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THESIS

CAS, INTERDICTION, AND ATTACK HELICOPTERS

by

Andrew S. Groenke

June 2005

Thesis Advisor: Daniel Moran
Second Reader: James Russell

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Within days of a major failed strike by attack helicopters during Operation Iraqi Freedom (OIF) analysts were questioning the value of such platforms on the modern battlefield. As OIF moved from combat to stability operations, helicopter losses from enemy action actually increased seemingly strengthening the argument of those who see the helicopter as unsuitable to some combat operations.

Attack helicopter operations have diverged into two distinct categories, interdiction and close air support (CAS), since their inception. This thesis argues that attack helicopters are most suited to perform CAS while their employment in interdiction is problematic at best. Doctrine, tactics, and threat are studied as they applied in the Soviet-Afghan War, Desert Storm, and OIF in order to examine the issue across a range of time and types of warfare.

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CAS, INTERDICTION, AND ATTACK HELICOPTERS

Andrew S. Groenke
Major, United States Marine Corps
B.A., Vanderbilt University, 1989

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June 2005

Author: Andrew S. Groenke

Approved by: Daniel Moran
Thesis Advisor

James Russell
Second Reader

Douglas Porch
Chairman, Department of National Security Affairs

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I. INTRODUCTION

A. INTRODUCTION

On the night of 23-24 March 2003 in the opening days of Operation Iraqi Freedom, the U.S. Army's 11th Attack Helicopter Regiment (AHR) executed a deep attack against elements of the Iraqi Medina Division south of Baghdad.[1] The mission as planned was representative of what had become standard doctrine for Army attack helicopters. Rather than operating as essentially another close air support (CAS) platform in direct support of ground forces, the Army had developed the idea of deep attack which allowed attack helicopters to operate in a more independent role interdicting the enemy before they ever reached a point where they could engage friendly ground forces. If enemy forces were in a static or defensive mode, as was the case with the Medina Division, then the idea would be to simply attrite them to the maximum extent possible. In any case, attack helicopters were seen as more than capable of successfully performing this mission, and had in fact conducted similar attacks during Operation Desert Storm.

In the end, however, the 11th AHR's attack was a complete failure, with one helicopter shot down, all but one of the remaining aircraft damaged, and the mission aborted before any appreciable damage could be done to the Medina Division.[2] Beyond the immediate efficacy of the attack, the operation also raised questions about the overall soundness and suitability of the Army's doctrine and the role that attack helicopters should play on the battlefield. Should attack helicopters have as their primary role that of interdiction, operating over hostile territory in an essentially independent role, or should they stick to the original operating principle of direct support for ground forces in contact with the enemy? While this question appears to have the most relevance in mid- to high-intensity conventional warfare, there is also room for exploring the same questions in the role of attack helicopters in low-intensity conflict. Shifting from one level or type of

[1] Gregory Fontenot, E.J. Degen, and David Tohn, *On Point: The United States Army in Operation Iraqi Freedom*, (Fort Leavenworth, KA: Combat Studies Institute Press, 2004), 179.

[2] Ibid, 179.

conflict to another is never as simple as throwing a switch. Thus it seems desirable that whatever the doctrine, it have a large window applicability without sacrificing capability.

The issue is more than academic or even operational when one considers the fiscal and training resources devoted to acquiring and operating very expensive and highly complex aircraft. A variety of dedicated attack helicopters are available on the international arms market today and virtually all cost more than $10 million a copy, with some significantly more. While doctrine and tactics can be flexible, emphasizing what might be an inherently faulty doctrine could cost a significant amount money, irrespective of casualties needlessly sustained. Further, though personnel can also be flexible, a training process based on a doctrine focused on one type of mission, interdiction or CAS, would be almost certain to short-change the other if one wanted to ensure proficiency. Finally and most importantly, following a flawed doctrine might lead to the failure of operational objectives potentially impacting both military and political policy.

The purpose of this paper is to examine the role of attack helicopters on the battlefield through the lens of three conflicts in which attack helicopters played a significant role. In each the doctrine and tactics of attack helicopter employment will be examined along with the threat posed by enemy forces to attack helicopters. Several questions will be posed in each case study: What was the doctrine utilized with respect to attack helicopters? What were the tactics used to support the implementation of that doctrine? Were the doctrine and tactics suitable for the threat? What modifications to doctrine and tactics were required by threat? Were these adjustments perceived as successful? By addressing these questions a clearer picture will emerge of those roles for which attack helicopters have been most suited which will allow for recommendations on future use. The argument of this paper is that the primary role of attack helicopters should focus on the mission area of CAS and not interdiction.

The first case study looks at the Soviet experience during the Soviet-Afghan War. Soviet doctrine for the use of attack helicopters evolved slowly during the course of the 1960s and early 1970s. During the mid 1970s, however, Soviet doctrine began to re-emphasize attacks that would penetrate deep in the enemy's rear. Concurrently, the role

of attack helicopters in the realm of fire support in both interdiction and CAS was expanded. Nonetheless, as the conflict in Afghanistan progressed and air defenses improved, the primary function of the attack helicopter was to provide direct support to ground units in the close battle. While the Soviets performed interdiction operations against enemy lines of communication, the nature of the battlefield and mujahideen air defense capabilities prevented these operations from having the hoped for success.

The second case study focuses on U.S. military employment of the attack helicopter during Operation Desert Storm. U.S. Army attack helicopter doctrine grew out of the experience of Vietnam and the Cold War and by the time of Operation Desert Storm had firmly established a central role for the attack helicopter in deep or interdiction operations. The heavy emphasis on attack helicopters, though not necessarily their independent maneuver role, was in part a reaction to the Army's historical distrust of the Air Force's willingness to fulfill its obligations with respect to CAS. In the case of Desert Storm, the doctrine and tactics developed for attack helicopters were actually tested in the sort of conventional conflict for which they were created. Marine Corps doctrine emphasized the role of the attack helicopter in providing CAS for what were, compared to the Army, relatively light infantry forces. In light of the actual experience of the war, both the Army and Marine Corps felt their doctrines were sound and sought to further expand the role of the attack helicopter. The length of the war and Iraqi opposition, however, may not have been suitable to adequately evaluate the validity of the doctrine.

The third case study examines the refinement of U.S. doctrine in the 1990s and Operation Iraqi Freedom. By Operation Iraqi Freedom (OIF), the doctrine that allowed attack helicopters to act as a maneuver force and conduct independent interdiction operations rather than just directly support ground forces was well established in the Army and had been introduced in the Marine Corps. The failure to employ attack helicopters in Kosovo in 1999 however, should have given pause to advocates of such operations. Primary among the reasons attack helicopters were not used was their perceived vulnerability to fires from Serbian ground forces. However, such concerns were muted in the run up to OIF and interdiction operations were largely unsuccessful and ineffective compared to what had originally been envisioned in doctrine.

Conversely, close air support by attack helicopters received near universal praise for its role during the conflict. Iraqi forces can be seen as having learned from the experiences of Desert Storm, as well as other recent conflicts, in the employment of air defense assets against helicopters, and were able to effectively counter the tactics of interdiction.

The conclusion seeks to bring together the major lessons from each case study and proposes that the primary role of attack helicopters should be close air support. For the U.S. in particular, the push for increasingly joint military operations suggests the need for unified military doctrine in areas where services operate similar weapons systems across service boundaries. In general, focusing on close air support allows attack helicopters to provide the most effective kind of support across the widest range military operations.

In order have a solid conceptual basis upon which to examine each of the case studies some basic ideas concerning doctrine and tactics, interdiction and close air support, and the nature of the air defense threat to attack helicopters will be discussed.

B. DOCTRINE AND TACTICS

Definitions of doctrine and its application to military operations are numerous in military literature. As a result, even within the military establishments of single countries there are varying interpretations of doctrine's role and place in the development of how an army fights. The two countries whose doctrines are studied here, the U.S. and Soviet Union, both spent significant energy creating and implementing their doctrines within their armed forces at various levels.[3] For the purposes of this paper, the idea of doctrine at the service and what might be called functional levels is most important. For example, the way the U.S. Army thinks about war is different is different from the way the U.S. Air Force thinks about war. Yet both services should be operating, in theory, under a larger national concept or doctrine. Within the Army, there are multiple functional entities, one of which is attack helicopter aviation, which in turn formulate their own doctrine to support Army service doctrine.

Though various countries and services have defined doctrine differently, the current U.S. military definition of doctrine seems to be suitably broad enough to capture

[3] Julian Lider, *Military Theory: Concept, Structure, Problems*, (New York: St Martin's Press, 1983), 309.

the essence of the concept across these differences. It states that doctrine consists of "fundamental principles by which the military forces or elements thereof guide their actions in support of national objectives. It is authoritative but requires judgment in application."[4] Thus, doctrine is a way of doing business but it does not offer mechanical or prescribed solutions for the questions faced by military personnel. Certainly the amount of authority and judgment required for interpretation varies depending on the military system creating the doctrine. Thus a Soviet officer, operating in a rigidly centralized military system, and American officer might have different ideas about the function of doctrine. Andrew Krepinevich, for instance, notes "current doctrine within the Army has often been described as what 51 percent of the Army thinks it is" implying that the authority accorded some doctrine in the U.S. Army has had less than full backing among much of the service.[5] However, the key ideas to remember when considering doctrine, regardless the source, are that it is overarching at the level it is designed for, it is intended to be authoritative, and it requires judgment in execution.

Considering tactics as unique from doctrine can be confusing. In some sense tactics are simply doctrine in its applied form. The U.S. military defines tactics as "the employment and ordered arrangement of forces in relation to each other."[6] Tactics exist at the most basic level of warfare where individual units maneuver and fight. Where tactics seem to differ most significantly from doctrine is that they appear to be far more mutable. As the definition implies, forces can be manipulated in any number of ways in order to accomplish a given mission. Thus, while there may be certain tactics that appear to be fundamental to how a military fights in given situations, they can be significantly altered in order to fulfill the principles set down in doctrine. Doctrine can be seen as prescribing the larger, general framework of how to fight, while tactics are the actual tools of combat.

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[4] JP 1-02, *Department of Defense Dictionary of Military and Associated Terms* (2001), available from the Joint Electronic Library website http://www.dtic.mil/doctrine/jel/new_pubs/jp1_02.pdf accessed 20 April 2005, 165.

[5] Andrew Krepinevich, *The Army and Vietnam,* (Baltimore: The Johns Hopkins University Press, 1986), 37.

[6] Ibid, 524.

Doctrine and tactics may originate from organizations within the military dedicated to this task, training, combat, or some combination thereof. Most militaries create and disseminate both doctrinal and tactical publications and manuals in order to ensure the official position is known if not understood. Doctrine and tactics are also typically incorporated into military education and training and there exist any number of professional journals and magazines that provide forums for the examination and discussion of both topics. Through all these ways, doctrine and tactics are exposed to the judgment of military personnel who it is hoped will develop a reasonably uniform understanding what they mean.

C. INTERDICTION AND CLOSE AIR SUPPORT

Fundamentally, interdiction and (CAS) missions both involve using aircraft to attack targets on the ground. A complete history of these types of missions is well beyond the scope of this paper but both interdiction and CAS came of age during the course of World War II and have played a role in most major conflicts since. The original weapons of choice in both endeavors were fixed-wing fighter-bombers that varied widely in design from country to country. With the introduction of first armed and then dedicated attack helicopters there was a seemingly natural expansion of ideas for using these aircraft as interdiction and CAS platforms.

Interdiction and CAS differ most substantially in where the targets for each mission are located on the battlefield. In conventional conflict with two field armies meeting on a frontline, interdiction usually occurs well behind the collision of forces and outside the range of most weapons organic to ground combat while CAS occurs where the forces actually meet. Though a traditional frontline may be absent in unconventional conflict, there are usually areas in which forces are able to operate without significant interference from the other side's ground forces. These might include supply lines from neighboring countries or interior lines of communication that are largely free of enemy action. In both the conventional and unconventional cases interdiction seeks to prevent enemy personnel and material from reaching the battlefield proper. Since attack helicopters lack weapons with the destructive force to destroy bridges or other similar transportation infrastructure, prevention usually involves destroying the material and personnel themselves.

There are several advantages to interdiction. Most obviously, interrupting the logistical flow to the enemy's combat forces weakens his capability at the point of conflict and eventually presents a force mismatch for one side or the other. By striking in areas removed from the immediate battlefield one also has the advantage of facing forces that are generally focused on a logistical mission not active combat. As a result, they move in administrative formations that are designed for speed and which concentrate assets. The alternatives to such lucrative targets are defensive measures and tactical formations that may mitigate losses but which also disrupt the supply effort. Interdiction is not a risk free endeavor, however. A persistent effort will almost certainly elicit strong air defense measures. Interdiction usually requires aircraft to spend significant time transiting over territory that is at best no-man's land and at worst controlled by the enemy. Long-range artillery, rocket, and missiles systems have helped add another dimension to interdiction but when used in conjunction with aircraft present complicated coordination issues as well. As will be seen in the case studies, the concept of interdiction has been called many different names and taken various forms.

CAS also has inherent advantages and disadvantages. The primary advantage is that it can be brought to bear on an enemy that is currently and directly involved in combat against friendly forces. CAS can be viewed as a direct extension of the ground force in way that interdiction usually is not, and is thus seen as more flexible and useful to commanders in contact with the enemy. The result can be close coordination between ground and air that provides aircraft with protection from enemy air defenses as they execute their attacks. By the same token, enemy forces are typically far more alert and oriented for combat the closer they get to the frontlines. As with interdiction, the concept of CAS has had various names and interpretations but it fundamentally remains the application of aerial fires in direct support of ground forces.

