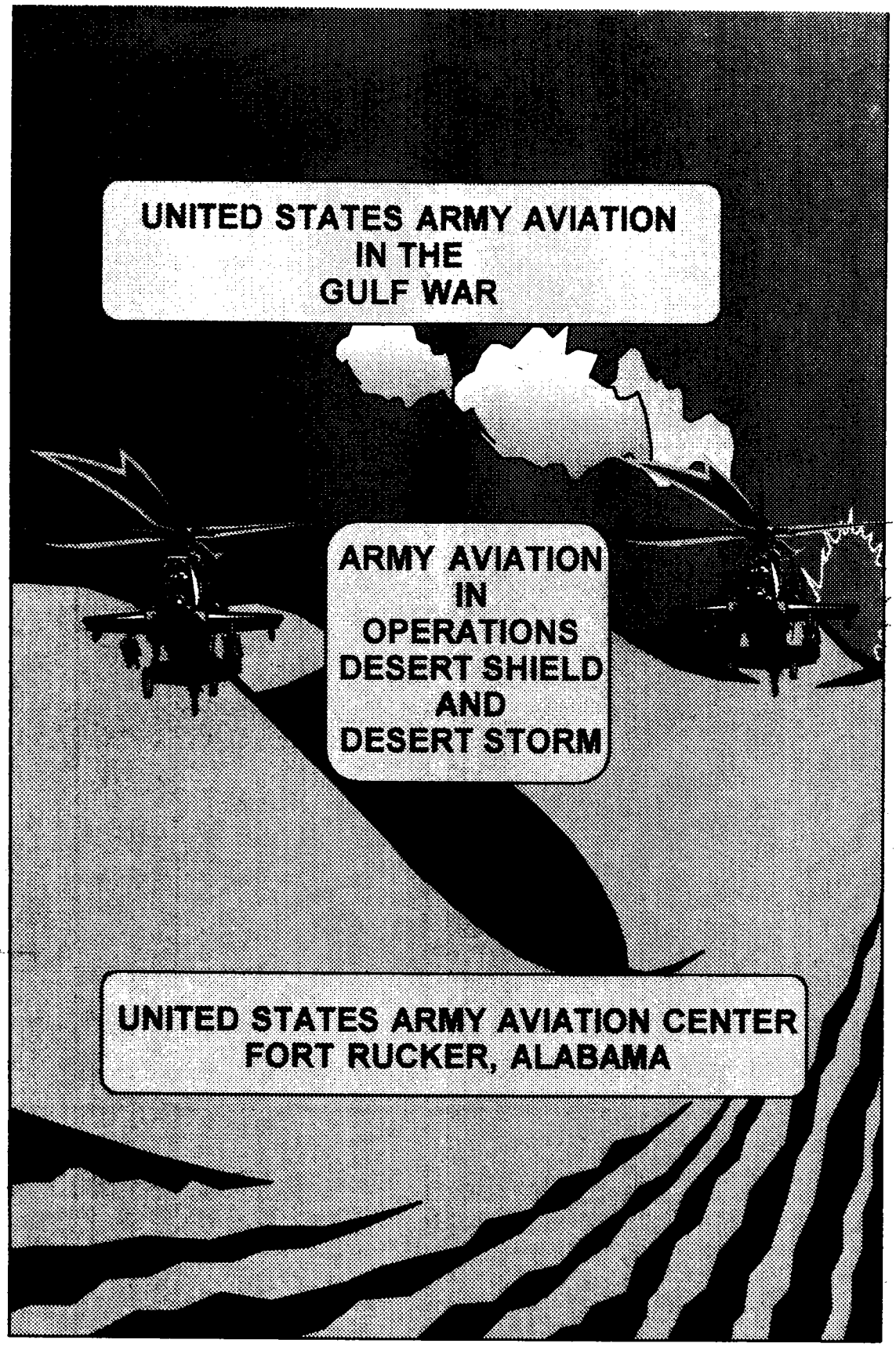
UNITED STATES ARMY AVIATION
IN THE
GULF WAR
ARMY AVIATION
IN
OPERATIONS
DESERT SHIELD
AND
DESERT STORM
UNITED STATES ARMY AVIATION CENTER
FORT RUCKER, ALABAMA

DEPARTMENT OF THE ARMY
HEADQUARTERS UNITED STATES ARMY AVIATION CENTER AND FORT RUCKER
FORT RUCKER, ALABAMA 36362-5000

REPLY TO
ATTENTION OF:

ATZQ-MH (870-5c) 20 June 1993

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: History of U.S. Army Aviation during Operations Desert Shield & Desert Storm: Selected Readings

1. Reference AR 870-5, Historical Activities: Military History--Responsibilities, Policies, and Procedures, 12 July 1993.

2. An historical account of U.S. Army aviation operations during Operations Desert Shield and Desert Storm is forwarded for your information and retention.

3. POC is Dr. John W. Kitchens, DSN 558-9151

FOR THE COMMANDER:

Encl

WARREN C. EDWARDS
Colonel, Aviation
Chief or Staff

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UNITED STATES ARMY AVIATION DURING OPERATIONS DESERT SHIELD & DESERT STORM

SELECTED READINGS

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Aviation Branch History Office

OFFICE OF THE AVIATION BRANCH HISTORIAN

UNITED STATES ARMY AVIATION CENTER
FORT RUCKER, ALABAMA

FOREWORD

Some aspects of Army aviation's performance during Operations DESERT SHIELD and DESERT STORM are well known. Video shots of AH-64 kills of Iraqi tanks and armored personnel carriers were seen often on the evening news during the Gulf war. These pictures, however, were snippets of time involving brief seconds of a complex operation that took months to plan and four days to execute.

The full story of the role of Army aviation during Operations DESERT SHIELD and DESERT STORM has yet to be written. United States Army Aviation during Operations DESERT SHIELD & DESERT STORM is the second in a series of historical studies of the Gulf conflict produced by the Aviation Branch History Office. The first study, The U.S. Army Aviation Center and Fort Rucker in DESERT SHIELD & DESERT STORM, completed in 1992, described the role of the Aviation Center in support of the war.

The present work focuses on the operations of aviation units in the conflict. It consists of topically arranged readings and oral interviews with editorial commentary. The study is intended to be used in advanced and senior staff courses. It may serve as a tactical reference manual as well as an historical analysis. Many of the best Army aviation lessons learned from the Gulf war can be found in the vivid, first-hand descriptions of actions contained herein.

The world today is undergoing rapid and unpredictable change. The demise of the Cold War has unleashed other vexatious threats to world peace. In 1990 and 1991, the United States and its allies sent almost a half million military personnel to Southwest Asia to halt aggression. We can be fairly confident that the Nation and its Army will again be called upon to fight in some part of the world for the same or a similar purpose.

The U.S. Army is keeping pace with the changing world by itself undergoing rapid and profound changes. As the Army and Army aviation adjust to changing world conditions, it is essential that the transformations be guided by the lessons of history. This study is a valuable source of information about Army aviation operations during the first major conflict of the post Cold War era. It can serve as a valuable tool for planning

and implementing the transformation of the Army and of Army aviation. As Chief of the Aviation Branch and the Commanding General of the Aviation Center, I recommend that all Army aviation leaders take time to read this work.

JOHN D. ROBINSON
Major General, USA
Chief, Aviation Branch

PREFACE

If Operations DESERT SHIELD and DESERT STORM validated one concept it is that an army must know in detail about both the terrain and the potential enemy. Lack of such knowledge will impact negatively on operations. The place to acquire such information can often be found in the experiences of previous wars. In many armies, this critical knowledge is often ignored or lost. This has happened in the U.S. Army, but it is not that the information is lost (Army historians generally see that most history is retained), but rather it is either not read or discounted because it happened years ago and has no relevance to the present. During Operations DESERT SHIELD and DESERT STORM, the Army couldn't get enough historical information on past combats.

Forewarned is also forearmed. Military history education throughout a career and a close study of military history leads to intelligent forearming. If it happened once, it just might happen again.

Army Aviation in Desert Shield/Desert Storm has been developed to educate and inform Army aviation in particular and the Army community in general about important military engagements from the perspective of rotary-wing operations, and this history is often told in the words and impressions of those who were there. Many selections contain diagrams of the action. Each chapter has a short beginning that attempts to put what follows in some historical perspective. At the end of that opening there is a short synopsis of what is in each of the selections, numbered by chapter and then selection. Use this as a guide to see what selection to look at first. At the end of the book, you will find a large number of graphs and charts that provide useful statistical data on Army Aviation in DESERT SHIELD/DESERT STORM.

As you are going through the Aviation Branch courses, the Command and General Staff Course, and the War College, Army Aviation in Desert Shield/Desert Storm can be a good reference work on aviation tactics and/or as a useful history of air and mounted warfare in the desert. The selections contained within are an attempt to cover most elements of the aviation story but not all. Time and space considerations precluded us from

including all that we would have liked to have seen in this book. For that, we apologize.

BURTON WRIGHT III, Ph.D
Deputy Aviation Branch Historian

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INTRODUCTION

Definitive judgments are inevitable after a battle. Hardly have the guns fallen silent when historians, politicians, and military professionals turn to an appraisal of the conflict in search of lessons learned. During that process, debates occur over what changes should be made. Like the 1986 conflict in the Falkland Islands between Britain and Argentina, the war in the Persian Gulf will provide doctrine writers and historians with a significant amount of new material to analyze and debate.

Operation DESERT STORM marks a significant milestone in the maturation of U.S. Army tactical and operational thought. Previous military history has repeatedly shown the potential of mobile tactical formations -- potential that has often been lost when it could not be maintained at high operational levels.

Ground forces are often constrained by terrain. In the case of Operation DESERT STORM the terrain of Southwest Asia was conducive to rapid ground movement. Hilly terrain covered with dense vegetation denies tanks and APCs their rapid mobility -- not so aviation assets. Aviation assets can break friction with the ground. These capabilities relieve the U.S. Army from the tyranny of terrain. This has not always been the case.[1]

Today, speed, power, and shock action are more effective than ever especially when one adds the limitless potential of the helicopter as a fourth dimension of maneuver. Working in conjunction with fast moving ground elements, helicopters can not only provide logistics, reconnaissance, and security to ground forces, but also massive firepower support for both close-in combat and combat at great distances.

The aforementioned is best described in tactical terms in Blumenson and Stokesbury's, Masters of the Art of Command: "The twin principles of opportunism on the battlefield and of feeding in reserves against the line of least resistance was translated by the U.S. Army, more than twenty years later, into the brief, direct axiom: 'Exploit

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[1] Had Patton's army possessed the aviation lift assets of a modern corps, they could have kept up the rapid pace of pursuit, and not allowed the German army a time to stand, penetrated the Seigfried Line, and, perhaps, ended the war weeks earlier.

success.'"[2] Army aviation is uniquely situated to exploit both principles.

Again and again during Operation DESERT STORM, attack and scout helicopters were launched in advance of ground units to find and fix the enemy. Having that fourth dimension gives a ground commander great flexibility on how he will maneuver his forces because he will know EXACTLY what is in front. The commander also has the option of attacking with helicopters alone to "soften up" the enemy for the ground forces. Attack helicopters can also be the commander's mobile reserve to influence the battle at the time and place of the commander's choosing. Few commanders in history have had such flexibility.

Early Army pioneers of air assault and armed helicopter operations in South Vietnam saw the potential for tactical movement that rotary wing aviation brought to the battlefield.[3] The North Vietnamese who fought the 1st Cavalry Division at the Ia Drang later in 1966 attested to the speed, flexibility, and mobility of Army air cavalry.[4]

Operation DESERT STORM validated the theories of those first helicopter pioneers. As Major General Barry R. McCaffrey, the Commanding General of the 24th Infantry Division (Mech) during DESERT STORM, pointed out that attack helicopter maneuver doctrine had matured to the point of becoming one of the most decisive forces on the battlefield. General McCaffrey remarked: "It was the Apache that was the single biggest maneuver factor on the battlefield."

Attack helicopters, however, are only part of Army aviation's tactical equation. The prime DESERT STORM example of aviation maneuver at operational level was the air assault envelopment conducted by the XVIIIth Airborne

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[2] Martin Blumenson and James L. Stokesbury. Masters of the Art of Command. (New York: DeCapo Press, 1975). p. 221.

[3] Luckily, leadership in the Army was persuaded to support such new elements of doctrine. After World War I, for example, the British Army leadership in the 1920s and 30s steadfastly refused to see the power of mechanized warfare. They gave little help and encouragement to those within the ranks that wanted armor to get the chance to prove itself as a decisive arm of warfare. See:

[4] As, for example: Joseph L. Galloway. "Vietnam Story," U.S. News and World Report (October 29, 1990): pp. 36-51. Referring to the Is Drang campaign, NVA General Chu Huy Man said of the 1st Cavalry Division, "You jumped all over, even into our rear area...You created disorder among our troops. You make it very hard for our commanders to keep up with the plan."

Corps. Other examples include the deep VIIth Corps operations to destroy the Republican Guard around Basrah.

Every Army division in Operation DESERT STORM used its aviation units for tactical maneuvers. VIIth Corps particularly excelled at closely synchronizing operations that located and fixed the enemy with air maneuver and then apply extremely rapid ground maneuver to complete the destruction of Iraqi Army units.

The VIIth Corps came from Europe where its mission was to take on Soviet forces invading West Germany. Aviation and ground units had been training for years to synchronize their actions to defeat not only the first echelon of Soviet forces, but follow-on echelons as well. This training paid big dividends during Operation DESERT STORM.

The hundreds of hours of practice in Europe preparing to fight the Soviets paid off thousands of miles away. The doctrine developed for use against massed armor of the Soviet Army was tailored to meet the conditions of the desert.

Aside from its offensive capabilities, the Apache provided a hitherto unknown capability -- near real-time reconnaissance. Both air and ground maneuver units benefitted from the in-depth reconnaissance provided by Apaches and other aviation elements.

Divisional operational orders were fashioned more accurately because of the availability of real-time reconnaissance of sectors prior to and during the ground offensive. Even with the formidable array of deep acquisition platforms used by American forces to acquire intelligence during Operation DESERT STORM, the best and most timely sources of battlefield information for the tactical commanders were usually visual intelligence provided by Army aviation.

Tactical experience gained as a result of Operation DESERT STORM demonstrates that Army aviation can perform well regardless of tempo. If Operation DESERT STORM can be used as a benchmark, the pace of future conflicts will be very high, and will use every single aviation asset to its limits to enable units to move quickly, see deep, and maneuver and focus tremendous destructive power at great depths.

The only limiting factor will the ability of commanders' minds to visualize how this tremendous asset can be used effectively. This ability can be compared to playing chess because a player must plan three or four moves ahead to be successful. Tactical commanders in Operation DESERT STORM showed they had that ability.[5]

The future of Army Aviation will be exciting, dynamic, and demanding. Technology and doctrine must combine to enable aviation to be a valued member of the combined arms team as well as a decisive element of maneuver in its own right.

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[5] An Aviation Brigade Commander in VIIth Corps told the author of asking then Lt. Gen. Franks how the battle would really happen, and using his foot, the VII Corps commander traced how he saw the coming battle with the Republican Guard. As it turned out, General Franks was completely right. The combat occurred as he had diagramed it.

OPERATION DESERT STORM - THE PLAN

Military organizations have always fought according a plan -- some sort of concept about what military action would take place. A plan could be verbal or written and when the National Command Authority in Washington made the decision to prepare for a possible offensive in Kuwait, planning cells at CENTCOM started working overtime.

When George Bush and his advisors became convinced that the Iraqis would have to be removed from Kuwait by force, they directed the military to prepare a plan of attack that would do just that. Military history supported the concept that a successful military campaign looks for a definite objective. As retired Colonel Harry G. Summers wrote in On Strategy II. A Critical Analysis of the Gulf War wrote:

> It is the first because all else flows from it [objective]. At the tactical and operational levels of war it defines the mission to be achieved. And at the strategic level -- with strategy roughly defined as the use of means to achieve ends -- the objective, by defining the ends to be attained, is literally half of the strategic equation.[1]

Military planning was then and still is a complex undertaking. Of necessity, many factors impacted on the plan as it matured from verbal concepts to written document. For example, DESERT STORM as the operation was now called, had to satisfy four major criteria approved by President Bush, Secretary of Defense Cheney and Joint Chiefs Chairman General Powell:

1. Eject Iraqi forces from Kuwait.
2. Remove the strategic (i.e., military, nuclear, biological, and chemical (NBC)) capability of Iraq.[2]

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[1] Harry G. Summers, Jr. (Colonel, USA ret.). On Strategy II. A Critical Analysis of the Gulf War. (New York: Dell Publishing, 1992), p. 162.

[2] Chemical and biological capabilities were particularly important for the following reasons: "By 1990, Iraq had the largest chemical agent production capability in the Third World, annually producing agents Sarin (GB) and GF...During the war with Iran Saddam exhibited the willingness to use CW against not only the Iranians, but also his own Kurdish populations." Conduct of the Persian Gulf War - Final Report to Congress. Pursuant to Title V of the Persian Gulf Conflict Supplemental Authorization and Personnel Benefits Act of 1991 (Public Law 102-25). Chapters I through VIII,

3. Avoid destroying Kuwaiti cities, industry, and injuring Kuwaiti civilians.
4. End quickly with low friendly casualties.[3]

The rationale for the four major criteria came from the President's desire to keep casualties low and end the conflict quickly. "I instructed our military commanders to take every necessary step to prevail as quickly as possible and with the greatest protection possible for American and allied servicemen and women."[4]

The principal objective of the offensive plan was summed up by the Chairman of the Joint Chiefs: "We are going to cut it [Iraqi Army] off and kill it."[5] This task seemed at the time to be a major undertaking when one considered the enemy.

In planning Operation DESERT STORM General Schwartzkopf's staff were more than aware that:

> Iraq possessed the fourth largest army in the world, an army hardened in long years of combat against Iran. During that war Iraq killed hundreds of thousands of Iranian soldiers in exactly the type of defensive combat it planned to fight in Kuwait. Saddam Hussein's forces possessed high-quality artillery, frontline T-72 tanks, modern MIG-29 and Mirage F-1 aircraft, ballistic missiles, biological agents and chemical weapons, and a large and sophisticated ground based air defense system. His combat engineers, rated among the best in the world, had months to construct their defense.[6]

April 1992, p. 18.

[3] This was one of the first times in military history where low casualties were a part of the operational plan, and military attacks were planned to achieve maximum destruction and defeat on the enemy while loosing no friendlies. In previous history, it was always "hoped" that the operation would not cause many casualties, but it was never put in as one of the written parameters.

[4] Summers, Jr. (Colonel, USA, ret.). On Strategy II. op. cit., p. 155.

[5] Quoted in Michael D. Krause (Colonel, USA). The Battle of 73 Easting. 26 February 1991. A Historical Introduction to a Simulation. (Washington, D.C.: Center of Military History and Defense Advanced Research Projects Agency, 1991), p. 2.

[6] Conduct of the Persian Gulf War. op. cit., p. ii.

In attempting to satisfy the four criteria, planners ran into a thorny problem -- the arithmetic of the offense. To achieve a major breakthrough history demonstrated that an attacker must outnumber a defender three or four to one. Allied intelligence determined that coalition forces were outnumbered 4:3 in tanks and 5:3 in artillery. This arithmetic, however, simply counted things. There were other factors to consider.

Ratios to determine battlefield success are more complicated than numbers alone. For example, how do you determine an enemy's will to fight? How do you determine the true effectiveness of his weapons systems?[7] Historical studies can provide significant assistance, but such questions are fully answered only when combat has begun.

To better the odds in their favor if Saddam's forces were attacked in Kuwait, the Iraqis set about building a line of fortifications which they had learned from their teachers -- the Soviets "sword and shield defense" -- was effective and that had also worked very well in the Iran-Iraq war. There were good reasons to adopt this defensive strategy. As James Blackwell wrote in Thunder in the Desert:

> This defensive doctrine emphasized fortifications, minefields, and obstacles woven together to force an attacker into predetermined killing zones, where the defending force concentrates its tank and artillery fire. Once the attacker is mired in the web of obstacles, the defender unleashes the full fury of its firepower on the helplessly immobilized enemy. It is designed to create a battle of annihilation.[8]

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[7] After the end of the Gulf War, the Soviets, having supplied Saddam with most of his major weapons systems, remarked that it was not their systems that failed so miserably against the Coalition, but the people that manned them. While there is some truth to that (also, the Soviets did not give the Iraqis their newest systems) American weapons system are generally superior to their Soviet counterparts. See: Douglas Waller. "What the Soviet Military Knew." Newsweek. January 20, 1992, p. 24.

[8] James Blackwell (Major, USA ret.) Thunder in the Desert. The Strategy and Tactics of the Persian Gulf War. (New York: Bantam Books, 1991), p. 21.

The idea of a battle of annihilation was a good one. This theory by Prussian military theorist and historian Hans Delbrueck had two parts. The first part -- annihilation -- was a one great battle scenario -- all or nothing.[9] The other part of Delbrueck's theory was the battle of attrition. General Schwatrzkopf was certainly thinking in terms of the former and not the latter when he developed his commander's intent.

As the situation continued to be quiet along the Saudi-Iraq border, General Schwartzkopf (CINCCENT) considered his opening moves. In that regard, he was precisely following one of Napoleon's most important maxims:

> The first thing for a commander in chief to determine is what he is going to do, to see if he has the means to overcome the obstacles which the enemy can oppose to him, and, when he has decided, to do all he can to surmount them.[10]

The CINCCENT's intent was based on his understanding of the capabilities of the Coalition to execute the plan, and the potential for Iraqi counteractions. The CINCCENT's statement of intent was that:

> We will offset the imbalance of ground combat power by using our strength against his weakness. Initially execute deception operations to focus his attention on defense and cause incorrect organization of forces. We will initially attack into the Iraqi homeland using air power to decapitate his leadership, command and control, and eliminate his ability to reinforce Iraqi forces in Kuwait and southern Iraq. We will then gain undisputed air superiority over Kuwait so that we can subsequently and selectively attack Iraqi ground forces with air power in order to reduce his combat power and destroy reinforcing units. Finally we will fix Iraqi forces in place by feints

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[9] Ibid., pp. 147-148.

[10] Maxim LXXIX quoted in: Conduct of the Persian Gulf War. op. cit., p. 83.

> and limited objective attacks followed by armored force penetration and exploitation to seize key lines of communication nodes, which will put us in a position to interdict resupply and remaining reinforcements from Iraq and eliminate forces in Kuwait.[11]

In the early stages of developing the final operational plan, Central Command developed an initial battle plan whose principal tactical operation was an attack into the heart of the layered fortifications the Iraqis were then constructing. This plan had good and bad points.

The good points were that the scheme of maneuver required no major displacement of logistical bases, and concentrated overwhelming combat power at critical points to smash through Sadaam's fortifications and then enter an exploitation phase resulting in the ejection of the Iraqi Army from Kuwait. A similar plan had worked once before in 1942.

During World War II, General Montgomery's Eighth Army literally smashed through Rommel's elaborate fortifications [called "Devil's Gardens" by the Germans] at El Alamein.[12] Although the battle forced Rommel away from Cairo, it was very costly in men and material.[13]

This was the principal drawback of the first DESERT STORM operational plan -- it was potentially costly in men and material. President Bush and his advisors appreciated the inherent efficiency of the plan, but correctly surmised

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[11] Ibid., p. 84. Gaining air superiority would not be an easy matter as James Blackwell point out in Thunder in the Desert: "Iraq's sophisticated air-to-air fighters, Soviet MIG-29's and French Mirages, certainly had the capability of putting up an impressive fight." Blackwell. Thunder in the Desert. op. cit., pp. 122-123.

[12] The Germans spent considerable time and care on the development of these fortifications. They even went back to the abandoned British positions at Gazala, and salvaged as many of the thousands of mines laid there for their own fortifications. Rommel insured that his fortifications were deep and dense. See: Paul Carrell. The Foxes of the Desert. (New York: E. P. Dutton & Co., 1961). p. 274. Also see: C. E. Lucas Phillips. Alamein. (London: Heinemann, 1962). pp. 90-93.

[13] For a listing of British losses at El Alamein, see: Phillips. Alamein. op. cit., pp. 394-395.

that it could result in heavy casualties, and also threaten Kuwaiti cities and citizens.[14]

A second plan, with greater tactical risk but with less potential for heavy civilian casualties and destruction of urban areas, placed primary armor power on the Coalition's left flank well away from Kuwait. This striking force, composed of two heavy corps (4+ divisions in each), perhaps the most powerful armored force in history, would enter the battle through western Iraq, move north, and then turn east and bring to battle the bulk of the Republican Guard forces which were then located in reserve positions north and west of Kuwait City.[15]

Saddam Hussein and his military advisors had positioned the Republican Guard Forces Command (RGFC) there to insure that they could counter-attack any attempt by the Coalition to breach the Iraqi fortifications, and also near enough to Iraq to be withdrawn if the military situation in Kuwait deteriorated or civil unrest occurred in Iraq.

Both offensive plans were predicated on a four phased operation of which the last was the ground assault:[16]

Phase One - an air attack on Iraqi command, control, and communications to sever Hussein from his forces. Simultaneously, coalition air power would destroy the Iraqi Air Force and Iraq's air defense systems.[17]

Phase Two - a massive, continuous air bombardment of Iraqi logistics installations and transportation

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[14] During the TET offensive in 1968, the NVA sent troops into Hue and Saigon. Defending U.S. and Vietnamese forces had to destroy entire city blocks to force the NVA away from those populated areas. CENTCOM planners did not want Kuwait City destroyed in house-to-house fighting. For a good discussion of the various attack proposals and how the final shape of Operation DESERT STORM was developed, see: Bob Woodward, The Commanders (New York: Simon and Schuster, 1991), pp. 369-376.

[15] Not in terms of numbers, but in firepower and speed.

[16] Briefed to the Secretary of Defense on 25 August 1989. Conduct of the Persian Gulf War, op. cit., p. 84.

[17] The air defenses were a particularly important target:
"The Iraqi air defense system was formidable, combining the best features of several systems. The multi-layered, redundant, computer-controlled air defense network around Baghdad was more dense than that surrounding most Eastern European cities during the Cold War, and several orders of magnitude greater than that which defended Hanoi during the later stages of the Vietnam war. If permitted to function as designed, the air defense array was capable of effective protection of key targets in Iraq." Ibid., p. 15.

infrastructure designed to cut off the Iraqi forces in Kuwait from their supplies.

Phase Three - direct air attacks on the Republican Guard. If the RGFC could be significantly weakened prior to the ground offensive, prospects of success enhanced. The final phase was the ground assault to eject the Iraqi Army from Kuwait and destroy Iraq's capability to de-stabalize the region with ground forces.

Phase Four - an invasion of Kuwait by ground forces to expel the Iraqi Army.[18]

Air power was given a significant share of the operation. This was done with the full knowledge that in previous conflicts where air power had been used (i.e., World War II, Korea, South Vietnam), the results had been less than decisive.[19] At the end of this air campaign, there would be little debate on its overall effects. Air power helped in no small way to make the ground campaign easier and less costly.

Strategically speaking, air power would strike at Iraq's "center of gravity" [place where an attack would be decisive], but first, air superiority had to be attained. As James Backwell in Thunder in the Desert wrote:

> Air superiority, once won, provides the means with which to strike an opponent's center of gravity and win. Air power itself may be able to defeat the enemy without restoring to the use of grand troops, or it may make it possible for ground troops to do nothing more than "mop up" after a successful air campaign.[20]

Embracing the air war as a cornerstone of the strategic plan was easy enough because it would bring tremendous force

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[18] See: Summers. On Strategy II, op. cit., p. 195.

[19] At the end of World War II, the Army Air Force's strategic bombing of Germany came under close scrutiny. German records showed that even during the height of the bombing, industrial production rose because Albert Speer decentralized German industry. The nearly 50,000 AAF casualties were questioned on the basis of the real effect of daylight precision bombing. See: Anthony Verrier. The Bomber Offensive. (New York: Macmillan, 1968), p. 323.

[20] Blackwell. Thunder in the Desert. op. cit., p. 115.

to bear on the Iraqis without risking heavy casualties as had been universally predicted in the world's press. Iraqi morale, fighting spirit, equipment, and logistics would be degraded to the point where a ground attack would encounter reduced opposition, and hence fewer casualties. As the air war plans were being finalized in late summer (1990), the Iraqis themselves helped to determine the outcome of the debate of the ground war plan. They were creatures of habit.

Military planners have a habit of conducting campaigns based on historical precedent. What was good for the last war could still be good today. After all, military commanders generally tended to trust their fate to experience rather than new ideas. The Iraqis, having successfully used fortified defensive belts in their long conflict with Iran, now created similar fortifications on the southern borders of Kuwait.[21] These defenses were dubbed "the Saddam Line."[22]

There was now no "cheap" way of directly attacking Kuwait.[23] Breaching fortifications had always been costly.[24] The Iraqis, like the French in their 1930s planning and construction of the Maginot Line, did not extend their fortified belt to protect their open flank.[25]

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[21] The Iranians always outnumbered the Iraqis in battle, and tended to use what amounted to "human waves" assaults against Iraqi positions. The Iranian lacked the heavy artillery and air power necessary for success. The Iraqis, mindful of their smaller population, built extensive belts of fortifications guarded by barbed wire and massed artillery. When the Iranians penetrated their outer defenses, the Iraqis would simply retreat to the next belt and continue to inflict heavy losses on the Iranians by firepower alone until their offensives stopped. See: Anthony H. Cordesman and Abraham R. Wagner, The Lessons of Modern War. Volume II: The Iran-Iraq War. (San Francisco, CA: Westview Press, 1990). pp. 448-449.

[22] The Iranians could breach these fortifications, but at a tremendous cost in manpower because they lacked the technical weaponry. Ibid., p. 449.

[23] During World War I, military commanders for both sides threw thousands of men at fortifications and suffered terrible casualties [i.e., the British suffered 50,000 during the first day of their attack on the Somme]. See: Martin Middlebrook. The First Day on the Somme. July 1916. (New York: W. W. Norton and Company, 1992). The book concerns the attack, and the terrible casualties suffered on that day.

[24] During the American Civil War, commanders on both sides continued to throw large masses of men at fortified locations even when previous experience showed that most such attacks were doomed to failure. See: William D. Matter. If It Takes All Summer. (Chapel Hill, NC: The University of North Carolina Press, 1988).

[25] The Maginot Line, named for the Minister of War Andre Maginot, was supposed to keep France safe from any potential German invasion. The line proved so expensive that it was halted at the Ardennes Forest. This was roughly half of the planned construction as the intention was to ring the entire French border with impenetrable fortifications. In developing their plan to defeat France -

This left a lightly defended area that could be exploited by armored forces. The very forces, in fact, that the coalition was then bringing to Saudi Arabia. The Allies planned to achieve a very rare commodity in military history -- strategic surprise. As retired Colonel Harry G. Summers wrote in On Strategy II: A Critical Analysis of the Gulf War:

> This conventional wisdom was reflected in U.S. Army doctrine, which also agreed that strategic surprise was difficult to achieve. 'Rapid advances in strategic surveillance technology, ' states FM 100-1,
> 'make it increasingly more difficult to mask mobilization or movement of manpower and equipment.'[26]

Saddam expected the Allies to attempt to blast through his elaborate fortifications. In the summer of 1944, Adolf Hitler expected the Allies to land in France at the Pas de Calais; Hitler like Saddam was wrong. In both World War II and Operation DESERT STORM, the allies used well-planned deception to mask operational intentions.[27]

Central Command developed operational plans for attacks into southern Iraq and a turning movement to trap and destroy the bulk of the Iraqi Army in Kuwait with the most important target being the RGFC. Deception was woven into the operation to keep Saddam believing the Allies were coming up through southern Kuwait.

A deception in the Persian Gulf (Marine amphibious troops) would be used to keep ten regular non RGFC) divisions of the Iraqi Army tied down in fixed beach

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Fall Gleb or Case Yellow - the Germans never intended to strike the Maginot line head on, but go around it. Saddam did not consider the lessons of history. See: William L. Shirer, The Collapse of the Third Republic -- An Inquiry into the Fall of France,1940. (New York: Simon and Schuster, 1969), pp. 590-595, 765.

[26] Summers, On Strategy II, op. cit., p. 217.

[27] The entire thrust of the Allied deception campaign was to make Hitler think that the Pas de Calais which possessed excellent landing beaches and was the shortest point between England and France would be the landing site for the invasion of Europe in 1944. The deception was a total success. See: Anthony Cave Brown, Bodyguard of Lies. (New York: Harper and Row, 1975), pp. 668, 677, 685.

defenses along the eastern Kuwaiti coast.[28] If it chose, CENTCOM could also switch the Marines from deception to attack should events warrant it.

As the details of DESERT STORM were being put together, the Iraqis still possessed some capability to "see" the battlefield. To allow the U.S. Army to perform major deployment to the west and later the attack, the Iraqis would have to be totally blinded. No movement west of King Kalid Military City (KKMC) would be allowed until air attack had blinded the Iraqis.

When XVIIIth Airborne Corps and VIIth Corps shifted west, both left small communication cells behind to provide electronic signatures to prove to anyone listening the two Corps were still at their eastern bases.[29] If the Iraqis were "listening in", they would conclude that these massive forces were poised to strike southern Kuwait into the teeth of Saddam's fortifications.[30] Because the Iraqis were "blind" and had to depend almost solely on radio intercepts, the deception operation covering the Army's movement to new bases in western Saudi Arabia worked perfectly.[31]

The first ground attacks were carefully staged to begin against the "Saddam Line" (consisting of the Arab Coalition allies i.e., Saudi Arabia, Egypt, Syria, UAE, etc.), and Marine elements to fix the Iraqis in place. Just prior to

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[28] Had the Marines been ordered ashore, they would have faced some formidable beach defenses like those faced by Marines on Tarawa during World War II. The heavy casualties suffered in the attack forced the Corps to re-examine its amphibious doctrine. See: Captain James R. Stockman, USMC. The Battle for Tarawa. (Washington, D.C.: Headquarters, U.S. Marine Corps, Historical Section, 1947), pp. 67-68.

[29] This had been very effective in the past. During World War II, deception planners had created a totally fictional First U.S. Army Group (FUSAG), and did with just 1,200 men. The British and Americans set up communication networks in Scotland that led the Germans to believe that nearly 200,000 allies troops were based there. This was but one deception used by the Allies to insure that D-Day Normandy would be a success. See: Anthony Cave Brown. Bodyguard of Lies. op. cit., pp. 474-478.

[30] Iraq never developed a deep intelligence capability because it didn't need one. During much of the Iran-Iraq war, U.S. intelligence supplied Iraq with that type of information in great detail. see: Gerald Wesley, Eclipse. The Last Days of the CIA. (New York: William Morrow and Company,Inc., 1992), pp. 375-377, 381-382.

[31] During World War II, a special office called the London Controlling Station was created by the British to develop and control all deception operations. Their work was highlighted by Churchill's directive to leave the Germans "puzzled as well as beaten". Much of the use of deception by the Allies has its origins with this unique organization. See: Anthony Cave Brown, Bodyguard of Lies, op. cit., pp. 2.

the attack, allied naval units along the Kuwait Coast initiated what appeared to be a pre-invasion bombardment.

These two actions reinforced Iraqi perceptions that the main attack would be in southern Kuwait and so froze their alignment in Kuwait during the critical time that the "hammer" forces -- XVIIIth Airborne Corps and VIIth Corps -- were moving into position. Logistics for the attack into western Iraq was staggering. For example, VIIth Corps alone consumed 3,000,000 gallons of fuel each day, and a ground offensive could potentially last for weeks.

The routes by which the logistical support was moved were somewhat tenuous. Tapline Road, a two-lane paved highway heading west into the desert, was the principal logistical lifeline of the envelopment forces and in the weeks prior to the attack, it was used twenty-four hours a day seven days a week with bumper-to-bumper traffic. To make the tedious job of long haul trucking easier, Lieutenant General William "Gus" Pagonis, the Commanding General of 22nd Support Command, set up way stations, much like truck stops, where drivers and crews could stop and get refreshment and some sleep on the long 18+ hour drives.[32]

Two huge logistics bases had to be built -- one for the XVIIIth Airborne Corps' near Rafha and the other in the vicinity of the VIIth Corps' forward assembly area (FAA) Garcia. The volume of supplies was immense. For example, the main theater ammunition dump covered 40 square kilometers.

This movement was a unique one as General Schwartzkopf commented: "This was an extraordinary move. I can't recall any time in the annals of military history when the number of forces have been moved over this distance to put themselves in position to be able to attack."[33]

As logistical support and combat units were being positioned for envelopment operations, the air war continued and proved to be a success. Because of the regime Saddam

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[32] He also set up regular flights along its route to assist stranded vehicles. In several cases civilian drivers of "low boys" [carrying armored vehicles] had simply disconnected the trailer and left the vehicle and its crew to their own devices. See: William G. Pagonis (Lieutenant General, USA), Moving Mountains -- Lessons in Leadership and Logistics from the Gulf War. (Cambridge, Mass: Harvard Business School Press, 1992), pp. 146.

[33] "Schwartzkopf: Strategy Behind Desert Storm," The Washington Post. (February 28, 1991), p. A5.

had built during his years in power, the air war was easier. Iraq was then and still is an industrialized nation with a delicate internal infrastructure that could be disrupted by air attacks. Air power had, historically, worked best against industrial nations.[34]

In past conflicts, air power had been less than effective against nations that do not have an industrial infrastructure. For example, in Korea against the Chinese Communists in the 1950s and in Vietnam against the North Vietnamese in the 1960s, strategic air power was not as decisive because both countries were agricultural not industrial.[35]

Targets with critical meaning to the economic life of the North Vietnam, for example, were hard to find and destroy because they didn't exist. Iraq, however, had easily identifiable targets that **were** vital. For example, Allied aircraft attacked the Iraqi national "power grid" which blacked out much of the country.

Iraqi industrial targets were neither mobile nor easily concealed. The Iraqi Air Force, thought to be among the best equipped in the Middle East, did not often contest the skies over Iraq and the only real threats that coalition aircraft had to face were missile and anti-aircraft batteries defending critical military and industrial installations.[36]

No wonder the Iraqi Air Force chose not to fight. The standard Iraqi Air Force joke during the Gulf War was:

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[34] The British opted to use much of their strategic bombers against civilian targets in order to "de-house" Germany. The Americans, on the other hand, used their daylight bombers against pinpoint industrial targets (i.e., factories, railway switching yards, synthetic oil plants). General Milch reported to his interrogators that it was this emphasis on industrial infrastructure that helped to bring about German defeat. See: David Irving, The Life and Death of the Luftwaffe -- The Life of Field Marshal Erhard Milch. (Boston, Mass.: Little, Brown, 1976), p. 279.

[35] The nature of the enemy army did not help. The Chinese Communists, for example, lived a "shoestring" existence. Since they had little mechanical transport and used mostly small crew-served weapons and equipment, they did not need or use a massive logistical lifeline. When the U.S. Air Force initiated an operation in 1951 to damage Chinese supply lines, it was an utter failure. How do you target gangs of "coolies" moving equipment on their backs over the hills? See: Major Scott R. McMichael. A Historical Perspective on Light Infantry. Research Survey No. 6. (Leavenworth, Ks: Combat Studies Institute, 1987), pp. 74-77.

[36] Some analysts wrote that the Iraqi Air Force would not be a factor because of its less than brilliant performance during the Iran-Iraq war. Throughout the conflict, the Iraqis faced only token Iranian air opposition but did not use their superior numbers to provide help for the ground forces. See: Cordesman and Wagner. The Lessons of Modern War. Volume II: The Iran-Iraq War. op. cit., p. 65-66, 81-84.

"Question: What were the three most feared words in the Iraqi Air Force? Answer: Cleared for Takeoff."

During the first few days of the days of the air war, Coalition aircraft attacked and destroyed 375 of Iraq's 459 hardened aircraft shelters and 141 aircraft estimated to have been in these shelters.[37] Thirty-five Iraqi aircraft were shot down in aerial combat, and another 55 destroyed by bombing.[38] Saddam quickly sent his remaining aircraft to safety in Iran. When air superiority had been assured, the coalition air forces targeted logistics next.

Like the U.S. troops in Saudi Arabia, Iraqi soldiers in Kuwait required logistical support. Supplies for them had to travel down a limited number of roads easily interdicted by air power. With the Coalition air forces exercising air superiority, the Iraqi logistical support infrastructure in Kuwait began to unravel.

The Iraqi Army like the Iraqi Air Force had almost no place to hide. Unit commanders tended to keep their troops in the same fortified location between the reconnaissance flights and the first attacks. The "smart" munitions used by Allied aircraft easily destroyed Iraqi tanks and tracked vehicles even in fortified positions. Anything moving was immediately attacked during daylight hours.

The most critical targets were not related to the tactical plan, but to the larger strategical picture. Prior to the conflict, Iraq had been working for some years on programs to develop and manufacture weapons of mass destruction.[39] This was a direct threat to Coalition forces. Installations used for nuclear, chemical, or biological experimentation or production were attacked not

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[37] Blackwell. Thunder in the Desert. op. cit., p. 181.

[38] There were no reported losses of Coalition aircraft in air-to-air combat although the loss of one American aircraft could have been as a result of a shoot down by Iraqi fighters.

[39] The Iraqis were working on a super-gun to be built by a Canadian ballistics expert named Peter Bull. He was murdered in Brussels, and the parts to his super-gun were confiscated in several countries just prior to their shipment to Iraq. Had the gun been completed, the Iraqis could have fired huge NBC or regular projectiles almost anywhere in the Middle East. See: Elaine Sciolino. The Outlaw State. Saddam Hussein's Quest for Power and the Gulf Crisis. (New York: John Wiley and Sons, 1991), pp. 142-143.

once, but many times in an effort to completely destroy them.[40]

Because it was difficult to compile accurate battlefield damage assessment (BDA), the efficiency of the air campaign will never be completely determined. But, the air campaign in general left the Iraqi army paralyzed and "blind".

Much of the real damage was done by fighters [F-15's] and fighter-bombers [British Tornados]. Large strategic bombers were not often used, but Iraqi troops in the fortified "Saddam Line" had to endure B-52 strikes.[41] These and other bombing missions resulted in Iraqi desertion rates of from 20 to 40 percent.

The stage was set for the beginning of the ground war. As the troops moved to the positions in the pre-dawn hours of 24 February 1991, they did not know how the battle would go, but they were prepared for a hard fight. There was no thought of defeat, only of what the final cost might be. At its end, the "mother of all battles" would turn out differently from what Saddam Hussein had predicted.

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[40] There are now indications that, although it was severely damaged, parts of Iraq's nuclear and chemical capability survived the air campaign. United Nations inspectors have been continually hampered in their efforts to learn more about the capabilities of these programs prior to the Gulf War. Who knows what was hidden before the end of the war?

[41] During the Vietnam War, B-52 strikes could be devastating to the North Vietnamese, and the psychological terror they caused to enemy units should not be underestimated. See: Bernard C. Nalty. Air Power and the Fight for Khe Sanh. Washington, D.C.: Office of Air Force History, 1976. pp. 82-89.

ACTION AND REACTION IN KUWAIT

Throughout history, battles have been won or lost in all types of weather and terrain. Great captains of history have had their share of terrain and weather problems. To invade Italy Hannibal's Carthaginian Army crossed the Alps during the winter of 218 B.C.. During transit, Hannibal lost 50% of his army and nearly all of his elephants.[1] Before Hannibal fought his first battle against the Romans at the River Trebia [218 B.C.], terrain alone had nearly dealt him a fatal blow.

Over 2,000 years later, terrain and weather could have stopped a U.S. led coalition army on its way to battle in Iraq. Had there not been the spirit and willingness of all personnel to overcome the problems of environment and weather, General Norman Schwarzkopf, like Hannibal, would have entered combat at a critical disadvantage.

Terrain in Kuwait and Iraq had a direct influence on how the campaign was planned and executed. The environment of Kuwait and Iraq in which the U.S. Army and its coalition partners had to fight contained some of the most inhospitable areas on earth.

Kuwait was bounded to the east by the Persian Gulf and to the north by the Euphrates River basin. Along the Persian Gulf coast, the ground consisted of a powder-like sand that shifted with the prevailing winds. This sand was extremely damaging to the moving parts of U.S. Army aircraft and vehicles.

Further inland (into Iraq) the ground was more rocky, with coarser sand. The major terrain feature of the area was the huge Wadi al-Batin.[2] This was a divisional-sized avenue of approach into Saudi Arabia which ran southwest to northeast. In both Iraq and Kuwait there was a notable lack of terrain features. For those who had never navigated in

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[1] Lynn Montross. War Through the Ages. (New York: Harper & Brothers, 1946), p. 57. Also see: Leonard Cottrell. Hannibal -- Enemy of Rome. (New York: De Capo Press, 1991)., pp. 31-78.

[2] Valley in Arabic.

featureless deserts, finding a precise location was a headache.[3]

In fact, intelligence indicated that one of the reasons the famous "end-run" of the Allied forces was not contested more strongly was because the Iraqis, who had their own problems determining position, did not believe the Coalition could do any better. They were wrong. The Coalition found a hi-tech way to navigate accurately.[4]

What transportation grids that existed in Saudi Arabia outside of the major urban areas were devoted mainly to oil fields. The few major highways that existed linked the larger cities of the region together. Major obstacles to cross-country movement included the oil fields with their large pipeline systems that moved crude oil to the coastline, some outcroppings of rock, and small wadis.[5]

Aside from the often oppressive heat and ever present sand, other conditions also affected operations. Each year during January and February, blinding wind and sand storms known as "shamals" continued for days. During these months aircraft in particular had problems because ceilings were uncommonly lower than normal. In fact, during Operation DESERT STORM the weather over Kuwait was the worst in fourteen years.[6]

Few humans or machines have ever thrived in the desert or grown to love it. Into this land of extremes came the best the U.S. Army had. An old ally Saudi Arabia had a hostile army on its borders, and had asked its friends for military help and President George Bush provided it. Iraq's aggressive behavior was a threat to regional stability.

Though the war with Iran ended in a stalemate, Saddam Hussein emerged with his power intact. As the Conduct of the Persian Gulf War - Final Report to Congress put it:

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[3] For a tactical appraisal of the desert terrain, see: Brigadier General Robert H. Scales, Jr., USA, Director. Certain Victory: United States Army in the Gulf War. (Washington, D.C.: Office of the Chief of Staff, 1993). pp. 119-121.

[4] The Army used the Global Positioning System or GPS that tied in the used to a satellite and could give extremely accurate position fixes. See: Ibid, pp. 305, 362.

[5] Ibid., pp. 55-56.

[6] Conduct of the Persian Gulf War. Final Report to Congress. Pursuant to Title V of the Persian Gulf Conflict Supplemental Authorization and Personnel Benefits Act of 1991 (Public Law 102-25), Chapters I through VIII, April 1992. p. 356.

> Emerging from the Iran-Iraq war at the helm of the dominant military power in the Gulf, Saddam saw himself as the premier leader in (and of) the Arab world. In April, 1990, claiming an enlarged region, Saddam had demanded withdrawal of US forces from the Gulf.[7]

Saddam Hussein miscalculated. His invasion of Kuwait was intended to serve two purposes: To send a message to other oil producing members of the Gulf that the dominant power in the region was Iraq, not Saudi Arabia. That dominance would have been quickly translated into higher prices from OPEC.[8]

The second reason was to solve immediate financial problems.[9] Iraq had obtained billions of dollars in loans during the Iran-Iraq War. Iraq did not have the money to pay the interest let alone the principal. Kuwait had large cash reserves. Invasion involved little direct danger as Kuwait was militarily insignificant and had no "friends" with military power. In a way, Kuwait's earlier foreign policy was its own undoing.

Kuwait had been very careful through the previous two decades to steer clear of alliances.[10] When faced with a diplomatic problem, Kuwait sought a solution through conciliation. When the Kuwaitis realized that Saddam was serious about taking military action, they searched desperately for allies, even approaching the Iranians, but were unsuccessful. Thus when Saddam's army attacked across the border at 0100 hrs, 2 August [1990], only the 20,000 man Kuwait army barred their way.[11]

Saddam had picked his target well. Kuwait was no Iran.

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[7] Ibid., p. 3.

[8] Organization of Petroleum Exporting Countries.

[9] Ibid., p. 4.

[10] In the 1950's, Iraq threatened Kuwait, and British troops were rushed to the country. Iraq then backed down. This time, no British troops would be coming. See: Alvin J. Cottrell, General Editor. The Persian Gulf States. A General Survey. Baltimore, Md.: Johns Hopkins University Press, 1980. p. 67.

[11] Command Report of Operations Desert Shield and Desert Storm. (Fort Hood, TX: The First Team, 1st Cavalry Division, 10 April 1991). p. 2.

> Kuwaiti armed forces were no match for the assembled Iraqi force. Although Kuwaiti armed forces had gone on full alert after Saddam Hussein's 17 July speech, they reduced alert levels a week later to 25 percent. This may have been done in an attempt to reduce the tension between Kuwait and Iraq. Kuwaiti military resistance was uncoordinated, despite individual acts of bravery. Kuwaiti forces were hopelessly outmatched. Army elements attempted to recapture the Emir's palace and the 35th Armored Brigade tanks tried to mount a defense against approaching Republican Guard armored formations. Kuwaiti casualties are estimated to have been light, but specific numbers are unknown.[12]

The Iraqi main effort of two divisions -- one armored and one mechanized -- came down the main north/south highway (Highway 6). An armored division (Medina) conducted a supporting attack in western Kuwait. Bubiyan Island off the Kuwait coast was seized by Iraqi marines, and two Special Forces battalions air assaulted into Kuwait City.[13] Several Iraqi special forces units had already been pre-positioned in Kuwait as a fifth column.[14]

The Emir of Kuwait, Sheik Jabbar al Sabah, barely escaped from his palace in Kuwait City moments before Iraqi commandos attacked. Within three days, all of Kuwait was occupied.[15] As soon as all organized resistance ended, the Republican Guard forces were withdrawn and replaced with regular divisions.[16] Saddam called his new conquest the 19th Province of Iraq. The world was shocked, but Hussein

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[12] Conduct of the Persian Gulf War, op. cit., p. 1.

[13] In the first video tapes of the invasion shown on American television, viewers saw Iraqi units landing by helicopter while two Kuwaiti armored cars took them under fire. These troops were part of the Special Forces battalions then being air landed in Kuwait City.

[14] Ibid. The term fifth column comes from the Spanish Civil War. When asked about his attack on Madrid, General Mola is said to have replied, "I have four columns moving on Madrid and a fifth inside the city." See: A. Majorie Taylor. The Language of World War II. Abbreviations, Captions, Presentations, Slogans, Titles, and Other Phrases. (New York: H. W. Wilson, Co., 1948). p. 80.

[15] Conduct of the Persian Gulf War. op. cit., p 1.

[16] Ibid, p. 3.

believed that there would be verbal condemnation as a result of the invasion but no military action.[17]

Iraq's President had not counted on the resolve of the President of the United States. President George Bush, Secretary of Defense Richard Cheney, and Joint Chiefs of Staff Chairman General Colin Powell did not need to be reminded of the necessity of a response to Iraq's blatant aggression.

> Saddam's seizure of Kuwait, left unanswered, threatened Saudi Arabia and its vast oil resources, in particular. He could have moved against Saudi Arabia, but even if he did not, the ominous presence of overwhelming force on the Kingdom's borders, coupled with the stark evidence of his ruthlessness toward his neighbors, constituted a threat to Saudi Arabia and vital U.S. interests.[18]

Hussein's invasion led, within a few days, to the initiation of Operation DESERT SHIELD by the United States, and movement of American troops to Saudi Arabia.[19] With Saddam's large army near the border the United States was rightly afraid of the collapse of a world economy so dependent on oil should Saddam attack Saudi Arabia. An interruption in oil deliveries could be catastrophic. For nearly four decades the Saudis had a cordial and close relationship with the United States. The House of Saud had developed an infrastructure of port facilities to support a friendly military force sent to defend Saudi Arabia.[20] Prior planning and building paid off.

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[17] There had been a great deal of condemnation from the world when reports reached the West that Saddam's forces were using poisoned gas against the Kurdish minority. The protests were quickly forgotten. See: Sciolino. The Outlaw State, op. cit., p. 186.

[18] Conduct of the Persian Gulf War, op. cit., p. iv.

[19] King Fahd was risking a great deal allowing U.S. troops into his country. As the official keeper of several of the most religiously important shrines of Islam, many Moslems would not take kindly to having thousands of unbelievers in the country. Since Saudi culture and American culture were quite different, there was a real danger of a culture clash. Because of the good will on both sides, this was avoided. See also: Bob Woodward, The Commanders (New York: Simon and Schuster, 1991), p. 272.

[20] Brigadier General Robert H. Scales, Jr., USA, Director. Certain Victory: United States Army in the Gulf War. Washington, D.C.: Office of the Chief of Staff, 1993. p. 57.

The initial mission of the American forces was to defend Saudi Arabia from an Iraqi invasion. With so few troops at his immediate disposal, General Schwartzkopf had to adopt a defensive posture.

> The area defense concept called for establishing initial defenses near Al-Jubayl and Dhahran, and using air power to reduce substantially the combat power of attack Iraqi forces.[21]

Although Saddam apparently did not plan to invade, American and Saudi troops were on the alert in the early days of DESERT SHIELD. As U.S. paratroopers and their supporting AH-64's and AH-1's prepared for a possible defensive battle, President Bush rallied the United Nations and brought diplomatic pressure to bear against Iraq to force Saddam to withdraw his forces from Kuwait.[22]

When economic sanctions and world pressure failed to budge the Iraqi leader, President Bush in consultation with the Coalition allies who had sent contingents to Saudi Arabia, despatched additional American troops to develop sufficient offensive capability for a direct military confrontation with Iraq and the possibility of war. Aside from the military risks, the political and economic fallout from such a war would be devastating to the U.S..

There was another reason almost as important. If the Allies continued to embrace the strategic defensive, they could not expect much. As Colonel (ret.) Harry G. Summers wrote in his <u>On Strategy II. A Critical Analysis of the Gulf War</u>:

> Thus a whole generation of military officers failed to perceive what von der Goltz [German Field Marshal] had made clear before the turn of the century: No matter how fine an army, no matter how well they were led, no matter how

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[21] <u>Conduct of the Persian Gulf War</u>. op. cit., p. 41.

[22] "The 82nd Airborne Division, although deployable rapidly, is primarily a light infantry division, albeit one that has substantial anti-armor capabilities with its attack helicopters." Ibid, p. 48. Also see: Brigadier General Scales. <u>Certain Victory</u>. op. cit., pp. 82-85.

> bravely they might fight -- the best result obtainable on the strategic defensive is **stalemate** (author italics).[23]

As 1990 turned into 1991 the defensive oriented Operation DESERT SHIELD became the offensive-oriented Operation DESERT STORM. Attack plans were readied that would launch the U.S. Army and its allies against the fourth largest army in the world. Saddam Hussein predicted that this conflict would be the "Mother of all Battles." He was only partially right.

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[23] Harry G. Summers, Jr. (Colonel, USA ret.) On Strategy II. A Critical Analysis of the Gulf War. (New York: Dell Publishing, 1992), p. 185.

THE EXECUTION OF DESERT STORM

The principal focus of the ground campaign was two-fold -- to liberate Kuwait and in the process remove Iraq's capability to destabilize the region through the use of its huge army. Operation DESERT STORM had to insure that the bulk of Iraq's main battle tanks, armored personnel carriers, and artillery was destroyed.[1] It was the Iraqi army's equipment, not its soldiers, that was the principal target of coalition forces. This destruction had to be accomplished before the Iraqi army retreated from Kuwait.

Saddam Hussein was intelligent enough to know that his survival and influence in the region depended on the Republican Guards.[2] At the first sign of real danger, he would probably order the Guards back into Iraq. The coalition planned ways to prevent this.

Operation DESERT STORM's air power segment included air strikes to insure destruction of the bridges over the Euphrates River in Southern Iraq to trap the bulk of Iraqi armor in Kuwait where the Coalition forces could destroy it. The XVIIIth Airborne Corps was given the mission of moving rapidly north into western Iraqi then turn east and block the key escape route for the Iraqi Army along Highway 8. A XVIIIth Airborne secondary mission was to protect the left flank of the armor heavy VII Corps as it attacked the Republican Guards.[3]

The XVIII Airborne Corps began its "shift-left" movement on 17 February (1991). Moving the entire corps to battle positions consumed nearly 10 days. Iraqi intelligence gathering activities had been lowered to the point of watching the information and analyses presented on CNN and other TV networks.[4] New reports on the movements of the XVIIIth Airborne Corps (82nd Airborne Division, 101st

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[1] Brigadier General Robert H. Scales, Jr., USA, Director. Certain Victory: United States Army in the Gulf War. (Washington, D.C.: Office of the Chief of Staff, 1993). pp. 111-112.

[2] Ibid., p. 114.

[3] See: Conduct of the Persian Gulf War. Final Report to Congress. Pursuant to Title V of the Persian Gulf Conflict Supplemental Authorization and Personnel Benefits Act of 1991 (Public Law 102-25). p. 338.

[4] Ibid., p. 344.

Airborne Division, 24th Infantry Division and the French 6th Light Armored division), news reports were deliberately deceptive -- the corps was not moving north as the reports had indicated, but west toward Iraq.

For important tactical reasons, the first XVIIIth Airborne units to be in position were the aviation brigades, and they immediately began conducting armed reconnaissance missions across the FLOT (Forward Line Own Troops) to the estimated depth of the Corps sector (i.e., the Euphrates River).[5]

Operating from bases near Rafha, Apache Battalions of 101st Airborne flew long and short range missions around the clock.[6] Night missions were particularly useful because the enemy was usually unaware the aircraft were even there and when they did see them, felt no danger because they could not believe enemy helicopters could be that far in Iraqi territory.[7]

Apaches in particular were a valued reconnaissance tool. Its (AH-64) missions were recorded on video tape, and used by G2/S2 for intelligence assessments within minutes of landing. Commanders and operational planners could see what was in front of the division, and plan accordingly.[8]

By the time G-day commenced (0400 hrs, 23 February 1992), unit commanders, thanks largely to Army Aviation, had detailed intelligence about their direct opposition. Few

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[5] The 101st Aviation Brigade "executed the 400nm air deployment of over 300 divisional aircraft to TAA Campbell under the cover of the air campaign over a period of 10 days. Simultaneously, the Brigade's vehicles road-marched 750 miles to TAA Campbell." See: Memorandum for Commander, 101st Airborne Division (Air Assault), AFZB-KF-CD, 10 Jun 91, sub: Executive Summary - Operation Desert Shield/Storm. 101st Aviation Brigade File, Branch Historian Office, p. 6.

[6] Oral Interview, Colonel Thomas W. Garrett, 20 December 1993, Oral History File, Branch Historian Office.

[7] Transcript. Oral Interview. Lieutenant Colonel William Bryan, 14 May 91, Oral History File, Branch Historian Office, p. 51.

[8] "The 1-101st AATK Bn reached the zone intended for FOB COBRA for the first time in the early morning hours of 16 February 1991. . .the pilots discovered a built up area . . . consisting of several structures, vehicles, and numerous bunkers and personnel . . . but [flights] confirmed that the COBRA area itself was virtually undefended." Memorandum for the Commander, 101st Airborne Division (Air Assault), AFZB-KF-CD, 10 Jun 91, sub: Executive Summary - Operation Desert Shield/Storm. 101st Aviation Brigade File, Branch Historian Office. pp. 6-8.

armies in history have had such a complete intelligence picture of the enemy prior to battle.[9]

Gazelle anti-tank helicopters of the French 6th Light Armored division were first across the line of departure at 0530, 24 February (1990).[10] Flying in direct support of the French helicopters were Army OH-58D Kiowas.

Because of several unforseen problems including weather, the 101st didn't begin the largest air assault in history until around 0800. Waiting for daylight to begin the assault was a calculated risk, but deemed worth taking.[11] The potential for accidents in landing zones with hundreds of helicopters in the area was just too great.[12]

As the "Screaming Eagles" moved toward FOB (Forward Operating Base) Cobra, French armored forces collided with an Iraqi brigade and a battle began for control of a road junction the French called Objective ROCHAMBEAU.[13] As the French armored forces were fighting for critical terrain, American lift helicopters were approaching their landing zones "bearing an air assault brigade of 2,000 men and 50 HUMVEES and howitzers in the largest airmobile operation in history."[14]

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[9] As an example, see the comparison between the Iraqi map of a particular position and intelligence appraisals prepared by the 1st Infantry Division of that same area. The match between the two was almost exact. See: Scales, Certain Victory. op. cit., p. 228.

[10] Ibid., p. 217.

[11] An OH-58 had crashed in darkness [no casualties], and it was this event that helped trigger the wait for full daylight. Oral Interview, Colonel Thomas W. Garrett, 20 December 1993. Oral History File, Branch Historian Office. Lieutenant Colonel Richard Cody (1-101) also sent back information about the poor flying conditions from the PZs to the LZ at Cobra. Rick Atkinson. Crusade: The Untold Story of the Persian Gulf War. (Boston, MA: Houghton Mifflin Company, 1993). pp. 384-385.

[12] Many of the commanders were no doubt aware of the catastrophic accident at DESERT ONE during the failed Iranian hostage rescue attempt. In the darkness of the crowded landing zone, a Navy CH-53 helicopter collided with a parked C-130 which touched off a firestorm as both aircraft burst into flames. See: Col. (ret) Charles Beckwith and Donald Knox. Delta Force. (San Diego, CA: Harcourt Brace Jovanovich, 1983). pp. 278-280.

[13] Named for the General that commanded French units during the Yorktown Campaign. See: Christopher Hibbert. Redcoats and Rebels: The American Revolution Through British Eyes. (New York: Avon Books, 1990), p. 291. FDor a good description of the battle, see: Scales, Certain Victory, op. cit., p. 217. Also see: Atkinson. Crusade, op. cit., pp. 383-384.

[14] Bruce W. Watson, Bruce George, Peter Tsouras, B. L. Cyr, and the International Analysis Group on the Gulf War. Military Lessons of the Gulf War. (Novato, Calif: Presidio Press, 1991). p. 100.

Proceeded by AH-1's and AH-64's the 101st leading brigade touched down at FOB Cobra. The first lift consisted of 66 UH-60's and an entire battalion of CH-47's. With the first brigade safely down on FOB COBRA, the lifts returned to pick up the 2nd Brigade for a possible follow-on assault to the Euphrates.[15]

CH-47's (4 separate lifts were required to move specifically configured pallets of fuel and ammunition) provided critical logistical support for the initial set-up of FOB Cobra. What the Chinooks brought in had to last until a 700 vehicle supply convoy reached the position at night on G-Day.[16]

The 24th Mechanized Division and the 3rd Armored Cavalry Regiment crossed their lines of departure late in the afternoon of 24 February during a blinding "Shamal". Observing strict radio silence, the two units moved unseen and undetected nearly 30 miles into Iraq.[17] Iraqi intelligence still placed the 24th and the 3rd ACR nearly 250 km to the east.

Within hours of the beginning of Operation DESERT STORM, it became rapidly apparent that the disintegration of the Iraqi Army was occurring faster than expected, so if the Coalition plan was to accomplish all its operational parameters, speed and flexibility were essential. Army aviation was ready to provide critical assistance to the ground forces in blocking Iraqi units as they raced to safety (or the "mother of all retreats" as one senior general at CENTCOM put it).[18]

The 101st accelerated its plan to "bounce" the 3rd Brigade up to Highway 8 as a blocking force. At 0100 hrs on 25 February, AO (Area of Operations) Eagle was occupied.

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[15] Memorandum for Commander: 101st Airborne Division (Air Assault), ATZB-KF-CD, 10 Jun 91, sub: Executive Summary - Operation DESERT SHIELD/STORM. 101st Aiviation Brigade File, Branch Historian Office. pp. 8-10.

[16] Task Force HEMMT did not close on VIPER with supplies until EENT on 27 February. Memorandum for the Commander - 101st Airborne Division (Air Assault), AFZB-KF-CD, 10 Jun 91, sub: Executive Summary - Operations Desert Shield/Storm. 101st Aviation Brigade File, Branch Historian Office, pp. 11.

[17] Major Jason K. Kamiya, USA. A History of the 24th Mechanized Infantry Division Combat Team During Operation Desert Storm. (Fort Stewart, Georgia: 24th Infantry Division, 1991). p. 23.

[18] "The Day the War Stopped." Newsweek, January, 1991, p. 21.

Airborne infantry quickly constructed blocking positions astride Highway 8 emplacing their TOW equipped HMMWV's in defensive positions.[19] The 3rd Brigade would occupy this blocking position until the end of the war.[20]

As the 101st was reaching its objectives for the day, the French 6th Light, having secured Objective ROCHAMBEAU the day before, drove toward the road junction of As Salman knowing that they faced elements of the 45th Iraqi Division whose defenses they knew from reconnaissance were oriented on a Southeast line as if expecting coalition forces to come through Kuwait. Approaching from due south with Gazelles and Kiowas in the lead, French armor slammed into the flank of the Iraqi units.[21] Iraqi defenses broke quickly and French forces attacked deep into the 45th Division's sector. By noon, 25 February, the 45th Division had ceased to exist. All along the front, victory greeted every coalition attack.

The 24th Armored and the 3rd ACR drove north reaching divisional objectives in the vicinity of Al Busayyah-As Salman. The division assumed a hasty defensive position to prepare for a jump to the major line of resistance --- Iraqi forces defending Tallil and Jalibah airfields.[22]

As these combats were taking place, momentous events were occurring further east. JSTARS (Joint Surveillance and Target Attack Radar System) showed that the Iraqis were now aware that one vital lifeline -- Highway 8 -- was occupied by U.S. troops and could not be used. Huge Iraqi columns were detected moving eastward toward the four-lane causeway over the vast Al-Hammar Lake. This causeway, and a bridge to the north, were the only avenues open for Iraqi forces to reach safety. Undoubtedly, Saddam hoped to get his "Golden

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[19] Colonel Thomas W. Garrett, the Commander, 101st Aviation Brigade, not only had to provide anti-tank protection with his Apaches/Cobras for the dug-in infantry along Highway 8, but also launch other units to attack the Al-Hammar area. Oral Interview, Colonel Thomas W. Garrett, 20 December 1993. Oral History File, Branch Historian Office.

[20] Some Iraqi vehicles did attempt to pass the block, but they were quickly destroyed. See: Memorandum for Commander, 101st Airborne Division (Air Assault), ATZB-KF-CO, 10 Jun 91, sub: Executive Summary - OPERATION DESERT SHIELD/STORM. 101st Aviation Brigade File, Branch Historian Office, p. 10.

[21] French aviation regiments usually attacked with "two squadrons abreast with a mix of ten antitank, six cannon-armed and four reconnaissance Gazelles followed by Pumas to recover casualties and downed aircraft." Bruce W. Watson, et. Al. Military Lessons of the Gulf War. op. cit., p. 100.

[22] See: Kamiya. The 24th Infantry Mechanized Division Combat Team. op. cit., pp. 3-8.

Children" (Republican Guards) out of Kuwait before they were overrun, but as American units closed with the Republican Guards, they turned and fought to cover the retreat of that portion of the Guards that had not become engaged.[23]

This decision necessitated a rapid shift in ARCENT planning. A quick boundary change was then orchestrated with the XVIII Corps continuing its blocking of Highway 8 and sending armored forces and attack helicopters sweeping down the Euphrates River valley toward Basrah.[24]

VIIth Corps, now deep into the northern portion of southern Iraq, wheeled due east, a move designed to bring the full combat power of the corps to bear on the Republican Guards before they could reach the relative safety of Basrah.[25] This boundary change now placed the causeway over Al-Hammar lake in the XVIIIth's AO (area of operations). Two factors acted as a catalyst for the developing situation at the causeway.

Coalition aircraft reported that thousands of Iraqi vehicles were stopped at the southern end of the bridge waiting for their turn to cross, and, secondly, that the Iraqis had blown up the oil wells in the area. Thick, black smoke from these wells greatly lowered visibility and hampered Coalition air attacks.

The leadership of the XVIIIth Airborne Corps assessed the situation -- if the bridge could be immediately blocked, hundreds of tanks, APCs and other support vehicles would be trapped on the south side, and destroyed. Ground elements (as well as their artillery support) would not be able to reach the area for nearly 48 hours. Some way had to be found to attack and stop those troops before they could reach safety. Only one weapons system was available that could do the job -- the Apache.

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[23] Their nickname in Iraq. The Republican Guards were both paid more than the average Iraqi army units, and they received the best equipment and training. They were the units that Saddam relied upon to crush any opposition.

[24] Scales. Certain Victory. op. cit., pp. 129-130.

[25] The VIIth Corps did not move as quickly as General Schwarzkopf wanted because Lieutenant General Franks wanted to bring all his units together for a concentrated attack. This issue is still being debated in military circles. See: Ibid., pp. 251-252; Atkinson, Crusade, op. cit., pp. 405-407.

The XVIIIth Airborne Corps launched part of its AH-64's at the Iraqis. Forward arming and refueling points (FARPS) were quickly moved to a new FOB named Viper (the wheeled portion of the logistics train ran into difficulties because they traversed areas heavily seeded with scatterable mines and other types of maneuver inhibiting munitions. As they convoys moved through these area, some of the munitions exploded causing casualties, confusion and delay).[26]

Refueled and rearmed the Apaches of the 1-101st ATKHB and the 2-229th ATKHB flew from FOB Viper to attack the area of the Al-Hammar causeway. They had the speed, firepower, and range to make the attack. Artillery was too far away to influence the situation.[27]

As the AH-64s approached the target, the area was obscured by so much smoke that it was described by many who flew the mission as Dante's Inferno. The Apaches FLIR (Forward Looking Infrared Radar) system could see through the haze.[28] If the Iraqis thought that firing the oil wells in the area would save them from attack, they were mistaken. As each Apache company came on line, tanks and APCs in the target area began to blow up and burn scattering Iraqi soldiers in all directions.[29]

As the Apaches of the 1-101st raked the causeway with Hellfire missiles and 30mm cannon, more Iraqi forces were being pushed toward the target area. The VIIth Corps had contacted the Adnan Division and savaged it in short, but heavy fighting.[30] The failure of the Adnan division to act

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[26] Transcript. Oral Interview, Lieutenant Colonel William Bryan, 14 May 1991. p. 32.

[27] See: Memorandum for Record, AFFR-BAH-O, 17 May 91, sub: Operations Desert Shield and Desert Storm After Action Report for 2-229th AHR. 2-229th File, Branch Historian Office, pp. 8-9.

[28] During World War II, the Germans used hundreds of smoke generators to obscure target cities. They were aware that the Norden bombsight could not accurately hit targets it couldn't see. The British, however, developed a radar system in aircraft that allowed bombardiers to see a radar outline of the city and, therefore, bomb with accuracy. See: Max Hastings. Bomber Command. (New York: The Dial Press, 1979), p. 193. It is interesting to note that during the war, several "military experts" for news organizations noted that smoke could hamper the use of thermal sights. Just after that, the Iraqis blew up some of the old wells. The cause and effect here was too close to be happenstance.

[29] See oral interview with Captain Perry Wiggins, Lt. Col. William Bryan, and Captain Tim DeVito. Oral History File, Branch Historian Office.

[30] Scales. Certain Victory, p. 235.

as a rear guard forced the Nebuchandnezzar Division to begin a hasty retreat northward -- further clogging the causeway.

After Lt. Col. Cody's 1-101st expended their ammunition, they were replaced on the firing line by Lt. Col. Bill Bryan's 2-229th who continued the relentless destruction.[31] Even as the "Flying Tigers" missiles were destroying Iraqi vehicles, XVIII Airborne Corps was sending more attack helicopter battalions (ATKHB) (3-227th and the 5-6th) to attack enemy vehicles on the north side of the causeway.[32]

On the 27th of February these two attack helicopter battalions moved North of the Al Hammar causeway attacking Iraqi vehicle concentrations, and also destroying a pontoon bridge over the Euphrates. At dark, the two battalions landed back at FOB VIPER having completed a six hour combat mission flying 450 km in the process. The next morning, a cease fire went into effect, and some believed that the "battle of the causeway" had come to an end. Those who did were wrong!

Just prior to the occupation of FOB VIPER, 24th Infantry Division (MECH) attacked Tallil and Jalibah airfields. The Iraqi resistance was mixed. Some units surrendered, others fought to the end -- i.e., an Iraqi Command Regiment fought near Tallil airfield for four hours before giving up. Prior to their surrender the commandos were subjected to the concentrated firepower of much of the 24th Mech Division's supporting artillery along with air strikes.[33]

For the XVIII Airborne Corps, one final battle took place. The 24th Infantry Division closed on the Hammurabi Division northwest of Basrah. Artillery fixed the Iraqis as ground elements maneuvered to deliver a decisive blow. However, the Hammurabi Division quickly retreated away from the limit of advance for the Corps -- a line running north-

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[31] For a personal view of the battle, see: Lt. Col. Bryan oral interview, Oral Interview Files, Branch Historian Office.

[32] Briefing Script. 101st Airborne Division (Air Assault), Operation Desert Shield/Storm. 101st Aviation Brigade File, Branch Historian Office, pp. 13-14 (slides 125-126).

[33] Kamiya. A History of the 24th Mechanized Infantry. op. cit., pp. 26-30.

south just west of the causeway (Phase Line VICTORY) just as a cease fire was announced.[34]

The enemy took advantage of the cease fire. Iraqi Army engineers worked during the night of the 28th (February) to repair the Al-Hammar causeway and remove the destroyed vehicles that would allow the balance of the Iraqi forces still in Kuwait to cross to safety. By morning, a temporary causeway was open, and the Hammurabi and the remains of other Iraqi units made a dash for the causeway and to safety.[35]

As elements of the Hammurabi Division approached the causeway, they opened fire on units of the 24th. More than 700 Iraqi wheeled and 300 tracked vehicles were in the area when the second battle of the causeway began. Cobra attack helicopters of the 24th Division's Cavalry Squadron were immediately launched to stop vehicles that had already crossed. A TOW missile struck a large ammunition truck that was just crossing the earthen dike, and it exploded in a great ball of fire blocking further traffic.[36] Apaches of the 1-24 ATKHB were summoned to deal with the trapped vehicles on the south side of Al Hammar. After Lieutenant Colonel Tom Stewart's Apaches finished their attack, the ground brigades of the 24th swept through the remains of the Hammurabi division. The battle of the causeway had finally come to an end -- Final Box Score: Apaches 200+ vehicles destroyed/Iraqis zero.[37] To the south, the VIIth Corps was also doing its part in Operation DESERT STORM.

The force that was intended from the beginning to deliver the knockout blow to the Iraq's armored forces in the KTO (Kuwait Theater of Operations) was the VIIth Corps commanded by Lt. Gen. Frederick Franks. It's potential combat power was the most powerful assembled by the U.S.

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[34] Ibid., p. 31.

[35] Ibid.

[36] Related to author in an oral interview. Colonel Burt Tackaberry and Staff, 24th Aviation Brigade, Fort Stewart Georgia. Oral History Files, Branch Historian Office.

[37] Kamiya. op. cit., pp. 36-37.

Army in nearly five decades.[38] It was such a huge force that the Corps' zone of attack stretched 50-70 km east to west and nearly 120 km deep.

The striking power of this corps was awesome containing 1,000 of the Army's finest main battle tanks (M1A1 Abrams), nearly 100 attack helicopters most of whom were AH-64s, one of the new ATACMS batteries, and over 100,000 soldiers (transported and supplied by 50,000 vehicles of all types).

Like the XVIIIth Airborne Corps, the VIIth Corps had to "shift left", but began doing so a day earlier on 16 February. It, too, left deception cells in place to mimic the electronic signature of the Corps, and news reports falsely portrayed its movement as North and not West.

As the VIIth Corps moved along Tapline road to FAA Garcia (the Corps attack position), allied intelligence analysts intently watched for any Iraqi movements that betrayed they had detected what VIIth Corps was about to do. Fortunately, no indications were forthcoming. The Iraqi leadership was still firmly fixed on southern Kuwait.

With care so as not to draw any undue Iraqi attention, VIIth Corps units mounted patrols to "feel out" what was in front. Seventh Corps reconnaissance helicopters flew a number of night, armed-reconnaissance missions to significant depth to determine the location and disposition of the Iraqi forces to directly examine trafficability in sector. These missions normally returned with video tape for instant intelligence analysis.

At 0538 on the morning of 24 February VII Corps units began breaching the Iraqi border obstacles; for example, the 1st Infantry Division (Mechanized) breached the berms to allow the passage of the British 1st Armored Division.[39] The British 1st Armored Division was to attack a three division Iraqi reserve located in the area.

On the western flank, the 3rd ACR provided a screen and coordination with the adjacent XVIII Airborne Corps. The 2nd Armored Cavalry Regiment, with it's right flank secure, moved 15 km to the north and set out a screen. Behind the

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[38] Its firepower was significantly greater then General George S. Patton's Third Army which contained more than 250,000 men and nearly 15 divisions.

[39] Nicknamed the "Desert Rats" because armored units that were still part of the division had taken part in World War II against Rommel in North Africa.

2nd ACR, the 1st and 3rd Armored Divisions were moving up and preparing to follow the 2nd ACR into the depths of the Iraqi defenses.[40]

Tactically, things were going so well that the operational timetable was accelerated by 15 hours. On February 25th, one Iraqi infantry division was the target of no less than three U.S. divisions (1st Armored, 3rd Armored, and the British 1st Armored).[41]

The VIIth Corps, now deep into the Iraqi defenses, executed a classic blitzkrieg operation as it closed in on its target -- the Iraqi Republican Guard.

With the 2nd ACR in the lead, the VIIth Corps armored juggernaut moved toward the positions of six Republican Guard Divisions. These Iraqi divisions had already been "softened up" by continuous bombing strikes by Coalition aircraft. Republican Guard positions were still oriented to the south. Intelligence had not yet reached them of the VIIth Corps approaching from the West. The first contact was expected to be at or near a map grid with the unlikely name of "73-Easting."[42]

The 2nd ACR's orders were "On order, 2ACR covers the Western flank of VII (US) Corps as it occupied FAA Utah. On G+1, 2ACR attacks through the western flank of enemy defenses and conducts offensive cover operations in order to develop the situation for VII (US) Corps."[43] Once the 2nd Armored Cavalry found and fixed the enemy, the VIIth Corps coiled its forces for the attack.

General Franks ordered the major striking power of his corps -- 1st and 3rd Armored Divisions -- to pass through the 2nd ACR and take on the Iraqis. The resultant battle was a masterpiece of combined arms synchronization. As the 2nd ACR moved into reserve, hundreds of M1A1 tanks and M2 Bradley APCs of the two armored division moved by in battle formation headed towards the enemy.

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[40] Scales. Certain Victory. op. cit., p. 231.

[41] Ibid., p. 263.

[42] For a synopsis of the battle see: Michael D. Krause (Colonel, USA), The Battle of 73 Easting, 26 February 1991: A Historical Introduction to a Simulation. (Washington, D.C.: Center of Military History and Defense Advanced Projects Agency, August 1991).

[43] Ibid, p. 5.

First, a massive artillery barrage struck the Iraqi positions. As soon as the artillery barrage was lifted Apache helicopters were launched from bases close behind the two divisions, and they moved out like horde of hungry locusts to attack Iraqi armor.

Tank after tank, protected in earthen berms, blew up in fiery explosions.[44] When the Apaches expended their missiles, they broke station to rearm, and the artillery resumed its suffocating fire.

Just as Abrams main battle tanks closely followed by Bradley fighting vehicles reached their firing points, Apaches again attacked the battered Iraqi positions before the massed armored divisions closed in for the kill. Technology enabled both the Apaches and the M-1's to obtain immediate hits in the near darkness and smoke from burning oil wells and blowing dust. As the 1st and 3rd Armored hit the Iraqi positions broadside, Apaches attacked deep into positions occupied by the Medina division and a huge Iraqi supply and logistics base.[45]

In the often savage and close actions fought between Americans and Iraqis, the superior thermal sights of Abrams and the skill of American soldiers and attack helicopter crews carried the day. While the 3rd Armored Division completed the destruction of the 52nd Armored Division, the 1st Armored dashed ahead to engage the Medina Division.

