainder of this article discussed why the Army fielded attack helicopters and argues that the Army should adopt the A-10 in lieu of the AH-64 Apache (Kaplan 2003).

The July 23, 2003 issue of the *Wall Street Journal* offers insight as to how high in the political chain this criticism has reached. In the article "Chopper's Future in Battle Looks Choppy" authors Nichols Kulish and Anne Marie Squeo again reference the 11th AHR mission. Loren Thompson, director of The Lexington Institute, a Washington defense think tank, says the Apache "is the most advanced attack helicopter ever built, so if it can't operate safely in a place like Iraq, that has to raise questions about the whole concept of attack helicopters." Furthermore, the authors quote Newt Gingrich, the former Speaker of the House and now a member of the Defense Policy Board and close advisor to Secretary of Defense Donald Rumsfeld, as saying "their performance in certain battles certainly puts attack helicopters in question." Yet another Pentagon official, the Director of the Pentagon's Office of Transformation, Art Cebrowski, stated that "The helicopter

industry is in the toilet, and probably it ought to be" because it has failed to improve technologically. Kulish and Squeo state that "no one is predicting the imminent elimination of attack helicopters. But there already is noteworthy movement away from these aircraft as technological advances and closer cooperation between military branches undercuts their role." Edward Aldridge, the former chief of Acquisitions for the Pentagon and now an advisor to Secretary of Defense Donald Rumsfeld has suggested that some roles that attack helicopters are currently performing may be able to be replaced as technology advances. On the other hand, the article offers some insight to the thoughts of the proponents of attack helicopters. Lieutenant General John Riggs, the Director of the Objective Force Task Force who is overseeing the Army's transformation process, said "I won't accept the premise [that] you can do without attack helicopters." However, the article does state that many are asking "Are helicopters' fighting days numbered?" (Kulish and Squeo 2003, A4)

The *Aviation Week and Space Technology* article, "Coming Under Fire," offers a different perspective. Unlike other articles criticizing the Apache, this article states that the 11th AHR mission has "sparked questions about U.S. Army tactics." The authors contend that "the service is still using tactics designed to defeat a massive Eastern Bloc armor raid pushing through the Fulda Gap." The article suggests that the tactics employed during the 11th AHR mission were a result of insufficient training with joint assets such as the Air Force and Special Operations. The article offers other points of view as well. In defense of the 11th AHR maintenance and supply personnel and the Apache helicopter, the authors offer that "The aircraft returning from the Karbala raid were operational again within 96 hours even though all sported at least six bullets holes." Additionally, the

article credits the Apache for being “instrumental to the outcome of the campaign,” the 11th AHR mission on 23 March withstanding (Wall and Fulghum 2003, 63-65).

The 22 April 2003 article “Apache Operation: A Lesson in Defeat” in *The Washington Times*, is another that questions the tactics employed by Army attack aviation. The article states that Lieutenant General William Wallace, the V Corps commander during OIF, said, “He hoped the AH-64D Apache Longbows would demonstrate how Army Aviation could devastate an armored unit.” As a result of that mission, the Army is evaluating its doctrine and tactics for conducting deep operations with attack helicopters. Again the lack of joint coordination between the Army and the Air Force is identified as a crucial mistake. The article, while it does focus on tactics, does fault the Apache’s survivability because of its vulnerability to small arms fire (Scarborough 2003, 1).

The implications of the lessons learned from all conflicts have the potential to either continue or increase weapon system funding or decrease it. Army attack aviation does not fare well in the June 4, 2003 *Report for Congress*, Iraq War: Defense Program Implications for Congress. The report states “The war in Iraq is the third consecutive major U.S. military operation, following the operation in Kosovo in 1999 and the war in Afghanistan in 2001-2002, where helicopter performance was mixed.” For the war in Kosovo, it criticizes attack aviation as not being integrated with the Air Force, specifically not being incorporated in the Air Tasking Order (ATO) and therefore significantly reducing its effectiveness. It also states that the Apache task force, consisting of 24 Apache helicopters, was not efficiently deployable. In Afghanistan, it refers to Operation Anaconda and the susceptibility of the Apache to small arms and RPG

fires. It also addresses a lack of joint interoperability with the operations of other U.S. forces during the combat operation. As for Operation Iraqi Freedom, it includes criticism of the aircraft's survivability and maintainability. For survivability it addresses the 11th AHR mission and the damage received from small arms fire and RPGs. It also speaks of a lack of joint cooperation between the Army and Air Force stating "an Army failure to coordinate the Apache attack with supporting Air Force and Navy aircraft operations may have played a significant role in the poor outcome of this attack." As far as maintenance is concerned, the report states that helicopters have difficulty flying in harsh desert environments. The sand ingested into the engines is a significant problem "and observers argue that little improvement in helicopter maintainability has been made since the 1991 Persian Gulf war." The implications of these findings are that "there is speculation that [Department of Defense] DoD may consider the option of placing less emphasis on helicopters in its plans and budgets" (O'Rourke 2003, 26-38).

The Proponents

> Our Army talks a lot about the need to be flexible, adaptable, and relevant. We believe Army Aviation proved to be just that in the course of Operation Iraqi Freedom. (2003)
>
> Major General David Petraeus, Commanding General, 101st ABN DIV (101st ABN DIV 2003a)

Despite the wave of criticism, the author's opinion in the article "Coming Under Fire," stated it best. "The Karbala mission aside, the Apaches were instrumental to the outcome of the campaign."

The 11th AHR was task organized with three attack helicopter battalions: 1-227th AVN from the 1st Cavalry Division, placed under the Operational Control (OPCON) of the 11th AHR, 6-6 Cavalry and 2-6 Cavalry (V Corps 2003, 1). Both 1-227th AVN and

6-6 Cavalry are AH-64D equipped and 2-6 Cavalry is AH-64A equipped. The 11th AHR conducted four major operations during OIF. The first mission was to conduct a deliberate attack against the Iraqi 11th Infantry Division. However this mission was cancelled after take-off because adverse weather prevented the supporting UH-60s and CH-47 from proceeding (6-6 Cavalry 2003, 1). According LTC Scott Thompson, the 2-6 Cavalry commander during OIF, this had a psychological impact on the leadership of the Regiment and was a factor in the decision to execute the deep attack on 23 March (personal discussion with LTC Thompson, 10 May 2004).

The next mission for the Regiment was the deep attack against the Medina Division of the Republican Guard. It was that mission that ignited the firestorm of criticism of attack helicopters in Operation Iraqi Freedom. Following the failed deep attack, the 11th AHR placed 2-6 Cavalry, which was removed from the 23 March mission just hours prior to launch, under the operational control (OPCON) of 3rd Infantry Division to facilitate their maneuver north to Baghdad. 3ID's organic attack battalion along with 2-6 Cavalry conducted attacks in support of ground maneuver forces in the close fight against the Medina Division (V Corps 2003, 2).

After the deep attack against the Medina Division, 6-6 Cavalry had approximately 12 aircraft that were mission capable and provided 3ID with a 24-hour Quick Reaction Force. During this time, the Squadron had a requirement to provide attack aviation support to 3ID with a 45-minute response time. The 6-6 Cavalry conducted reconnaissance, along Main Supply Routes and of 3ID objectives, and conducted hasty attacks to destroy enemy forces that were threatening 3ID forces. As a corps level attack aviation unit, 11th AHR rarely trained on attack helicopter operations in the close fight.

However, due to the versatility, adaptability, and previous experience of its pilots, 6-6 Cavalry was able to overcome this shortfall and successfully integrate with 3ID. The two remaining major operations involved the 11th AHR, now back to its original task organization of three attack helicopter battalions, conducting force oriented zone reconnaissance in order to secure both the western and eastern flanks of V Corps. These missions resulted in the destruction of numerous enemy armored vehicles, artillery and air defense systems, and several ammunition caches. Furthermore, the reconnaissance revealed the location of 19 Theater Ballistic Missile launchers, 80 missiles, as well as additional armor, artillery, and air defense systems (6-6 Cavalry 2003, 24).

The 3rd ID utilized their Apaches extensively in the close combat attack role and did not employ them in the deep attack role. Their attack helicopter battalion, 1-3rd Aviation moved with the lead ground elements and destroyed enemy targets ahead of the ground maneuver forces. The 3ID was the first to employ the relatively newly fielded AH-64D Longbow in combat as it destroyed the Iraqi observation posts along the Iraq-Kuwait border prior to ground forces crossing into Iraq. Working with ground maneuver forces, 1-3rd AVN enabled the 3rd Infantry Division to defeat the Iraqi 11th Infantry Division and allowed the division to successfully maneuver all the way into Baghdad. The attack helicopter battalion was employed in support of ground forces by conducting reconnaissance by fire in order to destroy enemy direct fire systems on the objective. The Apaches then focused their reconnaissance and attacks to the area surrounding the objective to destroy indirect fire systems. Once the surrounding area was secured, the Apaches focused on avenues of approach that the enemy could use to either reinforce or withdraw (Rude 2003, pg 33). The 1-3rd AVN was employed along the axis of advance

for 3ID which included urban areas such as An Nasiriyah, An Najef, Karbala, and Baghdad. In all, 1-3rd AVN was credited with the destruction of two battalions worth of equipment of Saddam's Republican Guard as well as numerous para-military forces from the Fedayeen (Wilson 2004, 44-46).