D. THE AIR DEFENSE THREAT TO HELICOPTERS

Air defense threats in general, as well as specific to helicopters, can be divided into two broad categories, guided and unguided. Guided systems can further be divided into those that use radar to assist in acquisition, tracking, engagement and guidance, those that use infra-red (IR) for some or all of these functions, and combinations of the two. Radar-guided gun systems currently offer no capability to guide the projectile once it has

been released from the weapon while this is generally a capability of missile systems. Radar systems of any kind are more difficult to maintain and conceal on the battlefield because they are generally large and active emitters that can be tracked and targeted once they begin operating. IR guidance has typically been used in man portable (MANPAD) missile systems that are virtually impossible to detect prior to launch and which have been increasingly tailored to counter helicopters. The ranges of guided weapons vary significantly but most are capable of engaging helicopters throughout their operating envelopes except at very low altitudes.

Unguided air defense weapons require an operator to acquire, track, engage, and adjust fire on a target manually. Such weapons are usually guns that range from assault rifles to high caliber anti-aircraft artillery (AAA) but can also include rifle propelled grenades (RPG) or guided missiles fired in an unguided mode. These weapons can be very difficult to detect prior to actually firing but because they are unguided offer less probability of hitting their target.

The most dangerous scenario for an attack helicopter involves an air defense that includes both guided and unguided systems. Because guided systems are more lethal and work more effectively against targets at the higher end of most attack helicopters' operating altitude, roughly above 200-300 feet, this tends to force helicopters to operate at lower altitudes. This places them in the heart of the engagement envelope for unguided systems. Though small arms, light machine guns, and RPGs are generally considered less lethal than systems designed specifically for air defense, their ubiquitous nature on the battlefield means that there will be many opportunities for personnel armed with such weapons to engage helicopters.

Helicopters use a variety tactics and equipment to counter the air defense threat but as of yet none are foolproof. Low-level flight involves flying at altitudes typically below 200 feet in order to avoid detection and engagement by systems designed to function against targets at higher altitude. In the absence of these systems, helicopters can operate above 1500 feet and negate the vast majority of lighter air defense threats such as small arms fire. Helicopters can also utilize constantly maneuvering flight, known as jinking, to mitigate the threat from some systems. As the threat has evolved so

have the technical means to counter it. Some attack helicopters have armor but it is usually limited to crew protection and the most vital components of the aircraft. Further, it offers only a degree of protection against less powerful weapons systems. A variety of countermeasures and warning systems against radar and IR threats have also been developed to include self-protection flares, chaff, and jammer systems. In the end however, as each of the case studies will show, while contributing significantly on the battlefield, attack helicopters remain potentially vulnerable.

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II. THE SOVIET EXPERIENCE

A. INTRODUCTION

When the Soviet Union invaded Afghanistan in 1979 it used a military doctrine that had been steadily evolving throughout the Cold War. Conventional airborne and airmobile operations had loomed large at every stage, and while the conflict in Afghanistan was hardly the conventional war for which they had prepared, much of the doctrine and tactics espoused by the Soviets would be tested there for the first time, against an enemy for which the Soviets had not prepared. One weapon and associated set of doctrine that would play a prominent role in the conflict was the attack helicopter. Though the Soviets were essentially in the infancy of determining how to use attack helicopters, they quickly realized their value as a fire support platform. Attack helicopters were far from immune to the effects of enemy action however, and mujahideen tactics to counter the Soviet threat developed as well. Eventually the mujahideen were able to employ weapons and air defense techniques that obviated portions of Soviet attack helicopter doctrine and tactics. Nevertheless, the attack helicopter would remain a mainstay of the Soviet effort and demonstrate its worth as a tool for close air support.

B. SOVIET DOCTRINE

Although one might expect Soviet doctrine with respect attack helicopters and helicopters in general to have been fairly well developed by 1979, it had in fact only recently received detailed attention as part of a more general shift in Soviet doctrine toward more flexible, integrated, and conventionally focused forces. The first significant Soviet thinking on helicopters in combat in the 1960s was an outgrowth of what they perceived as a revolution in military affairs initiated by the growth of nuclear weapons.[7] This school of thought held that mobility would be essential to counter the destructive force of nuclear weapons.[8] In addition, smaller units would require the capability to range throughout the depth of the battlespace attacking as required and avoiding the

[7]Matthew Allen, *Military Helicopter Doctrines of the Major Powers, 1945-1992: Making Decisions about Air-Land Warfare*, (Westport, CT: Greenwood Press, 1993), 74.

[8] V. YE. Savkin trans. by USAF, *The Basic Principles of Operational Art and Tactics*, (Washington, D.C.: Government Printing Office, 1974), 170.

residual effects of nuclear weapons.[9] Classic airborne forces were already a prominent feature of the Soviet military and had been moved from the air force to the army in the 1950s to reflect their importance to facilitating attack by mobile ground columns into the enemy's rear.[10] Though these forces were usually relatively small, battalion size or below, their missions were focused on strategic or operational objectives rather than tactical by the 1960s.[11]

In order to continue the tactical-level missions that had been previously fulfilled by airborne forces, the Soviets began to use helicopterborne, air-landed forces. Among other tasks, they were expected to gain control of, or destroy, the enemy's frontline, tactical nuclear weapons, which because of their mobility they were seen as uniquely suited to do.[12] It took little imagination to see that air-landings also offered benefits in the conventional arena with regard to seizing key terrain or attacking key enemy nodes and the Soviets also intended them for use in these missions. Thus, while the Soviets had originally envisioned the helicopter as a component of a doctrine that accepted the inevitability of the use of nuclear weapons, by the late 1960s it rapidly became apparent they would have an equally important role in conventional warfare. Regardless the role for an air-landed force, it was also becoming apparent, from observing American operations in Vietnam, that an armed version of a helicopter capable of fire support was required.

The Soviet Union had experimented with armed versions of attack helicopters in the 1950s, but it was not until the late 1960s that development began on what would become the primary attack helicopter platform, the Mi-24 Hind. The first model that saw widespread use, the Hind A, suggested that the Soviets had yet to fully embrace the idea of a dedicated attack helicopter. Rather, the Soviets viewed it as more of an armed transport helicopter that provided both transport and fire support capabilities.[13] Given the lack of range of artillery and the potential lack of tactical jets to support air-landings, it

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[9] Allen, 74.

[10] Ibid, 75.

[11] William Baxter, *Soviet Airland Battle Tactics*, (Novato, CA: Presidio Press, 1986), 160.

[12] Allen, 76.

[13] Ibid, 81.

was logical to incorporate some limited fire support within the force itself. The idea of dedicated attack helicopters fermented as the shift from nuclear to conventional doctrine continued and by the mid-1970s Soviet observation of the Vietnam War and the October 1973 Arab-Israeli War led to a version of the Hind focused almost exclusively on fire support.[14] Although some Soviet observers believed attack helicopter activity was prevalent during the 1973 war in spite of the fact it was not, the real lesson learned by the Soviets applied more generally to the requirements for conventional firepower on the battlefield.[15] Previously, the Soviets had relied heavily on the idea of offense because of their experience both defending against Blitzkrieg and then attacking Germany on World War II. In essence, they believed that fast moving columns of armor would prevail especially when combined with nuclear weapons. The drift from reliance on nuclear weapons coupled with the ability of the defense to blunt armor with highly accurate munitions provided a more receptive audience for advocates of dedicated attack helicopters.

The final phase of attack helicopter doctrine and tactical development prior to the beginning of the war in Afghanistan revolved around creating a role independent of air-landings that would focus on providing CAS for a variety of ground forces. This paralleled the overall shift in focus to a more conventionally oriented doctrine, which was manifest in the development of operational maneuver groups (OMGs). OMGs sought to take advantage of combined arms concepts and apply them to deep battle much as airborne and air-landing forces already had.[16] In this sense, attack helicopters would be used for a deep role but their primary mission was in direct support of ground forces that were beyond the reach of traditional fire support such as artillery. Whether the Soviets developed the idea of "free hunt" or interdiction missions independent of ground maneuver deep in the enemy's rear prior to the war in Afghanistan is difficult to discern, but it would seem a logical outgrowth of the OMG concept, the growth of the role of attack helicopters, and Soviet observation of Western thought on the matter.[17] At any

[14] John Everett-Heath, *Soviet Helicopters: Design, Development, and Tactics*, (London: Jane's Information Group, 1988), 120.

[15] M. Belov, "How to Fight Helicopters," *Soviet Military Review*, No. 9 (September 1979): 18.

[16] Allen, 94.

[17] Ibid, 95.

rate, Soviet attack helicopters would be prominently featured across an array of missions during combat in Afghanistan but unlike the academic environment of doctrine creation there would be an active, lethal enemy to oppose them.

C. THE HIND IN COMBAT

While Soviet intervention in Afghanistan was unexpected in the West and perhaps even in the Soviet Union, although in retrospect it seems difficult to understand why that was the case. For more than a century, the Soviet Union and Great Britain had played the Great Game with Afghanistan at its very center. Further, the Soviets had been actively interested and involved in the internal politics of Afghanistan since the 1950s. Yet in terms of Soviet military thought the emphasis was solely on a NATO/Warsaw Pact conflict and therefore oriented toward conventional war. It remains surprising, however, that there could be no thought or discussion of alternative forms of warfare given nearly continuous Soviet involvement in fomenting insurgency after World War II. Therefore, when the Soviets invaded Afghanistan, they did so using the military doctrine and ideas they had developed for the future fight in Western Europe and from their previous interventions in Hungary and Czechoslovakia.[18]

In terms of attack helicopters, the invasion came at a time when they were really just being integrated into operations on a large scale both in terms of doctrine and actual employment. Throughout the development of doctrine related to helicopters, control of these assets shifted to reflect updated thinking. Initially, all helicopters had come under control of the transport arm of the Soviet air force but all but the very large transport models had effectively shifted to control of the army by the early 1980s.[19] Nonetheless, in the initial commitment of helicopters in Afghanistan was relatively modest and consisted of a single regiment or about 60 aircraft of all types.[20] This reflected both optimistic thinking about the predicted length of the conflict but also what was then the doctrinally normal complement of aircraft for the invasion force.[21] As

[18]Lester Grau and Mohammad Yahya Nawroz, "The Soviet Experience in Afghanistan," *Military Review* (September-October 1995): 17.

[19] Allen, 99.

[20] John Everett-Heath, *Helicopters in Combat: The First Fifty Years*, (London: Arms and Armour Press, 1992), 120.

[21] Allen, 108.

Soviet forces increased and the value of all types helicopters became apparent so too did the number of aircraft. Although much information about the war has come out since its conclusion, exact aircraft figures are still difficult to determine. Reasonable published numbers range from 300 to over 600 helicopters employed at any given time but, regardless the total, almost all sources agree that variants of Hind made up about half the overall totals.[22] These numbers still ultimately fell short of what was required to support an average of 80,000 troops stationed in Afghanistan for most of the war.

Though the Soviets never established a complete counterinsurgency effort in Afghanistan, air assault and attack helicopter tactics quickly proved to be pre-eminent compared with the high intensity, mechanized warfare envisioned in pre-war doctrine. If the Soviets expected attack helicopters to be a primary CAS platform in the conventional war they had been planning, then the nature of insurgent warfare reinforced the importance of such aircraft throughout the entire range of warfare. With the exception of one dedicated ground support jet, the SU-25, high performance jets were ill suited to pick out small groups of insurgents that blended well with their surroundings. Hinds on the other hand operated at altitudes and speeds that allowed for increased target identification leading to more effective fire support.

The Soviets used what are now considered standard tactics in the employment of their attack helicopters during combat in Afghanistan. The typical number of aircraft in a flight would normally be two to four with single aircraft rarely employed because of a lack of mutual protection. An air assault would usually be preceded by a flight of Hinds which would suppress and destroy targets that might threaten the landing zone. As soon as the area was deemed safe, the assault helicopters would land supported by another, fresh flight of Hinds that would then provide CAS to troops on the ground as they undertook their mission.[23] Such direct support continued until such time as the ground commander no longer required the services of the aircraft. In terms of attack helicopters, these assaults followed both the doctrine and tactics that had been developed by the

[22] Aaron Karp, "Blowpipes and Stingers in Afghanistan: One Year Later," *Armed Forces Journal*, September 1987, 40.; Scott McMichael, *Stumbling Bear: Soviet Military Performance in Afghanistan*, (London: Brassey's, 1991), 80.

[23] The Russian General Staff, Lester W. Grau and Michael W. Gress, trans. and eds. *The Soviet-Afghan War: How a Superpower Fought and Lost*, (Lawrence, KA: University Press of Kansas, 2002), 201-202.

Soviets during the 1960s and 1970s for air assault in conventional war. In both insurgent and conventional combat, the aircraft had a primary responsibility for supporting the ground scheme of maneuver.

Though the doctrine concerning the use of attack helicopters for support of ground forces other than those landed by air assault was effectively in its infancy when the war began, attack helicopters quickly found themselves participating in a variety of missions. Most of these missions ultimately remained oriented toward providing CAS to ground forces regardless how they began. For instance, the idea for supporting OMGs that had arisen in the late 1970s morphed into providing CAS for almost any type of offensive or defensive mission by infantry, armor, or mechanized forces. The suggestion that armor and mechanized forces required little fire support had been prevalent until the re-evaluation of doctrine after the 1973 war and was certainly put to rest by simple but effective mujahideen anti-armor tactics. Typical counterinsurgency missions by Soviet forces included cordon and search, raids, and ambushes. In addition to providing CAS, Hinds were often employed in an attempt to provide a mobile, airborne cordon around an objective area to prevent mujahideen from entering or leaving the area.[24] Another mission that had previously been given little mention in doctrine but which proved important was convoy escort and support. Such rear area security functions had received little consideration when it came to the employment of attack helicopters. The dispersed nature of combat in Afghanistan, however, and the importance of road bound convoys in the Soviet logistical effort, mandated that attack helicopters play a supporting role when possible. These convoys proved to be lucrative targets for the mujahideen, and helicopters were used to reconnoiter routes and provide CAS when enemy forces were encountered.[25] Still, the Soviets suffered tremendous losses in convoy operations, including 11,369 trucks according to one source.[26]

Soviet attack helicopters also participated in what have been described as free hunt or interdiction missions. These missions had been hardly developed in doctrine

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[24] The Russian General Staff, 122.