As the 1st Armored approached, the carefully orchestrated ballet of close air support, Apaches, and artillery paved the way. This process had already damaged the Medina division's combat capabilities even before the ground battle was joined. Within the short span of just 40 minutes, the Medina ceased to exist as depleted uranium main gun rounds tore right through the sand berms of the Iraqi

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[44] The berms were oriented towards the south and gave some artillery protection, but almost no anti-tank protection. Positions attacked earlier by the 2ACR were described in these words: "Vehicle positions were poorly sited and did not provide maximum field of fire. The vehicle berms provided protection from artillery but none from tank main gun and TOWs fired at close range. Tanks could only fire from one flank or the other and had no visibility to the front." Michael D. Krause (Colonel, USA), The Battle of 73 Easting. 26 February 1991: A Historical Introduction to a Simulation. (Washington, D.C.: Center of Military History and Defense Advanced Research Projects Agency, August 1991), pp. 27-28.

[45] There were many ammunition bunkers in this supply complex, and most had not been destroyed by air attacks.

positions blowing up tank after tank.[46] In some instances, T-72 turrets were tossed 100 feet into the air when American 120mm rounds detonated their ammunition and fuel. The ferocity of the fighting was dramatically demonstrated by the fact that only 55 Iraqis were taken prisoner -- the rest stood, fought, and died.[47]

Because of the imminence of a cease fire, VIIth Corps units picked up the pace to find, fix, and destroy Iraqi units. Aviation units in front of the ground units not only provided immediate intelligence and security, but contacted, and then attacked feeling Iraqi units holding them in place so the ground forces could catch up. What little remained of the Medina division was destroyed during VIIth Corps' pursuit.

The First Infantry Division (Mechanized) had to clear bypassed Iraqi units from Safwan Airfield as it had been designated as the location for the surrender talks. At first, when confronted by a small number of 1st Division personnel, the Iraqis were resolved to fight to the last. When more combat units arrived, the Iraqis thought better of a last ditch defense, and moved.

When historians come to analyze the reasons for overwhelming successes on this battlefield, they will write that U.S. personnel and equipment were clearly superior. For example, all units with the exception of two battalions in the 1st Infantry Division were equipped with the superior M1A1 main battle tank. During the 100 hour war, only two Abrams were damaged by enemy fire.

The Bradley also proved to be as a durable vehicle as the Abrams. Of the more than 2,000 Bradleys brought to the desert, only three were destroyed and two damaged by enemy fire.

But, the most lethal and flexible weapon on the battlefield proved to be Army Aviation's Apache attack helicopter. Labeled in the press before the war as a weapons system boondoggle that couldn't fly or fight, the Apache did both in fine style.

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[46] Called "silver bullets" by the tank crews. Scales, Certain Victory, op. cit., p. 264.

[47] For a well written appraisal of the destruction of the Medina Division, see: Ibid., pp. 292-300.

Army aviation also provided real time intelligence and logistical support where and when needed. Since great distances are routine in the desert, aviation proved its worth in other areas -- logistics, search and rescue, working with the Navy in anti-ship patrols, and medical evacuations. The list goes on and on.

CHAPTER ONE

ATTACK HELICOPTERS

If there was one surprise "star" of Operation Desert Storm, one weapons system that rose, quite literally, above the rest, it was the AH-64. The Apache's systems performed so well during combat that Iraqi soldiers could not see or hear what killed them. VHS tapes from the gun cameras of Apaches showed in slightly fuzzy green images kill after kill from undreamed of distances, and in many cases, those within the vehicles had no idea they were in an Apache's gun sight.

The U.S. Postal Service has a motto that roughly states "neither rain, snow, nor gloom of night will stop these couriers from their appointed rounds." After Operation Desert Storm, the same could be said of the Apache. It's nearly all weather and all terrain capability allowed Apache to move and shoot in situations that other helicopters or ground elements could not. This ability was no accident, but the result of far sighted decisions by senior army leaders years before.

Following the end of the Army's involvement in South Vietnam, the military, and particularly the U.S. Army, were held in low esteem by the American people which translated into lean budget appropriations in the years between 1972 and 1980.[1] The Army leadership was forced because of funding cuts to select a few weapons systems to be continued as most others were cut completely. One of those few selected for retention was the AH-64.[2]

When the Apache came on line, it was ridiculed by so called "experts" as being too expensive and trouble prone. There were those who said that too much was expected of the system to be able to fly and fight in darkness.

They were WRONG. The combat operations selections you will find in this Chapter show the Apache and other attack

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[1] Brigadier General Robert H. Scales, Jr., USA, Director. Certain Victory: United States Army in the Gulf War. Washington, D.C.: Office of the Chief of Staff, 1993. pp. 6-8, 15-16.

[2] Ibid, pp. 19-20.

helicopters were in their element -- out in front in any weather, finding and then accurately destroying targets at great distances, and acting as the commander's fourth arm of maneuver.

Apaches have the flexibility, range, and firepower to provide the ground commander with a potent weapon limited only by the commander's vision. The Apache can probe and fix enemy forces for the kill, or can kill them by itself. The Apache can be used as a highly-mobile resource in the defense or offense and can influence the battle in several areas at the same time.

Attack helicopters in the desert was not exactly new. In fact, nearly a year prior to Operation Desert Shield, the U.S. Army had studied that situation during a CENTCOM CPX (command post exercise).[3] Colonel Robert N. Seigle, former USAAVNC Chief of Staff, but then the 18th Aviation Brigade commander, was a part of that CPX. You will see the importance of that operation through his eyes (Selection 1.1).

In the days preceding Operation DESERT STORM, the FLOT (Forward Line Own Troops) was no stranger to helicopters crossing at any time of the day or night. Following Colonel Seigle's interview, there are three operational reports dealing with cross border attack operations prior to Operation DESERT STORM. Selection 1.2 covers a deep night attack launched by the 5-6 ATKHB to strike an Iraqi bunker complex of the 841st Bde, 45th Iraqi Infantry Division. Selection 1.3 involves another deep attack on a radar site and an ammunition storage complex by the 5-6 ATKHB. Selection 1.4 highlights two night attacks across the FLOT by the 3-227 ATKHB to disrupt Iraqi reinforcements and supplies of the 45th Iraqi Infantry Division.

G-day, 24 February 1991, the beginning of the end of the Iraqi Army. Two operations narratives cover the beginnings of the operations performed by the 3-1 ATKHB and the 1-1 ATKHB. In one instance (Selection 1.5), attack helicopters served as aerial "cowboys" herding Iraqi prisoners to the rear, and in another (Selection 1.6) attack

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[3] Ibid., p. 93.

helicopters led the way for the armored units as they crossed the border to attack.

On 25 February, the attack continued, and in two selections, the 2-227th Attack Helicopter Regiment (AHR) (Selection 1.7) flies different missions on the right flank of the 3rd Armored Division. Acting as a screen for the division, the 34 aircraft of the 2-227th engage different targets with the same result -- destroyed. In the second selection, the 2-1st AHR conducts a 30km cross-border mission, and uncovers a battalion of dug-in Iraqi infantry. When the 2-1st (Selection 1.8) departs the area, that battalion had lost two companies of infantry.

The next day, 26 February, attacks continued. Operations during that day are covered by three more selections. The first is an interview (Selection 1.9) where you can see the battle through the eyes of an Apache Attack Platoon Leader, 2/227th Aviation.

The second selection (Selection 1.10) involves four attack companies of the 2/227th, code named "the Assassins" and an attached unit, "the Horsemen" of Alpha Company, 5/229th Aviation in combat with the Iraqis. The crews had to fly attack missions during a "shamal" where good visibility was at a premium.

The 2-1 AHR flew in support of 2nd ACR's attack (Selection 1.11). The battalion quickly encountered Iraqi tanks, trucks, and infantry, and suppressed them even though the weather was poor.

The 3-1 AHR (Selection 1.12), as luck would have it, encountered units of the elite Republican Guard and attacked them during the hours of darkness. Those Iraqis Guard members in the column buckled under the fire of an unseen enemy.

While refueling at FARP NISSAN (Selection 1.13), the 2-227th received word that the 3rd Armored's 4-7th Cavalry had contacted heavy units of the Republican Guard and was in battle. The 2-227th Apaches were immediately launched to conduct a hasty attack. Two brigades of the 3rd Armored were quickly committed to the battle in support of the Cavalry, and each received a supporting company of Apaches.

As you will see in the after action report of the 2-227 (Selection 1.14), the fight was hard but very successful.

Pay particular attention to how aviation's flexibility and maneuverability contributed to the successful outcome of this battle.

The most decisive day of the campaign occurred on the 27th of February with the battle of the Causeway. In the first selections, you get two different perspectives of the same battle. The first (Selection 1.15), that of a Apache Battalion Commander in the XVIIIth Airborne Corps, and the second from Captain Tim DeVito (Selection 1.16), an Apache crew member of the 1-101st AHR. In selection 1.17, Company C, 227th Aviation Regiment is involved in combat. In selection 1.18, Lt. Colonel Robert McCauley gives the reader a direct view of his unit's operations during DESERT STORM. In 1.19, Colonel Thomas Green gives his view from the XVIIIth Airborne Corps on the fighting, and 1.20 chronicle the combat actions of the 3rd of the 227th Aviation and 5-6th Cavalry.

Selection 1.21 involves the 24th Aviation Brigade and its commander, Colonel Bert Tackaberry. His operations were in the same area, and involved his attack battalion (1-24th) commanded by Lt. Colonel Tom Stewart. As in the battle of the causeway, the 1-24th Apaches destroyed everything that was moving, and much of what wasn't.

During the 28th of February, a "cease fire" was declared, but it was a short one. The next day, 1 March (1990), a major battle began when the 24th Aviation Brigade came in contact with the Republican Guard's Hammurabi Division -- over 1,000 vehicles were involved. Through Colonel Tackaberry's eyes (Selection 1.21), you will see the battle from his perspective as if you're sitting beside him in his C&C Black Hawk. The 28th (February) involved hard but anticlimactic fighting.

The 2-1st Aviation Regiment (Selection 1.22) supported the 1st Armored Division's final attack on the Medina Division of the Republican Guards. The after action report shows the flexibility required to properly use attack aviation in support of a ground assault. In section 1.24, the reader is given the views of Colonel Tackaberry as he led his brigade during combat.

What is not widely known is the part that Army Helicopters played in naval operations in and out of the

Persian Gulf. Three selections concerning important missions flown by Army helicopters in the Gulf are included. Each involves Army OH-58D armed Kiowas in action at sea in the Gulf.

Armed Kiowas operated from U.S. Navy vessels in the Gulf, and provided immediate, long-range security, observation, and fire-power.[4] In Selection 1.24, armed Kiowas assist in an attack on two Iraqi mine laying ships off the coast of Kuwait, and also with the capture of Maradan Island -- a joint Army, Navy, and Marine operation. Selection 1.25 covers a joint operation involving armed Kiowas of the 4-17th Cavalry, naval helicopters, U.S. Navy ships, and Kuwaiti patrol boats in an attack against the Dorah Oil platform complex. Hellfire missiles and 2.75" rockets were fired by Army aircraft in support. This assault resulted in the capture of 23 enemy POWs. The final naval selection (1.26) again involves armed OH-58Ds as they attack Iraqi Silkworm missile batteries on Faylakah Island. After air attacks failed to destroy the batteries, Kiowas were sent in to finish the job with Hellfire missiles.

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[4] Most frigates and destroyers have a rear flight deck that normally accommodates their anti-submarine helicopter. Seventeenth Cavalry crews lived and worked aboard these vessels throughout the Gulf conflict. They actually arrived earlier because of the problems of dealing with Iranian and Iraqi small boat attacks during the Iran-Iraq War nearly a year earlier.

ATTACK HELICOPTERS - 1.1

The following is an excerpt from an interview between Dr. Kitchens/Dr. Wright of the USAAVNC Historian's Office, and Colonel Robert Seigle, the 18th Aviation Brigade commander during Operations DESERT SHIELD and DESERT STORM:

Wright: You told me about a CENTCOM CPX.

Seigle: That transpired in July of 1990, and, I will tell you up front, we all thought that Schwarzkopf was crazy doing this exercise. He put us in the field, all fighting elements of the corps, the headquarters elements, were put in the field, we all had to have and were issued two sets of desert camouflage, and we went on this CPX as if we were prepared to go and do battle in SWA. And the 18th (Aviation Brigade), of course, had the initial responsibility of being first on station trying to stop any initial moves down that peninsula or down that coastal line. And at the time, when you are playing, this is July 1990, when you play a game like that, you can use whatever forces you are supposed to have, not what you currently have in hand. And the forces that I would have liked to have played for real would have been the attack group that should have belonged to the XVIIIth Airborne Corps and all of the 4/17th Cav and its newly modernized version. And when we put those three Apache squadrons and the 4/17th Cav, when we put them on the northern border of Saudi Arabia and the southern border of Kuwait, it was very, very difficult for the enemy forces to penetrate and come down the coastal highway. Now, because of the overwhelming number of forces that they had, if you just take the number of forces that Iraq had at that time, it is easy to see that over a period of time they are going to sneak through. But they, the game had to, they had to somehow discredit the aviation forces or we would have never gotten the rest of the units into the play. So, they actually stopped the play after we pretty much defeated them at the border and restarted the game some 10 days later just to put the infantry brigades back in the main battle area with the 24th Infantry Division, the 82d and the 101st and what not to actually give them some problem play. Now, some of the things that turned out to be absolutely unrealistic were the way you could move units around the field and have them actually move and their combat trains close with them

and stuff like that. If we had tried that with them for real in Saudi Arabia, the distances involved and the lack of networks and all that, we would have never made it. But it was interesting from the stand point of just about three weeks before we actually deployed, we were in the fields in desert camouflage playing exactly the scenario we were deployed to Saudi Arabia in.

Wright: Did the conclusions from this operation help you plan for Operations DESERT SHIELD and DESERT STORM?

Seigle: As a matter of fact, I remember specifically one of the major conclusions of that operation was the fact that with a large aviation force that was Apache-heavy on the Kuwaiti border, we could contain almost anything. But XVIIIth Airborne Corps didn't have a package that was Apache-heavy to be able to put into the fray like that. So, the minute that we got the notification that we were going to Saudi Arabia, I went to the Corps G-3, Colonel (P) Frank Akers, and told him exactly what we had gone through on the scenario in Operation INTERNAL LOOK and how we needed to change, to ask the Army for an Apache brigade to be able to put up on that border. And he agreed with that and that is when we went through the drill of requesting the Army to identify for us an Apache Brigade to come into the fight. We had all the XVIIIth Airborne Corps was deployed in the field at Fort Bragg operating on the scenario of a concerted attack into Saudi Arabia, and we were fighting our way from Dhahran up through Jubail to, you know, back into Kuwait.

Kitchens: It was actually conducted at Fort Bragg?

Seigle: Actually conducted at Fort Bragg. My brigade, 18th Aviation Brigade, would have normally had 3 Apache battalions organic to it. At the time of Operation DESERT SHIELD we only had one Apache battalion and it was the one at Fort Rucker and it deployed and we gave it to the 101st because they were short two Apache brigades in their organization.

ATTACK HELICOPTERS - 1.2

At 0115 hours, on February 18, 1991, 5-6 Cavalry launched a night, deep attack to strike a battalion bunker complex of the 841st Brigade, 45th Iraqi Infantry Division. The squadron attacked more than 100 kilometers deep into Iraq, west of As Salman Airfield in the western XVIII Airborne Corps sector. This was the brigade's first direct live-fire engagement against the enemy, and 5-6 was supported by USAF CAS (close air support), EF-111 Raven, and EC-130 Compass Call Aircraft. Over 500 artillery rounds of diversionary SEAD (Suppression of Enemy Air Defenses) were fired in support of the FLOT penetration. During this mission, 5-6 destroyed 15 trucks, numerous bunkers, and damaged an adjacent logistical site, resulting in numerous secondary explosions. The 5-6 Cav sustained no combat losses or damage during the mission. The squadron provided AH-64 video tapes to the 6th French Light Armor Division for intelligence purposes--a common practice throughout the war.

5-6 CAV

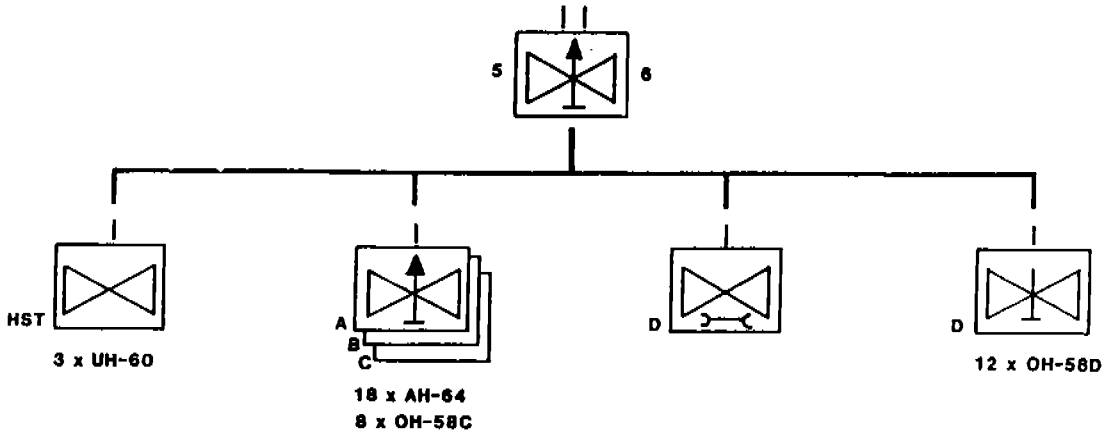

Fig. 1.2

ATTACK HELICOPTERS - 1.3

On February 20, 1991, 5-6 Cav (Attack Helicopter Battalion), launched a daylight deep attack to strike a radar complex and an ammunition storage site of the 841st Brigade, 45th Iraqi Infantry Division. The objective was defended by air defense batteries. The attack took 5-6 Cav over 110 kilometers deep into Iraq, east of As Salman Airfield, in the western sector of XVIIIth Airborne Corps. The corps fired over 600 rounds of diversionary SEAD fires to assist 5-6 Cav in crossing the FLOT. Also in support were USAF CAS, EF-111 Ravens, and EC-130 Compass Call aircraft. The 5-6 Cav engaged and destroyed the radar site, and then concentrated its fires on a nearby ammunition storage area destroying stacks of 122mm artillery ammunition, 20 cargo trucks, and 5 ZPU-4 anti-aircraft guns. As 5-6 Cav ended the engagement, they called in a JAAT (Joint Air Attack Team) with A-10s to assist in breaking contact. The 5-6 suffered neither loss nor damage on this mission. Again, Apache video footage was immediately sent to the French 6th Light Armored Division for intelligence analysis.

ATTACK HELICOPTERS - 1.4

On February 20, 1991, the 3-227th Attack Helicopter Battalion conducted two night attacks across the FLOT (Foward Line Own Troops). The unit attacked deep to strike moving targets detected by French and U.S. intelligence-gathering assets. Sensors used to support this mission included J-STARS, Quicklook, and the French "Horizon" system (a side-looking radar) mounted on a Puma helicopter. Non-lethal SEAD was provided by Guardrail, EF-111 Raven, and EC-130 Compass Call aircraft. Although not used, a lethal SEAD preparation of three artillery battalions was on-call from Corps artillery. The 3-227 responded quickly to real-time, down-linked data to destroy targets. This was the first Operation DESERT STORM use of direct data down-link to support attack helicopter operations. Moving target information was sent directly to the aviation brigade's tactical command post via FM communications from Quicklook and the French "Horizon" down-link station.

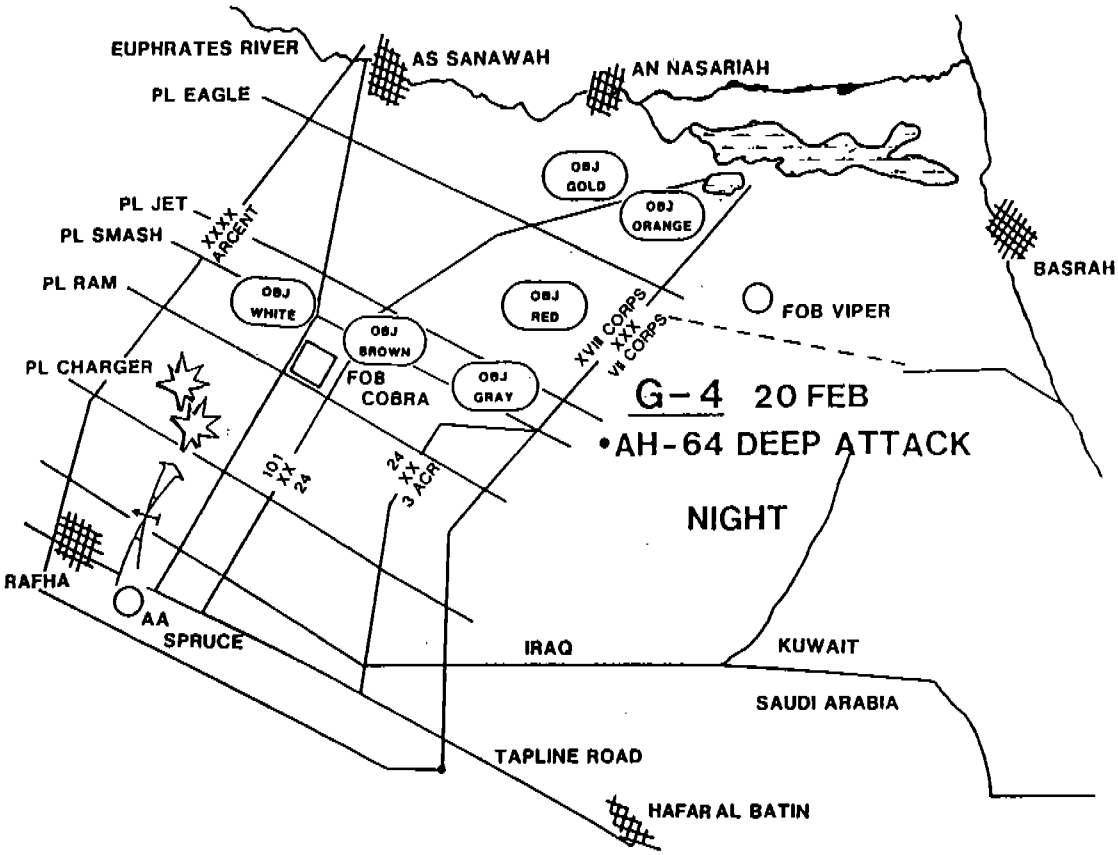

Fig. 1.4

As a result of this mission, the Iraqi 45th Infantry Division's reinforcement and resupply efforts, as well as their ability to reposition forces, were disrupted. Enemy vehicles and several Iraqi early warning radar complexes were destroyed.

The 3-227's operation represented the culmination of over five months of persistent work by the 12th Aviation Brigade to convince the XVIIIth Airborne Corps of the need for a deep operations planning and execution cell in the Corps main CP (Command Post). We believe this is the first time that the full "doctrinal" air/land battle deep operation, with all the component parts, has ever been conducted during wartime. Although a battalion-sized mission, it validated the doctrine and demonstrated the tremendous potential available to an integrated force of intelligence, deep maneuver, command and control by attack helicopter units, and fire support.

ATTACK HELICOPTERS - 1.5

G-Day, February 24

Due to the morning's success, Major General Rhame ordered the division to continue the attack. The 4th Brigade BTAC (Brigade Tactical Action Center), collocated with the division TAC, kept pace. 1-1 AHR kept its day company, A Company, in the battle with 2nd Brigade. A cross-FLOT reconnaissance was coordinated for B and C Companies, the night attack force.

That night, GUNFIGHTER 6, GUN 6 (Lieutenant Colonel Reichelderfer) and GUN 3 (Major Landreth) led B and C Companies in the mission. In this movement to contact, B Company moved north east from PL Colorado, while C Company moved east. Both companies observed several major, secondary explosions from the SEAD. The SEAD missions planned by the 4th Brigade Fire Support Officer, Captain Kirklan, were so effective that not one 1st Infantry Division aircraft was lost to enemy fire on a mission where SEAD was used. All front line, cross-FLOT missions used SEAD.

Continuing the mission, GUN 3 adjusted fire on a building suspected of housing an Iraqi command post. Several enemy locations were passed by 1-1 AHR to 2nd Brigade. Second Brigade used this information in its attack on the enemy's second defensive belt. It appeared that the limiting factor in defeating the Iraqi troops was how fast ground forces could move and receive orders to move again. Another key to 4th Brigade's success was the navigational aids used by the brigade's troops. The GPS (Global Positioning System) allowed the ground cavalry troops to orient on and reach their objectives. The Loran and Doppler navigational systems allowed utility aircraft to link-up with supply sites. After the war, Iraqi commanders marveled at our ability to navigate in a desert in which they were often lost themselves.

ATTACK HELICOPTERS - 1.6

On February 24, 1991, 1st Armored Division was having great success against Iraqi defenses. The division commander, Major General Griffith, met the 4th Brigade commander in the forward arming and refueling point (FARP)

at FAA Shake to discuss the feasibility of hitting the division's next expected resistance forward of the current FLOT. The target was a suspected Iraqi corps-level logistics base. This operation would employ two Apache companies in a daylight attack. The CG approved the concept and gave the order to launch.

During this attack, the two companies of 3-1 AHR encountered minimal resistance in the form of T-55 tanks and BMPs--which they destroyed. The surprising aspect of this operation was that it was the first of many instances where hundreds of Iraqi soldiers ran out of their bunkers and attempted to surrender after seeing Army helicopters in their midst. Without the means to hold them, the aeroscout pilots played "cowboys" to the "herd" of Iraqi soldiers--hovering them into a tight circle until the lead ground elements of the division's 1st Brigade arrived and secured them. No 3-1 AHR aircraft were damaged.

ATTACK HELICOPTERS - 1.7

At 0200 hours, February 25, 1991, 2-1 Aviation Regiment conducted a 30-kilometer cross-FLOT (forward line own troops) mission. The morale of the pilots and crew chiefs was extremely high. The enroute terrain was flat with periodic depressions. The weather at the time of mission launch was zero illumination, 3-kilometer visibility, and ceilings varying in altitude. At times, ground fog and haze created a zero visibility condition.

The enemy elements were part of the Iraqi 26th Infantry Division. The target area consisted of multiple launch rocket systems, a battery of tubed artillery, and a tank company. The enemy was in the VII Corps sector and had received intermittent fires. The enemy was in dug-in and fortified positions.

Communication was difficult. The OH-58 as a relay bird helped to minimize communication lag. The ATAC was limited by its reliance on the ANVIS-6s, when it really needs a FLIR system to keep up with the AH-64. There also must be daily points for regrouping when aircraft become disoriented from each other; both to facilitate recovery and a re-attack. The attack positions were used for this, though they should be further out than they were placed on this mission.

- Intelligence - it was relatively accurate for this mission.

- Artillery - Anti-fratricide coordination with the 2nd ACR was well done. The ground troops knew when we were going to be out there and where.

- 2nd ACR had a good MEDEVAC system in place that we could have utilized had it become necessary. We did not have an effective unaided recovery plan. We must plan on using white lights on vehicles and aircraft or setting up landing Y's that unaided aircraft can use.

ATTACK HELICOPTERS - 1.8

At 0620 hours on the morning of February 25, 1991, 2-227 ATKHB's 30+ aircraft crossed the line of departure into Iraq. The mission was to screen the right flank of the 3rd Armored Division. It included linking up with 4-7th Cav, the divisional cavalry squadron, and 2nd ACR of VIIth Corps, which was forward of 1AD, 3AD, 1ID, and 1AD (UK). The continuous screen required OH-58A's from C Company. They were deployed 30-50 kilometers to 3rd AD's southeastern flank, and due to 3rd AD's rapid pace, were forward of 1st ID and 1AD(UK). Enemy direct and indirect weapons engaged the scouts at 1430. Because there was not direct rear link with the TOC (tactical operations center), the battalion commander, in an Apache, flew toward the TOC until contact enabled the launching of a light team consisting of two Apaches and three scouts from A Company, and an OH-58D (7-227's six OH-58Ds were attached to 2-227 AHR for the war). While en route, the battalion commander relayed that C Company scouts were breaking station and had received heavy tracer

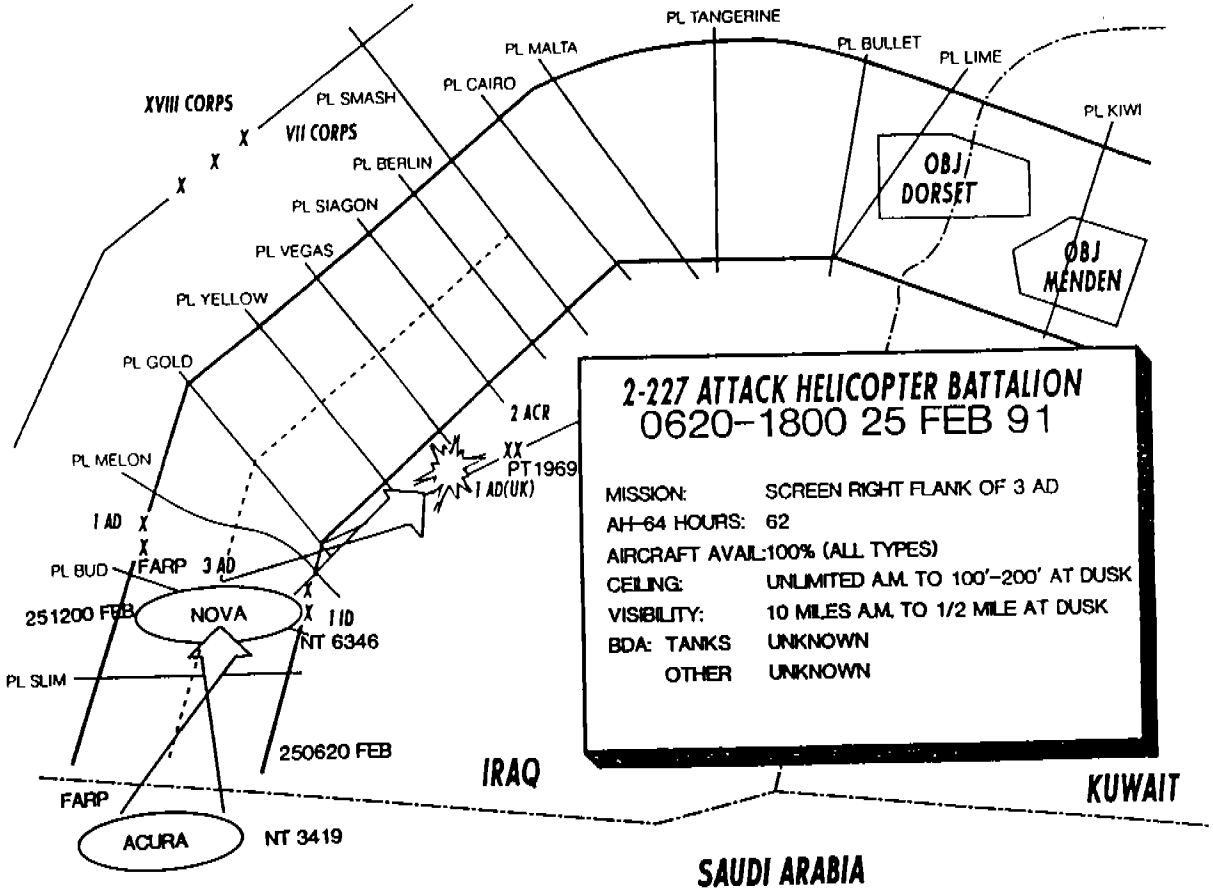

Fig. 1.8

fire. The A Company team attempted contact when the OH-58D spotted possible hard targets 7 kilometers to the south of their position. Immediately below them were hundreds of enemy soldiers who had left their bunkers to surrender to the aircraft. This was a very risky environment as enemy bunker complexes were everywhere, with no indication of exactly where the heavy ground fire had come. The target to the south was an Iraqi command post, which included light armored vehicles. While the light team leader was verifying that no friendlies were in the area, and with instructions not to fire unless fired upon, muzzle flashes from the vicinity of the enemy CP alerted the OH-58D to the presence of T-55 tanks. One of the scouts reported incoming artillery fire and the team dispersed toward the south, coming on-line to face the well-defined bunker complex. They were now less than 4,000 meters from the target area and maneuvering to engage. Fuel had become critical at this point and the team only had time to launch 2.75" multi-purpose sub-munitions (MPSM) rockets before leaving for FARP

Nova. Black smoke and secondary explosions indicated damage had been done, but specific destruction was verified. No BDA (battle damage assessment) was reported. The weather had deteriorated significantly during the mission and no additional force was considered appropriate under the circumstances. Alpha Company's heavy team of three Apaches had launched to support the attack, but instead continued the screen, as directed by the battalion commander. As the light team returned to FARP Nova at about 1900 hours, they overflew Chieftain tanks from the UK's 1st AD heading to the northeast. Visibility in the FARP was now one-half mile with drizzle. The crews slept in the cockpit seats that night.

ATTACK HELICOPTERS - 1.9

PERSONAL INTERVIEW

Apache Attack Platoon Leader, Bravo Company, 2/227th Aviation:

Platoon Leader: The morning of February 26, B Company, 2-227th moved to FARP Toyota at approximately 0700. There, Alpha and Delta company mechanics jumped all over our aircraft and performed services.

We spent about five hours at FARP (forward arming and refueling area) Toyota before we were ordered to move to FARP Dodge. It was raining while we were sitting at FARP Toyota. During the time we were at FARP Toyota, I heard a radio call from the 2-227th's Battalion S-3 (Major Scarpelli) to the Battalion Commander, "HEADHUNDER 6" (Lt. Colonel Billy Stevens). Major Scarpelli radioed that his group had picked up 5 EPOWs (enemy prisoners of war) on the way to FARP Dodge. Major Scarpelli was told by "HEADHUNTER 6" to continue to FARP Dodge, set up the FARP, and "don't worry about picking up any more EPOWs."

At 1200, FARP Dodge opened up and we were ordered to "open up" our aircraft at FARP Dodge--the whole battalion. At that time, the winds began to pick up. The wind's speed was up to between 30 and 35 knots. They were at 30 knots when we lifted off from FARP Toyota. We flew to FARP Dodge--the aircraft "crabbing" as we flew. The OH-58s flew almost completely sideways. As we were on our traffic pattern into the FARP, my back-seater, and I noticed that there was a

group of five friendly soldiers below us and to our left running to a berm. They jumped in a prone position behind us, up on a berm, set up and pointed their weapons into the area where our FARP was set up. It looked like they were going to engage our own FARP. WO1 Fribbs, who was the "Chalk 4" (the 4th Apache in our flight), noticed that there were five surrendering Iraqis walking toward the berm. We then realized that the five friendlies were actually pointing their weapons at the surrendering Iraqis.

We refueled at FARP Dodge and then waited at a holding area some 200 meters away until 1600. The entire time we sat there a "shamal" blew. The winds were so fierce that the wind was actually blowing rocks. It was like being in a hailstorm. Visibility dropped to 50 meters. It was unreal.

While at FARP Dodge, my platoon sergeant, who had been traveling with the FARP, stopped by my aircraft and told me that he had helped to "capture" the 5 EPOWs on the way to FARP Dodge.

At 1700 hours, Captain Mike Wills, the Bravo Company Commander, was ordered to fly FARP Nissan. As we were landing at FARP Nissan, we tried to make contact with the Battalion TAC headed up by Captain Williams (who is very calm normally). He stated, "Don't talk to me right now, can't you see we are trying to fight a war in here?" So, we figured something was up at that point, and to stay. As we landed, Captain Williams told Captain Wills, Bravo Company Commander, to walk over to the TAC and receive a mission brief. After the brief, Captain Wills told all the front-seat Apache guys and the AOs (aerial observers) to head to the TAC and get the mission graphics on their maps. Once everybody had the graphics, they ran back, jumped into their aircraft, and re-cranked them. Captain Wills came over FM radio and stated the grid coordinates to go to, which would be our holding area. We were to follow him there and wait for further instructions.

As we launched, the sun had just set. We were a flight of six Apaches in the lead, with three OH-58C and two OH-58D models following. But, because it was getting dark fast and all the Scouts (the OH-58s) only had NVGs (night vision goggles), Captain Wills ordered them back to FARP Nissan and stated that the Apaches would fly alone. He also sent back

one of the Apaches (WO1 Bryan Martin and WO1 Brent Fox) because it had a broken PNVS (Pilot Night Vision System). So, we flew as a flight of five Apaches to the holding area.

At the holding area, Lt. Colonel Stevens ordered us to a certain grid coordinate, which was to be our battle position. Where we were supposed to support 1st Brigade, 2 ACR, which was involved in a fire fight with Republican Guard armored forces.

As we flew to the battle position we heard the 1st Brigade Commander, calling the commander of the 4/7th Cavalry Squadron, and asking Saber-6 if he had any KIAs (any of his soldiers killed in action). Sabre-6 replied in a serious tone, "Yes, and I'll talk about it later." We heard that there were people dying out there and everyone's pucker factor rose.

As we continued to the battle, we saw flares, MLRS (Multiple Launch Rocket Systems) firing, and Bradley fighting vehicles firing in the distance with their distinctive "pop pop". We passed numerous convoys, including Task Force VIPER and the CAB (Combat Aviation Brigade's) Headquarters.

We saw an UH-60 Black Hawk fly by us. We guessed that he had just picked up the KIAs. As he was passing us, CW3 Kelly, in our Number 3 Apache, came over the radio. He stated that the Black Hawk had just blown "chaff" in his face. The flares looked like heat-seeking missiles, they just got brighter and brighter. We guessed that what the Black Hawk pilot had thought that the distant flares were radar-guided missiles. We continued to the battle position.

Once we reached the front lines, we noticed a big scramble of Bradleys and M1 (Abrams) tanks firing to the east. They didn't appear to be in any order. We came over them and then back to take up a battle position to the southeast. We slowed to a 60-foot hover over the M1 tanks and the Bradleys. We had our guns and sights pointing to the southeast, searching for enemy vehicles. It was still raining. I saw droplets of rain on my windscreen. Good conditions for Apaches: The enemy couldn't see us, but we could see them. It gave us quite the advantage. Plus, with the rain, we were not kicking up sand with our rotor wash that would normally allow the enemy to see us. For the next

15 minutes, it was chaos on the radio (to extend our radio range, 1LT Nick Snelson and SGT Ray Wilkinson circled their OH-58 a few kilometers to our west to relay our messages to our Battalion TOC (Tactical Operations Center)). We could see hot spots downrange and even burning vehicles, but couldn't identify anything as enemy or friendly because of the rain. Eventually, Ready-6 came on the radio and told us we were clear to fire the vehicles that were in the vicinity of the burning T-72 downrange. At that point, we started pumping off Hellfire missiles and rockets at the targets downrange. I remember one Hellfire shot where CW3 Jim Kelly and WO1 Steve Lee fired a Hellfire right over the top of a Bradley fighting vehicle (while at a hover to the left rear of that Bradley). The Bradley crew was so happy to see us they threw a vigorous thumbs-up to the Apache crew as the Hellfire blasted off.

At the same time that we were engaging the enemy, there were Bradleys to our right side and between aircraft. During the battle, the Bradleys to our right side and those to our rear fired their cannons next to and between our Apaches. They were firing tracer rounds between our canopies downrange. At one point, I asked the pilot to slide left. The rounds looked like they were a bit too close to our canopy. At that point, we were more afraid of the Bradley fire than the enemy at that point because it was so close.

We destroyed approximately 10 armored vehicles. They were a mixture of personnel carriers and tanks. After destroying the vehicles, we told READY-6 that we were short of fuel. We did a left turn and headed back out. As we departed, CW3 Dan Craytor and Captain Mike Wills radioed, "Lead's been hit in the tail rotor." As their tail rotor began to vibrate excessively and their "vibe gearbox" caution light flashed on, CW2 Dwayne Hogue and WO1 Brad Fribbs then radioed that they were hit too. They turned out to be false alarms; luckily, neither aircraft had been damaged.

We refueled at FARP Nissan. Then, at 2330, we took off to the east. Again, we could see the MLRS batteries firing in the distance. We flew by the CAB convoy again, and continued to the east. We landed short of the fight and

held. 1LT Snelson, WO1 Mike Mack, and their aerial observers (SGT Wilkinson and SSG Williamson) circled to our west in their OH-58s to act as our radio relay to the Battalion TAC.

While holding, Lt. Colonel Stevens told us we were going to fight in the southern area of the battle. We had been in the north before. We took off again and contacted READY-6 again. Then, Captain Wills called saying, "We have 'Death-Dealer' elements inbound." Ready-6 replied, "Welcome back 'Death-Dealers,' it's good to have you back with us again." He welcomed us and sent us to positions to the southern area of the battlefield. He gave us an approximate grids to go to and said that the friendly forces were on the 72 NS grid line. He further stated that they could be as far east as the 73 NS grid line. Shortly after we made radio contact, he told us to get low as "Millers" (MLRS batteries) fired over our heads into the enemy's area.

We could see loads of Bradleys and friendly forces lined up and facing to the east. I think "Ready-6" had called and told them to hold their fire while the Apaches came in. We slowed down airspeed and slowly moved forward. At that point I saw what appeared to be an armored vehicle to the east. It appeared to be dug in and had a U-shaped berm around it pointed in our direction. I called Captain Wills, and told him what I saw. Then, CW3 Crator asked if I could "ID" the vehicle. I said no. So he said to hold my fire.

At that point, all of the Apaches, one by one, started calling spot reports to our lead aircraft, Captain Wills. Yet, nobody could identify the vehicles, they were dug in or blurry or whatever. Captain Wills asked us for grid coordinates of the vehicles downrange. We sent grids of the vehicles. Within that range was an array of armor vehicles.

As we called these grids to Captain Wills' aircraft, he ordered us not to engage because the vehicles were too close to the 73 grid line. We continued moving east. Finally, when my Apache was less than 1,000 meters away, I heard WO1 Fripps and CW2 Hogue, radio that they had a positive ID on an MTLB (Iraqi troop carrier). CW3 Crater came back and said, "You are clear to fire." They fired a Hellfire and the MTLB exploded into fragments. Then, WO1 Hardy and CW2

Pennington announced that they had troops in the open. Lead said you are clear to fire.

They fired a pair of MPSM rockets (multi-purpose sub-munitions) which exploded in the air over the troops and killed them. Then, a vehicle downrange turned a spotlight on and shined it on WO1 Lee and CW2 Kelly (the third Apache). Then, it shone on WO1 Fribbs and CW3 Hogue. They immediately took evasive action to the left. Finally, the spot-lighter held his light steady for several seconds on CW2 McNamara and me.

It unnerved me. For a moment I was confused. I couldn't tell whether it was going to shoot at us or surrender. I called "Lead" (Captain Wills) and stated that "5 is getting spot-lighted." Lead was too busy to answer. Then CW2 McNamara took the gun from me and using his HMD (Helmet Mounted Display) looked at the target and fired at it to suppress it. The spotlight went out. I used the TADS (target acquisition designation system), zoomed in on the target and fired three more bursts to ensure it was dead.

All five of the Apaches continued to engage targets in the area until we destroyed approximately 29 armored vehicles (mostly armored personnel carriers). The vehicles were a mixture of BMPs, MTLB - armored personnel carriers, BTR-60s, T-55 (tanks), and a couple of unidentified armored personnel carriers in the enemy area.

In one engagement, Captain Wills engaged a vehicle with his 30 mm as approximately five troops ran towards it. I never saw so many people running so fast in my life. They were running first to the armored vehicle, until he engaged and destroyed it (just as they were to reach the vehicle), and then away from it. An armored vehicle is not a good place to hide from an Apache, I guess.

After killing all those vehicles, our final engagement at that battle position was three BMPs, in a line facing to the west. I killed the first two and then as we were pulling out, Captain Wills told us to egress (we were bingo fuel again). CW2 Kelly fired his gun using his helmet mounted display. The third BMP exploded in a huge fireworks display. It had secondary and tertiary explosions, as if the BMP was loaded with ammunition. And he was less than 300 meters away when he destroyed it, awful darn close. CW2

McNamara and I were the same distance away when it went up. We were also downrange when we were looking at this stuff. It began exploding. Ammunition, unexploded rounds from earlier, began flying out of the vehicles. We became concerned about secondary explosions getting our aircraft as flak.

We departed and went to the FARP and that was the last mission that night. I believe that it was approximately 0220 when we shut our engines down for the night. That was the morning of February 27.

February 28, 1991:

The morning of February 28, Bravo Company was first in line for battle. We heard that at 0800 there would be a cease-fire. Lt. Colonel Stevens put the battalion at REDCON (Readiness Condition) 5 which meant that another mission was not likely for the time being.

At 1000, we got a call from Lt. Colonel Stevens to launch against a column of T-72 tanks on the move. We launched our six Apaches and three OH-58As. The Apaches led and the scouts secured our flanks and rear. We flew to the area where the T-72 tanks were supposed to be, but saw nothing except numerous abandoned vehicles. These included T-55 Tanks, BTR-60s, BMPs, BRDMs, and trucks. We departed our BP (battle position) and continued to the east. We saw about 30 members of the Republican Guard waving flags to surrender. We continued until we were 20 kilometers into Kuwait. Then, we turned around and returned to our FARP. En route we saw another 40 or so Iraqi soldiers surrendering. My aircraft came to a hover next to them. They were waving their white flags--all of them. We then returned to the FARP.

ATTACK HELICOPTERS - 1.10

At 0700 the morning of February 26, 2/227 moved out to FARP Toyota and began their FARP leapfrogging drill for the day. "Assassins" were last in the rotation. The battalion had more Apaches then we would normally have. We had four Apache companies in the battalion for this war. The additional company was Alpha Company, 5/229th Aviation. The

Commander was Captain Chris Whitehurst and they were called the "Horsemen".

We were last in rotation because we had been first in rotation the night before. At approximately 1000, we received a verbal warning order, plus graphics, from brigade. (That was what we did, we never knew what to call it, we just received a mission. What the war really ended up being was an exploitation and a pursuit mission).

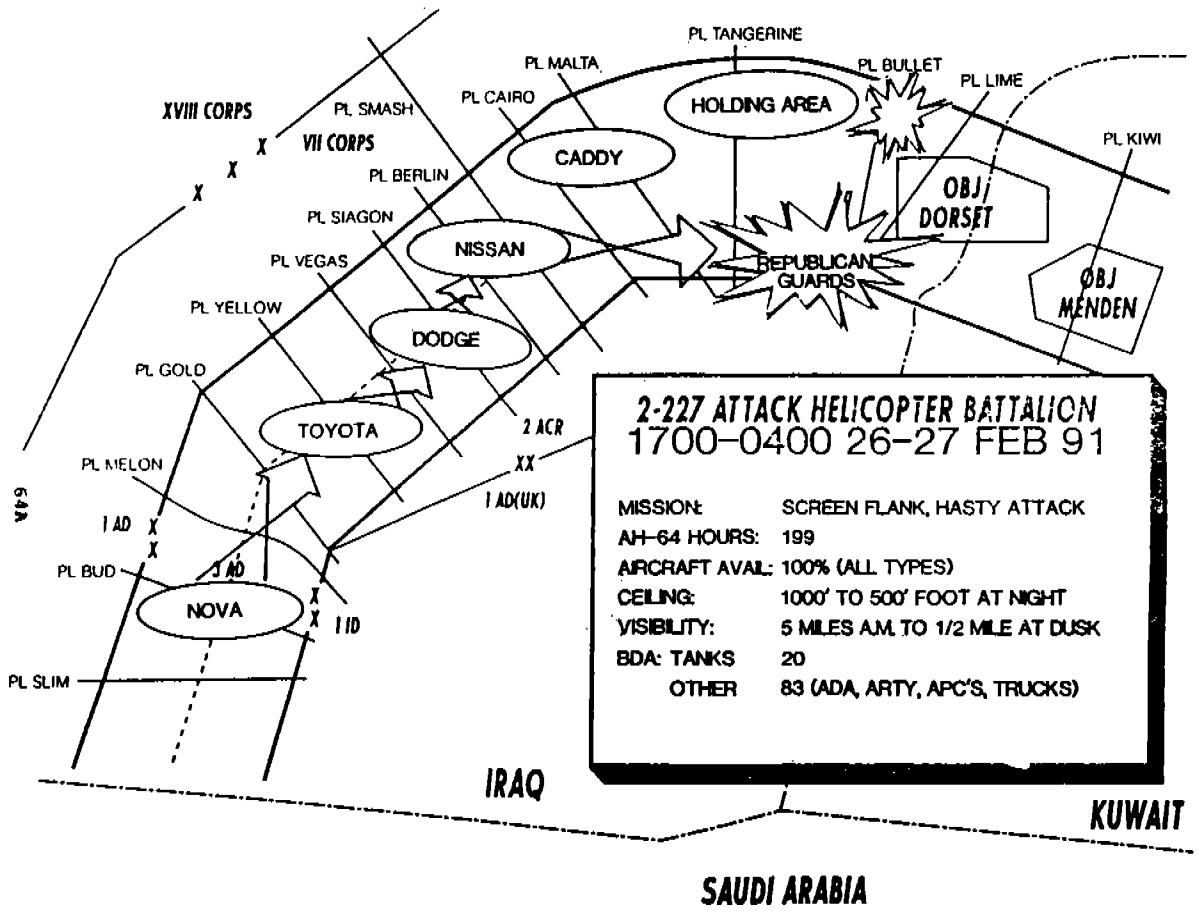

Fig. 1.10

We continued to leapfrog and by 1230 we were at FARP Dodge. That was in the middle of one hellatious "shamal" windstorm, and it was a bad one. Between 1230 and 1630, Lt. Colonel Stevens was attempting linkup with the brigade commander and brigade S-3 for specifics on the mission. As he was getting specifics, we were bounced to FARP Nissan. At 1700, Bravo and Charlie companies received a brief from the battalion and brigade commander at FARP Nissan, at our TOC. By 1730, they had launched for the fight between PL Tangerine and PL Bullet.

As they launched at 1730 hours, the Horsemen and the Assassins were briefed up on the fight. We launched to the next holding area. I'm not certain it was named, we just picked a point on the map.

Bravo Company launched into the southern sector in support of 1st Brigade. Charlie Company to the north with 2d Brigade. I left my scouts at FARP Nissan as darkness was approaching. I didn't want to fly my OH-58 guys with goggles until we figured out how big a fight we were getting into. As I was getting ready to launch my elements from the holding area, CW4 Roden approached me and asked if he could join the fight. (Roden is the standardization instructor pilot). We put CW3 Batt in his front seat and they assumed trail position for the mission.

INTERVIEW with Instructor Pilot, A Company, 2-227th Aviation.

INSTRUCTOR PILOT: We departed the FARP and arrived in the holding area, the aircraft shut down to the APU (Auxiliary Power Unit -- a small power unit to keep the systems up, but doesn't burn all the gas as the main engines would.)

Front-seaters got out to get graphics and the mission brief. They were out of the aircraft for approximately 30 minutes. When my front-seater was out, I made sure all the weapon systems were up and all the ASE (aircraft survival equipment) was working. After the weapon systems check and the overall systems check, I waited for my front-seater. I could hear, I was monitoring Bravo Company during

engagement, listening to scout platoon leader. He sounded like it was a fairly intense battle. From our position I could see the MLRS going off. The truck convoy was there. I thought there must be a world of @#$%! going on top of them. I could see the MLRS and the 155s (M-109 Artillery) going off. I was watching the Air Force A-10s shooting missiles, there were flares going off.

I could see the primary and secondary explosions going off. Then my front-seater came back to the aircraft. I gave him a piece of gum, shook his hand and said, "Good luck."

We cranked up the aircraft. We launched as a flight of six with John Roden making the sixth aircraft. One of our back-seaters, CW2 Chris Batt, climbed in the sixth aircraft as a front-seater for John. We launched out of the holding area. CW3 Bachand and WO1 Armstrong acted as flight lead. They led the company to the area of the engagement, where one of the MLRS batteries was at. There was a lot of confusion on why the artillery were still firing. There, we hovered with no lights. We were blacked out.

As we sat in a temporary hover, I could see we were on line and oriented towards the engagement area waiting. At one point, a MLRS battery started firing off at our left side. I could see the motors as they launched--it was very close.

We realized that we were in the way of the artillery tubes and that we needed to fly out of that area, find a better battle position and re-orient on the engagement area. We departed that area and found a better battle position with no overhead artillery fire. I can't be certain exactly which direction we went. It is real easy to get disoriented flying night system and staying clear of the terrain around you.

We took up a battle position on-line behind a line of Bradleys. Chris Batt saw tanks, he said they were M-1s, but all I saw was the Bradleys. The position of my aircraft put me behind a Bradley that was on fire. There were secondary explosions. I could imagine that the 25mm rounds inside were cooking off. There were secondary and tertiary explosions.

There was some confusion due to the difficulty of identifying the targets, whether enemy or friendly, because there were so many friendlies in our area. From our position, the confusion comes from the night system. It is confusing to see targets from a great range. Unless we could positively ID the green blobs we weren't going to fire.

Up to that point we had not been cleared to engage the enemy. I wanted to know, even though we didn't have a good target ID, that anything that we would see would be enemy targets. But, because there was no clearance to fire, we weren't going to engage unless positive it was the enemy.

Back to what I saw in front of me. The Bradley was burning quite heavily and finally exploded. It was loud enough that I could hear it over the sound of the engines, my front-seater said he could feel the concussion of the blast. The size indicated the fuel cell or possibly some tow missiles had cooked off inside it, because the explosion was quite large.

I came over the radio and addressed the commander that I had friendly vehicles burning in front of me and I asked, "are we clear to fire?" There was obviously a lot of talk on all frequencies on radio and I did not get a reply over the radio for a clearance to fire. Immediately after my request for the clearance, the light-team lead aircraft, which was to my left, fired a Hellfire. That's when I realized that we must be cleared, because my platoon leader is firing a missile.

Due to our orientation in the BP (battle position), the heavy team was between us and the targets. From my aircraft's position, because of the flame and the smoke of the burning Bradley, we were not picking out targets as clearly. I would see them as they would "break out" to become targets. Bushes and berms added to the smoke of the Bradley made it difficult to discern if it was a vehicle or a hot spot out there.

We did, when we could break out some targets, try to engage with Hellfire missiles. But our Hellfire missiles would not launch. I'm not sure why. At that time, it was assumed that it was due to bad laser return. The heavy team was able to engage the targets because they were probably

two "klicks" closer in relation to the targets. The Air Force Mavericks were coming down. You could see the Mavericks hitting the ground. At some point, due to fuel status, we had to break station. That meant we had to go back to rearm and refuel. It was about 1100 when we flew back.

We departed the BP and flew to FARP Nissan. Once we arrived at FARP Nissan, we found out they only had enough gas to take on an additional 500 pounds (usually we take more than 2000). Then, while at the FARP, the aircraft that expended ordinance were sent to rearm pads and were rearmed. The ground crews at the FARPs were really good. Our guys worked very hard. We had an open FARP. That meant that we had everybody in the Corps getting ammunition and fuel. Our crews were working on everybody's aircraft once the battle started.

Once the aircraft was rearmed and FARP Caddy was open and available, we flew to FARP Caddy, refueled and topped off. Then we were sent to another engagement area battle position. There was a problem sequencing us in with the artillery. We pulled up next to a ground convoy and were on-line, hovering. We were told it would be a 20-minute wait while we were sequenced in. Rather than burning fuel, we landed and parked next to a ground convoy, which ended up being our own guys.

We sat there with the engines running for about 45 minutes. We ended up not getting sequenced in. The ground commander said, "I will not shut my guns down for that long a sequence. READY-6 was the ground commander.

As we were waiting to get sequenced between the artillery, the weather started closing in on us. It was cloudy where before it had been clear. Some sort of weapon appeared to be going off. It was lightning.

So once we realized we weren't going to get sequenced, we returned to FARP Caddy. That is where we shut down for about two hours and slept. We were awakened when we were told that 4/7th was being overrun. But the message later was that they had it under control.

En route to FARP Caddy we ran into an extremely heavy rain shower. For the aircraft in front of the formation that was the scariest part of the battle. The night vision

systems felt completely useless. We were forced to land and wait for the rain to pass. Once the rain shower passed, we departed to FARP Caddy to refuel and shut down. We got there, shut down at about 0130 on the morning of the February 27.

ATTACK HELICOPTERS - 1.11

At 1200 hours, on February 26, 2-1 AHR conducted the first of two cross-FLOT attacks in support of 2nd ACR's attack. The weather was poor with less than 2000 foot ceilings and 1500 meters visibility. Winds were in excess of 25 knots with blowing sand and dust. Terrain in the target area was flat with gently rising inclines. The 2-1 had moved all day on February 25. The 2nd ACR's attack in depth was successful, and the morale of the pilots and crew chiefs was extremely high.

Intelligence indicated that over 100 vehicles from the Tawakalna Division of the Republican Guard were moving west into the 1st Armored Division. Upon reaching the attack positions, there was negative contact with the enemy. The battalion continued forward in a movement to contact with less than 1500 meters visibility. The battalion was arrayed with Alpha Company in the north, Bravo Company in the center sector, and Charlie Company in the south. Limits of advance were established at this point to facilitate command and control. The 2-1 moved almost 15 kilometers east--well beyond the initial objective area. At this point, the unit came upon several buildings occupied by tanks, trucks, and infantry. Under enemy tank and small arms fire, the unit remained in position and continued firing. The unit suppressed and then destroyed the enemy elements before returning for fuel and executing the second mission.

ATTACK HELICOPTERS - 1.12

The 3-1 ATKHB attacked the Medinah and Adnan Divisions, as well as other Republican Guard remnants that were moving north to escape the 3rd Armored Division's advance. The battalion attacked throughout the night of February 26 in four separate sorties. Most of the battalion's Hellfire shots were at long range, using both autonomous (self-

designated) and remote designation from Task Force Phoenix's OH-58Ds. The video tapes of this battle show the Republican Guard buckling under the fires of the unseen Apaches as their tanks were destroyed piecemeal.

Due to the fast pace and complexity of this night-long engagement, command and control required special attention. The brigade commander fought the battle in a C^2-equipped UH-60, and the battalion commander fought from his AH-64. The brigade S-3 found himself alongside the division TAC, in a HMMWV equipped with every radio he could get his hands on. The battalion S-3 was in a specially-configured C^2 UH-60. The effort and resources dedicated to C^2 resulted in a well-coordinated fight: combat information, tactical situation reports and orders were passed quickly, and combat assets were shifted to the critical point without delay.

The distances from the FARP to the battlefield covered over 70 kilometers until a forward FARP was established around 2400 hours. Throughout the day-long battle, the 3-1 AHR's support echelons had to not only chase the far-flung Apaches, but also the ever-elusive sources of fuel found in the corps' zone.

ATTACK HELICOPTERS - 1.13

At 0700 hours on February 26, 1991, the battalion's aircraft moved from FARP Nova to FARP Toyota. The 2-227th AHR employed two "super FARPs." The battalion's refueling and rearming personnel, their vehicles, and the S-3 section were split equally to support this concept. One was called the "TOC FARP," the other the "TAC FARP." To easily distinguish between the two, one was named after American cars, the other after Japanese cars. They leap-frogged one another, keeping one active at all times. By the evening of February 26, the teams had established five consecutive FARPs and had moved nearly 100 kilometers to maintain the screen.

By 1230 hours, the aircraft had closed on FARP Dodge in a "shamal," with winds blowing steadily at about 40 knots. The sand was irritating to the point that exposed skin had to be covered. Visibility on the ground was about 200 meters.

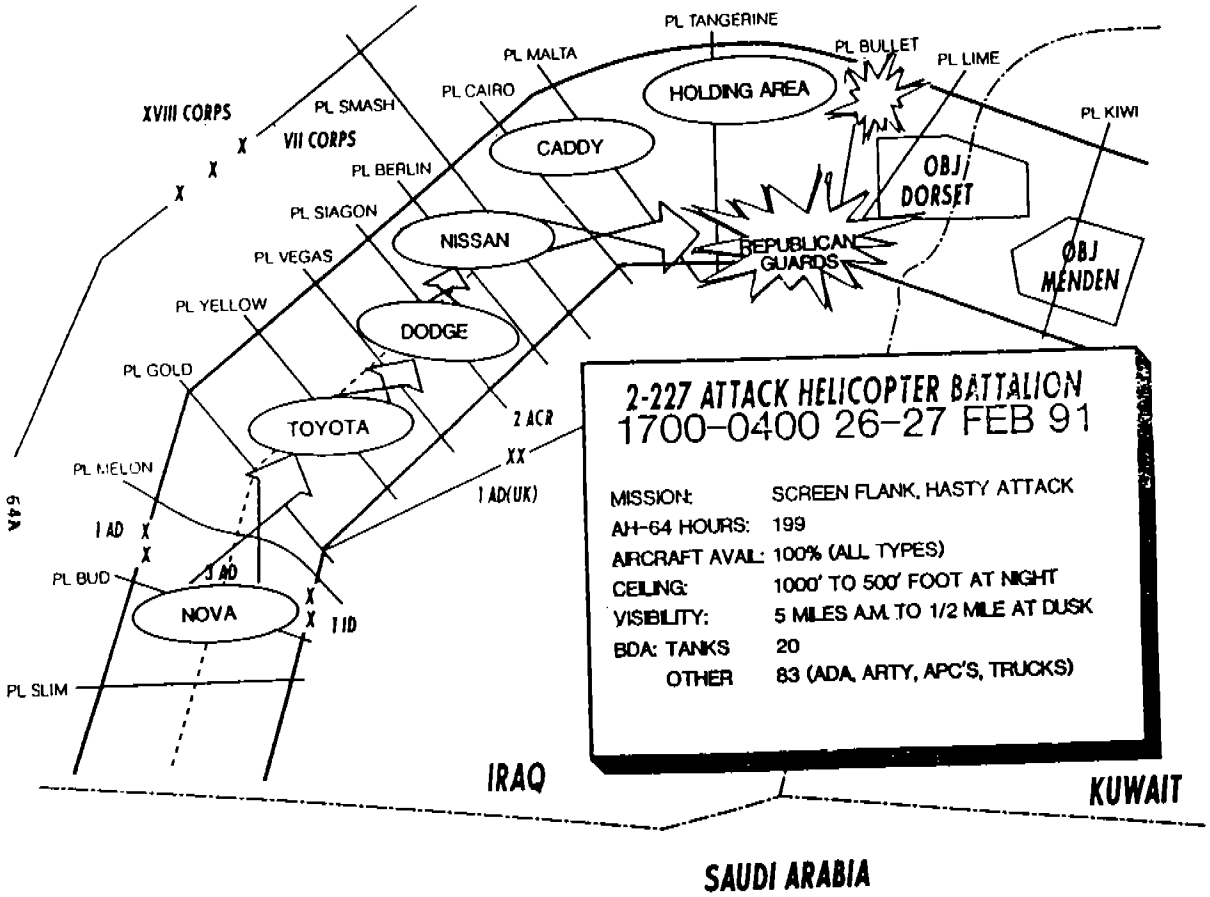

Fig. 1.13

En route to FARP Dodge, the TOC FARP, the ground convoy picked up five EPOWs who were searched, questioned, and sent under military police custody to the rear. One EPOW had fought in the Iran-Iraq war, and then this war, having only spent a few days in 11 years with his wife and family in Baghdad. Another, having had a tank to his left blown-up and then the one to his right, abandoned his tank only to run into another one in the dark and knock out his front teeth. He did not understand why he never saw our tanks. In the Iran-Iraq war, he would see the Iranian tanks advancing and firing, at which point his tank would "engage and destroy the enemy." This information was gathered by a 2-227 soldier born and raised in Baghdad until age 6, at which time his father left with the family for political reasons.

By 1700 the aircraft were in FARP Nissan when the brigade commander flew in with a change of mission. 4-7th Cav of the 3rd AD was in heavy contact with maneuvering elements of the Republican Guard and had sustained

casualties as a result of T-72 direct fire. The commander of 3rd AD directed 2-227 immediately conduct a hasty attack. The 1st and 2nd brigades were soon committed, with 2nd brigade to the north and 1st in the south, both facing east. B Company, the "Deathdealers," and C company, the "Stealthfighters" launched to support 1st and 2nd brigades respectively. A company, 2-227th, and A Company, 5-229th, repositioned to what was called the "holding area" , closer to the fight. Scout aircraft were not used in the forward fight as visibility that night was about one-half mile with no illumination. They repositioned halfway to the FLOT and relayed radio traffic to the TOC as the distance was too great for the FM radios.

C Company and 2nd brigade were observing enemy armored vehicles moving to the north toward a seam between 3rd AD and 1st AD. 4-18th Cav, the northernmost of 3rd AD's units, was maneuvering to the southeast in a "wagon wheel" movement to counter the Iraqi armored force. C Company pilots positively identified friendly and enemy vehicles, then engaged targets until all vehicles were left destroyed. C Company rotated through the FARP twice and completed the last sortie to return at 0400, February 27.

B Company, coordinating with "READY 6," the 1st Brigade Commander, oriented over the brigade and had to move farther to the east to positively identify enemy vehicles. M-1 tanks and M-2 Bradley fighting vehicles were massed and firing to the east along the north-south 72 grid line. Positively identifying enemy vehicles was difficult. They were dug-in in 1st Brigade's sector and only after "READY 6" said "the Apaches are clear to fire on vehicles in the vicinity of the burning T-72 downrange," did any aircraft engage. Aircraft were flying so low in this sector, low enough that Bradley cannon rounds were causing the aircrews to be somewhat uncomfortable as the rounds passed between hovering aircraft. B Company rearmed and refueled twice, returning to FARP Caddy at 0330, February 27.

As B and Co companies departed, having run low on fuel and ammunition, both A companies, the "Assassins" of 2-227, and the "Horsemen" of 5-229, were rotated into battle positions to support 1st and 2nd brigades and 4-7 Cav. Vehicles being engaged were T-72s, T-55s, BTR-60Ps, BMPs,

MTLBs, BRDMs, and trucks. It was apparent the enemy did not know where the Apaches were or how they were being engaged. They were abandoning vehicles once some of their vehicles were destroyed.

Alpha Company moved into a battle position over 4-7 Cav's armored vehicles and engaged enemy vehicles at long range. At one point, enemy artillery impacted around the flight of six Apaches, causing them to disperse and relocate to reengage targets. A Company rotated through the FARP twice before closing on FARP Caddy at 0220, February 27. Their second rotation forward was short as 1st Brigade's commander did not want to slow his advancing battalions to coordinate Apache support. After 45 minutes of holding, the Assassins returned to FARP Caddy for the night.

Because the terrain was flat, the intense fighting was visible for 15-20 kms. Multiple launch rocket systems, artillery, close air support A-10s and F-16s, and direct fire systems were creating a thunderous display of light and smoke. The ground trembled for hours once the Republican Guard were engaged from 1st AD's sector in the north to 1st ID's in the south.

In 21 hours the refueling platoon pumped 38,000 gallons of aviation fuel, about five times what is pumped in a busy day. The rearming line, normally manned with 15 personnel, had over 60 soldiers breaking open ammunition containers and preparing 30mm rounds, 2.75" rockets, and Hellfire missiles for loading. Cooks, clerks, drivers, radio operators... anyone that was not actively engaged in the mission at the time was supporting helicopter operations.

As C Company was rearming and refueling at 0400, a 30-minute standby mission required the crews to reload and then shut down on the rearming pads and sleep in the cockpit seats. The mission was never activated, allowing the crews some rest.

In the previous 21 hours, the four attack companies had flown more than 20 Apaches 196 hours for an average of over 8 hours per aircraft and would receive a follow-on mission at 0630 hours, February 27, just 2 hours later.

One of the three Headquarters Company's UH-60 Black Hawks was used by the battalion commander for command and control during the previous night's missions. The crew flew

over 13 hours of which over 8 were with night vision goggles (NVG). In peacetime crews are limited to about 4 hours of NVG flight per night.

ATTACK HELICOPTERS - 1.14

After refueling from an earlier attack mission, 2-1 ATKHB was alerted to conduct a cross-FLOT attack against two enemy artillery battalions, supported by tanks, 60 kilometers forward of 2 ACR's forward elements. The battalion had only 30 minutes to plan, brief, and launch against these units of the Tawakalna Division of the Republican Guard. Launch time was 1600 hours, with a 30-minute separation between companies. Charlie Company launched first with the battalion commander and the UH-60 Air TAC. Visibility was less than 1500 meters with blowing sand and dust. En route, Charlie Company came across a retreating enemy column, suppressed it with 30mm cannon, and continued forward to the primary objective. Upon reaching the attack position, the company detected the target and began the attack. The enemy in the engagement area consisted of D30 howitzers, T-55/T-62 tanks, and numerous bunkers and personnel along a road. Because of the limited visibility, the company moved forward on-line and closed to less than 600 meters from the enemy. Numerous tanks, trucks, and APCs were destroyed. Charlie Company captured over 400 prisoners. CW3 Mitcham notified AWACS (Airborne Warning and Control System) of the situation. The Air TAC (Tactical Air Controller) proceeded to round-up the prisoners into a central point. During egress, the battalion commander reported the location of the prisoners to a ground element of 2nd ACR that had closed to within 20 kilometers of the objective.

ATTACK HELICOPTERS - 1.15

The following is an excerpt from an interview with a pilot from the 2-229th in the 101st Air Assault Division. This interview is specifically concerned with the mission flown to cut the causeway over the Al Hammar lake on February 27, 1991.

229th Pilot: The actual battle of the causeway occurred between 1400 and 1700 hours on February 27. About 1600 hours on February 26, we were ordered to move. The two attack battalions, 1-101st and the 2-229th, were warned that we were going to move out of FOB Cobra and move to the east to another airfield which was tagged as FOB Viper. This air field was southeast of the big air base of Tallil.

FOB Viper was an Iraqi air field, a very clandestine type of thing that is an improved dirt strip. It covered a large area and had a tower off to the side. We were there and didn't even realize it, obviously an alternate air strip. There was nothing permanently stationed there, but it was an alternate recovery field that they had done an extremely good job of selecting. I don't think anybody ever knew that it was there. It was not on any of the maps or anything. We were told to move to FOB Viper the following morning and from 1600 hours on, we were in the prepare-to-move stage. At 0600 hours, the battalion wheels moved. They departed on a convoy we estimated was going to take until 1800 hours to reach us because of the distance. The route they were going to take went through some areas that had been hit with DPICM (dual-purpose improved conventional munitions) which later became a problem.

Smith: Did they know the route? Did they have it plotted on the map? Was there a road they were going to take?

229th Pilot: Initially it was a really good, hard-surface road, but about the last quarter of it was unimproved road. The problem was we went from one corps area to another. We went from the XVIIIth Airborne Corps, the Corps boundary ended about one-third of the way to FOB Viper and we transitioned into the VIIth Corps and what we did not know was that a lot of the route had been objectives that VIIth Corps had seized, a lot of the towns along the road. They had fired cluster munitions in there. Vehicles would get stuck when they would get on these unimproved roads. That is what happened to mine. In the process of everybody getting out and stomping around trying to push this vehicle out, this guy stepped on a cluster munition. Fortunately he wasn't seriously hurt. But there were a lot of people that were seriously injured and that was a problem

that was compounded by the fact that people were indiscriminately shooting cluster munitions in the areas that the loaded transport went through. Keeping track of DPICM-dudded areas was complicated by the fact that one corps moved into another corps area.

Smith: Were there still prisoners in the area?

229th Pilot: There were stragglers everywhere. You would fly over these guys and they would raise their hands hoping someone would come down and pick them up and take them to safety. But they were everywhere--little pockets of them raising their white flags. So, 0600 hours the wheels moved out and 0900 hours the aircraft departed. The attack battalions were the first to move and then the cavalry. We closed into FOB Viper around 1200 hours. Simultaneously with this we were moving our FARPs, our fuel, and ammunition by ground. Jump FARPs came in, but the lion's share of it was still coming by ground. By 1200 hours we had all of the aircraft, all the combat part of the battalion, closed on FOB Viper. We had our jump FARP, moved by the CH-47s, with a security force. We had the combat power on the ground and we had fuel and ammunition on the ground and wheels were still enroute. At approximately 1330 hours, Colonel Garrett, Aviation Brigade, gave us the order to move from FOB Viper and fly due north, pick up the Euphrates river, fly due east along the Euphrates--a distance of about 50 kilometers--to the causeway which went north and then turned back to the west towards Baghdad and intercept or do a flanking attack on the Republican Guard forces that were attempting to flee north and escape.

Smith: What about enemy situation or graphic control measures?

229th Pilot: All the enemy info we had was "the enemy is on the causeway." The causeway is the objective and there is a main highway which comes down and parallels the Euphrates, runs down by Tallil and heads over to Basrah. The only graphic measure that we had was the word that friendly forces are south of that highway, anything north of the highway is the enemy. That was the only graphic measure that existed at that time. We also knew that on the south end of the causeway, there was a big built-up area, a

citadel-type of affair. You can see it on the map, about three to four kilometers square.

Smith: Did friendly vehicles carry any identification, visual panels?

229th Pilot: Sure. The "V" on the side. Everyone was supposed to have the "V" on the side and the colored panels on the top.

Smith: Did that show up in the FLIR (forward-looking infrared)?

229th Pilot: No, neither of them showed up in the FLIR. It never was an issue for us because in all of our engagements we were so far forward of "friendlies" that it was not a problem. It could very well have been one. We generally flew due north of FOB Viper across the highway, picked up the Euphrates and then flew to the east, picked up the causeway and this citadel complex. At this point we had a big bottleneck because there was only one FARP and you still had the rest of the aviation brigade showing up--we were trying to refuel two attack battalions (minus) with five jump FARP points, so we encountered a big bottleneck in the FARP which caused the first company to be delayed from about 1430 hours until about 1500 or 1515 hours.

Smith: Was this particular routing primarily due to the terrain features available for navigation or the desire to avoid the concentration of enemy around the citadel?

229th Pilot: Both. This was a big issue that needs to be surfaced out of this whole thing. The maps that we used up there, 1/50,000's-- which in this terrain is generally like a manilla folder with black grid lines on it--there is not enough relief for 1/50,000, so they are generally worthless. The only other thing we had was 1/250 which is too big so, to answer your question, we considered both. We knew the Republican Guard was stacked in here and we wanted to avoid that. The 1/250 sectional maps had the roads, power lines and rivers. So, to make sure that we had positive navigation, and bear in mind we were using Doppler, we ran Doppler check points, but to use a backup we took this route because we knew we could get there on the map, and it also avoided Basrah and this big concentration by the citadel.

Smith: Did you have GPS?

229th Pilot: There were two GPS devices in the battalion and both were given to the wheeled convoys. The only thing other than Doppler, which is organic to the Black Hawks and the AH-64s, was about six commercial Loran devices that we had modified "a la Rube Goldberg" and put them in the OH-58Cs and they got about a "C+." But that's the only thing the OH-58Cs had. About 1515 hours we took off and the three companies were to cycle in 30-minute intervals, to maintain constant pressure up here. I took off with Charlie Company. The last thing you have to remember is that when we started this fight it was like starting to run a marathon, you don't know if it is a mini, a full or an ultra. So, that was also in the back of my head to conserve some combat power. To make sure that we didn't completely exhaust ourselves in 10 days and then we were done. Early on we had determined the OH-58Cs were basically along for the ride because they did not have any type of internal navigation device. Because of that they were basically a follower, they followed the Apaches and Black Hawks.

Smith: Did it cross your mind that you were now in pursuit operations?

229th Pilot: Clearly. Because just the amount of abandoned hardware, destroyed hardware, it was clear that this was going to end in the next day or two or the next week, somewhere in there. It was just a question of how could we negotiate it. Yes, this was clearly in my mind a pursuit.

Smith: Did it occur that you could perhaps surge combat power at this point?

229th Pilot: That's correct. But bear in mind now, and the reason that I did not deviate from my game plan was that the only thing up here at this point was 35 aircraft and a jump FARP. An aircraft-delivered FARP and a couple of crew chiefs with tool boxes. Had we surged...it turned out it was the afternoon of the next day before the wheels arrived because they hit those DPICM/mine fields...that is why the battalion purposely did not deviate from the game plan. Yeah, we could have piled on, but it would have been the afternoon of the next day before the first competent mechanic showed up to do any repairs. As it was, we took some combat damage that gave us some problems. So, those

are the reasons why we went that way. At 1515 hours, we departed with five Apaches, three 58s and one Black Hawk for command and control. That was Charlie Company plus my bird. We arrived on station up there approximately 1545 hours. We set up at 30-minute intervals because we expected it would take about 30 minutes to rotate off station. We went up across the highway, hit the Euphrates, headed east. The Euphrates then opened up into a very large marsh area probably 15 kilometers wide and 30 to 40 kilometers long. It was like flying back in time because of the resemblance of Vietnam. There were water buffaloes up there, there were some Iraqi native people that lived in long pontoon, cigar-type boats, pushing along in the water with these long poles. There were actually people that were tied up out in the middle of the lake, living there. You could see the smoke coming out of these thatched huts that were floating on these boats. Little kids would come out and look at us as the Apaches flew by. It was really like the twilight zone, flying back in time. It was bizarre. In fact, a couple came up on the radios and made the comment to myself and Dan Peterson, who were the Vietnam vets in the battalion, "Hey does this remind you of something 20 years ago?" It was really strange...a lot of buffaloes--and these people were obviously not the average Iraqi people we'd seen at that point. We continued to fly, and along the way we were strobed by a variety of different systems. APRs are keying, never got locked on or anything, but a lot of different systems in the area and we are flying pretty low over the water. We encountered two hazards enroute to this thing. Number one was bugs. I don't know what they were. By the time we got to the causeway most of our windshields were pretty well obscured just by bugs.

Smith: Did you have the deicing caps?

229th Pilot: No, we had...a couple of aircraft had them on, but most of them did not.

Smith: Were the deicing caps in the Hellfire boxes?

229th Pilot: No.

Smith: You had to get them through separate channels?

229th Pilot: Through separate channels. Separate kit. We got a couple of them mounted and they worked extremely well. And that ought to be in the desert. That ought to

be a standard procedure. Not just for bugs, but all the damage that you cause. Remember that as soon as we got the aircraft, the blades back on, and cranked them up, and my battalion and the 1-101st were the only two battalions over there that were off-loaded from day one.

Smith: Same rounds?

229th Pilot: Same rounds...stayed on the rails and some of the failures we had I attribute to flying around for six months before we lost some of the missiles. The seekers were a bit scarred. So, we had the bugs. The other hazard we had were water fowl. We hit two of them. Took one down the left side and it was kind of a glancing blow. It hit the engine...didn't do any visible damage. We had blood and guts all over the side of the nacelle. We did take one on the wing, the right wing. It physically damaged the air frame. It looked like somebody hit it with a sledge hammer. A couple of guys took them in their windscreens. It is not like there is one bird there. I mean as we would fly over these things would come up in front of us. There would be a whole flock of them come up over us...20 or 30 of them. You just could not avoid them.

Smith: What were the atmospheric conditions? Was it a sunny day? Was there smoke, blowing sand?

229th Pilot: Generally, it was partly cloudy, plenty of sunshine, temperature was pleasant, you know 65 to 70 degrees. Generally, a fairly good day. Typical sunny day. Wind was calm. Probably less than 10 knots. In fact, it was really calm, as I recall now, because I remember the smoke of the cooking fires. However, as we began closing in on the causeway, it was like going into darkness. There were just so many oil fires there from burning oil wells north of Basrah and Kuwait. Plus, the vehicles that had already been destroyed were burning. We reduced air speed and came in and flew to the northern edge of this citadel complex here and that was just an incredible array of hardware and positions. Concrete bunkers of huge proportions...50 meters wide by 100 meters long that you could drive vehicles down into. We personally overflew probably half a dozen assorted anti-aircraft positions that had been abandoned, but they were still loaded with weapons in there. Groups of soldiers were everywhere waving white

flags. It was bizarre. We continued in, and the deeper we went the worse the visibility became. Finally, at the point where we moved up to where we could see the causeway, the visibility was probably less than 300 meters and it was just pure black smoke.

Smith: Did the 1-101 have the sector to your north?

229th Pilot: They had the southern sector. They were south of us. They had their company spread out there. We came up kind of behind them and swung out to the left. They had a pretty good engagement going there and we came up on the left flank and after we got into it, they were expended and they came back off...that was Charlie Company.

Smith: Were you taking small arms fire during this?