The 101st Airborne Division (Air Assault) is equipped with three attack helicopter battalions consisting of 24 Apaches per battalion. All of the Apaches are assigned to the 101st Aviation Brigade and many feel this is why the division was selected to deploy over other armored units, namely the 1st Cavalry Division. Throughout the planning process, within the 101st Airborne Division, the focus of the operation was aviation centered and focused on attack aviation. The division was to conduct air assault operations in order to secure terrain so that Forward Arming and Refueling Points could be established. This would allow the 101st Aviation Brigade to conduct deliberate attacks deep into enemy territory in order to destroy a brigade from the Medina Division of the Republican Guard south of Baghdad. According to a battle summary from the 101st ABN DIV the division conducted: a successful attack against the Medina Division, armed reconnaissance deep in enemy territory, the two longest air assaults in history, close combat attacks and successful urban operations in An Najef, Al Hillah, Karbala, and Mosul. During all of these operations, attack aviation played a significant role in the success of the brigade combat teams and the division as a whole. Every operation was a combined arms effort with the other branches within the Army as well as the other services. This included Joint Suppression of Enemy Air Defense (J-SEAD) and Close Air Support (CAS) from the U.S. Air Force, Marines, and the British Air Force (Personal recollection, March-April 2003). The 101st Aviation Brigade is credited with destroying

over 1,549 military targets, including air defense systems, armor and mechanized vehicles, artillery and para-military vehicles used by the Saddam Fedayeen. Moreover, the 101st flew over 4700 hours and maintained an average mission capable rate of over 86 percent. While 22 aircraft did receive some damage due to enemy fire, not a single aircraft was destroyed as a result of enemy fire and all returned to their assembly areas (101st ABN DIV 2003a).

CHAPTER 3

RESEARCH METHODOLGY

The topic of this thesis led to one primary question and six supporting questions. These questions formed the basis of the research. This chapter will address each of those supporting questions from which the answer to the primary question: Will Army attack aviation be a relevant combat multiplier in future conflicts? will be derived.

Supporting Questions

Question 1: Why was the AH-64 Apache developed?

The US Air Force (USAF) becoming an independent service had a lasting effect on the US Army. Because the newly formed service was intent on establishing its own identity, the USAF focused on strategic bombing and interdiction. As a result the close air support mission was a very low priority. This combined with the fact that the world had entered the atomic age relegated the Army to "nonessential status."

Close air support proved itself to be a viable and effective mission for airpower during WWI. However, during the interwar period, not one country fully capitalized on the lessons learned from conducting close air support. The search for worthy missions for fledgling independent air forces in the United States and Britain further aggravated the quarrels between the ground and air forces. The impact of these debates and the USAF unwillingness to place priority on close air support lead the US Army to seek viable alternatives.

At the beginning of the Korean War, USAF close air support was effective and probably prevented the Army from being pushed off the peninsula. However, as the war progressed, the USAF once again began to place less and less emphasis on close air

support. Following the Korean War, “the USAF leadership continued to cling to the belief that strategic bombing was the best way to damage the enemy. Deep interdiction was held as the second best way to inflict pain, while close air support was still deemed the least effective way to employ airpower” (Bradin 1994, 76). The lessons from Korea proved to the Army that it could not depend on the USAF for around-the-clock close air support. This led the Army to believe it was going to have to once again begin to fly armed aircraft. Enter the helicopter.

Even prior to the war in Vietnam, the Army began to focus on the growing armor threat posed by the Soviet Union. The introduction of North Vietnamese tanks during the Vietnam War only solidified that concern. The Advanced Aerial Fire Support System, later known as the AH-56 Cheyenne, was announced in June 1963. The AH-56 would be designed to address not only the need for an Army close air support platform but also to destroy Soviet armor. However, because of the immediate need for an attack helicopter in Vietnam and the fact that the AH-56 Cheyenne would not be able to be produced in time for the conflict, the AH-56 Cheyenne began to die. Ultimately the AH-56 suffered from technical design problems which caused the program to be cancelled.

The airmobile concept, which was first introduced in the Vietnam conflict, solidified the need for a heavily armed helicopter. Initially, the UH-1 helicopters armed with machine guns and rocket launchers were not capable of suppressing enemy forces near landing zones and were unable to maintain the speeds to keep up with their unarmed sister ships. The Army understood the need for a helicopter “purely designed as a gunship” (Bradin 1994, 114). As a result, the AH-1 Cobra was introduced and flew its first combat mission in October 1967 (Bradin 1994, 122).

In 1972, the Army conducted what would become known as the Ansbach Trials. These evaluations were to determine "the effectiveness of attack helicopter teams on anti-armor missions against attacking aggressor forces" (Bradin 1994, 126). The results of these trials proved that helicopters armed with anti-tank missiles could effectively assist NATO forces in defeating Warsaw Pact armored formations.

Following the Ansbach Trials, the Army began searching for a suitable replacement for the Cheyenne as a long-term solution to kill Soviet armor. In the meantime, the AH-1 Cobra was the short-term, cost effective answer. The Advanced Attack Helicopter (AAH), later known as the AH-64A Apache was announced. During the development phase of the AAH, a new antiarmor missile was also being developed. That missile, called the Hellfire, would ultimately become the primary weapon system for the AH-64 Apache. Despite several manufacturing slips, changes to technical and operational requirements, and cost battles, the AH-64 survived and became the most advanced attack helicopter in the world, designed to kill Soviet armor in defense of NATO.

During the development of the AH-64 Apache, critics accused it of being "over-engineered" (Bradin 1994, 148). In order to ensure that it could survive on the Cold War battlefield, engineers built redundancy into almost every critical component. All aspects of the survivability features of the Apache are beyond the scope of this thesis; however, I will mention some of the features. For example, there are two engines, two hydraulic systems, two flight control systems, redundant black boxes, and self-sealing fuel tanks. The backup systems are placed on the opposite side of the aircraft so that one round could not destroy both systems. The drive train, including the transmission and gearboxes, on

the Apache are designed to operate up to 30 minutes without lubrication, sufficient time to egress out of the immediate danger area. The rotor blades are designed to be able to take hits from weapons up to 23-millimeter caliber and continue to operate. The cockpits are separated by a blast shield to prevent both crewmembers from being hit by the same round or shrapnel and the seats are made of Kevlar. The landing gear is designed to be able to absorb a vertical descent of 42 feet per second during a crash sequence while ensuring crew survivability. Furthermore, the aircraft is equipped with a suite of Aircraft Survivability Equipment (ASE) which includes a radar warning receiver, a radar jammer, a laser warning receiver, chaff dispenser and an infrared jammer. The radar equipped AH-64D Longbows also have a Radio Frequency Interferometer (RFI) that detects enemy radar and allows for the crew to rapidly engage the threat with radar or laser guided missiles (TM 1-1520-251-10 2002). Although this ASE suite was not extensively used in either OEF or OIF, future threats will likely pose a greater air defense threat where these systems will be extremely valuable (see figure 5, AH-64D Aircraft Survivability Equipment).

The AH-64 was designed to be survivable. During Operation Anaconda in Afghanistan and on the night of 23 March in Iraq, the pilots of the Apache were certainly glad that the Apache was “over engineered” because despite taking severe damage in some cases the aircraft brought all but one crew home alive. It is noteworthy to mention that the one crew was not injured as a result of being shot down by Iraqi forces. This is a testament to the survivability and durability of the AH-64 Apache.

Question 2: Was attack aviation doctrine appropriate during the planning and execution of combat operations in Afghanistan and Iraq?

During the planning and execution of OIF, the doctrine utilized by Army Aviation was fundamentally correct. FM 1-112 *Attack Helicopter Operations* and FM 1-111 *Aviation Brigades* covered all aspects of offensive, reconnaissance, and security operations. Both manuals detailed the planning and execution of deliberate attacks deep into enemy territory as well as offensive operations in close proximity to friendly ground maneuver forces. However, the doctrine did not go into sufficient detail regarding the coordination required between ground maneuver forces and attack helicopters when conducting Close Combat Attacks (CCAs).

As for the failed deep attack by the 11th AHR on 23 March 2003, the doctrine was not properly applied. Examples of improperly applied doctrine include: not operating out of a secure area, not having sufficient fuel and ammunition available, not having sufficient command and control measures in place, and not having sufficient information on the enemy force. Furthermore, the V Corps adhered to a policy that Suppression of Enemy Air Defense (SEAD) was to be executed 30 minutes prior to the helicopters arrival at check points along their routes and at the target area. Deep attacks, by nature, are high risk, high payoff operations. They require excruciatingly detailed planning and integration of all Battlefield Operating Systems and joint assets. This is one of many things that went wrong with the 11th AHR's failed deep attack. The USAF fighter jets that were supporting the mission never received the updated timeline and therefore were not on present during the attack (Fontenot, Degan and Tohn 2004, 184-185).

Question 3: What was Army attack aviation expected to accomplish during OIF and what were the results? (see Figure 1, Aviation Success and Failure Matrix)

During the summer of 2002, I was assigned as the Chief of Plans for the 101st Aviation Brigade, 101st Airborne Division (Air Assault). In this capacity, I became involved in the planning for OIF in September 2002. From that time until I arrived in Kuwait as part of the 101st ABN DIV's Advance Party, I participated in almost every planning meeting conducted at the Division and Brigade level. For the few meetings I did not attend I participated in a round table discussion with the division planners and/or the Operations Officer and Commander for the Aviation Brigade. From the beginning, attack aviation was an integral and essential element in the plan to defeat the Iraqi military. As stated earlier, Lieutenant General William Wallace was quoted in *The Washington Times* that he had planned on utilizing attack aviation to "devastate" enemy armored forces. In fact, V Corps had planned on paving the way to Baghdad with attack aviation from the 11th AHR and the 101st AVN Bde (personal recollection SEP 02-Mar 03). The 1-3rd Aviation, the attack aviation battalion from the 3ID, was tasked to destroy the Iraqi security observation post on the north side of the Iraq-Kuwait border in order to deny Iraqi forces knowledge of the impending border crossing. This mission was a success with the destruction of the security outpost. This was also the first time coalition forces were able to judge the Iraqi response to the invasion. The 1-3rd Aviation encountered heavy enemy fire. One AH-64D contacted the ground as a result of the pilot becoming disoriented while trying to avoid enemy fire. The crew was able to regain situational awareness and return the aircraft safely to its base camp in Kuwait with minimal damage. The V Corps attack aviation brigade, the 11th AHR, consisting of three AH-64 equipped battalions, was tasked to destroy the 11th Infantry Division, the southern most Iraqi unit. This mission was aborted while the attack helicopter battalions were enroute to the target

area due to high winds and the resulting sand storm. The destruction of the security post and the 11th INF Div were supposed to take place prior to the coalition ground forces crossing the border into Iraq (6-6 Cavalry 2003, 1).