[25] Scott McMichael, "Soviet Tactical Performance and Adaptation in Afghanistan," *The Journal Soviet Military Studies*, No. 1, Vol 3 (March 1990): 96.

[26] Nawroz and Grau, 8.

when the war began but as the need arose they became more important. Such missions were the norm for tactical jets but this was not the case for attack helicopters. Although the literature is limited, free hunt appears to have primarily encompassed armed reconnaissance for targets of opportunity as well as pre-planned strikes un-related to ground maneuver.[27] In Afghanistan, the missions would have been similar given the threat and nature of targets. In a typical example a flight of four Hinds:

> …flew over the mountain terrain at an altitude ensuring safety from possible rebel fire, closely scrutinizing the ground below. After they had reached the designated area, Nikolay Ivanovich Kovalev was the first to spot a string of slowly-plodding, heavily-laden camels and horses.[28]

The Hinds then destroy the caravan and, in an interesting twist on the tactic of armed reconnaissance, actually land to inspect the remains. According to at least one source, the idea of free hunt was in direct response to insurgent activity at night which reflects both an insurgent strength and the apparent reluctance of Soviet ground forces to combat it.[29]

Soviet attack helicopters faced numerous problems, both self-generated and enemy-induced. At the most basic level, the rigid nature of the Soviet system got in the way, causing pilots to blindly follow orders to attack unoccupied positions.[30] The depth of this and similar problems is difficult to measure, but a lack of initiative is often cited with respect to Soviet military activity in general in Afghanistan. Along with the relatively recent changes in helicopter doctrine prior to the war, this almost certainly created friction when it came to the planning and execution of attack helicopter missions. The mechanics of actually directing aircraft on to targets and clearing fires was usually left to forward air controllers (FAC) who were pilots assigned to ground duty.[31] This is clearly a task that requires significant experience to perfect and often there were not

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[27] James Holcomb, "Recent Developments in Soviet Helicopter Operations," *The Journal Soviet Military Studies*, No. 2, Vol 2, (June 1989): 269.

[28] Ye. Besschetov, "Mi-24 Gunship Crew Killed in Afghanistan," *Aviatsiya I Kosmonavtika*, No. 10, October 1986, 17 in Joint Publications Research Service, *Report on USSR Military Affairs*, http://stinet.dtic.mil accessed 17 Nov 2004.

[29] The Russian General Staff, 138 and 219.

[30] McMichael, "Soviet Tactical Performance and Adaptation in Afghanistan," 97.

[31] McMichael, *Stumbling Bear*, 87.

enough FACs available to satisfy demand. An even more fundamental problem was a lack of helicopters with which to adequately fulfill missions. Providing the doctrinally appropriate number of helicopters for the force present in Afghanistan might have sufficed had the combat resembled mechanized, conventional warfare as anticipated in general war planning. As it was, the fight in Afghanistan required far fewer tanks, an adjustment the Soviets ultimately made, and far more helicopters, an adjustment they failed to make.[32] Thus even when problems of coordination and employment were solved, the number of helicopters available was insufficient even had the Soviets implemented a viable counterinsurgency strategy.

D. THE MUJAHIDEEN THREAT

Mujahideen efforts at combating attack helicopters were initially limited to the weapons normally associated with any insurgency. These consisted of small arms, heavy machine guns, and light AAA, most of which had been captured from the Soviets or Afghan military. In the Hind, they faced a particularly difficult target because the most extensively used versions, the Hind D, E, and F, all possessed fairly robust armor protection from small arms and machine guns.[33] Prior to the introduction of Stinger missiles in 1986, helicopters were largely able to remain above or outside the engagement envelope of machine guns and light AAA while evaluating their targets and then expose themselves for a brief period during their attacks. In general, helicopter operations rated the most worry from mujahideen commanders and the mere presence of attack helicopters was often sufficient to alter their operations.[34]

While stories of terrified mujahideen are relatively common, it is clear that the guerrillas also developed tactics designed to combat the Hind. Increasingly, they devoted dedicated teams with a mix of weapons to the problem of attack helicopters.[35] The topography of Afghanistan was such that an altitude advantage was not always feasible for the Hind and the mujahideen took advantage of this to fire down on more vulnerable

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[32] The Russian General Staff, 197.

[33] Everett-Heath, *Soviet Helicopters,* 123.

[34] Ibid, 190.

[35] McMichael, "Soviet Tactical Performance and Adaptation in Afghanistan," 97.

portions of the airframe.[36] In addition, when the terrain was favorable, the mujahideen established air defense ambushes along obvious avenues of approach into a given objective area. In the same manner, they took advantage of poor security around air bases and engaged aircraft as they took off or prepared to land.[37] The mujahideen also possessed SA-7 MANPADs but given Soviet technical familiarity with these weapons they were insufficient to radically alter the balance in favor of the mujahideen. The easiest solution was to operate at night when the threat of detection was far less.

Though there is much hyperbole surrounding the introduction of the Stinger missile in Afghanistan, it does seem to have had major impact on the air defense equation in the areas where it was deployed beginning in 1986. Not all mujahideen groups received Stingers but those that did garnered a significant advantage, especially in combating the attack helicopters. Hinds were forced to operate at lower altitudes thus making them more vulnerable to guns of all calibers. In effect, Stingers removed the sanctuary of altitude from the Soviets' quiver of defensive tactics. This made life much more dangerous for helicopters to operate where Stingers were known to be present and forced them to honor the threat in areas where the situation was uncertain.

Up until the Stinger was introduced, the Soviets had little reason to extensively modify their doctrine or tactics with regard to attack helicopters. In spite of innovations by the mujahideen, the concept of CAS with attack helicopters was fundamentally sound. During most of the war the Soviets were expanding on the concept while simultaneously improving their own tactics. For instance, initially attack helicopter pilots took advantage of the minimal threat and flew low to gain improved target detection and engagement capability at low level. As AAA, heavy machine guns and SA-7s proliferated they continued to raise the altitudes at which they operated along with employing self-protection flares and IR jammers as countermeasures but they never ceased or seriously modified their operational patterns.

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[36] Robert Scales, Jr., *Firepower in Limited War*, (Washington, D.C.: National Defense University Press, 1990), 188.

[37] McMichael, *Stumbling Bear*, 87.

Stingers changed this however, causing the Soviets to "severely limit the employment of helicopters, especially during daylight."[38] Without technical knowledge of the Stinger similar to what they possessed for the SA-7, the Soviets could not initially provide a suitable technical countermeasure. This placed helicopter pilots in a dilemma as to whether they should operate at higher altitudes and risk attack from Stingers or fly lower in the heart of the AAA and small arms envelope. The Soviets accepted the risk at lower altitudes and operated there throughout the rest of the war. They also sought to provide increased suppression of air defenses when attack helicopters conducted CAS missions. This capability was essentially limited during free hunt missions and as result these were drastically curtailed especially in the border region where Stingers were known to be prevalent. New tactics, on both the ground and in the air, and technical countermeasures eventually mitigated the threat but there can be little doubt that Hinds no longer had the free hand they once did.[39] There are wildly varying figures for Soviet helicopter losses in Afghanistan but the Soviets themselves put the number at 329, with 127 of those attack helicopters.[40] Though one might think the Soviets would skew the numbers in their favor, in the same after-action review the figures for personnel killed in action were more than doubled from early official figures.[41] If one accepts the helicopter numbers, they are indeed rather modest losses over the course of nearly 10 years of combat.

E. CONCLUSION

Attack helicopter doctrine and tactics were initially slow developing in the Soviet Union. Although the relative worth of helicopters was recognized in planning for nuclear and then more conventionally oriented combat, it took the October 1973 War in the Middle East to cause the Soviets think seriously about the idea of attack helicopters. They moved quickly in both the development and implementation of doctrine and the development of aircraft. Nonetheless, when the war in Afghanistan began, the Soviets were essentially mid-stream in this process.

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38 The Russian General Staff, 197.

39 John Everett-Heath, *Helicopters in Combat,* 146.

40 The Russian General Staff, 221.

41 Ibid, 44.

The war did little to show the Soviets that attack helicopters were not relevant, although their doctrine was developed for conventional war. Helicopters in general were suited to counterinsurgency and the tactics developed for attack helicopters proved their versatility across a range of conflict. The Soviets focused their initial efforts on providing CAS but also developed interdiction missions for helicopters as cutting the flow of mujahideen logistics became a high priority. Given that the Soviets never came close to successfully shutting down the supply lines from Pakistan, it seems that pulling these aircraft from their duties performing CAS was largely wasted effort.

Mujahideen efforts at combating attack helicopters were generally unsuccessful in denying the Soviets the ability to carry out most missions. While aircraft were certainly shot down and damaged, it was not enough to prevent the Soviets from operating as they desired, at least with respect to attack helicopters. This equation changed somewhat with the introduction of the Stinger missile in 1986. It provided the final piece of what became a very effective air defense puzzle in the areas where it was utilized. The Soviets made fairly extensive changes to tactics and devoted more resources toward negating air defenses than had been the case earlier. As a result, less time and effort could be devoted to the insurgency proper and attack helicopter effectiveness fell off. This was especially the case for interdiction missions flown independent of ground maneuver, since suppression of air defenses was far more problematic in these situations. In the end, however, the attack helicopter proved its worth especially with respect to CAS.

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III. DESERT STORM: THE PERFECT ATTACK HELICOPTER WAR?

A. INTRODUCTION

As in the Soviet Union, the development of attack helicopter doctrine followed the contours of doctrine focused on the Cold War. Unlike the Soviet case, CAS by attack helicopters had already seen significant exposure during the Vietnam War. Thus as the U.S. Army pursued doctrine that emphasized an almost exclusively interdiction role for attack helicopters, the U.S. Marine Corps effectively continued to stand by CAS as the fundamental mission attack role for helicopters. During Desert Storm however, neither service was forced to face the same kind of adaptive enemy over long period of time as the Soviets had, which potentially calls into question the long-term validity of their doctrine.

B. THE EVOLUTION OF ARMY ATTACK HELICOPTER DOCTRINE

Attack helicopters came to the fore as major weapon of aerial combat for the United States during the Vietnam War. Both the U.S. Army and Marine Corps had experimented with armed helicopters since the 1950s when transport helicopters began playing an increasingly prominent role in a variety of operations. For the Army however, helicopters dedicated to providing aerial fire support to ground forces held special promise because of an increasingly strained relationship between the Army and the Air Force over the latter's priority for supporting ground forces. Mutual agreements limited the Army's ability to possess and employ fixed-wing aircraft, thus operations involving helicopters, which posed less of a challenge to Air Force roles and missions, were a natural area for expansion.[42] Moreover, as the capabilities of helicopters increased from the 1950s through the 1970s, they were more deeply integrated into the various operational strategies that the Army developed as it continually sought to refine its warfighting doctrine to match expectations about the nature of warfare. As helicopter doctrine evolved within this larger context, attack helicopter doctrine also evolved so that by the time of Desert Storm, ideas about employing attack helicopters as independent maneuver elements in deep attack operations were well developed. Thus, rather than

[42] Allen, 3.

encroaching on the Air Force's traditional territory in close air support, Army attack aviation had created its own niche on the battlefield.

In order to understand why the Army acted as it did with respect to attack helicopters, it is useful to broadly explain Air Force thinking on airpower throughout much of this period. Generally, the Air Force viewed airpower as existing in two realms, strategic and tactical. Of the two, strategic airpower held the most promise for service advocates because it represented a way for the Air Force to decisively influence a conflict on its own, especially in an era of possible nuclear warfare. Tactical airpower was seen as playing a supporting role for Army forces as they carried out a land campaign which might not even be required if strategic airpower were used appropriately. Within tactical airpower doctrine there were three basic subordinate missions. First, there was air supremacy, which consisted of controlling the airspace over the battlefield. Second, there was air interdiction, which sought to attack enemy forces and supplies before they reached the battlefield. Finally, CAS was designed to attack enemy forces that were essentially in direct contact with friendly forces.[43] In theory, the priority of these three missions would be dependent on the nature of the conflict. Nonetheless, the Army consistently saw the Air Force as emphasizing strategic airpower to the detriment of tactical airpower and air superiority and air interdiction to the detriment of close air support.[44] As one observer commented:

> Close air support will always be the unwanted stepchild of the Air Force. The job will not be given back to the Army lest it create a rival air arm; and it will not be embraced because it relinquishes the central control of air power…So the Army tries to make do with their helicopters.[45]

Helicopters were first used by the U.S. in large numbers during the Korean War, primarily for moving men and material. The Army particularly utilized helicopters for medical evacuation, with 21,000 casualties evacuated from 1951 to 1953, but senior

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[43] John Sbrega, Southeast Asia, in *Case Studies in the Development of Close Air Support*, Benjamin Cooling ed., (Washington D.C.: Office of Air Force History, 1990), 413.

[44] Ibid, 411.