229th Pilot: It is hard to say. It was incredible, like I say, because there was so much going on. You had all these vehicles up on the causeway--most of which had been abandoned--but some were not. We were taking fire, but it was mainly because guys would stick their head up, shoot a few rounds and duck back down. But you also have to remember most of these people, at this point, realized that the fight was over. They wanted to surrender. We came up and the first thing we saw was an SA-6 lock onto us. Bearing in mind now, we are looking through the FLIR and it is about 1530 hours in the afternoon. Visibility was so bad you had to look through the FLIR system. So, you see this SA-6 strobe and then lock on to us. As it turned out he was only about 600 to 700 meters in front of us. Captain Wiggins picked him up and shot him with a 30mm and we are still not sure if he actually launched or this engagement caused the launch, but an SA-6 came off of the rail and kind of went straight up in the air and then just kind of spun straight down and landed right in front of us. We continued to hose him down, but his radars, they were still active so we finished him off with a 30mm. There was another SA-6 off on the right flank that was still active. He also fired a missile, but we didn't take any hits.

Smith: Was this the old Soviet-6?

229th Pilot: Yeah, two of them, they were sitting kind of side by side. We took that one out.

Smith: Were they also doing rear security?

229th Pilot: Rear security. That's why we knew that we had some SA-7s fired at us. Our theory is they missed because up on this causeway about every 50 meters there was a burning vehicle of some type and you could see the flames burning. So, we were all aligned here and the battalion kind of referred to it as "hammer time"...it was "hammer time" and we were launching everything we had--2.75s, Hellfire missiles and 30mm depending on the target and the range.

Smith: How wide was this causeway? Was it multi-lane traffic?

229th Pilot: Yes, it was at least two lanes south and two lanes north. We shot up a lot of vehicles here and then we drifted south back down into the citadel. And the citadel thing where the causeway ...

Smith: Was it your impression the causeway was already jammed up and no vehicle could pass at that point?

229th Pilot: No. My impression was that there were a lot of burning vehicles there, but we did see, when we first got there, there were some people walking and some vehicles moving. At that point I think the causeway was still passable. I think someone still could have come along and gotten through. We initially moved up and we shot some vehicles on this causeway here. Then we shifted to the right because we had serviced just about all the targets we could acquire on the causeway itself. Now, again, remember that this citadel, or whatever it is, you can see it on the map, is just chock-full of military equipment. This was like the rear security point for traffic, people heading south into Basrah, I don't know what it was. Bunkers, vehicles, hardware, anti-aircraft, you name it. Again, we came back in to the south and we began to hit targets on the causeway or the highway leading to the causeway, but we also then started servicing targets on the other side of the causeway.

Smith: Did you specifically try to limit the engagement of soft targets to 30mm and 2.75" or did you occasionally shoot Hellfire?

229th Pilot: Yes, we went into it with pretty strict rules of engagement (ROE) because, when this whole thing started. It is like starting to run a marathon, you don't

know if this is going to be a mini or a half or ultra, you know you have to pace yourself here. So, we pretty well limited ourselves on Hellfire shots to hard targets, armored-type vehicles. We did shoot a couple at bunkers and vehicles of choice.

Smith: What were the other joint or combined elements that were up here on the causeway fight at the time?

229th Pilot: To my knowledge there was none.

Smith: No artillery available?

229th Pilot: No, you've got to remember at this point probably the closest friendly force was more than 70 kilometers away on the ground still moving forwards. The Air Force had started this battle, but they were pretty much out of the fight because of the smoke.

Smith: Obviously, this was one of the last routes out. There had to be, for instance, armored convoys queuing up even outside the citadel to the south, southeast, southwest, queuing up into the citadel trying to escape. Was the smoke all over that part of the country?

229th Pilot: It was everywhere.

Smith: So this was a helicopter fight?

229th Pilot: This was purely a helicopter fight. In my mind, first of all, the Air Force had nothing they could fly and fight in poor visibility. So, this was clearly a classic, armed-helicopter mission. Get in there and fight in obscurance with reduced visibility. This was basically in the daytime. So, we got up there, there are fires everywhere, there are fires in front of us and most of them are burning vehicles, some of them are actual oil wells, but it is dark, occasionally you will see a flame through the smoke and then the obscurance will come in again, but the fires are all in front of us and everybody is pretty much servicing targets. There were enough of them out there. They were hovering over this citadel complex, bunkers, vehicles. At one point I looked down on the right side of me and there was a 57mm that I could spit on and the left side was a 23mm.

Smith: But no fire coming from that area?

229th Pilot: They were abandoned at that point. But this was the spooky part. There were numerous groups of Iraqi soldiers that were around there waving white flags and

smiling. Here we are with our backs to a lot of these guys because we are up there engaging and they are just kind of sitting there like watching a prize fight. The real spooky part about it, you didn't know how many people were down in these bunkers under you that were fixing to come out and hose you. You'd kind of shoot a missile and look left or right to see what the hell was going on. He (the back-seater) had the 30mm...as I had, but every now and then we would pick up some-thing on our peripheral vision. Come to find out we suspect that those were some type of heat seeking missile, I don't think it was an RUG (rocket propelled grenade), but somebody was shooting at us from the rear because about the third time this happened the rug, the little rear security there, called up and said somebody just shot something at my bird, the right-most Apache from the rear. Our theory is that we probably had three missiles fired from the rear, some disgruntled Iraqis that still thought the cause was worthwhile and didn't want to surrender down here in the citadel complex.

Smith: Did you feel some security from the smoke?

229th Pilot: Well, that's kind of funny. There was some security--you were only threatened by things within 300 meters of you, but I am here to tell you there was just so much within 300 meters of us, I mean we were just flying over stuff everywhere.

Smith: Were they up on top of berms? Up on top of buildings?

229th Pilot: Yes, they were bermed-in. The standard tactic over there is get a bulldozer and berm everything up. So, and we just serviced targets, it was just like a shooting gallery type of situation. You would see a target, BOOM, shoot it.

Smith: How did you handle the distribution of fires in this kind of environment?

229th Pilot: We were spread out enough and there were so many targets that it did not become a problem. We fired out all of our systems.... We still had good success. Sub-munitions dropping right on top of soft targets. We stayed up there about 30 minutes and were pretty well expended. We came off as B Company relieved us in place, the same place, and continued to fight.

Smith: At the end of the fight had you drifted toward the highway or not even gotten there?

229th Pilot: No, no. There was just so much up here in this citadel, it was incredible...I would say upwards of 2000 vehicles in that whole complex. So, B Company came up. A Company never came up and what happened with them was the MEDEVAC mission where we lost the Black Hawk, they accompanied the Black Hawk that went on the SAR (search and rescue) mission. Ultimately shot down. So, only got two companies of the battalion in the fight.

Smith: Did your second company come back expended, they found the same target-rich environment?

229th Pilot: Same target-rich environment. They found BM-21s....Got good secondaries off of that. Took them out with a 30mm. BM-21s, BMPs, a lot of BRDMs. Never, in this battle...here I cannot sit here and tell you conclusively that any of us ever took out a tank. For whatever reason, we never saw them there. My theory is that when they were fleeing they were getting into vehicles that would move quicker. And, we knew from the "get go" that a lot of their tanks had mechanical problems. There were reports of all the white smoke and stuff like that. So, that's why I think we didn't see a lot of armored vehicles up there although there were lightly-armored vehicles. BMPs, BRDMs, a lot of support vehicles and a lot of that stuff were vehicles that were in defensive positions there.

Smith: If the helicopters had not gotten in this, if they basically had had to wait until the ground forces had come up and fought their way into the citadel and cut the causeway with artillery or something else, how much time would that have allowed that force to continue moving across the causeway?

229th Pilot: I can tell you for a fact it was three days.

Smith: So, potentially that whole bag would have fled across the causeway without the interdiction?

229th Pilot: That is correct. On the March 2 was when the 24th Division finally closed and secured this position.

Smith: And then the day after that, or two days after that, is when the 24th had the fight with the Hammurabi?

229th Pilot: Right, right. In this exact same position.

Smith: In the same place trying to get across the causeway?

229th Pilot: The exact same position. They went in and did a big sweep. In fact, I think it was March 2 that they did this.

Smith: So, essentially you had two divisions' worth of vehicles?

229th Pilot: I'd say at least, at least. You got to remember, it was a classic choke point. There were only about three places that you can cross the Euphrates. There was another one about 60 kilometers further east, due north of Basrah and then there was one that we flew over on the route to the causeway, but it was a very small, two-lane road. This causeway was the only one that I know of that was a large, four-lane and could carry a high volume of traffic. It was a classic choke point and so we really had them cut off. There is really no way...no high-speed avenue to escape because of the Euphrates and this large marsh complex.

Smith: No bridging equipment would have worked for miles to either side?

229th Pilot: Exactly, because the Euphrates turned into this big lake, or marsh. There was no way in the world you could bridge it. At that point it was a lake, it wasn't a marsh.

Smith: Why hadn't the Air Force already dropped that causeway?

229th Pilot: Good question.

229th Pilot: We had three aircraft that had taken small arms fire and, of course, then we had the two Apaches that had taken AAA that were with the Black Hawk that got shot down. That night we lost eight crew members on the Black Hawk, or so we thought. As it turned out we lost five, three of them were captured. But this was a fairly traumatic event, when we went in there focused on what we were doing, engaging targets, it was one of these delayed reactions. We came back and it was kind of like a polaroid camera, your mind began developing things and we talked about it among ourselves. You have to remember, too, it was

not a good night because we had the Black Hawk down with eight crew members and this experience was like a cheap horror movie, really bizarre, the obscurance, flying over the marshes, dodging the birds, there were a lot of things that could have happened to us and I feel extremely lucky that we didn't loose three or four Apaches in this fight. By all odds there should have been a couple of Apaches go down there. That evening everybody was recounting it and we did an extensive debrief and tried to get some accurate BDA and review the gun tapes. Unfortunately, some of our equipment, especially the cameras, were starting to show the effects of being exposed to this environment. That was a very hazardous environment--both getting in and getting out. The bugs, the birds, and then we had to contend with the Iraqis. At one point, just for an example, the UH-60 which was behind us was hovering over this marsh area and they were only a couple of feet off the ground. Unbeknownst to them they were hovering right over a bunker complex that had about 11 Iraqis in it. Out of the right side, all of a sudden the crew chief looks up and here is about 11 of these guys crawling out of the ground and actually came over and touched the aircraft with a white flag trying to get a ride out of there, trying to surrender to friendly forces. That was the eerie part about this, you never knew at what point these guys were going to throw down, and they would have a white flag in one hand and an AK in the other. That type of situation. There were a lot of people up there with white flags, there were a lot of people up there just standing around and here we were flying amongst them trying to service targets to our front and looking over our shoulder.

Smith: Did 1-101st rotate back in?

229th Pilot: No. They only sent one company up. Remember, they had to leave one company back to support the remaining brigade of the 101st. They had one company that was on a night rotation that was not up and so they only had one company left in place.

Smith: There were three or four other attack battalions working other parts of this fight either further to the south, further to the east, perhaps...I think they were even working across the swamp, across the causeway on the north side.

229th Pilot: Across the swamp, on the north side was the 12th Aviation Brigade, 5/6 Cavalry and 3/227. They had gone north of the swamp. They were probably 20 kilometers further up the causeway on the northern bank and again I think they found much the same that we found. A lot of light-armored vehicles, no real heavy armor, but a lot of vehicles with people trying to escape. And it was my general impression, at this point, that all discipline had broken down everywhere with the exception of those forces that were still on the ground in positions.

Smith: Kind of a classic pursuit?

229th Pilot: Exactly. Mass confusion. At this point, most of the Iraqis realized it was a futile fight and they just wanted it over and to get out of it.

Smith: What cut the causeway? Was it the number of burning vehicles or was it the immediate possibility of death that the Iraqi soldier faced if he got up on the causeway?

229th Pilot: Initially it was the number of vehicles which created a massive choke point. I think you could still have gotten through there, but it would have been like an obstacle course. Once these guys got up there and saw all the burning vehicles, all the death and destruction and everything, I think they just said, "...the road is closed." Now, further to the south, 24th Division was still moving. I really don't know the disposition of the 11th Aviation Brigade out of VII Corps or the 1st Armored Division, but I think they were still moving in support of their divisions.

Smith: The word we got back here was that the 24th Division was trying to race its MLRS to get into the fight.

229th Pilot: They never got into it that day.

Smith: You didn't go back up there, the 101st didn't go back up there. This thing is cut, nobody else is going across it, there is just a bag of people that have closed up on the citadel and they are now waiting, just hold them there and wait for them to surrender.

229th Pilot: That night we received the mission to go back up in there the next day, but 0800 hours was the cease fire the next day. We had the mission to go back up there again, 1-101st said they had the mission to go at 0900

hours, I had the mission to go at 1200 hours in the afternoon.

Smith: Doesn't sound like much had gotten over the causeway before you attacked.

229th Pilot: No, I think the Air Force caught these guys fleeing initially and hosed down the lead elements and created a bottleneck and at least slowed everything down enough and then things began to back up. Once people realized that they were sitting ducks they dismounted and moved out. But see, you look at the map and see that there are really only three places to cross the Euphrates in that area and I am surprised that we didn't take those out from the "get go."

Smith: How were you doing the back haul from the FOB back to wherever the fuel "pipeline" was ending? Were there HEMTTs or Chinooks?

229th Pilot: The HEMTTs showed up, the Chinooks were just basically flying nonstop because the 101st has a 45-ship battalion and then we had the corps battalion in direct support.

Smith: I don't know if you recall reading about this, but the original concept behind the old 11th Air Assault was to have C-130s do a lot of that in-theater backhaul and save hours on the Chinooks. That never occurred?

229th Pilot: No, it could have happened, but it never did. And that quickly became the issue. Any time you move the 101st, you just don't have enough heavy lift, you know, we can burn and shoot the fuel a lot faster than they can haul it to us. That is the Achilles heel with air assault stuff.

Smith: But really, you were in a better position to move faster and farther than like the 11th Brigade or the 12th because they were totally dependent upon ground transportation.

229th Pilot: Absolutely.

Smith: Whose structure had perhaps been flavored by our requirements in Europe, falling back on a supply line.

229th Pilot: But when you want to move over distance, you've got to have a lot of heavy lift. But clearly this is a text book operation. To take an attack helicopter battalion, well, just take a fighting force that started 300

kilometers away from the engagement area, less than 24 hours from the time that you give them the alert.

Smith: How many days do you think you could continue this identical operation with the log support that you had?

229th Pilot: I would say we were good with what I had, without having to go significantly higher, we were good for more than 7 days.

Smith: How much further in distance do you think you could have gone beyond your FOB with the same organic division support? Five hundred more kilometers?...three hundred?

229th Pilot: If we had moved the whole aviation brigade? A couple of things that came out of this was the "tanked" Apache. In my mind that just kind of squares the whole capability and that was apparent to the Iraqis by just the expression on their faces when we showed up on the Euphrates River.

Smith: Can you repeat that anecdote for the tape?

229th Pilot: Sure. On February 17, we began the armed reconnaissance; at that point we knew what day "G-day" was going to be within a fairly accurate window, and the idea was that on G-7 there would be an armed reconnaissance to determine the suitability of the landing zones for the 101st and also to determine enemy disposition. On that day we blasted out, crossed into Iraq and went up on the banks of the Euphrates, looking for LZs (landing zones), making sure they were suitable, no big dust problems and things like that. And we got up there and found that the area was lightly defended, but we did encounter a few Iraqi positions. We weren't there necessarily to take them out and we were kind of snooping around, checking LZs. First of all, they didn't know what we were--as they exhibited no fear at all--and they would stand there and look at us and point and talk amongst themselves. If we spoke Arabic and we had a listening device, I'm sure it sounded like, "You know, I've never seen helicopters like that before. What do you suppose those are?" And they would just stand there out in clear view, just kind of figuring out what we were and it was obvious to me that it never dawned on them that here were enemy helicopters more than 100 kilometers deep inside their country. They stood there for several minutes looking

at us, totally unafraid, and, of course, as we got ready to depart, we lobbed a few 2.75" rounds in their direction and they got the message real fast we weren't friendly. But they stood there in total innocence just looking at us and I am sure they thought, "the war hasn't started, who is that?" And my theory is that it never occurred to them that helicopters could fly that deep and fly around the area, turn around and fly right back without some type of incursion occurring. They were deep in the rear area. They thought they were just as safe as fleas on a dog and all of a sudden--there we were!

229th Pilot: Clearly we demonstrated the potential, the enormous potential, that armed helicopters have. Day and night, rear area operations, their ability to move quickly and strike hard, strike deep, clearly a system that can do what a lot of systems cannot do. Desert warfare is unique and probably the hardest type of battle to fight because there is no place to hide. There is nothing to get behind. Navigation is bad, effects of the sand are terrible, both on the equipment, it gives away your position as blowing sand can be seen for 20 or 30 kilometers with the naked eye, rotor signatures, those kinds of things. So, it is my opinion that desert warfare is the toughest there is both environmentally and tactically, and so if you demonstrated the potential here, then that potential is even greater in a less demanding environment like you are in.

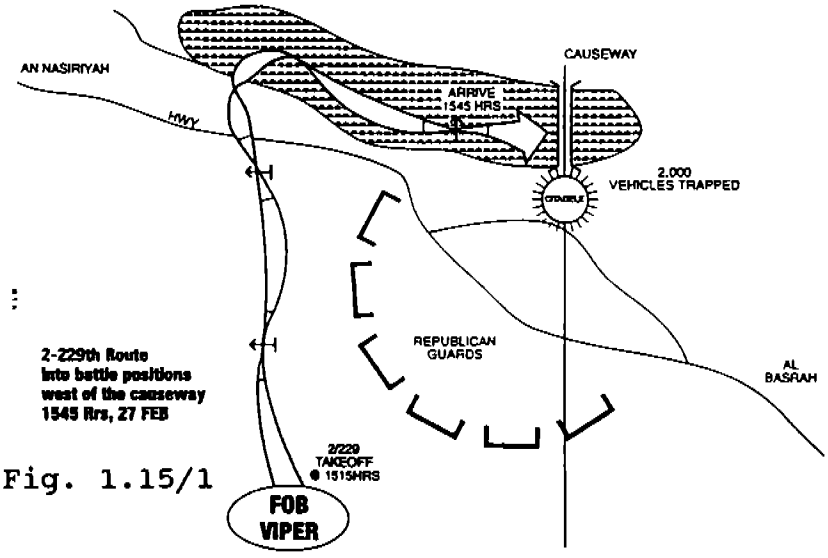

Fig. 1.15/1

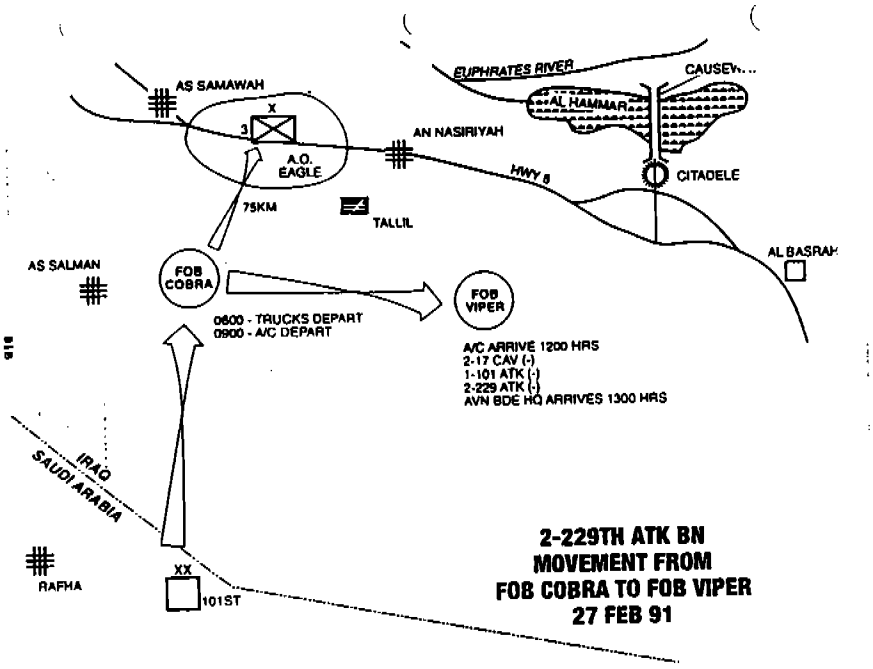

Fig. 1-15/2

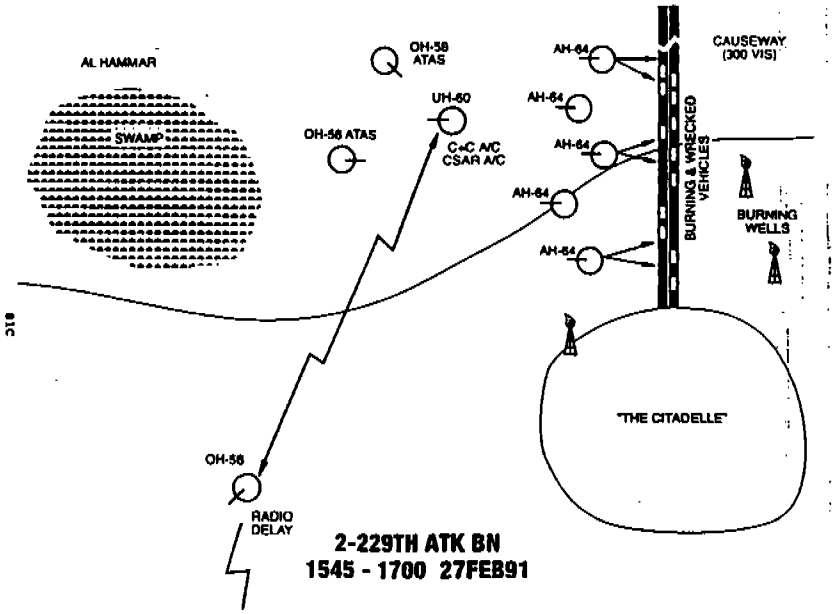

Fig. 1-15/3

ATTACK HELICOPTERS - 1.16

The following in an interview between Dr. Wright, USAAVNC Historian, and Captain Tim Devito, who was assigned to the 1-101 Attack Battalion:

Wright: You indicated that you were involved in what they call the Battle of the Causeway. How did it come about?

Devito: Two days after FOB Cobra was secured, February 27, we air assaulted again, a different brigade, from FOB Cobra to a place called FOB Viper approximately 80 to 100 miles to the west of Basrah. At this point, I believe I am correct in saying this--because of the bridging networks being destroyed along this area there was really one way out of Kuwait and that was this road through Basrah and this causeway right here--what we are referring to as the Battle of the Causeway. Once we established ourselves in FOB Viper that morning, we received a mission to conduct an attack on this causeway as it was the only road moving out of Kuwait at that time. We had received several reports that numerous, numerous vehicles were located on these roads, roads leading to that causeway. So, basically we conducted a mission with the 2-229th--our battalion took 6-8 Apaches out and established ourselves on line off this causeway. I was in an OH-58, I wasn't in an Apache, but I did get to see all of the tapes and I was out there with them. Looking back on this mission, this was really more of a turkey shoot than anything else. Unfortunately the Black Hawk got shot down doing a combat search and rescue mission, in the vicinity of the causeway, on the same day. The vehicles that we destroyed, I would venture to say 90% of them were unoccupied. Most of them were stopped, 10% maybe had people in the them. But most of the vehicles that we destroyed were stopped and in my estimation were vacant. You know, these people at this point were just running. The largest traffic jam that we have ever seen.

Wright: I have seen pictures of it and I agree with you. Were you engaging them only with rockets and Hellfire or did you get close enough to use the gun?

Devito: Sure, we got close enough. I didn't fly in a gun on that mission but actually flew over some of these targets and saw them engaged with 30 mm. Some of them were obviously vacant.

Wright: Did the Air Force work these same targets over too?

Devito: I am sure that they did.

Wright: When you came on-line, was the road itself blocked? Were there vehicles blocking the bridge?

Devito: There were vehicles blocking--just disarrayed, both vacant and occupied vehicles on that causeway were blocking it. But, it was traversable. There were vehicles moving in and around all of the destroyed or vacated vehicles, but it was definitely obstructed traffic through that causeway.

Wright: So, in other words, the Apaches weren't the first to work that target? The Air Force had been there earlier?

Devito: Definitely. And I would even take that one step further and say--looking back at some of the tapes, I would not be surprised if we actually engaged targets that had already been destroyed. Because there were just so many vehicles out there. As a matter of fact, I would guarantee you that we at least destroyed a couple of vehicles that had already been engaged.

Wright: Someone mentioned that there were a lot of Iraqi soldiers in the marshes.

Devito: Our route went right through the marsh which we thought would be a good route for us. In actuality these people had dispersed from the area where their vehicles were being bombarded into these marshes for concealment. Sure, the route from FOB Viper to the causeway over those marshes led over vast amounts of enemy, dismounted infantry and fields. Some of them fired at us, some of them didn't. Most of them were waving white flags. Some of them waved the white flags and then fired--we have that on film which is a good training device.

Wright: After they fired on you, was there return fire? Did you shoot them up?

Devito: Oh, sure. In the interest of self defense for the flight. If an enemy fired on chalk one, chalk two would

definitely return the fire. Just to suppress for the rest of the flight.

ATTACK HELICOPTERS - 1.17

The pilots of Company C, 1-227th Aviation Regiment, 1st Cavalry Division, had expected a "low threat" mission on the morning of February 25 in southern Iraq at the outset of Operation DESERT STORM.

Instead, the battle turned into one of the most fierce the 1st Cavalry would face during the 100-hour war. It was a battle that would determine the tactical direction of the coalition attack--and the only battle in which an Apache was lost in combat. The battle drew three Iraqi battalions to the south, and enabled the coalition forces to swing around the Iraqis and come in virtually unopposed from behind.

Remarkably, and to many almost unbelievably, the two pilots aboard the Apache downed by a ground-launched missile walked away from that catastrophic crash.

With "bigger fish to fry," the Apaches bypassed surrendering Iraqi soldiers, leaving behind Bravo Company scouts to land and keep a watchful eye on the enemy soldiers who were later captured by ground forces of the 1st Cav. "One kilometer further north we sighted a tank, locked on, and shot a missile. Someone else shot at it too so it was a double kill," recalled back-seater CW3 Mark J. Mullen, Co. B's lead bird. To the right, Charlie Company crept forward to the sound of mortars hitting to the left and front of Bravo's birds.

During the engagement, enemy fire consisted of artillery, small arms, and surface-to-air missiles one of which found its targeted Apache. "We're hit, we're hit," the radio sounded. February 25, 1991, was CW4 Michael Butler and Captain Michael Klingele's lucky day: it isn't just any day your AH-64 Apache is shot down by enemy fire and you live to tell about it.

The mission against an Iraqi mechanized company began well enough, but quickly spiraled into what could have spelled death and disaster for two 1st Battalion, 227th Aviation pilots. "We were in the sector looking from eleven o'clock to the right. Other guys were starting to see

targets, but I hadn't yet," recalled Butler, "I began sweeping back to twelve o'clock when I saw a flash at ten o'clock. I had turned the nose 10 degrees when the missile impacted."

Klingele at the time had his mike keyed, ready to give a command to his Charlie Company Apaches. "I instantaneously said 'we're hit, we're hit." Klingele remembered. "I saw the crash happening like you would a car crash " --you see it coming in slow motion, but the sequence probably only took two seconds. "I saw the ground rolling and pulled pitch. It was a hell of an explosion--we were violently thrown," said Butler of fighting to maintain control. "We hit hard and it knocked the wind out of us for a second. I looked and saw the captain moving up front." He said his first thought was "hey, I'm alive." He then released his seat harness before realizing he was tilted downward.

Outside the Apache, the two quickly asked each other if they were okay. Behind them, Butler heard machine guns. Their wing man, Chief Warrant Officer 2 Edward Sanderlin and 1st LT Robert Johnston, set down instantly as the rest of Co. C set up a perimeter of cover fire for rescue of the downed pilots. "They were out and running towards us before we even set down," said Sanderlin. Butler beat Klingele to the waiting Apache, hooked onto the wing and signaled he was ready to get out of the dangerous area. "Hooking on went as I expected it to if put into action, just as we planned" said Klingele. The duo flew on the Apache wings to a safer area where they transferred to OH-58C scouts.

Butler credits the rescuing pilots for the lift from danger and has referred to Sanderlin as his "best buddy" since. "Getting shot at was the easy part. Getting pulled out of there was the hard part. In twenty years flying I've never seen such professionals as in this company's fast reaction." A bloody-faced Butler transferred to the 1-227th Avn. command and control aircraft, and prepared to go back into the fight.

With a second run at the sector to do, Klingele commanded his Co. C birds from a scout while Butler helped to upload Hellfire missiles. "These two are incredible for continuing like that--I mean after just getting shot down

and all," said Johnston. Once at "home" Butler reflected on his good fortune. "I felt somehow as I was being protected on the way down, as if God was intervening in my life," he said. "It is the most incredible thing that has ever happened to me."

Two more runs at the enemy followed. Mullen and his front-seater, Chief Warrant Officer Brian Amos, nailed a battery of 120mm mortars, five tankers, some tanks, and a fuel tanker. The Hellfire missile punctured the tanker causing secondary explosions. The smoke from the tanker blended with that of a staggered Iraqi fire trench churning out black smoke and making for hazy sight pictures with the Apache's forward-looking infrared system. "I was really impressed with their trench systems--tunnels throughout the bunker complexes and the fire trench as well," said Amos. I'm impressed with their ground tactics, but our firepower overwhelmed them."

Though designed to combat enemy armor, the Hellfire proved fairly lethal against the dug-in Iraqis. According to Mullen and Amos, the bunker with steel plating and logs apparently caved in killing the Iraqis they'd watched earlier. "I don't think the Iraqis realized our stand-off ranges--they were out in the open smoking and joking at first," described Mullen.

Mullen and Amos' Apache has chalked-on stick figures representing their kills, a symbolic tally of their first taste of combat. Sitting in an isolated area of Iraq during the cease-fire, the two reflect on their first attack. "I wouldn't have missed this for the world," said Mullen, who was retained for Operation DESERT SHIELD on the Stop-Loss program. Amos had mixed emotions. "Everyone performed in a professional manner--it was professional soldier against professional soldier. I would have liked to have taken on the Republican Guard. As a soldier, I want to do it again. It's kind of addictive. But as a family man, I want peace."

The mission was undoubtedly the highlight of the aviators' careers. "We learned more in 30 minutes than all of training combined," said Amos. "You can't replace the real thing." It also provided the value of the AH-64. "Our radar jamming seemed to defeat their systems and the 30mms were effective in keeping the infantry suppressed, allowing

the back-seaters to concentrate on the targets farther out," said Capt. Jimmy Marchum, Co. B commander. "The Apache has done extremely well--this mission has given us confidence in our aircraft and countermeasures. Used in a real scenario, they all worked and all performed with no glitches, no problems. They proved their reliability," he added.

Back at AA Bart, the crews crowded into a GP medium to watch their on-board tapes of the attack and gather a tally of kills. "Oohs and aahs" sounded when a Hellfire missile found its mark on the instant replay and conversation abounded. Adrenalin and exhaustion seemed to mix, the air charged with electricity and war stories of First Attack's first attack.

ATTACK HELICOPTERS - 1.18

"I am Lt. Colonel Roger McCauley, commander of 4th battalion, 229th Attack Helicopter Regiment. I would like to present an after action view of the battalion's attack February 26, 1991, against Iraqi enemy forces in the vicinity of Kuwait. To set the stage for you, the battalion received a confirmation FRAGO (frag order) which was in effect on February 26 and also it received a warning order from the deep battle cell implementing the planning cycle for areas in the vicinity of the OBJ Menden--to be prepared to hit the targets no earlier than 1500 hours on February 26. However we were unable to maintain contact with Brigade--they were on the move and we were in the middle of a storm. That required me to make some decisions without the benefit of communication required. The battalion was essentially on the verge of splitting itself into four sections. I had my advanced elements moving with the 26th and Brigade TAC forward to FAA Skip in Iraq. I had decided to move my FARP forward--it was no longer of use for me since the advancing friendly elements were pushing way out front. I decided to move the FARP forward and started moving them toward the breach site. I also had moved the readiness status of my TAC elements up, my AH-64s, my OH-58Cs and OH-58Ds and prepared to launch them to maintain contact with brigade in the vicinity of FAA Skip. About the same time I was finally able to get through to confirm that

my orders were to move the attack assets into Iraq. I also gave orders as soon as the aircraft had departed that the main body would march order and follow me through. So, the attack was moving enroute with 26th and the Brigade TAC, my FARP was moving, my aircraft were moving and my main body was moving. So, I had elements spread in four different directions. The crews began their active duty day at 1200 hours on February 26 and by 1500 hours, they were prepared to leave FAA Hop.

On February 26, the battalion was located at FAA Hop. The advanced party element had already departed with the Brigade TAC and moved into southeast Iraq. I dispatched the class 3/5 platoon to move to the breech site in the 1ID's sector. The purpose of that move was to get the 3/5 platoon set to support follow on operations for both the attack battalion and the brigade. Simultaneously, I moved the three attack companies into Iraq to FAA Skip where the battalion refueled at the FARP at approximately 1830 hours.

Colonel Hitt and I discussed the restated FRAGO 7 in detail. Our mission was to hit the tactical reserves threatening the penetration, conduct deep attacks to isolate the reserve or reenforcing elements. Colonel Hitt also gave me an updated enemy and friendly situation and gave me other details of the mission. At approximately 1900 hours, Colonel Hitt departed for the deep battle cell from which he would command and control that operation and any follow on operations--that proved to be a wise move. At about 1930 hours, we began to have intermittent communication with the deep battle cell. Therefore, I repositioned my AH-64, brought an OH-58 along and I picked up the deputy brigade commander, Lt. Colonel Johnson, and we moved to the corps TAC. At the corps TAC I coordinated with the commanding general of VIIth Corps, General Franks, reference FRAGO 7 and our mission that night. I also spent a good amount of time doing detailed coordination with the forward G-3, Colonel Cherrie. He gave me updated friendly/enemy situations and also the frequencies and call signs of the units that I would be flying over that evening. We spent some time going over the details of where the attack was to take place against the Iraqi forces and I quickly learned that our mission would take us forty to fifty kilometers out

in front of the attacking forces and we would be attacking into Kuwait. At 2100 hours, we began the attack with Alpha Company moving along the coordinated route. The battalion moved into the formation that we call the "Apache wedge." The lead company (Alpha) moves out 20 minutes in front of B and C company. The mission of the lead company is to clear the route and also to provide early warning of anything unexpected along the route. In this particular case, in the vicinity of ACP (air control point) 17 enroute to 18, Alpha company encountered a large tank battle taking place in the vicinity of OBJ Norfolk. That required the company to relay the information back to the rest of the battalion and also deviate to the south. At the RP (Release Point), Alpha Company moved to its 10 by 20 kilometer box--each of the companies was given a 10 by 20 kilometer box in which to attack. I assigned each of the attack companies a maneuver box. Alpha attacked in the north, Bravo in the center, Charley in the south. I chose this method of attack because the enemy situation was unclear. They also didn't want to constrain my commanders to any one spot. I wanted them to have freedom to fire and maneuver. This was a combination of training that we had been practicing for the last two months which allowed the commanders to incorporate running fire and to fire and maneuver against enemy targets. I would like to point out that this mission had a second attack in it. We were not anticipating the re-attack to exploit our success. At the FARP and FAA Skip I requested the re-attack because I knew there were more targets out there. In the re-attack however only two companies made it out. Charley company unfortunately didn't get serviced quick enough in the FARP and didn't get into the second fight. I briefed the re-attack at 0200 hours on February 27, in FAA Skip next to the FARP. The attack companies were to move on the same route. This time, again they had to deviate from the tank battle that was raging by this time to the RP. Alpha company's mission was to swing from the south to the north to fix and destroy enemy forces. Bravo and Charley were to move in their original sectors out to their limit of advance which was still the 20 N/S grid line. Charley, of course, is not depicted since they did not make it out of the FARP. Now, I would like to turn the discussion over to my company

commanders, each briefly outline their mission that night. The tapes don't tell the whole story, however. Neither I nor my company commanders anticipated a re-attack.

I am a company commander, 4th of the 229th.

Company Commander: I am now going to briefly discuss the company's actions on the night of February 26 and February 27. At approximately 2115 on the night of February 26, we proceeded along the route as briefed. By the time we reached ACP (air control point) 17, I had to return one AH-64 and one OH-58 due to maintenance problems. We proceeded along the route with the tank battle commencing to the north of us which caused us to deviate a little bit to the south. We reached our RP (release point), and swung north to our sector. We entered our sector and encountered entrenched enemy targets, and received small arms fire. We continued to the east, engaging as we went. After approximately 30 minutes we returned to the rear of our sector and egressed without incident, turning back to our assembly area where we rearmed and refueled for the next mission. The re-attack, at approximately 0200, proceeded as briefed with all elements intact this time, deviating to the south between ASP 17 and 18 with the major tank battle ongoing to the north of us. Our mission was a little bit different this time as I was to orient to the north with my box defined with the QUEBEC TANGO 90 east/west grid line and I was to conduct a movement to contact to the north to clear above the 00 grid line. We were in the area approximately 30 minutes, and received unknown air defense engagement and small arms fire. After approximately 30 minutes we egressed to the south, after coordination with the battalion S-3 and without incident returned along the route, refueled, rearmed, our mission concluded at approximately 0430.

I am a company commander, 4th of the 229th.

Company Commander: I would like to tell you a little bit about how the battle went for the company. We departed the forward assembly area at approximately 2145 on the planned route. We flew along the route with six AH-64s, two OH-58Ds and two OH-58Cs. At this point we deviated from the route because of a tank battle to the north and a great deal

of indirect fire. We deployed at approximately the 80 north/south grid line and continued forward. Team two, my team in the south, made contact immediately with a small convoy along the road and teams three and one continued with no contact. We bypassed and continued approximately 20 kilometers deep into our sector. We made contact 5 kilometers from our limit of advance. We then engaged vehicles and egressed out of our area back on the route. We deviated from the planned route again because of the tank battle and the indirect fires and continued back to the FARP. I think the key to attack helicopter operations is the turn around time at the FARP. I was the third element into the FARP and there was a long line and we were unable to quickly get refueled and rearmed. In a pursuit-type operation like we were doing it was critical for us to get out fast and get back into the battle. It did not happen because the FARP could not handle the tremendous amount of volume that was coming into it. We got spot reports from another battalion commander that the weather picture had degraded tremendously, the visibility was dropping and we decided that it would be best to abort the mission at that point

ATTACK HELICOPTERS - 1.19

The following is an excerpt from an interview between Dr. Wright, Deputy Branch Historian, and Colonel Tom Green, who served as the XVIII Airborne Corps Aviation Officer during Operation DESERT STORM.

Colonel Green: XVIII Airborne Corps blew out a division that was scattered up a couple of roads. We took about 5,000 prisoners. Basically ran that whole flank. Once they hit larger units, they were already on the Euphrates River moving east toward Basrah and down that way. Boy, I'll tell you what, it was carnage up there. They just flat ground and air, Air Force and Army Aviation and Army ground forces and they just decimated that place. It's unbelievable.

Dr. Wright: In other words, you are saying they caught them in movement?

Colonel Green: Oh, yeah, all the stuff that we read about and expected, like tanks. Once you intercept a tank column on the road, they deploy and fight, hasty defense.

They didn't do any of that crap. The minute they started blowing up tanks, everybody stopped their tanks, got off and ran into the ditch. The tanks were like magnets and the crews knew it. Everybody's first urge was to get the hell away from those things and because we weren't killing people, we were killing equipment, and so the guys got off the tanks and ran for cover. I got pictures of Apaches, gun camera film, where an Apache would knock out a tank, knock out a tank and then wait for the crews to get off of the rest of the tanks and then knock out the rest of the tanks. You hear them say, "Are you going to shoot?" "Yeah, yeah, just wait a minute." "What are you waiting for?" "I'm waiting for this guy to get off." The guy would get off and then they would blow the tank up. Americans were not real good at the slaughter. We blew up a lot of equipment. Couple of times women and children were spotted in the mass of vehicles. They held their fire. They didn't blow the trucks, I got all that on gun camera film. One guy moved into 600 meters in an Apache trying to ascertain what the hell those people were. Were they soldiers or civilians? It was funny, where he was sitting, first time I saw the gun film, I was sitting up at night in the Corps CP and I'm yelling, "Shoot, shoot!" He was looking at one side of a truck and people were running all over the place, and he moved around and actually crossed the road at a side-ways hover and looking down in the ditch on the other side were women carrying babies and children in their hands, running down the ditch. And he would have killed them if he had fired that truck up. He didn't shoot. And that happened a lot.

Dr. Wright: Probably some of those Kuwaiti citizens they took along with them.

Colonel Green: Very possible. Very, very possible. I don't know who the heck they were but...

Dr. Wright: Were the pilots given specific instructions not to fire in the event or did they do it on their own?

Colonel Green: They did it on their own. The rules of engagement were clear. We tried not to kill civilians, but I can tell you that when you are shooting at a moving vehicle you don't know who the hell is in it. So the

pilots, I think at first we were expecting the Iraq/Iran type bayonet to bayonet type fight, they were killing everything moving. Then they started taking prisoners by the dozens and then hundreds and then thousands. The guys backed off a little bit. General Schwarzkopf put out the word we don't want a body count. We want to make sure this army does not have any equipment to continue to raise hell with its neighbors, so go after the equipment, even abandoned equipment will be destroyed. We destroyed everything we didn't haul out. The pilots then started backing off a little bit. I don't think they would have backed off of us. I think they would have cut our heads off and put them on poles around town. No doubt in my mind.

ATTACK HELICOPTERS - 1.20

The 3-227 AtkHB and 5-6 Cav (AtkHB) occupied FOB Cobra by 1100 hours on February 27, 1991 (G+3). They immediately received a change of mission, and proceeded to FOB Viper, some 180 kilometers to the east. Both attack battalions closed into FOB Viper by 1700 hours. That afternoon, 3-227 AtkBN conducted daylight attacks to strike targets deep in Iraqi territory, 70 kilometers northwest of Al Basrah along Highway 6. The unit then attacked into engagement areas north of Basrah to cut off the escape of Iraqi forces from the KTO, thus concluding a hasty attack that was accomplished after moving over 450 kilometers in 6 hours. (Author's underline)

The mission resulted in the destruction of an ammunition storage site, two Republican Guard MI-8 helicopters, vehicles, howitzers, and, most importantly, a pontoon bridge over the Euphrates. The unit sustained no combat losses. The 3-227 AtkHB was the northern-most U.S. Army unit in the allied offensive.

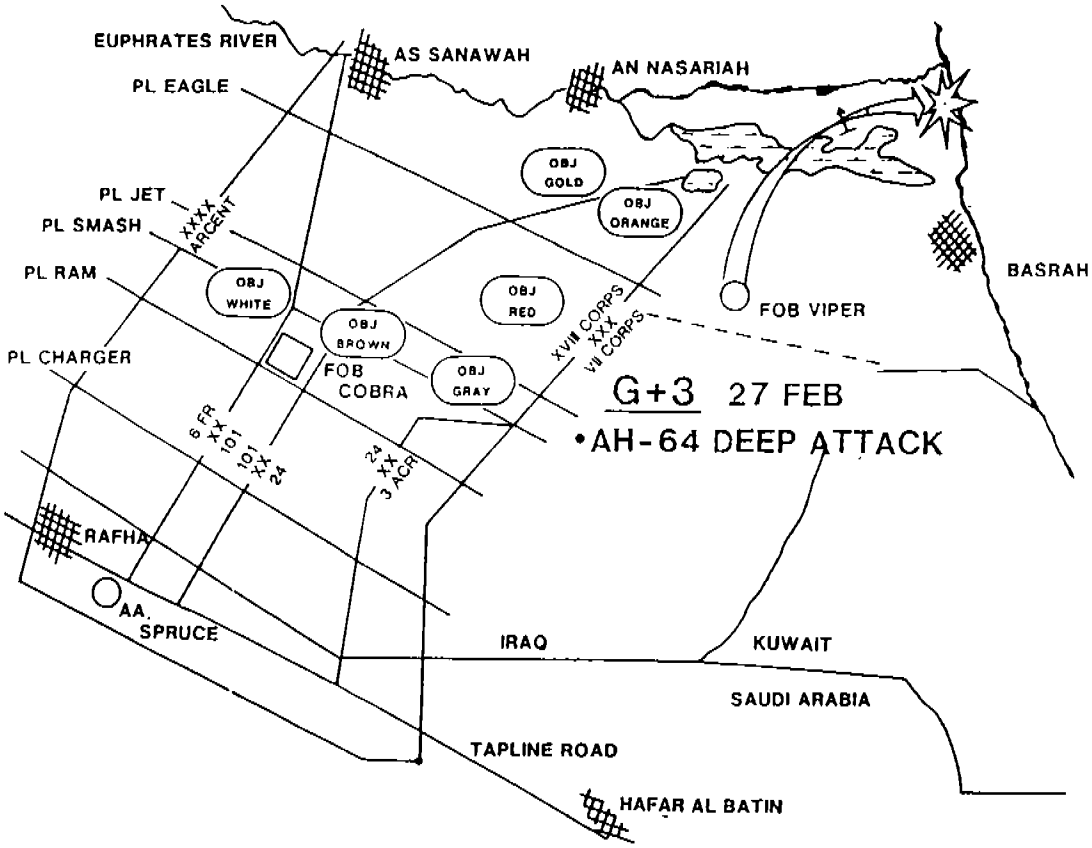

Fig. 1-20

ATTACK HELICOPTERS - 1.21

At 0400, on February 27, 1991, the 24th Aviation Brigade received the mission to destroy enemy forces forward of advancing 24th Division units in the Euphrates River Valley. Colonel Tackaberry recalled that, "At first light, Brigadier General James T. Scott, assistant division commander, 24th Infantry Division (Mechanized), called and said, 'Bert, I'm going to give you an area of operations running south to north on the six zero grid line just east of the Jalibah Airfield. I want you to kill and destroy everything east of it. It's all yours.'" The 24th Attack Helicopter Battalion alerted its companies to execute a rotation of A, B, and C companies, in order, beginning at 0700 hours.

At 0600 hours, Tackaberry's C^3 UH-60 launched to perform a leader's recon of the Euphrates River Valley. While airborne, he received instructions from the division commander to clear EAs (engagement areas) V22 and V24 of enemy resistance. Initial concern was two enemy battalions

advancing to the west along the six-lane highway. The division commander comments that Tackaberry is in "...the right place at the right time."

Alpha company of the 24th ATKHB arrived in the Euphrates Valley at 0700 hours, and immediately began operations to clear the enemy east of the PU 60 north/south grid line. Colonel Tackaberry selected an approach to the initial engagement areas that took his attack companies north (over the Al Hammar swamps) to avoid concentrations of enemy units. Alpha Company (A Company) began to rapidly engage the mass of enemy vehicles on the six-lane road. Iraqi soldiers quickly abandoned their vehicles and ran back towards the east. Initial engagements by A company were standard battle position operations. After the first contact with the enemy along the six-lane highway, operations were conducted as a "movement to contact" (first to locate) and then to destroy enemy forward of the advancing ground brigades of the division.

"Every 100 meters (330 feet) or so, there was some kind of defensive position, either a tank berm or air defense or trucks parked. The Apache battalion just had a super day. The Iraqis thought they could hide, but on the night of February 27 and early on February 28, we moved the entire battalion to the staging area and picked up over 50 enemy prisoners of war (EPOWs). At 0100 hours we jumped out and moved all the way up to FAA Linda, and were given missions which took us up to PL Knife, just ahead of the infantry brigades. We were given a sector there where we were freed up to kill anything we found in it."

Bravo Company arrived at 0815 hours with two teams, one north of the six-lane highway and one in the south by the Jalibah Airfield. Bravo Company continued clearing the enemy out of the sector to the east, using the six-lane highway as an axis of advance.

Bravo Company eventually cleared out to the QU 05 grid line, well forward of the 24th ID. Charlie Company arrived at 1000 hours with two teams of Apaches and cleared out to the QU 05 grid line, well forward of the 24th ID.

Attack elements were rotated on station to provide continuous support from 0700 to 1230 hours, under control of the brigade commander or the brigade S-3. Operations were

supported from FAA Tammie, approximately 90 kilometers southwest of the target area. The end result was that 1-24 cleared forward of the 24th ID an area 45 kilometers deep by 20 kilometers wide. Two aircraft received minor damage.

ATTACK HELICOPTERS - 1.22

On February 28, 1991 at 0530 hours, 2nd Battalion, 1st Aviation Regiment, departed for the final assault of the 1st Armored Division against the Medina Division. The weather at the time of departure was ceilings less than 500 feet and visibility almost zero. The terrain enroute was flat with a few depressions and gradual inclines. The morale of all pilots and crew chiefs was high. The crews had a total of about 12-15 hours of sleep over the past three nights.

Enroute, the Battalion RP was receiving artillery fire. The battalion flew through the area and became separated from the OH-58s. The AH-64s reached the holding area without the OH-58s though they did maintain radio contact. The battalion continued on with the mission at 0615 as briefed. The scouts arrived as the battle began gaining and maintaining contact with the enemy and providing unit security. While operating 20-30 kilometers across the FLOT, the scouts captured and reported approximately 15-20 prisoners. The AH-64s continued forward engaging small elements of the Medinah and destroying them at ranges less than 800 meters. The battalion was arrayed with Alpha Company in the north, Bravo Company center sector, and Charlie Company in the south. The Third Armored Division had pushed forward and was suspected to be near the Charlie Company sector. Under enemy small arms fire, enemy artillery, and adverse weather conditions, the scouts provided maximum security and prevented any chance of fratricide.

Maneuver - It was to be a company attack, but at 0415 IRON 6 changed it to a battalion mass attack. The attack elements launched at 0530 with two OH-58Ds, but the scouts were initially unable to launch due to visibility. Coordination with the OH-58Ds was inadequate for the battle. The front line trace of troops was inaccurate, thus increasing the possibility of fratricide. Upon arriving on the battlefield, visibility due to fog and the artillery

prep was 1500M, limiting the capability of the system to fight. Apaches had a difficult time detecting their laser spots as well as OH-58D spots. We were able to engage from approximately 0615-0630 before being called back so the ground attack could go forward.

The effects of artillery preps should be closely scrutinized before being implemented. Battlefield obscurances reduce the laser designation capability. METT-T would have told us that the no-wind condition would obscure the battlefield for at least 30 minutes after the prep ceased.

Poor visibility and the continuing changes on the battle-field made it very difficult to control the entire battalion. Excellent mission graphics aided in the overall understanding of commanders intent. Ground unit was notified that the area was clear up to PL Monaco. The exact front line trace needed to be known.

ATTACK HELICOPTERS - 1.23

At 0400 hours, the word came over the battalion (24th AtkHB) network to "hold" due to a cease fire. One hour later, all the aviation assets were sent into FAA Linda and the brigade main went back into FAA Andrea.

It was a short-lived cease fire because 24 hours later, on March 1, a major battle for Tackaberry's aircrews began when they came into contact with units of the Iraqi Republican Guard's Hammurabi Division. The Iraqis were moving north early that morning, away from the Rumaila oil fields. Just before dawn, they opened fire on allied forces in an attempt to force their way onto a causeway and get across the Euphrates. Over 700 wheeled vehicles and 300 tracks were seen heading north at this point.

At 0730 hours, Brigadier General Scott called for aviation assets. The Air Force knocked out one span of the causeway, but the Iraqis had built a one-lane dike around it. Tackaberry's mission was to go north of the dike and stop the vehicles. At 0830 hours, Alpha Company had launched into a nearby holding area to await employment instructions. As Colonel Tackaberry's Black Hawk flew over the Iraqis, he remarked: "They were obviously afraid of helos, because this was just a Black Hawk. But when we came

across the top of it--and it sure scared me to see their .50-cal pointing at us--they turned some of their vehicles back and down the highway toward Al Basrah. By then (0915) the first troop...of the cav squadron was in a blocking position 10 kilometers north of the causeway.

"It was amazing what we did here--in Vietnam we killed people, here we were killing vehicles. I instructed the cav troop commander...to fire 20mm across the front of the convoy. He did so and called back and said, 'Sir, they're not stopping,' so I said 'Fire your rockets; don't hit it, just fire across it,' and he said 'I did sir, and they're not stopping.' So I said, 'Just take it out with a TOW' and I got in behind the lead AH-1.

"What a magnificent sight it was to see that TOW go up in the air and then come down and hit the vehicle, because it was an ammunition truck and it exploded for 30 minutes. It was up on the dike, so nobody could go any place. So the cav troop went in there and bottled them up. We brought in two attack battalions from the north. Then I pulled the cav out and used the 58Ds to keep the causeway blocked off with their superb optics while the Apaches worked this entire area for four or five hours. They fired 107 Hellfire missiles. What a tremendous system"! The commander of the 1-24th AHR noted that "...we were so far away, the enemy's ability to retaliate was almost nil. Our ground soldiers reported seeing Iraqi tanks turning their turrets wildly trying to find who was shooting at them."

A captured Iraqi tank commander later told Army intelligence that they couldn't see what hit the first vehicle, nor did they see what hit the second vehicle. So they left their tanks and were gone.

"It was a turkey shoot from then on," Tackaberry described the battle. "Two attack companies worked on this operation from several miles out. Tackaberry directed A Company into the 1st Brigade sector after the artillery fire had lifted. A Company's initial engagement was a fuel tanker fleeing north. To prevent any possible fratricide, A Company was ordered to begin engaging at the causeway, and progress south to the QU 90 east/west grid line--their main target was a reinforced brigade. Ground elements of the 1st Brigade would work south from the QU 90 grid line. At 1015,

B Company replaced A Company, and continued the destruction of the Iraqi brigade. Bravo Company ended up destroying all targets in a 25 kilometer-square box around QU 2595. First Brigade requested a recon of the engagement area to determine the best north/south trafficability. The brigade S-3 met face-to-face with the commander of Task Force 4-64, oriented him on the best routes through the sector, and reported that the area was clear except for burning vehicles and fleeing Iraqis. Task Force 4-64 began its sweep to the north at 1110 hours.

Later that afternoon, while a third attack company was on station, a message came that enemy vehicles were entering the Apache's sector. Sent to the west, the Apache company found two T-72 Soviet-made tanks and three or four BMPs and took them out of action. Colonel Tackaberry's C&C aircraft found further enemy vehicles; "Then [he said] we had the luxury of killing those vehicles," Tackaberry said.

"That was basically the end of the war for us in the Euphrates River Valley. It was a race of 370 kilometers (230 miles) in less than 100 hours. We jumped ahead of the brigade tactical ground CP six times in four days. We jumped FARPs five times in four days. The main brigade CP jumped four times."

ATTACK HELICOPTERS - 1.24

On the morning of January 24, an SH-60B LAMPS (Navy) helicopter launched from the USS CURTIS, along with a British Lynx helicopter from the HMS GLOUCESTER, detected two Iraqi minelayers off Qaruh Island. One of the boats was damaged after contacting one of its own mines and the other was engaged by Navy A-6 attack aircraft, severely damaging the vessel. After the crew of this vessel began to abandon ship, the USS CURTIS launched armed OH-58Ds to cover the boarding party. After capturing 22 EPOWs, of which 7 were wounded, the USS CURTIS sank the Iraqi mine layer with 76mm gunfire. The OH-58Ds were on-station to provide escort of the recovery boat, as well as provide flank security between the ship and Qaruh Island. Close scrutiny of Qaruh Island by the OH-58Ds detected the presence of an Iraqi force of unknown size occupying bunkers and buildings on the island. The 4/17th Cav pilots engaged the island defenses with rocket and machine gun fire, and quickly observed white surrender flags. The capture of Qaruh Island, the first Kuwaiti territory to be reclaimed, was accepted by the 4/17th Cavalry. Twenty-nine prisoners were taken. Close inspection revealed that the island was defended with large-caliber anti-aircraft guns (57mm and 23mm), 120mm mortars, surface-to-air missiles, RPGs, and small arms.

The capture of nearby Maradim Island was a joint Army, Navy, and Marine operation. Launching from the USS OKINAWA, the AH-1Ws conducted an over-water linkup with armed OH-58Ds. As they approached the island, they discovered it was abandoned. The Iraqis had fled the island probably in fear of the same fate their fellow soldiers had encountered in the Dorah oil field and on Qaruh Island. With Maradim Island secure, the U.S. Navy had free access to the amphibious approaches into southern Kuwait--with the exception of the heavily mined areas.

ATTACK HELICOPTERS - 1.25

On the night of January 18, a coordinated attack using armed OH-58Ds, SH-60 LAMPS Mark III helicopters, 76mm naval gunfire from the USS NICHOLAS, and freed Kuwaiti patrol boats commenced. The OH-58Ds engaged the Dorah oil platforms using Hellfire missiles and 2.75" rockets, devastating the Iraqi positions. Numerous secondary explosions were observed as three of the four occupied platforms were destroyed. The Warriors of 4/17th Cav then directed naval gunfire on the remaining platforms and provided armed escort for boat boarding teams. This devastating attack resulted in the total destruction of the platforms and the first 23 prisoners captured in the war. Further investigation of the platforms in daylight revealed they were heavily armed with large caliber anti-aircraft guns, SA-7s, and large stockpiles of ammunition and explosives. Long-range communications gear was also discovered, confirming the platforms were early warning positions.

ATTACK HELICOPTERS - 1.26

As the naval task force continued further north, a new threat emerged. Iraqi Silkworm missile (a Chinese made surface-to-surface anti-ship missile) batteries on Faylakah Island and the north Kuwaiti coast posed a significant threat to all ships in the task force. One site in particular, on Faylakah Island, was slowing the mine clearing operation. Numerous carrier-launched sorties were diverted to attack the missile site on Faylakah Island. Battle damage assessment (BDA) reports from the MISSOURI's remotely piloted vehicle (RPV) were all the same--close, but no destroyed Silkworms. Armed OH-58Ds were launched from the USS JARRETT in an attempt to confirm the BDA on the night of February 16. After all naval gunfire ceased and all strike aircraft were cleared from the island, two OH-58Ds closed on the island undetected and confirmed the Silkworm battery was still intact. The Task Force commander directed the OH-58Ds to engage the missile battery if able. The lead aircraft launched two Hellfire missiles--destroying one Silkworm missile and launcher, and left another missile and its launcher knocked over. Video tapes of the

engagement and the USS MISSOURI's RPV confirmed the destruction. This engagement cleared the way for the Task Force, providing the unopposed freedom to pound Iraqi positions in Kuwait with 16-inch naval gunfire.

CHAPTER TWO

AVIATION RECONNAISSANCE AND SECURITY

"I don't want another minute to go by without Apaches out in front of this Division."

Major General Ron Griffith
Commanding General, 1st Armored Division

The "fight before the fight"--the reconnaissance/counter-reconnaissance battle was critical to DESERT STORM. Lose it and the main fight could be in jeopardy. Win it, and the Coalition forces would know the enemy's dispositions, and the Iraqis would not know the Coalition's. Operation DESERT STORM's recon/counter-recon battle was fought on the tactical and operational levels. At the operational level, the purpose of the recon/counter-recon was to deny the enemy information about the campaign plan by destroying or disrupting Iraqi deep reconnaissance assets--while preserving the Coalition's. At the tactical level, the reconnaissance/counter-reconnaissance game was played by every unit from the initial deployment to the final cease fire.

At the divisional level, the pattern of recon/counter-recon developed into three distinct phases. The first phase was the security mission to secure the Saudi-Iraqi border, and screen the dispositions of deploying units from Iraqi reconnaissance. Other than the rare, large-scale Iraqi attack across the border (such as Khafji[1]), Iraqi reconnaissance elements did not penetrate this screen. Few Iraqi commanders had any idea of the forces arrayed opposite them.

The second phase was the sector reconnaissance performed by divisions and corps. In this phase, it was critical to determine not only the dispositions of Iraqi forces in sector, but also to determine the trafficability

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[1] See: Brigadier General Robert H. Scales, Jr., USA, Director. Certain Victory: United States Army in the Gulf War. Washington, D.C.: Office of the Chief of Staff, 1993. pp. 189-191. Also see: Rick Atkinson. Crusade: The Untold Story of the Persian Gulf War. Boston, MA: Houghton Mifflin Company, 1993. pp. 202-203.

of the terrain to the limit of advance. It was during this phase that the AH-64 was pressed into service as a reconnaissance platform. Colonel Tom Green, the XVIIIth Airborne Corps aviation officer, described the evolution of the Apache as a recon platform:

> The ground commanders had a lot of blind spots --they wanted to know what was in their sectors. The recon business started grinding to a halt--no one was satisfying the tactical commander's need for intelligence. It got to the point where you couldn't do the tactical reconnaissance job any other way but with aviation. The distances involved were too great. Aviation units began going deep, and reporting what they saw. Then, more and more, ground commanders started asking questions and requiring aviation to do more deep reconnaissance missions. It was a natural evolution once the capabilities became known.

A second function of the reconnaissance-in-sector phase was to provide or confirm targeting data to feed the deep strike assets. One corps-level staff officer remarked that:

> Our deeper intelligence systems are not designed to give you precise data with which to go out and kill something. They can tell you, 'We think that there is a division there, but it was always left up to a man--LRSU (long range surveillance units), Air Force, or helicopter, to go out and confirm and refine that data. So there are two separate systems--an intelligence gathering system, and a targeting system. The guys in our corps broke down their intelligence gathering process in order to give us a targeting process--they did pretty good at it, but they didn't have the right equipment, training or orientation. They were actually degrading the intelligence gathering process by concentrating on targeting.'

AH-64s performed divisional-level sector reconnaissance, and also assisted in confirming deeper targeting data from more-advanced platforms. It was important to remember, however, that the AH-64 attack helicopters were pressed into armed-reconnaissance missions because the U.S. Army did not have a survivable, durable, capable armed-reconnaissance helicopter.[2] Environmental conditions often precluded helicopters from flying--except for the Apache, with its forward-looking infrared (FLIR) radar. As the requirement to go deeper emerged, AH-64 battalions mounted external fuel tanks to increase range.

Apaches reported back to the ground commander in one of two ways--either by radio relay through its accompanying OH-58 scouts or with C^2 UH-60 or EH-60, or by delivery of the video tape recorded by the Apache during the mission.

The third phase of the recon/counter-recon mission was to screen the movement of the divisions and brigades during the ground attack. Cavalry squadrons and attack helicopter battalions ranged far ahead of ground elements in the attack:

> Aviation assets almost always ran the flanks of the ground elements going in. And they ran out in front of them for miles and miles. Very often aviators found themselves so far out front that they couldn't talk anymore and they would drop back in order to make communications with the lead elements. They almost all were led in by Army aviators in every case.

Ground task forces and brigades enjoyed real-time information on Iraqi elements to their front and flanks, allowing precise applications of maneuver and fires.

The extended, non-linear battlefield of Operation DESERT STORM served to emphasize the importance of air cavalry. The air and ground campaigns reaped the benefits of aerial armed-reconnaissance for verification of intelligence and targeting data provided by JSTARS and other sensor platforms. Operation DESERT STORM clearly demonstrated that armed reconnaissance was a mission in its

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[2] The RAH-66 Comanche is being developed to fill this role.

own right. AH-64 Apaches, although not ideally suited to this mission, were pressed into service in this vital role.

Intelligence and targeting data provided by JSTARS and other platforms not only proved the concept of deep targeting, but also provided a glimpse of the ability to target on the move. The procedure normally used was for the planning staffs to determine the priority for different types of targets, and then depend on the weapons allocation officer (WAO) on board to detect and then hand over targets to any available attack asset in the area, whether Air Force, Navy or Army.

Operation DESERT STORM was, perhaps, the first campaign in military history where commanders of brigades and higher possessed the capability to know what was in front of them well before contact.

During World War II for example, ground commanders had little capability to see ahead except by using armored cavalry. During the Third Army's breakout from the Cotentin Peninsula in the summer of 1944, Patton's soldiers fanned out across France, and most of the time, his troops and the Germans met by accident -- the Americans advancing, Germans retreating -- and not by design. Patton had no capability to plan operations on timely knowledge of what German troops could oppose him.[3]

If such near real time information had been available, the Third Army might, perhaps, have used its combat power more intelligently. American troops during Operation DESERT STORM were much better equipped and with more favorable terrain than in 1944.

The terrain of Kuwait and Iraq maximized the use of air reconnaissance so the Apache in particular and other U.S. Army helicopters in general could provide commanders with detailed information on what enemy lay ahead. The Apache provided a truly unique intelligence bonus -- video tapes of what it saw.

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[3] He had, of course, Ultra information available to him, but that is not quite the same thing as battlefield information which is much more time sensitive. Even though the Ultra system was working well by 1944, it still took a while to process, translate, and assess such signals intelligence. In many cases it was on a higher level than Patton needed. See: Ronald Lewin. Ultra Goes To War - The First Account of World War II Greatest Secret. Based on Official Documents. (New York: McGraw-Hill, 1978). pp. 336-345.

As the U.S. and coalition ground units crossed the Saudi border into Iraq or Kuwait, they were preceded at 20 kilometer intervals by AH-64's, AH-1's, or OH-58's probing for the enemy. The commanders of the units they supported knew, in detail, what was in front, and where it was. Commanders could now plan the best way to attack the enemy while on the move.

Reconnaissance missions were uppermost in the minds of the Army leadership in the desert from day one. The first selection (2.1) describes the security arrangements when the 101st Airborne arrived in country and assumed a covering force mission. Had the Iraqis crossed the border, the Apaches of the 1-101 and the 2-229th ATKHB would not only have provided warning, but would have engaged the enemy. In the second selection (2.2), the 1-101st and 2-229th are highlighted as they conducted reconnaissance and screening operations in assigned areas.

Army OH-58D's of the 4-17th Cavalry operating from U.S. Navy ships in the Gulf performed their share of reconnaissance missions, two of which are found in the next selections.[4] For example, in selection 2.3, OH-58Ds perform surveillance (VHS tapes) operations against the Dorah Oil platform complex, and their information was used to plan an air and naval attack. During selection 2.4, several 4/17 aircraft patrolling only a mile off the Kuwaiti coast engaged in a running battle with several Iraqi patrol boats.

The selection following the 4/17 operations gets down to the "nuts and bolts" of reconnaissance and security -- a series of excerpts of long interviews conducted (selection 2.5) with crews from the 2-229th that focused on their see-deep missions prior to Operation DESERT STORM. How the missions were planned and flown are told in the crews own words.

In the next selection (2.6), the 1-101st operated as the "night" recon element and the 2-229th as the "day" element. In the next Selection (2.7), the 24th Division's

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[4] Army OH-58D's had been operating off naval vessels in the Gulf for a number of months prior to DESERT SHIELD. See: James Blackwell. Thunder in the Desert: The Strategy and Tactics of the Persian Gulf War. (New York: Bantam Books, 1991). p. 143.

24th Aviation Brigade did its own cross-border missions to search for the enemy.

In the next selection, Captain Tim DeVito again returns (Selection 2.8), and discusses how the 1-101st implemented reconnaissance missions prior to Operation DESERT STORM.

When the final plans had been written for Operation DESERT STORM, units along the border began to fly sometimes short, sometimes deep missions. This selection (Selection 2.9) describes in detail (types of missions, routes, methodology, zones, etc.) the reconnaissance plans for the XVIIIth Airborne Corps units.

Before and during Operation DESERT STORM, the reconnaissance system of choice for ground commanders where available was the AH-64, but some important missions were also flown by the ageless UH-1H and some by the OH-58C. The next selection (2.10) describes a route reconnaissance mission that ended in a mass surrender of Iraqi soldiers involving the 1-101st and 2-229th ATKHB.

The next selection (2.11) highlights an old workhorse in a recon mission -- UH-1Hs working for the 1st Infantry Division. Also, OH-58Cs and attack helicopters from the Division's Aviation Brigade also performed deep missions. Selection 2.12 chronicles the missions of the 4th Bde, 1st AD in recon work prior to DESERT STORM. Selection 2.13 begins with the Nomad Troop of 4/2nd ACR beginning combat by flying reconnaissance missions into Iraq on 23 February, 1991. The next day, as the Third Armored Division attacked into Iraq, its flanks were screened by the 4th Squadron, 7th Cavalry. This unique unit was a blend of ground cavalry elements working closely with its organic air troop. This selection shows that in training in Germany, the two elements learned to operate as one.

One of the more interesting selections (2.11) involves the cross border operations of the 4th Squadron, 7th Cavalry as it led the division in the attack, constantly looking for the enemy. Selection 2.15 covers the cross-border operations of 1-4th Cavalry especially the mission of one particular Scout Weapons Team (SWT) (OH-58C and AH-1 Cobras) that flew over an Iraqi position and caused its surrender. The arrow formations of helicopters (OH-58s leading supported by AH-1s) that proceeded the 1st Cavalry Division

saw no significant opposition in front, and knowing this, the CG ordered the attack to continue.

Selection 2.16 highlights Palehorse Troop, 4/2nd ACR's operations during the early part of the attack, and its efforts to provide recon and security to the division.

While performing reconnaissance operations, Army aviation could and did engage the enemy if discovered. In this selection Outlaw Troop (Call sign: COUGAR) (Selection 2.17) of the 4/2 ACR does just that. Working in conjunction with MLRS (Multiple Launch Rocket System), most of the enemy were destroyed and those that weren't surrendered.

The next selection concerns the 2-227th (Selection 2.18) and its operations in support of 3rd Armored Division. It is part of a longer interview with several Apache crews of the 2-227th, and gives the reader a feeling for what the situation was like in the cockpit during reconnaissance operations.

In Selection 2.19, the hardworking crews of the 4/2 are at it again doing what they do best -- screening and fighting. In this segment that are screening out front when they encountered Iraqi Army and a considerable number of bunker areas. For 4/2 no target was too tough to knock out.

The final selection (2.20) involves the aircraft of Troop Q (Quickstrike) of the 4/2 who are sent on a mission that seems right out of Hollywood -- air cavalry riding to the rescue of ground elements under attack by the bad guys. The AH-1s of Troop Q arrived in time, and destroyed the enemy.

The last seven selections dealing with operations from 25-27 February display the richness of diversity for Army aviation elements performing reconnaissance operations in the thick of combat. The hectic nature combat and how aviation handled the situation clearly demonstrates a flexibility rarely seen in military history.

RECONNAISSANCE AND SECURITY - 2.1

At 0500 on 18 September 90, the 101st Aviation Brigade conducted its first full dress rehearsal of the brigade's mission to screen in AO (Area of Operations) Apache and perform attack helicopter operations in support of Eastern Province Area Command (EPAC) forces. The drill stressed the joint and combined forces fire control networks, integrating TACAIR, naval gunfire, Saudi/GCC (Gulf Cooperation Council) artillery, and the 101st's attack helicopters. The exercise was conducted dry-fire, but successfully validated integrated defense plans, while exposing weaknesses in training and coordination to be corrected. The Aviation Brigade addressed those weaknesses in after action reviews and on September 27, 1990, conducted Operation DUST BUCKET II, a similar battle drill phasing companies from both 1-101st and 2-229th simultaneously into their sectors in AO Apache. The drill was an unqualified success, and fine-tuned the Aviation Brigade's readiness to a sharp edge.

With the Division's combat forces deployed into theater, the 101st assumed the covering force mission forward of the XVIIIth Airborne Corps Main Battle Area (MBA) in early October. As a result, the Aviation Brigade's mission changed to support the division's maneuver plans. The brigade's mission was to conduct attack helicopter operations north of the ARCENT (U.S. Army Central Command) boundary to assist EPAC withdrawal and passage of lines; attack to delay and disrupt; and conduct deep attack operations against high value targets along Tapline Road. The empty expanse of the northeastern Saudi desert was well suited to attack helicopter maneuver, and the Aviation Brigade's pilots were increasingly familiar with the terrain.

RECONNAISSANCE/SECURITY - 2.2

The first missions for the 2-229th focused on the defense of what was becoming FOB (Forward Operating Base) Bastogne. Intelligence sources indicated that the Iraqis might launch an attack to seize the oil fields in northeastern Saudi Arabia on the night of September 5, 1990. On September 5, the 2-229th ATKHB conducted a recon of FOB

Bastogne. On September 7, 1990, the battalion deployed a C&C element, FARP package, and one attack company to the FOB. The forward headquarters was in an abandoned ARAMCO compound, which had a fenced-in area for aircraft parking. Two AH-64 Apache battalions, the 1-101st and the 2-229th, worked progressively north and west as MARCENT (U.S. Marine Corps Central Command) established its boundaries, and ARCENT brought more units into the theater. AO Apache, the area along the Tapline road, was extensively reconnoitered by both attack battalions during their rotations at FOB Bastogne. The only available fire support beyond 10 kilometers north of FOB Bastogne was CAS (close air support). The JFACC had established a 40 kilometer "kill zone" from the Kuwaiti border south. Apaches would control CAS (Close Air Support), as they fought the planned delaying action to the south.

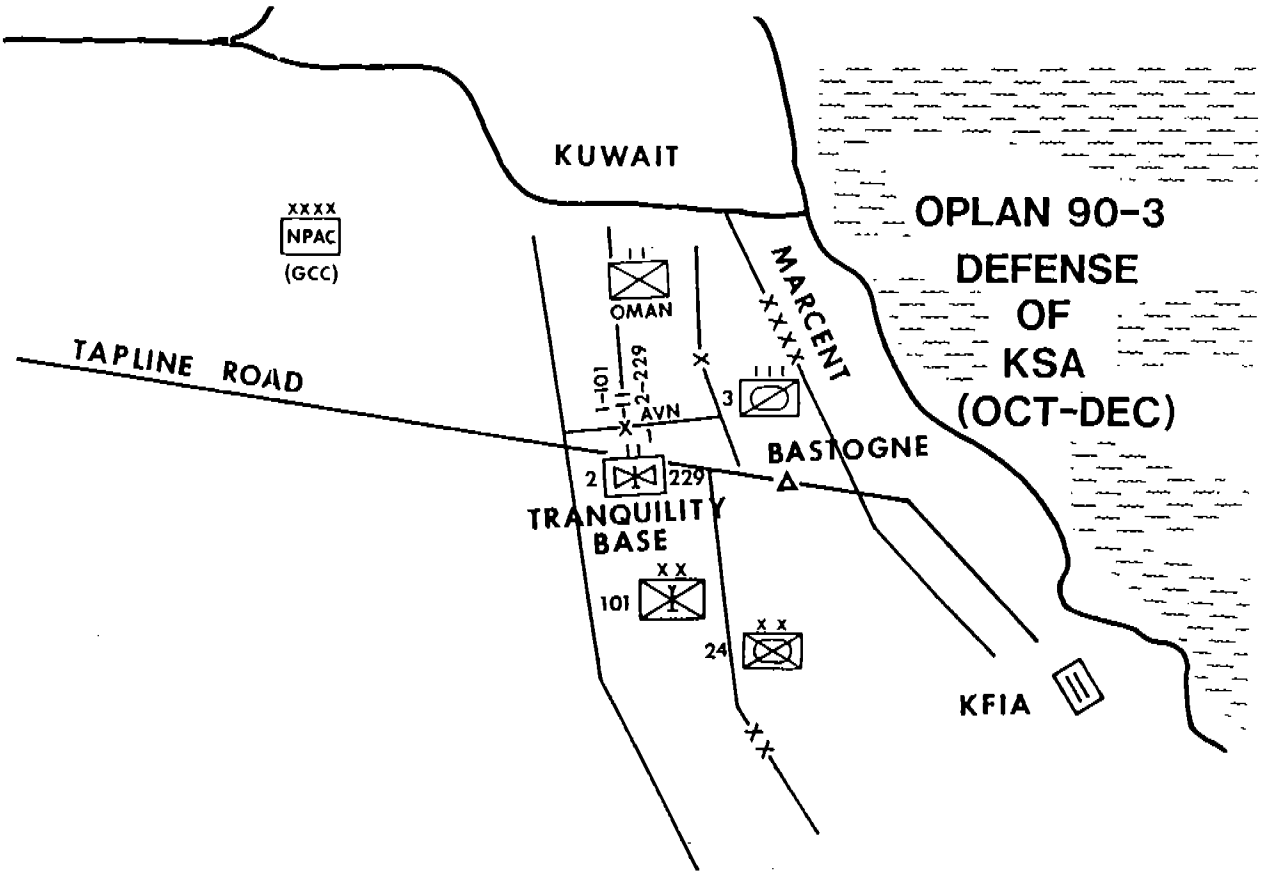

Fig. 2.2

It is significant to note that the 2-229th and the 1-101st represented the best tank killers available to ARCENT at the time. Correspondingly, each battalion was given a rather broad sector to defend.

RECONNAISSANCE/SECURITY - 2.3

On January 16, 1991, a team of armed OH-58Ds from 4/17th Cavalry, flying from the USS NICHOLAS patrolled the Dorah oil field platforms approximately 40 nautical miles off the coast of Kuwait. The aircraft were conducting surveillance of the oil drilling platforms looking for suspicious activity. Using the OH-58D's thermal imaging system (TIS) and video recorder, the team began shooting video tapes of the platforms. Nothing unusual was detected until one Iraqi soldier made the mistake of walking outside to take a smoke break. His warm body, brilliantly glowing on the screen, appeared to come from a bunker on the second level of one of the platforms. The team continued its mission undetected, taping all the platforms, noting what appeared to be enclosed bunkers on several of the platforms. Upon returning from the mission, careful analysis of the tapes revealed four of the eight platforms contained bunkers and shelters not previously detected. The platforms were assessed as hostile anti-aircraft and coastal early warning positions for Iraqi forces, and planning for a deliberate attack began.

RECONNAISSANCE/SECURITY - 2.4

4/17th Cavalry began conducting armed reconnaissance off the coast of Kuwait as early as January 27, 1991. These missions were flown into "Indian [Iraqi] Country" long before the ground war started. These patrols ranged from the Kuwait-Saudi Border, north to the Sea Island Oil Terminal and Kuwait harbor, to Faylakah and Awah Islands off Kuwait. On the night of February 2, 1991, a flight of two armed OH-58Ds were patrolling one mile off Kuwait, near Mina Saud, and discovered four Iraqi patrol boats departing a channel. The boats were outfitted with machine guns and were also suspected to have RPGs (rocket propelled grenades) and shoulder-fired SAMs (surface to air missiles). The

flight observed 4-6 people per boat with personnel manning the gun mounts. The standoff capability of the OH-58D's Mast Mounted Sight (MMS) allowed observation without detection outside the enemy's weapons ranges. After receiving orders to attack, the flight engaged the hostile boats with Hellfire missiles and then closed within 100 meters to continue the attack with 2.75" flechettes, high explosive rockets, and .50 caliber machine gun fire -- scoring direct hits.

RECONNAISSANCE AND SECURITY - 2.5

Major Kevin Smith's Interview with pilots from 2-229th Attack Helicopter Regiment:

Answer: Battalions were broken into one company to do a long, deep reconnaissance of Euphrates River Valley, the other two companies would do a detailed reconnaissance of the MSR (main supply route) up to certain phase lines throughout the day--a detailed reconnaissance of that specific point. The other company would be sent about 150 kilometers into Iraq to find possible assembly area sites or forward operating bases for the Aviation Brigade of the 101st.

Major Smith: Were these all daylight recons?

Answer: Yes, they had to do it in the daylight. The 1-101st was in charge of doing night. And when they went up on the LD, or lines of departure as we called it in Saudi Arabia into Iraq. Thermal based systems in that type of environment are basically useless because everything lives underground so everything is cold. You're not going to see people walking at night. Iraqis slept at night, primarily. So they go down in their holes and the possibility of you seeing somebody out and about was probably nil. So it was imperative that you do your reconnaissance during the day. We weren't going to do a night move. They actually gave their first night of reconnaissance like the night of February 15 and they cleared all the way up to PL Charger, I believe, which was just short of what they had just selected as FOB Cobra. They came back and said the entire sector was clear and the very next day we took 51 prisoners. That's what I'm saying night reconnaissance over there was just kind of...you know, it's good to go on night reconnaissance

because it is better for the aircraft as far as less vulnerable, but I think you have to check it during the day because that same sector they said they checked out during the night and flew through, primarily, you see they didn't do a real deep reconnaissance, just flew through, was the same place they picked up 51 prisoners 100 kilometers inside Iraq and then 513 prisoners, two days after that. It was important. The deep reconnaissance was primarily to make sure there was nothing in there that could stop an air mobile [assault] into FOB Cobra. Also, you had to find a elective site because the terrain and the environment was so hostile as far as Chinooks coming in and making approach to clout out the whole flight going in there. You are talking a list of I believe 500 helicopters. So it is important to find a suitable landing site for all these helicopters. An area large enough they could set up a whole division, drop them down and then go from there and that's what we did approximately. That was my mission, Charlie Company, and Alpha/Bravo did the detailed reconnaissance mission and that was G-7 (Ground attack date, seven days before). We crossed the line heading toward proposed site, link beds, things we thought would have a suitable hard landing area, not having as much dust, took a "slugger" [slang for Global Positioning System] because the Apache is not slugger-equipped. It gives you great coordinates and basically, I tell you, the slinged-up slugger won't work inside a canopy of an Apache. You have to land, open up your canopy door, stick your slugger outside your window, and wait for it to pick up at least three satellites and sit there and then turn on your recorder, read your coordinate to that specific spot and see if it lines up with your deck--just for a back up and that's how we took the coordinates.