The first mission for the 11th AHR after coalition forces crossed into Iraq was a deep attack intended to destroy the 2nd Brigade of the Medina Division of the Republican Guard on 23 March. This mission failed, and as a result, there has been much controversy surrounding Army attack aviation. The next mission conducted by attack helicopters was a successful deep attack against the 14th Mechanized Brigade of the Medina Division by the 101st AVN BDE. The purpose for this attack was to allow 3ID to maneuver north through Karbala and into Baghdad. It was not until I was in Kuwait in February 2003 that the 101st ABN DIV started planning for subsequent missions following the deep attack against the Medina Division. In late February and early March the planning focus began to shift to the seizure of Saddam International Airport. This is important to note because it exemplifies the adaptability and flexibility of attack aviation and its ability to successfully conduct complex missions without having an extensively detailed plan.

As stated before, attack aviation was an integral part of the operation. Both the 101st and 11th AHR were to conduct deep attacks to destroy the Republican Guard forces to shape the battlefield to allow either 3ID's seizure of Saddam International or to facilitate an air assault by the 101st to seize the airport. The 101st also had the mission to conduct air assault operations to secure key terrain to prevent the reinforcement of Baghdad from units to the north or to prevent the escape of enemy forces out of Baghdad. Once Baghdad had been surrounded, 3ID was to link up with the USMC in the city while the 101st cordoned Baghdad to the north and west.

However, as a result of adapting to the enemy and the speed of the advance towards Baghdad, the war suddenly shifted focus. Attack aviation found itself employed in reconnaissance and securing the flanks of V Corps plus conducting Close Combat Attacks (CCAs) in urban areas in support of ground maneuver forces. While this type of employment was not especially planned for, attack aviation doctrine does address and support these types of missions. Further, attack aviation proved that it could adjust its tactics, techniques, and procedures and successfully accomplish these missions in combat against an unexpected enemy.

Critics have stated that the failed deep attack by the 11th AHR resulted in a change of employment considerations for attack aviation, as in Fred Kaplan's article "Chop the Chopper" mentioned in the previous chapter. To some degree they are correct. However, the change in the tactical situation, specifically the asymmetric nature of the threat coupled with the fact that there were simply no massed enemy formations in the open desert, was the primary reason for the change in attack aviation employment.

The 3ID had an unprecedented advance through Iraq into Baghdad. One of the factors that led to this speedy advance was the fact the 3ID had not entered and secured several cities, namely An Najef and Karbala, and these cities remained under the control of enemy forces. The Division and Corps commanders realized that these cities needed to be secured in order to continue to utilize the supply routes from Kuwait to Baghdad. As a result, the 101st ABN DIV was tasked to secure the cities of An Najef, Al Hillah, and Karbala. None of these contingencies were planned for in the months leading up to OIF.

To the east of V Corps zone, the USMC was also having success in rapidly advancing towards Baghdad. The command realized that if the Marines were progressing

as quickly as 3ID, the threat from possible bypassed enemy formations along V Corps' eastern flank might disrupt 3ID's advance towards Baghdad (Baumgardner 2003b, 1). As a result, both the 11th AHR and the 101st were tasked to conduct reconnaissance and security operations to secure V Corps' eastern flank (101st ABN DIV 2003a). The command also realized that both the 12th Armor and the 17th Mechanized Brigades posed a threat to the Corps' western flank. Again the result was that both the 11th AHR and the 101st conducted offensive and reconnaissance operations against these brigades to the west and north, ensuring the western flank was secure from Iraqi enemy formations.

For the 101st, there were several aircraft crashes as a result of trying to land in the desert environment. Taking off and landing in a desert environment can cause a condition known as "brown out." This condition is caused by the rotor blades producing a tremendous dust cloud that results in the pilots losing visual orientation with the ground as they begin taking off and when on approach to land. (see Figure 2, UH-60 landing in a "brown out" condition) On the night of 28 March 2003, the 101st lost two AH-64D Longbows due to brown out conditions. As a result the command decided that the helicopters would operate during the day and would only operate during the hours of darkness if the aircraft could take off and land to an improved area, a paved area like a runway or a road. This occurred less than 10 days later when the lead elements of the division, including the 101st AVN BDE, occupied an airfield just south of Baghdad. At this time the daytime missions continued and night missions resumed.

It was not only the cost of losing an aircraft during a "brown out" condition that drove that decision to fight during the day. Following missions conducted by attack

aviation, it was determined that the Iraqi forces had been using a crude but effective early warning system. Specifically, they had what amounted to a “picket line” of outposts that would utilize cellular phones to alert other enemy forces of approaching attack helicopters. It was believed that changing the employment of attack aviation might reduce the effectiveness of the Iraqi picket lines because they would be expecting the attack helicopters to operate during hours of darkness. Furthermore, aircrews from the 11th AHR began to feel that conducting operations during daylight hours would increase the effectiveness of the attack helicopters as well as increase their survivability (personal discussion with LTC Thompson 10 May 2004). This was a shift away from established doctrine, but it was a temporary shift.

Question 4: Was attack aviation successful in Operations Enduring Freedom and Iraqi Freedom?

In order to answer the question of whether or not attack aviation will be relevant in future conflicts, I feel it is important to address whether or not attack aviation was a relevant combat multiplier in past conflicts.

Operation Enduring Freedom

The AH-64 was the weapon that changed the face of battle. (2003)

Colonel Frank Wiercinski (3-101st Aviation 2003)

The 101st Airborne Division (Air Assault) deployed an infantry brigade combat team in support of Operation Enduring Freedom in Afghanistan. Initially, this brigade combat team was task organized with one company of eight AH-64A Apaches from 3-101st Aviation Regiment. During Operation Anaconda, a majority of the aircraft were damaged, some severely, as a result of enemy fire. This was the spark that ignited the

criticism of attack aviation that followed the failed mission conducted by the 11th AHR on 23 March 2003. The critics cited Operation Anaconda and accused the AH-64 of not being able to survive on the battlefield because of the damage sustained by enemy fire. They also referred to this operation as evidence that attack aviation was incapable of operating in a joint environment; with assets from other services. This criticism came despite the fact that 3-101st AVN conducted operations with the US Air Force, US Army conventional and Special Operating Forces, US Navy SEALS, the USMC, and the British Royal Marines (3-101st Aviation 2003).

The 101st Airborne Division trains extensively on air assault operations. The mission of attack aviation during an air assault is to conduct reconnaissance of the landing zone (LZ), destroy enemy forces that can influence the LZ and, after infantry forces are on the ground, conduct hasty attacks to destroy enemy forces in contact with the friendly forces. These attacks are called Close Combat Attacks, or CCAs. Due to the proximity of ground forces, close coordination is required between the ground forces and attack helicopters. Operation Anaconda was no different. Once infantry forces were on the ground in the Shah-E-Kot valley they came under intense enemy fire. According to the 3-101st AVN After Action Reviews, the Apache aircrews were answering every possible call for Apache support from the ground forces. Due to the high altitudes of the region, the aircraft did not have sufficient power to hover, as the aircrews had always trained to do when engaging targets. The aircrews adapted quickly and throughout the operation made running fire engagement after engagement.

The Al Qaeda and Taliban forces did not pose a sophisticated air defense threat. Instead, they employed high volumes of small arms and machine gun fire as well as

rocket-propelled grenades (RPG). Apache aircrews have always trained to maneuver the aircraft to a position that will maximize the standoff capabilities of the onboard weapon systems. The rule of thumb used within the attack aviation community is to engage targets in the last one third of the maximum effective range of the weapon system. This is a survival technique so that the aircraft will not be within small arms range of enemy forces. (see Figure 4, AH-64D Weapons Ranges)

However, when conducting CCAs with friendly and enemy forces in close proximity to each other, the situation does not always allow attack pilots to employ standoff ranges. During Operation Anaconda, due to the close distance between friendly and enemy forces and the intensity of the volume of fire, the Apaches had to fly well into enemy small arms range in order to effectively engage enemy forces to reduce the risk of fratricide. While it is true that all of the aircraft received damage from enemy fire during Operation Anaconda, it is important to note that the aircrews continued to fight and continued to engage and destroy enemy forces. This is a testament to the airframe and the confidence the Apache pilots have in it. Following operations in Afghanistan, Major General Frank Hagenbeck, 10th Mountain Division Commander stated:

> The most effective close air support asset we had was the Apache, hands down. The Apaches were extraordinary- they were lethal and survivable. We had six in the fight with two left flying at the end of the first day. They were so full of holes- hit all over, one took an RPG in the nose- I don't know how they flew.
>
> The detainees later said the Apaches were the most feared weapon on the battlefield - the helicopters were on top of them before they knew what was happening. The Apaches came as close to "one shot, one kill as you can get. (3-101st Aviation 2003)

Operation Iraqi Freedom

The opening shots from the V (US) Corps during Operation Iraqi Freedom came from AH-64D Apaches on 20 March 2003. The 3rd Infantry Division's attack helicopter battalion, 1-3rd Aviation, conducted a very successful mission to attack and destroy the Iraqi Border Guards and observation posts along the Iraq-Kuwait border. This marked the first time the AH-64D Apache Longbow was used in combat since being first fielded in 1998. The same night the 11th AHR was to conduct an attack to destroy the armor and artillery of the Iraq's 11th Infantry Division. This mission was aborted after take-off, however, because of poor visibility conditions. While the AH-64Ds could proceed with the mission, the Command and Control UH-60, the Personnel Recovery UH-60s and the supporting CH-47 could not continue the mission (6-6 Cavalry 2003, 1).

On the night of 23 March 2003, the 11th AHR conducted a deep attack against the artillery and armored vehicles of the Medina Division. The mission failed as a result of a series of unforeseen factors. The results of this attack were 31 of 32 aircraft damaged by enemy fire, one crashed on take-off due to a brown out condition, one crew taken prisoner and the targeted enemy forces were not decisively engaged (Fontenot, Degen, Tohn 2004, 179). The mission also spurred a great deal of criticism and debate concerning the Apache: its doctrine, tactics, survivability and its relevance on the battlefield.