[45] Carl Builder, *The Masks of War: American Military Styles in Strategy and Analysis*, (Baltimore: Johns Hopkins University Press, 1989), 137.

leaders recognized the potential for the aircraft to perform a wide range of missions.[46] These early missions generally conformed with results of roles and missions conferences such as that held in Key West in 1949 as well as written agreements between the services designed to clarify who was responsible for various functions on the battlefield.[47] This administrative back and forth would continue in the coming decades with the Army usually attempting to expand its aviation capability. In all regards, but especially in the area of CAS, the Army felt that the Air Force had provided less than optimal support in Korea.[48] The Air Force would often be placed in a dilemma as it usually sought to thwart the Army's efforts at expansion. On the one hand, it showed little interest in becoming involved itself in the more mundane aspects of aviation support the Army required, such as tactical casualty evacuation and troop transport. On the other hand, attempts by the Army to employ helicopters in direct fire support roles or fixed-wing aircraft in any role infringed on what the Air Force viewed as its mission set. Thus, opening the door to some roles for Army aviation inevitably led to a further erosion of the Air Force's position.

Though the first attempts to arm helicopters for offensive employment rather than simply defensive purposes were less than successful, this did little to stop the Army's efforts in the area. In 1962, the Army convened the Army Tactical Mobility Requirements Board, or as it came to be known, the Howze Board, to review the Army's approach to battlefield mobility.[49] The board viewed the Army's situation through a new strategic lens based on flexible response, which sought to address conflict across a range of types from nuclear to low intensity warfare. It was thought helicopter aviation might represent not just a new type of tactical mobility but also a kind of strategic mobility, which fit within the overall theme of flexible response. Given the Kennedy administration's progressive outlook with regard to military strategy and the Army's own

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[46] Frederic Bergerson, *The Army gets an Air Force: Tactics of Insurgent Bureaucratic Politics*, (Baltimore: The Johns Hopkins University Press, 1980), 71.

[47] Ibid, 55-56.

[48] Phillip Meilinger, "Air-Ground Cooperation Perspectives," *Military Review* (November-December 2003): 50.

[49] Richard Davis, *The 31 Initiatives*, (Washington: Office of Air Force History, 1987), 16.

desires, there was little doubt that recommendations of the board would support a robust increase in missions for helicopters.[50]

The Howze board recommendations were indeed robust, recommending that five of sixteen active Army divisions become air assault divisions fully based around helicopters of all types and that the remaining divisions also receive significant infusions of helicopters.[51] Naturally, dedicated attack helicopters were included in these proposals in spite of the fact that, by agreement, the Air Force was responsible for supplying CAS to Army forces. In an even greater poke in the eye for the Air Force, there was a recommendation to convert light fixed-wing observation aircraft into CAS aircraft.[52] The probability that the Army would get all or even most of what the board recommended was low, but it had again made its feelings about commanding and controlling its own air support known.

The Air Force commissioned its own board, the Disosway Board, in response to Howze, and it unsurprisingly found that the Army study was faulty on a variety of levels. The biggest objections were centered on what the Air Force felt would be a loss of the central control of airpower if the Howze board results were implemented.[53] Specific to issues of CAS, the Disosway board felt Army fixed-wing attack aircraft and attack helicopters would be too vulnerable on the battlefield and were a direct usurpation of the Air Force's role.[54] The Army, however, believed helicopters could be employed in any intensity of conflict. In the end, neither board was binding and fiscal reality combined with the operational experience of Vietnam would guide the further development of attack helicopter doctrine.

What did result from the Howze Board was a decision to form the 11th Air Assault Division in 1963 in order to test helicopter concepts before fully committing resources.[55] The results were promising and all helicopter aviation received a significant boost by the

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[50] Bergerson, 111.

[51] Davis, 16.

[52] Allen, 10.

[53] Davis, 17.

[54] Ibid, 18.

[55] Allen, 10.

subsequent decision to create a combat unit in the 1st Cavalry Division (Air Assault) in 1965. Helicopters had already been deployed to Vietnam and by the time the 1st Cavalry Division deployed there in 1965, it was apparent that Air Force close air support was insufficient to meet the expanding need of aerial fire support. This, coupled with the Army already having concluded that armed helicopters were part of its future, led to their rapid expansion and use. The initial armed helicopters were created by adapting the UH-1 to the role but it was clear this was a stopgap measure. Since armed helicopters were organic to Army units, they could be quickly employed without going through what was viewed as a cumbersome process for requesting Air Force CAS.[56] Because of previous agreements on roles and missions however, the Army had to use terms other than CAS lest it step fully into the Air Force's domain. Thus, phrases such as "direct aerial fire support" were used to describe what was conceptually the exact same mission as CAS.[57] The absurdity of such rhetorical games may have been lost on service advocates at the time but the promise of attack helicopters was not.

The first dedicated attack helicopter, the AH-1 Cobra, was procured by the Army in 1966 and widely utilized in Vietnam. In part, this was a result of yet another agreement between the Army and Air Force concerning the division of responsibilities with respect to air support. The Johnson-McConnell agreement of 1966, named for the chiefs of the Army and Air Force respectively, traded the Army's fixed-wing tactical airlift capability to the Air Force and, in return, the Army became the majority stakeholder in missions entailing helicopter support including fire support.[58] The Cobra had been independently developed without significant Army input or funds but with the advent of Johnson-McConnell, the Army capitalized on its newfound doctrinal freedom and implemented development of a far more sophisticated attack helicopter, the AH-56 Cheyenne.[59] The fight with the Air Force, while not over, had been largely submerged by the weight of the war and the Army constantly pushing the envelope on roles and

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[56] Sbrega, 454.

[57] Bergerson, 137.

[58] Ibid, 117.

[59] Davis, 21-22

missions. Although the Cheyenne never advanced beyond the developmental stage, its capabilities revealed that the Army was looking beyond a simple CAS role for its attack helicopters.

Even before Vietnam came to a close, the Army was already looking at how it would fight the Soviets in Europe and using that framework to develop future doctrine. The major issue confronting the Army in this respect was the numerical superiority of Soviet forces, especially in armored vehicles. While Vietnam was generally viewed as a low intensity conflict with little applicability to the kind of war envisioned in Europe, the effectiveness of attack helicopters using precision-guided ant-tank missiles had been demonstrated late in the war.[60] This particularly interested the Army, which then conducted the Joint Attack Helicopter Instrumented Evaluation at Ansbach, West Germany in 1972 to further explore the concept. Using laser scoring to simulate actual ordnance, the results of the test were deemed impressive:

> Sixty trials were conducted with the following results: 10 AH-1G's and 4 OH-58's destroyed by antiaircraft fire and 167 tanks and 29 Vulcans destroyed by AH-1G's. These impressive results confirmed that a missile-equipped helicopter using nap-of-the-earth tactics and taking advantage of speed, maneuverability, cover, and concealment can achieve a high-kill ratio and survive on a high-threat battlefield.[61]

As indicated, the Ansbach evaluation cemented certain ideas in the heads of attack helicopter proponents. First, attack helicopters in combination with precision-guided anti-tank missiles were capable of independently influencing the battle not just supporting troops in direct contact with the enemy. Second, attack helicopters were survivable in high intensity conflict provided they used nap-of-the-earth (NOE) tactics, which essentially concealed them from the enemy except when employing their weapons. This directly contradicted continuing Air Force claims that attack helicopters were too vulnerable to be employed in such environments.

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[60] Allen, 24.

[61] Willian Bell and Karl Cocke, *Department of the Army Historical Summary: Fiscal Year 1973* (1977), available from The U.S. Army Center of Military History website http://www.army.mil/cmh-pg/books/DAHSUM/1973/chIII.htm accessed 10 Mar 2005, 41.

Nearly simultaneous with the Ansbach trials the Army began looking for a replacement for the Cobra.[62] The aircraft selected was the AH-64 Apache and its characteristics were designed to fulfill the future of attack helicopter aviation as foretold in the Ansbach trials. The program would grow in requirements and cost throughout the 1970s so that the final product would have advanced target acquisition systems, be day/night capable, and fire the laser guided Hellfire missile.[63] In other words, the aircraft would be a highly advanced platform capable of acting as a primary player in the Army's developing operational doctrine.

In the 1976 version of FM 100-5 *Operations,* the Army introduced a defensively oriented operational strategy called Active Defense to deal with the Soviet threat in Europe.[64] The tremendous losses incurred by both sides' armor formations in the 1973 Arab-Israeli War clearly made a significant impression on the manual's writers when it came to executing the kind of offensive operations envisioned in Europe.[65] Thus, a powerful defense was seen as the primary option for defeating a Soviet attack. Within in this framework, attack helicopters were touted as having "weapons systems capable of defeating the entire spectrum of battlefield targets."[66] Even more importantly in terms of the future of deep attack, they were seen as "sweeping around the flanks to engage reserves" while supporting attacks by armor.[67] Thus, while still a supporting actor during actions by ground forces, attack helicopters were assuming a greater role in Army operational strategy.

The overall defensive nature of *Operations* (1976) was disconcerting to some observers who thought the Army had too easily discounted ideas about offensive and maneuver warfare.[68] The subsequent debate spurred development of a new doctrine

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[62] Allen, 27.

[63] Allen, 27-29.

[64] John Romjue, *From Active Defense to AirLand Battle: The Development of Army Doctrine from 1973-1982*, (Ft. Monroe, VA: United States Army Training and Doctrine Command, 1984), 13.

[65] FM 100-5 *Operations*, (Washington, D.C.: Department of the Army, 1976), available from The Center for Army Lessons Learned Public Archives website https://calldbp.leavenworth.army.mil accessed 1 Mar 2005, 2-2.

[66] Ibid, 2-21.

[67] Ibid, 4-8.

[68] Romjue, 14-15.

called AirLand Battle, which debuted in the 1982 version of *Operations*. AirLand Battle envisioned forces would "attack the enemy in depth with fire and maneuver and synchronize all efforts to obtain the objective" while adhering to the basic tenets of "initiative, depth, agility, and synchronization."[69] Such operations could be up to 150 kilometers behind the forward line of own troops (FLOT). Within this context, attack helicopters were seen as providing "highly maneuverable anti-armor firepower," conducting "raids in enemy-held territory," and being "employed alone."[70] Thus, in less than a decade, attack helicopters had gone from providing what was essentially CAS to being capable of acting as an independent entity on the battlefield conducting interdiction. The mission description still included thinly veiled references to CAS in such phrases as "overwatch ground maneuver forces with antitank fires" and also provided for increased cooperation with Air Force CAS aircraft in joint air attack team tactics. However, the coming delivery of the first highly capable Apaches combined with AirLand Battle's emphasis on deep battle allowed attack helicopter proponents to see themselves as a maneuver force equal to armor.

AirLand Battle helped ideas about attack helicopter aviation flourish throughout the 1980s. Army aviators were not unrealistic about some of the problems associated with the developing deep attack doctrine. They recognized that other organic fire support assets, such as artillery and long-range surface-to-surface missiles, would be required to support such attacks and, in an ironic twist, Air Force strike aircraft could also help with the suppression of enemy air defenses.[71] The reason for this support was the expected heavy Soviet air defense threat particularly in the immediate vicinity of the FLOT.[72] Once past these organized defenses, missions would be planned to avoid the heaviest air defense concentrations. As AirLand Battle crystallized around nonlinear interpretations of the battlefield, the expectation was that air defenses might be "avoided altogether and

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[69] FM 100-5 *Operations*, (Washington, D.C.: Department of the Army, 1982), available from The Center for Army Lessons Learned Public Archives website https://calldbp.leavenworth.army.mil accessed 1 Mar 2005, 2-1.

[70] Ibid, 7-6.

[71] Maj Charles Barry, "Planning Aviation Cross-FLOT Operations," *United States Army Aviation Digest* (January 1884): 38.

[72] Ibid, 37.

penetrations made in the gaps between enemy formations.[73] Even if air defenses were found throughout the depth of a given attack, there was confidence that attack helicopters could "run the gauntlet" by using proper tactics and equipment.[74]

The doctrinal distance traveled by attack aviation with regard to its original role as essentially a CAS aircraft was considerable by the time of Desert Storm. Now described as "close operations," these missions were viewed as presenting "the most difficult challenges to attack helicopter units" not because of enemy threats but because of the issues involved in integration with the ground scheme of maneuver.[75] Close operations even had much in common with deep attack, whereby attack helicopters might be integrated into a division or brigade level plan but execute missions not in direct coordination with a ground unit. In other words, instead operating deep independently they would operate independently closer to the FLOT.

The development of attack helicopter doctrine prior to Desert Storm had covered significant ground. Attack helicopters were introduced as a way of compensating for a perceived lack of CAS as supplied by the Air Force. The Army went to great lengths to get around a variety of agreements on roles and missions that should have limited their ability to supply CAS to themselves. At times they simply disregarded these agreements or used different terminology in order to justify their actions. Their efforts eventually paid off with the procurement of dedicated attack helicopters designed with the express purpose of fire support. At the same time, however, Army doctrine changed and attack aviation proponents began to carve out their own unique niche on the battlefield. No longer would they merely support the ground force, as the Army had desired of the Air Force. Rather, they would become an airborne maneuver force of the Army, conducting deep attacks in enemy's rear, which the Air Force was already willing to do in the form of air interdiction. The advantage for the Army was that attack helicopters belonged to Army commanders not the Air Force and could thus be controlled and tasked for these missions with greater ease. Still, Army attack aviation had in some ways become more

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[73] Allen, 38.

[74] Edward Bavaro, "Running the Gauntlet," *United States Army Aviation Digest* (October 1986): 34.