Major Smith: When you took the coordinates, I am asking general questions right now. We will get into the specifics of the mission in a minute, but when you landed and took the coordinates, you updated your .... and you took video inventory from there to bring it back?

Answer: I'd say at this time start counting. Everybody would start recording so that the Black Hawks--you see we had ACPs (air control point) en route and they would know exactly what that route was going to look like, what

that ACP looked like cause they had no idea we filmed it going in. Push the deck up, show the coordinate as coordinates of the deck and then we would quit filming it and go to the next APC and do it. That was good because then I would go back to the 101st Brigade and get all the Battalion Commanders together that were doing the lift portion and I could sit there and plug that tape in and say, "These are your checkpoints." They would come in and they would look at it and they'd say, "yeah, those are good checkpoints." Bring their pilots in and they could brief them a lot faster, this is what you are looking for. Not only did they have the doppler point, they also had visual.

Major Smith: Did you guys do the same thing?

Answer: No sir, I was in Bravo Company and we had a short detail reconnaissance. On that mission there was only one company who did it five times. These guys were probably concerned with clearing en route. And once we landed, we through a cover on him to make sure nothing was coming while he was on the ground and the rest of his team.

Major Smith: So they would fly cover for you while you were on the ground. You are in the same company.

Answer: We had a white team and a red team. We traveled very low and constantly scanning. Make sure if we picked up something out there in the desert, it shows up pretty quick.

Major Smith: Hold on just one second. O.K. Let's talk about the deep armor reconnaissance mission first. I want you to take me like the day before and when you guys first found out you had the mission, where you were sitting, what you were doing, what generated the mission in the first place. You can continue to talk and I'll ask questions and I want all the dirty, gritty details. Starting with the day before.

Answer: When did we find out we had the mission? We knew we started G-7 about two days prior to that. What happened was Colonel Thomas Garrett, 101st Aviation Brigade Commander, came down and said, "I want a detailed reconnaissance done in a specific area and in addition to that I want your battalion to go on a deep armed reconnaissance proposed sites and he gave me a map with several light beds circled--approximately 12 of them. We

looked at that and said, well, that's 150 kilometers into Iraq. What type of support am I going to have as far as CSAR, what type of communications am I going to have back here in Saudi Arabia? That was my concerns initially and then it kind of dropped the next day. We didn't hear anything about it and then on G-7 we were told that we would do that mission. Charlie Company and Alpha and Bravo Companies would do a detailed reconnaissance across the LD to certain phase lines like Apple, Orange, Charger, until they cleared the MSR and all would be done during the daylight.

Major Smith: Who's plan was it? The battalion staff planning it?

Answer: It was the Brigade staff, they requested it--the brigade staff basically gave us the points, I planned how we would conduct the mission.

Major Smith: What was the S-3 shop doing?

Answer: Three Shop (slang for Operations section) basically was just interfacing with the brigade. Colonel Garrett came down and briefed the mission personally to me and to Colonel Bryan. As a matter of fact, he then requested to accompany us on the mission. In fact, Colonel Garrett and Colonel Bryan both went on that mission. I was air mission commander but they flew with my aircraft in the first aircraft.

Major Smith: O.K., you are in the planning stage now. What are you doing this time? Are you sleeping, are you hanging out, are you working on airplanes?

Answer: Well, at this time we are making sure all the airplanes are up, trying to disseminate whatever we know to the pilots, and since we had about two days, we picked all the crews and we did the good map recons and get all the points ready for the aircraft doppler, coordinates and all of that.

Major Smith: How do you do a good map recon like? If there's not a lot on the map?

Answer: Well there's a few things on the map. Other than that basically you just double check in good coordinates on where you want to go. Making sure everybody has the same doppler card, the same frequencies for the day, the aircraft are key.

Major Smith: No CSAR (combat search and rescue) support--you had the brigade commander, the battalion commander, you had all these aviators in aircraft but you didn't have a Black Hawk, you didn't have Air Force CSAR laid on.

Answer: That's right. The only person we had contact with was AWACS (airborne warning and control system, special USAF aircraft).

Major Smith: Why was that? You just couldn't send somebody with you.

Answer: Well, I think the main reason was they just didn't want to make that big of signature out there initially. We thought about taking a Black Hawk with us the second time. You see, our Black Hawks were doing stuff like flying missions--they were doing a lot of things that doesn't necessarily have the time to do a 3 1/2 hour mission up in Iraq.

Major Smith: But, still, eventually like during the causeway fight, you guys did take a Black Hawk.

Answer: That wasn't anywhere near the distance from the FOB Viper to the Causeway. The thing was I felt uneasy with that way, but see, I briefed my guys that if somebody goes down, you stop what you are doing and you pick the guys up because the bottom line is we aren't going to lose anybody out here. Because if you tell somebody you are going over a deep armed reconnaissance out 150 kilometers and you get shot down and we are going to continue on with the mission, that doesn't give them warm and fuzzy. How am I getting out of here? That's what people ask.

Major Smith: Did you have a procedure where one guy would secure the area and the other guy would land? He'd jump on the tires, on the rock pile.

Answer: Right, we made him jump down, the other two aircraft would provide security and they would hook up. We had the jump wing vest with the extractions, with the snap wings. Each person went out, as a matter of fact, when we first got to King Fahd each company went out and everybody hooked themselves on where they felt comfortable and had a plan. Whatever that was, it was up to the individual because some people didn't want to sit on the tire because if the guy did a rotor landing with only one engine, he

didn't want to be sitting on the tire. So that was my thing. I didn't sit on the tire. That was my spot. But about this time, I think everybody started getting--you know we use to be quite jovial--laughing, having a good time, that sort of thing. About this time, I noticed in all the companies people who were normally laughing and joking and all that stuff--all of a sudden they had a stern look. It was like business. Everybody use to joke about missions. You get in there and talk about missions--and the radio chatter quit. I tell you right now this battalion has an internal frequency and normally you could hear them talking over it but during that time frame you could hear nothing. People got serious.

Major Smith: So you are dealing with the airplanes. You are getting the mission put together. CSAR--let's talk about communications. How were you guys going to talk back 150 kilometers?

Answer: We didn't.

Major Smith: You didn't? So you guys went out of contact. Nobody knew where you were or what was happening to you.

Answer: Just AWACs maybe. We never talked to them but they supposedly knew where we were.

Major Smith: And then three hours later, you guys came flying back into radio range.

Answer: Well, we normally ran into one of the other companies--either Bravo or Alpha. You could talk to people during the shorter missions and some of our scouters were at work back there around the FARP area. We could talk to one of the scouts. But for about a half hour or an hour we couldn't talk to anybody. An hour--once you go beyond PL (phase line) Charger, just short of FOB Cobra there was no communication. That didn't really concern me as much as the decision if we run upon somebody--like the first mission, we came upon a truck and we shot the truck up. But, you know, as we started going, the realization that, hey, there are people out here...Iraqi soldiers. Ran into two bunker complexes beyond the size of the one that we discovered. We found one up on MSR Virginia to the north and one to the west of MSR Virginia and we filmed those. We stayed back out of range. That's the great thing about an Apache--

survivability thing about the Apache is you use the standoff range. They can see all they want to see and you can sit there and film them all day and they can't do a thing. There was some terrain up there. So we stayed behind some valleys. We came in one valley and there was another hill, you could see a bunker complex up on the hillside. They had some radio towers and some engineer equipment and we filmed all of that. Laser grids on that, we can basically store things and we gave that back and I think the Air Force took that out.

I think the crew chiefs, also, when they found out everybody was going to war took a little bit more extra care with the aircraft and made sure that there was not anything wrong. As soon as you landed, the log book came open, they were in there and were working on things to make that aircraft go. And then armament was up there making sure 30mm chain gun was operational and the rockets were loaded and brushed off the contacts, Hellfires proceeded properly. People took a renewed interest of pride in the aircraft, across the board. Something was finally happening and they were getting results for their hard work, they saw that it paid off. We'd show the ground crews the videos that we took of the different things that we shot or the things that we got for recon and made everybody excited that we finally got to do something after all the six months of sweating it out and not doing anything. We were working our butts off for no gain and now everybody pulled together. **And morale really got high when we started because we finally came together with a mission. Morale had hit a lot point when we had been there for so long. We kept thinking nothing is going to happen and then we finally moved out to the desert in January and morale picked up. When the war started, I think morale was at a peak there, too** (author's italics).

Major Smith: You're planning a mission. You are doing--Are you calculating how far you can go, how much gas you need? What are you doing?

Answer: The main thing is I wanted to take primarily light helicopters because on armed reconnaissance I didn't want to come decisively engaged on something that is suppressed so I wanted to make sure that I had--I kind of configured the helicopters to be the light configuration.

Secondly, I wanted people to double check the gray coordinates because everything was changing there. We went from 38 Sierra to 39 Quebec and we had a cross-over line right in this area we had to change over on the doppler so you had to make sure if you plug in a point it also showed a 180 degrees out because you didn't want to get lost out there. There is no terrain. There is some high ground but the map looked like a piece of brown manilla paper with black lines on it.

Major Smith: When the airplanes land, I heard a story that the airplanes would land and as they were sitting there or eventually before the next mission, somebody would come around with a GPS and survey the aircraft location or they would land by a pile of rocks that was already surveyed?

Answer: That's right. Each one had their own spot so we had done that originally. They could land and each had their own grid way on where to park. Just to give you an update. We also did heading, time and distance, that sort of thing in case you got lost because--some better than others. Even on the ground they had to do this.

Major Smith: We are going to keep talking about the deep recon mission and then I want to shift into you guys doing the detailed recon in a minute so I will ask you about your background in a second. O.K. you getting the mission prepared, airplanes were getting squared away, people were getting solemn, everyone's dealing with it in there own way. Everything is coming together. You see a great deal of professionalism and morale surge and then you cross the LD/LC. At what time on what day:

Answer: I believe it was February 15 or 17.

Major Smith: When you crossed on this mission? The first deep recon mission?

Answer: G-7 for sure. I think the 17th--that was the day we crossed. I tell you it was real fun because Mike Neeley, who was my backseater, who is now the SIP (senior instructor pilot) of the battalion--he basically said, "there goes the world." That basically said it all because at that point on nothing had been seen. From on it was that. It was just amazing because we flew up there. We started landing at these points and taking slugger coordinate and we ran into a guy--an Iraqi soldier--walking

down the road to no where. He must of been coming from somewhere going to somewhere. He was by himself out there. The helicopters flew by and he looked at us and tried to read the names on the side of the helicopters and then he realized it wasn't his helicopters. He shot his hands up. We just sat there and hovered around this guy. As we turned away from him, he put his hands down. As we looked at him again, he put his hands back up. It was like, "we can't do nothing to this guy. What are we going to do with him." We are like 100 kilometers in Iraq and we have this guy sitting in the middle of the road trying to surrender. We just left him and kept going. When we went back on about the third time, we remembered where that guy was, he was walking between the two bunker complexes. That's when we realized he was walking from the bunker complex to the west to the bunker complex to the north, along MSR Virginia.

Major Smith: Walking back and forth between the bunker complexes?

Answer: Well, he was en route. That's when we realized there must be something out there. This guy just couldn't be walking by himself in the middle of the desert with no water and just himself.

Major Smith: When you went up there, though, 1-101st had already reported to you that there was nothing up there.

Answer: They didn't go that far.

Major Smith: But up to the limit of their advance, they couldn't see anything at night because everybody was sleeping underground.

Answer: That's right. You know that soil hides it. Let me tell you, they say those guys have nowhere to hide. Those bunkers were incredible. If you could fly right over a bunker complex and not even know it was daytime. Their engineers surpassed our engineers capabilities ten fold. I don't know if they learned that during Iran/Iraq War, I think that's what it probably stems from. They learned how to do bunker complexes that had 90 degree angles in these tunnels. Mike could tell you more about that because he personally went down in one. But, I mean, 10 guys would come out of one little hole and you would think that was all of them, and then 10 more would come out. You would go, "My God, how big is that hole down there?" The only thing you

could tell if you saw a herd of goats in the middle of nowhere, you could pretty much speculate that there is probably a bunker complex there. Because, I think they used those goats as a meal supply. The better ones, or whoever their people were, would drive these sheep down there, sell them to the Iraqi soldiers, and that was living food. So it would last as long as they needed it. They would just slaughter as they needed and used it for food. That's one thing we started keying on was sheep, and the other thing was troop vehicles. If you saw a vehicle out there. They drove around in Chevy Suburbans, Toyota Trucks. We started keying on things to pick up possible bunker sites.

Major Smith: But the bunkers themselves, unless you were standing right on top of one, you couldn't see it. You had to look for the other signs.

Answer: You could be out there hovering looking for a bunker complex off over here. Sitting there not seeing nothing and the other 64s around you looking around--you could be hovering over a top of a bunker and not even know it.

Major Smith: Could they shoot out of these bunkers or were these just--

Answer: It would be fairly difficult to fire out of a bunker because it only has an opening and then it turns. A lot of people could not give you a volume of fire on it.

Major Smith: But the bunker was for protection, for living and for sleeping? Now you have crossed the LD/LC. You went 100 kilometers in and then you set down to update the grid coordinates. What are you doing? You are crossing the LD (line of departure) and then 100 kilometers later--what happened in that 100 kilometers, I guess, Terry, is what I'm saying. Was everybody nervous when they crossed the line of departure?

Answer: I was. Scott could tell you. I was real nervous. To tell you the truth because the fact is that when you do something like that--when you fly a mission--and you are a commander, you feel like these are your children. Not in that essence, but I mean, they belong to me and the thing is, you know, you promise them, and you have no idea, because as company commander, you are taking missions from higher and we get absolutely zilch on intelligence.

Major Smith: They must have some satellite pictures or something.

Answer: They said there is a possible site here, possible SH6 site here and you are flying through that area where they said there is a possible site and you can't see nothing--we had to talk in APR 39--Victor, Victor, 1. They sit there and go "radar, radar tracking. radar tracking. You sit there and look around and that's where you really start getting nervous. Then you start getting strobe and it goes, radar lock, radar lock, lock launch. It's just going nuts because of all the stuff that's up there above you and down below you.

Major Smith: But, was there an SA-2 out there?

Answer: I never saw him.

Major Smith: All the other radars on the battlefield, probably U.S. or allied or joint radars are causing these things to go haywire and that's the only thing talking to you in the cockpit beside your friends.

Answer: That's right. If you could get some of those tapes, you would hear, "radar locking, radar locking. All locks broken". That was the main thing. I had very little intelligence and yet I was taking people 150 kilometers into Iraq, a place where nobody else had been and I had two companies were already primarily engaged in doing their own reconnaissance that I had no contact with. If I had to have somebody to come up there and help me break contact, I was out of luck. If I ran into--They had ADA, hindsight, they had ADA things do a lot of damage. If you didn't use the stand-off capability of the apache. If you happened to fly right on them, they could nail you in a heartbeat because they had the 23mm and 57, 237, they had SA-6, SA-7s like you have never seen and we get to the Basrah mission--I'm sure a lot of people will start telling you about that. But at that point and time, my concern was for these guys. And when I landed, then knew that--Paul Wilson, as a matter of fact, one of my warrant officers, was flying around up there, flew over this high ground and chased 150 Iraqi soldiers sunning themselves on the rock. This was one of the armed reconnaissance--we did five of them in the same general area, too. I didn't like that. You're not suppose

to make a signature. Yet we did almost this same route through the brigade five times.

Major Smith: And Brigade would hand you this route?

Answer: Well, they would say, "I want you to go up to your ACPs again and check this point and that point." Narrowing down the areas is what they were doing. We went from 12 to 2. Then they would say they wanted us to go across MSR Virginia, up in the Euphrates River Basin and check this point out and finally, on about the fourth mission, we went on the actual route up and checked FOB Cobra and came back to make sure in essence there was nothing on that route. But Paul Wilson was up there and I get this radio call, "Iraqis, Iraqis." About that time I looked and he said he had 150 Iraqis, looked like 150, were off the side of this plateau. They were up there sunbathing. Getting them some sun. I guess they had to living down in those holes.

Major Smith: Captain Wiggins was worried about you guys as you were crossing the LD. What did you guys worry about? Captain Wiggins?

Answer: No. Well, I can only tell you what I felt personally, you know, but, I mean I wasn't--I think most of us were just pretty much mission oriented about that time. You know you are suppose to always scan on recons. When we practiced and everything, you know, you are looking around, you are moving your heads, but not as much as we did at that time. We were totally dedicated at working our systems and scanning everything we were doing on those recons. Before we got to the point where he would sit down, you know, we weren't moving that fast at that time. I think we were going about 60 knots, because we were going slow enough where we could see everything and you know looked around and every time you thought you saw something--like I worked in the front seat--so you look up there and you zoom in on it and you just see it's a pile of rocks. Every hill seemed to have a pile of rocks that someone had to do that way because it looked like it was man made pile of rocks and its hot so you think you see something and you look in there and it's just rocks. You move to another hill and it's just a half of barrel. So you zoom back out and keep looking around. I still wonder what those piles of rocks were. It scared the

heck out of you. You wondered if it was some kind of marker. Everybody would be flying and you came over this one hill and there would be a pile of rocks that would look just like a man. As a matter, one place the Iraqis put up a little thing and put clothing on it. Colonel Bryan saw that but it was rags hanging off this stick. Looked like a man until you got right up on it. I think they did that as their form of bench marks. All their cars were equipped with sluggers. They knew where they were at. You would think they would be able to navigate from stars but you look at one of their cars, they would have that slugger in there so they can get satellite beams also. How we flew those at that time we were in a west formation, he was one team and I was another team and we were both at a point and we just kept going.

Major Smith: How close were you? A couple clicks (slang for kilometers) between aircraft?

Answer: Just about a click.

Major Smith: So you are cutting a swath 5-10 kilometers wide just with the aircraft and probably looking a little wider than that with ...

Answer: And every time we saw something, we would call, if we zoomed in on something, we'd say, this is an azimuth of what we had and everybody else would look at it and zoom in on that and then we would find out it was just rocks or a barrel and we'd keep going. We came up on that one Suburban that one time and.

Major Smith: You flew this way all the way up to your advance.

Answer: All the way to where we wanted to go and then he would sit down and we would break off in our little security around the area. The great thing about the Apache is, you can film everything. You get instantaneous intelligence. It was interesting because I think this is the first time the infantry commander had filming at that level from the ground perspective. That was the selling point for the Comanche. Because you don't necessarily want the heavy attack assets doing that sort of thing although the Apache is capable. But getting that onboard recorder, knowing how to utilize it, and taking perspectives from the ground commander as he would want it. As he is going to

land in there, where do my troops have to go first, what type of resistance are they going to meet initially, where were the bunker complexes, what types of weapons systems do they have. We had the 23mm sites picked out. It showed on the tape. That is the advantage of the Apache and that is what I think the deep armed reconnaissance most of all.

Major Smith: You are flying north. You set down and secure, he gets the grid, and you come back in your wedge and keep moving for another distance. You come up to the limited advance. Was this the Euphrates River? Did you go all the way up there?

Answer: Short of the Euphrates by about 50 miles as proposed FOB Cobra--MSR Virginia.

Major Smith: That's as far as you guys went up.

Answer: No, we went beyond that. We went beyond MSR Virginia. But, proposed FOB was short of that. We checked two sites north of that--just over the other side of the bunker complex. We had to bypass the bunker complex.

Major Smith: This is your company or the whole--

Answer: Four aircraft.

Major Smith: O.K. Colonel Bryan told the story about seeing a bunch of Iraqis standing up kind of pointing at him saying, who's that. I wonder who that is? Was that you guys?

Answer: That was Communications Ten. Colonel Bryan was there. We flew up there. Where the engineer equipment was located, there was a tent. As we flew up there and turned to check out this one site which was right next to the engineer equipment. We had to make sure because the bunker complex was to our east. It wasn't that far off. We swung in there to get the coordinate. As we did, we noticed a communications tent sitting there and guys pointing at us and then they realized we weren't Iraqi helicopters and they started to run and we launched rockets on them. It was a direct hit with rockets. As a matter of fact--it was funny--one guy jumped out of a hole we didn't even see and ran right into the rocket shuttle. We were launching on this tent and this guy had ran from a bunker, they intended to hit 20 meters to the right of it. He was running and he ran right to where the rocket hit and exploded. I assume that guy was probably killed.

Major Smith: How much were shooting throughout all this movement?

Answer: Only when necessary. You know, armed reconnaissance is sort of strange because you don't want people to know that you are going to come into a specific area, so you don't want to go in there blazing guns and stuff but on the other hand, if you want to defend yourself...

Major Smith: Were these guys shooting at you?

Answer: Well, they had the capability. Where the engineering equipment was and the tower we never shot at them because they didn't even know we were there. We stayed back and just took video and that's where we had a few hill matches so we would come in and take our picture and then we would break off and come back again. We flew up on those guys and they had know idea we were there. We weren't there to shoot them up we were there just for surveillance it all. We only fired twice in two reconnaissance missions. One we fired a 30mm on troop trucks and the other we fired rockets on that communications station.

Major Smith: Out of all five of those missions?

Answer: Out of all five.

Major Smith: As you were doing these missions more and more, you were doing a sequence of fire rolling. Is it the same tightening of the sphincter? Is it getting a little bit easier to operate. You know what to expect. You know what to do?

Answer: I think it was getting a little bit easier because of the fact we know what to expect. We know the bunker complexes. We know how to approach them. We knew there was no ADA sites that we knew of along that route site. Now they could move something in but Alpha and Bravo Company was moving farther and farther north now and every once in awhile link communications with the scout birds to Alpha and Bravo company and give them the situation report (SITREP) to 4-6 and 2-6 elements. It was starting to get a little bit easier. People started getting a little bit more confident. The confidence level started to really pick up. People knew that the Iraqis with what we saw out there had no capability to stop the Apaches. I saw no armored threat.

All I saw was infantry soldiers with AAA guns. I knew they probably had SA-7s.

Major Smith: How long did these missions last? About four hours, five hours.

Answer: Three hours.

Major Smith: One a day or one every other day?

Answer: About one a day. When we took the prisoners. On the third day of coming back, Bravo company along with 3-101st came in. They came in, tried to launch TOWs (tube, optically, wire missile) against the bunker complex that we had found. Bravo Company found that.

Major Smith: This is a good place to shift into the Alpha and Bravo Company with the detailed reconnaissance. You guys are doing the detailed zone reconnaissance or route reconnaissance or was it a combo? It was a route reconnaissance for MSR Virginia and...was the one that came from attack assembly area from Fort Campbell that was supposed to lead FOB Cobra.

Major Smith: O.K. This is the one that the trucks and everything would come in later after your assault?

Answer: Right. The first mission that I flew--the Bravo Company Commander was my first seater--Captain Joe Mudd. The first mission that we flew was on the night of the 15th. That's where I kept coming up with that date. There was a suspected SA-8 site at the tri-secular area where 101st sector bordered with the 3rd ACR (armored cavalry regiment) sector. There was an SA-8 site there and it was reported SA-8 site and I don't know where the intelligence came from but they decided that they wanted video of it so the night of the 15th--this was the first real fear of combat that I felt.

Major Smith: Why didn't you just go out and shoot it?

Answer: I'm not sure of that answer.

Major Smith: We'll take a picture of it before we kill it.

Answer: It's 2:30 in the morning the night of the 15th and Captain Mudd and I launched single ship and had 2 OH-58s with us. We were the only attack helicopter. We flew to the LD (line of departure) and then began--that's why I say I felt the fear here because we were up there by ourselves and I didn't really feel any confidence in flying PNVS in

this type of mission. It is to me being that it's binocular and only uses the FLIR heat signature and you lose a lot of situational awareness. You can't see any lights if there are any. I didn't feel a lot of confidence in this mission but what we did is fly straight to the LD which wasn't very far north of TAA (theater assembly area) Campbell and we turned 90 degrees and began a flight west with camera oriented right along the border. All we did was scan this area looking to see the SA-8 and the whole point was they didn't feel the SA-8 was there in reality but someone--I think it was the Air Force--said that the SA-8 was there and they wanted it destroyed, so we went up there to video tape and prove that it wasn't there. But that was the first mission that I flew and the first real fear that I had.

Major Smith: Let me just stop for just a minute and get to the same par that we got to on these guys. Somebody is planning this mission. Who planned this mission for you?

Answer: The mission came from the S-3 and it was their decision to send only one aircraft. I don't know who but it was a battalion decision to send only one aircraft.

Major Smith: Was it the same kind of set up. Lieutenant Allpeter was...you guys getting the aircraft squared away and somebody else planned the mission for you. What's going on with you guys?

Answer: Actually, this particular mission here, they came in and told the pilots that one aircraft was going to go out and it was going to be Mr. Moore and the commander. They went in to brief the mission and no one else was allowed to go into the tent. Made all the other pilots stay in our pilots tent. We weren't allowed to go in and hear what the mission was. Actually, we knew they were going to have to fly mission. There would be 2 OH-58s, that commanded him, and those individuals, those pilots, and the commander was briefed, we all sit over and waited and didn't know what was going on. Well, the premise we had behind this single ship operations, intelligence confirmed that this site is at this eight digit grid and it is real live information and they didn't want to jeopardize the source of this information. This came right out of corps. Actually, what had happened was we had gotten the information from a source beyond our brigade and if our brigade would have

gotten word of the site, our fear is that they would have given it to the 101st to check out so it's like we know where it is and we are going to go out there and look and see if it's really there and if we find it a blow it up, it's a feather in our cap and then we'd tell brigade about it.

Major Smith: Where did you get the information?

Answer: It came from corps.

Major Smith: Are you talking about officially from corps or from a guy you ran into back somewhere that...

Answer: We had our own sources. A guy that was working in our S-2, live crew section. When they had gone through school, one of their instructors was now working at corps in the intelligence shop there and they would go up there on a daily basis and update information. We were the only battalion that had an invite to go up there. A link up thing going on.

Major Smith: Buy still weren't getting any information. I mean, a lot of good stuff.

Answer: We had whatever corps had. So they got this information before brigade got it and the old man decided that we were going to launch a ship out there and jump on it while it was still hot.

Major Smith: But essentially, corps didn't have anything. I mean, occasionally they had some stuff.

Answer: But Corps said there's this SA-8 site so because of the system and such, because we don't have a hard order to send you out there, we don't want to risk more than one aircraft and besides all we were doing is going out there and video tape it because we know where it's at. We are not going to get within the range span of this weapon. That's why only one ship was sent out.

Major Smith: All right. Did you see anything?

Answer: No, we didn't see anything. That was the funny thing about it. We got out there and I mean my palms were sweating the whole time and I'm thinking, I can't believe I am out here doing this. I have protection--nothing. I felt confident the survivability of the aircraft itself but I thought our probability of us being detected was really high. Because we were basically hovering and you know you couldn't go anywhere without creating a dust

signature and even at night they showed up really well. So we are just cruising along the border here and I am thinking, you know, we had no idea what was mapped on the other side of the border right there. If they were in those bunkers or whatever. So we were just flying along the border and I was pretty up tight at that point. As soon as we turned back southbound, I felt really good.

Major Smith: What were the 58s doing with you? This is a nighttime mission?

Answer: Yes, sir. They were up there to protect. They were keeping an eye on us because they had goggles and they could probably see better if anything.

Major Smith: So if the Apache blew up in mid-air, they could say yeah, we saw them get shot down.

Answer: Look out here comes the missile. So I think that's the only reason they were there.

Major Smith: You didn't fly on that mission.

Answer: I didn't fly on that mission.

Major Smith: But the next day or the day after you guys are getting cranked up and you were going out as a complete company.

We went out on a detailed recon on the 17th. Is that when we saw the first bunker complex? The morning of the 17th was the first day of the recon. Charley Company had already launched for their long recon, Alpha Company had launched on their short recon. The 101st Sector Alpha Company was to do the west side of the sector and Bravo Company was going to do the east side of the sector. We went up to our FARP and while we were in the FARP (forward arming and refueling point), Alpha Company had made contact with one of the bunker sites and had already fired up the bunkers. I don't know exactly what took place there but they ended up taking nine prisoners at that point. We went up to relieve them on station. The Black Hawks went up before us and took the prisoners out-- nine prisoners. We went up to relieve Alpha Company and we searched in that area 30-45 minutes after they left and we determined there was no one else in the area. We flew up the ridge line to the west right just into the 6th French (light armored division) sector. Right before we got to their sector, we turned back around and came back this way. We were using a technique they titled,

reverse reconnaissance. That's what we were doing. We had gone up to I don't remember what the first phase line was, but after we left that bunker complex area we flew up to that phase line with two teams, two aircraft each and were working our way back. The intelligence that we had at this time, the only graphics we had on the maps were mostly AAA sites. There were AAA sites scattered all over the place. Supposedly, once we got out there all we saw were big 55 gallon drums and the rocks piled up. I don't know who reported them as AAA sites but all through that sector there were AAA sites marked all over the place and we never saw any of them. It was all 55 gallon drums and stuff like that. The story that I got from the Corps guys that I talked to was that if any of the electronic platforms ever picked up an air defense weapon at a certain site, they'd simply would never take it off the map so let's say an SA-8 would move across sector and turn it's radar on, it might turn it's radar on six times but guess what would show up on the Corps map? Six SA-8 sites and they may never take them off the map. That's just an interesting anecdote.

Major Smith: O.K. you are in Alpha Company.

Answer: Bravo Company

Major Smith: You are both in Bravo Company. So you guys are both working this. You are working the ...

Answer: I wasn't on--I didn't fly that mission where Bravo Company took the first prisoners. Sir, I was trying to think who the crews were. You did the flying with us on the 18th. Okay, let me get back to the 17th. After we had gone back up to the phase line and were on our way back down, our wing man said I've got two trucks right out at 10:00 o'clock. Do you see them? Just as he was saying this is when I saw them. We were flying 130 knots probably 10-15 feet off the ground and just as we saw it we stopped and oriented toward it and before I could even slow down, Captain Mudd had said--he had his ID on them--and said they've got RPGs and AK47s and the guys are just standing there pointing at us at look at those helicopters way over there. And somebody raised a weapon and Captain Mudd started engaging them with a 30mm and when that happened a shot of adrenalin went through my body like I couldn't believe and I couldn't imagine--I thought right then--the

first thought that went through my head, I said, "We are killing people now. We are in the war now." Lieutenant Knight was our platoon leader at the time and was just off, I guess a little bit further to the west because we were southbound. They came up and flanked on the bunker complex oriented toward the east and we were oriented toward the south. They had disappeared into the bunker. We'd called back...That was a good thing about that deep armored reconnaissance. We were coming back and we spotted that bunker complex coming through the door. After we told Captain Mudd, hey, there's something there. They went up that next day and that's when he spotted that place and said they must of left.

The first day we saw it which was February 18, there were people all over the place. They were playing volleyball. They had a volleyball net up. That's how we spotted them. We didn't know if they were Iraqi soldiers because they were playing volleyball. So we crept up and then we identified them in uniform.

RECONNAISSANCE/SECURITY - 2.6

The 2-229 Attack Helicopter Battalion was designated by the 101st Aviation Brigade commander as the "day" Apache battalion during G-2 to G+4 operations. The 1-101 AHB would conduct recons at night to locate targets that the 2-229 AHB could attack the next day. The 2-229 AHB had one company available at night to assist 1-101 if necessary. The 1-101 AHB night recons were turning up no enemy activity in sector. An enemy platoon was located by 2-229th on the morning of February 17, 1991, during an armed recon mission 90 kilometers inside Iraq. Ten EPOWs were immediately taken and extracted by internal UH-60L assets. A platoon from 2nd BDE, 101st was used to help take 41 more EPOWs that day. The Aviation brigade commander had tasked 2-229th to perform route reconnaissance of the proposed air routes into FOB Cobra. Charlie Company was given this mission, and executed it over the next four days. On February 20, a site located by C Company was deliberately attacked by 3-101 AHB and 2-229th. After shooting 20mm and TOW rounds against enemy bunkers, 3-101 handed the battle over to the 2-229th. An A-10 originally requested by 3-101 AHB was controlled by B

Company, 2-229th, and dropped MK-82s on the position. A division psychological operations (PSYOPS) team, accompanied by pathfinders and infantry, was flown in to persuade the Iraqis to surrender. Immediately, Iraqi soldiers started coming out of the bunker complex. Four hundred and seventy-six Iraqis, including the battalion commander, surrendered as the 2-229th assisted in clearing the bunkers, and maintaining security around the site. On February 21, armed reconnaissance operations yielded another 13 EPOWs, which were extracted by internal UH-60 assets.

RECONNAISSANCE/SECURITY - 2.7

"The commanding general of the 24th ID ... realized he had to get more assets up in the area, so he gave the aviation brigade an infantry company, and told us all to move up there. What you had then was the aviation brigade working with an entire infantry battalion, securing things for the 24th Infantry Division. This was the first major maneuver force on the Iraqi border." On January 23, the 24th's first Apache combat mission was flown--a small reconnaissance mission on an Iraqi guard post at Nisab. The 24th immediately sent the 3/4-inch video tape of the mission to the Division TAC for analysis--the analysis of Apache video tape would soon become standard operating procedure for every division and corps in Operation DESERT STORM.

On January 30, a major operation started around 2100 and ran all night. [Colonel] Tackaberry ordered six OH-58Ds, in pairs and at different times, up to the order to look at specific targets around an Iraqi border post. The helicopters stayed out until 0300 before coming back to brief the assistant divisional commander. "This had, in fact, signaled the start of combat operations for aviation, for they had been taking fire up there, in a sector northwest of the border post, on the enemy's left flank."

During the same night's operations, the Apache battalion, with its long-range optics, conducted reconnaissance. On PL (phase line) Opus, they found an electronic warfare site, which the Air Force had already photographed three days earlier, on January 27. Early in the morning on January 31, Tackaberry ordered Apaches (a Company) across the border to attack it. "It was a great

start for the Apaches and a successful raid," Tackaberry stated.

"Every day and every night prior to the ground war, aviation crossed the border and went deep, all the way up to PL Lion and farther doing recon and deep operation. Nighttime, Apaches went across; daytime, the air cavalry went across using the OH-58Cs and the AH-1s.

"The Apaches at night would go across to look at the routes that the UH-60s would later take to put long-range surveillance detachments (LRSDs) into position. They also looked at the main supply route, knowing the lead brigades would come up both the eastern and western sectors.

RECONNAISSANCE AND SECURITY - 2.8

The following is an interview between Dr. Burton Wright, Deputy Branch Historian, and Captain Tim Devito. who was assigned to the 1-101.

Dr. Wright: Alright. When you got back after the TF Normandy mission, did you go back into training?

Captain Devito: Yes, even though the war had started, we were always training. We flew back to King Fahd, regrouped, debriefed the mission and went on from there. There was no more Task Force Normandy you know and we were able to concentrate on the division's mission.

Dr. Wright: What was your battalion's mission that came down from division.

Captain Devito: As we moved forward to 101st offensive area in Iraq, into our tactical assembly area, to south of that area in Saudi Arabia, we received the mission of conducting reconnaissance operations--prior to the Division's air assaults--into sector to see certain areas up to the Euphrates River. That is a strange mission to be giving to an attack battalion unless you consider, of course, the AH-1 battalion in the 2/17th Cav of Fort Campbell really has no night capability other than the night vision goggles. I think the division commander realized this especially after the Normandy mission. I am sure as soon as he saw those tapes, saw us pick up those targets at that great distance he said, "Hey, that Apache battalion is doing this." The Division commander had two AH-64 battalions and we basically had the same mission--to conduct

reconnaissance in the 101st sector, to fix the enemy, locate landing zones for 101st air assaults things of that nature. We had planned to do this over a period of about seven days prior to the ground offensive commencing and we pretty much followed that time table.

Dr. Wright: Did you do your recon during the night or the day?

Captain Devito: 101st did all of their recon missions at night and 2/229th concentrated on the day time.

Dr. Wright: You flew a lot of miles in the desert. Did this present any different problems to you because in recon you have a different mind set I would think. You are looking for things. You are taking time to look and what did you find out there?

Captain Devito: The only time that we had aircraft shot down or actually engaged by enemy fire was during the daylight hours--and I think that comes into play for a couple of reasons. Number one, pilots tend to be more apprehensive at night simply because they can't see with the unaided eye and they are relying on imagery through various systems. That is not a comfortable feeling and I think that keeps you a little more aware of what is going on and a little more tentative to approach the enemy which increased your survivability in general. That is an interesting point because we had one aircraft up and the 2/229th had the Black Hawk shot down, of course, both during the middle of the day, daylight hours.

Dr. Wright: What happened to the Apache?

Captain Devito: There was also an Apache damaged during that Black Hawk incident that the 229th had. I was talking about on the 24th of Feb, the 1/101st led the division as a recon out front--conducting air assault security was the official mission to us--out in front of the Black Hawks as we went up to FOB Cobra.

Captain Devito: We had conducted recon in sector up to certain phase lines and the next night we would go a little farther and a little farther and so forth. We didn't want to give away the surprise for the huge division air assault that was coming, but a couple of nights prior to G-day we actually did fly up and take a look from standoff range at FOB Cobra. On the morning of G-day, we flew up to FOB Cobra

providing air assault security en route, basically clearing the route, and then orienting on the objective and making sure that FOB Cobra was secure so that Black Hawks could land there. During that time we were engaged by enemy located right along this road.

Dr. Wright: Engaged with what?

Captain Devito: Small arms fire basically. One element had been engaged by triple A, and one element believes that they were fired on from a shoulder-fired weapon but for the most part, small arms fire. Almost every aircraft including the command and control Black Hawk that I was in was fired on by small arms fire and that Apache was hit in several places and sustained one key hit in the tail rotor which forced it to make a controlled landing in friendly territory. It was eventually fixed.

Dr. Wright: Now, as I understand from the gentleman that I interviewed yesterday, FOB Cobra was to be used as a staging point for an attack of Tallil Airfield or up in that area. But Tallil Airfield, according to what he told me, was heavily ringed with triple A, so they decided not to air assault into it but air assault into the east, I assume east of Tallil, at a place called FOB Viper. Did you have any missions in support of that?

Captain Devito: Yes, we were to conduct an attack on this airfield, Tallil Airfield, from FOB Cobra. However I think that it was canceled not because of the fortifications there, but because of the shift of the entire XVIIIth Airborne Corps to the east that you have alluded to--FOB Viper. We canceled that mission because the XVIIIth Airborne Corps had now turned quicker than expected and because of the progress made by the Marines and the VIIth Corps and the 24th and all of that. They had moved through so much faster than predicted and consolidated gains in this area that there was no longer a need to take that airfield.

Dr. Wright: What units do you know to be on your left and on your right?

Captain Devito: At this time in the 101st sector we had the 6th French light armored division on our left with the 82nd Airborne division and then we are in the middle here, and on our immediate right flank we have 24th Mech Division, the 3rd ACR and then VIIth Corps in that order.

Dr. Wright: According to this captain that I talked to, he said that they moved the brigade up to the Euphrates into a blocking position.

Captain Devito: Yes, they did.

Dr. Wright: Were you the Airborne's anti-tank protection?

Captain Devito: In actuality we were. I heard Gen. Schwarzkopf describe the psychological effects of the enemy finding out that the 101st Airborne Division (Air Assault) is on this road and has the road cut off from Kuwait to Baghdad--that apparently was a big hindrance to him. I flew over there and I saw them. All it was--a bunch of infantrymen with HMMWVs (high mobility, multipurpose wheeled vehicle) and some TOWs on the back of them, very few TOWs, sitting along this road, basically unprotected. We had one Apache company in our battalion that was OPCON (operational control) to this 3d brigade during the day. This Apache company would fly up there and land in the vicinity of the TOC (tactical operations center), the 3d brigade TOC, and every once in a while get up and conduct security because at that point they had a good ground security laid out already.

RECONNAISSANCE AND SECURITY - 2.9

General. During the recent conflict in Southwest Asia, AH-64 units conducted traditional air cavalry reconnaissance missions. The reason for this was primarily to take advantage of the optics on the Apache in a relatively flat desert environment. The 2nd Battalion, 229th Attack Helicopter Regiment (AHR) was attached to the 101st Aviation Brigade, 101st Airborne Division (Air Assault) for Operations DESERT SHIELD and DESERT STORM. This task organization gave the Air Assault Division two Apache attack battalions for combat operations. The unit conducted zone, area, and route reconnaissance missions from "G-day" minus seven (G-7) to "G-day" minus two (G-2). These missions were designated as "armed reconnaissance" because any enemy encountered might have to be engaged and destroyed for the Division's planned air assault to establish FOB Cobra to take place.

Area of Operations. Not long after occupying the TAA (theater assembly area), the attack battalions began to conduct border reconnaissance at night. When the predicted G-7 date drew near, the 1-101st Avn Regt (AH-64) was designated as the "night" attack battalion and 2-229th was the "day" Apache attack battalion to conduct armed reconnaissance missions. 2-229th maintained an attack company available to support the 1-101st Avn Regt (AH-64) at night in case a reserve was needed, while the 3-101 Avn Regt (AH-1) remained ready to conduct daytime operations. The 2-17th Cavalry Squadron conducted route reconnaissance of the main supply route to FOB Cobra after the zone had been cleared by the Apaches. The optics and auxiliary tank configuration made the AH-64 the logical choice to conduct deep armed reconnaissance missions. Figure 2 shows the Division phase lines up to the proposed FOB Cobra. On 14-17 February 1991, the 1-101st Avn Regt (AH-64) began conducting night zone reconnaissance missions into Iraq. On February 17, 2-229th conducted a daylight zone reconnaissance up to PL Charger and area reconnaissance of the proposed FOB Cobra site. These missions continued until G-2.

Situation. Intelligence had plotted several enemy locations that showed no activity upon inspection. 1-101st Avn Regt (AH-64) night recons had shown no enemy in sector. Some personnel were spotted under the PNVS at night, but were deemed to be Bedouins. The 101st Aviation Brigade commander wanted to be absolutely certain of what lay between the tactical assembly area and the proposed FOB Cobra site. The information required was the condition of the LZs (landing zones) at FOB Cobra, the suitability of ACPs (air control points) for the air assault, and the trafficability of the main supply route leading into the FOB. The greater visibility of daylight, and the better quality of videotaped recons during daylight prompted the decision to conduct daytime armed reconnaissance missions.

Methodology. Because 2-229th did not have the benefit of darkness to conduct its reconnaissance missions, the traditional method of a "low and slow" zone recon was rethought. It was critical to the division commander that

the armed reconnaissance operations not tip off the Iraqis to the size or intentions of friendly forces. A slow, probing reconnaissance in daylight hours would be easy to figure out, and it would be easier to visually acquire the AH-64s in daylight. The missions were too deep for traditional aeroscout coverage with the Apaches. Additionally, the unreliability of intelligence reports made it clear that an alternative method for conducting daylight armed reconnaissance was necessary.

Zone Recons. By flying in wingman teams, we ensured the reconnaissance was conducted in depth and security for the team was maintained. Each company used two of these teams to conduct the zone reconnaissance missions. The company would fly low and fast, directly to the designated phase line for the mission. It then worked the zone recon zigzagging towards friendly lines and optimizing the optics on the Apache (Figure 3). The idea was to deceive the enemy if the aircraft were spotted heading into Iraq, and catch them "looking the wrong way" on the way back to friendly lines, and to take advantage of battle positions being oriented towards Saudi Arabia. The zone was actively scanned on the route in to cue what might have to be thoroughly reconnoitered when working back to the FLOT. By doing "reverse reconnaissance," we hoped to attack the soft "underbelly" and minimize our vulnerabilities.

Area and Route Recons. Area reconnaissance of the proposed FOB Cobra site and the air routes into it were similar. The company with this mission flew straight to the proposed site, 150 kilometers from the TAA. One aircraft landed and obtained GPS coordinates. The company commander recorded the missions and narrated the videotape to increase their intelligence value and facilitate their review by higher headquarters. All ACPs were videotaped and GPS coordinates updated.

Summary. The two locations where EPOWs were captured were only visible during the day because the dug-in bunkers were well camouflaged, and blended in with the natural landscape. Daylight reconnaissance made the unit more vulnerable, but

also highlighted enemy locations as well. The standoff capability of the Apache <u>must</u> be utilized to the maximum extent possible during the day. Daylight armed reconnaissance missions against unknown or light forces are not impractical with AH-64s, but require more detailed planning and a review of techniques for the teams.

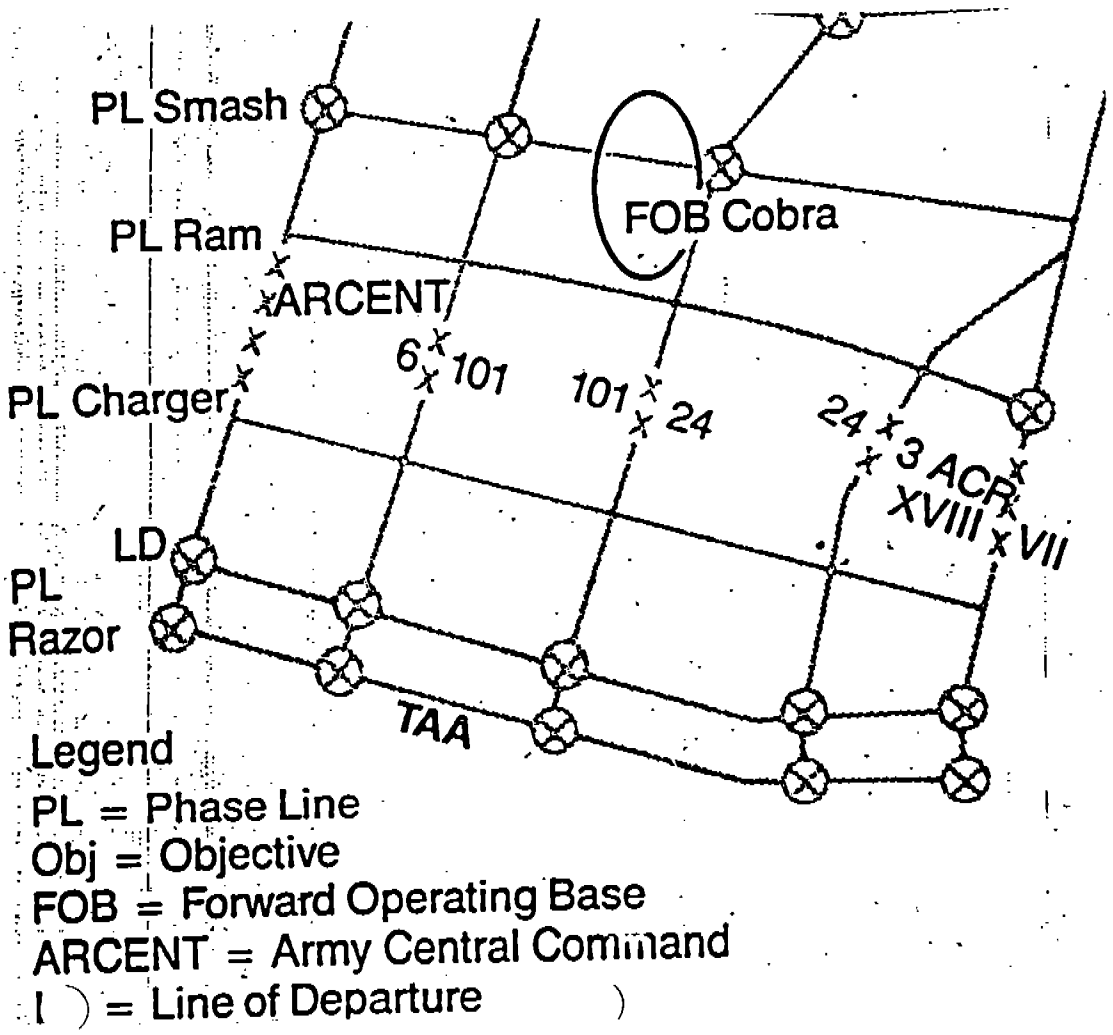

Fig. 2.9

RECONNAISSANCE AND SECURITY - 2.10

The 101st's plan for pre-offensive reconnaissance became known as "G minus operations." The initial plan called for night aerial reconnaissance beginning at G-7 days. Seven days would provide enough time to use stealth the first few nights to determine the actual threat, then attack to destroy forces in sector as necessary or change the plan to adjust to METT-T. The G-minus plan's only flaw was that it assumed that we would know the exact date of G-day seven days out, which was ultimately not the case. G-day was initially assumed to be February 21, 1991, and 1-101 AHB conducted the first cross-border reconnaissance in 101st Airborne Division sector under the cover of darkness on February 14, 1991. Their mission was to breach the FLOT, determine enemy disposition near the Iraqi border, and conduct reconnaissance in zone out to PL Giant (approximately 15nm past the FLOT). The following night, AH-64s from 1-101st again penetrated Iraqi airspace and conducted a zone reconnaissance in Division sector out to PL Charger. During these recons, personnel and livestock were spotted in the vicinity of MSR New Market, but no hostile action was initiated by the Iraqis and the Apaches bypassed to continue their recon.

The 1-101 ATKHB reached the zone intended for FOB Cobra or the first time in the early morning hours of February 16, 1991. This was the first reconnaissance past PL Charger, and the pilots discovered a built-up area near the oasis of Thaab al Hajj, consisting of several structures, vehicles, and numerous bunkers and personnel. Since no weapons were exposed and no hostile action was initiated, the 1-101st continued with their primary mission to determine enemy disposition via FOB Cobra. This recon was a critical turning point in the decision making process, as it identified a potential target along the route of flight to FOB Cobra, but confirmed that the FOB Cobra area itself was virtually undefended.

The day of February 17, encouraged by the apparent lack of enemy activity in sector, the Aviation Brigade committed the 2-229th to conduct a detailed daylight reconnaissance out to PL Charger. Also on G-5, the 2-17 Cavalry conducted

a route reconnaissance up MSR New Market, the primary ground line of communication for the Division as it advanced. The daylight reconnaissance exposed a sophisticated network of bunkers expertly concealed in the rolling terrain, from which Iraqi infantry could dominate MSR New Market by fire. The 2-229th engaged one of the first bunker systems, destroying several vehicles and armament caches. In an unforeseen development, ten Iraqi soldiers emerged from the bunkers with their hands up and waving white flags. A SAR helicopter with Pathfinders from C Company, 509th Infantry, Fort Rucker, Alabama (attached to the 2-229th), landed, secured the EPOWs, and flew them back to the division EPOW collection point. Shortly afterward, a large group of 40 Iraqi soldiers came out of a second bunker system and attempted to surrender to the company of Apaches. The brigade quickly scrambled a company of UH-60 Black Hawks from 9-101 and an infantry platoon from 2-502 Infantry, and secured Division approval to extract the EPOWs and sweep the site for documents and equipment. The EPOWs provided critical intelligence about enemy disposition in sector, as well as exposing an apparent lack of equipment necessary to conduct chemical warfare.

Also, on February 17, a company of AH-64s from 2-229, along with Colonel Garrett, the Brigade Commander, flew up to determine the location and suitability of the area which would become FOB Cobra. The site selection was critical to the success of the Division's plan to conduct an air assault to the Euphrates River. FOB Cobra had to be able to contain an infantry brigade, a DISCOM (division support command) logistics cell, up to five separate FARPs, larger sites for up to five aviation battalions, and a heavy PZ for external loads. All available photo imagery, maps, and soil analysis had been meticulously examined to narrow the possibilities down to approximately three large "goose eggs" in the division sector. Colonel Garrett brought back video along with his own assessment that while some dust was present, the primary area was suitable for the FOB.

Further daylight reconnaissance of the zone near PL Charger on February 14 by the 2-17 Cavalry and 2-229th confirmed the presence of at least a battalion-sized element at Thaab al Hajj, astride of MSR New Market and under the

intended flight routes to FOB Cobra. The area was named OBJ Toad, and the division and brigade staffs began to formulate plans for an air assault artillery raid to clear the Division route of advance prior to G-day. While the lack of Iraqi armor/mech forces and associated ADA systems encouraged this aggressive raid technique, ultimately the chain of command was reluctant to commit infantrymen prior to the official start of the ground war. As a result, the attack on OBJ Toad proceeded as an attack helicopter reconnaissance-by-fire, with a detailed contingency plan to insert an air assault infantry company or battalion in case of an Iraqi surrender.

After daylight on February 20, 1991, AH-1s from the 3-101 AHB began a phased attack on OBJ Toad, cycling all three companies through before conducting a battle hand over to the 2-229th. Dozens of bunkers were engaged, with reports of anti-tank missiles shot into the bunker entrance and secondary explosions from several bunkers. Enemy resistance was virtually nonexistent, yet neither did any Iraqi infantryman show any sign of surrender. By noon, the Aviation Brigade ALO (air liaison officer) had succeeded in getting CAS on station in the form of two teams of two A-10s loaded with cluster bombs, 500-pound MK-82s, and Maverick missiles. The CAS linked up with the air battle captain in the attack helicopter company, for a classic JAAT (joint air attack team) mission. The A-10s successfully scored direct hits on several bunkers with the MK-82s, and cluster bombed the area. They were only prevented from unleashing Mavericks by the lack of compatible (armor) targets in the area.

It was clear by the conclusion of the JAAT that the Aviation Brigade could continue to expend ordinance on OBJ Toad indefinitely, and the brigade commander convinced the Division to unleash a loudspeaker team on a UH-60 to develop the situation further. The UH-60 flew directly into the objective, dropping leaflets and speaking in Arabic over loudspeakers to entice the Iraqi soldiers to surrender. The loudspeaker team yielded immediate results, with 50 soldiers coming out of their holes, then 100, then 150. By the time the infantry company hit the LZ, the aviation commander was estimating over 400 surrendering soldiers. The division

launched the remainder of the infantry battalion from the 187th Infantry to process the EPOWs and sweep the site. The Aviation Brigade committed the 4-101 ASLT (Assault) Bn to support the insertion of troops and extraction of EPOWs as well as providing four CH-47s for EPOW back-haul.

The raid on OBJ Toad was an unexpected windfall, yielding an entire infantry battalion, complete with battalion commander. The Iraqi commander was captured along with all of his maps, orders, and classified documents. Additionally, 101st soldiers captured or destroyed a huge cache of Iraqi weapons and ammunition, to include ZPU-4 ADA guns that were never fired at the attacking U.S. aircraft. Most importantly, it was discovered that this battalion consisted mainly of border troops and new conscripts, and was part of the 49th Infantry Division. Morale, foodstuffs, and well-trained troops were in short supply. The make-up of the battalion and its division confirmed U.S. suspicions that the western flank of the KTO was lightly defended, and would not pose a major obstacle to the advance of the XVIIIth Abn Corps.

With OBJ Toad taken out, 101st "presence" in sector was reduced significantly to lower exposure and prevent "telegraphing" the true target area. The actual day of February 24 was confirmed as G-day, and the Aviation Brigade conducted light reconnaissance and final air mission briefs in the days prior to the G-day air assault. Further reconnaissance found little enemy activity in sector, and plans and contingencies were solidified for the largest air assault in history.

RECONNAISSANCE AND SECURITY - 2.11

From February 23, 1991 (G-1) to February 26, 1991 (G+2), 4-1 Aviation Battalion utilized all of its different types of helicopters for a variety of combat and combat support missions, in support of the 4th Brigade and the 1st Infantry Division.

On February 23, a UH-1H was tasked to perform a route recon mission near the 00 grid line. This information was utilized in movement planning for the 1st ID's advance. UH-1Hs were also used for command and control as they flew the

Commanding General and the Assistant Division Commander for Maneuver from the 23rd to the 26th.

OH-58Ds flew night reconnaissance missions on February 23, searching for enemy troop movement to the Division's front. On February 24 and February 26, OH-58Ds flew screening missions with the Divisional Cavalry Squadron (1-4 Cav), and performed as aeroscouts in support of attack helicopter missions flown by 1st Bn, 1st Avn Apaches. On February 25, OH-58Ds flew deep attack missions with 1-1 Avn.

From February 23 to February 26, OH-58Cs were utilized for command, control and reconnaissance. They flew recon missions for the commanders of 1st, 2nd, 3rd Brigades, and DIVARTY. The OH-58Cs enabled these commanders to evaluate terrain, monitor their Brigade's movements, and gave them the mobility to influence the battle at critical times and places.

RECONNAISSANCE/SECURITY - 2.12

The 4th Brigade of 1st Armored Division began its participation in Operation DESERT STORM's ground phase with a reconnaissance in sector on 23 February (G-1). The mission was to gain real-time intelligence on the Division's proposed sector of attack from the Saudi border to PL Melon--a depth of 50 kilometers. No resistance was encountered--the elements of 3-1 AHB passed over a few dug-in infantry and scout elements who did not shoot. After crossing PL Apple, Apache crews began to pick up radar strobes. Near PL Melon, enemy artillery began to fire illumination rounds to the north in an unsuccessful attempt to locate the Apaches. Although the recon failed to produce the Brigade's first live fire engagement, it was a success in many respects. It validated the G-2's estimate, and provided detailed information on the enemy's dispositions in depth. The pilots and gunners of 3-1 AHB noted that the meteorological and illumination conditions were perfect for hunting Iraqi armor. Once the Division kicked off its advance across the LD the next morning, it found little initial resistance (as verified the previous evening) and an opportunity to cover ground quickly.

RECONNAISSANCE/SECURITY - 2.13

On 23 February 1991, N (Nomad) Troop, 4/2 ACR, moved forward and crossed the Saudi berm into Iraq at 1345, clearing the targeted area from west to east. The OH-58Ds joined the flight, and Nomad troop reported the zone forward of Cougar (2/2 ACR) clear up to PL Bud, 10 kilometers into Iraq at 1350. Nomad Troop cleared the zone halfway to PL Busch, the limit of advance, then paused because of communications difficulties. We observed one artillery round impact within 30 meters of one OH-58C while clearing the zone. We reported to Wolfpack (3/2 ACR) negative contact in Cougar's zone, and the troop commander (Captain Newton Kendrick) flew back to report the same to Cougar and Redcatcher (4/2 ACR). O (Outlaw, 4/2 ACR) Troop relieved both Nomad and P (Palehorse) troops at 1430. On February 24, 1991 (G-day), Nomad Troop took off at 0630 to screen forward in Cougar's sector up to the FSCL (fire support coordination line), PL Apple. We reported to Cougar's TOC negative contact as well as the positions of Cougar's lead scouts. We broke for refuel at 0827. We monitored the limited resistance of the Iraqi forces and the requests of the regimental commander (Colonel L. D. Holder) to maintain the initiative by pushing forward. The crews prepared for the regiment's LD time of 1430 by assuming MOPP-1 and placing M9 paper on their aircraft. Palehorse Troop was placed in Wolfpack's sector. Nomad took off at 1435 to relieve Palehorse in Wolfpack's sector. We flew along the MSR to PL Colt, then monitored that Palehorse was taking fire. We flew directly along PL Colt toward that location while asking if Palehorse needed assistance. Their enemy chose to surrender after several engagements. Wolfpack Nine (USAF ALO) called Nomad Troop to relay CAS information for a single F-16. Captain Kendrick began to talk to the fighter as the flight approached a large hill. We observed a soldier running on top of the hill while also dissuading the F-16 pilot from continuing to identify Wolfpack's M-3s and M-1s, and our helicopters, as enemy equipment. We observed main gun rounds flashing in our direction as the Troop's helicopters encircled the hill. We identified and engaged BRDMs and other vehicles in revetments, and rallied to the

south of the hill. We reported the vehicles to Wolfpack, gave a target handoff in distance and direction to their lead Bradleys, and called for artillery fire on the command net. We sent the F-16 to the north to look for targets in OBJ Feucht because the fighter was unable to identify the hill from his altitude. The enemy continued to fire main gun and machine gun rounds from their key terrain at our aircraft as Bradleys approached to within 4 kilometers. The AH-1s had to break for fuel, so the entire troop left station except for the troop commander's aircraft. The F-16 reported negative contact in Objective Feucht, so we directed him to Objective Merrell where he confirmed the existence of numerous trenches but saw no vehicles. We directed him to the northeast where he dropped a 2000 pound bomb directly on an enemy scout vehicle on a dirt road. We reported the negative and positive enemy sightings from the F-16 to Cougar, Wolfpack and Redcatcher en route to the FARP as the mission ended at 1748."

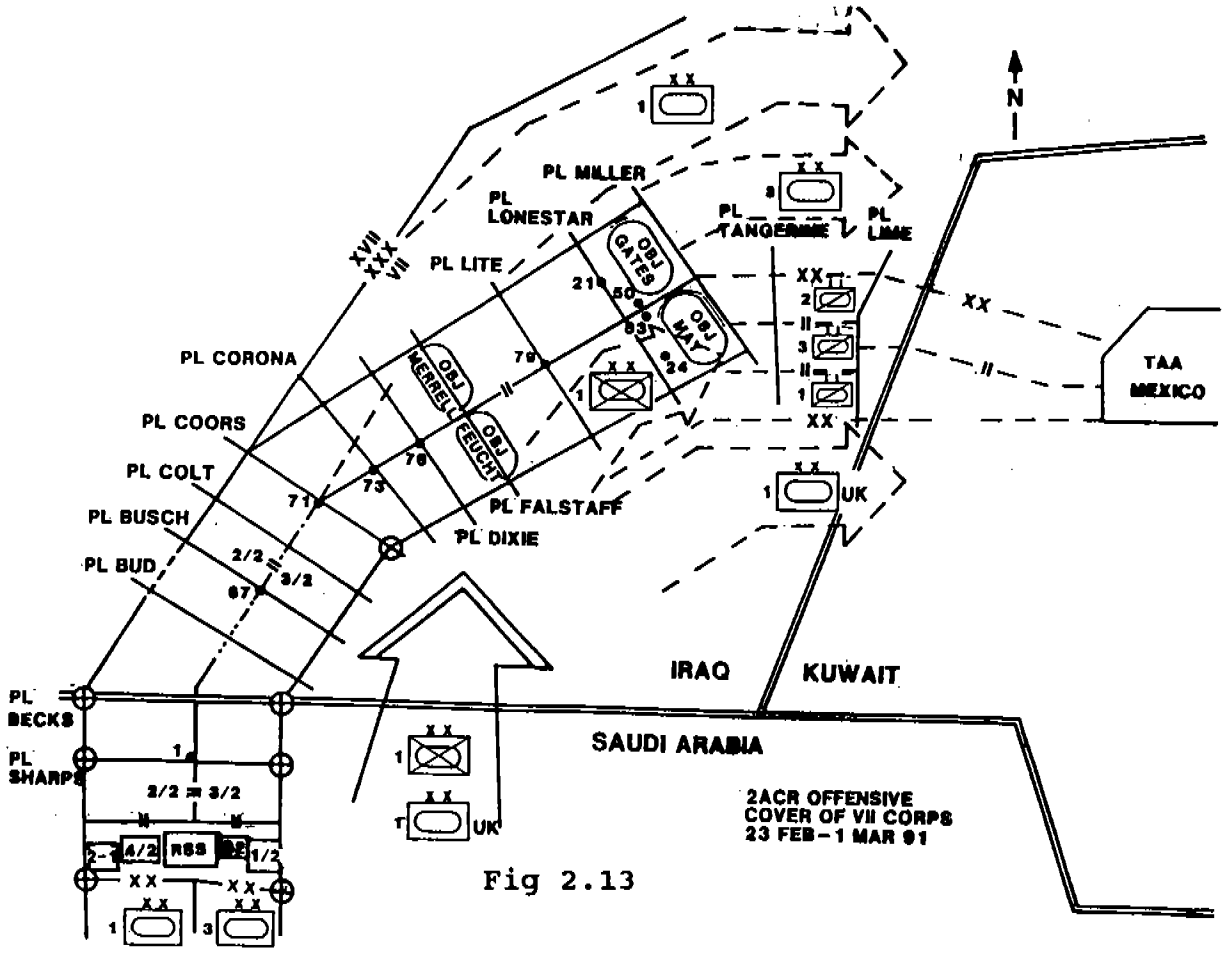

Fig 2.13

RECONNAISSANCE AND SECURITY - 2.14

On February 24, 1991, the 4th Squadron, 7th U.S. Cavalry was ordered to cross the Iraqi border and attack as part of the VIIth Corps operation to destroy the Republican Guard Forces Command and free northern Kuwait. The squadron fought from Saudi Arabia through Southern Iraq into northern Kuwait in only five days, leading the 3d Armored Division and the VIIth (Heavy) U.S. Corps.

The squadron's mission during Operation DESERT SPEAR, which was the 3d Armored Division's portion of Operation DESERT STORM, was to screen the Division's front and eastern flank. D Troop screened forward of 2d Bde and maintained contact with the 2d Armored Cavalry Regiment. The remainder of the squadron screened the division's right flank. A Troop screened from 2d Bde's right flank battalion to the head of 3d Bde while B Troop screened 3d Bde. C Troop's mission was to screen from 2d Bde's right flank battalion to the front of 1st Bde's right flank battalion. The squadron was required to screen from the LD to PL Melon; a distance of 50 kilometers.

Lt. Colonel Terry L. Tucker and Command Sergeant Major Ronald Sneed were the first to cross into Iraq. The squadron crossed the line of departure (LD) at approximately 1500. The LD consisted of an Iraqi obstacle belt of earth berms and mine fields. Prior to crossing this obstacle, divisional engineers had punched out several crossing points to allow the squadron to move rapidly into the attack. No enemy resistance was encountered along the obstacle belt. The squadron moved 25 kilometers into Iraq before making first contact with the enemy. The squadron discovered a camouflaged Iraqi bunker complex 200 meters inside the screen line. Earlier intelligence reports compiled from multiple sources indicated that the Iraqi soldiers manning the bunkers were elements of the 3rd Bn, 807th Bde, 48th Infantry Division. This battalion was the western flank security for the VIIth Corps. The enemy was armed with RPG-7s and small arms. The Bradleys began to engage the bunkers with direct fire to rout the Iraqi soldiers. Some of the Iraqi soldiers began to surrender while others remained hunkered down in their holes and returned fire. After

sweeping the fortified ridge line, a total of 59 EPOWs were captured and were detained by the squadron's attached engineer company (C Co, 23rd Engineer Battalion). The squadron continued to reposition throughout the night, making sleep a very rare commodity.

RECONNAISSANCE/SECURITY - 2.15

At 0420 on G-day (February 24, 1991), 1-4 Cavalry, the Divisional Cavalry Squadron for the 1st Infantry Division, began a zone reconnaissance north of PL Vermont--the border between Iraq and Saudi Arabia: "The 1st Brigade of 1st Infantry Division arrayed 1-4 Cav on the left, TF 2-34 in the center, and TF 5-16 on the right. 3/2 ACR, on our left flank, assigned a liaison officer, Captain Delgado, to us. The squadron collocated the field trains with the 101st Support Battalion. We moved forward in zone and remained tied in with TF 2-34. The Scout Weapons Teams (SWT - OH-58s and AH-1s) reconnoitered forward and maintained contact with our flank units. By 1000, we were set along PL Plum with no contact with the enemy. At that time, the Forward Area Support Team began refuel operations under control of the command sergeant major (CSM) and the headquarters and headquarters troop (HHT) commander. This operation took little more than an hour. During the refuel operations, CW3 Winter's SWT flew over the Iraqi positions to our front. This single act caused several Iraqis to surrender. By 1030, B Troop had taken 21 prisoners. The B Troop first sergeant consolidated the prisoners at the refuel site. The CSM, HHT commander and flight operations personnel assisted in the evacuation of these prisoners which included several officers. At the same time, Captain Tovsen's SWT (scout weapons team), who relieved CW3 Winters SWT, engaged and destroyed an AML scout car. Due to the lack of any significant resistance, the division commander ordered the attack to continue at 1500 hours.

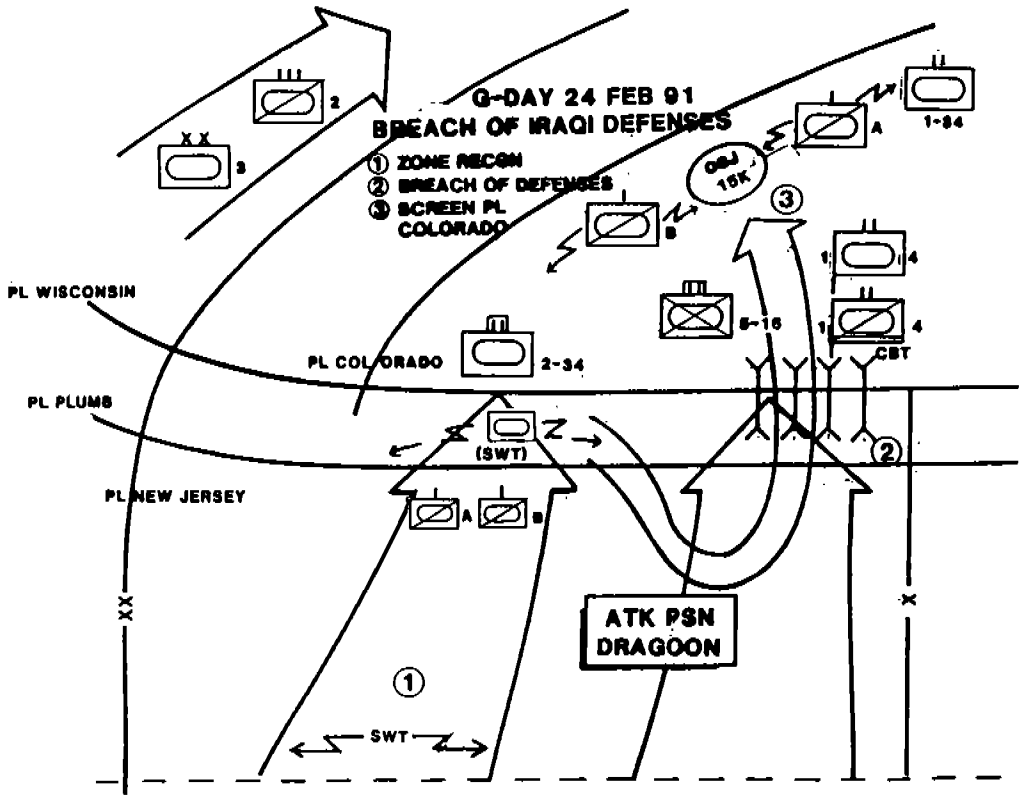

Fig 2.15

RECONNAISSANCE/SECURITY - 2.16

P (Palehorse) Troop, 4/2 ACR, departed its Saudi Arabian AA at 0715 on February 24, 1991 (G-day), to continue its mission Wolfpack's (3/2 ACR) sector: "At 0800, we reported personnel on a ridge line. This grid coordinate closely coincided with the contact point between the regiment and 1ID. Fratricide had been a serious threat throughout the theater. Knowing this, we moved closer to the position for positive identification. As we closed, the position engaged us with mortar and RPG fires. We moved out of the enemy's range and reported a dug-in infantry unit supported by a T-55 platoon. The regiment made some quick coordination and we had artillery impacting within seven minutes. After a bold correction by Staff Sergeant Warner (a 13F on-board), we had 90 rounds of 155mm on the target. After moving into Iraq, Fourth Squadron reported that the Coalition was making tremendous success in the KTO. The regiment received permission to accelerate the timetable.

Palehorse's mission was to assume the regimental sector at 1430. At 1500, we saw numerous foxholes

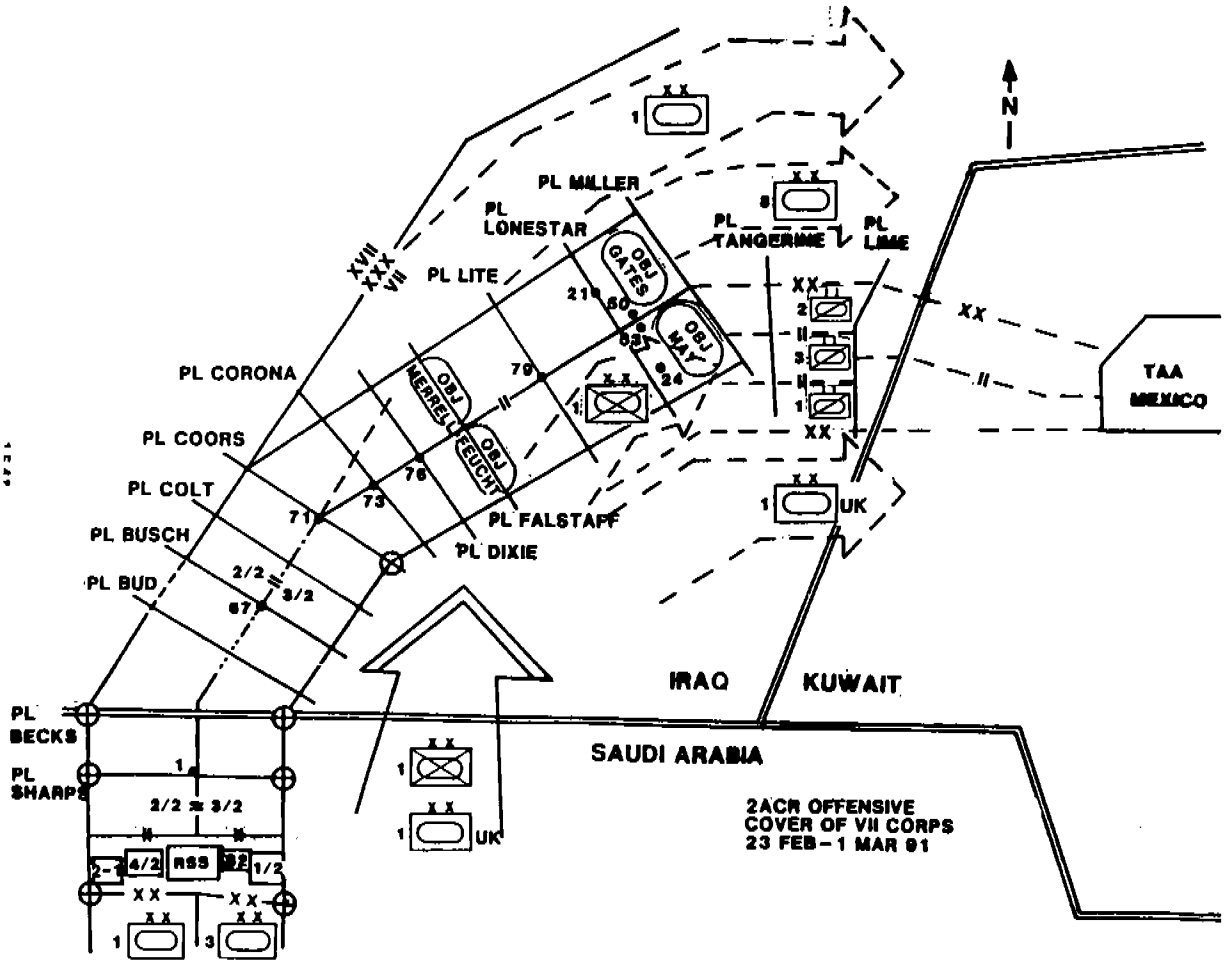

Fig. 2.16

vicinity PL Colt. There were so many that it made bypass impossible. Slowly, many Iraqis raised their arms and waved white leaflets. Later, Palehorse and Wolfpack troops received credit for rounding up this infantry battalion. We continued to PL Corona. Here, we saw dug-in enemy vehicles north at the phase line, out of our current sector. We reported them and continued to the east. Almost immediately, a D-30 [artillery] battery attempted to engage us. We broke away and another battery engaged us with small arms fire. We finally broke the engagement and put MLRS fires on these positions. The artillery battalion surrendered."

RECONNAISSANCE/SECURITY - 2.17

The February 25 (G+1), began with Outlaw Troop (4/2 ACR) executing a 0645-hour takeoff to assume Cougar's (2/2 ACR) sector. Cougar's lead elements had pushed to PL Lite and by 0800, Outlaw had increased that gain out to PL Lonestar. The troop refueled at FARP Slice and returned to Wolfpack's (3/2 ACR) sector just north of PL Lonestar. Within an hour, the screen was out to PL Smash and had eyes on OBJ May. In the southern portion of OBJ May, numerous fresh revetments were found, although all of them were unoccupied. In the same area, two Iraqi infantry companies surrendered and began walking to the south. The troop refueled at the FARP and was scheduled to screen forward of Cougar onto OBJ Gates. Before departing the FARP, the mission changed to work flank security between PL Lonestar and PL Miller. At approximately 1130, with visibility around 1500 meters, the troop made contact with an MTLB which was moving rapidly northeast. As Outlaw maintained contact, numerous T-55 and T-72 tanks and MTLBs were discovered, placing the enemy at task force strength.

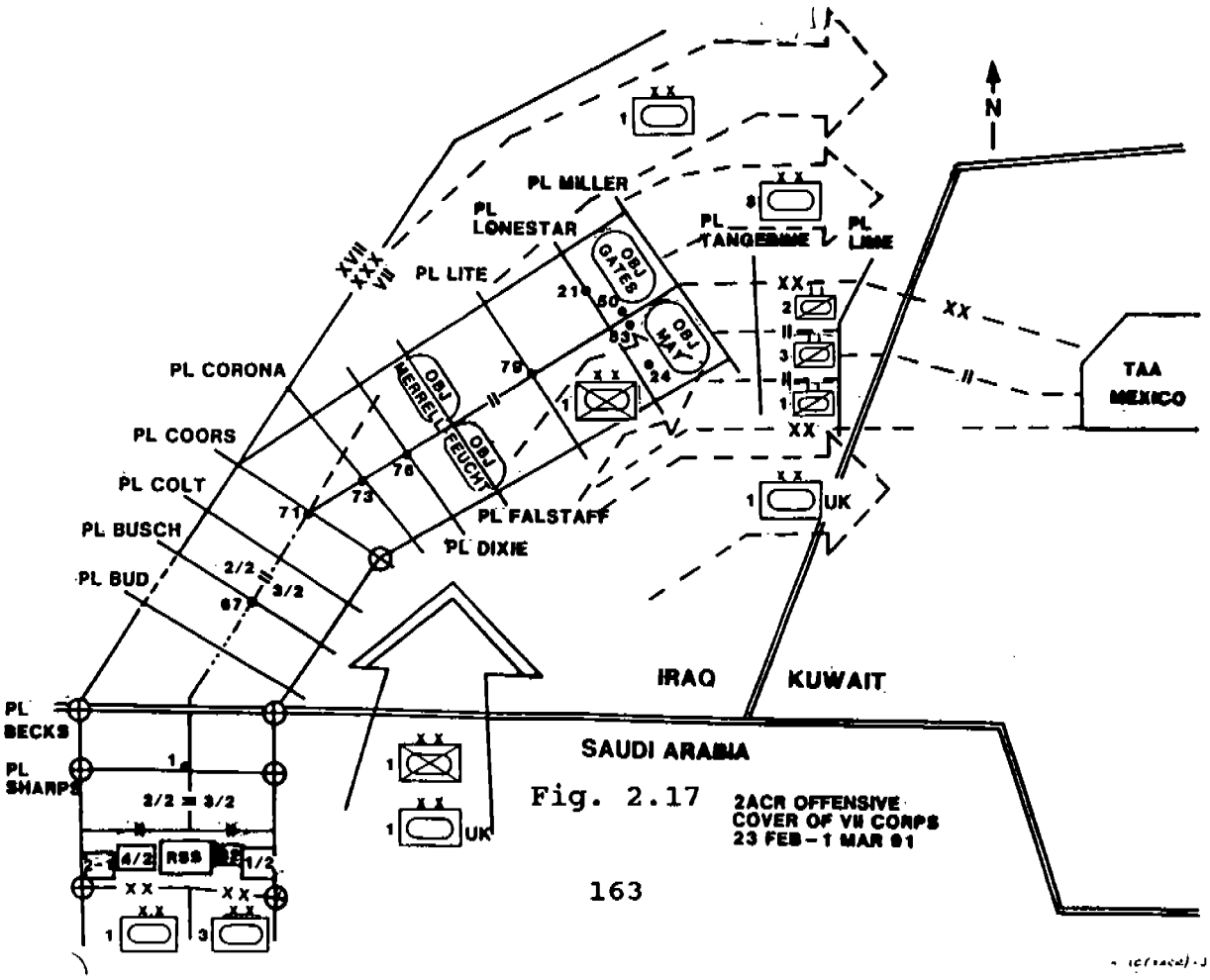

Fig. 2.17 2ACR OFFENSIVE COVER OF VII CORPS 23 FEB-1 MAR 91

One MTLB was engaged and one T-55 was destroyed with organic assets while MLRS was preparing to fire. Wolfpack had received the target handoff and was closing with two cavalry troops abreast. The initial volley of MLRS rockets landed with 50 percent effectiveness and was shifted to the northeast on the rest of the task force. Once Wolfpack was within effective range, Outlaw egressed to the southeast to return to the FARP. Total operation from initial contact to Wolfpack placing direct fire on target was under 20 minutes. The last screen mission of the day was along the 60 N-S grid line (the fire support coordination line) from the right flank north to the 20 E-W grid line. After refueling at the FARP, Outlaw moved to screen in front of Wolfpack. After 20 minutes, weather started deteriorating rapidly and all air aircraft were brought back to FARPs. Outlaw launched again at 1300 to rejoin the screen line in Wolfpack's sector only to return to the FARP due to a dust storm. At 1620, with visibility at 1500 meters, Outlaw began screening along the Wolfpack/War Eagle (3/2,1/2 ACR) boundary (the PT90 E-W grid line) attempting to push out to the 75 N-S grid line. At 1645, contact was made with two MTLBs, which were destroyed with TOWs from two AH-1s. During the engagement an OH-58 saw two possible targets. The OH-58D that was with Outlaw determined them to be T-55s and began calling in artillery. As the rounds started impacting, Outlaw started receiving main tank gun fire on our left flank, so the troop shifted 500 meters to the south and shifted the artillery to the north to get better target effect.