Deep attacks are used by Corps and Divisions to shape the battlefield; that is to engage and destroy enemy forces before they can influence ground forces in the close fight. They are, by nature, high risk, high pay-off operations. If the Corps or Division Commander is going to send attack helicopters against a target deep inside enemy

territory, he has to acknowledge that the target is worth the risk of getting his limited number of attack helicopters shot down. Furthermore, in order to successfully accomplish a deep attack all Battlefield Operating Systems (BOS) must be dedicated to the attack and highly synchronized. Deep attacks demand that sufficient assets are available to the executing unit. These assets may include equipment that is of very short supply to the commander. He must weigh the risk of dedicating these assets to the deep attack as opposed to other forces. Assets that are required to successfully accomplish a deep attack and are in short supply include, but are not limited to, Unmanned Aerial Vehicles (UAVs), joint surveillance and electronic warfare systems, long range artillery systems, and extended range communications capability. These assets have a significant role in the successful conduct of deep attacks. UAVs are used to fly the routes to be used by attack helicopters and to confirm enemy locations and dispositions. Joint assets such as JSTARS are used to locate enemy forces and pass them directly to either the Apache helicopters or the command and control aircraft. Electronic warfare platforms, such as the EA-6B, are required to jam enemy air defense radars. The Army Tactical Missile System (ATACMS) are given the mission of SEAD. Dedicated TACSAT channels are needed so the command posts can monitor the fight and redirect assets as required to successfully accomplish the mission. Having trained personnel and equipment for Personnel Recovery (PR) is another essential ingredient. All of these assets must be dedicated to and synchronized with the deep operation. Therefore, dedicating these assets to the deep operation deprives other units of these valuable assets and thus completes the circle of why deep attacks are high risk. They are high risk for the aircrews and they increase the risk to other forces because these assets have to be allocated to the deep attack. FM 71-

100, *Division Operations* stated that deep attacks should be considered the division main effort (FM 71-100 1996, 4-8). While the new Division Operations manual does not state this, the implications of conducting a deep attack remain the same.

While the 11th AHR had the required fire support from ATACMS and the USAF, it was not synchronized. As a result of extended convoy times along the Main Supply Route (MSR) not all of the logistical support required by the 11th AHR reached the assembly area in time to support the operation. The result was postponing the attack by two hours. The ATACMS and USAF fire support for the mission was based on time and not based on event. As a result, the SEAD and USAF assets arrived on time, two hours early. The 11th AHR would conduct this mission alone, without any fire support (Fontenot, Degen, Tohn 2004, 186).

The 11th AHR did not have a dedicated UAV. The Corps' Hunter UAV was being moved north through Iraq and would not be available to support the operation and the theater's Predator UAV was dedicated to the USAF. As a result, the 11th AHR had to rely on incomplete intelligence that has been described as being only a "75% picture" of the enemy disposition (Fontenot, Degen, Tohn 2004, 185). Due to the high risk involved with deep attacks, it is highly discouraged to send Apaches deep into enemy territory for what has been called "trolling" for the enemy. It should be a prerequisite to know enemy locations so that the Apaches can attack the target and return to friendly lines after spending as little time as possible in the target area. This lack of intelligence about the enemy also failed to determine that the Nebuchadnezzar Infantry Division of the Republican Guard had moved south into the 11th AHR area of operations. The Regiment

learned after the fact that they had flown directly over elements of that division (6-6 Cavalry 2003, 13)

In combat operations the enemy has a vote; this was certainly true in Iraq. The V Corps' plan was to destroy the Iraqi military. However, it soon became apparent that the Corps was fighting an enemy for which they had not anticipated. As a result, the 11th AHR improperly applied existing doctrine and employed unsuitable tactics, techniques, and procedures against the enemy. In addition to engaging Iraq's conventional military forces in the open desert, V Corps found itself fighting para-military forces in built up areas. Coalition forces were attacking enemy tanks as well as pickup trucks with machine guns mounted in the back, air defenses on roof tops, and armored vehicles parked next to schools, hospitals, and mosques.

Three days prior to this mission, the 11th AHR aborted its first mission against the 11th Infantry Division. This had a psychological impact on the 11th AHR as it weighed heavily on the minds of the leadership within the Regiment. Some felt that this mission might be their only chance at getting into the war (Personal Discussion with LTC Scott Thompson 10 May 2004). There was some disappointment at V Corps as well about the deep attack against the 11th Infantry Division being aborted. Lieutenant General Wallace's hope that Apaches would be able to destroy enemy forces in the open desert did not come to fruition with the first opportunity to prove him, and Army Aviation, correct.

While the failed deep attack on 23 March cannot be disputed, the criticism surrounding the Apache in OIF and the relevance of attack aviation seems based on the outcome of only one mission conducted by the 11th AHR.

The Successes

The critics fail to consider the success of Apaches throughout the major combat operations in the liberation of Iraq. Following the beginning of ground combat operations, attack helicopters from the 3rd Infantry Division conducted operations that assisted in the defeat of Iraq's 11th Infantry Division. The 1-3rd Aviation Regiment conducted operations in support of ground maneuver forces, facilitating their maneuver through the Karbala Gap, in and around Baghdad and the seizure of Saddam International Airport. During combat operations, 1-3rd Aviation had only three aircraft damaged by enemy fire and one destroyed on take-off in brown out conditions.

Another success occurred just five days after the 11th AHR's mission against the Medina Division. The 101st AAVN BDE conducted a successful deep attack on 28 March which incorporated direct fire and maneuver and indirect fire support, including fixed-wing CAS assets, against the 2nd Brigade of the Medina Division. Prior to executing this deep attack, lessons learned by the 11th AHR were shared with the 101st. There were valuable lessons regarding tactics, techniques and procedures that were adopted by the 101st. However, despite what has been published, the course of action that was executed by the 101st was developed in Kuwait prior to offensive operations beginning. The Battle Damage Assessment (BDA) from this mission was not what was expected but it did result in the destruction of several armored vehicles, artillery systems, air defense and radar systems, and numerous other military targets with no aircraft damaged due to enemy fire (101st ABN DIV 2003a). The tactical success of this deep attack was that it confirmed that the 3ID's axis of advance was not heavily defended and that the chosen course of action would not have to be altered (Gass, Gregory 2003, 25).

The 101st Aviation Brigade also conducted armed reconnaissance missions deep into enemy territory and CCAs in and around urban areas under the operational control of ground maneuver forces. The urban areas included the cities of An Najef, Al Hillah, Karbala, Baghdad, and Mosul.

Attack aviation learned the hard lessons from the 11th AHR and quickly adapted its tactics, techniques and procedures. Attack helicopter pilots relied almost exclusively on running fire techniques as opposed to hovering fire which was, prior to OEF and OIF, the most heavily trained firing technique. However, there was no fundamental shift in the types of missions given to attack aviation units during major combat operations in OIF. The only shift away from established doctrine for the 101st was to conduct day time versus night time offensive operations. Prior to OIF, attack aviation was employed almost exclusively at night in order to capitalize on its night fighting capability. The Apache is equipped with a Forward Looking Infrared (FLIR) that allows pilots to see at night, when enemy forces are more vulnerable due to their lack of night vision and night fighting capacity. This shift to day time operations was a direct result of the dangers of landing at night in a desert environment. The 101st had two Apaches destroyed and two others damaged due to brownout conditions. In order to mitigate the risk of brown out landings and takeoffs, the 101st Airborne Division's Commanding General directed that aircraft will not fly at night unless taking off and landing to an improved surface such as a runway or a road. It was agreed that this might have a tactical advantage as well as the enemy expected attack helicopters to fight at night. Furthermore, the optics of the Apache perform better during the day. The Day TV is a black and white camera that has a 128x zoom capability while the Forward Looking Infrared (FLIR) only has a 28x zoom (TM 1-

1520-251-10 2002). This allowed aircrews to maximize the standoff capability of weapon systems when not operating in close proximity of friendly ground forces. This temporary shift of doctrine proved to be successful for the 101st (101st ABN DIV 2003b).

Question 5: What technological advances will impact the relevance of Army attack aviation, specifically the development of Unmanned Aerial Vehicles?

During Operation Enduring Freedom, a Predator Unmanned Aerial Vehicle (UAV) successfully fired a laser guided Hellfire missile and destroyed its intended target; in fact this is not the only instance of an UAV attacking targets with Hellfire missiles (Center for Defense Information 2002). From that day in OEF, some have argued that unmanned drones could potentially replace manned aircraft. While the advancements made in UAVs may some day replaced manned aircraft for strategic target engagement, such as the dropping of Global Positioning System (GPS) guided munitions, they are not currently under development to replace manned attack helicopters. UAV programs are currently being developed to enhance attack helicopter operations. The Army Aviation Applied Technology Directorate (AATD) at Fort Eustis, Virginia, has developed technology to wed attack helicopters with UAVs. The Airborne Manned Unmanned System Technology (AMUST) program joins the AH-64D and the HUNTER UAV forming the Hunter Standoff Killer Team (HSTK) (Wright and Kuck 2001, 38-45). The HSTK system allows for the crew of the AH-64D Longbow to control the optics on the UAV and have the image from the UAV displayed directly on the Multi-Purpose Displays in the cockpit. Further, under some levels of control, it allows the crew to adjust the flight route of the UAV. The HSTK program also allows the UAV images to be displayed on the screens in the A2C2S Command and Control UH-60, which was utilized

by the 101st ABN DIV during OIF and is being fielded throughout the Army. However, the HSTK program only applies to the HUNTER UAV, which, at the time of this writing, the Army does not intend to field to Division and Corps level units.