[75] Lt. Gen. Crosbie Saint and Col. Walter Yates, "Attack Helicopter operations in the AirLand Battle: Close Operations," *Military Review* (June 1988): 8.

like the Air Force than another branch of the Army. Deep attack would get its first test in Desert Storm, and the expectations were high according to the commander of the Army Aviation Center on the eve of war:

> Massed attack helicopter formations of brigade size and larger will combine the elements of speed, surprise, and lethality with a marked night-fighting advantage over the enemy…Massed attack helicopter formations provide the corps commander a maneuver asset that can influence the operational level of war, well before ground force engagement is possible.[76]

C. THE IRAQI THREAT

The Iraqi threat in Desert Storm was generally based on the same Soviet weapons systems the Army had been studying throughout the Cold War. This was especially true in the area of air defense on the battlefield. The Iraqis employed mobile surface-to-air missile (SAM) systems such as the SA-9 and SA-13 along with MANPADs such as the SA-7, SA-14, and SA-16.[77] These systems were guided either by radar or by tracking the IR signature of the aircraft. In addition to the missile threat, the Iraqis employed a wide variety of antiaircraft AAA from heavy machine guns to mobile 57mm systems to include some systems with radar guidance.[78] Overall, the U.S. military expected to face about 3700 dedicated AAA systems and some 10,000 heavy machine guns in the Kuwait theater of operations (KTO).[79] One significant disadvantage for the Iraqis was their relative lack of night capability. Although their radar systems would be unaffected at night, when turned on they risked being detected by aircraft employing anti-radiation missiles specifically designed to destroy them. The rest of the AAA and the IR guided SAMs required visual acquisition before the target could be engaged which presented a problem for night operations.

Given the featureless terrain in the KTO, attack helicopters would be able to fly very low, but there would be very little in the way of ridges or hills to hide behind, as

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[76] Major General Rudolph Ostovich III, "Army Aviation in AirLand Battle Future", *Military Review* (February 1991): 28.

[77] *Conduct of the Persian Gulf War: Final Report to Congress,* (Washington D.C.: Department of Defense, 1992), 12.

[78] Ibid.

[79] Brig. Gen. Robert Scales, Jr., *Certain Victory: United States Army in the Gulf War*, (Washington D.C.: Office of the Chief of Staff, U.S. Army, 1993), 116.

envisioned by the preferred NOE tactics. A properly camouflaged and concealed enemy would be extremely difficult to detect while the aircraft would be relatively easy to see. On the other hand, moving vehicles in a flat desert landscape would be vulnerable to detection from great distances. In addition, the Apaches were equipped with electronic countermeasures that would assist them in recognizing and defeating radar and IR guided threats. In any event, for Apaches executing deep attacks it would be essential to take advantage of night and the nonlinear battlefield in order to avoid Iraqi air defenses.

D. THE GROUND WAR

The overall plan by the Army was to eject the Iraqis from Kuwait by employing two corps, XVIII Airborne Corps and VII Corps, in a wide single envelopment of Iraqi forces in Kuwait and southern Iraq.[80] Helicopters of all kinds featured prominently in the plan because of the significant distances both corps had to travel in order to complete the envelopment. Mobility was key whether providing resupply or directly attacking Iraqi forces. The plan was designed to quickly unhinge the bulk of Iraqi forces, oriented to expect an attack into southern Kuwait, and was felt by some to be the embodiment of the AirLand doctrine established nearly twenty years before. While the heavily mechanized VII Corps was the focus of effort with its armored divisions seen as the primary killing force, both corps also featured significant attack helicopter forces. In fact, 274 Apaches, nearly half the Army inventory, deployed in support of Desert Storm.[81]

Ironically, Apaches fired the first shots of the war and opened the door for Coalition air attacks to begin. The mission was to destroy Iraqi early warning radars deep in the desert but near enough to the Saudi/Iraqi border for the Apaches to reach the site. The mission was assigned to the Apaches because a Special Forces ground attack might be compromised before the mission could be completed and an attack by cruise missiles or Air Force strike aircraft would not provide the necessary confirmation the targets had been destroyed.[82] The mission was actually coordinated and controlled by Special Operations Command, Central Command and more properly fit in the realm of special operations than deep attack. Still, it featured some of the capabilities that made the

[80] Scales, *Certain Victory,* 128.

[81] *Conduct of the Persian Gulf War,* 669.

[82] Edward Flanagan Jr., *Lightening: The 101st in the Gulf War*, (Washington D.C.: Brassey's, 1994), 117.

Apache suited for deep attack, including the ability to move undetected over long distances and still deliver a significant payload of ordnance.

For XVIII Airborne Corps, operations against Iraqi forces began on 15 February 1991 when Apaches began conducting a series of reconnaissance missions designed to test Iraqi border defenses and check the routes that ground forces intended to use once the invasion itself began on 24 February.[83] These attacks were generally conducted in concert with other air assault helicopters carrying infantry or mobile forces on the ground. The first major deep attack of the war involved two battalions of Apaches, 23 aircraft total, from the 82 Airborne Division hitting two separate objectives nearly 100 kilometers inside Iraq on 18 February.[84] These attacks were designed to destroy Iraqi forces near an airfield intended to be used as a forward operating base during the invasion and were repeated two nights later supported by artillery.

In VII Corps' sector, similar activities were taking place with the largest attack combining the fires of five artillery battalions and the equivalent of one battalion of Apaches in the early morning of 16 February.[85] This attack was not as deep as some of those carried out by XVIII Corps but its purpose was different as well. It was intended as a feint to confuse the Iraqis as to where the corps would cross the border and it was also specifically used as "a carefully rehearsed drill for later deep attacks."[86] As a result, it combined many of the desired supporting arms for deep attack to include the artillery and electronic warfare aircraft designed to provide suppression of enemy air defenses (SEAD).

Thus, as XVIII Airborne Corps and VII shaped the battlefield in their respective sectors, they demonstrated the flexibility of attack helicopters to carry out both close and deep operations nearly simultaneously. They used these opportunities to perfect and rehearse deep attack concepts that had never been tested in combat and the results were encouraging. Nonetheless, the resistance met was light and came from the less capable

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[83] Scales, *Certain Victory,* 198.

[84] Ibid, 198.

[85] Stephen Borgue, *Jayhawk! The VII Corps in the Persian Gulf War*, (Washington D.C.: Department of the Army, 2002), 161-162.

[86] Ibid, 162.

Iraqi units stationed in the border area. There was little in the way of a concerted air defense and the confusion present during a full attack was also absent. Even after the ground invasion however, the Iraqis showed little inclination to adjust their tactics to meet the threat of deep attack.

For much of XVIII Airborne Corps, the beginning of the ground war on 24 February meant air assault operations deep into the Iraqi desert west of Kuwait. The corps' overall mission was to secure Highway 8 as it ran out of eastern Iraq toward Baghdad in order prevent Iraqi forces from using it either to reinforce or retreat.[87] The commander of the 101st Airborne

Division supported this plan by inserting the bulk of the division 100 kilometers into Iraq virtually astride the highway in order to create a forward operating base (FOB) capable of supporting attacks by his Apaches against the highway and points east.[88] With this complete, the Apaches began patrolling the highway for Iraqis but few were encountered over the next two days. By 27 February, the 101st had pushed elements east in order to establish a new FOB close enough to hit targets in the vicinity of Basrah, a key city and road junction for Iraqi forces attempting escape to the north. In the afternoon, two brigades of Apaches, consisting of 64 aircraft total, flew 145 kilometers and attacked the highway north of the city for four hours. They destroyed 70 vehicles, 8 multiple rocket launchers, 2 SAM radars.[89] While the Apaches encountered mainly support vehicles and not the massed armor they had hoped for, the attack still served to close the highway as an escape route for those forces further south. The final deep attack by XVIII forces occurred on 2 March after the official ceasefire when a Republican Guard division attempted to breakout of the pocket of trapped Iraqis. As elements of the Iraqi division attempted to cross a lengthy causeway through a swamp, 18 Apaches of the 24 Infantry Division attacked and destroyed 102 vehicles.[90]

On the night of 26-27 February, VII Corps Apaches carried out their own devastating deep attack against an Iraqi armored division. A battalion of aircraft weaved

87 Scales, *Certain Victory,* 129.

88 Ibid, 217.

89 Ibid, 303.

90 Ibid, 314-315.

between two major armor battles as it passed the FLOT and flew a further 40 kilometers to make the attack.[91] Over the course of the next four hours it destroyed 53 tanks and 35 armored personnel carriers.[92] The attack was so effective it caused the rest of the Iraqi division to simply abandon their positions and vehicles.

It would seem apparent from this sampling of major deep attacks during Desert Storm that attack helicopter doctrine as it had developed during the previous two decades had been vindicated. Though there had been some close operations similar to CAS, attack aviation had been primarily used in large numbers, usually at the battalion level, in order to support either corps or division level objectives. Apache units proved the ability to operate in a fairly dense air defense environment taking advantage of their night capability and aircraft systems to diminish the threat to the point it was ineffective. Survivability was not an issue since only one Apache was lost to Iraqi fire during the war. Before passing final judgment, however, it will be useful to look at how the Marine Corps developed its doctrine and employed its attack helicopters during Desert Storm.

E. THE EVOLUTION OF MARINE CORPS ATTACK HELICOPTER DOCTRINE

A discussion of Marine Corps attack helicopter doctrine leading up to Desert Storm involves little of the drama that surrounded the conflict between the Army and the Air Force concerning roles and missions on the battlefield. Neither does it involve discussions over issues such as whether attack helicopters are better suited to missions such as deep attack or CAS. This is fundamentally because Marine Corps doctrine writ large has always espoused the centrality of the infantry and the supporting role all other functions of the Marine Corps play in ensuring the infantry's success. The first Marine Corps aviator, Alfred Cunningham, epitomizes this attitude: "'the only excuse for aviation in any service is its usefulness in assisting the troops on the ground to successfully carry out their operations.'"[93] Though this idea was somewhat altered by the introduction of maneuver warfare in the years just prior to Desert Storm, its essence

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[91] Borgue, 313.

[92] Ibid.

[93] Quoted in Peter Mersky, *U.S. Marine Corps Aviation: 1912 to the Present*, (Baltimore: The Nautical and Aviation Publishing Company of America, 1983), 13.

remained. Thus if an aircraft was designed to deliver fire support, regardless if it was rotary or fixed-wing, its primary mission was seen as CAS.

By the time the helicopter began appearing on the battlefield in large numbers during Korea, the Marine Corps had wide experience with CAS. Marine Corps aviation had played a largely tactical role during the entirety of World War II, flying in support of amphibious landings and further operations ashore. Because weight was always an issue when conducting such operations, the Marine Corps relied on naval gunfire and aircraft to supplement a relative weakness in organic artillery and armor. Additionally, given the relatively small size of the islands attacked and the Navy's presence, there was little call for air interdiction on a large scale as there had been in Europe. The effectiveness of the Marine Corps CAS system as opposed to Air Force's "came as a revelation to the Army officers" who experienced it during the early months of the war in Korea.[94]

The Marine Corps began thinking about arming helicopters almost as soon as it acquired its first aircraft in the late 1940s and conducted unsuccessful tests shortly thereafter.[95] Attempts continued during the late 1950s and generally centered on experiments involving transport helicopters modified to carry various kinds of ordnance, including guns, rockets, and missiles.[96] What little controversy did arise from Marine efforts to create an armed helicopter came from within the Marine Corps during the early part of the Vietnam War. For the most part, opposition centered on the idea that helicopter operations in Vietnam had loomed unusually large only because fixed-wing aircraft were hampered by restrictive rules of engagement.[97] Further, the Marine Corps lacked the fiscal resources to pursue attack helicopters the way the Army had regardless the need. Helicopter pilots who had already been to Vietnam however, clearly saw a need for armed helicopters to escort transport helicopters and provide support to troops on the ground. As the war intensified and the Marine Corps committed more of its

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[94] Allan Millett, Korea, in *Case Studies in the Development of Close Air Support*, ed. Benjamin Cooling, (Washington D.C.: Office of Air Force History, 1990), 367.

[95] William Fails, *Marines and Helicopters, 1962-1973*, (Washington D.C.: History and Museums Division, U.S. Marine Corps, 1978), 85.

[96] Ibid, 85.

[97] Ibid, 86.

resources, the issue was settled and the Marine Corps procured the same AH-1 Cobra that the Army had.[98] The aircraft were flying in Vietnam by 1969 and providing helicopter escort and CAS thereafter.

The Marine Corps acquired improved versions of the Cobra throughout the 1970s and 1980s, ending with AH-1W Super Cobra, but there was little or no change in its fundamental mission. Unlike the Army's evolving doctrine, the Marine Corps remained committed to a doctrine based on amphibious warfare and integrated air-ground operations. Like the Army however, the Marine Corps was reluctant to describe the mission of its attack helicopters as CAS and instead referred to it as close-in fire support.[99] Close-in fire support was considered "air action unique to helicopters against hostile targets which are normally in closer proximity to friendly forces."[100] The word "closer" was in comparison to hostile targets that were already in "close proximity to friendly forces" when being engaged by CAS. The definitions of each mission were otherwise essentially identical, including a requirement for "detailed integration" with friendly forces.[101] The mechanisms by which CAS and close-in fire support were requested were essentially the same, as were the larger conceptual principles behind their employment. For instance, because these were operations in close proximity to and in direct support of friendly forces, both fixed-wing aircraft and attack helicopters required positive clearance from a terminal controller observing the battlefield before releasing ordnance.[102]

In practical terms then, there was little difference between close-in fire support and CAS. Close-in fire support was different from the Army's concept of close operations because it required detailed integration with friendly forces. Close operations carried no such stipulation given that they were often intended as independent actions in spite of their proximity to friendly forces.

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98 Fails, 153.