RECONNAISSANCE AND SECURITY - 2.18

On February 25, Charlie Company, 2-227, was given orders from "LEAD-6" (CAB Commander Colonel Charles M. Burke) to expand the "screen" to go further east to PL Cotton. Upon reaching PL Cotton, First Lieutenant Luebbe (the Charlie Company Platoon Leader) and I took fire. When we first arrived there with SGT Johnson and WO1 Gladowske, there were three aircraft. First Lieutenant Madkins (Delta model pilot) and Sergeant First Class Devlin, the left seat in that Delta model, were flying with us. They left Gladowske and Johnson at PL Cotton for "retrans" as ordered by "HEADHUNTER 6" (Lt. Colonel Billy Stevens). The Delta

model and my aircraft were continuing the screen. We crossed over what were fighting positions in those revetments. We continued up the phase line and noticed an explosion approximately 400 meters to our 4 o'clock. We noticed they were mortars. Just after that tracer rounds came across the nose of the aircraft. We then began evasive measures to the west. Numerous mortar rounds were landing all around. So we flew about 5 kilometers to the west and turned in our spot report to "HEADHUNTER 6".

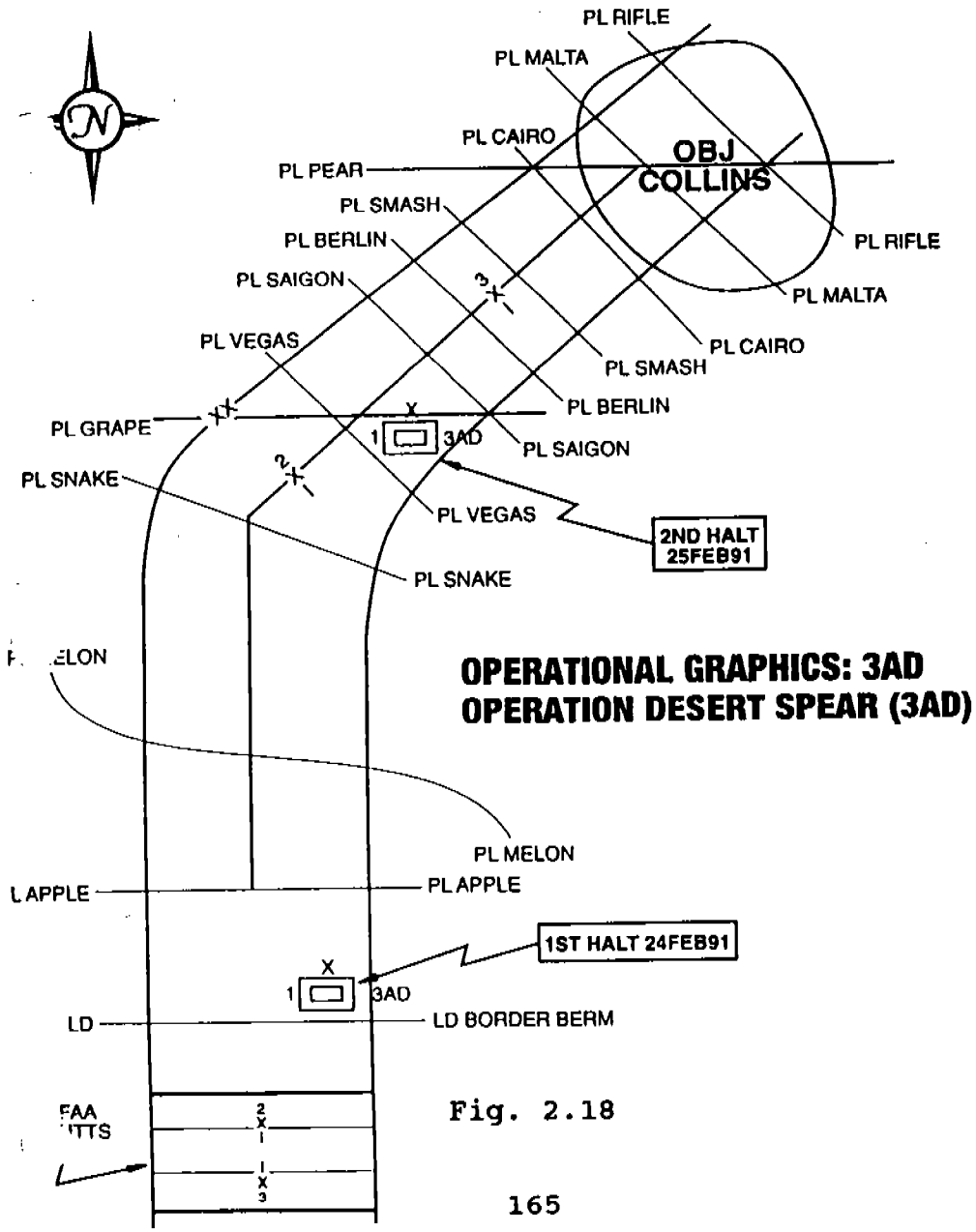

Fig. 2.18

Then, Madkins and Devlon thought they were taking fire again, so we went another 5 kilometers to the west. Upon later inspection none of the aircraft sustained damage.

So, we were then ten kilometers from where we took fire initially, and stationary. "HEADHUNTER 6" called up some guns from Alpha Company. Since aircraft were taking fire the order from the Tactical Action Center (TAC) and Headhunter 6 was to scramble some guns. This meant sending the Apaches. Getting them up in the air. Alpha Company was given the mission and they sent their light team, two AH-64 Apaches.

(This story is picked up an AH-64 Instructor Pilot, A Company, 2-227th Aviation).

INSTRUCTOR PILOT: The light team was launched because Charlie Company was taking fire. We launched two Apaches: the light team lead, First Lieutenant Parrish and CW2 Armstead; and the second aircraft, CW2 Stroud and WO1 Branda. We took with us two OH-58 Charlies; first aircraft lead, First Lieutenant Warnicke and Staff Sergeant Polelli; and second aircraft, WO1 Karella and Specialist Johnson. Also, one Delta model was launched from Task Force Viper.

We were launched en route and linked up with one more Delta model, an unknown crew ("Stuka" was their call sign and I never knew the names of the crew. They were also from TFV.) The OH-58 Charlie (CW3 Gilhouse and Specialist McDonald) crew that we linked up with, was in the process of rounding up EPOWs when we came across them. Once they finished, because friendly ground troops were there to take over from them, they linked up with us. We proceeded as a flight. There, we spent approximately 30 minutes on station searching for elements that had engaged Charlie Company Scouts. After 30 minutes, in the haze on the horizon, we sighted gun flashes from large caliber guns. One of the Delta model Scouts called in stating he had sighted an enemy command post. Due to his position he was able to see the command post (he was on the other side of the enemy post from us, between the post and our position), whereas the rest of the flight was unable to see their command post.

AH-64 Apaches are not normally equipped with laser warning devices. For this war, however, we were given hand-

held substitutes that were, in fact, laser warning devices. They suction cupped to the windshield inside the aircraft. At the same time as the Delta Scout was radioing his sighting, both AH-64s laser warning devices went off indicating probably engagement by Iraqi tank laser range finders. Scant seconds after the laser warning devices activated, artillery or main gun rounds started coming in on us. At our aircraft. The call was made for the flight to drop back, putting some distance between the bad guys and us, so that we could come back and engage them.

The flight retreated out of range of the incoming rounds. Then the two Apaches turned to reengage the enemy positions. Upon being cleared to fire CW2 Stroud and WO1 Branda launched a volley of 2.75 rockets (Hydra 70s) into the vicinity of the enemy command post. The second Apache also launched a volley of rockets into the vicinity of the command post. The incoming artillery ceased. At that point, due to fuel status, the flight broke station (ended contact) and returned to FARP Nova. That engagement was the first time that the battalion shot back.

The first time that the battalion had EPOWs surrender to an Apache occurred after the engagement with the artillery. There were two Iraqi soldiers that surrendered to us. During that engagement, Alpha Company's heavy team was launched to relieve the light team. They were forced to return due to bad weather. We all started coming back in because of the nasty storm.

That night we flew back in extremely poor weather back to the FARP. It was raining and dark, visibility was low (maybe a quarter of a mile). There were no windshield wipers and we couldn't see through the system.

There were no missions that night due to weather. People slept in their cockpits. There were no good night sleeps. It was our third night of sleeping in the cockpit. It was miserable, the worst desert weather I had ever seen. That was my 33rd birthday.

February 27, 1991 (G+3) - The squadron's air troops continued to screen forward of the division's movement. C Troop screened forward of 1st Brigade while D Troop screened forward of 3d Brigade (see Figure 4). The ground troops were ordered to react to any enemy penetration or counterattack from the 3d AD's left or right flanks or to pass through 1st and 2d Brigades to again find the enemy contact was lost. The squadron's air troops distinguished themselves throughout the day. They operated in severely adverse weather conditions which included sandstorms, a thunderstorm, and at times, a maximum visibility of 100 meters. They repeatedly employed indirect and direct fires on the enemy. The Knightmare Team from C Troop, led by First Lieutenant Dave Penczar, captured 12 EPOWs. OH-58Cs and AH-1 Cobras, flying 3-5 kilometers forward of maneuver units, herded EPOWs like cattle back to waiting maneuver battalions. Engaging the enemy with TOWs, 20mm, and 2.75 rockets, the air troops destroyed one T-72, one T-55, three T-62s, one T-69, three ZPU-23-2s, one D-30, one S-60,

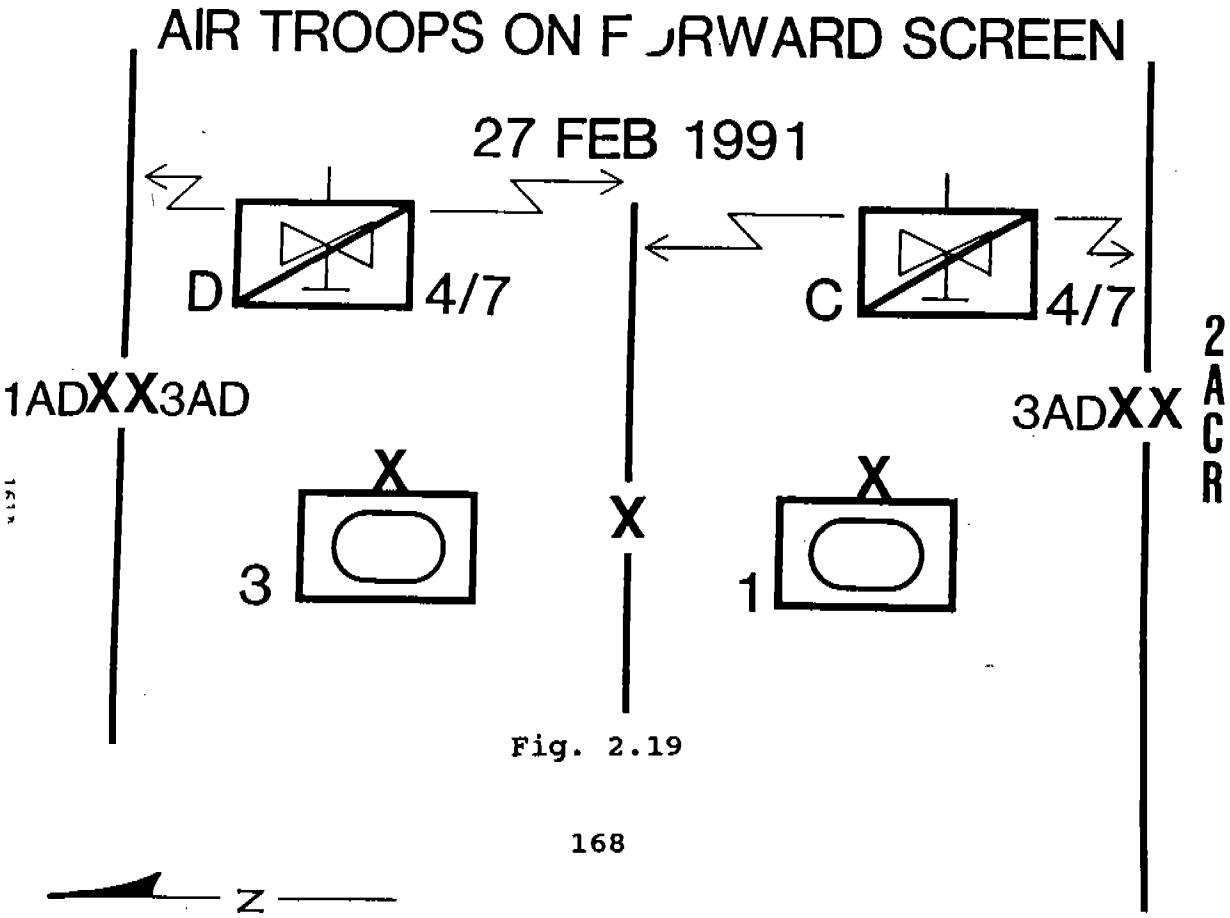

Fig. 2.19

one ZSU-23-4, seven trucks, four APCs, and one MTLB command vehicle. Numerous bunker complexes and trench lines were also engaged and destroyed.

By 1200, every air crew in the squadron had been forward of the Division. The air troops made contact with the Iraqis, reported to the brigade commanders, then engaged the enemy. The air troops' battle captains (Captain Don Presgraves, Captain Harlan Blake, First Lieutenant Rod Kennard, and First Lieutenant Penczar) were instrumental in keeping the Division's maneuver brigades on line and preventing fratricide. CW2 John Kroenke (D Troop) prevented fratricide by quickly identifying reported enemy crews also aided the brigades by spotting targets for them, adjusting fire, ad warning them of forward enemy defensive positions. WO1 Alan Jewett and CW3 Guy Cooper (D Troop) were forward of 3d Brigade when they spotted enemy tanks. They engaged and destroyed two tanks with TOW missiles. They quickly reported the rest of the enemy elements to 3d Bde who was advancing rapidly. 3d Brigade units destroyed the remainder. Many crews received small arms fire, artillery fire, and fire from enemy armor. CW2 Dimas Deleon and WO1 Greg Newhouse (C Troop), in an AH-1 Cobra, received fire from a T-72 main gun. They evaded the T-72 and destroyed a T-62 that was engaging Bradleys. There were instances when Cobra crews encountered weapons systems malfunctions, but continued their screening and recon mission. The squadron's air troops played a vital role in the defeat of the Iraqi 52nd and 17th Armored Divisions.

RECONNAISSANCE/SECURITY - 2.20

On the morning of February 27, 1991 (G+3), Q Troop (Quickstrike), 4/2 ACR, received a mission to move to an assembly area to the east: "I (Captain John Magness) instructed my scout platoon leader (First Lieutenant John Thompson) to move Quickstrike Troop and I would follow with two AH-1s. Within 3 minutes, I received a mission to protect the regimental support squadron (Sabre) who was under attack. Already in the area, I steered my two gunships into the engagement. I identified the enemy MTLBs but was unsure of Sabre's trace. I told my AH-1s to hold their fire until the situation became clearer. I requested

smoke from Sabre's most eastern elements, and they responded with violet smoke from two of their vehicles. This gave me a good picture of the situation, and confidence to safely shoot without fear of hitting friendly troops. The distance between Sabre and the MTLBs was less than 1 kilometer. I told my two AH-1s that they were cleared to engage, and they responded by destroying four MTLBs with TOW missiles and MPSM 2.75" rockets within about six minutes. In addition,

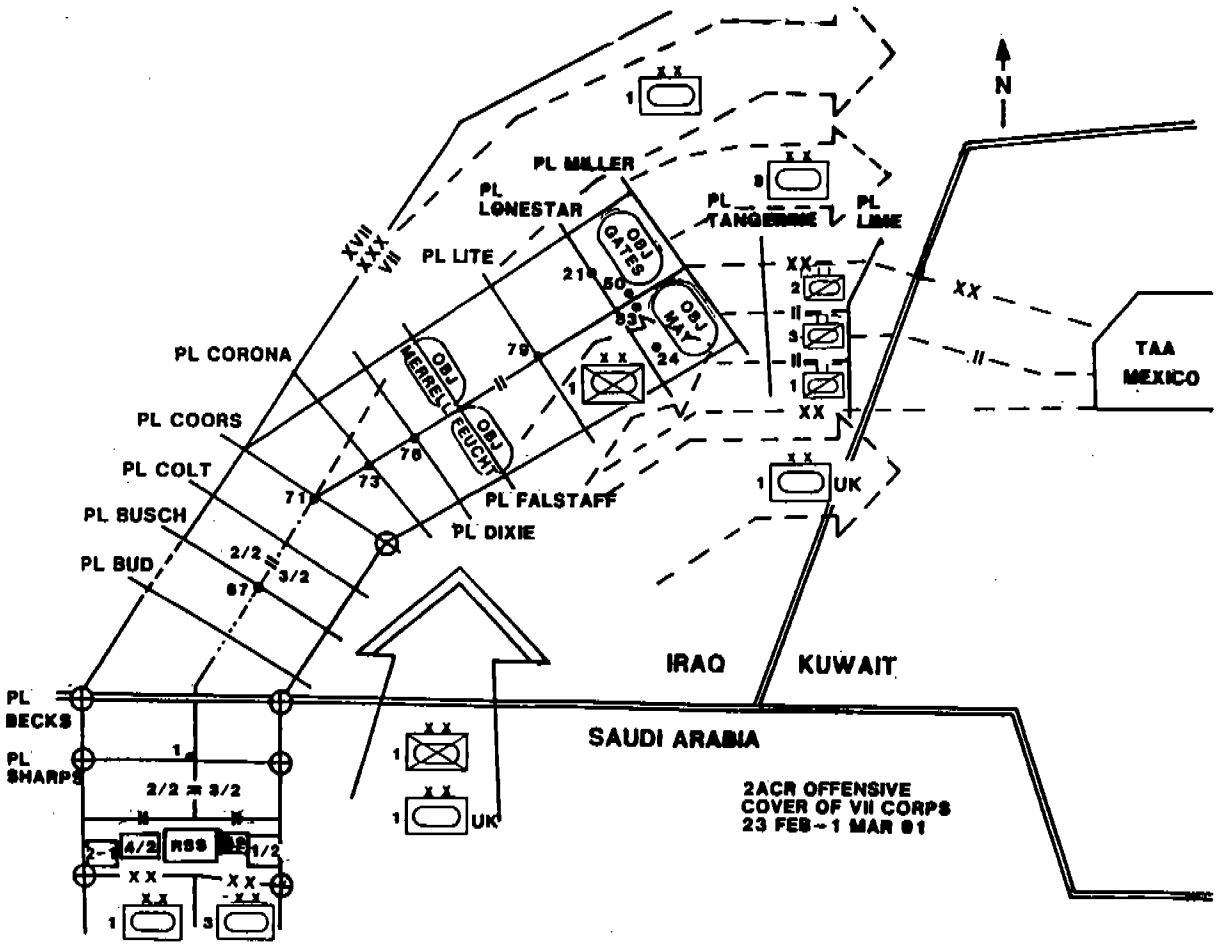

Fig. 2.20

I saw one enemy soldier killed when we engaged his vehicle. Each AH-1 fired three missiles, and each had one TOW either detonated early or missed the target. We actively searched for additional targets, but found none in sector. By this time, my scout platoon leader arrived with five more AH-1s. I guided them into the engagement area and they confirmed that everything in sector was destroyed. I relayed this information to Sabre, and they continued their mission to the east. We returned to the FARP to refuel and rearm for future missions. We used this time to debrief the engagement and to give the mechanics time to inspect each aircraft."

CHAPTER THREE

AIR ASSAULT

There is an old axiom in business - "time is money." In battle time IS victory. For example in the summer of 1864, Grant's Army of the Potomac fought Lee's Army of Northern Virginia in tangled forests near the Rapidan River. Grant sought to slide his army around Lee's right flank and move toward Richmond. This forced the Confederates to follow, and fight Grant on ground more to the Federal commander's choosing. During each flank movement, the Army of the Potomac was just minutes late to critical crossroads (i.e., North Anna, Cold Harbor). The Confederates invariably marched faster and arrived first, setting up defensive positions that stopped Grant's forward momentum.

Time, or lack of it, cost the lives of thousands of Union soldiers which, in turn, caused political pressure to be brought against President Lincoln to relieve General Grant. The President held firm and so did Grant and time ran out for the Confederates.

Commanders throughout history have sought ways of cutting down movement time to put troops at critical points ahead of the enemy. Until the advent of the 1st Cavalry Division in South Vietnam, infantry and related equipment/supplies moved into combat in only by foot or truck. In World War II, quick assaults were carried out by paratroopers jumping out of C-47 aircraft. Paratroopers were quick on the draw, but they had some notable weaknesses.

In Sicily, Normandy, Holland, and at Corregidor, paratroopers provided flexible and quick response forces for any tactical contingency.[1] They were, however, what would be called "light fighters" today. The only equipment and logistical support they had was what they could carry on

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[1] In all the aforementioned instances, paratroopers were used for important tactical missions. In most, but not all, there were successful. However, in the instances that the paratroop drops were not as successful, the major reason was that they were at night, and the air crews that flew the mission had considerable problems determining their exact locations. See: Gerald M. Devlin. Paratrooper, The Saga of U.S. Army and Marine Parachute and Glider Combat Troops During World War II. (New York: St. Martin's Press, 1979) p. 366.

their backs or what could be dropped to them by parachute. They were expected [and still are] to fight only for a short time until heavy forces reached them. If support did not reach them, as, for example, the British First Airborne Division at Arhnem, paratroopers did not have enough support to stay a long course.[2] Slow movement by truck and foot was the accepted system of getting most units to critical locations in war until new doctrine developed from outside doctrine the Army literally got things moving.

The U.S. Marines developed the initial doctrine for fast troop movement using helicopters to support their beach landing missions. Helicopters would take off from ships offshore and move inland to land troops behind enemy beach defenses. The Marines called the concept "vertical envelopment."[3] The Marines didn't carry this concept to its logical conclusion.[4] Their focus was too narrow. The Army began experimenting with their version of vertical envelopment, but called it "air assault."

During Vietnam, air assault came into its own when infantry was combined with the mobility, speed, and versatility of the helicopter into a powerful offensive team.[5] Infantry and supporting units could now be moved and supplied entirely by air. In the first battles between U.S. airmobile forces and the North Vietnamese Army, aviation assets continually saved the day.

When the 1st Cavalry Division first contacted North Vietnamese Army (NVA) units near the Ia Drang River, the NVA

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[2] Since the 1st Airborne was dropped into the assembly area of two Panzer divisions, its lack of heavy anti-tank guns or armor led to its undoing. See: Major General James M. Gavin. Airborne Warfare. (Washington, D.C.: Infantry Journal Press, 1947), p. 115.

[3] See: Lynn Montross. Cavalry of the Sky. (New York: Harper & Row, 1962).

[4] This was perhaps inevitable because of the normal Marine mission which was to land and seize a beachhead for the eventual landing of larger bodies of troops. The small but lethal islands defended by the Japanese forced the Marines to think in linear terms. Just seizing a beachhead was tough enough. See: E. B. Sledge. With the Old Breed at Peleliu and Okinawa. (Novato, Calif.: Presidio Press, 1981).

[5] For an excellent work on the development of the air mobility concept and its application in South Vietnam, see: Lieutenant General (ret) John J. Tolson, Airmobility, (Washington, D.C.: Center of Military History, 1975).

was surprised by the speed and power of these sky troopers.[6] The heritage of aerial mobility continued beyond the end of the Vietnam War.

Air assault operations in Operation DESERT STORM showed that infantry could be moved quicker than before and relieved to some extent from the tyranny of terrain. This capability was to be pivotal to commander's battlefield decisions during DESERT STORM.

To have the ability to move large bodies of troops and equipment some miles and land them almost anywhere in support of a tactical situation allows the commander to plan and then act in several dimensions at once. Influencing the battle by moving great distances has always been key to victory.[7] This factor has been particularly important in battles where terrain was significant.

One can extol the virtues of air and sea power, but only ground forces can occupy and hold critical terrain, but it must reach that terrain on time, and in good condition. History is replete with situations where ground troops were forced to make a long march and then attack when exhausted.[8]

Modern Army Aviation provides infantry as well as other combat arms the capability to move farther and faster then ever before. Ground forces with aviation support went into Kuwait to expel the Iraqi Army which was one of the operational imperatives of DESERT STORM.

Before the ground campaign, more than 200,000 allied soldiers disappeared from the map. When they suddenly reappeared several hundred miles to the west, it was initially in the form of one of the largest and fastest air

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[6] For an excellent work on the first contacts between the 1st Cavalry and the North Vietnamese Army, see: Lieutenant General (ret.) Harold G. Moore and David Galloway, We Were Soldiers Once, and Young, (New York: Random House, 1992). Also see: S. L. A. Marshall, Battles in the Monsoon, (New York: Alfred A. Knopf, 1972).

[7] The famous campaign in the Shenandoah Valley by Confederate General Jackson during the Civil War demonstrated the importance of rapid maneuver. See: Colonel G. F. R. Henderson. Stonewall Jackson and the American Civil War, Volume 1. New York: Longmans, Green and Company, 1927. pp. 404-433.

[8] For example, at the Battle of Antietam, 17 September 1862, the Confederate infantry of Ambrose Powell Hill's "light division" had to march from Harper's Ferry, Virginia, more than 20 miles to Sharpsburg, and then straight into battle. Hill brought fewer numbers because many hundreds of men had dropped out march because of exhaustion. Using their last reserves of energy, Hill's infantry defeated the final Federal assault. See: Stephen W. Sears. Landscape Turned Red. The Battle of Antietam. (New York: Ticknor and Fields, 1983. pp. 285-286.

assaults in history. On G-day, the 101st blitzed 70 miles into Iraq to establish FOB (forward operating base) Cobra--primarily a forward logistics base.[9] Before the Iraqis could react, the largest mechanized assault since World War II had already begun. As VIIth Corps and the British 1st Armored division crashed into Iraqi defenses farther east, the 24th Mechanized drove deep into Iraq to link up with the 101st. The French 6th Armored Division, along with elements of the 82nd Airborne made up the far left wing of the turning movement, screening and securing the rapid gains.

Within a matter of hours, the 101st and elements of the 24th Infantry Division dashed farther north and east from FOB Cobra to cut Iraqi retreats through the Euphrates River Valley. Due north of FOB Cobra, the 101st air assaulted an entire infantry brigade into AO (area of operation) Eagle--to the northeast, the XVIII Airborne Corps dispatched three Apache battalions and two air cavalry squadrons to sever the causeway and pontoon bridge over the Al Hammar Lake. With these two escape routes cut, the Iraqi army was trapped.

The XVIIIth Airborne Corps was successful in conducting what only the best armies in history had been able to do well -- a deep operational envelopment that ensured the campaign's decisive success. The air assault conducted by the 101st was a masterpiece of execution -- and it differed in scope from other air assaults in the Army's past.

It was not a short range mission against an elusive guerilla force, nor was it a small-scale special operation. It was an operational maneuver against a large mechanized foe and, as many operational-level maneuvers before it, the emphasis was on logistics.

FOB Cobra was initially secured by an entire infantry brigade, which arrived in two lifts on board 126 Black Hawk and 60 Chinook sorties. The depth of FOB Cobra was essentially set by the operating radius of a CH-47D with a sling load. By the end of the first day, four teams of Chinooks had lifted 131,000 gallons of fuel along with pallets of combat-configured ammunition for the next day's fight. Forty separate refueling and rearming points were

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[9] The area was very carefully chosen prior to its occupation by the 101st through the efforts of the 101st Aviation Brigade. Oral Interview, Colonel Thomas W. Garrett, 20 December 1993. Oral History File, Branch Historian Office.

active in FOB Cobra in less than two hours. Each team of CH-47s picked up their logistics cargo from one of four carefully arranged "rows" of pre-rigged cargo pallets located along the Tapline Road in Saudi Arabia. The food and water for the entire force was palletized to be carried on three CH-47s.

By the end of G+2, the 101st had 380,000 gallons of fuel available at FOB Cobra. By then FOB Cobra was old news--the combat elements of the division and corps had moved farther north on G+1. One brigade was air assaulted north to the Euphrates River Valley (AO Eagle), and two attack battalions were ordered to move east 200 kilometers to FOB Viper in order to attack the causeway.

The Al Hammar causeway was the last escape route of the Iraqi Army. The superior operational tempo of the XVIII Airborne Corps air assault allowed coalition forces to reach it within one day, and then cut it--effectively trapping the Iraqi army.

VII CORPS

While the air assault of the 101st was certainly the largest and most decisive during the campaign, other--more specialized--air assaults took place that contributed to the final result.

The 1st Armored Division was one of the first to group its general support and assault helicopter companies under a task force command and control headquarters. During the course of the war, Task Force Phoenix took charge of all medium lift missions, Special Forces extractions, FARP emplacements, and command and control missions.

At one point in the division's pursuit of the Republican Guard, the 4th Brigade was tasked to clear and "mop-up" the town of Al Busayyah. Task Force Phoenix was given the mission, and was reinforced with an infantry and an engineer company. As the division raced beyond Al Busayyah, Task Force Phoenix executed a methodical series of air assaults, cleared the town, and destroyed enemy weapons and munitions. The employment of Task Force Phoenix allowed the division to use a much smaller force in the clearing of Al Busayyah, thus conserving combat power for the continued pursuit.

The distances involved in Operation DESERT STORM dictated the use of air assault. The technique proved its worth at both the operational level--to execute the deep envelopment--and at the tactical level--to improve the efficiency of the combat assets within the heavy division.

The first selection (3.1) deals with the air movement of the 101st Airborne to its assembly point, and its jump to FOB Cobra in Iraq. Using available lift assets, most of the division's infantry, and some of its support personnel were moved nearly 100 km into Iraq swiftly, and with no losses.

The second selection (3.2) highlights the yeoman work performed by the Army's only heavy lift helicopter, the CH-47D Chinook. The operations discussed in the selection had the Chinooks of the 7-101 ASH (assault helicopter battalion) carrying the 3rd Brigade, 101st TOW equipped HMMWVs to LZ (landing zone) SAND. By the time weather closed down flying, the 3rd Brigade was safely astride Highway 8 southwest of As Samawah and fully prepared to block retreating Iraqi units.

Selection 3.3 chronicles the air assault of the 2rd Brigade into FOB VIPER, and how this was planned and executed. Part of the selection explains how this FOB was used by FARPs to support the battle of the causeway.

Like their cousins in the combat side of the house, the support helicopters are every bit as flexible. Take for example the next two selections. Instead of going to OBJ (objective) Gold, the 2nd Brigade had to be moved to a new LZ called FOB Viper.

Because of the fast moving nature of Operation DESERT STORM at that point, combat plans were frequently ancient history even before the planning cycle finished. These narratives show the importance of aviation's flexibility to the important application of time/distance during Operation DESERT STORM.

The final selection (Selection 3.4) of the Air Assault Chapter is an excerpt of an interview with Colonel Thomas Green, then the XVIIIth Airborne Corps Aviation Officer. In the interview, Colonel Green compares the air assault capability in Operation DESERT STORM with what he saw as an aerial rifle platoon leader in South Vietnam in the late 1960's. It makes for some interesting comparisons.

Infantry, using air assault tactics, provided critical support to Operation DESERT STORM.

AIR ASSAULT 3.1

Prior to the initiation of hostilities, the 101st Aviation Brigade maintained an assault helicopter task force (9-101) and an AH-64 attack helicopter battalion (2-229th) deployed to the vicinity of Hafar al Batin/King Khalid Military City. These forces supported the 502d Infantry Regiment, whose mission was to screen VIIth Corps as it moved forward to occupy its tactical assembly area.[10] Intelligence reports at the time predicted that Iraq would launch a preemptive armored assault along the Wadi al Batin to prevent the VIIth Corps from positioning for the impending allied offensive.

The remainder of the brigade deployed from Camp Eagle II to the Division's tactical assembly area (TAA) Campbell, beginning on January 17, 1991, in accordance with 101st Airborne Division's OPORD DESERT RENDEZVOUS II. The brigade executed the 400nm air deployment of over 300 divisional aircraft to TAA Campbell under the cover of the air campaign, over a period of 10 days. Simultaneously, the brigade's vehicles road-marched 750 miles to TAA Campbell, taking the long route via Riyadh for purposes of deception and to relieve congestion on the over-stressed Tapline Road. Task Force 9-101 and the 2-229th were chopped back to brigade control on January 21 and all brigade forces closed at TAA Campbell by January 31 to prepare for the start of the ground campaign. The 101st Aviation Brigade began immediate reconnaissance and security operations in the vicinity of TAA Campbell and PL (Phase Line) Razor conducting first and last light aerial reconnaissance as well as maintaining an attack helicopter company on 30-minute reaction around the clock.

With Air Force efforts largely focused on the Kuwaiti theater of operations (KTO) and the Wadi al Batin, where the main allied attack would take place, intelligence on enemy

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[10] In training, the 101st habitually attached aviation units to each of its brigades. A Brigade Commander could count on having control of an entire UH-60 battalion, plus a Ch-47D company, and attack and scout elements plus LRSD units. Aviation work with and knew the ground units, and vice-versa. This system provided the 101st with combined arms units that were truly teams. Phone conversation with Captain Shufflebarger, DCD, Concepts Division, 18 December 1992.

disposition in the division and corps sector was often outdated or exaggerated. The success of the 101st Airborne Division depended on its ability to air assault deep into Iraq on the first day of the ground offensive (G-day) and establish a "super FARP" to support follow-on operations to the Euphrates River. With the lack of real-time intelligence in sector, inaccuracy of maps on hand, and unknown terrain suitability for FARP operations, the Aviation Brigade developed and executed a reconnaissance plan to gain the information needed.

The air assault of 1st Brigade to FOB Cobra was the first event of the ground campaign, with the 1-101 AHB leading as air assault security, followed by the 3-101 AHB. An assault helicopter task force comprised of the majority of all three UH-60 assault battalions and a CH-47D battalion, was under the control of 5-101 ASLT for the 1st Brigade mission. The planned H-hour was 0600. Heavy fog was encountered by 1-101st on the route from the tactical assembly area to FOB Cobra during their route and area recons. One OH-58D crashed due to the heavy fog at approximately 0500 while performing security operations along the line of departure. The decision was made to delay H-hour until 0700, but weather forced a second delay, and the first of two lifts of 66 UH-60s and 30 CH-47s began landing on the LZ at 0800. The 1-101 secured the objective landing areas and inserted pathfinder beacon teams along the route to assist navigation prior to the insertion. By H-hour, all three companies of 1-101 were in contact with Iraqi forces north of the landing zones, along MSR (Main Supply Route) Virginia. The Iraqis used their AAA guns this time, resulting in an AH-64 having its hydraulics shot out (the crew nursed the damaged aircraft back to FOB Cobra). In accordance with the plan, the 1-101 conducted a battle hand-over to 3-101, who continued contact with Iraqi forces in the vicinity of MSR (main supply route) Virginia. The 3-101 simultaneously conducted an aerial screen of IF forces at FOB Cobra. The insertion of 1st Brigade was completed as planned, but two other major lift missions remained for the Aviation Brigade on G-day.

After the insertion of 1st Brigade, the 2nd Brigade (minus) was inserted to reinforce and stage for follow-on

operations. This insertion required a third turn of the assault force of 66 UH-60s and 30 CH-47s, with the task force now under the command and control of 9-101 ASLT, due to their habitual relationship with 2nd Brigade. Additionally, 25 CH-47s of the 2-159th AVN, OPCON to the Aviation Brigade, had the mission to insert 100 sorties of fuel, ammunition, and other logistics critical for the survival of the force at FOB Cobra. The logistic build-up could not begin until the 1st Brigade was established at FOB Cobra. The first logistics lift was scheduled to land at FOB Cobra at H+2, and required four turns to complete the mission; the two-hour weather delay had created a serious problem. The first 25 CH-47s of 2-159th's four turns landed at FOB Cobra at 1000, providing critically needed fuel to keep the attack/recon aircraft flying in over-watch of FOB Cobra. The Chinooks turned at a furious pace, and completed 75 of the 100 planned sorties before a dust storm and visibility of less than one-eighth mile halted operations at 1630.

Once the first support lift arrived and FARPs became operational, the 2-17th Cavalry and 2-229th began a zone recon, pushing north from the FOB in sector. The Cavalry had responsibility for the eastern sector, with priority of recon to LZ Sand, where 3rd Brigade would insert its heavy lifts on G+1 and the Cavalry would set up a FARP to sustain its forward operations. The 2-17 Cavalry encountered sparse enemy activity in the eastern sector, destroying several abandoned anti-aircraft guns and capturing 16 Iraqis who flagged down the Cavalry's helicopters as they flew by. LZ Sand was found to be clear of Iraqi soldiers, but was occupied by numerous Bedouin.

The 2-229th had responsibility for the western sector of the Division's zone, with priority of reconnaissance to MSR Texas, which was the major Iraqi avenue of reinforcement or withdrawal from OBJ White. While OBJ White was in the French sector, it possessed a heavy concentration of Iraqi troops (to include armor forces) only 30 kilometers from FOB Cobra. With the advance of the 6th French Division on the left flank expected to reach OBJ White on G+1, there was concern that the Iraqi armor would withdraw east along MSR Virginia into the 101st flank. On G-day, the 2-229th

covered the capture of the Iraqi infantry battalion along the northern edge of MSR Virginia, which the 1-101st had discovered at H-hour. Forces of the 1st Brigade secured the entire site by nightfall with little opposition, reportedly with the help of the Iraqi battalion commander, who encouraged his troops to come out of their holes rather than face certain death.

By EENT on G-day, 1st Brigade, 2nd Brigade, Aviation Brigade, the Div ACP, and a DISCOM (division support command) FOB cell were established and operating at FOB Cobra, 85nm inside Iraqi lines. While the amount of fuel and ammunition were not as robust as planned, due to the lack of a fourth turn of support Chinooks, all five FARPs were operational with sufficient quantities to support operations through the next 18 hours. After EENT (end of evening nautrical twilight), Apaches from the 1-101 and 2-229th launched to conduct armed reconnaissance in zone up to PL (phase line) Viking. Both elements reported little contact throughout the night.

STRAT AIR DEPLOYMENT FORCE

101ST AIRBORNE DIVISION (AASLT)

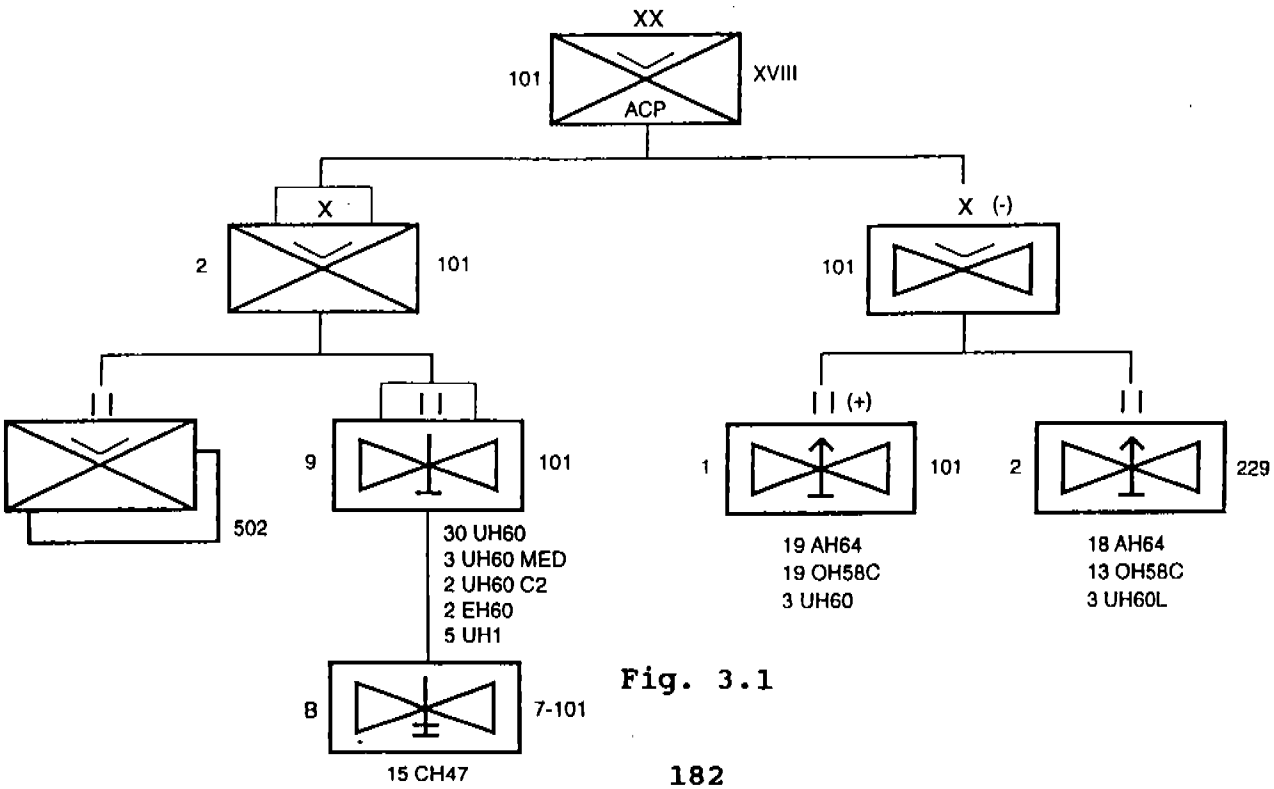

Fig. 3.1

AIR ASSAULT 3.2

On February 25, the morning of G+1, 7-101 ASH conducted an air assault of 3rd Brigade's TOW HMMWVs to LZ Sand. The distance from the TAA (tactical assembly area) to the Euphrates and back to FOB Cobra was too great for the Chinooks to carry their maximum load of 18,000 lbs. Rather than sacrifice the weight reduction (personnel, ammunition, weapons), the decision had been made to put these mobile forces in to a position 30 kilometers short of the infantry LZs on the Euphrates. With the infantry air assault planned for EENT, sufficient time was allowed for the TOW vehicles to move north to over-watch positions prior to the landing. That, at least, was the plan.

The weather factored heavily on operations for both air and ground forces on G+1. With rain, haze, and low ceilings throughout the day, the plan to air assault 3rd Brigade to the Euphrates with two turns under NVGs (night vision goggles) was in jeopardy. The decision was made to air assault 3rd Brigade to the Euphrates River the afternoon of G+1, February 25. Two turns of the UH-60 task force under the control of 4-101 accomplished the task with the last serials arriving back to FOB Cobra under NVGs in extremely poor weather. Third Brigade reported heavy traffic during the initial hours following the air assault landing, and 1-101 responded by destroying several cargo vehicles, including one with a AAA gun in tow. By 2200, the weather had deteriorated to where AH-64 crews reported less than one-eighth of a mile visibility with the FLIR (forward looking infrared radar). Nonetheless, by that time 3rd Brigade was entrenched astride Highway 8 to the southwest of As Samawah.

AIR ASSAULT 3.3

The mission to air assault 2nd Brigade, 101st, to FOB Viper was intended to establish a base of operations from which to exploit the Iraqi bottleneck and destroy the Republican Guard forces before they could escape the Kuwaiti Theater of Operations. Task Force 9-101 again lifted 2nd Brigade into place while 7-101 inserted a jump-FARP to allow the 1-101 and 2-229th to begin operations by mid-day on February 27. The aviation brigade mission was to conduct

deep attacks on withdrawing Iraqi forces in the vicinity of a causeway which crossed the Euphrates. The first AH-64 company from 1-101 departed FOB Viper for the causeway at 1430 and encountered numerous targets en route and in the target area, with most of the traffic on the causeway having already been engaged by the Air Force. A second AH-64 company from 2-229th launched to conduct a battle hand over with 1-101 and continue the attack.

The 2-229th aircrews encountered similar contact along the ingress and egress routes. Both battalions destroyed fully functional SA-6 sites. By 1630, the skies darkened considerably with smoke from the burning city of Basrah, and pilots reported visibility down to one-eighth of a mile in the target area as well as Hellfire missile failure due to obscurants in the air. Nonetheless, both Apache companies recorded significant BDA (battlefield damage assessment) from the day's mission.

By EENT on February 27, Task Force 9-101's HEMTTs closed on FOB Viper, bringing fuel to continue operations as well as support vehicles for life support. Plans were made for operations the following morning to press the attack north of the city of Basrah to sever the north/south line of communication. At 0500 on February 28, 1991, a cease fire went into effect as Iraq agreed to acquiesce to all of the U.N. resolutions.

AIR ASSAULT 3.4

The following is an excerpt from an interview between Dr. Wright from the Ft. Rucker History Office, and COL Tom Green, who served as the XVIIIth Airborne Corps Aviation Officer during Operation DESERT STORM:

Dr. Wright: Is this the same from your experience in Vietnam? I got the impression there was a different attitude.

Colonel Green: Absolutely. In Vietnam every ground commander knew how to use his helicopters. The change is that we have isolated aviation as a branch. Do you know how much aviation they teach in the Infantry Advanced Course? Three hours. The infantry owns air assault, they own it, they write the manual, 90-4. Teach their company commanders three hours of aviation operations in the advanced course.

They don't know how to do air assaults. They don't have the slightest idea how to do air assaults. The 101st does because they are kind of hooked up inside. The 82nd does. They are a light infantry outfit, they work with it. Let me tell you I bet there aren't half a dozen divisions out there that are not in that business that know how to do air assault operations. And what happens? We're expected to send our guys out to do it, teach it for them, to set up the LZs, PZs. They even have it now where they want us to bring slings with us when we go to pick up somebody's load. Got that over and over again. "Hey, come out and pick this stuff up and oh by the way bring slings, we don't have any." It's not the Chinook's job to have a sling on hand for every kind of load he has to carry. The unit being moved should have all those things purchased, everything rigged when the aircraft gets there. That's doctrine. Nobody knew it. If they knew it, they were ignoring it and didn't care. We've got a serious problem with the integration of Army Aviation into everybody's business.

Dr. Wright: If you read the newspaper accounts of Operation DESERT SHIELD, and I closely read it, you had a combined arms team clicking like that (snaps his fingers).

Colonel Green: I did. But more often than not it was because people spent weeks and weeks of grinding out a special orientation operation rather than a normal flow. When the guy said, "Green, you are going to be our air rifle platoon. You are going to have this many aircraft. You are going to PZ us here. You are going to organize chalks." I knew what he was talking about. I went out and set my guys up, that many airplanes landed, we got on and went where we were supposed to. It was all by the numbers. Now-a-days it is not by the numbers. You have to go out in advance. That is why you are hearing this constant scream for liaison officers. Because they don't know what the hell they are doing with us. And if we don't sent a good guy, I would say equal to a company commander in ability, you have a disaster. You are working through this stuff over and over again. Yeah, we had a nice integrated group going on, but I can tell you it was only because of the herculean efforts of a lot of aviators doing way more than they should have ever been expected to do. It was silly. After a while it got

real silly. Let me tell you though, on the other hand, 82nd knows how to do air assault operations, how to do loads and lifts and all of that. The 101st they know how to do all of that stuff. In our corps, two of the divisions worked it out real well. The other support that we did was for the 24th, the 3rd Armored Cavalry regiment and to the French. By the way there is another really interesting integration problem of Army Aviation that we had to work out special deals for every time. After a while it got to be SOP and so it worked. Again, you don't have to be the most efficient or the best fighter, you just have to be better than the guy you are going up against.

CHAPTER FOUR

AVIATION SPECIAL OPERATIONS

Special Operations are often misunderstood. The exploits of Darby's Rangers in Europe, and the behind the lines missions of OSS (Office of Strategic Services) Detachment 303 in the jungles of Burma during World War II were famous, but similar operations of the Special Forces and MACV-SOG in South Vietnam have been so shrouded in myth and misinformation, that the very talented members of this elite profession were often thought of as nothing but crazy people.[1] In fact, most of the important missions performed by Special Operations units in the Gulf did not involve combat at all. In fact, quite the opposite.

In Operation DESERT STORM, as in South Vietnam nearly twenty years earlier, these courageous soldiers and the aviation crews who flew them into enemy country accomplished critical reconnaissance missions. Most teams performed classic long range reconnaissance missions of the earlier Vietnam era. Landed well behind enemy lines, they looked, counted, photographed and reported.[2]

Although the coalition had the benefit of the most extensive array of intelligence satellites and communications intercept equipment in the world, most commanders wanted the assurance of reconnaissance out front. Even though the U.S. military possessed sophisticated sensor and intelligence systems they could be fooled. Nothing can take the place of a human on the ground looking right at the

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[1] For example, Special Forces soldiers were responsible for running a number of particularly important behind-the-lines operations in South Vietnam. See: Shelby R. Stanton. Green Berets at War, U.S. Army Special Forces in Southeast Asia. Novato, Calif.: Presidio Press, 1985. pp. 194-205.

[2] Although most missions were uneventful, one mission in particular was memorable. A reconnaissance team was inserted behind enemy lines, and built a blind. A Arab child approached the hiding place, and discovered their presence. Rather than harm the child, the team did nothing, thus compromising its position and endangering themselves. The child told others of seeing the strangers, and Iraqi troops quickly arrived. The team was surrounded, and had to be extracted by Army helicopters under fire. So much for the killer image.

enemy.[3] A new chapter in special operations was written during Operation DESERT STORM.[4]

Special Operations Aviation (SOA) performed a variety of missions during Operation DESERT STORM. Some regular unit performed special operations missions, for example, the 1-101st ATKHB, was tasked to provide the firepower on the joint special operation that opened the air campaign.

After the start of the air campaign, there was a high demand for deep combat search and rescue (CSAR). While not normally part of their mission parameters, SOA was uniquely suited for these missions because of the navigation, communications, and visionics aboard their aircraft. As the ground campaign neared, SOA aircraft were used for the infiltration and recovery of reconnaissance and combat teams.

Combat teams attacked command bunkers and sabotaged communications lines. One eight-man team, detected deep in Iraq, fought off 150 enemy soldiers for more than six hours. By the time helicopters rescued them, the Green Berets and their air support had killed 130 Iraqis. Most recon teams slipped in and out unseen, gathering intelligence on a wide variety of targets. Other SOA missions included beacon emplacement, photo, reconnaissance, NBC (nuclear, biological, chemical) surveys, and soil samples.[5]

The sheer volume of special operations missions required regular participation by division and corps aviation brigades. The Long Range Surveillance Units (LRSU), found in each corps, operated in a fashion similar to the special forces reconnaissance teams. During the course of Operation DESERT STORM, the corps tasked regular aviation units to insert and recover LRSU units.

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[3] Many SOG missions placed special Forces team right on the Ho Chi Minh Trail. Their job was simply to sit and count what went by -- i.e., number of trucks, special equipment, etc.. When President Johnson declared a unilateral bombing halt in 1967, the NVA put the time to use by running everything down the trail they could with their lights on. Trail watching team were there and reported this to higher headquarters. See: Ronald J. Glasser, M.D. 365 Days. (New York: George Brazelle, 1971), pp. 247-248.

[4] For a classified view of Army Special Operations, see: Richard Stewart. Army Special Operations in Operations DESERT SHIELD/DESERT STORM (U). Fort Bragg, N.C.: United States Army Special Operations Command, 1993. [SECRET/NOFORN Monograph]

[5] A team was inserted just before DESERT STORM to overlook FOB Cobra to give warning if any Iraqi units moved into the position. Oral Interview, Colonel Thomas W. Garrett, 17 December 1993, Oral History Files, Branch Historian Office.

To the press and the general public, Operation DESERT STORM seemed to enjoy a series of lucky breaks. The Baghdad air defenses were caught napping by massive air strikes. Ground maneuver forces sailed through Iraqi mine fields virtually unscathed. Iraqi defenders were completely hoodwinked by a faked amphibious landing off Kuwait's gulf coast. The apparently risky "Hail Mary" flanking maneuver into Iraq was not surprised by a counter attack. In fact, many of these operations owed as much to special operations and special operations aviation as to detailed planning and luck.

The first special operations selection (4.1) involves a short description of the reasons for the Team Normandy mission. Because of the nature of the target, this mission deserved the title of a special operation. Without its successful conclusion, the allied air armada heading for Baghdad could have encountered an integrated and FUNCTIONING Iraqi air defense system. Team Normandy punched a big hole in that radar coverage through which hundreds of allied planes passed with Baghdad none the wiser until bombs began to explode all over the city.

The second selection (4.2) consists of a major segment of a longer oral interview with Captain Tim DeVito, a member of the Team Normandy mission group. From it, you will learn how the mission came about, training for the mission, and the actual attack.

The third selection (4.3) has nearly as much drama as the Normandy mission when a special forces team well behind enemy lines is compromised by a Bedouin shepherd. Over the next six hours, the nine members of the team fought off Iraqi troops while calling desperately for extraction. While USAF F-16s bombed and strafed the enemy two UH-60s raced in to pick up the team under the noses on the coming Iraqi infantry.

The fourth selection (4.4) involves the insertion of two long range reconnaissance detachments (LRSD) by UH-60s of the 2-17 Cav with accompanying AH-64 escorts 135km behind enemy lines. The LRSD units were checking out a potential forward operating base. During the second insertion, on-board radar showed the helicopter was being tracked by air defense radar, but the lock was broken by chaff and evasive

maneuvers. The next night, two more teams were inserted near the Euphrates River. On 26 February, one of the teams was compromised, and UH-60's were scrambled to extract the team.

The fifth selection (4.5) is of an insertion of three reconnaissance teams by Task Force Warrior (12th Aviation Brigade supported by Apaches of the 3-227) 230 km deep into Iraq. All aircraft penetrated the Iraqi air defense undetected, completed their mission, and returned to base. The ability of Army aviation crews to navigate over the Iraqi desert at night under goggles were proven by this operation. Without this type of intelligence preparation of the battlefield, commanders could not adequately plan combat operations.

In Selection 4.6, Colonel Tackaberry describes his brigade's use of Apaches to scout routes used to insert LRSDs (long range surveillance detachments) during the day, and then flying the mission that night. An electronics intelligence configured EH-60 also went along to listen to the Iraqis and give warning if the aircraft were spotted.

Selection 4.7 describes a short but important mission where Task Force Phoenix was required to extract two Special Forces teams that had been compromised. Their last known location was over 130 km from Task Force Phoenix's current position which was already well inside Iraq. As the extraction aircraft flew into the area for pickup, visibility due to blowing sand was down to 1/4 to 1/2 mile. Eventually, the two teams were spotted and extracted with an enemy mechanized infantry battalion near the pickup point.

Sometimes Special Forces teams had to be extracted in the middle of battle. Selection 4.8 describes such a pickup when two Task Force Phoenix UH-60's extracted two Special Forces teams near the town of Al Busayyah while a battle was going on in the town, and visibility no more than 300 meters. The first team was spotted, but not picked up, and after the second team was extracted, the aircraft returned to pick up the first team. Time was of the essence because Iraqi infantry were closing in on the position. With the help of the team leader of the second SF (special forces) team, the first was spotted quickly and extracted. The poor

visibility made it difficult to find the team, but also masked the aircraft from the oncoming Iraqi soldiers.

The final selection (4.9) is somewhat anticlimactic but no less interesting. On 27 February, seven OH-58 Kiowa Warriors from the 4/17th Cavalry lifted off on a unique and special mission -- to reoccupy the British and American embassies in Kuwait City even though some Iraqi military units remained in the city.

SPECIAL OPERATIONS AVIATION - 4.1

For months, KH-11 satellites and high-flying TR-1 reconnaissance planes had circled over Saddam Hussein's air defenses, looking for holes. They found none. Unless the Coalition could find a way to break through the early-warning radars ringing Iraq, the air raid on heavily-defended Baghdad might become an Iraqi "turkey shoot". Gen. Schwarzkopf feared that he would lose scores of planes on the first night of the war. One way to insure fewer air casualties was to take out a portion of the Iraqi air defense system. Since the air defense network was deep in Iraq, some sort of special operation mission had to be conducted.

The raid on the Iraqi early-warning stations had to be planned down to the last second. To open a corridor wide enough for the allied air force, one of the several radar stations in southwestern Iraq would have to be destroyed before it would have time to alert Baghdad.

At precisely 0220 Saudi Arabian time on the morning of January 17 [1990], two teams of helicopters nicknamed Task Force Normandy -- each team consisted of one CH-53 Pave Low and four AH-64's -- crossed the Iraqi border. The teams zigzagged around Bedouin camps to avoid being seen or heard, ducked into wadis to fly under Iraqi radar coverage, and weaved through a maze of Iraqi observation posts. Less than ten miles from the target, the Pave Lows dropped chemical lights on the ground to position the Apaches.

An Iraqi sentry at the main ground control center spotted the attacking force and turned to run toward the bunker. He never made it. A laser-guided HELLFIRE missile ripped into the building as he opened the door--within two seconds of the designated time of attack.

On the trip home, the helicopter crews glanced up from their cockpits. The skies overhead looked like an interstate highway at rush hour. The entire allied air force was streaming through the corridor opened by Task Force Normandy.

SPECIAL OPERATIONS AVIATION 4.2

The following is an interview between Dr. Burton Wright, Deputy Branch Historian, and Captain Tim Devito, who was assigned to the 1-101 st Attack Battalion, and participated in the opening mission of the air war.

Captain Devito: The battalion commander selected Task Force Normandy as the name for the battalion elements on this mission, based on the heritage of the 101st and we stuck with that throughout the planning, training and execution of the mission. Our mission statement, as we developed it, read as follows:

"Task Force Normandy conducts a deep attack January 17, 1991 at 0238, to destroy two Iraqi early warning/ground control intercept referred to as EWGCI Radar Sites to commence Operation Desert Storm and create a radar free route to be used by Allied aircraft." Very briefly, I want to go over some chronology here and then talk about the mission. We were first involved with the mission in late October, when my battalion commander received notification and the initial details. As his assistant S-3 on the battalion staff I knew that he had received a mission, but most of us were kept unaware of the exact details. We were finally briefed that we were conducting some type of joint operation on October 26, 1990, and over the next three months we conducted intense planning and discussions on the tactics that we would use to attack a generic type target--to conduct some type of raid/deep attack at night, Apache pure, and we basically just war-gamed the different team wing man concepts and type of tactics that we were going to use to conduct the attack. We conducted several joint exercises with Air Force aircraft, helicopters, in preparation for this. We also did several night gunnery exercises and actually fired aircraft equipped with auxiliary fuel tanks on the wings. That has never been done before, but we realized that was necessary for the mission so, we rehearsed it. We had plenty of time, three months basically to plan, rehearse, war game--just stab this thing to death and come up with a good plan and we were very, very confident that we could conduct the mission as we had trained.

On the January 14, 1991, at 0830, we departed our 101st Airborne Division assembly area and flew a route in excess

of 650 miles traversing across the western side of Saudi Arabia and was there at an airfield called Al Jawf, Saudi Arabia, where we received notification of the exact mission and a possible time for this thing to kick off. The mission actually kicked off for us on the night of January 16, with an attack time of 17000238 in the A.M., that is when the first shots of the war were fired. That is basically a good chronology of how we got notified of the mission and what we did from there on after.

I would just like to get into discussing it in a little more detail. The concept of this mission. There were a lot of key issues that came up at the onset of this. The battalion commander, because of the security of this thing, obviously had to keep the whole thing under wraps for a while. He could not even bring his staff into the planning process. He did most of the planning himself for the first few weeks of Task Force Normandy. Obviously, he had to select crews.

The battalion commander felt that every pilot in this battalion, because they had been trained by the Army Aviation Center at Fort Rucker and because they had trained with this unit from six months to three years, are equally qualified to conduct this mission. Obviously, some pilots are more experienced than others, but the bottom line was that any crew selection should be able to accomplish this mission. He went with that and the old saying, you know, train as you were going to fight. Rather than stacking the deck with all of his W4s with 2,000 hours and 1,000 hours at night and so forth and so on, he selected combat crews that have trained together as a combat crew in peace time. Each company, each of the three line companies, had to provide three crews. We had a variance of one CW4, 4 CW3, 5 CW2s, 3 WO1s, 1 Lt. Colonel--the battalion commander, 1 Captain and 1 Second Lieutenant, so we had a wide variety of crew members.

Aligned with the combat crew selection was that each crew in our battalion is assigned an aircraft. The crew flies that aircraft in peace time, performs maintenance with the crew chief on it and we did not split that up because that definitely becomes important in combat. You know, you don't worry so much about that stuff in peace time, but when

the bullets are flying, you want everything to work and you feel more comfortable in the aircraft when they are crewed this way--you know what does work and what doesn't work.

The other two issues were the night training and the deep operations that this battalion has conducted. I think that they impacted drastically on the success of this mission and I don't think it is this battalion inclusive, I think it is general trend of Army Aviation. Fighting at night, training to fight at night, training for the deep attack made this mission possible. Just about any battalion is capable of conducting this mission because of the readiness of Army Aviation.

We did other things as well--the use of the ANVIS-6 night vision goggles in the front seat of the Apache. Secondly the use of aux [auxiliary] tanks. Aux tank integration into our training program I don't think can be matched by anything that we have ever done as an attack helicopter battalion. It was really a drastic change to our tactics and how we employed the battalion both to support the division and to do external missions. We first started using the aux tanks back in 1989 and we were the very first Apache battalion to use them. These tanks truly realized the full combat potential of the Apache--you can carry fuel, increasing the range immensely and therefore extending the combat arm on the battlefield. From 1989 to 1990 we trained extensively with the aux tanks and in December and June, 1990, we were required to fly cross-country from Fort Campbell, Kentucky, to Fort Hunter-Liggett, California, which is approximately a 17-hour flight and that really convinced us of the capabilities of the Apache with the aux tanks.

The first leg of this mission was 240 nautical miles from the 101st assembly area to KKMC (King Khalid Military City) just south of the tip of Kuwait. Next leg of this mission was in excess of 360 miles to our staging base for the attack which is Al Jawf out in the very western corner of Saudi Arabia. From there we would conduct the attacks into Iraq. The flight into Iraq was another 120 nautical miles and we soon realized that without the use of the aux tanks this mission would be impossible. We had to calculate the number of aircraft that we wanted to utilize on this

mission and the array of targets that intelligence provided us at each of these locations--we had difficulty in how we were going to configure the remaining two pylons of the Apache with two of the being occupied by aux tanks. It was really a problem. Do we equip a couple of the aircraft with just rockets and no HELLFIRE, or on the other hand do we make a guy carry both HELLFIRE racks and have no rockets to quickly suppress in case of enemy fire? That was a real big issue for a while. We came up with the solution of the one tank option.

Again we went radical and went out on the line and said, "Hey, the Apache will work with one aux tank and the remaining three pylons configured however you want to configure them. The Apache is smart enough to figure it out and the offset on either wing that you have the single aux tank. The lateral offset probably won't be that much of a factor. It was very, very radical. Unfortunately for me, I was the person that suggested it and was subject to a lot of ridicule from IPs (instructor pilots) and maintenance officers and things of this nature, but we finally tested it. Actually put it on an aircraft. Tested it. It flew ok. The weapons systems functioned ok. Then we had plenty of time to rehearse this and we actually fired the aircraft using what they labelled the "Devito Option". I guess no one else wanted the credit for it in case it went wrong. But we proved it to work and we were set. At that point we had max flexibility.

We had some of the aircraft configured with two HELLFIRE racks with a single rocket pod and we had others just with one HELLFIRE rack with two rocket pods for plenty of suppression out there and then, as usual, each Apache was configured with 1,000 rounds of 30 mm. Basically the tactics that we were going to use for this was a team man concept, a wing man concept, and we identified the number of targets that had to be destroyed in each of these target areas. We split them up, drew sketches off of the intelligence that we had and labeled each of the targets and designated them to either the lead aircraft or his wingman. There was redundancy built-in, in that if you were the wingman and I was in the lead, I had a primary target and an

alternate target and it worked out that your primary target was my alternate and my alternate was your primary.

We built this in with all eight aircraft that were involved in the attack--what this did for us was we identify the critical targets in each GCI (ground control interception) site that had to taken out to create this radar-free quarter that was desired. Then on top of that any damage that we did to the radar systems, communications systems, etc., would simply enhance the success of the mission. But we knew we had very limited targets that we had to take out to get this thing done so it was a very simple mission in that. All we really had to concentrate on was rehearsing flying low, rehearsing our weapons engagements which were very simple--engaging the critical targets with HELLFIREs simultaneously, each aircraft engaging simultaneously, once those targets were engaged, moving in a certain distance and engaging with rockets to destroy the area with an area weapons system and then moving in further and while the co-pilot gunner would engage with his 30 mm. Basically the pilot in the back seat would saturate the area with whatever rockets he had remaining before we broke station. We rehearsed this thing and rehearsed it on dummy targets out in the southern Saudi Arabia desert and it seemed to work flawlessly.

The use of the Apache video tape greatly enhanced our ability to critique these training missions, we found faults that are too numerous to mention, errors that we were creating, difficulties in engagements, things of this nature. We were able to fix them before having to actually go out and do the mission. So, at the end of our training, we basically had the view point that this was a walk in the park. The only thing that would stop us would be, of course, if the enemy was aware that we were coming because if he wasn't, he was basically dead. As simple as that.

We flew this mission at night, which greatly enhanced our survivability and we also flew this mission with Air Force helicopters with the Pave Low system--a navigation system, which created for us a last minute update point to increase the accuracy of our Doppler. They led us in, their navigational system is much more accurate than our Doppler. They led us into a certain point south of the targets and we

updated over that point, they knew their exact latitude and longitude over the surface of the earth and they dropped some chemical light sticks down there for us and we knew what this grid was going to be through prior coordination. We flew over the chem sticks and updated the doppler and what that did for us was that gave us a zero error in our Doppler and from there we can conduct our final navigation to the targets with great accuracy.

Dr. Wright: Were the Pave Lows in front of you--were you in radio contact with them?

Captain Devito: Well, this was a "no communications" mission, but in a sense we were in radio contact range with them. They were within visual range.

Dr. Wright: And you were flying in formation?

Captain Devito: Yes sir, and like I said, we did a lot of joint training with them and we had worked out all of the bugs involved in this. They flew us in, allowed us to update our point and then they rallied back here while attacked our targets. And then once we completed the mission and turned around and came back we linked up with them at our designated rally point. They led us again back to our staging base.

Dr. Wright: At what height were you flying when you did the 120 miles from your base into Iraq?

Captain Devito: Crews were flying within 30-75 AGL (above ground level) depending on the judgement of the pilot.

Dr. Wright: Was this based on the fact that the Iraqi radars would not pick you up flying that low?

Captain Devito: Yes, it was and it was also based on the fact that we had been training so much out in this area, we were comfortable with how the pilot night vision sensor in the Apache related the terrain to the pilot. I know there were a lot of stories over here about the night vision goggles and the problems with seeing terrain changes, however we felt comfortable with the training that we did to conduct this mission at low altitude.

Dr. Wright: Were the Iraqi radars that you were going to hit actually warmed up and operating?

Captain Devito: Yes, they were. In reviewing the Apache tapes, the APR-39 Radar Warning Receiver in several

cockpits were active with strobes which means they were picking up some kind of radar emission. However, we got no indication that they were actually aware that we were there--they were not tracking us.

Dr. Wright: Did you have a pretty good idea of what to look for?

Captain Devito: Yes sir, we did. We were very comfortable with the target areas through intelligence and sand table rehearsals and sector sketches that we did on our knee board. Another thing--the redundancy went one step further in that each co-pilot gunner and pilot had a little sketch on his knee board of not only his target but of the other teams target and each target labeled very simply. Each of the critical targets labeled and which chalk--chalk one, chalk two, chalk three, or chalk four in the flight that was responsible for that target. If you are chalk three and I am chalk four and your aircraft went down on crank, now not only do I know my targets, but if I am designated to take yours if you go down, I know what you were supposed to be engaging and I can do that very simply.

Dr. Wright: So, the minimum number of aircraft to successfully accomplish the mission was four?

Captain Devito: Actually the minimum that we required for this mission was one. The one thing that I didn't cover in great detail was that there were two GCI sites, one slightly to the north of the other and we tasked organized into two teams of four aircraft, the red team and the white team. Each team had four aircraft, and in all actuality only one Apache could have sufficiently taken out one of these targets. I honestly feel that way. However, I think we had a good balance. We didn't go for overkill and launch the entire battalion up there, but then again, we didn't leave ourselves short just in case something was to happen. The other thing that made this mission simple was that we did not encounter enemy fire. G-2 told us there were light AAA sites around each of these two sites, basically S-60 type gun and we had a good idea of where they were located at each site. When we got up there the designated person started looking for those S-60 sites and found them however they were unmanned and at that point didn't receive any

fire. The only fire that we encountered was actually going over the border which we think was from a border post.

Dr. Wright; There was and article that seemed to indicate that you may have used RPVs (remotely piloted vehicles).

Captain Devito: No, that is not true. The tape, which I can show you afterwards, will indicate that the first aircraft picked up the first site at quite a large distance out and we had a good idea that we were going to be able to do that based on training analysis. It is pretty flat out there and we felt that we had good success with that. I really can't think of anything else to talk about as far as the mission itself, but it was basically a walk in the park from our perspective.

Dr. Wright: When you knocked out these radar sites, how big a corridor did you open up in the radar coverage? Do you have any idea?

Captain Devito: I don't know specifically. I know that it was huge. Talking to the Air Force guys that we were involved with, they basically said, "Hey, if you take out this site and that site, our entire allied air force will be able to move all the way to Baghdad radar free that night. I took that to mean that they were going to use the western sector to do that, but then again I don't know. I am just taking a guess. I don't really know how far to the east it blocked out radar.

Dr. Wright: Describe the time that it took to fly the mission. How long you were in the cockpit?

Captain Devito: The training that we conducted from October through early January in preparation for this mission, constituted 184 Apache hours and each mission lasted about 2 hours per Apache. Two hours a night and in that time we conducted six night gunnery ranges also. The actual mission itself we flew in excess of 150 Apache hours on nine Apaches, specifically on the day of attack, once we were staged out of Al Jawf and we took off about midnight on the sixteenth, flew the mission, landed back there at about 0500 in the morning, refueled the Apaches and then flew back home--at that point we didn't know you know what was happening with the war now that it was kicked off. We flew in excess of 13 hours on the average and the crew day was in

excess of 26 hours. Pretty big day for most of the people involved.

Dr. Wright: When you flew back from Al Jawf back to your operating base, what altitude did you fly? Were you flying NOE (nap-of-the-earth)?

Captain Devito: It was during day light hours at that point and the commander made the decision that because everyone was fatigued we would be at an altitude of 100 feet minimum and we maintained that all the way back once we were in Saudi Arabian territory.

Dr. Wright: So, I was curious if you were swapping duties between the pilot and co pilot, the pilot flies for a while and then he gets tired and says, "Here, you take the stick."

Captain Devito: The pilot in the back seat can operate all of the weapons systems. The only thing that he cannot do is laze for the HELLFIRE missile--but he can fire the HELLFIRE missile. For example, if you are a pilot in the back seat and I am your front seater and I get killed you can operate all of the weapons systems. The only difference is that you are going to have to use your wing man to make the HELLFIRE work cause he is going to have to laze for you.

Dr. Wright: How did you communicate on this mission?

Captain Devito: We did not. We took off from King Fahd on the 14th and flew without communications all the way to Al Jawf and along that route there were no words spoken. That part of the flight was flown in the daylight hours and we could have come up on the wing and said, or just wave at the guy and say I have ...., but it didn't happen. We had some contingencies-- I mean if you have got to talk on the radio, then you can talk on the radio, but, in the interest of security and surprise, we did not do that. Fortunately, we were able to go as planned. Now, on the night of the mission, what I was referring to was the flight all the way from eastern Saudi Arabia to our staging base. On the night of the mission we conducted an initial communications check on the ground at Al Jawf and took off and the mission was absolutely no communications all the way through to the battle positions. In the battle position at 10 seconds prior to the attack time, the call was given to coordinate all of the fires--the call from one team was party in ten

and the call for the other team was target in ten. That is the only time that radio silence was broken. At that point, it was free game. Once the engagement started people started talking on the radios a little more and during the egress there was some radio chatter, but for the most part, up until attack time, there was absolutely no communications.

Dr. Wright: What would be the distance between the Apaches when you fired, several hundred yards...?

Captain Devito: Right, about 150 meters is a good guess. 150-200 hundred meters. That is the way we rehearsed this thing. We deployed on line and started acquiring the targets, soon as one guy acquired his laser spot, the rest of the team acquired off of his laser spot. Then once the engagement was called and we engaged with HELLFIRE missiles, we moved forward as a team and engaged with rockets and then moved forward as a team and engaged with 30 mm and then broke off individually.

Dr. Wright: Now, when you told me in the initial talk that when your HELLFIREs engaged there was a flash and the enemy could have seen that. When you fired your HELLFIREs, did you jinx or move around as a team that once you fired missile--move somewhere else so that they cannot shoot at your, or engage you in that position?

Captain Devito: In general, once the first shots were fired--the video picks this up great on all the aircraft that fired-- you can see the guys diving for the ground, running for buildings. There was definitely no one curious as to what was going on and no one was looking up into the sky at that point. There was really no need to be excited about it fortunately for us.

I just wanted to talk about a couple of issues here real quickly. Our battalion commander did an excellent job of balancing out operational security and saying what he was authorized to say and not saying what he couldn't say and maintaining our focus. Now, he undoubtedly convinced all the players on the task force, all that needed to know, that 'gentlemen you are going to engage in a combat operation so you had better get your focus right. Don't be listening to the radio--what is going on in the UN, reading the Stars and Stripes and all of that stuff that is playing with your

mind. Listen to me, you are going to combat and it is about time you started focussing on these maps and getting your stuff together'. So, he did an excellent job on that without compromising the mission, because we honestly didn't know the specifics of the mission until just a couple of days before the attack. Another issue that I wanted to work on you know was this mission perfect or not because--it was referred to in Soldiers Magazine as a flawless mission. The aircraft were reported as having zero malfunctions and I will just address that by saying, no the mission was not perfect. It was a very well executed mission, but I don't believe that you can execute a perfect mission. Even as something as simple as this with all the rehearsals, no communications, no room for error to talk to anybody. I don't thing that you can conduct a perfect mission per se. In review of all of the Apache tapes I am sure that each of the crew members will agree that a couple of times they got a little too high, a couple of times they got a little too low and maybe a little bit too close to the enemy--in general terms it was near perfect. Fortunately we do have that capability to review the tapes and work on it from there in case we have to do another mission like this in the future. And another reason that I think it was so successful was because it was conducted at night and we train so much at night. Finally, this was one of the first times that a mission like this was conducted without the use of special forces or special operations type element. You know we are a line unit, a divisional asset, 101st, just like any other division in the Army--we have never conducted any type of special operations per se--and you know we conducted this mission with great results. In my opinion, the results of this mission demonstrate the tremendous flexibility and potential of today's armed helicopters.

The Special Forces' mission had taken them 150 miles inside Iraq to spy on Saddam Hussein's army. A Bedouin shepherd walked by the camouflaged holes the team had dug for itself. Sergeant First Class Troy Colson popped up a periscope from his hole. "He saw us," Colson whispered to his teammate, Sergeant First Class Gary Seideman. "Should I shoot him?" "No," said Seideman, "he's not a combatant." The shepherd ran away yelling. Within minutes Iraqi soldiers surrounded the team. For the next six hours, the Green Berets battled desperately...and Seideman, pulling out his camera, recorded the fight.

For Seideman and the eight other Green Berets, the war began the night of February 21, three days before General Norman Schwarzkopf launched his ground campaign. Their mission: infiltrate deep into Iraq to warn General Schwarzkopf if Saddam's Army tried to counterattack the allies' "Hail Mary" flanking maneuver from the west. Two Army Black Hawk helicopters landed on a barren, gray field that looked like a moonscape. The team piled out with their 100-pound rucksacks and marched for a day to a point north of the Euphrates River.

They had dug in and begun transmitting intelligence on Iraqi convoys when the shepherd spotted them. The team scrambled out of their holes and raced to a nearby irrigation ditch. Sergeant First Class Michael Flick radioed for evacuation. But a daylight rescue was too dangerous: "We can get you out at 2000 hours," came the response. Flick turned to his team leader, Captain Jim Thompson. They looked at their watches; eight in the evening was twelve long hours away. Thompson said little, but his grim expression said a lot. His sharpshooters had picked off advancing Iraqi soldiers so far, but the lightly armed team couldn't hold out for 12 hours against overwhelming odds.

Air Force F-16 Fighting Falcons swooped in, dropping cluster bombs around the team's ditch. For the next six hours, F-16 pilots with call signs like "Dingo" and "Pointer," kept the Iraqi soldiers away. Thompson peered out of the ditch and spotted a truck with enemy reinforcements. "I've got movers," he barked into his

radio. But a fog was setting in and more trucks were pulling up. The Fighting Falcons would soon be unable to see their targets. A daylight evacuation had to be attempted. Two Black Hawks came racing in, so low that their wheels bounced along the ground. The commandos dove into the choppers, which lifted off within seconds. Everyone escaped unhurt. And Seideman had the record of a mission he'd never forget.

SPECIAL OPERATIONS 4.4

On February 23, 1991, at 2030, two AH-64s from 2-229th and three UH-60s from 2-17 Cavalry (101st Abn Div) took off for the first of two successful LRSD insertions some 135 kms into Iraq. The mission was to provide security for the UH-60s, clear the proposed LZs (landing zones) and establish security of the proposed FOB. The first insertion was uneventful; however, during the second insertion the on-board Radar Warning Receiver showed the aircraft was acquired four times. Acquisition was broken by employing chaff and executing evasive maneuvers. The next night the teams flew from FOB Cobra some 90 kilometers next to the Euphrates River to insert two more teams. This mission turned out to be uneventful. On February 26, the battalion was notified that one of the teams was compromised by civilians in the area. The battalion scrambled to extract them. The extraction was successful with no loss of life or damage to aircraft.

These missions spearheaded the 101st Airborne's drive deep inside Iraq. The mission was a complete success with no loss of life or aircraft.