UAVs could undoubtedly enhance the situational awareness of attack helicopters by flying the routes the attack helicopters will fly and over the target area prior to the arrival of the attack assets. This would allow the command structure to divert attack helicopters around high threat areas and assist in the targeting of enemy forces with other assets, such as artillery, etc. (see Figure 3, UAV and AH-64D Interoperability)

When operating in an urban environment, attack helicopters are particularly vulnerable. During OIF, a tactic employed by the 101st ABN DIV was to have the smaller OH-58Ds fly over the city in support of the infantry units on the ground while the AH-64s remained outside the cities to prevent enemy forces from reinforcing or withdrawing. This tactic was employed during the battles of An Najef, Al Hillah and Karbala and proved to be extremely effective. The OH-58D is more maneuverable at slower speeds than the Apache and affords the aircrew the ability to look directly below the aircraft when flying with the doors removed, an option that Apache aircrews do not have. However, OH-58D aircrews are still placing themselves at a high risk. BG Sinclair, the Assistant Division Commander for Support of the 101st during OIF and the current Army Aviation Branch Chief and Commanding General of Fort Rucker, Alabama, stated during the AUSA's Sunshine Chapter General Membership meeting briefing on November, 19, 2003, that in the future, UAVs will fly over the cities instead of manned aircraft (AUSA 2003).

Question 6: What impact will the organization of the Future Force have on attack aviation?

The U.S. Army is currently in a state of transformation. The purpose behind this transformation is to form an Army that is capable of rapidly responding to the needs of the combatant commanders. In order to accomplish this, the Army will convert its brigade elements into Units of Action (UA). This modular concept will, in theory, allow combined arms forces to be more rapidly deployable while maintaining sufficient combat power to successfully operate across the spectrum of military operations, from heavy to light intensity conflicts to Military Operations Other Than War (MOOTW).

While the UA concept is and will remain in the "experimental" phase for quite some time, the 3rd Infantry Division is currently undergoing the transformation. The task organization of the 3ID has already been approved by the Chief of Staff of the Army, General Peter Schoomaker. This new task organization has increased the number of attack helicopters from 18 to 24 per battalion and also added an additional attack helicopter battalion. If each AH-64 was configured to carry 8 Hellfire missiles, 38 rockets and 300 rounds of 30mm, attack aviation brings 384 missiles, 1,824 rockets and 14,400 rounds of 30mm to the fight for the division commander.

Under the current and future force structures, the attack helicopter battalions remain under the control of the Aviation Brigade or UA. This affords the division commander the flexibility to employ the attack helicopter battalion against enemy forces not in direct contact with friendly forces. However, if the situation dictates, the attack helicopter battalion, or elements of it, can be placed under the operational control (OPCON) of a ground maneuver UA for a specified time. Historically, when a ground

maneuver brigade deploys, it deploys with an attack helicopter element within its task organization. The challenge for the attack helicopter battalions and the command will be if a ground maneuver UA deploys, will it deploy with attack aviation elements? I foresee two courses of action with this scenario. (1) The ground UA will not deploy with an attack aviation element or (2) The operational tempo of attack aviation will increase as an attack helicopter battalion, or elements of it, will deploy every time a ground maneuver UA deploys.

Another aspect of the Army Transformation is to create an Army that is more joint force oriented. That is an Army more capable of conducting combat operations in concert with the other branches of the armed forces. With the first fielding of the AH-64D Longbow in 1998, Army Aviation had a capability to work with joint assets all the way down to the cockpit level. The AH-64D has the capability to send and receive digital messages with USAF assets. Furthermore, aircrews have the capability to share a common operating picture of the battlefield by sending graphic depictions of both enemy and friendly unit locations. All of this information can be sent digitally via an Improved Data Modem (IDM) with only a few button pushes.

For years the US Army has incorporated joint fire support into attack aviation operations when conducting cross-FLOT missions. USAF assets have conducted Joint Suppression of Enemy Air Defense (J-SEAD) for attack aviation deep attacks, including both lethal and non-lethal means. Now, with the improved communications allowed between the Longbow and USAF assets, this process is streamlined and more effective. The IDM is also capable of sending digital calls for fire to field artillery units. This

digital message greatly enhances the process when conducting a call for fire and increases the accuracy of indirect fires.

Primary question: Will Army attack aviation be a relevant combat multiplier in future conflicts?

The answer to this question is yes. Attack aviation has proven to be an extremely valuable asset in past conflicts. Incorporating changes in tactics, techniques, and procedures based on lessons learned in Afghanistan and Iraq into training programs at home station will only increase its value. Furthermore, slight modifications of existing doctrine and increased technology and digital connectivity, will further enhance attack aviation's contribution.

Historical Perspective

Airpower, including Army Aviation, has been utilized extensively on the field of battle since World War I. As a result of damage from enemy fire in Afghanistan and Iraq, some question the survivability of attack helicopters. I offer a historical perspective on the survivability of aircraft in past conflicts. During WWII, the Army Air Force lost 7,749 aircraft in combat operations in the European Theater in 1944, an average of over 21 aircraft a day. During Vietnam in 1967-68, the U.S. suffered a combat loss of 856 fixed-wing and 840 rotary-wing aircraft; an average of over 2.3 fixed and rotary wing aircraft were lost per day. During the 1983 invasion of Grenada four helicopters were destroyed. In 1989, two helicopters were destroyed during Operation Just Cause and during Operation Desert Shield and Desert Storm in 1991, 17 helicopters were lost (Clodfelter, 2002). Helicopter survivability in Afghanistan and during March and April 2003 in Iraq stands in contrast when compared statistically to past conflicts. While

numerous attack helicopters received damage from enemy fire, in some cases severe, only one AH-64 was shot down.

CHAPTER 4

ANALYSIS

Army attack aviation will continue to be an extremely valuable asset on the future battlefield. Despite the criticism surrounding it, Army attack aviation played a significant role in both Afghanistan and Iraq. A change in training programs supplemented by advancements in technology will ensure that attack aviation remains a relevant and ready combat multiplier.

While it may take years to fully document what took place during OEF and OIF, lessons learned have already had an impact. These lessons have also reached Fort Rucker, Alabama, the home of Army Aviation. There they are addressing many of the lessons learned by incorporating changes into flight training.

This new flight training curriculum, referred to as Flight School XXI, will provide units in the field with more highly trained pilots than in the past. Previously, pilots graduated flight school and had to undergo extensive unit training before being considered mission ready. This unit training included doctrine, tactics, techniques and procedures, gunnery, and night vision goggle (NVG) qualification. Based on the lessons learned from OEF and OIF, new AH-64D pilots will receive more flight hours than the legacy flight school curriculum to include training on running fire engagements and will be NVG qualified upon graduation (Colucci 2004b). This will lessen the burden on receiving units and will shorten the time required to produce a mission ready pilot. In addition to the changes in the flight school curriculum, Ft. Rucker is implementing a

Survival, Evasion, Resistance, and Escape (SERE) Level C course that all pilots must complete prior to departing for their first unit.

The requirements to ensure attack aviation is employed effectively cannot solely take place at Ft. Rucker. Leaders across the Army have to be knowledgeable on the capabilities and limitations of attack aviation. While Flight School XXI combined with the training conducted at home station will ensure that aircrews can efficiently, effectively, and safely employ their weapon system, attack aviation as a whole will not be as effective if not properly incorporated into the ground scheme of maneuver. In order to address this situation one of the steps Aviation Branch has taken is to embed a Brigade Aviation Element (BAE) into the ground maneuver UAs. This BAE will consist of an experienced major, a captain, a senior warrant officer and three enlisted personnel. Just as a Fire Support Officer (FSO) and the Fire Support Element (FSE) have done for the Field Artillery, this BAE will serve the UA commander as the aviation expert on the staff and will be charged with ensuring that aviation is properly incorporated into the scheme of maneuver. The BAE will also educate the UA staff on proper employment techniques, capabilities and limitations and will ensure that attack aviation is properly resourced to conduct a given mission.

What does the future hold?

The Army is currently undergoing a transformation. The Chief of Staff of the Army, General Peter Schoomaker, has given Aviation branch his vision of Army Aviation "as a capabilities based maneuver arm optimized for the joint fight" (Sinclair 2004, 8).

The AH-64D Apache Longbow has an Improved Data Modem (IDM) which is interoperable with other Longbow helicopters, the OH-58D, Army field artillery through the ATHS and AFATDS, and USAF assets. In terms of joint interoperability, the IDM allows the AH-64D crew to share a graphic depiction of the location of friendly forces and targets detected by the Longbow radar on its moving map display. The IDM also allows the Longbow to send critical zones to JSTARS in order to conduct radar surveillance. This interoperability was proven successful during the 28 March deep attack conducted by the 101st AVN BDE. During manufacturing the Apache Longbow's software is continuously updated. The current "batch" of aircraft are equipped with the joint interoperable tactical internet. This will allow the Longbow to share even more data with joint assets.

Unmanned Aerial Vehicles have received ever-increasing attention by the US Army and the Department of Defense. During Operation Enduring Freedom, a Predator UAV fired a laser-guided Hellfire missile and destroyed its target. This engagement marked the first time an UAV fired a weapon in combat. Some in the attack aviation community began to wonder about their job security, asking the question "is an armed UAV going to replace the attack helicopter?" Not in the foreseeable future is the answer (interview with UAV Teaming Director, Major Robert Johnston, 17 Feb 2004). The development of the HSKT program by AATD teams the AH-64D and the Hunter UAV. This teaming was tested under simulated combat conditions at the Joint Readiness Training Center (JRTC) at Ft. Polk, LA in February 2001. During the 2-101st Aviation Regiment rotation at the JRTC, one AH-64D Longbow was fitted with the required equipment and was given control over a Hunter UAV. The UAV was used to conduct

reconnaissance forward of the Longbows and relay information about the enemy activity on a proposed landing zone that was to be used during an air assault operation. This allowed the aircrew to update the inbound Longbows of the real time enemy situation within their area of operation. The bottom line is that it worked and it worked well (personal experience as commander of B Company, 2-101st AVN, Feb 2001).

As UAVs become more and more prevalent, passing the data received from the UAV to the user will be the challenge; bridging the sensor to shooter gap. Having the ability to provide the user with a direct feed from the UAV straight into the cockpit will prove to be a tremendous asset.