99 *FMFM 5-4A Close Air Support and Close-In Fire Support*, (Washington D.C.: Headquarters, United States Marine Corps, 1988), 1-2.

100 Ibid, 1-2.

101 Ibid, 1-2.

102 Ibid, 4-12, 5-7.

Going into Desert Storm, Marine Corps attack helicopter aviation didn't have a new doctrine to test as the Army did. Rather, it was simply looking to provide the same kind of support it always had though on a potentially much more lethal battlefield. Attack helicopter units would have prove they could survive the Iraqi threat and still provide useful support to ground forces.

F. MARINE COBRAS IN COMBAT

While the Army was busy enveloping the Iraqi forces in the KTO from the west, the Marine Corps was to attack directly into southern Kuwait in order to hold the Iraqis in place. The mission would require slower initial movement through the main Iraqi defenses and, because of the Marines' relative lack of armor compared to the Army, significant CAS and close-in fire support. The Iraqi threat in the Marine area of operations was essentially the same as that experienced by the Army, with few exceptions. The Marine Corps also deployed about half its fleet of Cobras to the KTO, though this number only totaled 50 aircraft.[103]

While Cobras would use the same basic flight tactics as the Apaches, including NOE flight profiles to avoid enemy air defenses, they would not generally be used in the same numbers to accomplish their missions. Typically they would be employed in flights of four aircraft, which would still generally allow them to provide significant firepower for the units they were supporting. The Marine Cobras lacked a night targeting system which degraded but did not negate their effectiveness during periods of darkness. FACs were distributed down to the company level throughout Marine Corps combat units, and gave the terminal clearance necessary for aircraft to provide close-in fire support or CAS. The resulting operational profile for Marine attack helicopters could not have been more different from that of Army attack helicopters. Flights of Cobras were far smaller, worked at a lower tactical level, and usually worked directly for a controller on the ground who would help identify appropriate targets.

Because the Marine Corps largely retained control of its fixed-wing attack aircraft during the air campaign, it was able to target those Iraqi positions in Kuwait that it felt were most threatening to its intended scheme of ground maneuver. This precluded having to employ attack helicopters and long-range artillery the way the Army had in the

[103] *Conduct of the Persian Gulf War,* 666.

days leading up to the ground campaign. Nevertheless, Iraqi forces themselves helped Cobras get in the fight early by attacking the town of Khafji, approximately 10 kilometers south of the Saudi/Kuwait border on 29 January.[104] The attack was by a mechanized brigade and unexpected, which led the Coalition Arab forces occupying the city to abandon it. However, a small group of Marines remained to direct air strikes around the city while others worked with the Arab units to retake the city.[105] Flights of four Cobras worked with FACs in and around the city continuously over the course of three days, contributing to the defeat of the attack and the destruction of the attacking Iraqi brigade. The CAS and close-in fire support also had an effect on the confidence of the Coalition forces according to one FAC:

> …we had Cobras at our side all day and ran about five fixed-wing CAS missions into the city…The [Saudi's] learning curve was pretty steep…They got to the point where they got very confident that they could fight a ground fight against the Iraqi. Mainly because if anything went wrong they always felt air was there to help them.[106]

When the ground campaign began on 24 February, close-in fire support from the Cobras was critical for ground forces because the thick smoke from burning oil wells often precluded using fixed-wing CAS. As a result, flights of Cobras were constantly supporting the two main thrusts of the Marine attack as they moved north. On 25 February, a single flight of four Cobras single-handedly stopped a counterattack by an Iraqi mechanized brigade in spite of severely degraded environmental conditions.[107] Similar actions took place nearly continuously during the three days of fighting it took the Marines to secure their objectives.

There were problems with the employment of the Cobras but they were relatively minor and usually had to do with the severely restricted visibility on the battlefield. In the end, however, much like the Army, the Marine Corps could claim success for its attack helicopter doctrine in the aftermath of Desert Storm. Cobra units proved to be

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[104] Leroy Stearns, *U.S. Marines in the Persian Gulf, 1990-1991: The 3D Marine Aircraft Wing in Desert Shield and Desert Storm*, (Washington D.C.: History and Museums Division, U.S. Marine Corps, 1999), 123.

[105] Ibid, 124-125.

[106] Quoted in ibid, 125

[107] Ibid, 159.

exceedingly flexible, operating in environmental conditions for which they lacked both the proper aircraft systems and any kind of prior experience. The Marine Corps lost no Cobras to enemy action during the war in spite of a theoretically capable Iraqi air defense threat. Though few firm figures are available, anecdotal evidence suggests Marine Corps Cobras destroyed well over 100 Iraqi vehicles or pieces of equipment. Finally, they provided the psychological boost ground forces have always enjoyed when attack aircraft are literally overhead.

G. WAS DESERT STORM TOO SHORT?

Desert Storm has sometimes been referred to as the "100 Hour War" because of the brief length of the ground phase. While this obviously fails to take into account the air phase that went on for over a month prior to the ground war, it suggests that the lessons derived from such a short period of combat should be viewed with caution. Certainly the success of both Army and Marine Corps attack helicopters are readily apparent. Yet this does not necessarily make the doctrine so. Of the two, Marine Corps doctrine can accurately be viewed as merely an extension of CAS doctrine, which had been continuously refined since World War II. The major issue for Marine doctrine was to prove that attack helicopters could provide effective support in conventional war, in addition to the kind of low-intensity combat generally experienced in Vietnam. For the Army, deep attack represented an entirely new way of using the attack helicopter that was, in essence, divorced from its roots. It was critical that it be viewed as successful in order to fit the Army's overall AirLand Battle doctrine. It is unclear that Desert Storm provided sufficient time for either doctrine to be adequately tested.

Other issues that call into question accepting these doctrines at face value include the relatively poor performance the Iraqi military. Although it is a fine line deciphering whether an army performed poorly because of its opponent's strengths or because of its own weaknesses, it seems apparent the Iraqis quickly lost the will to fight. In many of the examples cited in this paper, the initial contact between U.S. and Iraqi forces caused the Iraqis to either abandon their equipment and flee or attempt to surrender to the helicopters themselves. Debriefs from the large numbers of captured Iraqi prisoners

indicated a decided lack resolve.[108] The quick collapse of the Iraqi Army also prevented any kind of learning process from taking place or attempts to adapt their efforts to counter attack helicopter tactics. The result was that both deep attack and close-in fire support were made to look relatively easy along with the U.S. military's overall effort. In some sense however, Desert Storm marked not the end of the conflict with Iraq but more of a beginning. Attack helicopters would again be tested in Iraq during Operation Iraqi Freedom and that experience would offer a far greater test for both doctrines.

[108] Thomas Keaney and Eliot Cohen, *Revolution in Warfare: Air Power in the Persian Gulf*, (Annapolis, MD: Naval Institute Press, 1995), 94.

IV. OPERATION IRAQI FREEDOM

A. INTRODUCTION

Between the end of Operation Desert Storm and the beginning of Operation Iraqi Freedom attack helicopters and associated doctrine in the U.S. remained focused around the missions of interdiction and CAS. Though the U.S. Army continued to acknowledge that attack helicopters could play a role in CAS-like operations, there seemed to be little reason to stray far from what had been an apparently successful approach in deep attack. Rather, the capability of the Apache in this role would grow in the minds of many in spite of a renewed focus on low-intensity conflict, which followed the dissolution of the Soviet threat. The deployment of Task Force Hawk to support operations in Kosovo exemplified this emphasis on the Apache and deep attack. The results of Task Force Hawk, however, called into question the doctrine of deep attack and revealed that potential enemies had absorbed the lessons of Desert Storm with respect to employment of airpower and attack helicopters on the battlefield. The U.S. Marine Corps continued to emphasize CAS as the role of choice for its attack helicopters but also began expanding their operational envelope to include missions termed deep air support (DAS). The role of attack helicopters in both interdiction and CAS was formalized at the joint level in the joint doctrine that emerged throughout the 1990s.

Operation Iraqi Freedom (OIF) represented an opportunity to again test attack helicopters in combat in both conventional and unconventional warfare. Like the enemy in Kosovo, however, the Iraqis learned from Desert Storm and the nearly continuous sparring with U.S. and British airpower since the end of that conflict. As a result, of the two major deep attacks during the invasion phase of OIF, one resulted in complete failure and the other in modest success at best. CAS operations had a better track record and received more emphasis because of the nature of the combat both during the invasion and subsequent counterinsurgency operations.

B. REFINING THE DOCTRINE

Desert Storm occurred virtually simultaneously with demise of the Soviet Union as the major military threat to U.S. interests. As a result, the military fought that war largely on the basis of doctrine designed to meet the Soviet threat. There had been little

time to recognize, much less digest and respond to, the crumbling of the Soviet empire. Nonetheless, as early as the 1982 edition of *Operations* there was recognition that conflict such as insurgency was an entirely possible form of warfare in which the Army might find itself engaged.[109] Still, virtually the entire manual was geared toward facing the conventional Soviet threat. The 1986 edition of *Operations* laid out a spectrum of conflict from high- to medium- to low-intensity that would challenge the Army in the future.[110] While low-intensity conflict was formally introduced, there was little practical discussion of it and the publication overwhelming remained focused on high- and mid-intensity conflict.

The next edition of *Operations* in 1993 reflected "Army thinking in a new, strategic era" and recognized that the Cold War and attendant Soviet threat had passed.[111] This doctrine contained more discussion of issues pertinent to low-intensity conflict such as operations other than war and the necessity for tailoring Army forces for such operations. Still, it makes clear that "the Army's primary focus is to fight and win the nation's wars" with the implication that such wars are of the high- and mid-intensity variety. Thus, although low-intensity conflict was seen as increasingly likely, Army doctrine, in essence, clung to the past.

Even before *Operations* (1993) publication however, aviation related doctrinal publications also began to recognize that all aspects of Army aviation might be required to participate in low-intensity operations. *FM 1-100, Doctrinal Principles for Army Aviation in Combat Operations* (1989) accepted that "most Army doctrine, tactics, training…focus on Soviet and Warsaw Pact forces in mid-to high-intensity conflict. However, low-intensity conflict remains the most likely form of future combat operations."[112] Predictably, the rest of the manual remained overwhelming oriented on

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[109] *Operations*, (1982), 1-2.

[110] FM 100-5 *Operations*, (Washington, D.C.: Department of the Army, 1986), 2.

[111] FM 100-5 *Operations*, (Washington, D.C.: Department of the Army, 1993), vi.

[112] *FM 1-100, Doctrinal Principles for Army Aviation in Combat Operations,* (Washington, D.C.: Department of the Army, 1989), 1-12.

high- to mid-intensity conflict and, specific to attack helicopters, emphasized that the "main purpose of Army aviation attack operations is to defeat enemy armored, mechanized, and helicopter forces."[113]

The next edition of *FM 1-100, Army Aviation Operations* (1997*),* however, made a large doctrinal leap. It stated that "the primary purpose of attack helicopter operations is the destruction of enemy ground forces at decisive points. Attack units can conduct deep operations or be used in conjunction with ground maneuver units during close battle operations. For cross-component support, Army attack helicopters, usually tasked as units, can perform a close air support (CAS) function."[114] Further, *Joint Pub 3-09.3 Joint Tactics, Techniques, and Procedures for Close Air Support (CAS)* was published in 1995 as part of wider effort to unify and standardize doctrine in the U.S. military and it contained a section devoted specifically to the employment of Army attack helicopters. Army aviation thus seemed to have fully accepted not just the idea of close battle but outright CAS. Yet the most recent version of *FM 1-112 Attack Helicopter Operations* (1997), the manual most specifically devoted to the role of attack helicopters, makes no mention of CAS as a potential role. It does address close operations but, as was the case in earlier doctrine, such missions lack the emphasis on air-ground coordination inherent in CAS.[115] To be sure, all the Army doctrinal publications stress the importance of integrating attack helicopters with the ground scheme of maneuver but the context usually revolves around striking massed enemy armor or vehicle formations rather than targets already in direct contact with friendly forces. While potentially relevant for the high- or mid-intensity warfare, such operations had little relevance in the low-intensity conflicts that were increasingly believed to be the future for Army operations. Thus, while the Army appeared to acknowledge in its doctrine that war would likely be fought differently post-Cold War, it had a difficult time translating that fact into the realm of attack helicopters.

For the Marine Corps, the period between Desert Storm and OIF was also a chance to refine its doctrine. It did this by formalizing CAS as the primary role for its

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[113] *FM 1-100* (1989), 2-15

[114] *FM 1-100, Army Aviation Operations,* (Washington, D.C.: Department of the Army, 1997), 2-5.

[115] *FM 1-112, Attack Helicopter Operations*, (Washington, D.C.: Department of the Army, 1997), 1-1.

attack helicopters as well as expanding into potential interdiction missions. Although the Marine Corps continued to refer to close-in fire support in doctrinal publications for some time after Desert Storm, by 1998 the term was eliminated and CAS was applied to both to both fixed-wing and rotary-wing aircraft.[116] Though this was essentially cosmetic in terms of functionality since close-in fire support had mimicked CAS in every regard, it also followed the lead of the joint doctrine, primarily *Joint Pub 3-09.3 Joint Tactics, Techniques, and Procedures for Close Air Support (CAS*), that was being promulgated at the time. The complete acceptance of CAS as a mission for attack helicopters is logical given the Marine Corps' organizational experience with the concept and the prevailing wisdom concerning low-intensity conflict, which the Marine Corps also accepted.