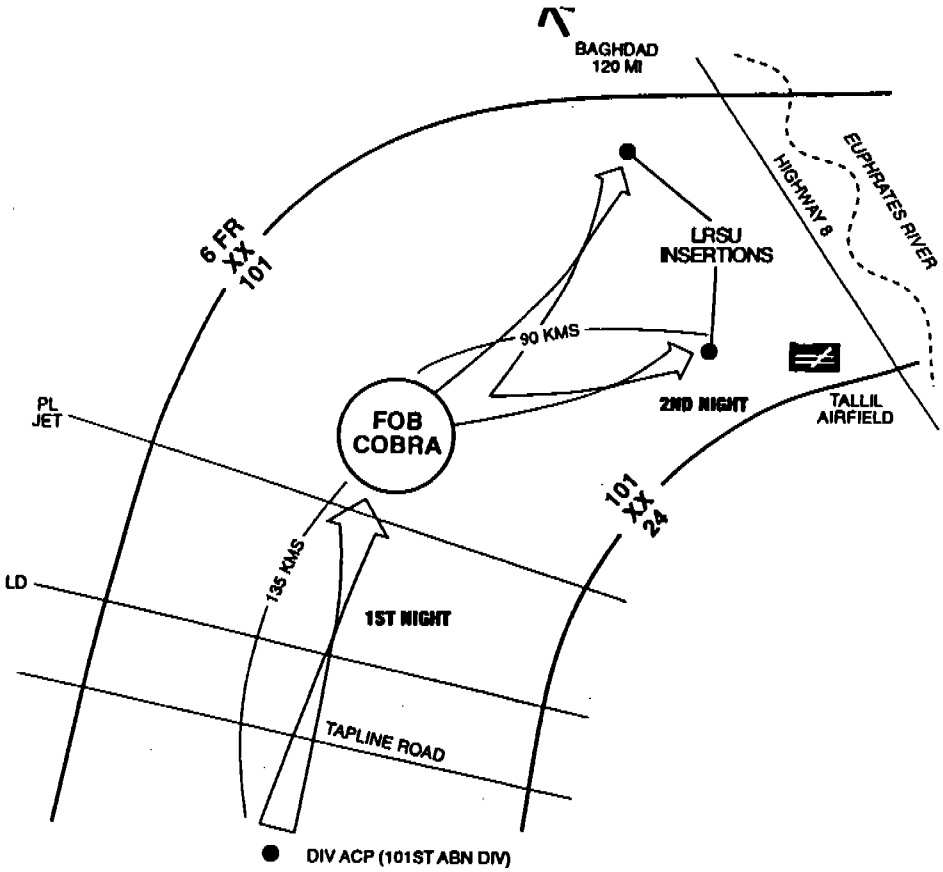

Fig. 4.4

SPECIAL OPERATIONS AVIATION - 4.5

Starting on February 23, 1991, Task Force Warrior (12th Avn Bde) and Apaches from 3-227, accompanied by EF-111 Raven aircraft, flew night cross-FLOT missions 230 kilometers deep into Iraq to insert three LRSD teams. The aircraft penetrated Iraqi air defense systems undetected, inserted three six-man teams, and egressed undetected. During the next 24 hours, Task Force Warrior, again escorted by Apaches from 2-227th, executed day and night emergency extractions of the teams and 5 EPOWs. Apaches attacked and suppressed enemy locations along the routes.

These operations were the first corps-level LRSD insertion missions conducted during actual combat. Global positioning systems were mounted on each aircraft to enhance desert navigation at night. The aircrews and LRSD teams conducted extensive training and rehearsals prior to the mission.

These missions proved vital to XVIIIth Airborne Corps intelligence preparation of the battlefield, providing intelligence on Iraqi positions and movements in the vicinity of key G-day+1 objectives. The units involved sustained no combat losses or damage.

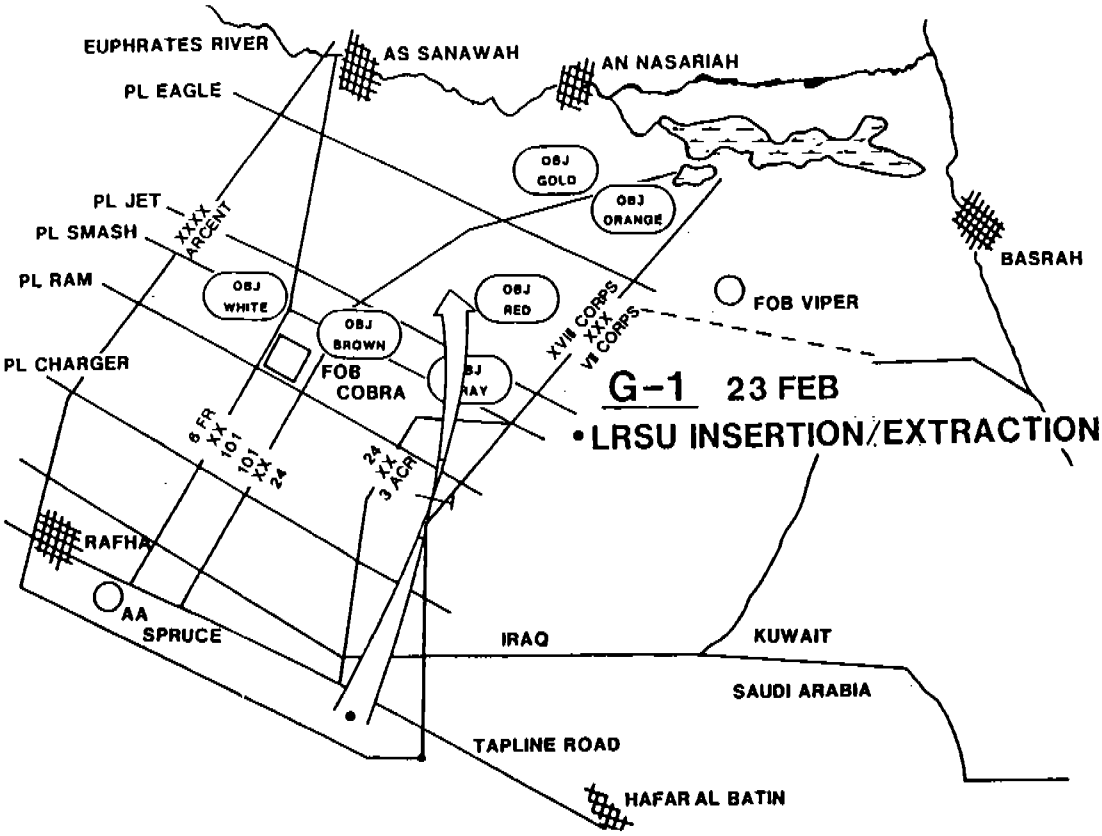

Fig. 4.5

SPECIAL OPERATIONS AVIATION - 4.6

"The Apaches (of the 24th ID) at night would go across to look at the routes that the UH-60's would later take to put long-range surveillance detachments (LRSDs) into position. They also looked at the main supply route, knowing the lead brigades would come up both the eastern and western sectors." Of particular importance was an area called Marilyn. To be the division's big forward logistics base, it had to be assembled and operational 18 hours after the ground war started. It had to have all the fuel and ammunition the division needed to go on up into the Euphrates River Valley.

"On the 23rd we inserted three LRSD teams," Tackaberry outlined. "The day before, we ran a daylight insertion to double check. In all of these operations across the FLOT, we sent up the EH-60 to tell us what was happening, when the enemy began talking on its networks."

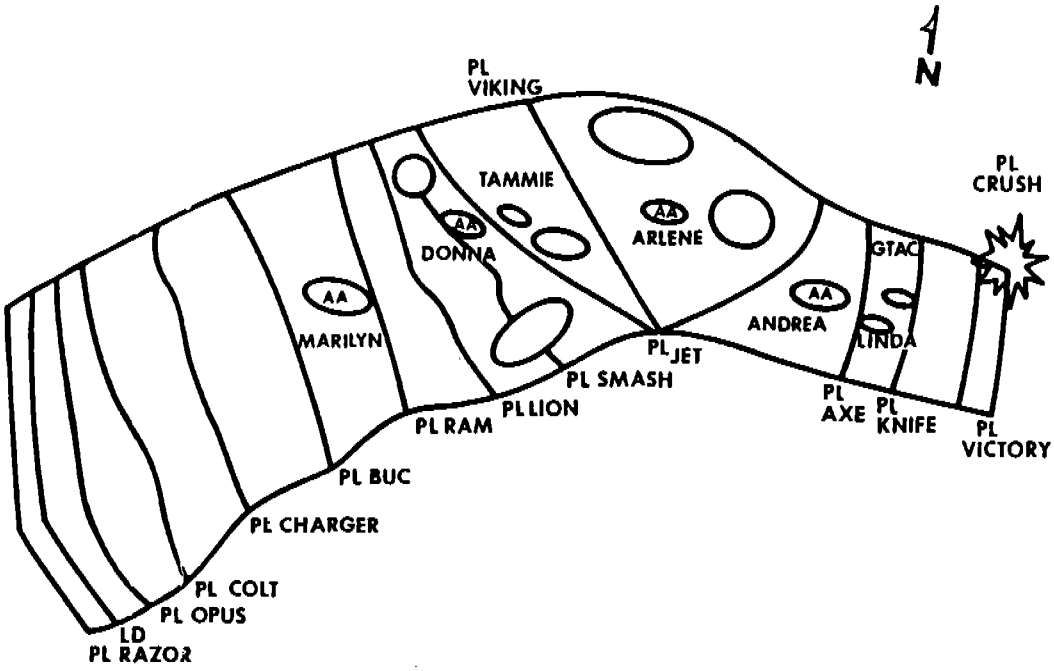

Fig. 4.6

SPECIAL OPERATIONS AVIATION - 4.7

On 26 February, while the 1st Armored Division continued its advance into Iraq, the 4th Brigade received an ARCENT (army central command) mission to extract two Special Forces teams which had been compromised. Their last known location was across the VIIth Corps' boundary with XVIIIth Airborne Corps, over 130 kilometers from Task Force Phoenix's UH-60 staging area, and about 80 kilometers from friendly lines. Two of Task Force Phoenix's Black Hawks flew through one-quarter to one-half mile visibility due to blowing sand to the approximate location. After a frustrating, but ultimately successful reconnaissance, they extracted the two teams from under the nose of an enemy mechanized infantry battalion which was within sight of the pickup.

SPECIAL FORCES TEAM EXTRACTION

26 FEB 91

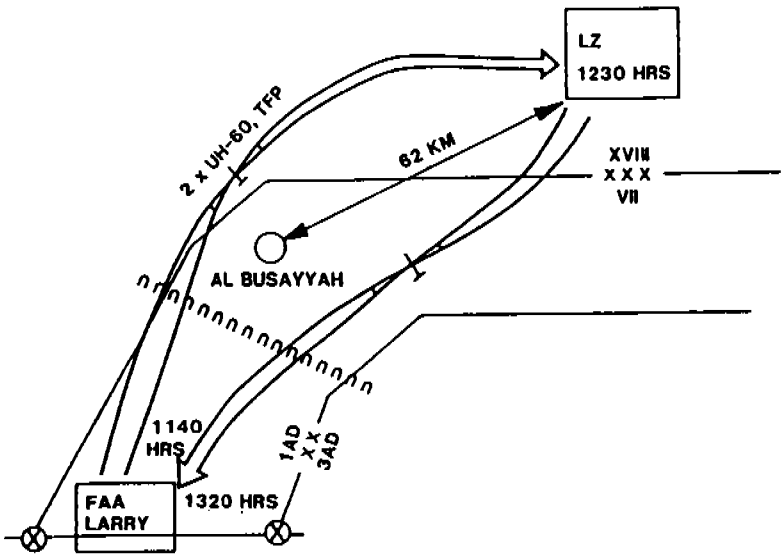

Fig. 4.7

SPECIAL OPERATIONS AVIATION 4.8

On the morning of February 26, 1991, Task Force Phoenix received orders for two UH-60A aircraft to extract two Special Forces Teams that had been compromised. The aircraft departed from FAA SHAKE to two pick-up zones (PZ) 60 kilometers beyond the FLOT. The total flight path was 120 kilometers, along the route the aircraft had to circumnavigate a battle taking place at the town of Al Busayyah. Visibility was down to 300 meters within 5 kilometers of the PZs due to smoke and sand. On arrival at the first PZ, they were unable to make contact with the first team visually or by FM secure radio so they proceeded to the second PZ. The second team was spotted and extracted. The aircraft then returned to the first PZ and with the help of the second team leader made contact and extracted the first team. Both teams were extracted while an Iraqi battalion-sized element was rapidly closing in on the team's positions. The poor visibility added to the success of the mission because the enemy was unable to make visual contact with the aircraft.

SPECIAL FORCES TEAM EXTRACTION

26 FEB 91

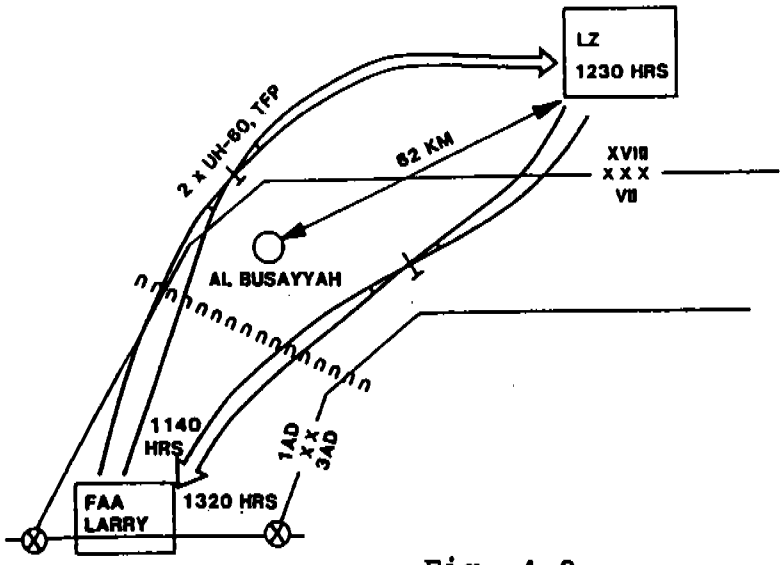

Fig. 4.8

SPECIAL OPERATIONS 4.9

On February 27, 1991, at approximately 1600 hours, seven armed OH-58D helicopters from 4/17th Cavalry armed with a mixture of HELLFIREs, 2.75-inch rockets, and .50-caliber machine guns departed King Fahd International Airport (KFIA) on the mission to reoccupy the British and American Embassies. Aviation Special Operations Command (AVSOC) cleared the flight with a fuel stop at Ras Al Mishab and a destination of Kuwait City International Airport (KCIA). Initial coordination of the flight route through AVSOC proved to be extremely difficult with serious problems attaining particular codes. Due to the late departure of the flight, the day cross country mission to reach Kuwait City became a NVG (night vision goggles) mission. Upon entering Kuwait, the flight of seven aircraft encountered numerous burning oil fields which decreased ambient light levels to a point where ANVIS NVG's became unusable. Due to the importance of the mission, the flight slowed down but continued forward momentum. The conditions worsened rapidly and the flight landed in the desert 20 miles south of Kuwait City. After regrouping and discussing the conditions, the troop commander made the decision to try to slowly move forward the last 20 miles. The flight hovered slowly for about 2000 meters until visibility worsened again and the commander ordered the flight down. The aviators utilized the MMS (Mast Mounted Sight) in the forward mode to detect any obstacles that couldn't be seen with the goggles. The aviators landed on a dug-in Marine infantry unit and set up in a defense position. After discussing the conditions of the environment and the impossibility of aerial flight, the troop remained in the desert for the night. It was an extremely cold night. The following morning (February 28) at 0030 hours, six aircraft departed enroute to KCIA. The seventh aircraft would not start and remained in the desert until recovered by the troop with the assistance of the 3-160th.

The flight arrived at KCIA at 0700. The aviators linked up with elements of the advance party and parked the aircraft in a secure area. The troop commander debriefed the squadron commander and then conducted final mission planning for the British and American Embassy Missions. The

seventh aircraft arrived at 1000 hours. The mission to reoccupy the British and American Embassies began at 1300 hours and was complete by 1430 hours. An adequate ceiling existed but the visibility was one-half mile with smoke and fog. Four armed OH-58Ds were used in teams of two for the mission. The initial reconnaissance of the American Embassy was conducted and the rooftops were evaluated as being secure. The troop conducted a relief on station and the 3-160th air lifted Special Forces sniper teams and assault forces into the Embassy and surrounding high-rise buildings. Special Operations Command, Central Command (SOCCENT) provided insufficient intelligence on enemy air defense artillery positions for the operation. The aircraft configuration consisted of one aircraft with four HELLFIRE missiles and the other with 2.75-inch rockets and a 50-caliber machine gun. The hellfire aircraft provided a point weapons system for target destruction while limiting collateral damage and the second aircraft provided self-protection for the team. The British Embassy mission was conducted with one team of two armed OH-58Ds configured with HELLFIREs and a 2.75-inch rocket/50-caliber machine gun aircraft. The British inserted an assault team into the embassy grounds while the Armed OH-58D team provided over-watch and security. While in Kuwait, Troop A received follow-on missions in support of SOCCENT in Kuwait City.

CHAPTER FIVE

FIRE SUPPORT

During World War II in Europe, the German Army learned a valuable lesson when they attacked the U.S. Army. If they saw a small, dark green aircraft flying above the American lines a ground attack was by unit SOP (standard operating procedure) forbidden.

Belying its size, this tiny aircraft could summon and control significant combat power. The observer sitting behind pilot could direct artillery fire quickly and accurately on any German attack. The "grasshopper" or as the Army designated it, the L-4, was so dangerous to the Germans that Luftwaffe flyers received maximum points for shooting one down.[1] In Italy in 1943, a "grasshopper" spotted a German infantry battalion with armor support preparing to attack. It radioed in the coordinates to its Fire Direction Center (FDC), and the FDC assigned a 105mm battery that fired 47 rounds in support. This broke up the attack. Time from the spotting of the Germans to the impact of the final round on the target was slightly under six minutes. This aerial fire support provided by Army Aviation did not end with World War II. It continued through Korea and into Southeast Asia.

In Vietnam, the L-19 "Bird Dog" aircraft were often the only friendly voice a company could talk to when in contact with the enemy. The pilot could contact, vector in, and control air, artillery, and aerial rocket artillery assets in support of ground troops. The Army fixed winged pilots who flew these missions could sometimes direct artillery fire more accurately than ground personnel.[2] Many small units from battalion on down owed their survival to the

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[1] This was important for the awarding of the Knight's Cross which was one of Germany's highest awards for valor. When a pilot accumulated a certain number of points from air-to-air combat kills, he was automatically give the award.

[2] When the famous Army football player Captain Carpenter and his company of the 101st was surrounded by NVA forces, an L-19 above him helped to vector in aircraft that bombed the oncoming NVA with napalm and saved the company.

accuracy of the artillery which was often directed from overhead.

Army Aviation also provided a mobile and flexible fire support platform for tube artillery and MLRS. Because helicopters had roamed the battlefield out to a distance beyond ground observers, and have a better angle to judge the fall of shot, artillery and MLRS were a very effective asset during Operation DESERT SHIELD.

Aviation participation in the fire support operating system met with mixed results. Before the start of the ground campaign, OH-58Ds and AH-64s designated Iraqi border positions for Copperhead rounds--eliminating the Iraqi ability to see Allied activity south of the border.

The JAAT (Joint Air Attack Team) proved especially deadly in the wide-open desert of the Middle East. In many cases, the depth of attack helicopter operations meant that fixed-wing aircraft were the only fire support available. In other cases, CAS (close air support) sorties were specifically guided onto target by laser designations from AH-64 and OH-58D aircraft operating in close proximity to friendly ground units.

Attack and scout helicopters, flying ahead of large ground formations, commonly reported the locations of Iraqi units equipment, and fortifications. In many cases, helicopters called in artillery fires to fix or neutralize enemy units, allowing ground maneuver to close with and subsequently destroy Iraqi formations.

Throughout the conflict, it was clear that the force commander would tend to use whatever combat means were available to accomplish the job at hand. Commanders at all levels quickly realized that the destruction of Iraqi units could be accomplished through the use of direct fires by tanks, helicopters, CAS aircraft, or by indirect fires from artillery systems. Thus, the concept of "interchangeability of fires" proved valid.

Apaches often found themselves in the counter-battery role, going deep to attack Iraqi artillery and reduce the chance of using chemical munitions. Close cooperation between deep aviation maneuver elements and deep fire support paid tremendous dividends--when they could be

brought together. The coordination of elements working together in the fire support suffered from various problems.

Both Artillery and Aviation lacked a real-time interface with the Air Force airspace control system. In one case, an artillery mission was about to be shot through a KC-10 tanker orbit because of the lack of real time airspace control interface. Helicopters unknowingly overflew live demolition areas for the same reason.

The widespread use of DPICM and air-dropped cluster bombs caused problems during the ground campaign. A number of bomblets from each such fire mission would fail to explode, and there was no easy means of marking those areas. In several cases, vehicles moving through the desert would find themselves in the middle of a DPICM (dual purpose improved conventional munitions)/cluster bomb "mine field" and sustain casualties.

More attention needs to be given to "real estate" management in the rear areas. On at least one occasion, Iraqi counter-battery fire impacted on a helicopter assembly area after a MLRS battery pulled up beside it and fired.

Deep fires in support of deep aviation maneuver is one area where doctrine is somewhat lacking. In the XVIIIth Airborne Corps, attack operations went so deep and occurred so often that organic artillery assets could only provide fire support if used in an artillery raid. Executing an artillery raid usually meant that the Apaches would have to provide security for the artillery unit conducting the raid. To operate in this manner was self-consuming--and would reduce the number of Apaches available to attack the target at any one time. It is still a question as to whether the artillery was supporting the Apache attack, or the Apaches were supporting the artillery raid. In January, the Divisional Artillery finally allowed a tactical artillery unit to become direct support to the Aviation Brigade. Although the 101st Division's Apaches were its farthest reaching combat elements, the Division's FSE (fire support element) either could not or would not push requests for Corps ATACMS to support the deep strikes of the aviation units. The selections contained in this chapter highlight Army Aviation as an artillery asset.

The first selection (5.1) in this chapter deals with the use of Aviation elements to help target the MLRS and tube artillery during the battle. The synchronization of these capabilities is necessary for success in AirLand battle. The interface with A-10's and the capability of Army aviation to laser designate targets for them heightened the ability of the U.S. Air Force to provide pinpoint strikes in support of ground forces. In one instance, A-10s returned the favor and helped Army aeroscouts spot artillery fire. Aeroscouts also spotted for a new 155mm "smart" round called the Copperhead.

The Copperhead was a sophisticated artillery shell that required a designator to "light up" a target to guide the artillery round. In one case, an OH-58D pilot was guiding a Copperhead onto a target and suddenly realized it was only a border marker. Round lost -- no! He simply guided it toward the real target 500 meters to the right and destroyed it. The second selection (5.2) is an all-copperhead mission flown by two OH-58Ds of 4/2 ACR with the aeroscouts finding, marking and Copperheads killing two Iraqi targets.

Army Aviation worked with everyone during Operations DESERT SHIELD and DESERT STORM. Take for example the third selection (5.3) in which the 5-158 Aviation Battalion (OH-58D) worked with the French 6th Light Armor Division as it moved toward Al Salman airfield. Army OH-58Ds guided French and American artillery fire using laser targeting, and the Commanding General of the French division altered his scheme of maneuver twice thanks to critical information provided by the attached OH-58Ds.

The final selection (5.4) is one of the most interesting from a doctrinal perspective. At first light on the morning of 26 February (1991), Palehorse Troop, 4/2nd ACR was given a unique mission -- to find the Tawakalna Division and fix it using long range fires. When that unit was finally located, "Palehorse" OH-58Ds coordinated artillery fire and MLRS onto Iraqi targets that air liaison officers from the Air Force could not see. Eventually, an A-10, guided by OH-58Ds led F-16s through the poor flying weather to bomb targets with cluster munitions. This fixed the Iraqi units for the oncoming ground elements. The

helicopters pulled pitch as soon as Abrams main battle tanks came within effective gun range. Mission accomplished!

FIRE SUPPORT - 5.1

MLRS (multiple launched rocket system) placed well forward in a regimental formation proved to be excellent fire support for the air cavalry squadron (ACS). With the ACS leading the ground formation by 20 kilometers initial contact was suppressed with rockets and TOWs. The MLRS then would set and shoot as the remainder of the ground formations and associated direct artillery support artillery quickly moved to flanking positions fixed by the MLRS and attack helicopters. As the squadrons prepared to close with and destroy the enemy, the tube artillery would set massing with the MLRS as the tanks and Bradleys closed on the flanks with direct fire. During the final artillery prep and gun tube battle, aviation would back off and continue the forward screen 20 kilometers in front of the regiment.

The interface with A-10s and OA-10s assisted often in adjusting long range artillery. On the 2 ACR/1st Infantry Division boundary an A-10 watched effective artillery on dug-in positions on a ridge line. He advised aeroscouts to adjust the artillery 300 meters east and destroyed an artillery battery that was unseen by the aeroscout. Many secondary explosions occurred.

At the berm crossing on G-1, February 23, 1991, OH-58Ds "lased for eight Copperhead shots. All eight hit. One round was shifted 500-600 meters after it was fired when the pilot realized his assigned target was a border marker. His new target that he shifted to was an Iraqi outpost building that was destroyed.

FIRE SUPPORT - 5.2

The 4/2 ACR attached two OH-58Ds to Troop N (Nomad) to support berm crossing operations on February 23, 1991: "Their crews conducted final face-to-face coordination with 6-41 FA Battalion at 1000 while the troop commander did the same with Cougar (2/2 ACR). Nomad Troop took off at 1300 to be in position immediately to the rear of the artillery positions. The OH-58Ds laser designated two border buildings from positions forward of PL Becks. Eight

Copperhead rounds were fired, and destroyed the targets. Two Copperhead rounds were suspected duds. One round was shifted 600 meters after fired when the target was discovered as only a border marker. We heard the last rounds of the prep fires leaving the tubes at 1334 and observed the "rounds complete" on Cougar's command net; however, Cougar Six (Lt. Colonel Kobbe) asked again for clarification. A jammed round in one of the tubes caused a delay until 1341.

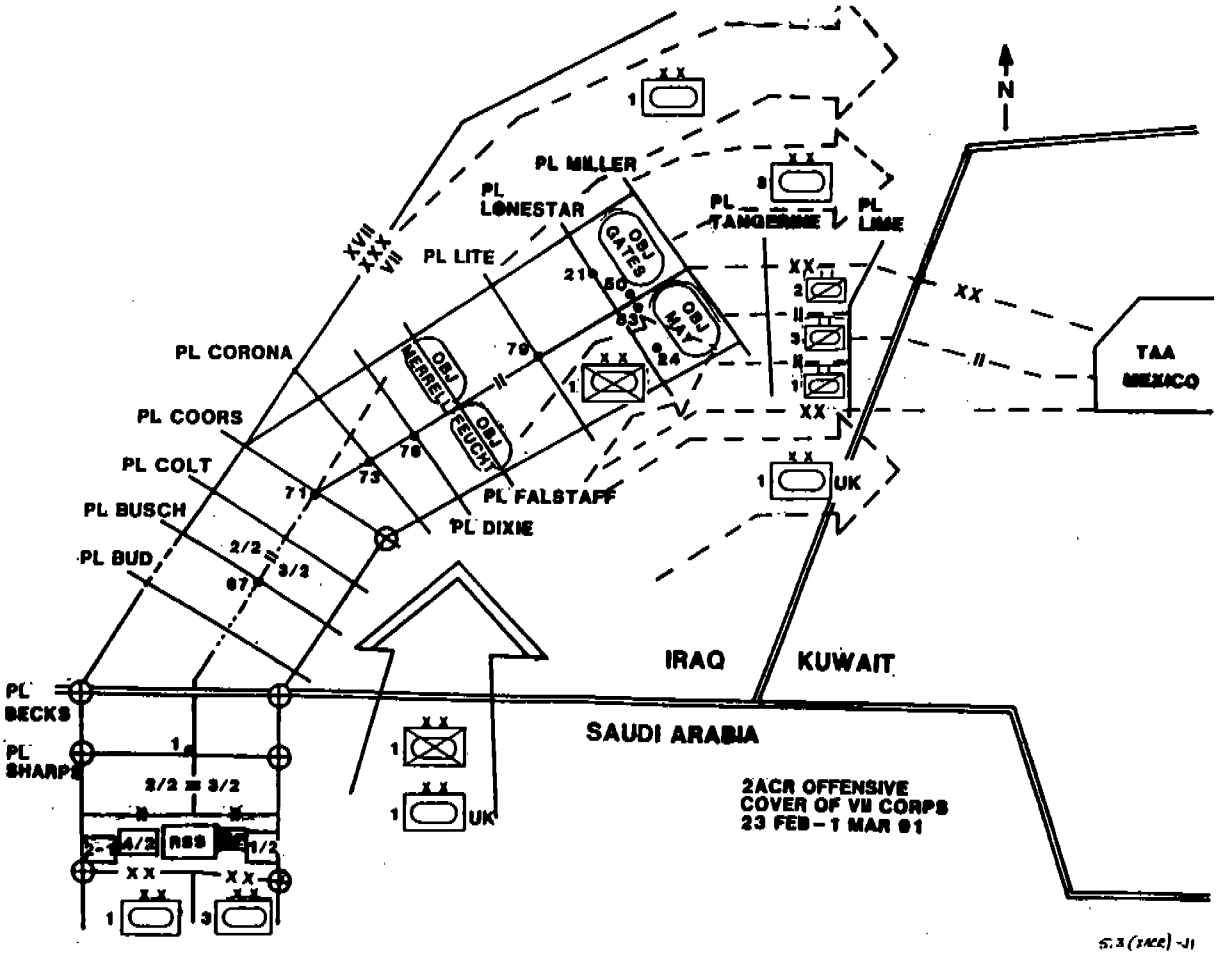

Fig. 5.2

Nomad Troop moved forward and crossed the Saudi berm into Iraq at 1345, clearing the targeted area from west to east. The OH-58Ds joined the flight, and the troop reported the zone forward of Cougar clear up to PL Bud, 10 kilometers into Iraq."

FIRE SUPPORT - 5.3

On G-day, February 25, 1991, Company D, 5-158th Aviation (OH-58D), conducted reconnaissance and targeting operations forward of the French 6th Light Armor Division as it moved toward As Salman airfield. The unit provided over 14 hours of continuous forward coverage for the division. OH-58D's, escorted by French Gazelles, were the lead elements in the attack. Air crews provided timely spot reporting, called and observed numerous artillery strikes, and laser-designated for A-10's.

The Commanding General of the 6th French Light Armor Division adjusted his scheme of maneuver at least twice based on the accurate reporting by the aeroscout crews. OH-58D's used artillery to suppress or destroy numerous Iraqi positions, and destroyed 8 tanks by laser designating for USAF A-10 launched munitions. Additionally, the OH-58D crews captured 110 EPOWs. The unit sustained no combat losses or damage.

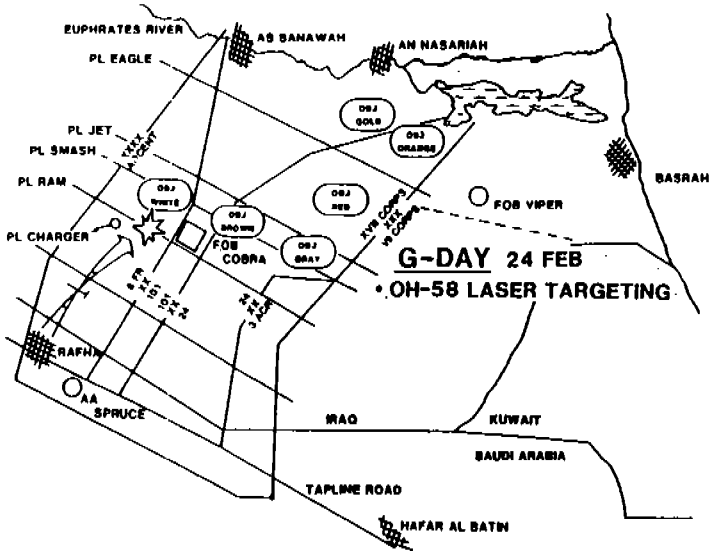

Fig. 5.3

Company D, 5-158 Aviation, was widely acclaimed by the CG and staff of the 6th French Light Armor Division on its agility in adjusting its operations to varying enemy situations.

FIRE SUPPORT - 5.4

On February 26, 1991, (G+2), Palehorse Troop, 4/2 ACR, had a first light mission to find the Tawakalna Division and fix it using long range fires. Palehorse worked in the Wolfpack (3/2 ACR) sector. "We traveled slower than usual for two reasons: (1) Wolfpack had repelled company probes the previous evening and; (2) the visibility was marginal at 1500 meters. We made contact with an enemy tank platoon in revetments, 1700 meters to our front at 0713. Another enemy platoon engaged us with main gun and machine gun fire. Wolfpack closed aggressively, but the conditions did not allow these units to see the enemy only 700 meters away. We coordinated CAS with Bethel 30 (a USAF Air Liaison Officer), as one of the OH-58Ds coordinated artillery and MLRS. We poured artillery on the target while the Airborne Forward Air Controller, "Nail 61" did a magnificent job of persuading hesitant F-16 pilots to descend through the low clouds. We designated the target with a laser spot to justifiably anxious jet pilots. They were very concerned with friendly disposition and location. Finally, "Nail 61", from his now unarmed AO-10, led the F-16 jets through the AAA and the jets unloaded with laser-guided 500lb

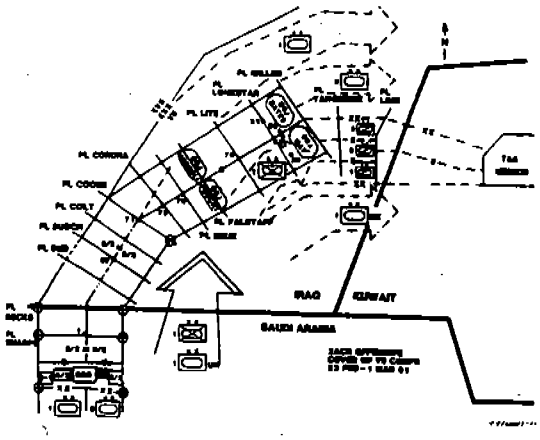

Fig. 5.4

bombs and Cluster Bomb Units. The tanks were damaged or destroyed at 0747. We returned to the FARP (forward arming and refueling point) to learn that it had received close counter-battery fires due to its proximity to a MLRS battery. There were no casualties. We launched at 1630 to Cougar's (2/2 ACR) sector. Visibility was again poor (200-

1000 meters) because of the sandstorm as well as Cougar's recent battle that left several burning vehicles. As we entered Cougar's rear boundary, they began engaging infantry to their front vicinity of grid line 4 Easting. The mission now called for us to maintain contact with 3 AD's Cavalry Squadron while Cougar focused to his front. We continued this mission as night approached."

CHAPTER SIX

AVIATION COMMAND AND CONTROL

Where should a commander be located during battle? At the front? At his command post behind the front? During the Thirty Years War, Gustavus Adolphus, the King of Sweden in the mid-1600's, commanded his army from the front. The King led his cavalry into every attack. At the battle of Leutzen [1652], Gustavus Adolphus was killed leading a cavalry charge.[1] The lack of outstanding central direction such as Gustavus had given it denied Sweden final victory against forces of the Holy Roman Empire.

Leading from the front has its good and bad points. In the front line, soldiers can see their commander and their commander can see them as well as how the battle is going, but the commander also has a greater risk of being wounded or killed, and if the leader is lost, the battle could be also.[2] As Blumenson and Stokesbury wrote in Masters of the Art of Command: "For nothing can substitute for personal reconnaissance, the actual sight of the ground, which often erases the pessimism created by grease pencils tracing dispostions on a map far to the rear of the action."[3] Other commanders have stayed well to the rear with decidely mixed results.

During the Battle for France in 1940, the French Supreme Commander General Maurice Gamelin commanded Anglo-French forces from a chateau more than 120 miles behind the front line.[4] His opponent Adolf Hitler led German forces

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[1] See: Lynn Montross, War Through the Ages, (New York: Harper and Brothers, 1946), pp. 283-284. Incidently, the Swedish Army barely won the battle, and never enjoyed the same level of success.

[2] At the Battle of Hastings (1066), the Normans under Duke William of Normandy had not managed to break the front of the English King Harold despite repeated cavalry charges. When Harold was struck in the eye by an arrow and killed, the English soldiers lost heart, and Duke William won the battle. Had Harold not been killed, William might not have won the battle. See: J. F. C. Fuller. A Military History of the Western World. (New York: Funk and Wagnalls, 1954), p. 381.

[3] Martin Blumenson and James L. Stokesbury. Masters of the Art of Command. (New York: DeCapo Press, 1975), p. 270.

[4] See: William L. Shirer, The Collapse of the Third Republic -- An Inquiry into the Fall of France in 1940, (New York: Simon and Schuster, 1969), p. 621. The supreme allied headquarters was serviced by a single telephone line that ran through the local village. The telephone operator took off two hours for lunch war or no war.

from the safety of a series of specially constructed bunkers in the Ardennes forest.[5] What a change three centuries can make!

In South Vietnam, senior commanders flew in their personal Command and Control (C&C) helicopters. They could see the battle in a dimension that their subordinates on the ground could not. All was not perfect as their high perch often created a skewed view of events because the commander in the air often believed he had a better view of the situation than subordinates on the ground.

When commanders in the air and on the ground clearly understood this relationship, there was no problem. For example, at the Ia Drang, the 1st Brigade Commander, Colonel Tim Brown, wanted to fly into Landing Zone (LZ) X-Ray during the fighting, but his subordinate on the ground, Lt. Colonel Harold G. Moore (CO, 1/7th Cavalry. 1st Cavalry Division) would not allow it.

Colonel Brown realized why (it was too dangerous, and it wasn't the brigade commander's job to fight the battalion), and used his time over the embattled 1/7th Cavalry to contact subordinates and higher headquarters to rush reinforcements to X-Ray.[6]

In a modern, highly mobile war, where should the commander be? Rommel, one of the most mobile of commanders, preferred to be at critical points on the battlefield in an armored command car which he called the Mammoth.[7] As a result, Rommel's command post was generally where the critical action was going on as he meant it to be. Rommel wrote:

> There are always moments when the commander's place is not back with his staff but up with the troops. It is sheer nonsense to say that maintenance

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[5] See: Walter Warlimont. Inside Hitler's Headquarters, 1939-45. (Novato, Calif.: Presidio Press, 1964), pp. 87-88. Also see: William L. Shirer, The Rise and Fall of the Third Reich. A History of Nazi Germany, (New York: Simon and Schuster, 1960), p. 720.

[6] See: J. D. Coleman. Pleiku: The Dawn of Helicopter Warfare in Vietnam. (New York: St. Martin's Press, 1988), p. 198.

[7] See: B. H. Liddell-Hart, Editor, The Rommel Papers, (New York: Holt, De Capo Press, 1960), p. 138. The Mammoth wasn't even German, but a captured British command vehicle. This saved Rommel once night when he laggered in a group of vehicles he thought were German, but proved to be English. No one gave his vehicle a second look.

> of the men's morale is the job of the battalion commander alone. The higher the rank, the greater the effect of the example.[8]

With regard to generals who stayed at their command posts, General George Patton had a colorful but highly unprintable description.[9]

Yet, in today's three dimensional battlefield with its fast changing situations, the commander must stay in and round his CP to obtain all the necessary battlefield information. Or should he? Whether he leaves the CP or stays the commander's ability to communicate with his subordinates is essential. History is quite clear on this point: if a commander cannot contact his subordinates, learn how the battle is going, and give proper orders, the battle may be mishandled or lost.

For example, at the Battle of Chickamauga, 19-20 September 1863, General Braxton Bragg wanted to renew his attacks against the Union Army. Bragg's commander's intent was to attack Union positions from the north to south as simultaneously as possible on 20 September. One of his corps commanders, critical to the carrying out of the attack order, was nowhere to be found. Lieutenant General D. H. Hill had disappeared.[10]

Bragg went to bed that night with the mistaken notion that all his commanders understood the attack plans, and would carry them out the next morning. Since Hill could not be found to receive his written orders and no initiative by his staff was taken to overcome this problem, confusion in the morning delayed the attack. Union forces were allowed

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[8] Blumenson and Stokesbury. Masters. op. cit., p. 270.

[9] "Maj. Gen. Eugene Landrum: Short, fat, uninspiring, could not motivate troops. Commanded the Division from an arm chair in a cellar. Bypassed regimental commanders from his chair. No faith or confidence in his subordinates. Gloomy and pessimistic in outlook. Relieved 28 July after 5 weeks." Quoted in "Brooks E. Kleber Reviews John Colby's War from the Ground Up. The 90th Division in World War II. Army History. Summer 1992, PB-20-92-3 (No. 23), Washington, D.C., p. 41. This type of command behavior is one reason why Patton disliked command posts.

[10] His explanation is that he searched for Bragg's headquarters at Thedford's Ford, but could not find it, and then laid down in the woods for three hours rest. He then sent a courier to find Bragg, and went up to the battle line at dawn. Historians have not been able determine if General Hill was telling the truth. See: Hal Bridges. Lee's Maverick General. Daniel Harvey Hill. (Chapel Hill, NC: University of North Carolina Press, 1978), pp. 208-214.

an extra three hours to prepare defenses.[11] Once orders are transmitted to commanders, they must also know what they have to do.

The instructions given by the commander must be understood by the subordinates who will carry them out. A simple proposition, but there is more to it than that. During one battle, Napoleon gave written instructions to Marshal Ney to be in the enemy's rear at precisely 1400 hrs. When Ney reached his attack position much earlier, his chief of staff (Baron Jomini fully understood Napoleon's commander's intent) pleaded with him to begin the attack immediately. Ney, however, remained unmoved, and did not attack until 1400 as specified in his orders.

As a result, Napoleon did not achieve the decisive victory he sought because the enemy detected Ney's arrival, determined what Napoleon intended, and withdrew.[12] Napoleon did not, in the end, control the battle. Today, controlling the battlefield in all its dimensions is absolutely vital.

The extreme distances involved in Operation DESERT STORM put a premium on commanders leading from the front and on constant, reliable communications. This need for instant communications and the great distances involved forced some commanders to set up relays. On deep missions, units would often use OH-58Cs as communication's relay platforms.

During missions involving closer coordination with ground elements, a substantial control structure ensured real time relay of orders and situation reports. Particular systems, such as the UH-670 command and control console, proved absolutely invaluable in combat. Other systems, such as the communications on the AH-64, required endless "work-arounds" and resulted in communications problems during combat.

Controlling the tactical movements of far-flung units as they moved rapidly across the desert was a particular problem because operational graphics used to "see" the tactical situation were useless without the ability to

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[11] Glenn Tucker. Chickamauga -- Bloody Battle in the West, (Dayton, Ohio: Press of Morningside Bookshop, 1984), pp. 218-232. Also see: Peter Cozzens. This Terrible Sound. (Urbanna, Ill: University of Illinois Press, 1992), pp. 302-304.

[12] See: Montross, War Through the Ages, op. cit., p. 537.

navigate. The global positioning system (GPS) and Loran receivers used by aviation and ground elements during the war were absolutely invaluable. There is no doubt that had they not been available, the war would still have been won, but not without greater cost in personnel and more importantly, in time.

In order to make intelligent decisions, the commander needs both accurate and timely information at his fingertips. Before and during Operation DESERT STORM Army Aviation helped to provide the commander what the type of tactical information that allowed repeated use of Army aviation to attack from one direction, break contact to allow ground forces to strike, and re-attack from a second direction while keeping the commander fully informed about what was happening on the ground. Few commanders in history have had so versatile a force at their disposal.

Senior commanders quickly learned to depend on army aviation to assist in controlling the tempo of ground combat. An armored cavalry regiment (ACR) was low on gas because two separate fuel convoys had become lost in the desert -- neither convoy had GPS, and could not be contacted. Aircraft from the regiment's aviation squadron scrambled, found the missing convoys, and led them back to the main body. The regiment moved forward again thanks to the flexibility of Army aviation.

Command and control can also involve communications and coordination with units that are not trained or equipped like American units. The U.S. Army has often fought along side armies of other nations and did so again during Operation DESERT STORM. Command and control has always been a problem when armies of different nations cooperate in war.[13] Army Aviation played no small part in developing a coalition tactical partnership that truly worked.

U. S. Army OH-58Ds were attached to the French 6th Light Division throughout the war. The night vision systems and long range optics of the OH-58Ds permitted the 6th to

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[13] Coalition warfare has, historically, been the hardest to control. During World War II, for example, a number of the highest leaders of both the British and Americans were barely on speaking terms. This animosity was often difficult to overcome in operational planning. See: David Irving. The War Between the Generals. (New York: Congdon and Lattes, Inc., 1981). Also see: Blumenson and Stokesbury. Masters., op. cit., pp. 241-245 and Brigadier General Robert H. Scales, Jr., Director. Certain Victory: U.S. Army in the Gulf War. (Washington, D.C.: Office of the Chief of Staff, 1993), p. 222.

adjust its scheme of maneuver based on near-real-time intelligence. French Gazelle anti-tank helicopters accompanied by OH-58Ds always preceded French ground forces. This ballet of air/ground movement needed a firm hand.

Orchestration of movement by helicopter and ground forces for deep operations involved continuous control measures. This type of control was, more often than not, colored by previous experiences. Both corps (VIIth, XVIIIth Airborne Corps) operated deep operations planning cells for the control of attack helicopters, but each cell was created because of different needs. VIIth Corps had been training to fight a European land battle, and its deep attack cell was a reflection of the need to destroy follow-on echelons of Soviet forces.

Additionally, VIIth Corps set up a decision methodology that would automatically launch Corps aviation attack battalions when the conditions were correct. An active decision-making process was therefore required <u>only</u> when the battlefield conditions were borderline.

XVIIIth Airborne Corps, on the other hand, was trained and structured for rapid-deployment/contingency situations, and had not established a deep attack planning cell. As the plan for the ground war matured, the expected depths of helicopter operations and the persistence of the 12th Aviation Brigade (a European based unit) combined to finally persuade the XVIIIth Airborne Corps to set up a deep attack planning and execution cell. Even with this planning (control) agencies in place and operating, the fluidity of the tactical situation often required helicopter units to execute attack plans with the barest amount of planning time.

The maintenance of control in combat is one of the principal reasons for planning. If attack planning is reduced to 10 minutes using a map on the hood of a jeep, control problems can and do occur. Much of the hurried nature of planning was as much as anything a result of how the divisional commander chose to control his air elements. During Operation DESERT STORM, two general methods were used.

The first method could be categorized as centralized planning and centralized execution. The division commander

retained direct control of his aviation elements and assigned them missions and controlled those missions as part of his operational intent.

Aviation elements were used, in effect, to extend the striking distance of the division in concert with the overall scheme of maneuver. In these cases, orders were passed either directly from the division commander or the ADC-M (Assistant Division Commander for maneuver).

The second method could be categorized as decentralized planning, decentralized execution. The divisional commander simply assigned his aviation units to his ground brigades, and they controlled missions.

Ultimately, it was the aviation brigade commander who bore responsibility for the success of aviation elements of the division. His orders were transmitted by a variety of means. Since aviation units often shared the same FARP, missions were often discussed and orders sometimes given there.

When more time was available, brigade commanders planned and discussed missions and then issued orders in TOCs and TACs, with staffs and company commanders present. When deep missions were being flown by aviation elements, corps aviation brigade commanders were most commonly found in the corps deep operations cell, transmitting updates to combat units.

Most aviation brigade commanders spent a majority of their time in their command and control helicopters. A common set-up included the brigade commander in a UH-60 accompanied by his "combat multipliers" and his Air Force Tactical Air Control Party (TACP).[14]

Aviation brigade commanders performed a variety of command and control tasks. i.e., providing the link between the units and the division or the ADC (Assistant Division Commander) for maneuver. In many instances, the brigade commander's aircraft was the first to reach the projected LZ

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[14] Combat Multipliers included fire support coordinators, logisticians and other liaison officers. During World War II, the Germans used JU-87 dive bombers controlled by Luftwaffe officers on the ground. After 6 June 1944, the RAF supplied controller officers to ground units, and they would call in and direct close air support missions. Eventually, the U.S. Army also developed a similar system. See: Daniel R. Mortensen. A Pattern for Joint Operations: World War II Close Air Support North Africa. (Washington, D.C.: Office of Air Force History and U.S. Army Center of Military History, 1984).

or target, and perform a leaders reconnaissance to help set up the fight.

Commanders also provided target information or helped to sort out problems on the ground because they could "roam" the battlefield almost at will. In one case, an aviation brigade commander flew a single-ship deep reconnaissance mission in an OH-58D to determine the situation in the front of his division.

During Operation DESERT STORM a pattern developed not unlike Vietnam. Brigade commanders normally were in and around the fighting in their command and control (C2) aircraft. Corps aviation commanders, whose aviation battalions were often spread over the entire battlefield and who had considerable "deep" responsibilities, tended to remain at the deep planning cell to better control the flow of the action.[15]

At the next lower step, the Aviation battalion commanders were as they should be in the thick of the battle with their units. Here, a interesting conundrum developed with regard to attack helicopter units. Where should one find the attack battalion commander in combat? Should he be in the front seat of an Apache/Cobra or should he be in a C2 equipped Black Hawk? There were instances of commanders successfully using one or the other.

A strong case can be made for each. Which is correct doctrinally? Commanders on both sides of the issue have strong feelings based on combat experiences and thoughtful reflection. There seems to be a place here for new doctrine. In the end, which aircraft the commander fights the battle in may have to be left up to individual commanders. Regardless of where he fought the battle from, aviation battalion commanders were on the cutting edge of the important relations between air and ground elements.

During World War II, through much of the war, there was a problem between the Army ground forces and the Army air

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[15] Colonel Thomas W. Garrett whose 101st Aviation Brigade was spread all over northern Iraq was able to manage both. Oral interview, Colonel Thomas W. Garrett, 17 December 1993, Oral History Fille, Branch Historian Office.

forces which resulted in incidents of fratricide.[16] Near the end of the war, cooperation had become so much of a way of life that the Army Air Force assigned dedicated fighter-bomber units to fly support missions for ground forces. Since these air units habitually worked with the ground elements, the incidents of mistakes were greatly reduced. A similar attitude of cooperation between ground and air elements would be so in Operation DESERT STORM, but some problems still remained concerning support mission planning.

For example, one of the major problems faced by Army Aviation was airspace control.[17] Both aviation and artillery units lacked the necessary equipment to interface with the SPINS system used by the Air Force. Without mission input from both services, Air Force jets could wander into artillery fire or Army helicopters into the middle of a bombing raid.

In order to effect the daily air tasking order, units usually had to physically bring a roll-up of the next day's missions to the nearest Air Force SPINS terminal. Because of this time lag, there were instances of Army helicopters flying over live demolition areas and artillery trying to shoot through KC-10 refueling orbits. Operation DESERT STORM clearly showed the need to provide an effective airspace control system that tied together the Air Force air tasking order with the ground commander's plan.

Bottom Line -- within certain specified limits, the C2 System worked well enough to orchestrate one of the most lopsided defeats in military history. There is doubt, however, that the Army cannot rest on its laurels. Combat experience in Operation DESERT STORM strongly indicates that C2 systems should be one of the top priorities for future R&D.

Selection 6.1 consists of a short briefing on the problems of communication in the desert, and the use of OH-

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[16] For instance, the Chief of U.S. Army Ground Forces, General Lesley McNair was killed when Army Air Force bombers dropped their bombs to short during Operation Cobra. More than 100 ground troops were killed with General McNair in this incident. Because such mistakes occurred often, ground troops tended to refer to the USAAF as "Hitler's Air Force." See: Russell F. Weigley. Eisenhower's Lieutenants. The Campaigns of France and Germany, 1944-1945. (Bloomington, Indiana: University of Indiana Press, 1981), pp. 152-158.

[17] A dispute over airspace could have led to more Iraqi troops reaching the safetyu of Iraq. See: Rick Atkinson. Crusade: The Untold Story of the Persian Gulf War. Boston, MA: Houghton Mifflin, 1993. p. 462.

58Cs as radio relay ships for deep missions. Selection 6.2 involves another novel way of providing deep communication -- the 24th Aviation Brigade use of USAF A-10s for the same purpose as selection 6.1. Selection 6.3 involves a detailed briefing of communication and control of an actual combat mission on February 25 involving 4/2nd ACR. Selection 6.4 involves the same unit, but with several different types of missions and the communication problems they caused. Selection 6.5 is a very interesting briefing on the planning process for offensive operations, and the thought that went into the development of proper communications. A integral part of proper communication in the desert was knowing your exact location. Selection 6.6 discusses the importance of the Global Positioning System (GPS) to command, control, and communications. Selection 6.7 consists of an interview with Captain Robert Chester, a UH-60 platoon leader with 2/17th Cav and how he controlled his company during the 101st Air Assaults into Iraq. Selection 6.8 sees the return of Colonel Tom Green with a detailed discussion on the important subject of air space control as does Selection 6.9. The Selection 6.10 is another part of the same interview with Colonel Green, but this time he discusses command and control from his perspective and experience as the aviation officer of XVIII Corps. Selection 6.11 again involves Colonel Green but this time on the subject of air-ground coordination which had its problems during Operation DESERT STORM. Command and control is part and parcel to doctrine. In selection 6.12, a senior staff officer in XVIIIth Airborne Corps discusses the problems of doctrine as they related to how aviation units were controlled on deep missions. As the commander of the 18th Aviation Brigade, Colonel Robert Seigle was in a unique position to see all sides of the command and control equation. In selection 6.13, he talked in a post-DESERT STORM interview about command and control problems between the various services. In Selection 6.14, Colonel Seigle talks about the problems of mobilization from a communications viewpoint -- in other words, how much communication is enough to talk to other units in a desert. When U.S. aviation units arrived in Saudi Arabia and began flight training, they had significant air space control problems with the local Saudi authorities.

In selection 6.15, Colonel Seigle speaks at length on this problem and how it was eventually solved.

A senior staff officer in the VIIth Corps discusses the large number of command, control, and communication problems VIIth Corps faced in the desert -- they range from his view of C2 birds to controlling aviation units in combat.

AVIATION COMMAND AND CONTROL 6.1

Control. One of the major problems faced by Army Aviation was airspace control. Both aviation and artillery units lacked the necessary equipment to interface real-time with the CTAPS (Contingency Theataer Airspace Planning System) used by the Air Force. In order to effect the daily air tasking order, units usually had to physically bring a roll-up of the next day's missions to the nearest Air Force SPINS Terminal. Helicopters flew over live demolition areas, artillery tried to shoot through KC-10 refueling orbits. Operation DESERT STORM clearly showed the need to provide an effective airspace control system that tied together the Air Force air tasking order with the ground commander's plan.

Tactical Control. The extreme distances involved put a premium on commanders leading from the front. On deep missions, units would often use OH-58Cs as communication's relay platforms. During missions involving closer coordination with ground elements, a substantial control structure would be emplaced to ensure real time relay of orders and situation reports. Particular systems, such as the UH-60 command and control console, proved absolutely invaluable in combat. Other systems, such as the communications on the AH-64, required endless "work-arounds" and resulted in lost communications during combat.

Control Measures. Operational graphics are useless without the ability to navigate. The GPS and Loran receivers used by aviation and ground elements during the war were absolutely invaluable. This war would have been far less successful without GPS.

Rapid Tempo. Despite the command and control problems listed above, aviation repeatedly demonstrated the ability to attack from one direction, break contact, and re-attack from a second direction.

C^3I Enhancement. Aviation's inherent mobility created opportunities to improve the command and control of ground elements. Aircraft from the Regimental Air Cavalry Squadron scrambled to find the lost convoys and direct them to the Regimental main body. In another case, Air Force F-16s repeatedly identified friendly ground units as Iraqi elements --fortunately, OH-58Ds were able to identify the friendly ground units with laser designation and avoided a potential fratricide.

"The Gulf War both demonstrated the tactical usefulness of the GPS and added fuel to the debate about how access to the system should be controlled. For coalition forces, the GPS receiver became the military equivalent of the military equivalent of the personal computer, facsimile machine and cellular telephone; something you didn't know you really needed until you had one. GPS corrected Doppler errors of up to 5 kilometers in helicopters, and some combat aircraft flew with hand-held receivers attached to their instrument panels by Velcro. Even the humble foot-soldier suddenly had access to technology that made sense out of the featureless desert. GPS has outmoded the adage that the most dangerous animal on earth is an officer with a map.

The highly accurate read-out of time provided by GPS is also useful for synchronizing secure communications, such as Have Quick frequency-hopping radios and JTIDS networks, which require accuracies of a microsecond or better. During the Gulf War, GPS-derived timing information proved a boon to coalition forces that had geared their plans to a European conflict using terrestrial transmissions.

When designing the GPS system, the U.S. Department of Defense (DOD) intended that the GPS should provide a positional accuracy of no better than 100m. Commercial C/A-code receivers routinely produce read-outs that are accurate to 20-40m, however, allowing them to be militarily useful. For example, there is anecdotal evidence that Iraqi forces used commercial C/A-code receivers to position their mobile SCUD launchers during the Gulf War.

In order to minimize this threat, the DOD has implemented a policy of selective availability (SA). This involves the intentional degradation of GPS signals by

broadcasting slightly erroneous clock and orbital information from the Navstar satellites.

Who commanded Army Aviation units? Who generated the missions? Who led Aviation units in actual engagements? Which command relationships worked, and which ones didn't (and why)? Army Aviation was unique in that it was sent into battle and effectively used by coalition forces, joint elements, corps, divisions and brigades.

Coalition

The French 6th Light Division used an OH-58D platoon throughout the war. The night vision systems and long range optics of the OH-58D allowed the French Division to repeatedly adjust its scheme of maneuver based on near-real-time intelligence. OH-58D's were accompanied into battle by French Gazelle helicopters, firing HOT anti-tank missiles. Other cases included C^3I enhancement missions to keep track of allied elements, armed escort missions for foreign dignitaries, and support for the re-occupation of the American and British Embassies.

(OH-58Ds Off The Coast)

Joint Command and Control

The armed OH-58D's of 4-17th Cavalry flew off of Navy ships throughout the war. Naval task force commanders directed the OH-58D's to perform reconnaissance missions, and attack missions in support of joint and coalition naval missions. In one critical case, the naval task force commander directed the OH-58D's to engage a Silkworm missile site, after repeated attempts to destroy it by fixed wing sorties had failed. The mission that began the air war was a joint USAF-Army mission, using CH-53's and Apaches equipped with long range fuel tanks.

Corps Level Command

Both Corps operated deep operations planning cells for the control of attack helicopters, but each cell was created through different needs. VIIth Corps had been training to fight a European land battle, and its deep attack cell was a reflection of the recognized need to destroy follow-on echelons of Soviet forces early in the battle. Additionally, VIIth Corps set up a decision methodology that would automatically launch Corps attack battalions when the conditions were correct. An active decision-making process

was therefore required only when the battlefield conditions were borderline. XVIIIth Airborne Corps, on the other hand, was trained and structured for rapid-deployment brushfire situations, and had not established a deep attack planning cell prior to Operation DESERT SHIELD. As the plan for the ground war matured, the expected depths of helicopter operations and the persistence of the 12th Aviation Brigade (a European-based unit) combined to finally persuade the XVIIIth Airborne Corps to set up a deep attack planning and execution cell.

Even with such planning and execution cells in place, the accelerated tempo of the ground war often meant that attack battalions executing Corps missions were sent into battle with the barest minimum of planning time--often only enough to quickly draw rough graphics on a map. During one phase of the Battle for the Causeway, the order given to attack helicopter units was simply "... fly due north, pick up the Euphrates, fly due east along the Euphrates, and engage elements of the Republican Guard moving over the causeway...".

Division Level Command

Two general methods were observed for the command of Aviation units at the divisional level. Some division commanders decided to retain control of their aviation elements, and use them to extend the striking distance of the division in concert with the overall scheme of maneuver. In these cases, orders were passed either directly from the division commander, or from the assistant division commander for maneuver (ADC-M). Occasionally, orders passed by the ADC-M would be 'fine tuned' en route by the division commander. The narratives of these missions are marked by a relatively clear sense of purpose and, usually, by good results. The other method used at the divisional level was to "OPCON" attack battalions directly to ground brigades. The narratives of these missions often reveal confusion and doubt, and will be discussed later under the heading of "Ground Brigade Command."

Aviation Brigade Command

Regardless of who generated the missions, it was the aviation brigade commander who bore ultimate responsibility for the success or failure of aviation elements at the

divisional level. His orders were transmitted by a variety of means. Since aviation units often shared the same FARP, orders were sometimes given there, face to face -- especially when time was short. When more time was available, brigade commanders gave orders in TOCs or TACs, with staffs and company commanders present. During deeper missions, corps aviation brigade commanders were commonly found in the corps deep operations cell, transmitting updates to combat units.

Divisional brigade commanders spent much of their time in command and control helicopters during missions. A common command set-up included the brigade commander in a C^2-equipped UH-60, accompanied by "combat multipliers" such as the tactical air control party (TACP) in another aircraft. Deeper missions and longer station times demanded aircraft that could carry auxiliary fuel, such as the UH-60.

Aviation brigade commanders performed a wide variety of tasks on the battlefield - tasks that occasionally went beyond the command and control of their units. Commonly, when a brigade commander was on the scene, he provided the link between the ADC-M or division commander, and the attack companies or battalions--feeding attack assets into areas where the fight was the hottest. Divisional Brigade commanders were often in the first aircraft on the LD/LC, performing leaders reconnaissance, and setting up the fight. Command and control aircraft allowed the brigade commander to "roam" about the battlefield and, in some cases, provide targeting for the attack assets. In one remote case, a brigade commander flew a single-ship deep reconnaissance mission in an OH-58D to determine the situation in front of the division.

The general pattern emerging from these narratives was that the divisional brigade commanders, who were faced with a relatively difficult task of integrating helicopters into the close fight, were usually flying in command and control aircraft in fairly close proximity to their combat units. Corps aviation brigade commanders, who were faced with the difficult task of controlling units spread out around the corps area, and whose attack battalions usually went deeper into enemy held territory, remained at the deep attack

targeting cell to help provide the information and intelligence required for these missions.

Aviation Brigade Staff

The primary function of the brigade staff is to assist the Commander in controlling, commanding, and supporting the operational units of the brigade. Aviation staffs were somewhat hamstrung by their small size, and the extremely large area which the brigades normally covered. A shortage of qualified liaison officers forced the primary staff to do things that were never doctrinally intended. In several cases, the brigade S-3 had to position himself alongside the division TAC, in a HMMWV with every radio he could get his hands on just to maintain a steady flow of mission changes and support requirements. As a general rule, the brigade staffs were neither manned nor equipped to handle 24-hour operations across the breadth and depth of the division zone. As the tempo of the ground war increased, the normal staff work required to support the operation suffered, with a corresponding decrease in the availability of operations graphics, full operations orders, and coordinating instructions. One conclusion that must be drawn is that, if you command assets which provide a 24-hour capability on the battlefield, you must have a command and control apparatus (including a staff) that is also able to operate on a 24-hour basis.

Ground Brigade Command

Divisional aviation battalions can doctrinally be put under the operational control (OPCON) of ground brigades. Normally, this occurs when the only fight to prosecute happens to be the close battle at the front line trace. There is a tremendous amount of activity at any given moment in a ground brigade sector and the ground brigade commander must integrate a tremendous number of dissimilar weapons and functions in order to apply the maximum combat power. Think of it this way. Try maneuvering in your head forces on the ground, coordinate with them converging artillery fire, helicopter attacks, and Air Force CAS missions. In addition to this, keep control of all support that is moving up behind to include Army aviation support. It's much like playing a fast form of chess. The commander must keep all of the afore mentioned factors in his head as his is

calculating the Brigade's next move which is subject to rapid change as he is contemplating it. To do this with some expectation of success, the commander must have precise information at his immediate fingertips. Compounding this problem is the real possibility that the brigade Tactical Operations Center (TOC) often cannot locate, with precision, every single ground vehicle out of the thousands assigned to it at any one instant.

The brigade area is a crowded place. Just behind the fighting units is the artillery -- potentially dozens of mortar batteries, at least one self-propelled artillery battalion and, in this war, one or two Multiple Launch Rocket Systems (MLRS) whose range extends beyond 30km. The "real estate" of the brigade area must be carefully managed to prevent units from getting in each others way, or from wandering into areas where only the enemy should be. All of this is difficult enough on a peacetime day--it often becomes a real headache at night in the confusion of war.

When attack helicopter battalions were OPCONed to ground brigades, three primary problems occurred in the narratives. One problem was the relative "incompleteness" of the orders. Attack units would launch with only a grid location for a holding position, and a radio frequency to contact the ground brigade. " The battalion commander's intent, after we reached the holding area, was to contact the ground brigade commander, the aviation brigade commander, and the division commander, and figure out where we needed to go. Then he would come up on the radio and direct us into the fight". Another problem was "real estate management." Attack helicopters were directed into locations already occupied by ground units and artillery battalions--"...the engagement area that the apaches were given was collocated with a MLRS battery, which was firing. There was a lot of confusion on why the artillery was still firing. Another MLRS battery started firing off to the left. They were very close. We realized that we were in the way of the artillery tubes and that we needed to fly out of the area". If the originally coordinated position was crowded, chances were that the alternate position was unsuitable as well. The third problem, and potentially the most dangerous, was trying to acquire the "front line

trace." If Apaches were brought into close proximity with fast moving ground units, there had to be some means to separate friendly ground elements from Iraqis. At the core of this problem was the inability of any headquarters to precisely locate all of its assets at any one time. The result was attack helicopters either waiting in a holding area for extended period of time--or executing the mission with a bad "front line trace," and the attendant fratricide risks.

The units that successfully synchronized all the elements of the combined arms and joint teams apparently did so by "spreading them out" in time and space. Instead of trying to focus too many combat elements onto a front line that could never be well defined, many divisions would let attack helicopter battalions work well ahead of ground brigades--disrupting and fixing Iraqi elements in sector--in order to help "set up" the ground attack.

Aviation Battalion Command

A vast majority of the narratives show the aviation battalion commander airborne, and closely involved in the fight. Many attack battalion commanders flew from the front seat of an Apache the whole time and will probably continue to do so in the future, until something like the Comanche comes along. There were several good reasons for this. The OH-58, Huey, and Black Hawk can't see the fight; they don't have the night optics. The Huey and the OH-58 can't keep up with the Apaches. You need to be able to put extra fuel in the C^2 aircraft to handle the longer missions. The technique of using AH-64's as command and control platforms took no combat power away, due to the fact that corps had issued the extra maintenance floats to individual battalions - many attack battalions had 19 or 20 Apaches. In several cases, AH-64 Battalions were assigned an extra company of Apaches, taken from the ARCENT reserve battalion, 5/229th. Considering the distances covered, and the mission profiles flown, the only place that an attack battalion commander could effectively fight his battalion was from an Apache. When maintenance decreased the number of available AH-64's, or when Battalion Commanders needed immediate access to their staffs, they sometimes relied on a UH-60 with a C^2 console.

As mentioned earlier, the process of working Apaches into a close fight was difficult and time-consuming. Various parts of the mission briefing did not always "come together" at the same time, nor early enough to effect the operation: "The battalion commander went to get the specifics of the mission, which took 4 hours. While he was gone, the attack helicopters had moved to a new FARP, farther forward to keep them in proximity to the fight...I received the mission from the battalion commander from the back of a pickup truck. All I was given was some simple graphics depicting boundaries, and the grid location of the holding area."

A common pattern was for the battalion commander to lead the first company into the fight, accompanied by the UH-60 Air TAC. The battalion commander would then maintain radio contact with either the aviation brigade commander, the ADC-M, or the ground elements, and remain on station to feed attack companies directly into the fight. With the battalion staff nearby in the "air TAC" UH-60, and other elements of the combined arms/joint team in OH-58Cs, such as the tactical air control party (TACP) or the aerial fire support observer in OH-58Ds, the aviation battalion commander could see the fight, integrate the combine and joint teams on the spot, and rapidly focus tremendous combat power anywhere in the division or corps area.

The prime members of the battalion staff (the operations and intelligence staff officers) often followed the battalion commander in specially-configured UH-60s. These aircraft also performed the role of the organic Combat Search and Rescue (CSAR) aircraft for the battalion, and rounded up prisoners that had surrendered during the helicopter attack. When the depth of the attack was not too great, these multi-role UH-60s allowed aviation staffs to remain in contact with brigade and division, relaying situation reports and orders to and from the fighting units. They were commonly found several kilometers behind the attack helicopters, but they were certainly not immune to close contact with the enemy. At one point in the causeway fight, the UH-60 "...was hovering over the marsh area and they are only a couple of feet off the ground...they were hovering over a bunker complex that had about 11 Iraqis in

it. Out of the right side, all of a sudden, the crew chief looks up and here is about 11 of these guys crawling out of the ground and actually came over and touched the aircraft...trying to get a ride out of there". The operations officer of the battalion, or S-3, sometimes replaced the battalion commander for short durations. Naturally, in the commander's absence, the exact same functions had to be performed in order to execute the mission successfully - battles had to be handed over from one battalion to another, communications maintained with division, the aviation and ground brigades, and the subordinate attack companies. Artillery and close air support had to be conducted.

Written by Major Kevin B. Smith, USA, Aviation Planning Group, U.S. Army Aviation Center, Fort. Rucker

AVIATION COMMAND AND CONTROL - 6.2

It was becoming increasingly clear that communications in the desert was going to be a continuing challenge. The battalion communications section of the 2-229th AHB continually searched for innovative ways to solve the communications problems. Additionally, continual employment of the OH-58C scouts underwent some operational changes. The 2-229th consolidated OH-58C assets under one officer -- a concept they dubbed Team Warhawk. The Team Warhawk mission was to provide C&C, communications relay, FARP traffic control, airborne communications platforms for the FSO and ALO (when available), and aerial security with the ATAS-equipped OH-58Cs for the company in contact. This concept was to yield significant dividends during future training, battle drills and, most importantly, during combat.

AVIATION COMMAND AND CONTROL 6.3

Colonel Tackaberry's units (24th Avn Bde) used the Air Force's A-10s to maintain communications with the Apaches when they crossed the forward line own troops (FLOT), about 16 miles (25km) out. At that point, radio contact was lost, so the Apache crews would call out their phase lines as they

reached them to the A-10s, which relayed the information back to Colonel Tackaberry.

AVIATION COMMAND AND CONTROL 6.4

At approximately 1000 hours on February 25, 1991 (G+1), 4/2 Squadron's HELITOC was ordered to perform radio retransmission along PL Falstaff: "Although Wolfpack (3/2nd ACR) had reported reaching PL Falstaff, they were actually 5 kilometers short of it. The HELITOC flew over Iraqi infantry and was hit by a single 7.62mm bullet. The bullet lodged in an exhaust plug in the tail boom and caused no further damage. The aircraft turned, fired a single burst from its M60D machine gun and the infantry surrendered. Scouts from Wolfpack handled the EPOWs. In the afternoon, the Quickfix Platoon (UH-60) established a low level collection and fixing position in the vicinity of PL Blacktop. By 1400 the weather in the area of operations deteriorated and all Savage Troop assets (UH-60) recovered to a new AA. On February 27 (G+3), the entire troop moved at 0800 to a new assembly area. While transporting the Squadron S-3 (MAJ John MacDonald) forward, the Squadron HELITOC became involved in a small battle between some MTLBs and elements of regimental support squadron (RSS). It remained on location until Q (Quickstrike) Troop arrived and destroyed the threat. One UH-60 aircraft that was unable to locate the fuel convoy the night prior, launched at first light and located the convoy at approximately 0930 on February 27, 1991. It landed and gave the convoy directions to the RSS, which was critical on fuel. That same night, another aircraft was launched just before dark to locate yet another lost fuel convoy. Using the extended range and loiter time allowed by the ESSS UH-60, the crew located the fuel convoy with night vision goggles and returned to the assembly area at 2130. Three UH-60 aircraft which had been launched at noon returned to the regimental assembly area with slingloads and internal loads of mail."

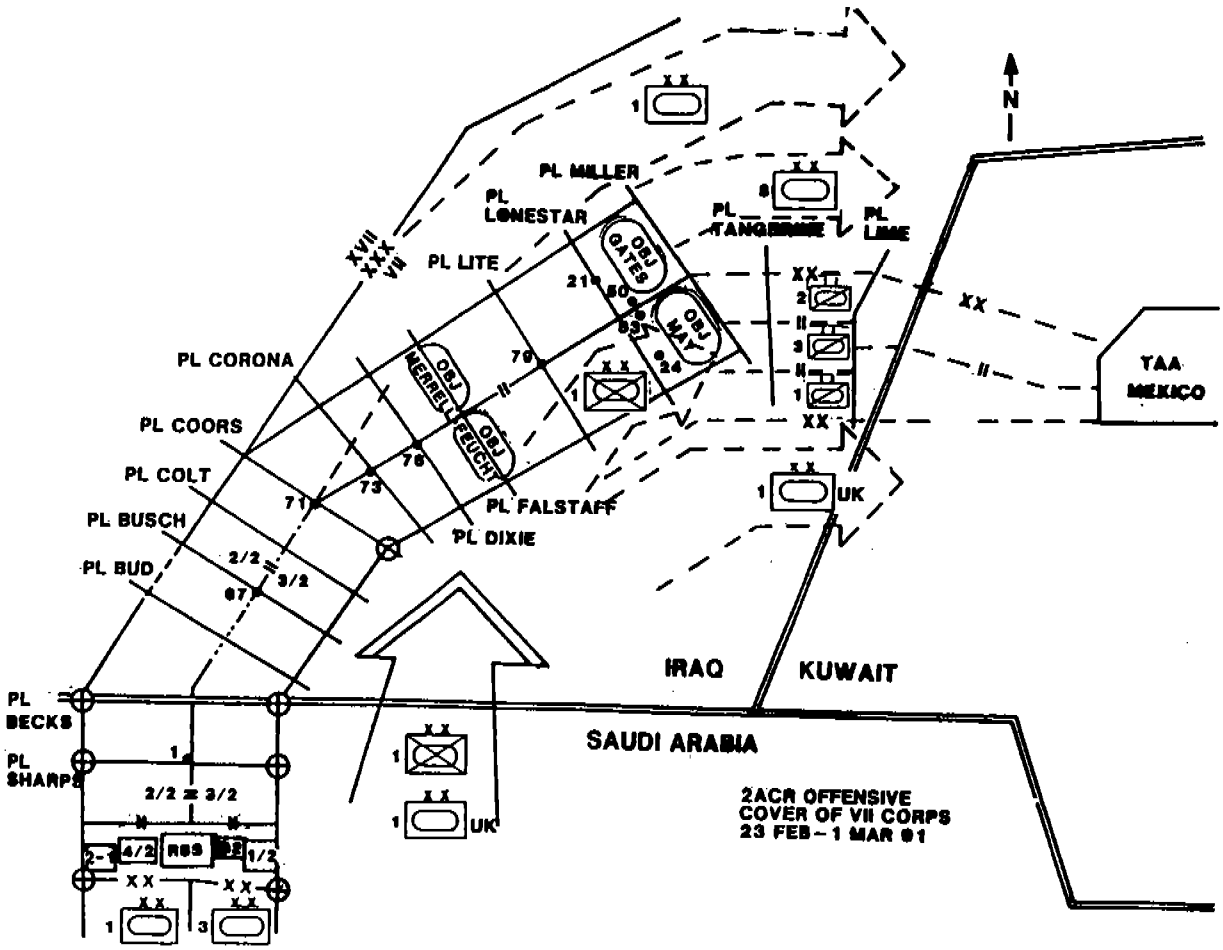

Fig 6.4

AVIATION COMMAND AND CONTROL - 6.5

In order to fulfill the command and control requirements required for fighting the fluid battle, the 4/2nd ACR's HHT modified the existing system to support the Squadron. "With the Squadron set within regimental sector, the communications center best situated for the tactical scenario would control the battle (normally the TOC). The TAC and Jump TAC would position forward behind a lead ground Squadron's combat trains while the TOC controlled the initial stages of the day's battle. The helicopter TOC (HELITOC) provided a flexible link which primarily served as a temporary control platform and to improve communications at extended ranges. While the C&C structure remained essentially the same, the Corps movement exercise prior to the ground war showed the requirement for additional communications. As a result, the TOC dispatched two HMMWVs with multiple radios and OE-254 antennas to serve as a jump TOC and to strengthen the C&C link. This added measure was highly mobile, fast, easy to employ, and proved invaluable,

providing the final link for control of the battle throughout the depth of the sector. A majority of the difficulties experienced with C&C were corrected prior to the ground campaign with the addition of the jump TOC. Other minor problems were corrected through additional training to include several communications exercises involving many variants of the C&C structure."

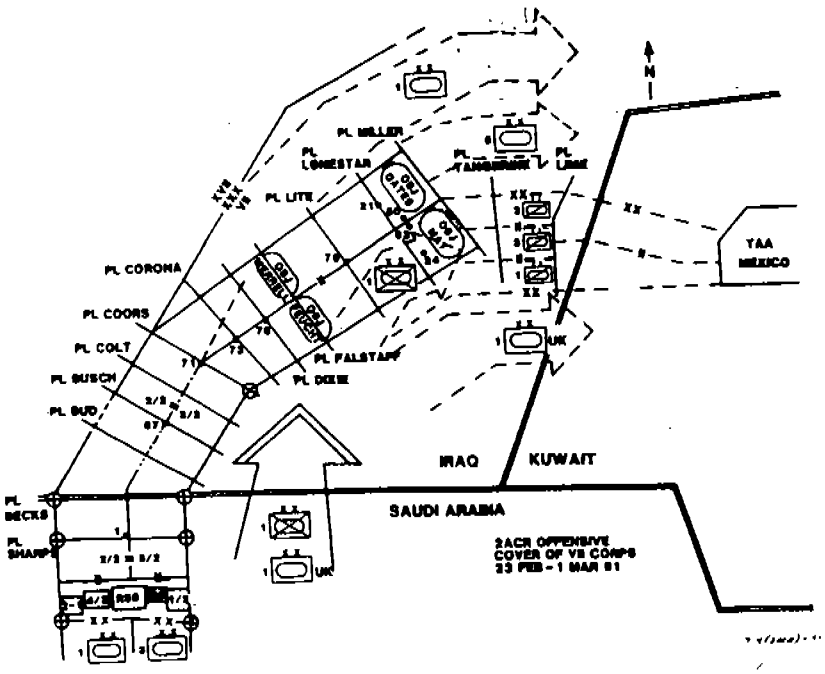

Fig 6.5

AVIATION COMMAND AND CONTROL - 6.6

By December, the 101st's transition to the offense began to take place and training was limited to rehearsals for offensive operations. Additionally, the "OPTEMPO" was drastically cut back allowing the 101st Aviation Brigade to initiate a major maintenance surge. This surge included completing as many phase maintenance inspections as possible, changing out weak engines, and completing all finite-life TBOs; all in order to increase the "bank time" available for offensive aviation operations. These efforts

were enhanced by the visit of the AVSCOM commander, who was briefed on our maintenance situation and responded quickly with technical and logistical assistance.

Along with the maintenance surge, December was marked by a planning surge at all levels. While the Brigade did not have an OPLAN or even a preliminary mission, commanders and planners tackled the larger task of determining what was "in the realm of the possible," While exact capabilities and mission requirements had long been answered with "it's based on METT-T," most of that equation was now a known quantity. The ability of the 101st Airborne Division (Air Assault) to project combat power lies in the capabilities and limitations of its aviation. Several key questions needed definitive answers: How long could our crews fly under night vision goggles (NVGs)? Under what conditions? What was the maximum planning range and radius of our aircraft with max combat loads? How much fuel would that require? Where would that fuel have to be, and how many hot refuel points would be needed to achieve the desired minimum separation? These and many more questions were analyzed, argued, tested, and largely resolved for the known conditions in the weeks leading up to the start of offensive operations.

Hard data on the offensive mission was scarce until the start of the air campaign, yet most of the Division's planning was centered on a divisional air assault mission. This presented a new challenge to the Aviation Brigade, since all peacetime training centered around infantry brigade operations. A multi-brigade air assault required the Aviation Brigade to retain control of all of its assets, allowing it to combine and task organize as efficiently as possible. A divisional air assault would require a single lift using every available aircraft in the three assault battalions and the medium lift assault battalion. No FARP operated to date was capable of supporting lifts of that size without separation between serials that was unacceptable to the ground commander. Ground commanders demanded closure of combat forces on the objective as rapidly as possible, thus reducing his risk of being outnumbered and increasing shock effect.