One of the many changes taking place as the Army transforms is that every division, known as a Unit of Employment (UE) will have an additional attack helicopter battalion, an increase by one. For the heavy divisions, the additional attack battalion replaces the OH-58D from the divisional cavalry squadron, which will be assigned to light divisions. The additional attack helicopter battalion will allow even more flexibility and adaptability to the UA commanders while giving the UE commander the ability to shape the deep fight if required.

The most important consideration in determining how the attack battalions will be employed is to ensure they are incorporated into the ground scheme of maneuver. Since the 11th AHR's failed mission against the Medina Division on 23 March 2003, there has been much debate on the roles of attack helicopters. There is a school of thought within the aviation community that deep attacks are a thing of the past. The more important question that aviation should be debating is 'how deep is deep?' Attack helicopters, specifically the AH-64D, have the capability to fly approximately 230 kilometers

(depending on weapons load, fuel and atmospheric conditions), engage targets for up to 15 minutes and return without refueling. Just because Apaches can fly 230 kilometers and engage targets does not mean they should. Every operation should be a combined arms effort. Attack aviation units, like any other maneuver force, need responsive fire support in order to maneuver when under enemy fire. The only fire support system that could possibly support such a deep operation is ATACMS. However, ATACMS should not be considered responsive fire support because, due to the extended ranges, it can take up to 10 minutes for the rounds to impact (Gayler 2003, 1-2). Also, when conducting deep attacks at this range, attack aviation units would require Corps or Theater level UAV, specifically the Hunter or Predator UAV, support to provide accurate and timely enemy unit dispositions. One mistake that commanders make when enemy location fidelity is lacking is to turn the deep attack into a movement to contact. Conducting such an operation deep in enemy territory only increases the risk of the operation. Based on the direction the Army is headed with its transformation, it is more feasible that the classic deep attack will be within the range of responsive artillery support, that is out a maximum distance of 45 kilometers, can be provided by the UA or UE. It is this author's opinion that, during the conduct of offensive operations, attack aviation will be employed in three ways on the future battlefield.

Conducting deep attacks out to a maximum distance of 45 kilometers is the first way attack helicopters will be employed. The new UA is a task organized brigade combat team that has organic artillery assigned to it, while the UE retains the MLRS. This artillery, in the heavy division or UE, will be capable of supporting deep operations out to a range of 30 kilometers with its 155mm Self-Propelled artillery systems or up to 45

kilometers with Multiple Launcher Rocket System (MRLS). At these ranges, it is still very feasible that attack aviation can shape the close fight by conducting a deliberate attack against forces not in direct contact with friendly forces as a shaping operation. The UAs and UEs in the future will have UAVs, such as the Shadow 200, that are capable of flying out to the maximum range of the MLRS in order to provide the attack helicopter unit timely and accurate intelligence. Furthermore, the UA or UE could provide responsive artillery fires. These fires would allow greater freedom of maneuver to the attack helicopter by suppressing enemy forces that engage the helicopters. The responsiveness of these fires would be enhanced by the digital connectivity with the Longbow which allows calls for indirect fire to be processed faster. At extended ranges this digital connectivity would not be possible. Conducting an attack out to the maximum effective range of responsive artillery allows attack aviation to shape the close fight without having to conduct coordination with the UA's front line forces. Attack aviation will continue to conduct deep operations in future conflicts but the concept of "deep" will change from the classical 100+ kilometer deep attack that was known prior to OIF. During OIF, the 101st AVN BDE conducted deep attacks that were 167 kilometers and 135 kilometers in depth (101st ABN DIV 2003a). While there was dedicated fixed-wing support, they relied upon ATACMS fire which averaged 7-10 minutes from the time the call for fire was made until rounds impacted. Considering the distances involved that does not seem like a significant amount of time. However, had the crews been receiving effective enemy fire and not been able to maneuver out of the effective range of the enemy weapon systems those 7-10 minutes could have meant the difference between life and death.

The second employment method will be attack aviation integrated into the close fight and not in a reactionary CCA situation. Attack aviation will be given a zone adjacent to or forward of a ground maneuver UA and be tasked to conduct offensive, reconnaissance and security operations in order to protect the flanks of the main body. This method of employment was successfully executed during OIF when both the 101st AVN BDE and the 11th AHR conducted reconnaissance on the eastern and western flanks of 3ID and V Corps.

The third and final way, discussed in this paper, for Apaches to be employed will be under the Operational Control (OPCON) of ground maneuver forces. One method for a ground maneuver commander to plan for the integrated employment of attack helicopters is to ask the following question: "If I had an additional armor battalion, how would I employ it?" Commanders, staffs, and pilots within the attack aviation community fully understand the Army's doctrinal tasks and purposes. If given a task and purpose, attack helicopters can, and most likely will, accomplish the task due to their inherent capabilities.

An example of how a ground UA commander could properly integrate attack aviation is given in the following scenario.

A ground maneuver UA commander has received an attack helicopter battalion OPCON to him. He has been given the task to destroy an enemy armor battalion and seize Objective Slam. His plan is to fix the enemy force with his mechanized task force. Once the enemy force is fixed, he will conduct an envelopment with his armored task force. The attack aviation battalion will conduct a shaping operation, with two companies to destroy the enemy's armored reserve. The third attack helicopter company

will attack to defeat the enemy force that is defending along the flank that will be enveloped and will be prepared to conduct CCAs, as required. The artillery priority of fires and CAS initially goes to attack aviation in its shaping attack, then to the fixing force and then to the main effort, the enveloping armored task force. The commander will employ his organic UAVs to find the enemy's reserve and the enemy battalion locations and dispositions. This information will be rapidly passed to all of his maneuver forces.

In the above example, the ground commander articulated his vision and gave attack aviation suitable tasks and provided them with the assets required to accomplish those tasks. The attack aviation commander understands his role in the fight and his subordinate commanders and pilots have the situational awareness required to conduct CCAs if required to accomplish the mission of seizing the objective while mitigating the risk of fratricide.

Urban Operations

Attack aviation will continue to be a valuable force multiplier when conducting Military Operations in Urban Terrain (MOUT). During OIF, the 3rd Infantry Division and the 101st Airborne Division conducted urban operations in the cities of An Nasariyah, An Najef, Al Hillah, Karbala, Baghdad and Mosul. Throughout the conduct of operations in these cities, attack aviation played a key role. The 101st Airborne placed attack helicopters OPCON to infantry brigade commanders when conducting these operations. Although air-ground coordination was heavily trained prior to the deployment, the tactics that were employed during these operations had not been trained at home station. The tactics employed by the 101st included the OH-58D equipped cavalry squadron flying inside the cities while the Apaches flew outside the city to

destroy enemy forces that were trying either to escape or reinforce enemy forces within the city. While these tactics proved to be very successful for the 101st Airborne Division, they will not, in my opinion, be repeated on the future battlefield. Urban operations are extremely complex and the Army generally tries to avoid such operations, preferring instead to defeat enemy forces away from built-up areas. However, this has already changed as proven in OEF and OIF. The future will see UAVs flying over the cities to identify the locations of enemy forces and that intelligence being relayed to the ground maneuver force and the attack helicopters. This will allow the Apaches to maximize their stand off capability and employ precision fires to engage and destroy the enemy while minimizing collateral damage.

Attack Helicopters v. the USAF

The question "why do we need attack helicopters when we have the USAF?" has been posed by some critics of Army attack aviation. During OIF the US Army had an unprecedented amount of airpower at its disposal. Fixed wing aircraft "stacked" at varying altitudes and they had the requirement to place bombs on the target within minutes of the request being made. While this proved to be an extremely valuable asset to the US ground forces, it was not always the best solution.

In order for USAF close air support (CAS) to be employed it requires control by qualified USAF personnel, called Air Force Liaison Officers (ALO) or Enlisted Terminal Air Controllers (ETAC). While the Army has these qualified airmen they are not always at the right place at the right time. This is not solely the fault of the USAF. Just as ground commanders, at times, do not properly incorporate attack helicopters they also do not always integrate USAF assets. There are a myriad of reasons for this, including the

requirement for qualified terminal air controllers, the Air Tasking Orders process and the process for requesting CAS; however, these are beyond the scope of this paper. Based on the situation, it may be easier for the ground force commander to employ attack aviation. Furthermore, one of the goals of the current Army transformation is to become a more expeditionary force. This may require that UAs are deployed to an immature theater that does not have the required systems in place to effectively employ USAF assets in the close fight. This was the case with Operation Anaconda.

The January 2003 article "The Clash about CAS" in *Air Force* magazine addressed the displeasure with USAF CAS on part of the Task Force Commander in OEF, Major General Franklin Hagenbeck. His complaints about the support he received from the USAF were based on inefficiency.

The article states that Major General Hagenbeck "was not pleased with the Close Air Support he received from outside the Army. He praised the Army's Apache helicopter crews as "extraordinary" but gave the Air Force little more than a passing grade. The Air Force had to work through airspace management, Hagenbeck said. Aircraft were stacked up to the ceiling and could only be flown in, in a few minutes." He was also displeased with the time it took to get precision munitions employed. He was quoted as saying that it could take "anywhere from 26 minutes to hours (on occasion) for the precision munitions to hit the targets." In defense of the USAF, the systems required to properly plan and employ airpower were not fully established (Grant 2003, 54-59). Afghanistan was, when Operation Anaconda took place, an immature theater of operations. With the Army transforming to a more expeditionary force it is highly likely

that this scenario will be repeated in the future and the requirement for Army attack aviation to again fill the void left by USAF CAS will be will present.