In addition to its traditional focus on CAS for attack helicopters, the Marine Corps also expanded into what it called deep air support (DAS), which it defined as "air action against enemy targets at such a distance from friendly forces that detailed integration of each mission with fire and movement of friendly forces is not required."[117] DAS was further subdivided into air interdiction and armed reconnaissance with the major distinction between the two being whether target location was known, air interdiction, or unknown, armed reconnaissance. Although DAS had originally been the purview of fixed-wing aircraft, Marine Corps and Army experiences during Desert Storm widened the field to include attack helicopters as well. In contrast to the massed helicopter formations of deep attack, the Marine Corps recommended only a flight of four aircraft as optimum for DAS.[118] While such rules of thumb are obviously flexible, they reflect the difference in assets available to each service. Also while deep attack doctrinally focused on forces not yet in the area of the FLOT, DAS could be accomplished against targets in close proximity to the FLOT yet not in contact with friendly forces. Hence the line between DAS and CAS was not so nearly well defined as between deep attack and CAS.

Although there were a few operations during the 1990s that allowed the U.S. to employ attack helicopters for CAS, they were limited in scope and duration and did little

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116 *MCWP 3-23.1 Close Air Support*, (Washington, D.C.: Department of the Navy, 1998)

117 *MCWP 3-23.2 Deep Air Support*, (Washington, D.C.: Department of the Navy, 2001), 1-2.

118 Ibid, 4-15.

to affect what was already a proven mission area. The experience of Task Force Hawk during operations in Kosovo, however, led to widespread analysis of deep attack.

C. TASK FORCE HAWK

In April1999, the U.S. Army deployed a 5,500-man task force built around 24 Apaches to Macedonia as part of Operation Allied Force in order to conduct deep operations against Yugoslav forces in Kosovo. Task Force Hawk was designed to complement ongoing air operations by targeting dispersed Yugoslav units that fixed-wing strike aircraft were having difficulty locating. In the end, elements of Task force Hawk contributed to combat operations but the Apaches did not. Although this was partially related to policy differences between U.S. civilian and military leaders, as well as within the NATO alliance, there were also operational and tactical difficulties related to the doctrine of deep attack that prevented Task Force Hawk from being used as intended.

Most of the problems associated with executing deep attacks in Kosovo were related to the ability of Yugoslav forces to adjust their tactics to counter both fixed-wing and, potentially, rotary-wing attacks. The Yugoslav air defense capability was similar to that of the Iraqis and included a variety of guided and unguided missile and gun systems. Though many systems had been neutralized by the time Task Force Hawk deployed, the low-altitude threat remained significant. The Yugoslavs also had extensive operational experience from previous Balkan wars and had obviously observed Iraqi experiences in Desert Storm. In countering American air attacks, it was clear that ground forces stood the best chance of survival when they limited movement during good weather and dispersed among natural and man-made cover.[119] Thus, while fixed-wing aircraft were able to deal with immobile strategic targets such as airfields and bridges, tactical formations concealed in tree lines or villages presented a greater challenge in detection, identification, and targeting. This was the primary reason General Wesley Clark requested the deployment of Task Force Hawk, which he believed would be able to effectively target the Yugoslav forces using deep attack.[120]

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[119] Maj Mark Segovis and CPT Robert Salvatore, "Deep Operations Coordination Cell" in *CALL Newsletter* No. 00-8, August 2000, 24.

[120] General Wesley Clark, *Waging Modern War*, (New York: PublicAffairs, 2001), 198.

The dispersed nature of the Yugoslav units, however, did not conform to deep attack doctrine, which sought to employ Apaches against massed, preferably moving, vehicles. This was recognized by the Task Force Hawk planners who proposed attacking elements of four or five aircraft to offset the Yugoslav dispersion.[121] Though also potentially at variance with doctrine, this technique seemed to be the best method to economically cover the battlefield and deal with the constricting nature of the mountainous terrain. In order to suppress the air defense threat, Task Force Hawk planned to employ long-range rockets and fixed-wing aircraft along ingress and egress routes and objective areas, as required by doctrine. To be truly effective however, these fires would require precise and timely intelligence. Otherwise they would have to be employed over a wide area, since the remaining air defense assets were so difficult to detect.

This presented perhaps the main operational obstacle to using the Apaches. Precise, timely intelligence on mobile AAA, MANPADs, and small arms was essentially impossible to obtain before the Apaches were already in the operating area. Though dedicated SEAD or the Apache themselves could reactively target such systems, this would take time and make attacks on the original targets less effective or impossible. The alternative, saturating route corridors and objective areas with SEAD, might cause prohibitive civilian casualties and still not ensure adequate suppression. This was a problem not faced in Desert Storm because there were few civilians on the battlefield, the terrain offered less potential for concealment, and the Iraqis lacked a meaningful air defense.

Whether the introduction of a ground force may have changed the equation and forced the Yugoslav forces into the open is less than clear. Certainly deep attack was envisioned as operating in the context of larger ground actions and these were absent in this case. Nonetheless, a disciplined enemy on the defensive, which the Yugoslavs appeared to be, would likely maintain dispersed, static positions for as long as possible in the areas deep attacks were intended to operate. Even were they to move, the problem of difficult to target mobile air defense systems would remain.

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[121] CW4 Clay Santini, "Attack Helicopter in Deep Operations" in *CALL Newsletter* No. 01-5, March 2001, 7.

Most of the after-action reviews of Task Force Hawk indicate that the participants believed they had a good plan and could have been successful had Apaches been employed. The deputy task force commander went so far as to say they could have "'taken [the Yugoslav army] out, and I don't think we would have lost anybody.'"[122] However, senior Army leaders openly questioned this and believed the potential vulnerabilities involved outweighed any potential gain.[123] The failure to see this difference of opinion in terms of a larger doctrinal issue would have serious consequences during the execution of OIF.

D. DEEP ATTACK AND INTERDICTION IN OIF

The war plan that formed the basis for military operations during OIF called for "speed and momentum" as the keys for defeating Iraqi forces.[124] Two major forces would attack out of Kuwait toward Baghdad. The Army's V Corps would skirt the western edge of the Tigris and Euphrates river valleys and I Marine Expeditionary Force would advance through the eastern portions of river systems. For each force, the goal was to close on Baghdad as quickly as possible establishing a series of forward operating bases and forward arming and refueling points (FARP) designed to sustain ground and aviation forces as they attacked. The most potent Iraqi units were thought to be Iraqi Republican Guard divisions at least one of which, the Medina Division, lay between V Corps and Baghdad in the vicinity of Karbala.[125]

The 11th Attack Helicopter Regiment (AHR), which consisted of 61 Apaches, was supposed to play a key role in the Medina Division's destruction by executing deep attacks designed to destroy the division's armor and artillery before friendly ground forces ever made contact with them.[126] This was all the more vital because the overall invasion began short of the forces V Corps desired, meaning that fire support assets like the Apache would be critical in compensating for this lack of ground combat power. Ironically, the 11th AHR was also the unit that had deployed to Albania as the core of

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[122] Dana Priest, "Risks and Restraint: Why the Apaches Never Flew in Kosovo," *The Washington Post*, 29 December 1999 available from Proquest at http://proquest.umi.com accessed 4 May 2005.

[123] Clark, 278.

[124] Gen Tommy Franks, *American Soldier,* (New York: HarpersCollins Publishers, 2004), 396.

[125] Fontenot et al, 100.

[126] Ibid, 180.

Task Force Hawk 1999. The mission as assigned was in accordance with classic deep attack doctrine but a number of issues related to doctrine, planning, and execution led to complete failure.

The 11th AHR executed its initial attack from a FARP called Objective Rams in the Iraqi desert southwest of Najaf. Originally it was thought that two nights of attacks would be required to fully accomplish the Medina mission.[127] Rams had only recently been established when the Apaches began arriving on 23 March but planning for the mission had been going well before the invasion had begun on 20 March. A forecast sandstorm and V Corps' rate of advance caused the Medina attack to be moved up one day to the night of 23-24 March.[128]

Although Rams had been established, it was hardly secure in military terms and at least some Iraqis were detected in its vicinity observing operations.[129] This was certainly a lapse in operational security that might have cued the Iraqis but it seems unlikely that they could have developed their complete air defense plan in the roughly 8 hours available before the attack. Rather, based on what unfolded during the mission, it appears that the Iraqis studied Apache doctrine and employment in the wake of Desert Storm and created an air defense that, as in Kosovo, would be extremely hard to detect and effectively suppress. Although Coalition air operations between Desert Storm and OIF had done much to degrade radar guided, high-altitude air defense systems, the Iraqis still possessed essentially the same basic low-altitude weapons they had in Desert Storm. 11th AHR leaders and planners recognized this capability and even visualized to some degree how the Iraqis would employ it:

> …the summary assessed that air defense assets could be placed around schools, mosques, and hospitals, indicating Iraq's awareness of coalition attempts to avoid collateral damage. Finally, Hobart described Iraq's air defense ambush techniques along friendly routes, to include massing small-arms fires on low-flying and hovering aircraft.[130]

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[127] Fontenot et al, 181.

[128] Ibid, 184.

[129] Ibid, 184.

[130] Ibid, 183.

Nobody was able to forecast its effectiveness against deep attack however, and the commander of the 11th AHR commented that "'we still expected the enemy to look, smell, and taste and move like the enemy.'"[131]

The routing into the objective was intended to avoid known air defense assets and take advantage of sparsely inhabited terrain but the nature of the Iraqi countryside was deceiving.[132] Instead of open terrain, the routes passed over farming villages and suburban sprawl connected to the larger towns that were depicted on maps. The air defense systems that were detected and thus avoided were placed in areas west of Karbala that were largely uninhabited. By positioning their most visible air defense assets in this manner, the Iraqis dissuaded the 11th AHR from using this area to make their attack, leaving the more populated southern approaches apparently open.

Though the 11th AHR was lacking some equipment that would have allowed it to receive updated intelligence from V Corps on site at Rams, it did get a final update by radio on air defenses and targets providing what was believed to be "a 75 percent picture on enemy disposition."[133] Yet it was also clear that the Iraqis had dispersed their forces in order avoid air attack. This meant that not only were air defenses difficult to find but so was the armor and artillery that was supposed to be the focus of the Medina attack. Instead of having precise locations, the pilots would be forced to search for their targets within a given objective area. This technique had worked during Desert Storm when the Iraqis massed their forces and operated in considerably more open, unpopulated terrain. Against an enemy dispersed in terrain with both natural and man-made cover, it would be far more problematic. As it turned out, the intelligence picture was far less than the pronounced 75 percent.

The incomplete intelligence picture and well-designed Iraqi air defense meant that doctrinal SEAD in support of the mission would be problematic at best. The planning for fixed-wing support was deemed inadequate even before the mission by some of the participants but this probably reflects the paucity of precisely located suitable targets as

131 Sig Christenson, "Shot Down," *San Antonio Express News*, 22 March 2004, available online at http://www.mysanantonio.com/news/metro/stories/MYSA21.01A.Longbow_1_0321.7d24b3c.html accessed 6 Aug 2004.

132 Ibid, 183.

133 Ibid, 185.

well as the accelerated timeline.[134] V Corps also intended to fire 32 long-range missiles designed to dispense anti-personnel sub-munitions in support of the attack. Even given the considerable coverage of these weapons, this number was completely inadequate to carpet the routes and objective area with fire as required by the dispersed threat. Concerns about collateral damage precluded such a method of employment as well.

Ultimately 30 Apaches departed Rams in several different flights that took slightly different routes depending on the exact position of their final objective area. The number of aircraft was less than desired because of fuel availability issues at the FARP but it was still considered sufficient for the attack.[135] As the flights progressed north toward Karbala at low level, they received increasingly heavy small arms and light AAA fire from personnel in vehicles, buildings, and irrigation ditches. The missiles employed as SEAD impacted on time 30 minutes prior and obviously failed to suppress these threats.[136] The fire picked up considerably when the power grid in one of the towns along the route was turned off, then turned back on presumably as a signal to begin barrage fire.[137] Such a signal for potentially thousands of individuals would require significant prior coordination, further strengthening the idea that the Iraqis studied attack helicopter doctrine and devised specific tactics to counter it. The high level of ambient lighting and widespread fire partially stripped the Apaches of the advantage offered by operating at night. While some of the flights made it to their targets, the volume of fire and enemy disposition prevented them from finding and destroying any armor or artillery. Most Iraqi targets were engaged in self-defense and were personnel with small arms or manning light AAA weapons. When it became clear that the aircraft would be unable to accomplish the mission, the order was given to abort. Every aircraft on the mission received battle damage, one was shot down with both pilots captured, and several of the pilots were wounded. All but two of the 29 remaining aircraft were back in service

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[134] Sig Christenson, "Flight into Ambush," *San Antonio Express News*, 21 March 2004, available online at http://www.mysanantonio.com/news/metro/stories/MYSA21.01A.Longbow_1_0321.7d24b3c.html accessed 6 Aug 2004.

[135] Fontenot et al, 185.

[136] Ibid, 186.

[137] Christenson.

within a week, however.[138] Nonetheless, General Tommy Franks, the overall commander of OIF, thought it "a blessing we didn't lose the whole battalion."[139]

The essence of the problems with the Medina deep attack revolved around attempting to employ deep attack doctrine on a battlefield for which it was unsuited. Certainly the planning and logistical efforts could have gone more smoothly and the probable loss of tactical surprise led to heightened Iraqi readiness on the night of the attack. Yet the problems of target location, air defense location, and appropriate SEAD are extremely difficult to resolve for attack helicopters in the interdiction role.