AVIATION COMMAND AND CONTROL - 6.7

Trimble Trimpack Global Positioning System (GPS). Based on a theater request for better navigational equipment to guide aviators over the featureless desert terrain, AVSCOM and PEO Aviation funded for the development and procurement of "A" kits (wiring and mounts) and arranged for obtaining "B" kits (the actual GPS receiver) for Army aircraft in SWA. Because of time constraints, i.e., the need to deliver these devices as quickly as possible to the theater, quick mount devices were specified and the GPS was not integrated into existing aircraft avionics systems but required manually entering output of the GPS into the aircraft avionics systems for aircraft positioning.

AVIATION COMMAND AND CONTROL - 6.8

The following is an interview between Dr. Burton Wright, Deputy Branch Historian and Captain Robert Chester, who was a UH-60 Platoon Leader with 2/17th Cavalry, 101st Airborne Division (Air Assault).

Dr. Wright: What line company were you assigned to?

Captain Chester: I was in Delta troop of 2/17th. Its a Cavalry squadron, but D troop was all UH-60s. We had three EH-60s, we had five assault UH-60s straight support and then we had five command and control aircraft which I was the platoon leader of.

Dr. Wright: Describe what makes a command and control ship different from a normal run-of-the-mill Black Hawk.

Captain Chester: An EH-60 is equipped with a radio rack in the back. It has a SATCOM radio, a high frequency (HF) radio, and three multi-band radios. It can be operated in the air, or ground operated where you run out the antennas and set up a ground generator.

Dr. Wright: So each of the these C^2 UH-60s would probably be used by a brigade commander with three battalions. He would operate on that?

Captain Chester: Right.

Dr. Wright: What did they have you do at D troop?

Captain Chester: At D troop I was the command and control platoon leader. I had five aircraft, my platoon sergeant, five crew chiefs and nine pilots (all warrant officers) plus myself.

Dr. Wright: Describe the qualifications of the pilots in terms of how many had several thousand hours and how many did not.

Captain Chester: Two had been prior MEDEVAC pilots in Panama during Operation Just Cause. One was an IP with 1,000 hours. The other one had relatively low time. The rest of the pilots were W1s and W2s. Their experience ranged from probably 500 hours up to about eleven or twelve hundred hours. So, there wasn't a whole lot of experience in the platoon.

Dr. Wright: Did you have any problems with maintenance or anything like that in the platoon?

Captain Chester: Worst problems were sand eating away at the blades. We came up with some quick fixes. A lot of that was 100-mile-an-hour tape as a stop gap. Other than that, our APUs tended to burn out quickly in the desert environment. We maintained them pretty well. Normally at about 80% availability.

Dr. Wright: Now as the C^2 platoon leader, I assume your aircraft were used by commanders. Which commanders did you serve or who used your aircraft?

Captain Chester: The aviation brigade S-3; the infantry brigades - whichever one was mounting the mission at that time - their brigade commander; the assistant division commander for maneuver. We had five aircraft configured to carry the consoles, but only had three radio consoles on hand - only three that could work that mission at a time. They configured a UH-60 that was almost all FM radios for actual internal control of the cavalry line troops. That wasn't operable in the air. You would go forward and set that up on the ground with the S-3 running that show. That was the use of the fourth one and the one that I primarily flew during Operation DESERT STORM.

Dr. Wright: How did you use the few weeks remaining from the time that you reached the unit to the time that Operation DESERT STORM kicked off?

Captain Chester: That time was spent trying to keep the aircraft down as much as possible. We had a general date. We knew about when it was going to kick off and we were trying to work on units and get the aircraft up. I arrived with two warrant officers also from Fort Lewis and

the unit put us through the ATM training to certify us up for the mission. Anytime an aviator comes into a different unit, they go through that unit's indoctrination. So, we had to fly a certain amount of hours with them. Plus it was good for us to get trained, night vision goggle training in the desert, a completely different environment.

Dr. Wright: Tell me what you did for Operation DESERT STORM? Where you went, the distances involved, who you supported and what they did.

Captain Chester: We were part of the big movement to the west. We had FOB Cobra. We had the 24th ID on our right and the French Division on our left and the 101st was in the middle. About the January 25 or January 26, shortly after Operation DESERT STORM kicked of the air war, we moved out to our assembly area which was about 400-500 miles to the west of King Fahd International Airport and just south of Tapline Road along the border. We staged out of an area near the city of Rafha. We were there for about three weeks. Once the ground war kicked off, a Sunday morning I believe, the whole division went into FOB Cobra. That involved setting up a PZ posture the Saturday afternoon prior and we were all prepared to take off early that Sunday morning. That was just a few miles north of Tapline Road and from there, on that Sunday morning, we moved on up into FOB Cobra.

Dr. Wright: What did you personally do during that time?

Captain Chester: I was flying the Cavalry squadron's command and control aircraft. We had the squadron S-3, the fire support and chemical officers, a couple more assistant S-3s on board. Our job was basically to serve as what they called the air TAC. It was pretty much a jump TOC, forward for the cav squadron. The squadron's mission was to screen forward of the division.

Dr. Wright: What assets were used for this? How many companies are we talking about in the cav troop?

Captain Chester: There are three line troops there in the squadron. I believe on that day they used two of the troops and kept one back on reserve to come up later in the day. The troops were equipped with AH-1S Cobras and OH-58C scouts.

Dr. Wright: So you were screening the movement forward. As I understand it the 1st Brigade of the 101st made the initial assault into FOB Cobra.

Captain Chester: I believe that is right.

Dr. Wright: Were you flying along air corridors which you could not deviate from or were you free to fly as you wanted to?

Captain Chester: There were so many aircraft that, although we weren't locked into any real specific area, we did have air corridors. We were in flights of about six or seven aircraft each. That morning we were originally scheduled to take off about 0500 under NVGs. That probably would have been the first twenty or thirty minutes of the flight, but the fog came in that night and a 58D crashed. The division commander decided to hold off until day light so, we actually didn't take off until about 0700.

Dr. Wright: When you were flying with the S-3 what did you see on the battlefield?

Captain Chester: None much at all. Not while we were flying forward. Once we got forward, we set up our TOC, and, at one point, we had a truck load of about 25 Iraqi soldiers drive up to us. We didn't know what they were doing at first, but they came up to us, holding their hands up, trying to surrender. We were just that small crew off the aircraft so, we called back and got some more infantry support flown in from the UH-60s to the rear of us. They brought some CH-47s back and evacuated the prisoners.

Dr. Wright: How long did you sit in one place as a TOC?

Captain Chester: We moved a lot. It varied. Sometimes we would sit in one location for a few hours and other times we would sit for as long as days at one location.

Dr. Wright: Did you move to FOB Viper--can you describe that move?

Captain Chester: We didn't really have great coordinates of where we were going and we got up there early. There were several aircraft that were flying around (CH-47s dropping off troops). We didn't know exactly where we were going to land, but we finally just picked a spot.

That was going to be our assembly area for the squadron. They came in later in the day.

AVIATION COMMAND AND CONTROL - 6.9

The following is an excerpt from an interview between Dr. Wright, Deputy Command Historian, and Colonel Tom Green, who served as the XVIIIth Airborne Corps Aviation Officer during Operation DESERT STORM.

Colonel Green: So, the French got into the battle. They were the left flank unit. They were the heavy security on the border or boundary and their job was to screen and seal off that boundary. It was a guard-type mission to keep anyone from attacking us. And they worked just fine. Their interaction with us was right by NATO standards to include air space management. They caused us some embarrassment because they followed the air space management rules precisely and we didn't. They couldn't understand why we didn't follow our own rules. We finally talked the aviation folks into doing that. They would report every day, 24-hours in advance, what they intended to do the next day. They told us in advance when they were going to shoot artillery and to what depth and what altitude, etc. So that information could go to the Air Force and they would not fly through any danger areas. We flew helicopters all over the place, up and down the roads, through their areas and areas where they were setting off demolitions. We got that under control after a while. Air space management is still a relatively new skill for Army aviators and we are working our way through that. We found, though, that once we got the guys going on air space management, they thought a little bit farther in advance and they could tell you what they would be doing the next day. We actually got it into the air tasking order and the Air Force was publishing it so that everybody that needed to know about it got the information."

Dr. Wright: Who controlled the air space, Air Force or Army?

COL Green: This was joint. It went right by JCS Publication 1-1 and the air space, the ACC, the Air Component Commander, in this case it was an Air Force three star I think, he controlled air space for everyone, the

Navy, the Marines, Air Force and Army, in those designated areas. We cleared all of our air space requests through the BCE, the battle coordination element, that is a normal interaction in the process, and through the Air Component Commander. Lot of different branches whined and cried, not just us, about this that and the other thing, but their job is to coordinate and consolidate that single-use air space and they did it exceptionally well. Didn't always make the decisions I would have made but it was obviously one guy in charge of that whole thing. As an interesting anecdote, General Powell sat in on a briefing early on in which the air space was explained to him and General Schwarzkopf and they broke the air space down into the Navy is over here in the Gulf and the Navy is over here in the Red Sea and the Air Force has this piece and General Powell stopped them and asked them, "Is that what the Pub 1-1 says?" They guy kind of went, huma, huma, "I don't know." General Powell said, "No, that isn't what it says." There is one ACC and that's him, and there is one air space and it is coordinated just the way we set it up. By following that simple kind of guidance the air space command control issues were not a big deal. There was a lot of crying and whining. The artillery wanted to shoot what they were calling raids. To do this you had to clear it with the ACC through the BCE. Wll, the artillery didn't think to do that and when they went roaring forward to do that a couple of times they were told no. "Cease fire, you are not allowed to shoot." One of the things we had planned that didn't shoot an RAO was going to shoot right into tanker orbit where DC-10 tankers were driving around refueling F-15s. I don't think he could have hit one, you know, big sky, little bullet, but when the word went through the word came back to cease fire. And then I got a call from another colonel saying, "Listen, dufus, if you call us we'll put the tanker over where it doesn't affect your area of shoot if you will let us know." I said I would try. Then, I went back down to the commanders to talk to them, I did that a lot. They were ground commanders. See, that's the other part of the deal. We're not teaching air space management at the Fort Sill or we're not teaching it much. We're not teaching air space management to the armor guys and that is what I am talking

about our educational system -- it's not just for aviators, it's for everybody that uses the air and if you walk across the fire support coordination line (FSCL), what you do is walk into air space up to your 5-feet, 9-inches or however tall you are, that belongs to the air component commander, you are breathing his air and before you do that, being an Army guy or a Navy or a Marine, you are supposed to coordinate. We had some problems with that but we worked them out. Some guys got better but it was a constant education. it goes back to training and I think our training bases and officers in those areas are adequate.

AVIATION COMMAND AND CONTROL - 6.10

The following is an excerpt from an interview between Dr. Wright, Deputy Branch Historian, and Colonel Tom Green, who served as the XVIIIth Airborne Corps Aviation Officer during Operation DESERT STORM:

Colonel Green: AWACS picked up aircraft inbound and put them in the direction of targets, put them on targets, positive control, and they also watched the enemy air space so anything coming over they would see it. Along with everything else, they had to watch. Whenever we had lots of targets at night and deep we could call on the Guard channel, the safety channel, on FM radio, we got lots of targets and the AWACS would say, "Where are you, who are you, what do you need?" We would go to a pre-set frequency and we would talk to each other. He would send an attack aircraft in to work with us. So we were able to work with the AWACS by calling them on the safety channel and get them to divert aircraft in to shoot targets in enemy territory that we were designating with laser systems from the 58D and the Apache. A lot better than we ever expected to be able to do.

AVIATION COMMAND AND CONTROL - 6.11

The following is an excerpt from an interview between Dr. Wright, Deputy Branch Historian, and Colonel Tom Green, who served as the XVIIIth Airborne Corps Aviation Officer during Operation DESERT STORM:

Colonel Green: Command and control are everything in war. **If you can't talk you can't control and you've got**

commo problems (author's italics). The Apache for instance, classic, everybody knows it. When they built the Apache, they built conformal antennas on the belly of the Apache for the antennas. That's great except they are on the bottom. So, when the thing radiates, it talks to ants, bugs, and stuff on the ground. You gotta get the Apache up off the ground before you can talk to the darn thing, he goes 20 miles and you can't talk to him. We got to fix that. Everybody knows it. Nothing new. But it's the most irritating, thing going. What we did was we used the improved Guardrail 5 aircraft, the RU-21, that were up on the stations listening for the enemy communications. It is the standard doctrinal arrangement. He has a UHF retrans antenna, we talk on that UH frequency and it would automatically retrans back down to the birds on the ground and the guys on the ground could hear us. Sometimes they could talk back up to us, but not always. Their antenna is pointed the wrong way. 58D doesn't have that problem. The 58D has the antenna on the tail. Sticks right up there. No problem, When you retrans to him you can talk to him forever and ever. I understand on Long Bow Apache that they are repositioning the antenna on the Apache. That was probably the biggest problem that we had though was communication operations. That was both good and bad. That meant that while you ere out on mission, no one bothered you. But on the other hand, it wasn't easy to divert an aircraft from one place to another. There were all kinds of problems with communications mostly related to distances that they had to talk and the type of radio equipment. We had the damndest mishmash of radios you ever saw. how the hell we ever talked to each other I don't know. We were using VRC12 series radios in our Corps. Some of the elements had just been issued "SINCGARS." We had the French using a different type of radio that was capable of frequency hopping but our radios were not. So everyone was working single channel. Some units of the Reserve were using what they called NESTAR, a secure radio. A box hooked on the back of your radio to scramble your radio signal before you transmitted it. Anybody listening who didn't have the box didn't know what you were saying. They had NESTAR, everybody else was using 57s and 58s. Very often

you had to turn that stuff off and just go clear. Back that us with a mash of ground communications. Some units on the other Corps had mobile subscriber equipment, the new kind of ground telephone. They guy actually has a mobile radio. he can call Mom. Most of the units were using the old VHF shot to shot and point to point. God bless the communications guys. They busted their butts to make it all work. Most of the time we were able to talk. SATCOM saved us on the distances. Those little suitcase satellite communications kits were everywhere at higher levels. By doing that the Corps commander could talk to his division commander. That sort of thing. You could call home on one of those things. Literally call home. It was as big as a suitcase. Pull out the little parabolic antenna and point it at a satellite and off you would go. Thank God for those things because when we started running 200-300 kms out there, the Corps was talking to the divisions on SATCOM. In training for years we have been putting up our communications nodes first and the defense, where you own the terrain, you could run your communications systems out, put up your little stations and talk from station to station. You could set up a whole network with just a few nodes. In the offense, the enemy owns the terrain. You don't get to set your node up in advance. You got to go take that terrain and then put your node up on it. SATCOM, the way we are going now has got to be what we use in the next big long range war. Little hand held GPS, tell you where you are quickly, all of the time. People may go back to war without SATCOM but they aren't going without GPSs. If I have to buy my own I would. They cost $1500-3000 bucks a shot and I tell you what, I won't ever go without another one.

AVIATION COMMAND AND CONTROL - 6.12

The following is an excerpt from an interview between Major Kevin Smith, USAAVNC Aviation Planning Group and a senior officer in XVIIIth Airborne Corps Headquarters during Operation DESERT STORM.

Senior Planner: You see the guys who are having the problems with it. The ground guys. The same people that were claiming that the Air Force was taking away their ability to fight. I explained this before, but when the air

war started the FLOT and the FSCL (Fire Support Coordination Line) were one line. If you wanted to shoot a tank gun across the FLOT you had to clear the air space. If you wanted to run an artillery raid, you had to do that. As a matter of fact I'm not sure they are teaching that at the artillery school. I don't think they are. I think air defense is teaching it although artillery officers in our Corps were very well versed in air space management. The problem was that the battalion, GS (General Support) and the GSR (Ground Surveillance Radar) commanders who wanted to shoot hip shots, do raids and that stuff were not factoring in air space management partially because we had never trained that way. We always have a little space that was ours and we would do whatever we wanted to. In this case, we couldn't. In the air war, there was no Army in it. We had to lay out restricted operation zones, high tenacity air space, whatever, to do what we wanted to do and that required prior planning. It wasn't happening exactly that way and we were having a hell of a time making it work. The artillery guys were screaming their guts out but mostly because the brigade wanted to shoot or the divisions wanted to shoot and they couldn't because they hadn't gotten their air space coordination done. Army is failing to educate the whole system on its third dimension. It is not Army Aviation third dimension, it is Army third dimension. We've got to work that into the education system for all of our officers. In this particular case, what happened was we followed the doctrine that was written up to where we couldn't follow it any more. That was about 80 percent of the time. It doesn't say in the doctrine that fire support coordination is a line barrier over which we can't shoot without coordinating with the Air Force. It doesn't mean that exactly, but we handled it that way. We had an agreement that was the way it would be. I bet you it changes into a doctrinal thing down the line. In Europe we had the FSCL, the RIPL (Reconnaissance Interdiction Phase Line) and we had different agreements on those. But in this theater of air space that we were working with, we used the FSCL for everything. Air Force out beyond that was BAI (Battlefield Air Interdiction) and AI (Air Interception) targeting, inside of that was close air support and they

didn't shoot inside of that without checking with them. It worked OK. Not completely 100 percent doctrinal, but we did everything doctrinal that we could up to a certain point and then we kind of army wrestled over the last 20 percent. That worked out well. I want to make sure that you understand, the Air Force guys [worked very hard to] help us. A couple of times they had to treat us like children because of our ignorance of the system. "The ATO (Air Tasking Order) was published three hours ago and all of our units have got it. We have missions in the air man, you can't make this change right now. But wait a minute and let me see what I can do." They would call AWACS (Airborne Warning and Control System) from the ASOC (Air Support Operations Center), AWACS would divert aircraft for us if they could so we could shoot artillery. And they did that within an hour. They were bending over backwards to help us. A couple of times though...we had one artillery hip shoot that came up, and my old captain who is a super guy handling air space and his two 3-7s came running in and said, "Look at this! They're going to shoot into a tanker orbit." They had a DC-10 orbiting, picking up F-15s off the combat air patrol (CAP) and putting them back up on the cap and we were shooting right into it. I mean if they had planned to shoot three or four battalions in a worse place, they couldn't have picked it. Now I don't know if they could have hit him but their max. We had to shut them down. They went absolutely crazy. The Air Force put the tanker over in a different place the next day. They did it without anger or malice. But basically, it was kind of like "Hey, you guys, don't you know how this thing works? Haven't you read the JCS (Joint Chiefs of Staff) Pub-1 or anything?" And I kept saying, "Yeah, yeah, yeah, we know but the armor battalion or the brigade doesn't and we are trying to educate them now." Then the guys would come back up on the line angry and say, "We told you we were going to shoot this thing." "Honest to God, boss, I didn't know. Someone said you are going to shoot artillery but I didn't get an air space request of any kind that I know of." "Well, we told you we were going to shoot artillery. Why didn't you do it? "Tell you very honestly, boss, when you said you were going to shoot artillery, we figured you were going to send us the

information of how high and that kind of stuff." We started getting proactive and when someone said they were going to shoot artillery, we wrote it down and some times put the requests in for them ourselves. It was never pretty, never completely right. I can tell you though that it got better by degrees. I would never assign us a passing grade in air space management. Maybe 65 percent. We might have hit 69 a couple of times but I'd never give us even a D- which would be a 70. We went from 10 percent to 15 percent all the way up to 65 but we never got our stuff in on time. Very often, due to the changing nature of the battlefield, the guys didn't know what they were going to be doing within 8 - 12 hours.

Major Smith: How often did the ATO change?

Senior Planner: They published daily, but they allowed four hour changes. They could do that easily. We had guys doing deep battle reconnaissance up to 150-200 ks at night in Apaches that we had to do air space for. It was across the FSCO (Forward Area Support) and we had to let the guys know they were coming far enough in advance to put it out on the ATO for their units in that area. If I could give them four hours notice on an event, they could get it out on the ATO. I mean, you know, we integrated into the ATO process and fires and all of that stuff, go to the fires page of the ATO, there it is. If we got it in on time. It was tough for us to do that and it was seldom, but we did about two-thirds of the time maybe. And we thought two out of every three. It was a constant process, however, and there were guys that reacted angrily through this. They were general officers, brigadiers reacting very angrily. ADC (Area Damage Control) maneuver guys.

Major Smith: Would it have been possible to put in any blanket requests for your Corps and just leave it there?

Senior Planner: We did that when it didn't affect the battle. You see what happened was we were nominating targets. What we were trying to do was keep from affecting their shooting of our targets. What happens in the process is, you put in targets and they are prioritized according to the air war plan and as approved by Schwarzkopf and his plan. Hell, we didn't get anything. We never had a target approved for weeks. Nothing. Some of them were out of

range from our artillery and MLRS (Multiple Launch Rocket System) were not good ATACMS (Army Tactical Missile Systems) targets because we were trying to husband our use of ATACMS and not waste them. We had a hell of a dilemma. They had a lot of the targets that we thought should be fired to affect our battle planning that wasn't getting done. The closer we got to the ground war, the higher our priorities got until when we started building the battlefield for the division commanders. Then, we got all the air we could handle. Both Army and Air Force ground maneuver and air deep and it was integrated pretty well. We thought the threat was bigger than it was. I think the Air Component planners, because they were many nations of many services, Navy, Marines, etc., had a better picture of that than we did. We were screaming for missions to go after targets in our divisional areas and they weren't shooting them. We were real worried about it. But when they finally came in to shoot them, it took a relatively short time to take them out. Probably if they had taken them out when we asked for them, the enemy would have had a chance to replace them by the time we went in to attack. Having it close to the attack time and with close coverage worked out very well. We asked the Intelligence community to do things that they could not do. Over and over again. Intelligence was not bad, but it wasn't good either. Intelligence was gathering data and building an enemy order of battle which I think they did well, but they were not capable with the systems we gave them and trained them on to do targeting. Real time stuff. It was not their fault.

AVIATION COMMAND AND CONTROL - 6.13

The following is an excerpt from an interview between Dr. Burton Wright, Deputy Branch Historian, and Colonel Tom Green, who served as the XVIIIth Airborne Corps Aviation Officer during Operation DESERT STORM.

Colonel Green: One of the big problems that we had, and I am still a little bit embarrassed by it, but it took me 48 hours to figure out what in the hell was wrong with the doctrine. Then, I realized we wrote all the doctrine for the defensive and we were going offensive. Once we made that change, we were okay but that meant that the Division

commanders' area of interest and influence wasn't 30-40ks, it was 300 and you had to dump him the assets he needed, intelligence and air and everything else to develop his IPB (intelligence preparation of the battlefield) and develop his battlefield for that attack to get out 300 ks. Different look. And the Corps commanders area of interest was anything that would have affected the Division commanders 300k attack. To keep them off of his back so he could work inside of that area. Very different look for us. It literally took us 48 hours of head banging to figure out why. We were just locked in. I wasn't in command. I was one of those helping and advising with the deep battle cell. They were using the doctrinal manuals, all materials were there, everything we developed was there and it was on going and I jumped in as it was moving and I really thought for the first day and a half, "What is wrong with this thing? It's just not right." Then I realized that's it. We can't do Corps deep operations. That is a division objective. That's crazy. The Division Commander has got to do it. He has got to have the assets to do it with. That is why you can't take his Aviation brigade away from him.

AVIATION COMMAND AND CONTROL - 6.14

The following is an excerpt from an interview between Dr. Burton Wright, Deputy Branch Historian USAAVNC Historian's Office, and Colonel Robert Seigle, the XVIII Aviation Brigade commander during Operations DESERT SHIELD and DESERT STORM:

Colonel Seigle: Yeah. I think there are some roles and missions problems that we probably need to identify in Army Aviation that is going to take some time to iron out and these are integration problems with our combat arms buddies in the Army and with our Air Force guys in the air, and we have a decided interest in coordinating in the Air Force arena that is highly automated because that is where we make our living and although in simple times like Iraq, JUST CAUSE and Grenada the control measures of "I'll take 200 feet and below for helicopters, you can have 500 feet and above for fixed-wing aircraft" is a simple parameter, it didn't work as effectively as it needed to in Iraq. The Air Force fell in love with their Air Tasking Order, the ATO,

and the SPINS that are the daily derivative of that. It's automated. It's probably the slickest way to manage and to coordinate 2200 sorties in a day that I have ever seen. It is a phenomenal document, and it works. The problem with it is, and the one where the Army needs to invest some time, energy, and money into how it works, can be made more flexible to work to the Army system, is the fact that we need to know that information because the Air Force is racing down the road that says ATO is the way to go, and they are ballyhooing the fact that it was the most successful thing in the war on Iraq, and that is true. The problem is it was unopposed. No one ever shot back. So, the ATO, being a great automated display of how many aircraft ought to go on which course and drop what kind of bombs and that sort of thing, made great sense from a planning standpoint, but it was locked into about 72 hours out. Nothing the Army did was even written in even paper 72 hours out. So, we need to find the difference between 72 hours locked into the ATO and immediate calls for fire where somebody needs help and Apaches can be dispensed within a certain area to do that and then to be able to work the magic of cover to make sure the Air Force knows we are down there operating in some dirty environment and not just willy nilly up there taking care of air space and dropping things where we might be. We have a vested interest in that. I'm not worried about running into an Air Force airplane. We're going to be able to separate that in time and space, but I am worried that the Army is not sensitive to the issue of automation that the Air Force has taken on, and consequently, the Air Force runs the risk of over controlling the air and if it looks like the most successful way to go, they may over control the air all the way down to the ground which means Army Aviation finds itself playing catch up after several years of being left in the computer dust. And we need to fix that. That is a problem that has got to be fixed. The XVIIIth Airborne Corps could not keep up with the changes in the Air Force or weren't willing to live with the long time lead times of changes in the Air Force coordination. And so they (XVIIIth Airborne Corps) put the fire support coordination line all the way out on the Euphrates River on day one. So that meant the Air Force

could fly with impunity north of the Euphrates River and anything between the Euphrates River, and the Saudi border in the XVIIIth Airborne Corps sector was automatically close air support, require ground controller and the whole nine yards. The VIIth Corps, on the other hand, tried to move the fire support coordination line like you would expect them to do in front of a major battle, but the battle moved so fast and they tried moving it a couple of times and it didn't work, that they finally just threw it well beyond the Basra region which is up north of the Euphrates River again and sort of get it out of their way. Wll that is an answer to coordination measures with the Air Force, but it's not a good one. We, the Army, need to get in league with what the Air Force is doing. Not to take their system, but to be able to play in it. And it is a system I think that has some pay off, it has some merit, and so it's at 72 hours, let's see what we can do to tweak it to get it down to a more reasonable time to be more flexible in the Army system to see what we need to do to interface with it and to integrate at that macro level. That's Army to Air Force and one that I think is about to run away with us at the speed of computers if we don't do something about it. Roles and missions within the Army of army aviation or field artillery controlling deep attacks. We need some specification in there as to how that is going to happen. Army aviation is the only branch now that is capable of putting eyes on target and flying out there to see what they're going to hit, but field artillery right now has the responsibility, from a fire standpoint, to plan those deep attacks, and we've got a disjointed link there. Consequently, the field artillery feels like it is their purview for all deep attacks, and they've got an ATCMS missile that will fly very, very deep, but it needs to have pinpoint accuracy on its targeting because it's a very large missile that, in essence, blows up a grid square, and you kind of need to know where that thing is going before you launch it. From my parochial viewpoint, Army Aviation needs to head the program for deep attack options, but if we do some of our development correctly and we develop an unmanned aerial vehicle that has a GPS (global precision system) instantaneous 8-digit readout of its location and a TV

optics system in it that is wired or it is relayed back to a ground station, there is no reason in the world why you can't get specific targeting information off of a UAVS (unmanned aerial vehicle for surveillance) and run deep attacks that way by putting that thing out there. Right now the technology is not there to do it well enough, but it is not far away from us and it's the kind of way that we ought to be growing. In the mean time we've got to get out of the struggle between the army aviation and field artillery as to who is going to control this thing, settle that issue and get on with developing tactics, techniques and procedures that are going to get us out there deep because the Apache just, it out stripped everybody's wildest imagination about how far it could go, what it could see, what it could shoot and what it could do. And it can take on very large columns of tanks and destroy very many of them and the more things that you can throw out there while an Apache guy is there lazing the target, the more tanks and vehicles you are going to destroy that never have to invade the ground space that your ground troops are operating in, and the more of them that you kill, the safer it is for the ground troops to sweep through an area. We need to capitalize on that. Roles and missions within the Army OPCON versus attached. I think it goes without saying, we had to jerry rig the XVIIIth Airborne Corps to put two more Apache battalions into the 101st Airborne Division just doesn't make sense from the way we build out units. There were Apache units throughout the world that, when this thing first started, were not prepared to go to war, and so, the question was, why were they deployed to those areas and why were they fielded there first when units that are first to deploy and are first to go to war ought to have the modernized equipment. So, you have the 101st Airborne Division sitting there with a need for 3 attack battalions. They've got one Apache battalion and one Cobra battalion. Their third battalion is not even there or not even on the drawing boards, and you've got the 6th Cavalry Brigade sitting in Texas with three perfectly good Apache battalions and yet they weren't used in the war effort. And is it didn't make any sense. We needed those three matched up with the 101st or matched up as the Corps Aviation Brigade and out front

particularly in the defense the first area of Operation DESERT SHIELD with the defense of Saudi Arabia where the plan required an Apache-heavy force for forward in the Corps area, and we just need to do our fielding plans differently and get the units that are going to be first to war with the modernized equipment that are the best to fight, and that is being fixed now. There are going to be three Apache battalions very quickly attached into the 101st, and the three battalions that are supposed to be organic to the XVIIIth Airborne Corps will all be on station within the next 12 to 18 months.

AVIATION COMMAND AND - 6.15

The following is an excerpt from an interview between Dr. Burton Wright, Deputy Branch Historian, and Colonel Robert Seigle, the XVIIIth Aviation Brigade commander during Operations DESERT SHIELD and DESERT STORM:

Dr. Wright: When the XVIIIth Airborne Corps mobilized and went over, did you have any problems that stand out in your mind in mobilizing and getting them over there?

Colonel Seigle: Well, I cannot think of any real problems. You know we are used to deploying so much out of the 82d and Fort Bragg that it is kind of second nature to take off and go somewhere else. The mere distance involved was interesting from the stand point of how long it takes to get some forces on the ground, turn the airplanes around and come back and do it again. But from the brigade standpoint the only thing I can think was a problem, we were terribly short of communications gear. I mean we had less than 25% of all the communications gear that we should have had. That was listed on our USR (user status reporting) report every month and we highlighted that with this kind of caveat. Now I have been at Fort Bragg for a long time. I deployed with the 82d into Grenada, deployed with the Joint Task Force South as the aviation officer on Steiner's staff to Panama and everywhere that I had ever been and everything that I had ever practiced from the XVIIIth Airborne Corps' standpoint indicated that it would have to be some unbelievable level of conflict for the country to deploy the entire XVIIIth Airborne Corps. So, we used to laugh about that. Don't worry, we've got enough communications gear, we

can aggregate it and move it to the unit that needs to go somewhere because we never go as an entire corps. Therefore, we don't need the entire package. Although we did list that every single month on our status report, degraded capability because of the lack of communications gear, and, I might add, that same comment was made by probably four or five other major subordinate units of the XVIIIth Airborne Corps. Communications gear was severely lacking. But that is the only problem that I can think of other than the force structure. We didn't have the right structure. We didn't have the right number of aircraft. A UH-1 operating in the desert is not really as good as a UH-60 and here we had as the Corps Aviation Brigade only two companies of UH-1s.

AVIATION COMMAND AND CONTROL - 6.16

The following is an excerpt from an interview between Dr. Burton Wright, Deputy Branch Historian, and Colonel Robert Seigle, the XVIII Aviation Brigade commander during Operations DESERT SHIELD and DESERT STORM:

Colonel Seigle: The helicopter problem of coming into the theater which started on day one was the fact that they, they, the Saudis wanted to treat helicopters as if they were Air Force F-15s. Air Force infrastructure in SA was unbelievable. I am beginning to think that the Air Force infrastructure around the world is fairly well built. All foreign countries model their professional service after the Air Force and Pegonis was the in to this so that every time I had a problem with the helicopter, you know, flying off somewhere, the eastern province control zone didn't know that this helicopter was going to fly from here to here and do these things, you know, like Army guys, we are used to, we know where we are when we take off and we know where we are going to but the routing is, you just kind of make it up as you go cause you have got to find your way through various obstacles and what not. Well, that wasn't good enough for the Saudis. When we first started out they wanted a flight plan. You are going to take off from here and fly exactly this route and you are going to land here and know exactly the times this was going to happen. Because if we surprised any local Saudi citizen, and a

helicopter is a surprise a minute as you well know, if we surprised any local Saudi citizens looking for some place to billet troops or something like that and hover down or set down or something like that and a Saudi citizen didn't, hadn't been told that a helicopter was going to be there or by the time he called his local, I've forgotten what they called those guys, their mayors and what not, by the time he called his local guys, if they didn't know and then everybody gets upset because it is supposed to be a lock step advance notice, you know, on and on system and so [Lt. Gen. "Gus"]Pegonis was forever on our case about helicopters going off and doing this and, you know, we are going to get thrown off of the airfield and you guys got to do better. Here go set this thing up and so he did and by the time its over with he did an amazing job of setting it up. So, we worked with Pegonis but he was right there in Dhahran. We also worked with Frix and we worked with Frix closely, he was in Riyadh as the ARCENT Deputy Chief of Staff and we worked with him for two reasons. Number one he was an aviator, we all knew him and number two he was the Chief of Staff and Deputy of ARCENT and we needed his support to begin to establish those infrastructure links to get helicopters freed to go here and there and it was his headquarters that should have done that for both the Central, where Riyadh was, and the Eastern region, but what they quickly found out was that what you negotiated with the Central region and the Central authority didn't have any weight in the Eastern province. So that you had to negotiate both of them and do it either simultaneously if you could but usually sequentially to get the approval to fly the way helicopters needed to fly. When we first got there we were dealing with Frix, his air staff, Army aviation staff on his G-3, ARCENT G-3 staff consisted of some total of four people, two officers and two enlisted soldiers and they were overwhelmed from the before it ever started. It was poorly organized because no one ever foresaw this kind of need and so, we haven't resourced it and so those four guys were just overwhelmed. So, what we had to do is we got more and more build-up in the brigade and I was able to put additional people on the corps staff because the corps staff in the aviation planning business is

not nearly large enough. I ended up farming out somewhere in the neighborhood of twenty-two people out of hide to staff the Corps Aviation office with enough people to make it work, the corps air space coordination element and I took some of those same people from corps and I put them up for about a three week period at ARCENT to organize their ARCENT Aviation office and that was before we got Colonel Rich Roy out of, wherever he was, was it here en route to going somewhere, en route to being reassigned somewhere and then we got him over there as the Aviation officer. Unfortunately for about a week and a half, actually for about a month, he came in and started to work and then got sick. So, he was down for about a month and we just put our guys up there. So, that was our initial interaction but it was good to the point that we then had names and faces and people we could count on at ARCENT we could go fly and see in order to work out some of these problems and our biggest problems were air space control because the Saudis wanted to run it like the Air Force and the Army, they just didn't understand that by the time we got the 2,000 helicopters, as a matter of fact, by the time we got to 200 helicopters, we had overwhelmed their system. They just couldn't keep up with processing flights to various places that we would go in the helicopters in a day times 200 and certainly by the time we got the 2,000 it would, you know, it would have killed them. So, we interacted with them on the air space measures, on trying to establish range areas where we could practice firing Hellfires and 30 mm, door guns those sorts of things. I mean you would think, it was a great big open desert, it would be easy. They've got that desert parcelled out to every Arab Bedouin guy you have ever seen in your life. And they have got it charted out. I mean it is mapped out like a big city map and, you know, old Abdul Aziz has got these five square miles and I don't know what he is supposed to do with it or why he has it but he, and it is charted out and he knows where it is and he knows what's his and you just can't go out there and just start lobbing rounds, you know, out into the sand. There may not be a thing there, but it is his and it is marked off on their charts and so, we had to go through a torturous route of getting clearances into areas and whether we could even set

up troops there. Could we build an air field like facility? Could we just put helicopters out there? Could we bivouac an aviation brigade and, of course, all of the brigades, all of the divisions suffered through this. So, each time, we thought getting off of the boat and racing out to the desert, keeping them out of the way of the people in and around Dhahran and Dammam, Jubail City was the way to go, but we quickly ran a foul of local districting out there in the desert. So, it was air space and ground space, ranges, beyond that I guess it was mostly reactive. They would get a number of calls in Riyadh that helicopters were doing this and helicopters were doing that and, of course, we didn't know whose helicopter it was, special operations guys out doing something. It could very well have been our guys because all you needed to do was go somewhere where they weren't expecting you and telephone calls would start being made and pretty soon the very highest regional commander would end up with a bunch of complaints on his desk and he would send a letter to General Luck or it would go into General Schwarzkopf and then it would come down, let's see, to Schwarzkopf, who was our ARCENT commander? Three star? Frix's boss, I can't remember his name. Anyway it would come through him at ARCENT and it would come down to us and we would have to answer, you know, why was the helicopter at such and such a place at such and such a time. Why was this helicopter and, you know, it just got crazy and so we, for a period of time we overwhelmed that, but we had to constantly work through ARCENT headquarters and through the support command.

AVIATION COMMAND AND CONTROL 6.17

The following is an excerpt from an interview between Major Kevin Smith and a senior staff officer, VIIth Corps:

Major Smith: Here's something else interesting that I found...I know it happens in every single war, but, you know, if you read the brigade commander's view of the battle or particular engagement, in a lot of cases its clean, running on rails, everything is looking good, I'm talking, we're moving, we're wiping them up and as you step down and progress down to successively lower levels, it is chaos.

When you get down to the bottom guy, the operator himself, everything is confused.

Senior Staff Officer: There's a captain named Lee Wilson, whose an OC at the NTC now and he was in Bravo Company, 141, that got around in front of 266 in 2nd Brigade, 1st ID, actually 2 AD Forward Brigade and in the battle out by OBJ Norfolk, he was the one who jumped off his Bradley, didn't have a GPS with him and got disoriented and he's leading his company around and the 266th fired them up. I've written to him and talked to him and he did say it was chaos. Sand swirling all around and you were getting shot at with SABOT rounds for the first time...I think, my sensing is, that guys knew that fratricide was alive and well and that it could happen very easily. The higher up you go...to pretend looking at the corps map that was an actual depiction of what was going on there...you've got to be skeptical about what you see. Satellite communication and the old man out going nose to nose with the division commanders did go a long way, though, to reaffirm the fact that at least that's what is on the division TAC map--which still leaves some time lag in that. It didn't take time to get reported and all that transcription time. I could get SITREPs straight from their TAC to TAC with satellite communications.

Major Smith: How about "C^2 birds"?

Senior Staff Officer: We looked at using "C^2 birds" and we could have really used them when we flew around the corner here. The Air Force had a communications package in a C-130. I can't remember what it was called--we looked at using that, we looked at using a C-12 with retrans capability on it or the ability to just translate from one type radio.

Major Smith: Retransmit over VHF?

Senior Staff Officer: Retransmit over VHF or whatever to gain distance. That never worked very well. We looked at using a Black Hawk with a retrans on it. VIIth Corps could not get that to work properly, for whatever reason I don't know. A lot of these things didn't get a lot of G-3 or chief of staff effort because at the time we were starting to do that, the war was moving and it was moving at a pace where all your time was spent plotting where things

were and what was going on the ground. If we did look at that we could have sorely used a "kitted-out" Black Hawk because the ADA threat really wasn't there so you could have flown it pretty much at altitude. Instead, we used tactical satellite and did communications on short hauls. Having said that, the CG used his Black Hawk at a "C-squared bird." [Maj. Gen. Ron] Gen. Griffith, divided his time, spent most of his time 50-50 on the ground, in his TAC, and the other half in the air.

Major Smith: What about Gen. Franks?

Senior Staff Officer: Gen. Franks, every morning, he would get himself an hour's sleep just a short nap, daylight would show up, he would jump in his Black Hawk and he would be gone until nightfall unless we had an orders group and then you'd fall in on him. He would go out and talk to each of his division commanders once, maybe twice a day. He'd fly to Gen. Griffith over in the 1st Armored Division. He'd listen to what he had to say, he'd give him orders, his aide would call me and say the boss just gave Gen. Griffith the following orders: humma, humma, humma. I'd put all that down in a Zenith lap top and by the time the boss got back at night, I would have a draft copy, show it to him. Now, the whole OPORDER wouldn't be done, but these are the orders that he'd passed out. Great, pass it out on E-mail, about two pages per corps. Standard corps FRAGO for the day was two pages. Gen. Franks wanted at least one order per day that encapsulated everything that went on and basically, since he had talked to him "nose to nose", these were nothing more than confirmatory orders or confirmatory notes and you could do it in two pages.

Major Smith: If there was really any change from what the corps commander said, you could get on the radio and follow with a paper copy.

Senior Staff Officer: Roger. We were using FRAG plans. We had very detailed FRAG plans so you could say 'continue execution of FRAG plan 7 with the following exceptions, etc., etc.' It became easy, but the boss used the "nose to nose." We had, I think three O groups during the thing. I went with him to the 1st and 3rd divisions. We had one with the 3rd Division on the third day. We had another one that...<tape skips>. I was trying to get to

[Maj. Gen. Thomas] Gen Rhame, he had already passed through 2nd ACR and was headed for OBJ Norfolk and I was trying to catch him to give him...this was the first phase of the plan at the end where we were trying to the 1st Armored around to the north and we were going to try to re-orient him once he hit the Basrah-Kuwait highway and try to come up the highway and "pinch her" in the back. I never, I was flying, jumped into a Black Hawk with 2 female Black Hawk pilots, and away we went charging at one hundred some knots and the visibility was absolutely terrible. We're flying under the black smoke past the 73 Easting, all the burned out vehicles, and I couldn't find Gen Rhame. I couldn't find the 1st Division's lead elements. I would say the ceiling was down to 100 feet; oil was sticking to the windshield, the smoke was so thick. They were getting a little ancey about flying; I was getting a little bit ancey about them flying, so we landed at one CP--it was the 280 forward. I jumped back in, still thought I could find them. Then we found the 2nd ACR CP and I realized my chances of finding Gen. Rhame in his tank were probably minuscule. I got his TAC and I generated from this overlay about 25 or 30 point-to-point dots and me and the G-3 from the 1st Division played connect-the-dots from here to here. Pretty simple, though, because most of our graphics were straight lines. We tried to use straight lines whenever we could.

Major Smith: The air space...I read a lot about it. The Air Force sort of glossed over it, but I see many, many problems. More so for artillerymen than for aviators, because as soon as they set that airspace coordination altitude you've got to be on ATO spins if you want to break it. I don't know if Fort Sill is aware of this.

Senior Staff Officer: We aren't there yet and I'll tell you we hot-wired the system, jerry rigged it. We had artillery fired at us and I wouldn't let them fire back. I asked if the artillery fire was effective. The answer was no. Well, if people aren't getting hurt, I can't allow you to do it. I can't allow you to fire immediately. They wanted clear artillery, clear counter-fire now. I said I can't, I've got to go to the Air Force. By the time the Air Force get its, it'll be over and done. I understood that, but I can't subscribe to the "big sky-little bullet" as the

G-3 and have you guys shoot down a KC-135 tanker. I can't do that.

Major Smith: Which nearly happened in the XVIIIth Airborne Corps.

Senior Staff Officer: I didn't know that, but I knew you could go outside any time of the day or night and as we moved forward see tanker tracks with F-16s and F-15s hanging on them. "Big sky--little bullet" is not my lexicon. We had to fire ATACMS on a couple of occasions, we had to clear the artillery. We did that. You wait, you wait, you wait. You wait on the blessing of the Air Force. If you are going to fire something that is going to punch holes in the bottom, top, the top and the bottom, I didn't know before that ATACMS doesn't ...if I'm firing from here to your watch, it doesn't have a straight line from me to a Zenith and then straight down. It goes up and around and around and doesn't follow that. It has an anti-track device so if you are trying to track it coming back, you won't be able to do it. So, air space coordination becomes critical. Now there are some parameters there, it will stay within a certain thing--so you have a corridor, a band width. It's difficult, the system is broken and you can't have this...the Army can't work that way. They need to have a system where you reach out and grab a commander's override and say I've got to shot now. There has to be something that paralyzes the system.

Major Smith: Every fast mover in the sector goes out--boom.

Senior Staff Officer: Right.

Major Smith: Two minutes and then this sector goes.

Senior Staff Officer: Right, but we don't have that. They used a control system, a kind of kill box system where they could control hot or cold air, but the holes getting from point A to point B that they could just do that and open a corridor took a painfully long time.

Major Smith: How about de-confliction within the corps assets. Helicopters, artillery.

Senior Staff Officer: I'll tell this little story. Helicopters and artillery--three things with aviation. Nobody used their IFF. We were tracking their IFF, how many--this was even while we were back in Saudi

particularly. How many hits we had plus how many interrogations we had. How many answers we had. It was woefully inadequate. Now whether we don't know how to use transponders, transponders are broken (which I know they have a tendency to break a lot), or we just didn't pay any mind to them. I'm not sure which. Greg Johnson was 2-1 and I remember that. It didn't get much better when we went to combat. People just didn't take it seriously. That was part of it. There were three parts. The second one was as far as clearing artillery, I don't think we had problem there. I don't think we had a problem with artillery because you would check before a deep attack would go in, you'd check to clear and make sure nothing was firing out there, make sure you were clear of air. On one occasion when we were doing the attack into Objective Minden, the guys came out to the TAC, two aviators (one a Lt. Col. and one a Maj.) laid it out and talked me through it. I knew we had planned it and I had a general idea of what the attack would consist of. We thought that there would be a concentration in and around Minden. Then when they finally got ready to do it, they came out and showed me the routes they were going to go in, about what time, all that kind of stuff. They coordinated with the 2nd ACR. In the meantime the world famous VIIth Corps passes the 1st ID through the 2nd ACR. The G-3 didn't check with the 1st INF Div if they were planning to do any deep attacks. We've got the attack on Minden under way. I get a call saying the first attack troop coming home using corridor whatever and I had the thing rolled down on the map. At the same time I hear the 1st INF DIV saying that their deep attack is commencing and they have guys flying on almost the same axis west to east as Colonel Johnny Hitt's guys are from east to west. Holy cow, boom! Hold until they clear. Gave a quick briefing to Hitt's guys. They acknowledged and the Apaches held. When the last one cleared...

Major Smith: Traffic cop.

Senior Staff Officer: Didn't have that. So de-confliction between what a division commander wants to do in his box and overflight with the corps and egress routes for the corps...we thought we had that worked out to a "T" and really didn't.

Major Smith: The record shows that there were several instances of stuff going on between artillery and helicopters at the division level. DIVARTY and attack battalions in several cases, it was a real estate management problem in the rear area where a troop would be sat down for a period of time and an artillery battalion would come up, shoot, pack up and leave and the counter-battery would come in and mess everything up. There were several other cases where you couldn't have planned it any better that...the check point along the route...as they got to the check point so did the artillery and everybody scattered just like quail and came back around together. Just trying to get a feel from you about how that was accomplished at the corps level.

Senior Staff Officer: When you think about it, I would imagine there are probably going to be more problems at the division level because the division deep attack is going to be more shallow. They have more artillery pretty much that can range in that general area where you are going to do that. The corps is probably going to have its attack a little bit deeper and when the corps' doing it is the biggest show in town. So, this is the corps deep attack so clearing artillery as you went through it was probably some one guy, that's all he has to worry about doing that, whereas the division is down there mixing it up and has artillery falling all over the place. It's almost like things look a lot clearer at brigade, at a higher lever, than they do when you get down around the task force level when you start slinging lead around. I won't say it is cleaner the deeper you go, but you have less stuff falling around you.

Major Smith: How hard were you and your staff trying to get...1st Cav did a magnificent job up the wadi. Did we need to get 1st Cav into the fight? Did you think we were...

Senior Staff Officer: We needed to get 1st Cav into the fight and we knew from the get-go back in Dhahran. From the time we found that we would be given OPCON of 1st Cav (that was written into the plan, however, its primary mission was theater reserve) we knew from the get-go by the time they were committed to us that it would be too late. We just figured on that. Our movement up and we figured the

movement into Kuwait. If you took the cav out prematurely, if things went badly in the Egyptian or Syrian sector, you would have to put the cav in there. Those guys (Arab Coalition forces) looking over their shoulders seeing [Maj. Gen. John] Tilelli hook up and go...that couldn't happen prematurely. So, I respect Gen. Schwarzkopf's rationale for keeping them that long, but based on having to do that we knew that they would probably get into our fight. So, we couldn't count on them being one of the three divisions that the "old man" talks about not employing as fingers, but as a fist. We could have used them--if we had the 1st Cav 12 hours sooner, it would have made a tremendous amount of difference because they showed up on the scene, galloping into Alpha Spur throughout and were behind the 1st Div and got there just about dark. We asked for a boundary change to the north to move the VIIth Corps northern boundary farther north so we could get them around the Rumaila oil fields. That was denied. If I could take back a decision again where I didn't act forcefully enough. Now, in 20/20 hindsight, at least we could have gotten one arm around and the gate may have been open.

Major Smith: What happens to XVIIIth Airborne Corps up here? That make it to the Causeway.

Senior Staff Officer: The JSTARS picked...they didn't make it to the Causeway until the @*#*$*@ war was over.

Major Smith: Until 8:00. Till the morning of the cease fire is what I heard.

Senior Staff Officer: Let me tell you. Our records indicate that the morning they got into the Causeway fight, the morning the fight started with the 24th, which was two days after the war. When you looked at the set on our map and we got into the CP and I took the 5:00 a.m. brief. Ok, anything else?...XVIIIth Airborne Corps, Lt. Col. Bill Kennedy, he said this morning at 0600 the 3ACR and 24th Cav will move to the east. I said move to the east, what do you mean move? We're at a cease fire freeze. What are you doing moving? I made some quip about looks like Colonel Starr is trying to move his regiment as far east as Holder so he can get his picture taken for the history books. Everybody chuckled. Then about an hour or two later, what do we find but the big fight up on the causeway.

Major Smith: This is the second day after the...

Senior Staff Officer: Yeah. The relative position of where folks were...

Major Smith: The causeway that went across the Al <<..??..>> their limited advance was just to the west of that and that's where they were when they came out of the Rumaila oil fields and tried to cross back over the causeway.

Senior Staff Officer: I want to tell you, when that happened, we had the cease fire...you had the 1st Armored Division up against the Rumaila oil fields, well the day before the cease fire you had Gen. Griffith engaged with what we thought were elements of the Hammurabi, but we're not really sure, remnants of the Medinah, some of the Ad Non also. Significant fight going on in the Rumaila oil fields. Right behind him maybe 10 or 15 kilometers back, Gen. Tilelli's mob [1st Cavalry Division]... his lead elements were in contact with the butt end of the 1st Armored Division. On the map, 3 ACR was significantly to the rear of 1st Cav. They may have had some lead elements way east of the causeway.

Major Smith: Their mission was to maintain contact between the 24th and the 1st Armored Division.

Senior Staff Officer: They may have had contact, its like the old contact thing. I put a guy next to you on the boundary and then the next guy on my left side with my unit is maybe 20 or 30 kilometers away.

Major Smith: Ok, that kind of contact.

Senior Staff Officer: Yeah. What I am saying here is that the bulk of his units were no where near--at the termination of conflict--were no where near on line with the 1st Armored Division. No sir, it wasn't.

Senior Staff Officer: You say provide comfort to somebody...Kurds, Turkey, northern Iraq. VIIth Corps, for seven weeks, took care of 20,000, 30,000, 40,000 Shiites. There is something wrong with that. We kept looking over our shoulder waiting for the State Department, the World Health Organization, the United Nations, the International Red Cross all of it--king's X--one reason or another, you guys do it. Guys that were trying to kill you one day are now in the humanitarian mission. We had never anticipated

going into the humanitarian mission; we had anticipated going into a defensive posture and then we'd get out of dodge as soon as possible. We spent seven or eight weeks building refuge camps, we had an airlift--airlifted 8000 of them from Safwan; moved another 12,000 here and 8000 there for a total of about 20,000 folks. We hadn't planned on that, on that peace time...trying to get Iraq back into some semblance of being able to support itself. The old man brought his lawyer and the G-5 out to the TAC and said you guys have to help me out here. Are we considered an occupying power? If you are an occupying power you have to do A, B, C, D, and re-institute schools, public safety, make sure there is no looting...

Major Smith: This is an armored division?

Senior Staff Officer: This is a corps! Gen. Franks looked around and said I'm the senior guy in Iraq. I don't want to be Tojo after the war and somebody say you didn't do this, you didn't do that.[18]

[18] General Tojo was the Prime Minister of Japan at the beginning of World War II, and was blamed by all for the defeats during the first years of the war. He was removed from his office in 1944 after the fall of Saipan. See: Robert J. C. Butow. Tojo and the Coming of World War II. (Palo Alto, Calif: Stanford University Press, 1956).

CHAPTER SEVEN

AVIATION INTELLIGENCE

Throughout history, armies have sought to learn as much about the enemy as possible. In the 12th Century Genghis Khan sent Mongol spies into the camps and cities of his enemies to spread psychological terror, gather intelligence about strengths/weaknesses, perform route reconnaissance, and find "friends" who could be counted upon to open the gates of the city to the Mongols (The Khan always preferred to take a city without fighting for obvious reasons).[1] Only when he had all the necessary information did the Mongols begin offensive operations.[2]

There are numerous battles in military history where intelligence provided strong clues of an enemy attack yet those who interpret it missed the signals.[3] There is no parallel in previous history to the intelligence gathering systems available to senior commanders during the Gulf War. Often times during DESERT STORM it was not a matter of too little intelligence, but too much.

Real time intelligence was vital to air and ground commanders. Think of what the "Desert Fox" (General Erwin Rommel) could have done with the intelligence capabilities now available. He did rather well with what he had.

During the early part of the war in the Western Desert between the British and Rommel, the German commander benefitted from a particularly accomplished radio intercept company commanded by a Captain Seebohlm. The company

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[1] Normally, the spies came in the guise of traders, and they always took the routes the Mongol army planned to use in order to see possibilities for defense, and where the land would logistically support the operation (i.e., water, grass). See: Norman Kotker. "Genghis Khan". MHQ: The Quarterly Journal of Military History, Summer 1991, Volume 4, Number 4. p. 109.

[2] See: Lynn Montross. War Through the Ages. New York: Harper and Brothers, 1946). p. 149.

[3] The British and the French both received intelligence that the Germans were going to use poison gas in April 1915, and both discounted it. As a result, in the French sector, the Germans ripped open the French lines on a four mile front. See: Robert Harris. A Higher Form of Killing. The Secret Story of Chemical and Biological Warfare. New York: Hill and Wang, 1982. p. 4. The Russians received detailed information on the German Army's pending assault from both the Americans, the British, and Soviet intelligence. Stalin discounted them. See: Earl F. Ziemke and Magna E. Bauer. Msocow to Stalingrad. Decision in the East. Washington, D.C.: Center of Military History, 1987. p. 20.

listened in on British voice and radio communications.[4] This Horch (signals intelligence) Company was so important to Rommel that when the British discovered its existence, they sent an Australian infantry battalion behind German lines to eliminate it. Because they were successful, Rommel never again enjoyed timely intelligence provided by listening to the "ether".[5] In the deserts of Saudi Arabia in 1991, U.S. Army commanders had the benefit of a newly discovered intelligence asset.

Those divisions with AH-64s assigned received an unexpected intelligence bonus. Because other aviation assets could not do the reconnaissance job as deep or at night, Apaches were pressed into service as intelligence platforms. Their systems had the capability of recording what they saw on video tape. This allowed ground commanders to see what was in front.

Just before the air assault of the 101st into Iraq, Apaches flew the route the air armada would take to FOB Bastgone. When the crews returned, they briefed the lift ship commanders and other staff officers on the route, and used video tapes to show each checkpoint that would be necessary for accurate navigation. Knowing the route was vital to commanders. It enabled them to <u>know</u> that they could move and do what the operational plan required.

Just before the battle of Alam Halfa (1941), Rommel was the beneficiary of a map found on the body of a British Officer in a destroyed armored car.[6] The topographical map seemed to show there was terrain that would support the passage of armored vehicles around the British open flank. Having closely examined the history of Rommel's earlier battles in the Western Desert, British HQ in Cairo decided

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[4] They also listened to Americans as well. Colonel Bonner Fellers, a liaison officer with the British in Cairo, sent detailed reports of British tactical intentions and lists of their strength and logistical needs. As a result of this, Rommel knew when, how, and with how much the British were going to attack. See: Anthony Cave Brown. <u>Bodyguard of Lies</u>. (New York: Harper and Row, 1972). pp. 101-104. Also see: David Fraser. <u>Knight's Cross: A Life of Field Marshal Erwin Rommel</u>. New York: Harper Collins Publishers, 1993. p. 346.

[5] Ibid., pp. 102-106.

[6] Anthony Cave Brown. <u>Bodyguard of Lies</u>. op. cit., p. 113. The Germans were apparently not aware of a similar deception used against the Turks in 1917. See: David L. Bullock. <u>Allenby's War. The Palestine-Arabian Campaign, 1916-1918</u>. (London: Blandford Press, 1988), pp. 122-124.

to take advantage of Rommel's penchant for flanking operations.

The "Desert Fox" had no capability to see deep or examine the route. Had he that capability, he would have quickly learned that the British had deceived him. When the map marked areas as "passable", the opposite was true.[7] German armor took those routes during the battle of Alam Halfa, and quickly bogged down. This upset the delicate timetable that Rommel had developed allowing the British to dictate the tempo of the action and thus win the battle. Since Rommel was aware that the British generally outnumbered him, his attacks had to be quick enough to defeat the enemy before reserves could be brought up. Timing was everything.

This battle was vitally important because Rommel was then nearing the gates of Cairo. Had the British lost the battle, they could have lost the Middle East, opened up the Middle Eastern oil fields to occupation by the Germans, given Hitler a back door into the Soviet Union, and, perhaps, forced Churchill to consider peace negotiations.[8]

Part of the reason for the victory was that the British had deceived Rommel because he did not possess the intelligence assets to check the veracity of the map that had come into his possession. This problem would not be repeated during Operation DESERT STORM.

Apaches and other rotary winged assets performed the types of reconnaissance missions that Rommel's forces could not. They flew deep missions that involved the checking of trafficability for vehicles along projected attack routes. This time, no armored vehicles would go into areas not fully checked out. Crews could move with assurance they wouldn't be bogged down in combat.

The cutting edge of the intelligence spectrum in any war are the line units. The second selection (7.1) is an

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[7] Cave Brown, Bodyguard of Lies, op. cit., p. 113._ A British officer was "volunteered" for this lethal mission because he had inadvertently given vital military secrets to German agents in Cairo and faced court-martial and long imprisonment.

[8] Hitler never understood the strategical importance of the Middle East or he would have supported Rommel more strongly. Throughout the campaign in North Africa, Rommel lacked for nearly every important logistical item imaginable. See: David Irving. The Trail of the Fox. The Search for the True Field Marshal Rommel. (New York: Macmillan, 1986), pp. Also see: Fraser. Knight's Cross. op. cit., pp. 253-254.

excerpt of an oral interview with Captain Charles Mosliack of the 4/159th Aviation Battalion. As the S-2, he was directly involved in the intelligence process, and he provides some interesting insights into how intelligence or lack of it because of the rapidly changing situation affected battalion operations during Operation DESERT STORM. Intelligence from higher levels is the subject of the third selection (7.2) which is an excerpt from an oral interview with Colonel Thomas Green who served as the XVIIIth Airborne Corps Aviation Officer during Operation DESERT STORM. As usual, Colonel Green has some interesting and innovative views on intelligence matters.

Colonel Robert N. Seigle, the former USAAVNC Chief of Staff but at the time the 18th Aviation Brigade Commander, provides insight into usefulness of Joint Surveillance and Target Acquisition Radar System (JSTARS) from his perspective in selection 7.3.

Selection 7.4 is a After Action Report of the experiences of the 2nd Military Intelligence Battalion (Aerial Exploitation) during Operation DESERT STORM.

The sixth and final selection (7.5) involves an interview between Major Kevin Smith and senior staff officer, VIIth Corps on the value of intelligence.

INTELLIGENCE 7.1

The following is an interview between Dr. Burton Wright Deputy Branch Historian and Captain Charles Mosilack, S-2 of the 4/159th Aviation Battalion, part of the 11th Aviation Brigade.

Dr. Wright: How many people in your section that you are responsible for?

Captain Mosilack: I had three people I was responsible for - an E-5 and two E-4s.

Dr. Wright: What did the E-5 and E-4s do?

Captain Mosilack: Their primary job was gathering the intelligence and bringing it down, taking a look at, drawing out what we needed to draw out for our battalion. Of course, we would disseminate that information when pilots came in to get S-2 briefs before going out on missions or during the command and staffs and any other briefings that I gave along the way.

Dr. Wright: Had you been given any intelligence information prior to your deployment?

Captain Mosilack: Well, we had gathered quite a bit of intelligence information prior to August and right after August [1990]. We tried to stay abreast of the situation as best we could. Our only problem was that there is about a fifty mile difference between my unit and the next higher headquarters. It was a good hour and a half to two hour drive back and forth. Flying hours were pretty tight about that time so it wasn't quite as easy to get into a Huey just to go up there and gather intelligence. It was difficult trying to work through them and sometimes with them to go to Corps - which was maybe about fifteen miles away from our location. So, we gathered the information as best we could and gathered as much as we could, and we went to SWA with some pretty good details.

Dr. Wright: What type of briefings were you required to give the battalion?

Captain Mosilack: A lot of them were just general information briefings, dealing with soldiers and right on up to the colonel, himself. It was just a lot of information briefings about what's going on right now. What is their strengths? What looks like their weaknesses? Where are they? Where are the ADA assets? That sort of thing. The things that affected our battalion most of all. That was what we were looking for.

Dr. Wright: Since most of your intelligence information, that you would normally keep in safes I would assume, deals largely with the Warsaw Pact and things of that sort, what would you have taken along with you? Wouldn't you normally have left all of your stuff behind?

Captain Mosilack: No, no, because we knew that the Iraqis operated with a lot of Soviet equipment, we saw it as a necessity to take that information with us. An awful lot of it was used to determine capabilities and courses of action and that sort of thing and helping in looking at the situation itself because a lot of that popped up. You know intelligence summaries (INTSUMs) would come down and give us information on what kind of radars were being used on the other side of the border, and, of course, it was Soviet equipment, the majority of it.

Dr. Wright: When you got there, describe your first month or so in Kingdom. What did you do? Who were you attached to?

Captain Mosilack: I spent a good part of my time going over to XVIIIth Airborne Corps and trying to get INTSUMs information trying to stay abreast of what was going on. How many planes were flying that day. That sort of thing came down or any other good information that would keep us abreast of the situation. Maps were another big thing to get our hands on. It was a priority for our battalion simply because we had only a couple GPS within the battalion. One of them was a privately owned one. One of the SIPs had gotten it from the Magellan Company. So, that was a big priority for us since all our navigation was primarily on maps. The UH-1s didn't have any nice navigational aids on it besides the radio equipment that we possessed. So, that was a big thing, trying to get our hands on that. And I was able to get enough maps to at least outfit each aircraft with a set of maps that would extend our range, which would be pretty much all of VII Corps as it sat in Saudi Arabia.

Dr. Wright: How would you describe what you got in intelligence? Was it timely? Was it useful?

Captain Mosilack: Before any of the war broke out, it was pretty timely, got a lot of good information. We moved out to the field, started traveling to 2 ACR, went to the 2d MI and, of course, went to corps an awful lot. Our brigade was kind of balking on getting information. We actually ended up having to go around brigade and go out and get the information ourselves. It was a difficult time. The Brigade S-2 wasn't there. She was still back in the states and didn't arrive until well after the air war started, was only there for a month or so and then was gone again.

Dr. Wright: Was the intelligence timely?

Captain Mosilack: Timely before the war? Yes. Timely during the air phase? Yes. But when the ground phase started off it just dried up. The biggest thing that we were concerned with, within our battalion is where the front edge of the battle is. Often the information that I was able to update my maps with and brief outgoing pilots with came back from spot reports from other pilots who were flying across the forward edge of the battle.

Dr. Wright: Now describe for me what the battalion did. What was its principle job? How many aircraft it flew and how many hours you flew on the average day?

Captain Mosilack: Well on the average of a day probably twenty-four hours a day for the battalion through the course of the whole phase. We were out there for about five months. We flew about 3,000 hours.

Dr. Wright: You say after the air war started, your intelligence wasn't too good. What was the problem?

Captain Mosilack: Well, its not so much after the air war as it was when the ground phase started and the information that was coming down from the units that were up fighting the war - positions or what they have overrun or bypassed and that sort of thing. It was late getting to Corps because Corps was saying that they weren't talking to them or we were up at Corps trying to gain this information or Corps just wasn't going to release it to us was the other thing. Our biggest concern was, you know, where the ADA was and how effective is it in particular areas and where is the front line of friendly troops versus the front line of the enemy. So, we didn't have any of this from our own sources, because we flew single ship all the time so, we didn't have helicopters out there flying all by themselves getting shot down. Another big problem we had, even though I was in the S-2 arena, I also worked with the S-3 looking for FARP locations, trying to stay up on where the FARP locations were. That was another difficult thing because we'd get information on where the Corps FARP locations were, and somebody would fly there, and they wouldn't be there. Doesn't help out a lot when its a long way home.

Dr. Wright: When you got your intelligence information did you get it verbal or in written form?

Captain Mosilack: Depends. Pilots who come back gave me spot reports so that was verbal. Of course, I immediately sent those up as soon as I could to brigade, and they would send up to corps. I had already talked to corps and brigade about what I needed for information, and I got a lot of that written. It was already written. When the ground phase started a lot of the information I got was six to 12 hours old.

Dr. Wright: How would you assess our communications security from what you heard?

Captain Mosilack: Within our battalion, the biggest thing that I can judge it on, it was pretty strict. We stayed off of the FMs within the TOC itself unless we absolutely had to use them, otherwise we used land lines and, we talked a through a signal node via a land line and from that node they electronically sent it to the next node-which were all secure areas unless it went outside our corps area. Most of our calls didn't go outside of our corps. I tell you what the biggest problem was OPSEC, and that was all the GIs going down to AT&T and calling home to their wives, and all this would filter back to our commander and the commander's wife, she would be telling him where he was located in Saudi Arabia, and that was always a constant battle. It actually got down to the point that anyone leaving the AO to make a phone call had to come through my shop first to get an OPSEC briefing.

Dr. Wright: Was there any indication, from what you saw, that there was a definite effort to practice deception?

Captain Mosilack: I saw an awful lot of Iraqi effort to practice deception. Going up on missions myself to transport an individual from point A to point B and having read what I did read from what the Iraqis were doing you know, burying their tanks and that sort of thing. One interesting thing that I did notice out there was that they were piling up piles of sand and putting tank turrets on top of them trying to make it look like a buried tank. There were some interesting things. Lot of rags tied onto a tank or an artillery piece trying to camouflage them. As far as our side went, there wasn't a whole lot to do. There wasn't enough tan paint to go around to paint everything tan! We were absolutely unsure of how much satellite information Saddam could have got his hands on, but we were pretty sure that it was nil to none **since most of his information we knew came from us during the Iran/Iraq war** (author's italics). Soldiers were pretty good about keeping their eyes open about what was going around our AO. Anything different or strange. An individual that they had never seen before, that sort of stuff.

Dr. Wright: Given the fact that your unit primarily transported commanders, how much intelligence do they really need to perform that function?

Captain Mosilack: We were concerned what can affect us while we are doing our mission especially air defense sort of things or locations of where the enemy is as opposed to where they are going to. During the air phase and even before the air phase of the war an awful lot of our missions were down south, and there wasn't a whole lot of anything to worry about. Of course, the terrorist threat was always there and any subversive sort of activity that they were trying to spot.

Dr. Wright: Before the start of the ground war, how would you as an intelligence officer have rated the outcome at the time?

Captain Mosilack: Expecting heavy casualties. We were expecting to see a lot of heavy casualties. When we first got there, everybody was pretty nervous. There wasn't a whole lot of equipment there. There wasn't a whole lot of our assets from 7th Corps there so, our defenses weren't beefed up, and we were pretty nervous about that. At that point, I think, if a large force would have come over the border at us, we would have sustained pretty heavy casualties and probably would have been pushed back pretty far. As it progressed, as more of the equipment came in and we started feeling more confident, we really expected to go in and kick some butt, but really expected some heavy casualties. Being as far back as we were our biggest worry was SCUDS - possibly with chemicals.

Dr. Wright: How did you assess the Iraqi chemical threat?

Captain Mosilack: I assessed their chemical threat as being very potent, but, looking at most of the delivery means that they had, chemicals going to happen most likely up on the front lines. Artillery was their biggest means for delivering chemicals. The SCUD missiles that they had, being so inaccurate as they were, we felt ok. Here is an inaccurate missile piled full of chemicals. At one point we felt we were a pretty lucrative target being at an Iraqi pumping station.

Dr. Wright: You were in Iraq?

Captain Mosilack: No, no actually there is pipeline that comes down from Iraq to Saudi Arabia and they have eight pumping stations, I believe. We were at one of them. They had a landing strip long enough for 737s to land on, which was used an awful lot for C-130s to bring in cargo. Actually we kind of ended up running the airfield, too. So, there, we felt the chemical threat was high. It is a scary thing thinking about that sort of stuff. The dusty mustard that they were reported to have. As more and more information came down on how we were systematically destroying storage areas and munitions sort of plants and that sort of thing, we started feeling a little more confident. But we were unsure when the ground phase started as to what was going to happen.

Dr. Wright: When intelligence information came to you, did you feel that it had been digested and had been evaluated - or did you feel that it was more raw data?

Captain Mosilack: I got an awful lot of raw data, but we also got some very good written INTSUMs, too. That would come from corps and those were pretty well written. The raw data that we got in came over radio-telephone (RAT) rigs, that sort of thing.

Dr. Wright: Was there a lot of information exchanged among the other S-2s?

Captain Mosilack: Within the battalion? Yes. We pretty much pulled together especially as support folks. The Chinooks that were there and also there was a Black Hawk company. We tried to share as much information amongst ourselves, especially in the beginning. At one time I was the only person in the brigade who was even getting any INTSUMs when we first arrived or had even made any contact with anybody and was getting any information. I tried to loosen the brigade, share it as freely as possible. In fact, I also had other units coming to me looking for information.

Dr. Wright: Why would units come to you for information?

Captain Mosilack: People would be out there wheeling and dealing parts, that sort of thing, and probably run into their S-2 and they would ask them where they were getting their information, how good is it, how they got it.

Dr. Wright: One of the jobs as an S-2 that you are responsible for physical security of the unit. How would you describe your units security posture?

Captain Mosilack: Fair to good. The problem is being out in the desert by yourself. Not a whole lot of assets to go out and stand guard on a berm, and, of course, that was our big priority, always to build up a berm. Mostly to stop anybody from driving by and being able to lob too much inside and destroy an aircraft. The soldiers did a pretty good job. They would go out and build up their fighting position. But our biggest problem was just man hours. Personnel to do the job. We had to keep the aircraft flying.

Dr. Wright: Did you find it a problem. Were there a lot of people around you that you had to be cognizant of all the time- Civilians, Arabs?

Captain Mosilack: Not really. The Bedouins pretty much disappeared when the air war started. They kept pretty far to the south. After the ground phase had been over with, they all moved back in and that was a bit of a problem because they wanted to sell us Iraqi money or that sort of thing. It was a problem keeping them all out. We were constantly chasing them out, keeping them away from the aircraft.

Dr. Wright: Did you find that the commanders that you dealt with and briefed appreciated the type of intelligence that they were getting and that they used it?

Captain Mosilack: Yes, like everybody they were always curious about what was going on. Always curious to know a little bit more. My biggest challenge was in the D company that we had. They had 3 platoons. Two of them we OPCONed off. The third one stayed back with us. That commander was my biggest challenge. He was always wanting to know particulars about the Iraqis and equipment that he may run up against or possibly where, and it always kept us digging for information for him and keeping his company and his pilots informed.

Dr. Wright: In order for you to perform your job, you had to have access to as wide a data base as possible because for instance, that D company commander would want to know certain aspects of the terrain in front of him. Was it

possible for you to ask or get missions flown that would provide you with that information?

Captain Mosilack: As far as the Hueys went, no. As far as D Company went, no--they were OH-58Ds that were OPCONed. Those two that were OPCONed off they got their information from the Apache units. They didn't come back to me at all to get information. After the ground war, they wanted us to go up with Hueys and find equipment. You know, where is a bunch of equipment that looks like it was taken out? The engineers went in and destroyed or blew up things. We would in turn send a couple of 58D up to do the job because they can give a lot more accurate readings than we could in the Huey and not only that, but they were in better shape than the Hueys were since we were continually having to support the commanders and the general officers - whose missions required the widest data base possible. There again, I used my assets as best as possible, going through my brigade, having them work for me. When I was unsuccessful or unsatisfied with what they got, I pretty much went around and went in the back door to corps.

Dr. Wright: I was wondering what the difference was in what CNN was saying.

Captain Mosilack: Actually what CNN was saying was very, very accurate. In fact, **what I got from CNN was more accurate and timely than what I got from military channels** (Author's italics). It sounds scary. My colonel and I would just sit there. At five o'clock each morning we would try to tune in ABC or anybody, I tried to pretty much get a hold of BBC as much as possible. At 0500 we were always trying to tune somebody in. AFN was a big time radio station for us there because it came in pretty clear and, of course, we tried to pick up Baghdad Betty when we could, too.

Dr. Wright: Baghdad Betty? Tell me about Baghdad Betty.

Captain Mosilack: She was something else. Big propagandist. One story that I enjoy the most is right after Christmas, the day after, we were listening to Baghdad Betty, about 2300, she always came in kind of weak. She would give some news about what was happening up in Baghdad. How strong the Iraqis were. She had a cohort up there. We

called him Baghdad Bob. One night, she came on and she told us she hoped that the Americans had a nice Christmas because it was going to be our last. President Bush wanted us all dead and the reason that he wanted us all dead was so we wouldn't go home and tell all our families how miserable we were. The stuff that she was putting out was pretty funny. I know her intent was trying to break our morale and give us some bad poop and that sort of thing, but the way that she went about it was so poor and so poorly put together that it actually turned out to be pretty entertaining.

Dr. Wright: Do you think that we have any lessons learned here.

Captain Mosilack: I think we had an awful lot of lessons learned here. One thing is that we overestimated our enemy in the first place. He went through an eight year war with Iran. Pretty much a war that was fought along the borders. He was able to effectively employ his chemicals because it was that type of war, sort of fixed positions, being able to zero in his artillery where he wanted to deliver chemicals. When I flew up there the first shocking thing was to see the different types of defensive belts that he had set up. I didn't physically land and go out and look at them. It was pretty dangerous with all the booby traps and unexploded ordinance out there, but I flew over quite a bit of Iraq and Kuwait.

Dr. Wright: Ever run into Iraqi prisoners?

Captain Mosilack: Yes, a lot of them we saw when we were flying over trying to surrender to us. We couldn't stop and pick them up. They were wounded. It was a pretty sad thing. We would throw out our boxes of MREs for them. They were starving. At first when we would throw out the boxes of MREs, they would scatter. They probably thought that we were trying to drop some ordinance on them, but after a while they knew that we were just dropping food out. We'd also try to drop some water out to them, too, because you've got everything in these plastic bottles. They looked pretty demoralized.

Dr. Wright: From your intelligence point of view, assess for me what aviation did for Operations DESERT SHIELD and DESERT STORM.

Captain Mosilack: I think that aviation provided a very fast reaction to anything that was going on. One time the Syrians did move and it was within the Corps sector. We got the information and our Delta guys were out there screening that area and they reacted relatively fast. The Deltas got up there and started doing screening movements and the Apaches went up there to back them up. At the time we were unsure what the heck was going on. Somebody just started moving to soon. We weren't sure if the Syrians were all of sudden turning face on us or what.

Dr. Wright: The Iraqi equipment that you saw, was it maintained well?

Captain Mosilack: A lot of pieces of junk. We started referring to Iraq as the biggest used tank lot in the world because there were a lot of pieces of junk. Though I did fly over one of the battle areas where the Republican Guard had an engagement...their stuff looked a lot better, just exterior-wise because all I could see was exterior, but most everything else that I saw just looked rusted, beat up, dented. The information that came down, at one point they were talking about billows of black smoke coming from the engines. They thought that their fuel injectors were going bad. Other information would come down and they were talking about the Iraqis were selling their gasoline so they could get food. They were going back and selling gas so they could get food and that sort of thing.

INTELLIGENCE 7.2

The following is an excerpt from an interview between Dr. John Kitchens, Aviation Branch Historian, Dr. Burton Wright, Deputy Branch Historian, and Colonel Tom Green, who served as the XVIIIth Airborne Corps Aviation Officer during Operation DESERT STORM.

Dr. Wright: How well did the intelligence information work?

Colonel Green: Intelligence information. The intelligence community collected an enormous amount of data. They worked their butts off. They really did a good job in collecting intelligence and working hard. There is just an awful lot about our intelligence gathering systems that we have not learned about yet in terms of what the heck we are

doing with it. The intelligence guys are focused on gaining information and then turning that raw data into intelligence. Then you know giving it to the boss to help him with his decision making and that sort of thing and commanders also. But we are not set up to do intelligence targeting. There is a difference. See, intelligence gives you this many enemy elements went this way or they are coming from this way or we think that this unit is sitting where it is. They are not real sure but they have lots of data that indicates this. It's a blending process. They get human information, they get satellite information, they get OV-1 SLAR, they get all kinds of stuff from their long-range reconnaissance units and they put it all together and make kind of an overlay and from that they ascertain what kind of enemy units are in a particular area, what type and actually the designation. In our AO, the intelligence community, by the time we kicked off the attack, had identified almost every single divisional element and where it was. Our intelligence guy, our G-2, a classmate of mine at the War College, he is a super guy. I used to ride him mercilessly while we were up there because of this intelligence business. I always used to say to him things like, yeah, the intelligence community that brought us the Alamo, Bastogne, Pearl Harbor and Tet of '68. But this time he handed me a little note paper, and I wish I had it because it was really great. I know I have it in my "save this from Saudi" package, was just a little note paper no bigger than this with every division on it in Kuwait and the way they were set up. I decided I was going to grade him on this and they were not far off. Probably 90 percent correct. The intelligence guys had information and they had it pretty much correct. More or less. What happened was they were not, the systems were not designed to give you the area in which to shoot and kill something. They could tell you, we think there is a division here, but it was your job to get in there and find out where the individual targets are. That's right, they are not set up for targeting, but for intelligence gathering. Now artillery does targeting. They have radars. The fire finder radars. They tie in with various and sundry systems that look out onto the battlefield and tell them where things are so that they can

shoot it, battery, counter battery, all that kind of stuff. Aviation doesn't have that. We thought we were going to get it with JSTARS and we didn't. We had a problem. We were trying to get the intelligence system to give us the type of information we could use to kill things with and they were trying to develop intelligence. The guys in our Corps broke down their intelligence gathering process to give us a targeting process and they did pretty good at, but they didn't have the equipment or the training and the orientation, the whole thing. They were actually making their system more dysfunctional by trying to help us target stuff. And so, we need a targeting system and that is pretty obvious. But the intelligence guys worked pretty hard and their information was more or less correct on the grand scale. Good enough so the boss could make his decisions and figure out where, you know our left hook went in where it went in because of an intelligence decision and they were right. The problem was we were trying to get the intelligence guys to tell us where individual tanks were and that is not fair. We didn't give them the training or the equipment or background or anything to do that. But they were still trying to do that. They were giving us satellite information, but a mobile system can be in one place one minute and five miles away, ten minutes later. So that was a problem that they had and we didn't know how to fix it.

Dr. Kitchens: Was JSTARS fed to you effectively?