Another counter argument for relying on the USAF for CAS is the weapon system employed. The Air Force employs jet aircraft, often from very high altitudes, as its CAS platforms. The speed and altitude at which they fly makes them less effective than the comparatively slower, low-flying attack helicopters. It takes longer for the jets to identify not only the enemy targets but the friendly unit locations as well. Furthermore, the minimum safe distances for the weapon systems employed by the Air Force can be substantially greater than that of the weapon systems on attack helicopters (Joint Pub 3-09.3 2003). An Army infantry battalion commander from the 101st Airborne during operations in Afghanistan and Iraq stated that the best platform to provide close support was by far the Apache. He explained that they were able to fly lower and identify targets and friendly forces, were able to respond more rapidly and that the aircrews understood what he wanted from them (personal discussion with Lieutenant Colonel Lee Fetterman, Oct 2003)

While the deep attacks is still a viable mission as discussed previously in this chapter, the Army will rely more heavily on the Air Force for air interdiction. When attacking ground forces, commanders mass effects from more than one asset. For attack aviation to conduct a deliberate attack deep into enemy territory, the effects of almost every battlefield operating system must be massed, specifically intelligence, maneuver, fire support and command and control. Without dedicating assets to the deep attack the aircrews are placed at even higher risk. However, dedicating these assets to the deep attack places other units at risk because of the finite amount of resources available. As a

result the USAF will be even more heavily relied upon to shape the close fight by attacking enemy forces in the deep fight in the future. This not only reduces the risk for other ground forces because the commander is not denying assets in order to support a deep attack, it also reduces the risk of getting the relatively slow attack helicopters shot down. The speed and altitude of the Air Force enhances their survivability as do the other assets in the strike package such as electronic warfare aircraft, etc. Furthermore, the Air Force is trained and equipped to execute Personnel Recovery, a capability that the conventional Army has to put together ad hoc and seldom trains. Combat operations conducted during Desert Storm, Kosovo and, more recently, OIF have demonstrated the effectiveness of the Air Force at shaping the battlefield by attacking enemy forces that are not in contact with friendly forces.

Doctrine

The doctrine utilized during the planning and execution of OEF and OIF was fundamentally correct. However, it was improperly applied during the 23 March attack conducted by the V Corps and 11th AHR. Prior to OEF and OIF this doctrine was based on defeating Soviet forces in the Fulda Gap. During operations in Iraq, this doctrine was adjusted somewhat to meet the threat and the environment. While there is no doctrine to define "how deep is deep," aviation will adapt its operations to reflect the true definition of deep operations: attacking enemy forces which are not in contact with friendly forces. Due to the limitations of attack aviation and the requirements to dedicate invaluable and finite resources in order to successfully conduct deep attacks using the AH-64, greater emphasis will be placed on employing attack helicopters in the close fight versus the deep fight. The lessons Army attack aviation learned from OEF and OIF will result in a change

of tactics, techniques, and procedures as opposed to a fundamental change in doctrine. Attack aviation has proven to be extremely valuable on the battlefield, particularly when properly integrated into the ground scheme of maneuver.

CHAPTER 5

CONCLUSION

Despite the controversy surrounding it, US Army attack aviation is an extremely capable combat multiplier and will continue to prove to be an invaluable asset on the battlefield. The critics have cited some very specific examples during OEF and OIF as the foundations for their criticisms. However, they have taken an extremely limited view when making their arguments. They have failed to gather all of the facts and take into consideration what the Apache aircrews actually accomplished.

The biggest criticism of the Apache during OEF was that during Operation Anaconda most of the Apaches were damaged by enemy small arms fire and RPGs, some severely. What the critics failed to recognize is that those Apache aircrews were not trained to fight the Apache against the type of enemy they faced. Nor did they consider the fact that the aircrews were not highly trained for the high altitudes in which they had to fight. Despite these factors, the aircrews adjusted their tactics and were successful. The critics have stated that the Apache is not survivable enough for the modern battlefield. The fact that those aircraft received extensive damage yet none were lost to enemy fire, nor was a single pilot seriously wounded, serves as a testament to the durability and survivability of the AH-64. The claims that attack aviation did not work well in a joint environment are simply untrue. During Operation Anaconda, 3-101st AVN conducted operations that not only spanned the joint community but also the coalition community as well. Examples of this cooperation and synchronization included operations conducted in concert with US Army Rangers, Special Operation Forces, the USMC, the British Royal

Marines and Special Operation Forces from four other countries as well (3-101st Aviation 2003). Both the Task Force Commander for OEF and the 3rd Brigade Combat Team Commander from the 101st praised the Apache and its pilots as the force that continued to engage enemy forces despite the damaged they received and as the combat multiplier that "changed the face of the battle.."

On 23 March 2003, the 11th AHR and V Corps conducted a deep attack against the Medina Division south of Baghdad. This mission failed as a result of a series of mistakes and a failure to apply established and known doctrine. Furthermore, though no fault of the pilots, the tactics, techniques, and procedures employed against an asymmetric enemy were inappropriate (Fontenot, Degen, Tohn 2004, 179). The end result of that mission was, as in Operation Anaconda, a majority of the aircraft were damaged with one shot down and its crew taken prisoner. It was this mission that ignited a blaze of criticism and controversy about the AH-64, attack aviation doctrine and the relevance of attack helicopters.

Army attack aviation is certainly not perfect. Mistakes were made and there are better ways to employ attack aviation. While there were no fundamental changes in the missions conducted by attack aviation following 23 March, the attack aviation community quickly adjusted some tactics, techniques and procedures during combat operations and proved to be an extremely valuable asset to the coalition.

Recommendation

As a result of aviation deep operations in OIF and USAF capabilities in air interdiction (AI), the Army will rely more heavily on the Air Force to shape the close fight by attacking targets deep. The flip side of this is that there will be greater emphasis

placed on employing attack helicopters in the close fight. The new aviation doctrinal manuals, specifically FM 3.04-111 *Aviation Brigades*, dated August 21, 2003, address air-ground integration and incorporate the proper method to request and control attack helicopters in the close fight. However, it is not enough that this information is incorporated in Aviation manuals; it must be included in the doctrinal manuals of all branches. Once it becomes Army doctrine, not just Aviation doctrine, air to ground integration must be extensively trained, to include Combined Arms Live Fire Exercises (CALFEX). These live fire exercises must incorporate, at a minimum, ground maneuver forces, attack aviation and artillery. Training of this type is invaluable because it illustrates the complexity in employing attack helicopters, the marking of friendly and enemy locations, and provides the ground forces with the sights and sounds of an attack helicopter flying overhead while firing its 30mm chain gun and 2.75" rockets. The first time a young soldier experiences this should not be in combat.

In accordance with the Army's training doctrine, training should be combined arms oriented. In order to successfully train soldiers on attack aviation integration much more emphasis needs to be placed on this type of live fire training. Furthermore, as evidenced in Iraq when supply convoys were attacked, not only do combat forces need this training, all branches within the Army need to be trained on air-ground coordination. Due to the speed, versatility and mobility inherent to attack aviation, it is feasible that attack helicopters will either provide convoy security or will react to a vehicular ambush on the battlefield. Therefore, leaders in every type of unit need to understand how to control attack helicopters.

Areas that Require Further Research

The Army's training doctrine can be summarized as "train as you fight." However, there are very limited training areas where attack helicopter pilots can employ their weapon systems in a realistic fashion. One lesson that was learned in Afghanistan and Iraq is that running fire engagements versus hovering fire are essential. Not only do running fire engagements increase aircraft survivability the engagements are also more accurate. However, there are limited live fire ranges available to conduct running fire rocket engagements due to safety considerations. Furthermore, there are even fewer ranges that can accommodate the surface danger zone of a Hellfire missile and those still require the employment of the Hellfire under restricted modes of operation (AMCOM Safety of Use Messages 2001a, 2001b, and 2002). In order to conduct this type of training, units have to travel to other installations, rely almost exclusively on hovering fire or not conduct the live fire training at all. Further exploration is needed as to the requirements and feasibility of increasing the number of ranges that can accommodate the surface danger zone for running fire engagements as well as for Hellfire missile engagements.

In order to compensate for the effects that inadequate gunnery ranges, insufficient training ammunition allocations, and a lack of flying hours funding have on crew proficiency, units have relied on the use of simulation. While the use of simulators can be a valuable training tool for emergency procedure training and as a procedural trainer for weapon engagements, it cannot be a substitute for flying the aircraft and employing its weapon systems. Flying a simulator does not make a proficient pilot. Furthermore, simulation does not accurately resemble the Contemporary Operating Environment

(COE) that we can expect in the future. The effectiveness of simulators in replicating the COE and the effects of flying a simulator on aircrew proficiency warrants further research.

Considering the operations in which US Army aviators have participated since 1990 we have been extremely fortunate that more aviators have not been shot down and taken prisoner. Even though many aircraft received enemy fire in both Afghanistan and Iraq only one Apache was shot down and its crew taken prisoner. However, this may not always be the case. Just as we learn lessons from our operations, so do our potential future adversaries. Some have argued that Iraq and Al Qaeda learned from our operations in Somalia that helicopters are vulnerable to heavy volumes of small arms fire and RPGs. It was heavy volumes of small arms fire in a helicopter ambush and not a sophisticated air defense network that caused the 11th AHR mission to fail and brought down an Apache on 23 March 2003. While Army aircrews are considered to be at a high risk of capture there is not an established standard for Personnel Recovery within the conventional Army. The element that would conduct Personnel Recovery is ad hoc at best and it is not specifically or intensely trained. Furthermore, the conventional Army does not have the assets to conduct Combat Search and Rescue (CSAR); instead it would rely on joint assets or Special Operations Forces to conduct these missions. The feasibility of establishing a Personnel Recovery cell at Corps and Division level combined with having the assets assigned to conduct CSAR at Corps or Division level needs to be researched.

Military Operations in Urban Terrain (MOUT) will become more and more prevalent in future conflicts. We experienced urban operations in Somalia, Haiti, and Iraq

to mention a few. Again, potential adversaries will study our operations and attempt to exploit our weaknesses. While most Army installations have a MOUT training site they only replicate a very small town at best. However, most of the urban operations we have conducted have been in large cities, that is, Baghdad and Mogadishu. What is the feasibility of utilizing larger population centers for MOUT training? Could the Army utilize an installation that has been recommended for closure due to Base Realignment and Closure (BRAC), or portions of one, to conduct urban warfare training?