The Army did conduct one other deep attack on 28 March and it benefited substantially from the 11th AHR's lessons learned though the results were less than devastating. Two battalions of Apaches from the 101st Airborne Division, which possessed 72 Apaches, carried out this deep attack. It was also against elements of the Medina Division in the vicinity of Karbala. Fixed-wing and surface based SEAD was planned in heavy concentrations and more closely coordinated to coincide with position of the Apaches at any given time. Within the flights of Apaches, some aircraft were dedicated to suppressing ground fire rather than attacking targets. Greater attention was paid to varying routes and ensuring the routes selected avoided inhabited areas and known air defenses.[140]

Although the Iraqis were unable to successfully employ similar air defense tactics against the 101st attack, they remained dispersed. The Apaches were able to reach their assigned objective areas with little significant damage and were thus successful by those measures. The objective of destroying a brigade of the Medina Division was not accomplished, however. The finally tally for all the assets employed including fixed-wing aircraft was "six armored personnel carriers, four tanks, five trucks, and a fiber-optic facility."[141] This total clearly indicates that Iraqi efforts at dispersion were successful and calls into serious question whether the effort and assets committed to the attack were worthwhile.

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[138] Fontenot et al, 190.

[139] Franks, 498.

[140] Fontenot et al, 193.

[141] Ibid, 195.

Marine Corps efforts at integrating their concepts of DAS with attack helicopter operations seem to have been limited. Without official narratives a complete examination is difficult but it appears that armed reconnaissance was employed in closer connection with CAS than with ideas about DAS or interdiction. Flights normally worked directly with FACs who might use them either for CAS or in an ad hoc local armed reconnaissance role. This helped extend the ground commanders view of the battlefield but hardly fit with DAS in a doctrinal sense.

There is some evidence to suggest that the Army and Marine Corps have used attack helicopters in an independent interdiction role since major combat actions related to the invasion ceased. They have almost undoubtedly been utilized as an economy of force asset to monitor areas where ground forces exist in small numbers. The border regions in particular offer the opportunity force such use but with the advent of high endurance unmanned aerial vehicles (UAV), attack helicopters would be a less than optimum asset for such activity. In addition, it is unclear that insurgent cross-border activities have been anything on the scale as that countered by Soviet attack helicopters in Afghanistan, for example. In that situation, it was clear that large numbers of personnel and equipment were entering the country from Pakistan. The level of activity and liberal rules of engagement (ROE) allowed Hinds to target these caravans freely until the advent of the Stinger missile. Thus far in Iraq, the insurgents have yet to organize their cross-border activity similarly and the ROE is almost certainly far stricter. Within the country, the insurgents' ability to blend in makes interdicting them solely with attack helicopters problematic at best.

E. CAS IN OIF

Rotary-wing CAS and variations thereof played a prominent, if less documented role than deep attack, in operations for both Army and Marine Corps during the invasion and insurgency phases of OIF. Though the Marine Corps had included attack helicopters in its DAS doctrine, Cobras were primarily used in their traditional CAS role. The outright failure of the 11th AHR's attack and the paltry results of the 101st Airborne's attack forced the Army to shift its emphasis for attack helicopters from deep attack to close operations. Though both services experienced significant success with their respective operations, they were not problem-free.

Marine Corps employment of Cobras during the initial stages of OIF largely mimicked their use during Desert Storm. This reflected the customarily strong relationship between aviation and ground forces in the Marine Corps and satisfaction with their employment as a CAS platform. A total of 62 Cobras deployed in support of operations.[142] Initially, flights of two to four aircraft would launch from secure bases in Kuwait or at sea and be directed by the aviation command and control system to support requests by ground units for CAS. These missions typically lasted from 8-12 hours with the aircraft landing at FARPs as required to re-fuel and re-load ordnance.[143] As ground forces advanced toward Baghdad, flights operated out of these FARPs for days at a time in order to provide proper support. This flexible cycle made attack helicopters available around the clock.

As indicated in the following passage from a Cobra pilot, these missions were not necessarily what might be termed pure CAS but a flexible combination of ad hoc local armed reconnaissance and CAS:

> Meeting up with the grunts near a river, we began to conduct reconnaissance forward of the friendly lines. To their north, we located an Iraqi artillery position. At the same time, the FAC wanted us to return to their position to engage some Iraqis that had camouflaged themselves near a large ditch embankment. Racing back to the Marines, we engaged the Iraqis with rockets and guns.[144]

The effects of Marine attack helicopter CAS have yet to be quantified except on an anecdotal basis. Nonetheless, the presence of Cobras was a top priority for one infantry battalion air officer: "'[My job] boiled down to getting Cobras to show up almost every day of the war…the grunts only wanted Cobras and I obliged.'"

After the attacks by the 11th AHR and the 101st Airborne, the Army shifted emphasis to close operations more akin to CAS than deep attack. This shift was unexpected according to the V Corps commander, Lieutenant General William Wallace, who said that Apaches "' didn't perform the same role that I envisioned for attack

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142 LtCol Michael Visconage and Maj Carroll Harris, *Third Marine Aircraft Wing: Operation Iraqi Freedom*, (Quantico, VA: Marine Corps Association, 2004), 19.

143 Capt. Allen Grinalds, "Cobras Rock in Iraqi Freedom," *Proceedings*, March 2004, 72.

144 Anthony Cordesman, *The Iraq War: Strategy, Tactics, and Military Lessons*, (Westport, CT: Praeger Publishers, 2003), 329-330.

aviation.'" after the deep attacks.[145] Close operations by Apaches employed flights of four to eight aircraft that focused on directly supporting engaged ground forces. These operations also offered flexibility by providing local armed reconnaissance and close combat attacks. As the 3rd Infantry Division entered the Baghdad area from the Karbala Gap it had "'a total of 39 Apaches for continuous 24-hour operations to provide close combat attack or close support of ground forces.'"[146]

As operations against insurgents increased after the end of major combat operations, both Apaches and Cobras continued to be used primarily in a CAS role. As with the initial phase of OIF, CAS as applied during the insurgency has often not been purely applied as envisioned in doctrine. Attack helicopters originally tasked to act as an aerial blocking force during cordon and search missions could quickly shift to provide CAS if contact was made with the enemy, for instance. In one typical encounter, Apaches killed insurgents attempting to escape an area in a vehicle after they had been discovered and tracked by a UAV and ground-based scouts.[147] In intense battles around Falluja, Najaf, and Baghdad, attack helicopters reverted to more traditional CAS employment in support of infantry and mechanized forces. The key elements linking these potentially diverse missions are that they occur within close proximity to ground forces and require detailed integration before fire support can be provided.

Although CAS and close operations have been successful, they have not been without problems. A traditional strength of CAS, timely and accurate SEAD was not always present or sufficient when required during the initial phase of OIF.[148] In part this was because of the extremely fluid nature of a battlefield where significant enemy forces were bypassed leaving aircraft potentially exposed even when transiting to objective areas. It also reflects the same difficulties seen in detecting and suppressing small arms, light AAA, and MANPADs in general. This problem has also come up during the insurgency in intense combat in urban areas. Under certain conditions, it may simply be prohibitively costly to employ attack helicopters in such situations particularly if the ROE

[145] Cordesman, 319.

[146] Maj Robert Cassidy, "Renaissance of the Attack Helicopter in the Close Fight," *Military Review* (July-August 2003): 42.

[147] Ibid, 44.

[148] Grinalds, 74.

is restrictive with respect to SEAD. On the other hand improvements in aircraft survivability equipment, modifications to tactics, and improvements in providing effective SEAD have allowed attack helicopters to continue operating in the vast majority of circumstances.

The Marine Corps had no attack helicopters destroyed by enemy fire during the invasion of Iraq. Cobras were damaged by small arms and light AAA on 49 occasions however, indicating a degree of effectiveness in the Iraqi air defenses against CAS.[149] Most of these aircraft were able to continue flight and quickly return to service but some were forced to land in the vicinity of friendly forces. Though hard figures are not available for Apaches in the same period it is clear that the losses in addition to the aircraft lost in the 11th AHR attack were also comparatively low. Operational security concerns limit open source information on losses, but at least 36 helicopters of all kinds have been destroyed in both operational and enemy related incidents up to 24 April 2005.[150] Given that operational helicopter losses have historically equaled or exceeded enemy-related losses, total losses of attack helicopters thus far in Iraq can be considered light.

F. CONCLUSION

In the aftermath of the invasion phase of OIF, numerous questions arose respecting the utility of attack helicopters. Most of the critics used the failed attacks on the Medina Division as the basis for their arguments. These criticisms did not discriminate between the substantially different missions of deep attack and CAS, however. Deep attack was clearly an inappropriate doctrine based on the enemy situation. One attack failed because the enemy successfully adapted its air defenses to counter it and the other because the enemy simply presented no worthy targets. Army doctrine in the 1990s recognized that future enemies could be expected to adopt new methods of warfare designed to counter the doctrine and tactics that had been so successful in Desert Storm. The difficulties inherent in employing Task Force Hawk in Kosovo were, in part, recognition of this fact. Yet, Army attack helicopter aviation chose

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[149] Grinalds, 73.

[150] Michael O'Hanlon and Adriana Lins de Albuquerque, *Iraq Index: Tracking Variables of Reconstruction & Security in Post-Saddam Iraq* available from The Brookings Institution at http://www.brookings.edu/iraqindex accessed 10 May 2005.

to view Task Force Hawk as failure of political will not doctrine. As a result, they employed deep attack against an Iraqi force that had learned from Desert Storm and successfully adapted their tactics to render deep attack ineffective.

CAS on the other hand was generally employed as doctrinally envisioned against enemy in contact with ground forces. In these situations, the enemy was by definition present and lacked the ability to employ an air defense similar to that employed against the deep attacks. Enemy efforts to systematically disrupt CAS were far less effective when they were simultaneously engaged by ground and air forces. Because of the nature of insurgency, CAS was also doctrinally flexible enough to be employed during that phase of OIF with similar effectiveness.

V. CONCLUSION

While CAS has stood the test of time for attack helicopters, the same cannot be said for interdiction. Those who saw a role for the attack helicopter in this mission sought to bring its unique capabilities to bear on the deep battlefield. For the Soviets in Afghanistan, this was less an application of previously formed doctrine than it was a natural adaptation, arising from their need to interdict mujahideen lines of communication. As the mujahideen developed their air defenses interdiction became more problematic and less effective. CAS continued to be employed until the end of the conflict however. In contrast, the U.S. doctrine on interdiction and CAS was very well developed by the time of Operation Desert Storm and attack helicopters were quite successful in each mission during combat. However, the brevity of ground combat and paucity of enemy opposition provided a false sense of accomplishment especially with respect to deep attack. Events during OIF bore this out and caused a re-evaluation of attack helicopter employment by the U.S. Army in the midst of combat.

Thus, in addition to possessing unique capabilities, the attack helicopter also possessed inherent limitations in performing interdiction against a thinking, adaptive enemy. The fundamental problem of aircraft survivability against a robust low-altitude air defense in such situations continues unsolved and will likely remain so. Though attack helicopters in a CAS role face potentially similar problems, direct integration with ground forces has helped mitigate the issue. More responsive SEAD, reasonably safe areas for loitering, and improvements in survivability equipment have allowed the attack helicopter to continue as a successful CAS platform across a range of conflict. Though air defenses obviously seek to overcome these factors, they combine in such a way as to make this very difficult.

A. THE FUTURE

For the United States Army perhaps the most telling and obvious sign that deep attack and interdiction are no longer the primary focus was the cancellation of the Comanche helicopter. The Comanche was to be an advanced, heavily armed scout helicopter designed to find targets for attack helicopters to destroy. It was intended to be stealthy in order to defeat radar-guided air defenses and operate deep behind the FLOT.

It would have been the perfect asset for AirLand Battle in Western Europe but post-OIF, it was deemed to be too expensive and largely irrelevant for future conflicts.[151] Further, evidence that the shift away from deep attack is more than temporary is the inclusion of detailed information in new Army aviation doctrine about how attack helicopters should conduct close combat attacks.[152] While again eschewing the doctrinal terminology of CAS, the information replicates exactly the techniques and procedures delineated in joint doctrine for CAS. Perhaps the most fundamental change the Army could make would be to openly align itself with joint doctrine and formally declare that its attack helicopters perform CAS. This would eliminate confusion and provide a focus for attack helicopters across services.

The future for interdiction and CAS almost certainly includes the use of armed UAVs capable of providing significant fire support. UAVs adapted for this purpose are already operational and both the U.S. Army and Marine Corps are working on doctrine that will employ these systems alone and in concert with other aircraft, including attack helicopters. Interdiction seems the most obvious space for expansion in this regard, given that it is the more dangerous operating environment and fratricide is less likely. Nonetheless, armed UAVs have at least operated in very close proximity to ground forces, even if they have not provided outright CAS in recent conflicts.

In spite of the emergence of armed UAVs and questions of about effectiveness, attack helicopters are likely to remain an important part of many nations' arsenals for some time to come. A variety of countries such as Australia, Great Britain, and Kuwait have recently acquired their first dedicated attack helicopters. Thus, while the case studies in this paper have focused on two large military powers, the lessons have relevance for anyone employing attack helicopters. In the absence of a known threat for which a force can be tailored, understanding the basic advantages and disadvantages of interdiction and CAS is a useful place to start. Given the limited resources of most countries, it will likely be impossible to sufficiently train for both missions. Further, based on the conclusions of this paper, focusing on interdiction would be a mistake. By

[151] Lt. Gen. Richard Cody, *Briefing on the Restructure and Revitalization of Army Aviation* transcript, 23 February 2004, available at http://www.defenselink.mil/transcripts/2004/tr20040223-0484.html accessed 3 May 2005.

[152] FM 3-04.111 *Aviation Brigades*, (Washington, D.C.: Department of the Army, 2003), Q-15.

focusing on the employment of attack helicopters in CAS, militaries will maximize their time and efforts in a proven mission area thereby increasing their chances for success.

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