FIGURES

Table 1. Aviation "Scorecard" for Operation Iraqi Freedom		
Mission	Success	Failure or Abort
3ID Border Security	✓	
11 AHR v. 11th Infantry Division		X
11 AHR v. Medina Division		X
101st v. Medina Division	✓	
1-3rd AVN close support to ground forces	✓	
11th AHR & 101st AVN Zone Reconnaissance	✓	
101st Air Assault operations Close support in Urban Areas	✓	

Figure 1. Behind the dust cloud a UH-60 conducts a “brown out” landing.

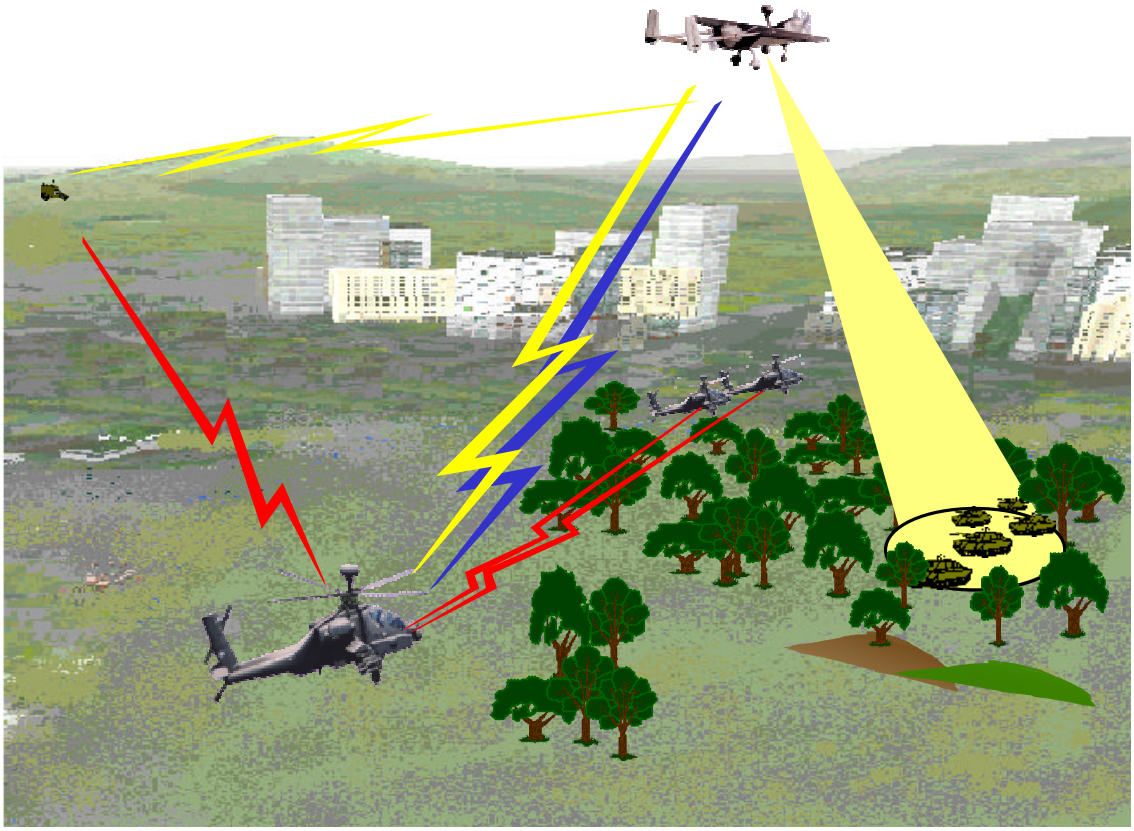

Figure 2. UAV and AH-64D interoperability. The picture depicts the UAV sending its imagery to the AH-64D Air Mission Commander (who in turn sends it to the other Longbow aircraft) and the command and control Tactical Operation Center (TAC).

Source: www.aatd.eustis.army.mil/Transfer/CSC_overview.ppt, February 2004. Internet.

Table 2. AH-64D Weapon Ranges	
WEAPON	MAX EFFECTIVE RANGE
30-mm Chain Gun	3.5 km
2.75-inch Rockets	7.2 km
Hellfire Missile	8.0 km

Source: TM 1-1520-251-10, 2002f.

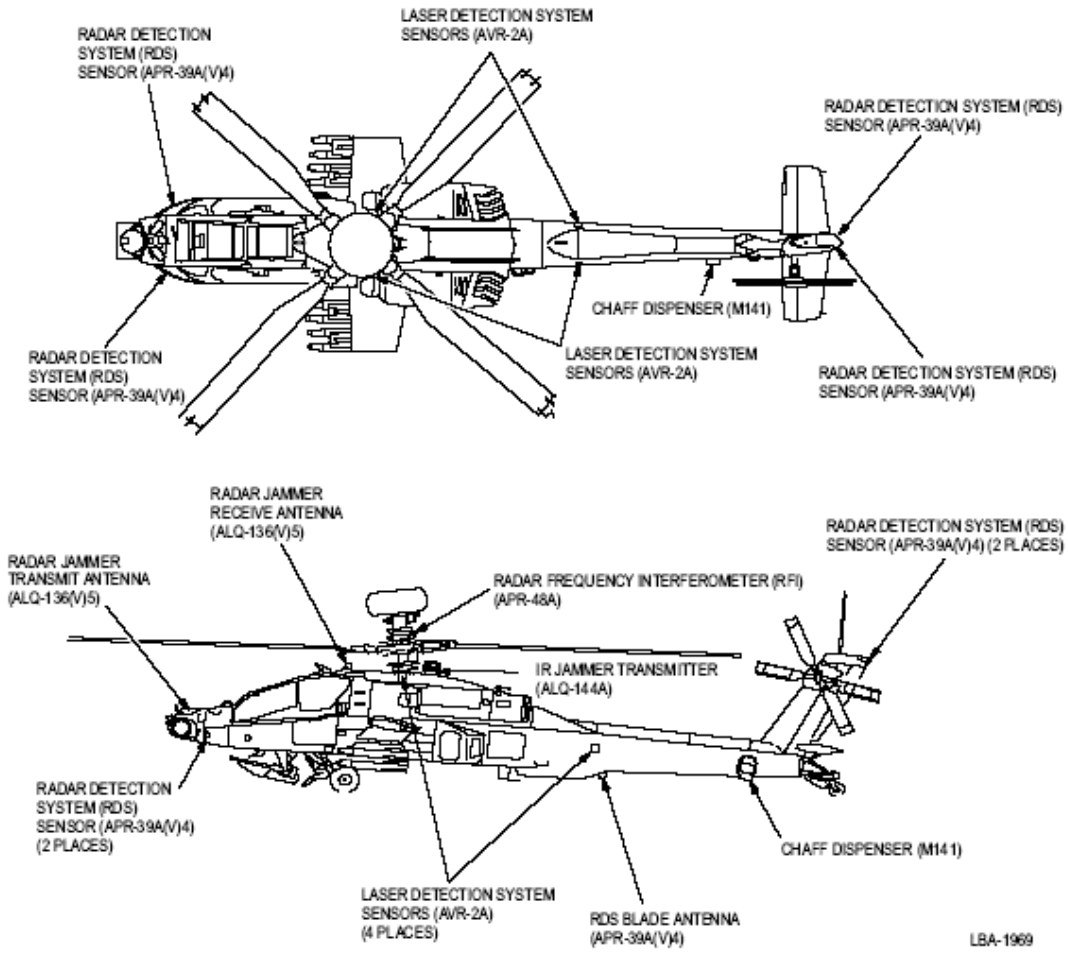

Figure 4-98. ASE Equipment Locations

Figure 3. AH-64D Aircraft Survivability Equipment (ASE)

Source: TM 1-1520-251-10, 2002f.

GLOSSARY

Air Tasking Order (ATO). A method used to task and disseminate to components, subordinate units, and command and control agencies projected sorties, capabilities and/or forces to targets and specific missions. The ATO is published by an element within the Joint Forces Air Force Component. (Joint Publication 1-02 2001)

Assembly Area. An area in which the command is assembled to prepare for further action. (FM 101-5-1 1997)

Ballistic Missile. A missile, which may be a ballistic missile, a cruise missile, or an air-to surface missile (not including short-range, non-nuclear, direct-fire missiles, bombs, or rockets such as Maverick or wire-guided missiles), whose target is within a given theater of operation. (Joint Publication 1-02 2001)

Battle Damage Assessment (BDA). The estimate of damage resulting from the application of military force. (FM 101-5-1 1997)

Battlefield Operating Systems (BOS). A listing of critical tactical activities. The BOS provides a means of reviewing preparations or execution in discrete subsets. Critical to the review is the coordination and synchronization of activities not only within a BOS, but among the various BOS. The BOS are not all inclusive; they include intelligence, maneuver, fire support, mobility and survivability, air defense, combat service support, and command and control. (FM 101-5-1 1997)

Close Air Support. Air action by fixed- and rotary-wing aircraft against hostile targets that are in close proximity to friendly forces and that require detailed integration of each air mission with the fire and movement of those forces. (FM 101-5-1 1997)

Forms of Engagement: **Hovering Fire.** Hover fire is any engagement conducted below effective translational lift. It may be either stationary or moving. **Running Fire.** Running fire is an engagement from a moving helicopter above effective translational lift. Crews can deliver both direct and indirect fires during running fire. The forward airspeed adds stability to the helicopter and increases the delivery accuracy of weapon systems, particularly rockets. **Diving Fire**. Diving fire is a direct-fire engagement from a helicopter that is in a diving flight profile. The airspeed and altitude of the aircraft improve the accuracy of engagements, particularly for rockets. (FM 3.04-140 2003)

Operational Control (OPCON). Operational control normally provides full authority to organize commands and forces and to employ those forces as the commander in operational control considers necessary to accomplish assigned missions. (FM 101-5-1 1997)

Reconnaissance by Fire. A method of reconnaissance in which fire is placed on a suspected enemy position to cause the enemy to disclose a presence by movement or return of fire. (FM 101-5-1 1997)

Suppression of Enemy Air Defense (SEAD). That activity which neutralizes, destroys, or temporarily degrades surface-based enemy air defenses by destructive and/or disruptive means. (FM 101-5-1 1997)

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