Colonel Green: No, I didn't think so. I've already gotten into trouble about this five times. JSTARS was being used by the Air Force as a BAI (battlefield air interdiction) targeting system and they were dumping a total mass dump to our ground stations and we could focus using our ground stations on whatever we wanted to look at. You could look at anything you wanted to. It was taking a picture of the whole world. I mean, we didn't know what it was. We didn't know where it was going or anything else about it. Yeah, we got it on the ground station and all of that and we were the second to VIIth Corps in priority, but when they were done with VIIth Corps and they came back over our way sometimes the systems were down. What we needed to do is what the Air Force did. They put an attack commander on board the aircraft with a systems operator and an

intelligence analyst. Those people analyzed what they saw, organized a plan into target boxes. If they had a specific target box they wanted to check, the analyst and the commander determining it a good target, would send a combat spotter...to look. The spotter would evaluate and would tell you whether or not you had a target. Then they would just divert on to it and kill it.

Dr. Wright: What contact did you have with allied units?

Colonel Green: Allied units--worked with the 6th French. Their division was part of our Corps. They had operational control to them. One brigade of the 82d airborne. They had about 120 helicopters of their own.

Dr. Wright: Did they use Pumas?

Colonel Green: They used the fantail Gazelle with 10mm and fantail Gazelle with HOT missiles, Pumas and they used this horizon radar system for giving their division commander information on what the enemy was doing behind the lines.

Dr. Wright: Did you get good access to the intelligence they created?

Colonel Green: They did not create intelligence, they created targeting information. And they talked directly to us. I talked directly to the pilot, the pilot would go where I asked him to go and it was a beautiful system. I got more information out of him than I did with anyone else.

INTELLIGENCE - 7.3

The following is an excerpt from an interview between Dr. Kitchens, Aviation Branch Historian and Colonel Robert Seigle, the XVIII Aviation Brigade Commander during Operations DESERT SHIELD and DESERT STORM:

Dr. Kitchens: Were you at all involved with the collection of intelligence data from JSTARS?

Colonel Seigle: No, we had a very tenuous link to JSTARS. It did not fly much for the XVIIIth Airborne Corps (ABC) and for good reason, we were the supporting attack. The VIIth Corps was the main attack. And JSTARS was targeted primarily toward the VIIth Corps area, which was where all the targets were located, and the system was not ready yet to be pushed into combat although the parts they

rushed into combat, I understand, worked ok, but then the down link from that is still a tenuous link. It's unfortunate that I later find out that there is just an incredible amount of intelligence data that was collected, available and known at ARCENT Headquarters that never made it down to XVIIIth Airborne Corps' headquarters or, if it made it inside the headquarters, it never was dispersed throughout the aviation units in the various divisions because the one thing that the division commanders reported on a daily basis of what they needed more of was what they were facing across the border, and they didn't have it. And the way they found out about it was they put Apaches over there looking and it was because the Apache had the range and speed and aircraft survivability equipment to make sure that they would live to fight another day. We would have sent the OH-58Ds with them, but they were too slow and didn't have the range. Consequently, the Apache became both the scout and the gun of choice, that he could go a long way, he could see at night, no one knew he was there and if he was discovered he could fight his way out of any box that he was in. And so the primary eyes and ears for a division commander before he went across the border and, I think in many cases as he rolled across the border, where his Apache guys were way out in front and able to report back to him directly what they had seen.

INTELLIGENCE 7.4

The experience of the 2nd Military Intelligence Battalion (Aerial Exploitation) (AE), was unique during the Gulf War. The 2nd MI flew intelligence collection missions in support of the only "heavy" corps in theater, U.S. VII Corps. This is the same corps 2nd MI supported in USAREUR. The 2nd MI was forced to operate split base the entire conflict which made command and control and logistics support a real challenge. The ground station module (GSM), the ground station for the OV-1D Mohawk's side-looking airborne radar was recently fielded and tested only once in an exercise before Operation DESERT SHIELD/DESERT STORM. An unmanned aerial vehicle (UAV) platoon from the Intelligence Center and school was attached for Operation DESERT SHIELD/DESERT STORM. This system proved to be decisive

especially during the air war. Finally, 2nd MI overnight went from a fixed-site, forward-deployed general defense plan to a rapid deployment asset. This new development mission which demanded mobility was not part of the unit's original mission essential task list (METL). The accomplishments of the 2nd MI under these unique conditions are worth studying for the future Army and particularly for the future mission of the aerial exploitation battalion.

The mission of the 2nd MI was starting to evolve the summer that Iraq invaded Kuwait. With recent German reunification, the lessened threat from the Soviets and the looming force reductions due to the Conventional Forces Europe (CFE) Treaty, missions in USAREUR were starting to change. The single and mobile corps concept was the buzz word for the end-state in USAREUR. Major subordinate commands (MSCs) were beginning to re-look their METL during the summer of 1990.

Second MI Battalion did not go into the new contingency planning cold. For almost two years, a subtle change in training had taken place. In fact, a metamorphosis had occurred which completely changed the focus of the battalion which in the past was singularly focused on the Peacetime Aerial Reconnaissance Program (PARPRO). Two REFORGERS were played tactically for the first time with 24-hour operations. The whole battalion deployed twice to a local training area for field training exercises (FTXs) without aircraft which focused on deployment, survival and support skills. This training included aggressor attacks (day and night) on an established perimeter, patrolling, individual soldier skills and convoy operations. The entire battalion deployed to Grafenwohr for weapons qualification for the first time. Several corps-deep attack exercises were conducted with 24-hour operations. Chemical decontamination exercises were conducted with a supporting chemical unit both in the field with the vehicles and on the airfield with aircraft.

Along with the shift to combat training, came the significant initiatives in deployment. A Company through the years maintained its lineage of a mobile unit through company deployments twice to Spain and once to Scotland for training. The A Company deployment to Spain in 1989 include

Air Force airlift of ground equipment and self-deployment of aircraft. B Company moved its integrated processing facility (IPF), ground station for the Guardrail communications intelligence system, for the first time in the summer of 1988. This was a significant event which proved B Company's mobility. It also developed the SOPs, expertise and techniques used several times in the Persian Gulf with success under duress. Hard, realistic combat and mobility training were the keys to battalion success in the Gulf.

The battalion staff was totally involved in the significant changes in the battalion. A proactive quarterly command inspection program reaped huge dividends by keeping the companies sharp through compliance and assistance inspections. The staff was trained before Operations DESERT SHIELD and DESERT STORM on the command estimate, war-gaming and staff planning process. The staff was exercised on all major training exercises, FTXs, REFORGERs, deep attacks and GDP briefings. Probably like a few other units, 2d MI went through staff planning for two false alarms prior to actual notification for actual deployment to Saudi Arabia.

Second MI was given a major support mission in September/October 1990 before its own notification for deployment in early November. Second MI became the aircraft maintenance support base for elements of two AEBs deploying from CONUS through USAREUR to Saudi Arabia. This composite AEB from Fort Hood and Hunter Army Airfield in Savannah, Georgia, would go on to support XVIIIth Airborne Corps with distinction in the Persian Gulf. The maintenance support provided by 2nd MI for the old and difficult to maintain OV/RV-1D Mohawks would later prove significant because 2nd MI's zero balance of PLL went to 30 percent after this mission. This would prove significant later when 2nd MI was called to deploy its entire battalion of Mohawk and Guardrail aircraft. The challenge to maintain the OV/RC-1D Mohawk during the war was on the of battalion's toughest. The 2nd MI had not recovered from the support mission prior to deployment.

When the actual notification for deployment came in November for 2nd MI, the mood in the battalion was one of confidence mixed with some natural anxiety. The soldiers

felt prepared because of the training explained earlier. The main emphasis now shifted to logistically packing and moving the unit. Individual NBC training was the only major training occurring at this point. This was necessary due to the perceived NBC threat and capability of the Iraqis. The battalion flight standardization officer was sent to Saudi Arabia to the AEB in country. They became familiar with the flight regulations, airspace requirements, etc., and came back and taught the flight crews. An advance party of one captain and one sergeant first class were sent to Saudi Arabia. They became involved with the battalion's first big problem: Which airfield are we going to and what support is available and required? The battalion commander went on a leader's recon and briefed the staff and commanders upon return.

Back in Germany, preparation for deployment was hectic but actually went better than expected even though the weather in Germany was poor and the phones went out for four days with the exception of one line. The S-1 processing for overseas movement (POM) went like clock-work. The movement of the battalion's vehicles (one hundred prime movers with trailers) to port was no problem. All the vehicles made it. This was significant in a unit that two years prior rarely moved a tactical vehicle out of the motor pool. The S-4's work in movements throughout the deployment was exceptional. Recent logistics profiles, SOPs, movements and annexes all bore fruit during the real test. Sea/Land vans were loaded and picked up by transportation units; some of these were not received until the war had already started which made cross-leveling a must. Only one problem remained and that was that there still is no airfield identified for occupation by 2d MI in Saudi Arabia. Finally, ARCENT gained permission for 2d MI aircraft to part "temporarily" at King Khalid International Airport (KKIA) in Riyadh. So, the battalion deployed by land, sea and air and self-deployed 21 aircraft.

The battalion's main body deployed to Saudi Arabia over a three-day period from departure airfields in Stuttgart and Nurenberg. The 2d MI was stationed in Stuttgart. The battalion stayed a week and a half in "Tent City" near Damman Port awaiting the unit's equipment/prime movers. The

mission in port was to receive equipment and get out of port as soon as possible. The original guidance was to move a company-size unit after it had 70 percent of its equipment minus sea/land vans. In reality, units were forced out with much less and didn't care because "Tent City" was probably the worst experience of the war to include SCUD missile attacks and aircraft radar warning receivers lighting up like a Christmas Tree. Meanwhile, the unit's IPF was air-lifted to Dharhan and moved to King Fahd for storage. Unit-organic aircraft and flight crews flew into KKIA. The nightmare had started; the battalion was spread over three locations and would be destined to operate split-base the entire deployment except for one week prior to redeployment. The command and control aspect with a split staff and split base was the biggest challenge of the war. The AEB was not designed doctrinally to operate split-base.

Before Christmas, an advance party was sent to Algaysumah Airfield near Hafar Al Batin to hold ground and coordinate with 207th MI Brigade and help for deployment of the entire battalion. The battalion was to convoy to Algaysumah on Christmas Day. This changed at the last minute due to the deception plan. Seventh Corps did not want to tip its hand and thus did not want battalion aircraft operating initially from Algaysumah which was well forward in the Corps' AO on the very western boundary for the deception plan. The battalion main body convoy left the day after Christmas instead, to join unit aircraft at KKIA in Riyadh. B Company (-) with the mission operations platoon and a support slice of HHS Company convoyed to Algaysumah. The IPF was airlifted to King Khalid Military City (KKMC) and then taken by ground convoy to Algaysumah. Tailoring the convoys and battalion staff and support structure for the split base was difficult to say the least.

After the movement into two different tactical assembly areas, the battalion urgently began flight operations and airborne intelligence collection. The first flight missions started right after New Year's, exactly two days after the arrival of all organic aircraft to Riyadh. The coordination with the Saudis at KKIA was a major effort in order to establish a base and begin flight operations quickly. The Saudis were helpful and friendly, but there were several

layers of bureaucracy to deal with while effecting any coordination. There was also the Saudi customs which included tea drinking and idle chit chat before any real coordination could be attacked. Miraculously, everything came through in a timely manner with the Saudis even though they wanted to consider 2nd MI as a temporary fixture at Riyadh and they still didn't think there would be an actual war. A permanent base was established at Riyadh and the heavy maintenance portion remained there throughout the conflict. This area was outside the VII Corps "footprint" and required a separate logistics network for aircraft and, to a lesser degree, vehicle parts. Working through Saudia Air and ARCENT, 2nd MI was well taken care of at KKIA with flight planning, ground support, ground support equipment, overhead shelter for phase maintenance, phones, latrines, commercial power, integrated base defense with Air Force and Saudi security, ramp space, messing and Air Force intelligence.

North, at Algaysumah, the rest of the battalion focused on force protection initially. This was necessary because 2d MI was the northern-most unit deployed in TAAs within VII Corps and there were only a few Arab forces north and east of the area. The IPF was not working as advertised initially due to salt water corrosion caused by the delay between tear-down in Germany and set up for operation at Algaysumah in Saudi Arabia. Just when the IPF was functioning normally, 2nd MI north was moved to KKMC at night during a rainstorm because of a threat to the airfield which intelligence predicted. The corps did not want to take a chance with its only deep-look airborne communications intelligence (COMINT) system. Once at KKMC, negotiations had to start over again and for a while it looked like 2nd MI would base there permanently for the rest of the deployment. Unit aircraft, particularly the OV-1 began to forward base for missions from KKMC because of fuel range. The IPF became functional again and ramp space was being coordinated with the Air Force and French.

The air war began with the 2nd MI split between KKIA and KKMC. Unit aircraft flew intelligence missions even the first day of the air war. Air superiority didn't take long. Missions were launched from both KKMC and KKIA. The living

conditions at KKMC were very austere. At KKIA, the 2nd MI took over the civilian terminal and moved unit personnel in permanently. They had been living at Eskan Village which was south of Riyadh and a 45-minute drive. SCUD missile attacks went on nightly at Riyadh and a terrorist threat one night required 100 percent manning of the perimeter. Just when operations were becoming well-established at KKMC and KKIA, another move was ordered the first week of the air war. Without interruption of intelligence missions, the 2nd MI moved everything to Algaysumah from KKMC and KKIA except for the heavy aircraft and electronic maintenance which stayed at KKIA. This now included unit aircraft, except those in maintenance at Riyadh.

Moving all aircraft operations to Algaysumah was a new exercise in coordination because the VIIth Corps logistical system was not mature at this point. There were no hangar facilities for maintenance; a clam shell was erected by the engineers, but it fell weeks later during a windstorm--luckily, only minor damage was done to one aircraft. COSCOM was not ready to immediately provide the support required; aviation oxygen for OV-1D, battery shop, parachute re-pack for OV-1, TMDE, AOAP lab, machine shop, nitrogen, magnaflux, etc. Without the permanent aircraft maintenance base in Riyadh and the shuttling of aircraft for maintenance, 2d MI aircraft would not have kept doing the mission. Along with the airfield and maintenance support problems came the biggest problem of all, next to split-base, the OV-1 Mohawk parts problem.

At the macro-level, everyone will agree that logistics were an unqualified success during Operations DESERT SHIELD and DESERT STORM. At several micro-levels, there were headaches, 2d MI's being the receipt of AVSCOM parts for the OV-1. The CECOM parts arrived timely at both Riyadh, outside the Corps system, and to Algaysumah within the Corps system. The system never straightened our for AVSCOM OV-1 parts, even before redeployment. Second MI survived on a herculean effort by the soldier aircraft mechanics, the Grumman Field Service representative rebuilding parts, extensive controlled exchange, direct shipment of critical parts when it could be arranged, and from trading or being given parts by a sister AEB which operated near port and

seemed to have an ample supply. This AEB also had been in-country months longer with a mature corps logistical system. Extreme measures were taken by all levels of command to find OV-1 parts, but there was only a trickle of success. A book could be written on the 2d MI's challenges to supply and maintain the battalion while operating split-base. Second MI did not want for anything significant except for OV-1 parts due to the extraordinary efforts of all those in the battalion involved in supply and maintenance.

The mission success of 2nd MI can be directly traced to the Peacetime Aerial Reconnaissance Program (PARPRO) flown daily along the borders of USAREUR. Second MI had a daily real world mission while forward based in Germany and a successful airborne intelligence mission was second nature to the soldiers in the battalion. The only major difference was that now 2d MI aircraft had to fly in Air Force airspace under the Tactical Air Control System (TACS). This meant being included in the Air Force Tasking Order and receiving daily special instructions to this order. The tool to do all of this was to have access to or own an Air Force Computer Assisted Flight Management Systems (CAFMS) computer terminal. This was obtained through hard work and command involvement and upon receipt negated a daily, four-hour round-trip to get the timely information from the Air Force at KKMC. The lesson learned for several levels of command is that special electronic mission aircraft (SEMA) fly in Air Force air space and not Army air space, below the coordinating altitude, which is usually 500 feet or lower. After all this was learned, flying in Air Force air space is very simple, but you must have the correct tool to do it.

During the war, 2nd MI was allowed to do some unique things with respect to targeting that are not in accordance with doctrine. A voice product net (VPN) was established through the IPF and commander's tactical terminal. Near real time reporting of combat information was passed to multiple activities, including the Air Force Airborne Command and Control Center (ABCCC), to include the nomination of targets to the shooters. Additionally, it allowed for the 207th MI Brigade assets to receive "tip offs" on targets of interest to VII Corps. Second MI mission operations personnel and their supporting Air Force

electronic security command detachment were instrumental in this significant and valuable asset. The Unmanned Aerial Vehicle (UAV) platoon attached to 2nd MI was given a senior NCO from the Corps FSE to form a targeting cell. The UAV provided the Corps commander with a system to view the battle field in a manner not previously available. Given the Iraqi obsession with SIGSEC and the reluctance to move due to the air threat, this system allowed many intelligence gaps to be filled. The UAV was particularly successful for targeting during the air war.

The UAV definitely had the Corps commander's attention, but it was of negligible value during the ground war because of the distances moved by the U.S. forces. This UAV, Pioneer II, is really a division-level system with limited range. The system was jumped forward for the ground attack and the 2nd MI had Task Force Sandhawk attached to it. However, only a handful of missions were flown after a runway was built for the UAV forward. By that time, front-line U.S. forces were too far away again for UAV support. Lesson learned: The U.S. Army needs a corps-level IEW UAV with greater ranger and less support requirements, i.e., hardened runway.

The work horse for the 2nd MI under an Iraqi SIGSEC umbrella was the venerable old OV/RV-1D Mohawk with its SLAR down-linking to three new GSMs spread out with maneuver forces on the battle-field. The commander, 2 ACR, Colonel Holder, said that he found no surprises due to good intelligence while he spearheaded the VII Corps attack. One GSM team was attached to 2 ACR the entire conflict and was critical to the 2 ACR success. JSTARS may have received all the press, but the OV-1 SLAR was there when JSTARS was down at critical times. **OV-1 SLAR also gave the Corps commander the coverage he needed; 15 minutes per hour from JSTARS was not sufficient for the Corps commander in a rapidly moving tactical situation** (Author's italics). Can JSTARS be the panacea for airborne radar coverage in the future, or do we still need a dedicated Corps SLAR platform OV-1 or replacement?

COMINT from Guardrail was flown every day during the war. Some would argue its contribution since the Iraqis talked very little on the radio. However, the fact that

Iraq's command and control was very poor added significantly to their quick defeat. In reality, Iraq knew if they talked, they would be targeted immediately. COMINT was a success. The RC-12D Guardrail was also used as a back up and sometimes primary communications relay for Corps deep attacks with Apaches. This was practiced in VII Corps prior to the Gulf War and was successful in the Gulf. The communications relay aided command and control and also tipped off the maneuver force with ELINT intelligence gathered by the RV-1D and passed through the commander's tactical terminal. Multi-channel COMINT was exploited and will be the target of future Corps Guardrail systems.

Second MI's unique experiences in the Gulf War bring many lessons learned. The future AEB should learn from the past. Should there be a UAV company for the future AEB with a corps IEW UAV? The Gulf War demands it. The targeting initiatives at battalion and brigade made a difference. Flying in Air Force airspace is not magical. Training at the Air Ground Operations School with brigade and above staff officers attending their battle staff course is the missing link. Participating in a daily, real-world mission in USAREUR was the best possible training for war. Many look back and wish they had this or that in retrospect. I don't think anyone would wish split-base operations on any AEB unless the force structure is increased. Most in the 2nd MI wished there had been more prime movers because of multiple moves and difficult to obtain lift support. The current AEB is definitely not mobile. POL support should be changed from 49C to HEMMET. Fortunately, 2nd MI received refueling support at Riyadh from Saudia Air.

The missions also need to be re-looked for the AEB. Is the OV-1 photo mission still a viable one? The current camera system is long since non-supportable. The RC-12D Guardrail and follow-on RC-12K Guardrail common sensor are still flown in non-survivable aircraft with no ejection seat and no capability for doing a viable evasive/aerobatic maneuver. The OV-1 will retire in a few years and there is no replacement aircraft on the books. Will JSTARS fill the gap? Finally, it is imperative that emphasis be placed back on the G-2 Air O-5 position at corps. That position is

critical to good airborne intelligence. In most corps, the position in not OPD supported.

INTELLIGENCE 7.6

The following is an excerpt from an interview between Major Kevin Smith and a senior officer, VIIth Corps:

Smith: You guys are the divisions...before you crossed the berm, the divisions did send out Apaches to do armed reconnaissance in sector and brought back imagery. Did you ever get to see any of that imagery?

Senior Staff Officer: Yes, the Apaches did. Yes, I sure did, I got to see some of the pictures especially I think the ones I took the most interest in were the ones from the 1st Infantry Division, who were doing the artillery raids. The artillery that could range the breach during activities prior to G-day was the most important thing known to man. We went after that with Apaches, a combination of Apaches firing at it, Apaches finding it and bringing in our MLRS on it and the RPV flying those tracks identifying artillery and battery or larger-size that could range the breach. So, the guys that really had a good intel turn-around were the 1st Armored Division. They really did. I went to their headquarters with the 'old man' once and I saw they had better intel products than we did. They did. I mean they were working at it. At least for that first part of the operation.

Smith: SIGINT (Signal Intelligence). Let me ask you about SIGINT. This is the conclusion that I'm starting to come to. Here we are, we've been designing courses for 30 years based on the European kind of "fall back" to defend Europe battlefield. MI battalions are heavy SIGINT creatures and it doesn't seem like the Iraqis used a lot of their radios...

Senior Staff Officer: They didn't.

Smith: And so, 80% of that force structure that we call the MI battalion kind of sat...they might have been flying trying to do collections, but they weren't getting much.

Senior Staff Officer: We weren't getting much of anything, SIGINT wise. There were some fox-mike communications, he had an extensive wire. I didn't know

until the other day, when Dave Kirk talked about it, about fiber optics and not just prehistoric WD1, but he had been there a pretty good while and had a pretty good command and control lash-up. I think for two reasons, they knew of the capabilities that we had and they knew that we had the capability to reach out and touch them. Just like their counter-fire. They stopped shooting artillery at us because a battery of artillery would fire and it would land out in the middle--it wouldn't be adjusted--it would land out there and we would put a battalion 2 or battalion 3 on them and then they wouldn't fire anymore. By the time we started the breach operation, the 48th Infantry Division's artillery was down to less than 10%.

Smith: That was the unit immediately opposite the breach?

Senior Staff Officer: Right. It just didn't have any. But the SIGINT...I don't know what the SIGINT guys or gals did. I can't remember anybody saying a "SIGINT intercept indicates that"... We used to use that a lot in the 1st Armored Division when I was chief and I used my little MI company when I was a brigade commander. We had a little, separate MI company going against the Germans. We tracked them...

Smith: With the ground-mounted milkies and turkeys...

Senior Staff Officer: Turkeys and milkies and all that stuff and you could figure out where they were. There wasn't a whole lot of that.

Smith: So we shift into a mode where we are trying to get imagery intelligence (IMINT) and HUMINT as opposed to signal intelligence (SIGINT).

Senior Staff Officer: Right. And the imagery thing is that there is a big "brouhaha" around that. I don't want to take sides, because I know how my boss felt, but whether or not I have a picture or you can tell me there are tanks arrayed in a line from here to there, verified by imagery, I'm going to believe you. I don't need to see the pictures. I will trust that there is an enemy arrayed there. There was a big thing about "if you can have pictures, why can't the state of the art give me the pictures so I can give them to the guys in each tank company?" Except for planning an attack when you're trying to attack a fortification, hell,

it's a line in the desert, so... The MI guys got beat up a lot for not being able to disseminate...when they talk about intelligence dissemination, I think you're mainly talking about imagery dissemination. I never saw any of these JSTARS pictures at all...not until they presented the "old man" with a book when the war was over. Now, I am a corps G-3 at the TAC and I never saw any of those JSTARS pictures until the war was over.

Smith: Was the ground station back in the main?

Senior Staff Officer: Back in the main and they'd say we have a large vehicle convoy moving from...and they would give us grids and that was gospel truth because we actually--if JSTARS said it was there and moving, it was there.

Smith: What about the corps Mohawks? JSTARS only flew at night. It appears like the corps Mohawks with the SLAR was given the corps MTI during the daytime, but I'm not sure exactly how...

Senior Staff Officer: They were. We would have a thing...have six 577s and two rows of thin tables with the phones on them. I sat in the second row back in front of the OPS map. They would have a bar chart daily of what was flying, what was covering. You would see JSTARS was covering and you would have everything from Guardrail, UAV, Mohawks, so that there were no holes in that and I would go over that with the G-2 guy at the TAC every night for what was going to be flying, what flew, what did they get and so forth. The UAV track, the G-2 used to be the "kahoona" for that. The boss asked who was running that and I told him John Davidson. He said, uh uh, you know what my intent is and what I want to find out. You select the tracks and you let John Davidson, the G-2, deal with the MI guys to get that thing flying where you...

CHAPTER EIGHT

MOBILITY, COUNTERMOBILITY, AND SURVIVABILITY

In the early hours of Operation BARBAROSSA (22 June 1941), Luftwaffe aircraft attacked Soviet airfields catching hundreds of Red Air Force aircraft on the ground. Within hours, the Soviet air assets on the Eastern Front were largely destroyed. This affected Red Army combat operations for months and effectively gave the Luftwaffe control of the air over the battlefield.

From 1941 through 1945, Soviet units were continually bombed and strafed by German aircraft. These attacks did not normally stop offensive operations[1], but they destroyed hundreds of Soviet tanks.[2] After 1945, the Red Army made a direct and sustained effort to develop a anti-aircraft system that would give ground forces protection against aerial attacks by any potential enemy.

By the 1970s, Soviet science and technology had developed a formidable array of anti-aircraft weapons that provided Red Army units with protection from 0 altitude up to 60,000 feet. This array of AAA (anti-aircraft artillery) weapons consisted of tube weapons like the ZSU-23-4 and ZSU-58 or missiles like the SAM 6 and SAM 7. Most of the Soviet Army's tube and missile AAA systems were mobile, and could accompany it everywhere.[3]

When Soviet ground forces were either moving or stationary, the AAA systems were tied-in and integrated at every level. If aircraft attacked from high altitude, specific missiles targeted them. If an attack at low

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[1] See: Army Center of Military History. Russian Combat Methods in World War II. (Washington, D.C.: U.S. Army Center of Military History, 1988.) pp. 95-102.

[2] The Germans developed a special JU-87 Stuka dive bomber with 30mm cannon. This JU-87G variant was made to kill Soviet tanks, and it did so in great numbers. The best known tank-killer in the German Lufwaffe was Colonel Hans Ulrich Rudel. He destroyed an estimated 600 Soviet tanks, and others in his special squadron had kills nearly up to that level. See: Hans Ulrich Rudel. Stuka Pilot. (New York: Ballantine Books, 1968).

[3] The most recent historical episode of the use of the Soviet AAA capability was the Yom Kippur War. The Syrians had been given the complete Soviet system to include the SA-6. This system effectively negated the striking power of the Israeli Air Force for part of the fighting in the Golan.

altitude came in, both missiles and tube AAA systems engaged. Since armor units were thought to be prime targets by the Soviet Army, they were well supplied with AAA protection. On the flanks of each armor and mechanized formation lurked ZSU-23-4s, and behind them, SA-6 and other mobile AAA missile launchers.

In the years of the threat of nuclear attack by manned bombers, the Soviets also developed a in-depth and integrated missile defense system. This system was controlled by a series of interlocking radars that provided air defense from low to high altitude. By the 1980's, the Soviets possessed one of the most sophisticated, in-depth air defense systems in the world that could protect military units in the field or fixed, critical defense installations. With this system the Soviet Army could protect itself from enemy air attacks that might impede its mobility. During the 1980s the Soviets transferred or sold their AAA technology to other countries.

A complete but less sophisticated air defense system was sold by the Soviets to Saddam Hussein.[4] Iraq also obtained the Roland Air Defense System from the West as well as capturing the entire Kuwaiti HAWK missile system. All-in-all, the Iraqi Army possessed a sophisticated and capable air defense system that could defend against both strategic and tactical air attacks. As Conduct of the Persian Gulf War - Final Report to Congress noted:

> Air defense weaponry included SA-2, SA-3, SA-6 and Roland SAM system. Additional air defense was provided by Air Force interceptors and organic Army assets, including the SA-7/14, SA8, SA-9/13, SA-16 missile systems and the ZSU-23/4 self-propelled AAA systems...These weapons -- 57mm and 37mm AAA pieces, ZSU-57/2 and hundreds of 14.5mm and 23mm light antiaircraft weapons-formed the backbone of the integrated air defense network. In major high value target areas (such as Baghdad, airfields, chemical production complexes and

[4] During the Iran-Iraq War, the Iranians rarely used air power to influence the ground war, so the Iraqi army had little chance to use their sophisticated Soviet systems. What aircraft Iran could still fly were used against strategic targets or urban areas.

chemical production complexes and nuclear facilities), the combined arms air defense could prove lethal to aircrat operating below 10,000 feet.[5]

Allied aircraft and helicopters faced as many as 17,000 surface-to-air missiles and "between 9,000 and 10,000 anti-aircraft artillery pieces."[6] As planners struggled with operational schemes for the invasion of Iraq and Kuwait, they had to take into account that the Iraqis could use AAA systems to protect their troops. Attack helicopters or transport helicopters could be at considerable risk especially if deep-missions across the FLOT were required.

During its first experiences with mobility warfare in South Vietnam, the Army learned a hard lesson. Helicopters were found to be very useful and efficient servants of the operational plan, but they WERE vulnerable. At the height of the Vietnam War, the Army deployed more than 5,000 aircraft into the battle area, and over 1,900 were shot down.[7] From 1965-1972 the North Vietnamese possessed no sophisticated AAA systems other than simple automatic weapons and their own ingenuity. With these crude AAA weapons, they [North Vietnamese] sought to counter the U.S. Army's growing ability to attack in two or three dimensions.

To counter possible AAA problems, the U.S. Army spent considerable time and effort after Vietnam in perfecting ways to provide the helicopter with systems that would help insure its survival in a high threat environment. This paid off during the Gulf War.

Although the Iraqis did not employ their AAA capabilities to full extent, Army helicopters were locked on with radar, and missiles fired, but in only two instances did missiles apparently down U. S. aircraft (an AH-64 and an

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[5] Conduct of the Persian Gulf War - Final Report to Congress. Pursuant to Title V of the Persian Gulf Conflict Supplemental Authorization and Personnel Benefits Act of 1991 (Public Law 102-25). Chapter I through VIII, April 1992, p. 14.

[6] Bruce W. Watson, Bruce George, Peter Tsouras, B. L. Cyr, and the International Analysis Group on the Gulf War. Military Lessons of the Gulf War. (Novato, California: Presidio Press, 1991), p. 69.

[7] Many, of course, were salvaged, repaired, and returned to duty.

UH-60).[8] The other UH-60 lost was brought down by automatic weapons fire while on a CSAR (combat search and rescue) mission.

In instances where missiles were fired, aircraft survivability equipment (ASE) did its work. Without the use of ASE equipment during the conflict, aircraft losses could have been much greater. In addition to provide system in aircraft to provide security from attack in flight, the U.S. Army also had to deal with security on the ground. A situation that was often neglected during the Vietnam War.

Since many units in the desert were often isolated, security was performed by unit members. Although the Iraqis did not attempt any raids behind Coalition lines, most units took perimeter security seriously. There was a time when that was not a high priority.

In 1967, the 1st Cavalry Division occupied a fire base identified as Landing Zone Bird.[9] This firebase sheltered artillery units protected only by an under strength infantry company of less than 80 soldiers. Although bunkers surrounded the base, no fields of fire had been cleared, and little barbed wire deployed. The infantry company commander did not have the personnel to provide total security, so he asked the artillery if they could help. The artillery refused citing the need of personnel to man the guns, and that's where the security issue abruptly ended.

The men of LZ Bird did not know that an entire NVA regiment was preparing to attack the base. The North Vietnamese had spent some time observing their target, noting that the jungle ran nearly up to the trench line and that security was slack. These were two faults they would shortly exploit. As the base slumbered in ignorance of imminent danger, hundreds of NVA infantry silently crept undetected.

When the attack came, the NVA easily overran the defending infantry, and were in the gun pits of the artillery before the defenders knew they were being attacked. The few surviving infantrymen, and artillery

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[8] One of the missiles could have been an SA-7 - a Soviet supplied, shoulder fired anti-aircraft missile.

[9] For a complete history of the attack on LZ Bird, see: S. L. A. Marshall. Bird. (New York: Doubleday, 1973).

crews held out, and with the help of the new "bee hive" rounds, repelled the NVA attack.[10] Because both the artillery and infantry felt it was the others job to secure the perimeter the NVA attack nearly succeeded. In the desert, aviation units frequently had to pull their own security which took personnel away from their primary duties. But this time, it WAS done.

The first selection (8.1) is a narrative written by Major Kevin Smith on mobility, countermobility and survivability during the Gulf War. Since ASE is often highly technical, unforeseen problems can arise.

The second selection (8.2) is an excerpt from the interview conductged by Major Smith with an Apache Battalion Commander who discusses the firing of what he thought was a SAM 6 missile during the causeway battle.

The third selection (8.3) is an excerpt from U.S. Army Aviation: Operation Desert Shield/Storm. After Action Report. 1 May 1992 that discusses mobility, countermobility, and survival. Survival also means units on the ground. Because aviation units aren't manned at a high level, and since a majority of their personnel are specialists of one kind or another, providing internal security is not an easy task. As the AAR will show you, this lack of personnel can lead to some shortcuts in survival operations.

MOBILITY, COUNTERMOBILITY, AND SURVIVABILITY - 8.1

Operations DESERT SHIELD and DESERT STORM mark the first time large numbers of U.S. Army helicopters faced modern air defenses on a mid-intensity battlefield.

On February 6, 1991, 1-1 AHB discovered a critical operational anomaly. While performing a reconnaissance mission for 1-4 Cavalry, they discovered that the ground surveillance radar used by U.S. Forces caused the on-board radar to issue ZSU-23-4 air defense artillery indications. This situation was reported to Corps and was of critical importance to cross-FLOT (forward line of troops) operations.

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[10] Not unlike canister rounds of the U.S. Civil War in the 1860s. They turned the artillery pieces into giant shot guns, and their fire swept the masses of NVA infantry from the position. When fired, the fleschettes made a sound like a thousand whips cracking. Ibid., p. 104.

There is little question that aircraft survivability equipment (ASE) saved the lives of combat helicopter crews in Operation DESERT STORM. In February, two Army Special Operations MH-60s rescued an Air Force pilot shot down 50 miles inside Iraq. On the way home, their on-board radar warning receivers turned them away from an air defense threat. Some 15 nm further south, their upgraded infra-red jammers confused the seeker of a surface-to-air missile fired at one helicopter. Crews in both aircraft saw the missile "porpoise" left and right, then veer off and miss.

The U.S. Army believes a number of helicopters survived infra-red missile firings unscathed. It is impossible to estimate how many infared (IR) threats never fired for want of a good lock on helicopters with infra-red suppressors and jammers. Of the radar threats logged against aircraft, ten engagements were broken before firing, and seven confirmed radar-guided gun or missile firings missed. Three engagements by unidentified systems threatened four aircraft and claimed a single Black Hawk.

By mid-July 1990, the Aircraft Survivability Equipment project manager at the Army Aviation Systems Command had compiled 100 interviews with Operation DESERT STORM aviators to document the performance of ASE and gauge the attitude and understanding of combat aircrews.

Braving the Storm: The U.S. Army ultimately sent over 1,800 aircraft to southwest Asia and quickly discovered that ASE cannot be simply installed and used for the first time when deployed. Aviation units rushed to Saudi Arabia left survivability equipment in the U.S. and the ASE initially in the Gulf was often installed improperly and could not be tested, repaired, or used effectively. AVSCOM shiped aircraft survivability equipment to the Gulf, and contact teams made ASE-related repairs on more than 500 aircraft before the start of the 100-hour war.

Most ASE failures were in aircraft A Kits--the buried racks and wiring that accommodate the receivers, jammers, or other elements of the active B Kit. Without classified B Kits in service, crews had no way to detect faulty connectors, broken wires, and mission antennae or grounding straps. A lack of test sets also made it difficult to troubleshoot dead systems. The self-test mode in one radar

warning receiver, for example, checks only the processor, receiver, and display. A test gun is needed to verify the operation of antennae, cabling, and connectors. Unlike fixed-wing strike aircraft, Army helicopters used the desert as their hardstand. When the equipment was maintained, it worked very well.

One jamming device on aircraft, for example, is a mechanically modulated IR jammer with unsealed bearings. The bearing grease breaks down after about three years in storage, and the bearings seize if not lubricated in the field. Also important, crews have to shut the jammer off during take-off and landing, and ground crews have to cover the jammers on parked helicopters to keep dust and sand out of the bearings. In the wake of the Gulf war, the ASE project manager has recommended a formal maintenance plan for units to check A and B kits and record inspections.

Replacement parts and new equipment were easily lost in a logistics system moving millions of tons of supplies. The ASE project manager's office set up its own distribution system with specialists in the theater who could track shipments by transport aircraft number, pull black boxes from incoming pallets at Dhahran, and deliver equipment to field units. Deliveries were first made with rented Toyota trucks and later with two UH-1H Hueys. At peak deployment, the ASE project manager had just 17 people in southwest Asia and relied heavily on civilian contractor personnel to install and maintain systems in the field, and train Army technicians. "Their service was invaluable. In order to fix the black box, you need guys who really understand the black box."

Technical representatives from Dalmo Victor, ITT, Lockheed Sanders and Northrop, remained in Saudi Arabia throughout Operations DESERT SHIELD and DESERT STORM to support U.S. Army aircraft survivability equipment. Soldiers and civilians installed, upgraded, and reprogrammed systems in the field to meet a mixed threat of Soviet- and Western-made air defense systems bought by Iraq or captured from Kuwait.

At the start of Operation DESERT SHIELD in August 1990, most of the new series of jammers with their digital processors were in warehouses and not scheduled for fielding

until February 1991. Under an Army contract, Dalmo Victor and General Instruments' Government Systems Division sent five technicians to Dhahran to install about 1,200 new threat warning receivers on AH-1F Cobras, AH-64 Apaches, OH-58C and OH-58D Kiowa scouts, and UH-60 Black Hawks.

To locate and jam enemy signals traffic, the EH-60A Quick Fix and other special electronic mission aircraft spent their time at higher altitudes in a denser electronic environment. Onboard systems were reprogrammed in the field once during Operation DESERT SHIELD to accommodate an additional threat.

The second reprogramming effort undertaken in southwest Asia was for the radar jammer aboard Apaches and Cobras committed to Operation DESERT SHIELD. The jammer receives pulsed radar threats and selects a jamming mode to suit the situation. Some older systems aboard Cobras were upgraded in the field to standards, and the jammer received a new programmable read-only memory (PROM) to handle a new threat. International Telephone and Telegraph built a PROM-burner in less than two weeks, and the reprogramming tool was rushed to Saudi Arabia.

The pulsed-threat jammer aboard the higher-flying EH-60A and fixed wing SEMAs were complemented by a continuous wave jammer. The U.S. Army ultimately deployed more than 20 EH-60As to southwest Asia, some arriving from Germany without some of the new systems. Northrop Electronic Systems Division had two technicians in-country from December 1990 until the cease-fire to install and maintain the new system. The technicians started working at the big West Heliport near Dhahran, and travelled to units throughout the theater. Significantly, the new systems suffered only one failure in the desert and needed no reprogramming.

Quick Fix EH-60s normally operated anywhere from in front of the forward line of own troops (FLOT) to the FLOT itself, at different altitudes. On one occasion, the 24th Infantry Division sent an EH-60 along on a reconnaissance mission more than 100 kilometers beyond the FLOT, specifically to provide ASE coverage to other aircraft. Most EH-60 operations in Operation DESERT STORM were conducted under at low altitude, an indication of the

confidence pilots had in their aircraft survivability suite. The Quick Fix helicopters were the only intelligence/electronic warfare assets that could keep up with maneuver forces encircling Kuwait.

Sophisticated as Iraq's radar-guided defenses were, the primary threat to U.S. Army helicopters remained SA-7/14-type infra-red seeking surface-to-air missiles. Omni-directional infra-red jammer was used on Black Hawks, SEMA Hueys, and Pave Chance Kiowas; improved versions were used on Apaches and Cobras. A rush request in October 1990 led Lockheed Sanders to deliver 250 improved jammers before the start of Operation DESERT STORM to replace older models in the fleet. The improved jammers were effective against a broader range of threats, and upgraded jammers were aboard Apaches of the 101st on their deep strike the first night of the war. Follow-on modification kits are upgrading more -144s to -144A standards.

Infared missiles are not betrayed by RF emitters, and all CH-47D Chinooks committed to Operation DESERT STORM had a missile warning detector tied to the flare/chaff dispensers. A lightweight pulse Doppler radar was also aboard the EH-60s flying their special electronic missions. A single Lockheed Sanders engineer remained in-country to service both the IR jammer and missile detector. Paint was another system used to protect aircraft.

Unfortunately, the non-specular acrylic lacquer is available only in dark black-green--inconspicuous at night but a poor match for desert sand by day. Air Force Special Operations and Marine helicopter squadrons re-camouflaged aircraft for the desert. Only one Army unit in Operation DESERT STORM was officially authorized to repaint helicopters to reduce their visual signature, and tan Black Hawks, Cobras, and Kiowas were rare. AVSCOM had an easy-to-decontaminate, polyurethane-based, low IR grey paint for its fixed wing SEMA, and considered a low-IR tan for Army helicopters.

Other signature reduction methods are not so simple to order and apply as paint. All Apaches and Army Cobras went to southwest Asia with suppressors to hide hot metal parts and dilute hot exhaust, but only about 30 percent of the entire Black Hawk fleet was so equipped at the start of

Operation DESERT SHIELD. The Army had more than 400 UH-60s in southwest Asia at the height of the build-up. Aviation Systems Command accelerated production of new infra-red suppression systems but most were not fielded before the cease-fire. Light utility UH-1H and MEDEVAC UH-1V Hueys wore hot metal suppressors--the Vietnam-vintage "toilet bowl" exhaust and a belly shield.

Just as important as survivability hardware is knowing how to use it. The ASE project manager's office taught over 40 electronic warfare classes to Army aviators in the desert, covering threat systems. The sessions and post-war interviews uncovered misconceptions about the equipment and how it is used. For crews not used to ASE equipment, basic truths need to be restated: the goal of survivability is to evade the threat, not jam it; no RF receiver can identify every threat, and no RF jammer jams every radar; infra-red jammers cannot defeat IR missiles alone--they work with IR suppressors, low-IR paint, and effective tactics.

Some misconceptions were tied to specific systems. Crews feared the emissions of some ASE systems could betray them to enemy RF detectors. But most of the energy from the missile detector is directed downward, and a helicopter would most likely be heard or seen before the radar gave it away. Helicopter crews felt the systems placed behind the main rotor mast leaves the helicopter vulnerable to IR threats from the front. In truth, the IR signature from the front of the helicopter is low, and acquisition ranges for IR threats would be limited in the frontal aspect.

Some crews thought chaff would hide their aircraft from radar. The cloud actually provided a stronger return to draw attention away from the aircraft so the crew could take evasive action. Aviators believed they could mix M-1 chaff bundles and M-206 flares in the same M-130 dispenser. The 30-shot dispensers were set and oriented to achieve maximum effectiveness with one load or the other.

Training with real ASE can overcome some problems. Crews found the computer voice on one system difficult to understand and needed time to get used to it. Other lessons came from simulation. The Army is pursuing its ASET--Aircraft Survivability Equipment Training--programmed to teach aviators about the threat and survivability. Desk-top

trainers are already being fielded, and a mobile threat simulator network is in full scale engineering development.

MOBILITY, COUNTERMOBILITY, AND SURVIVABILITY 8.2

Interview with Apache Battalion Commander

Battalion Commander: We continued to fly and, you know, along the way we get strobed by a variety of different systems. The APRs are keying, never got locked on or anything, but there were a lot of different systems in the area, and we are flying pretty low over the water...so we came up and the first thing we saw was an SA-6 lock onto us. Bearing in mind now, we are looking through the FLIR and it is about 1530 in the afternoon. Obscurance was so bad you had to look through the FLIR system. So you see this SA-6 strobes and then locks on to us. As it turned out he was only about 600 to 700 meters in front of us. One of the Apaches picked him up and shot him with a 30mm, and we are still not sure if he actually launched or his engagement caused the launch, but anyway an SA-6 came off the rail and kind of went straight up in the air and then just kind of spun straight down and landed right in front of us. But we continued to hose him down, but his radars, they will still active so we finished him off with a 30mm. There was another SA-6 off to the right flank that was still active. He also fired a missile, but we didn't take any hits.

Major Smith: Was this the old Soviet SAM 6 with a separate radar and launcher?

Battalion Commander: Yes, two of them. They were sitting kind of side by side. We took that one out. Now, at this point we had five Apaches, and I became an active shooter once we got everybody up there. We had five Apaches, and I was on the right most flank so we had four on the left. We had five Apaches, behind them a couple of hundred meters was the UH-60 command and control bird, and then behind them were two of the Aero Scouts we had taken along. They were still in contact with the Aero Scout we had dropped off.

Major Smith: But no fire coming from that area?

Battalion Commander: ...He [the back seater] had the 30mm, but every now and then we would pick up some on our peripheral vision. Come to find out we suspect that those

were either SA-7s or some type of heat seeking missile. I don't think it was an RPG (rocket propelled grenade), but somebody was definitely shooting at us from the rear because about the third time this happened, the Aero Scouts, about a kilometer behind us behind the little rear security there, called up and said somebody just shot something at the right most apache from the rear, which was my bird. Our theory is that we probably had three missiles fired from the rear, some disgruntled Iraqis that still thought the cause was worthwhile and didn't want to surrender down here in the citadel complex....Our theory is the reason that we didn't loose a bird is the ASE (Aircraft Survival Equipment), the system is pretty decent. But the other big thing is, remembering there were probably three dozen fires in front of us, and so with a tail shot like that going toward a fire, that is our theory.

MOBILITY, COUNTERMOBILITY, AND SURVIVABILITY 8.3

DOCTRINE - MOBILITY/COUNTERMOBILITY/SURVIVABILITY

ISSUE: COMBAT SUPPORT FOR THE AVIATION BRIGADE

DISCUSSION: Aviation brigades possessed a limited capability to protect themselves on the battlefield during Operations DESERT SHIELD and DESERT STORM because they received a marginal combat slice from corps or division. Army aviation personnel were totally dedicated to operating or maintaining aircraft. Therefore, aviation brigades required CS assets for protection during combat operations. These protection requirements included engineer, military police, signal, air defense artillery, and chemical detection and decontamination units.

Since there were no designated CS (combat support) slices to habitually support the aviation brigades, these brigades competed with other units for extremely limited combat support assets. In the absence of adequate combat support assets, aviation brigades operated at greater risk because of their lack of personnel to protect themselves at unit locations.

For example, aviation units needed earth-moving support at FARPS (forward arming and refueling points) and at maintenance unit locations in order to build protection

berms and level terrain. With no organic earth-moving equipment, aviation brigades relied on corps or divisional engineer assets to provide the requisite support. However, since no corps or divisional engineer unit habitually supports the aviation brigade, aviation units competed with other units for available engineer assets. In many cases, conflicting unit priorities delayed the arrival of engineer assets at aviation brigade FARPS and maintenance locations. IMPROVE: Designate a combat support slice for habitual support of the aviation brigade and exercise this support relationship during peacetime training.

CHAPTER NINE

COMBAT SERVICE SUPPORT

Confederate General Nathan Bedford Forrest had a favorite saying about his success in combat: "I git thar furstest with the mostest." That quote from a long past war could easily be the theme of modern day Army support personnel. In this century the United States Army has rarely suffered from a lack of logistical support.[1]

Before that time, however, logistical support was a often a problem. For example, during the Revolutionary War, the American army had to struggle to maintain itself in the field.[2] To the members of the Continental Army, Valley Forge was more than a footnote in history. The Continental Congress did not seem to understand that simply passing bills to provide food and clothing to the army wasn't enough. Someone had to go out and acquire the supplies, and then ship them to George Washington's troops. A "let George do it" mentality took over and the supplies were not delivered. Today, it is not the problem of having the logistical material, but rather how to move the thousands of tons necessary to sustain the modern army to where it has to fight and win.

In some cases, including Operation DESERT SHIELD, army units have had to arrive somewhere in the world prepared to fight, but without the necessary combat service support. In most instances, it is a matter of priorities given the amount of air and sea lift available. There was a deliberate decision made by the commanders in the Gulf to go heavy on combat units in the first increments so that combat

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[1] In fact, the Union Army was so well supplied that the Confederates frequently supplied themselves from abandoned Union equipment. After the Seven Days campaign in early 1862, the Confederate Army spent nearly a year salvaging all the equipment abandoned by the Union Army. See: Stephen W. Sears. To the Gates of Richmond The Peninsula Campaign. (New York: Ticknor and Fields, 1992), p. 345.

[2] The problem was that Congress could not understand that it took more than just passing monetary appropriations to get supplies to Washington's Army. See: U.S. Army Center of Military History. American Military History. (Washington, D.C.: U.S. Army Center of Military History, 1989), p. 54.

power would be there is the Iraqis decided to invade Saudi Arabia.[3]

Combat support takes many forms in today's modern Army. One critical area of support is covered in the first selection (9.1) -- the U.S. Army Safety Center's After Action Report. The Safety Center IS the Army's expert on safety doctrine. They developed the training programs that kept army aviation assets performing their many tasks, but in a safe manner.

When aviation units first began flying the Persian Gulf, the number of Class A accidents rose dramatically. The Safety Center sent experts to the area to assist in developing training that would lower the accident rates. This selection is a portion of the Safety Center's Operations DESERT SHIELD and DESERT STORM After Action Report.

One of the most dynamic areas of Aviation support to the Army is in the realm of air movement of supplies. Just like the Army Air Corps C-47's that supplied the trapped paratroopers of the 101st Airborne at Bastogne, the CH-47D Chinooks and UH-60 Black Hawks of Army Aviation flew thousands of missions before, during, and after Operation DESERT STORM to move supplies to desert outposts.[4] In the early weeks of the deployment, the helicopter was a ground unit's only source of supply.

The next four selections are short vignettes on "great moments in air movement" and how helicopters helped support the ground war. In Selection 9.2, UH-60s from Task Force (TF) Phoenix help to set up a FARP (forward arming and refueling point) for the 1st Armored Division during Operation DESERT STORM. In Selection 9.3, air elements of TF PHOENIX transport badly needed FARPs for the 1st Cavalry Division. In 9.4 Task Force WARRIOR moves ammunition, food, water, fuel and repair parts 144 km into Iraq to sustain FOB

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[3] Brigadier General Robert H. Scales, Jr., USA, Director. Certain Victory: United States Army in the Gulf War. Washington, D.C.: Office of the Chief of Staff, 1993. pp. 46-49.

[4] Because the C-47's had to fly straight and level to drop their loads, German AA fire shot down a significant number. Still the crews of these aircraft kept on with their mission. One pilot received a posthumous Medal of Honor as paratroopers on the ground watched his mortally wounded C-47 circle for another run to drop all the supplies aboard to those on the ground. See: Charles D. MacDonald. A Time for Trumpets. The Untold Story of the Battle of the Bulge. (New York: William Morrow and Company, 1985), p. 522.

Cobra. In selection 9.5 Captain Michelle Barlean, a CH-47D pilot who flew many support missions for the 101st, describes her experiences. The sixth (9.6) selection is an interview with Captain William C. Quistoff, a liaison officer at 2nd COSCOM who worked with CH-47D units. The final selection (9.7) is part of an interview conducted by Major Kevin Smith with a senior staff officer, VII Corps who discusses the importance of supply movement from the operational side of the house.

COMBAT SERVICE SUPPORT 9.1

U.S. ARMY SAFETY CENTER AFTER ACTION REPORT

Since Vietnam, we have known that accident losses in a war theater usually exceed actual combat losses. In Vietnam, for instance, between October 1965, through December 1971, the U.S. Army lost 1,899 helicopters through combat loss--loss due directly to enemy action--and 1,901 helicopters to "operational losses," a category including all unknown losses not to due to enemy fire.

EXECUTIVE SUMMARY

Although Operations DESERT SHIELD and DESERT STORM were battlefield success stories, the Army Safety Program (ASP) performance was not an equal. This was due to many challenges. First, the ASP did not have a play in the Army Central Command (ARCENT) contingency plan nor its operations plan (OPLAN). Second, the ASP was not resourced adequately with the desirable mix of required military and Department of the Army civilian (DAC) safety personnel to perform effectively during mobilization, deployment of forces, and combat. Third, the ASP lacked a formal go-to-war plan, contingency organization, and concept of operations to support Air/Land Battle doctrine.

Operations DESERT SHIELD and DESERT STORM emphasized the existence of significant safety staff shortages. These operations also highlighted the need for effective combat safety programs at all levels of command. Both operations underscored the requirement for a proper mix of safety disciplines on safety staffs in the Theater Army (TA) area of operations, U.S. Army Europe, and in the Continental

United States. Throughout Operations DESERT SHIELD and DESERT STORM, some safety staff shortages hampered efforts to comply with Headquarters, Department of the Army (HQDA) policy concerning protecting and preserving personnel and property from accidental loss.

Initial Army efforts to identify DAC safety personnel and reservists possessing safety training and experience proved futile. Both the active and reserve personnel centers were unable to identify qualified ground safety personnel. However, the U.S. Army Safety Center (USASC) was able to expeditiously identify, recruit, mobilize, and deploy volunteer safety qualified reservists to Southwest Asia (SWA). This resulted in expeditious deployment and assignment of reservists to ARCENT, ARCENT Support Command (SUPCOM), a Corps Support Command (COSCOM), several divisions and a brigade. This action was designed to fill a shortfall in ARCENT safety personnel requirements until a makeshift HQDA program could be put in place to identify, recruit and deploy volunteer DAC safety personnel.

As in Operation JUST CAUSE, the near total absence of ASP planning resulted in the ASP being a non-player in most key planning efforts prior to, during, and after Operations DESERT SHIELD and DESERT STORM. In addition, a similar absence of safety considerations in planning, and shortages in safety staffs, prevented CONUS and USAREUR safety staffs from fully accomplishing their total scope of support responsibilities during mobilization. This deficiency continued throughout the deployment phase in CONUS. USAREUR requested, and received, additional port qualified DAC safety personnel who assisted in the task of deploying VIIth Corps assets.

One of the most significant ASP shortcomings during Operations DESERT SHIELD and DESERT STORM was the absence of an authorized and deployable USASC "go-to-war" organization, with an operational contingency support plan, and a defined war-fighting support mission. This shortcoming deprived the TA Commander of normal HQDA-level support, assistance, and advisories. The USASC took the initiative and established priority support efforts early on. This included a 24-hour hot line for Operations DESERT SHIELD and DESERT STORM priority assistance requests, on-site safety training to

deploying units, and on-call, deployable, Army accident investigation teams. However, insufficient available man ours hampered development of training materials and precluded certain requested on-site unit training to mobilized units.

Aviators were issued Pyridostigmine as anti-nerve agent antidotes, but the effects of the drug on flight performance was unknown. Subsequent brief tests, performed by the Army Aviation Research Laboratory (USAARL) at the request of USASC, determined no ill effects due to the agent while aviators wore MOPP4 (mission oriented protective posture) or with night vision. However, no studies to this date have been done to determine the effects while using night vision goggles (NVG). But another USAARL study demonstrated several adverse effects associated with the use of Atropine, another antidote issued aviators. In addition, the effects on night flight, NVG use, and additional use of 2 PAMCL (pamchloride) and Pyridostigmine were not addressed and have not been discerned. Another shortcoming in equipment issued to aviators dealt with the M-43 Mask. AH-64 aviators cannot wear their spectacles with the M-43 mask. Only one or the other can be worn in the event of a chemical attack.

During the first several weeks of Operation DESERT SHIELD, the USASC could not accurately determine, and was unable to requisition, obtain, or issue, sufficient quantities of personnel clothing, equipment, field gear, protective clothing and masks, and antidote kits. This impediment was soon resolved through perseverance and the actions by many USASC members before the first accident investigation team deployed in August 1990.

Information feedback from SWA indicated that a lack of visual cues and visual illusions were identified as major causes of SWA accidents. Plans are to use aviator questionnaire information and an NVG video taken in SWA in the production of a training film covering visual illusions in the desert.

The first USASC accident investigation team deployed to SWA on 21 August 1991 to investigate the first reported class A accident occurring in Operation DESERT SHIELD. Eventually, the USASC was able to maintain accident investigation teams in-country per agreement with the TA

commander. USASC's investigation teams stationed in-country initially encountered obstacles early on and some that continued throughout Operations DESERT SHIELD and DESERT STORM.

The investigation teams had to ferry out their own transportation, office space, and billets. This was due to an absence of ARCENT support, possibly because the teams were only formally attached for administrative support.

During Operation DESERT SHIELD, the USASC was requested to evaluate a proposed policy covering the use of stimulants and hypnotics to enhance sustained combat operations. The USASC recommended to rely on adequate crew endurance and not on the use of stimulants. U.S. Army Aeromedical Activity (USAAMA) subsequently fielded APL 10-91, Sustained Combat Operations Policy, which addressed this issue.

The USASC experienced a near total absence of Army accident reporting from SWA throughout Operations DESERT SHIELD and DESERT STORM. The USASC had to rely on other Army reporting systems, to include casualty and medical reports, in attempts to determine possible accidental injuries and deaths, equipment damage, and accident trends in SWA. What few SWA accident reports that did reach the USASC were dismally incomplete. This prevented USASC from providing accident trend analysis advisories, countermeasures, and developing of accident prevention and promotion programs.

Once Operation DESERT STORM started, in-country notification of ground accidents stopped completely, and notifications of aircraft accidents to the USASC in-country accident investigation teams were either non-existent or late. The USASC in-country investigation teams learned of most AO accidents through an information relay from the USASC operations sergeant who pieced together information from his ARCENT communications network.

In addition, all air and ground transportation and administrative assistance given investigation teams during Operation DESERT SHIELD stopped abruptly when Operation DESERT STORM started. This cessation caused team members to drive 12 hours or more to reach accident sites. In most instances, they arrived only to find the sites cleared of wreckage and the principals gone.

Many, if not most multi-media safety promotion and accident prevention ideas, conceived within the TA, based on lessons learned, never came to fruition due to an absence of timely materials targeted specifically at preventing accidents in the SWA environment, developed by USASC in a record time of two weeks, never reached the troops in time. Had a USASC forward been in SWA, experts in multi-media, as well as other USASC safety support disciplines would have been able to provide normal HQDA safety support throughout the TA.

There appeared to be no HQDA plan to debrief Army personnel re-deploying from SWA. This would seem to be a self-evident action to obtain information on which to take action to preclude accidents resulting from combat stress and other factors.

Finally, the need for ASP contingency planning, evidenced by Operation URGENT FURY and Operation JUST CAUSE, became even more evident as Operation DESERT SHIELD progressed. The need for the safety function to be involved early on in the planning and execution of contingency and operations plans has been known for decades. And many major Army commands have taken the initiative and institutionalized the safety function in contingency plans while practicing execution on a periodic basis. But this was not, and is not, the case when it comes to ASP support of a TA command in support of the six unified commands and their contingency plans. Operations DESERT SHIELD and DESERT STORM, and Operation Just Cause, gave superb examples of tactical and combat achievements on the battlefield despite the absence of the ASP function in the planning phase. However, had each of these operations been prolonged, the historical precedent of high accidental deaths, injuries and equipment damage due to accidents would probably have prevailed.

The USASC has implemented many projects in the past designed to overcome the problem of the safety function being a non-player in the design, planning, and execution of contingency operations. In 1989, the Director of Army Safety (DASAF) reaffirmed the need for the USASC to take the lead and develop a USASC combat support mission, a go-to-war organization, and a contingency plan. This action was

spurred on by Operations DESERT SHIELD and DESERT STORM. USASC is completing development of a "go-to-war" deployable organization and a contingency plan designed to support a TA commander.

This "go-to-war" organization will have the necessary mix of safety disciplines required to provide the full scope of HQDA safety support to meet the needs of a TA commander. The concept plan, to include mission, functions, manning and equipment, approved by the DASAF, will become a final manning document to be submitted to the Director of the Army Staff for approval in October 1991. This "go-to-war" organization is self-sustaining, will possess the most modern equipment available for light, rapid deployment. It will be capable of renewing its manpower assets from a trained cadre of DAC and reserve safety personnel who will train and work at the USASC until deploying as the second team.

Milestones call for USASC's contingency concept to be initially validated during Team Spirit '92. The final go-to-war organization and plan will be validated during Team Spirit '93.

COMBAT SERVICE SUPPORT 9.2

On February 24, 1991, UH-60As of Task Force Phoenix, 4th Brigade, 1st Armored Division, received a movement order to deploy forward to FAA (Forward Assembly Area) Bump from FAA Garcia. This movement was for the preparation of resupply for the 1st Armored Division's Attack Helicopter Battalions. The movement involved air transportation of the jump-FARPS, associated blivets, personnel and organic external loads belonging to Task Force Phoenix. Transportation commenced at 1700Z following a severe sand storm. The mission was completed successfully in poor visibility after EENT (end of evening nautical twilight).

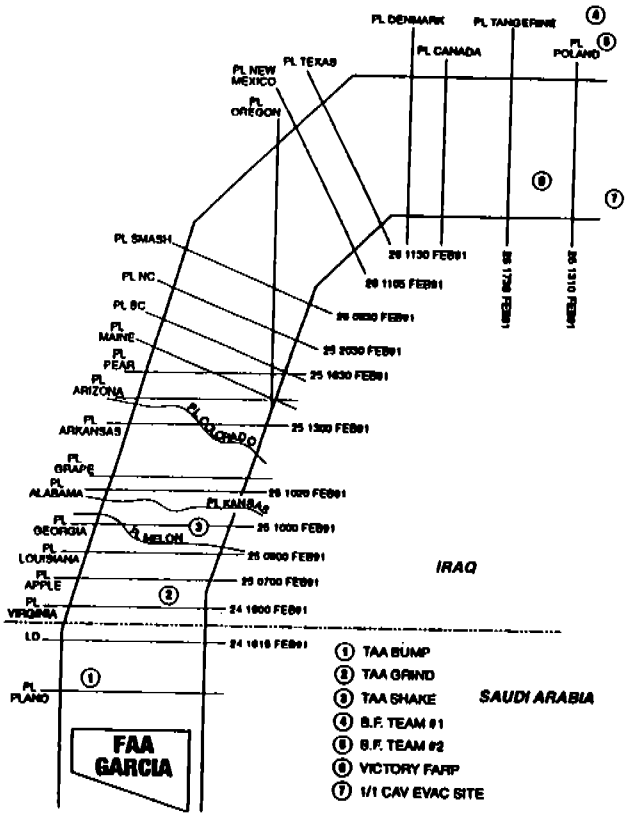

Fig. 9.2

COMBAT SERVICE SUPPORT 9.3

On February 24, 1991, all elements of S (Savage) Troop, 4/2 ACR (armored cavalry regiment), crossed the berm into Iraq shortly after 0800 hours. Upon receipt of the Corps order to continue the attack, 2nd Platoon flew forward to establish an ESSS (External Stores Supply System) "Fathawk" FARP. During the operation of the FARP, a pump began leaking fuel around the ESSS Black Hawk--and suddenly ignited. Specialist Monzell Ford, the crew chief of the Black Hawk, grabbed a fire extinguisher and extinguished the fire--saving the aircraft and crew manning the FARP. At approximately 1530 hours, 3rd Platoon moved forward to establish another ESSS "Fathawk" FARP. That FARP pumped over 2,500 gallons of fuel in support of the air cavalry troops' operations in front of the 2nd ACR. On February 25, 1991, 2nd and 3rd Platoons combined assets to surge a single, large ESSS "Fathawk". During the conduct of FARP operations at that site, 2nd and 3rd Platoons captured eight bypassed Iraqi soldiers, which were later transported by two

of Savage Troop's UH-60s to the EPOW (enemy prisoner-of-war) collection point.

COMBAT SERVICE SUPPORT 9.4

On the morning of February 26, 1991, the Task Force Phoenix S-3, on orders from the 4th Brigade Commander, directed four UH-60A aircraft to transport badly needed FARPs to 1/1 Cav of the 1st Armored Division. The fuel was to be transported from FAA Bump to OBJ (objective) Grind about 25 kilometers. While enroute to OBJ Grind the flight received a mission change from the Battalion S-3. The fuel needed to be moved further forward to FAA Shake due to the tempo of the battle. Approximately 10 kilometers southeast of the new objective, enemy forces were encountered. An Iraqi battalion-sized force was being engaged by the 1st Brigade, the forward column of the 1st Armored Division. The flight relayed a spot report to the Battalion Operations and the mission was continued. The FARP was successfully inserted behind enemy emplacements and became operational shortly afterwards.

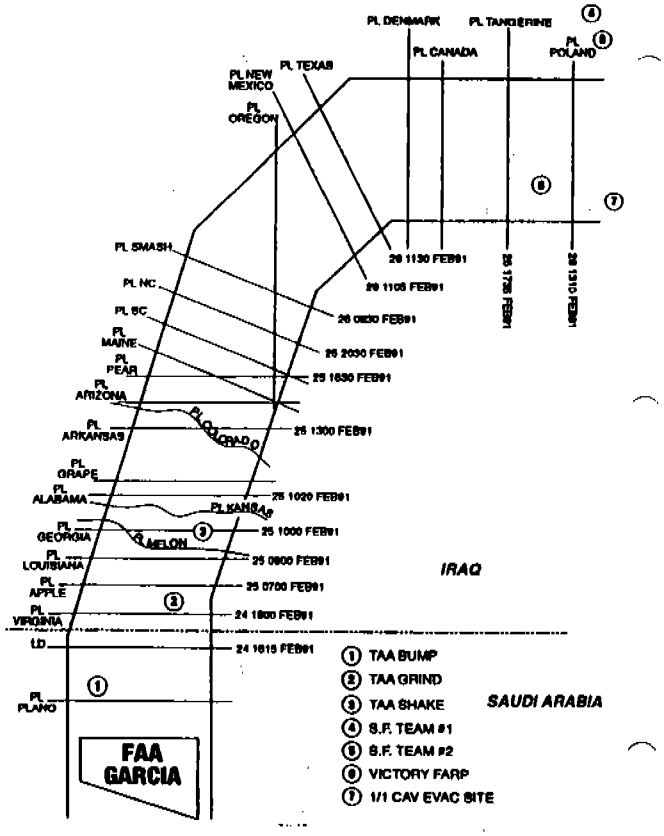

Fig. 9.4

COMBAT SERVICE SUPPORT 9.5

On February 27, 1991 (G+3), Task Force Warrior (TFW) of the 12th Aviation Brigade moved critical fuel, ammunition, food, water, and repair parts 144 kilometers inside Iraq to sustain FOB Cobra. After receiving a change of mission at 1100 hours from the CG (commanding general), 101st Airborne Division, the Brigade Commander directed TFW (Task Force Warrior) to begin repositioning sling loads to FOB Viper, 160 kilometers east of the original location. Support of FOB Viper was critical to the operational success of the XVIIIth Airborne Corps--attack helicopter battalions had already launched out of FOB (forward operating base) Viper to begin cutting the last escape routes of the Iraqi Army north of Basrah.

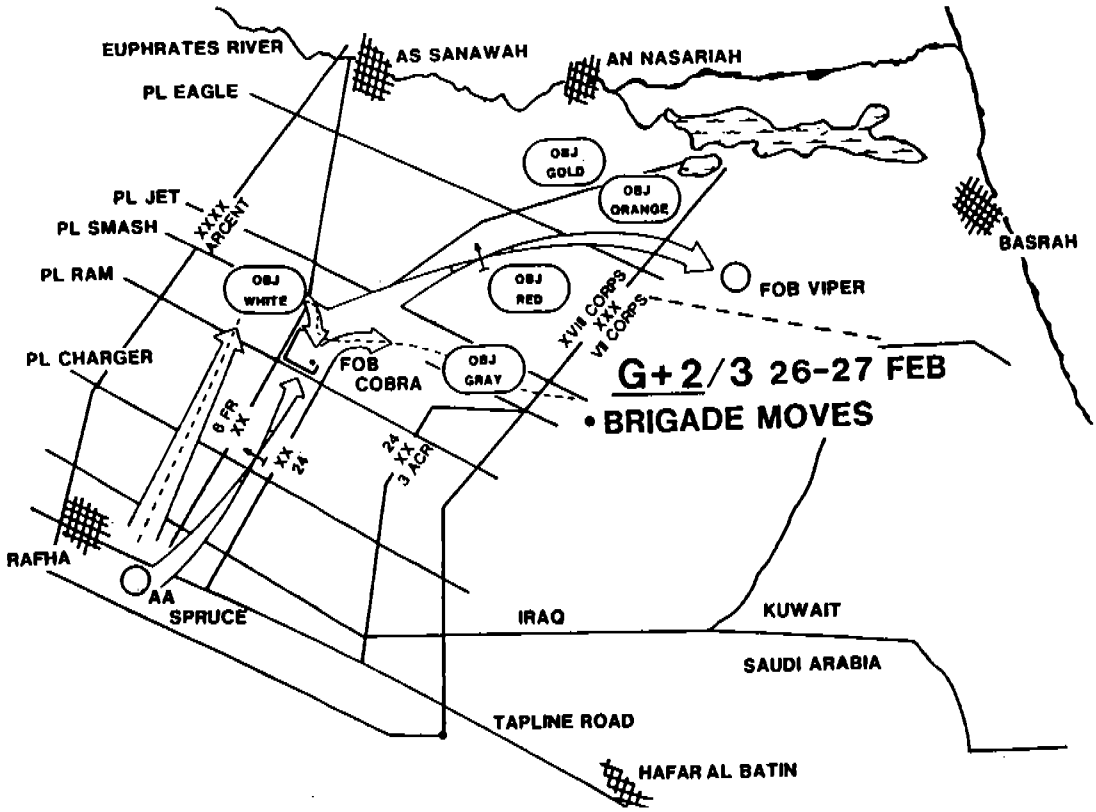

Fig. 9.5

COMBAT SERVICE SUPPORT 9.6

The following is an interview conducted by Dr. Burton Wright, USAAVNC Deputy Branch Historian, with Captain Michelle Barlean, who was assigned to C Company, 7/101st, as a CH-47D platoon leader:

Dr. Wright: What were the other platoons available ready rates?

Captain Barlean: My company was between 85 and 90% but the other companies, there were times when they fell way below 40% and they could not keep enough engines up because the engines were not in the system. They were taking engines off of units state-side to send them to us in the desert because they just didn't have them. Boeing could not crank out enough 712 engines. And with the rotor blades, we taped them.

Dr. Wright: When your unit became operational-ready, what type of missions did you fly during Operation DESERT SHIELD?

Captain Barlean: You name it, we flew it. They had a hard time with the Black Hawks. They did not have the capabilities that we had. The UH-60 did not have its normal capabilities in the desert due to the heat, the altitude, normal things like that. A lot of smaller missions were DISCOM related. Almost immediately, within the first month we were there, we sent people up to a place called El Nariyah, north of Tapline Road, where an infantry brigade was located. Every single day a Chinook would go up. Sometimes two or three would go up just to support that mission. Mail, ice. I have hauled over 18,000 pounds of ice at one time on pallets. MREs (meals ready to eat), maintenance parts, HMMWVs, the band for morale support, you name it--we hauled it. Dentists, we had dentists pulling teeth in the back of an airplane. Not pleasant. I kept on his good side the whole time he was there. FARP missions. Tons of blivets. Ammunition, all kinds of ammunition. We were basically the work horse of the logistical field. It wasn't efficient, not a good idea to move all these mass quantities of stuff out by aircraft, even so we just became the logical choice.

Dr. Wright: What distances were your average missions?

Captain Barlean: I would say a couple of hours each way. A lot of times we would have all kinds of forward bases that we would be supporting so you would hop from one to the other. It was kind of like being the pony express or something. We would drop off mail at one place and ice in another and pick up their stuff and move it over to another location. It would be an all-day mission by the time you shut down, loaded, found out it they needed anything hauled back or if they needed people taken back or brought up.

Dr. Wright: When you did these missions, what was the number of aircraft that you would use in any one day?

Captain Barlean: Out of my platoon, normally once we got started, I tried to keep one airplane in phase so I could keep maintenance on a steady state. If and when the war came up all my aircraft would be available. I would say that the most that I ever did in any day would be about six and that was when we were getting ready to change out an infantry brigade. We had all of those people. We had a lot of packs to haul and they normally have a couple of HMMWVs to be sling-loaded too, so I would say the most I would have was six.

Dr. Wright: Navigation in the desert, how bad was it?

Captain Barlean: It was very taxing. We were very lucky in the Chinook. We have a piece of equipment that basically works along the same lines as a GPS (global positioning system). We were very, very lucky in this respect. It was an experimental system put in some Chinooks. We had four Chinooks that had this on-board. Basically with this system, as long as your satellite systems are up, you had no problems. That baby would take us right where we needed to be. Unfortunately, my personal aircraft, that I flew, did not have it. Doppler becomes difficult to program--it's difficult to find good way points to update it all of the time. Doppler is only effective if you keep constantly updating it. You could go miles and miles without a village or good road you could update off of. Obviously, we like to use terrain features, but in the desert, you know, one sand dune looks like another. A lot of times sand dunes move and that is something that you don't think about, but they are constantly moving with the wind. What might be good one day, may not be good the next

day after a good storm. It was very, very difficult. A lot of times, we would have to go off air speed and heading, especially at night. Back to your basics.

Dr. Wright: Around January or so, the units began to switch and go into an attack mode. In order to get ready, did your missions change? What did you do?

Captain Barlean: December we sat down basically. All of a sudden training stopped. Up until that point we were making new PICs (pilots-in-command), qualifying people in the aircraft and everything else and then all of a sudden December came around and everything stopped. We no longer flew aircraft except for maintenance test flights and we knocked out as many phases as we could. Boom, boom, boom. Worked really hard. Packed our equipment. Had all of our necessary equipment packed and I was required to turn in lists of all of the things I was going to need to function self-sufficiently as a platoon. We had what was known as a "scatter order" since we were at a very vulnerable position, especially for SCUD attacks. Our initial scatter plan was to a place out in the desert that was relatively near Dhahran and we scattered by platoon. I took my eight aircraft. We became our own little unit. We scattered all of our assets the day the war began. Actually, right prior to the day the war began because we were afraid of any retaliatory effects. Almost immediately after that the SCUD attacks started to happen and we watched a lot of those happen from our place in the desert. We were very isolated from the rest of the world. I had a radio that went back to King Fahd. That is the only communication that I had with the outside world for me and my platoon in the middle of the desert. We were quite near a Patriot battery, so between AFN (armed forces network) and anything that I got sporadically on the radio and watching SCUDS be hit by Patriot missiles, we had a pretty good idea of what was going on. At this time we started taking our nerve agent antidotes and started to get into the proper mode. We started to fly combat crews, which meant you flew that same airplane with the same crew every time. I had my designated co-pilot, my designated flight engineer, crew chief and my aircraft and we were a part of the eight available. We were a part of the NVG (night vision goggles) crews although we

only rarely used NVGs once the war kicked off. After about a week in the desert, we transferred up to the Saudi--Iraqi border, which was about a five-hour flight for us; our vehicles followed us on which was a substantial convoy for those people. It was a twenty-four hour convoy for our drivers. Actually, it was more like a forty-eight hour convoy. It was really messed up. We were given our own little piece of terrain and we immediately started to dig in and prepare our own fighting positions. Mostly we were very concerned about the air threat at the time and we were concerned about artillery. I scattered the aircraft about, dispersed them and then as soon as it became evident that we weren't going to be attacking immediately, we started training up again. In fact, we ended up training the infantry and artillery units--and everybody else that we were going to be supporting--on air assault and air movement more than we trained ourselves.

Dr. Wright: When combat began, what did your unit do?

Captain Barlean: Well, it is pretty interesting, the screening missions were happening and we weren't sure exactly when G-day was going to be. The first experience that my unit had was I was told to show up one day for a passenger haul. I was in AMC (Army Material Command). We had five airplanes. I was just going to go do a passenger haul with the infantry guys. I got there, this was about five or six days before the war started. They said we are going to do an air assault into Iraq. The attack helicopters have come upon some bunkers or some possible prisoners of war and we need you to take in the security forces and to back haul any equipment, EPOWs as necessary. I said OK. You don't mind if I test my weapons first do you? I figured it was OK to cross the border if some colonel told me to, but my commander knew nothing about this. None of us knew nothing about this. So, I loaded up my guys and we prepared to cross the border and we went in five minutes later. It seemed like an eternity though, right behind the attack guys, the Apaches and the Cobras. As we came in they were still firing up the LZ (landing zone) and they were meeting with some resistance and they were firing some people up. By the time that we got in there most of that had been reduced to just pockets. It

didn't really affect us. We came in with five Chinooks. I had the infantry security team on-board with the mortars. They immediately secured the perimeter and started fishing people out of the bunkers--there were a lot of people in the bunkers. A lot more than they ever dreamed of. They ended up having follow-on Chinook support and for that day and the next day we did about 480 prisoners of war. I carried the security team in and I brought all the friendly folks out. I was the last Chinook out of the area and I carried, you are not supposed to, but I carried probably well over 60 people on board the Chinook. I've never grossed out an aircraft like that before, but I wasn't going to leave them in Iraq and there was no other way for them to get home. And I know that the people carrying prisoners carried equally as many. I would say between 55 and 60 folks per Chinook which is not a normal load for us. If it is a combat load, take the seats out, put up a big cargo net and watch them. We also brought back quite a bit of enemy equipment at that time--ZPU-2 and I think a ZPU-4, too. We also had the engineer on aboard my aircraft. Since I was the last aircraft out, the set all of the charges and as we took off they blew everything up.

We didn't really know the war was going to begin until two days before it began. We got a briefing with G-day still subject to change. The day before it was going to begin we went and set up what we referred to as our heavy PZ (pick-up zone)--we set up right next to all of the loads that we were going to be doing the next morning. It was planned for 6:00 in the morning. And we got up about 3:00 a.m. to start loading because we were doing internal loading of HMMWVs in a Chinook which, it may be authorized now, but at the time it was not authorized. I don't like the load, but it increases your speed somewhat and also the enemy has no idea what you are carrying. We were able to carry in the security teams first thing in the morning without anybody knowing what we were carrying. The weather was bad. The night before we got there early and loaded as much as we could. Take-off was delayed because we had very poor weather and smoke and there was also a crash just prior to us taking off. I don't know whether it was an attack guy or an observation guy that crashed at about 6:00 in poor

weather. They put a hold on us and we took off just prior to 8:00 and I was in the first lift. I had TOW HMMWVs on-board and a security force and we took them up and we put them around 100 miles into Iraq. The rest of the day we filtered more and more equipment as we brought a brigade forward and set up FOB Cobra. The Chinooks primarily established FOB Cobra. The Black Hawks were bringing troops forward. We brought forward all of the equipment. Most importantly, we brought forward the ammunition and the gas and FARP equipment which sustained the attack for the attack guys that were going forward and for all of the vehicles and the huge amount of aircraft. This is the first time that Chinooks had operated as a battalion-size element. We operated with 30 Chinooks in the initial lift. Continued to do that sporadically throughout the course of the day. We stated out working in company elements, but it ended up that you inevitably became separated from everybody else as you dropped the load and refueled. We put markers on our airplanes so we could distinguish the Charley company aircraft. As you were flying during the course of the day you'd ask, "I wonder where I need to go now?" Who needs to be picked up? Which PZ is clean? You looked up and tried to find somebody that had this little horizontal line on the pylon and that is how you recognized "C" company aircraft. "B" company had two vertical lines. "A" company had one and so you knew immediately to go up on your internal frequency and you could find out where you needed to go next. Everybody became dispersed. The logistical flow would get behind or catch up or somebody would have problems with a load and somebody would have to take over. Very, very fluid, very flexible and it gave us the capacity just by glancing around or picking up and flying around a little bit, finding somebody that was in your unit that had an idea of what was going on and you could pair and get the job done. We got to our LZ the first night and there was supposed to be about eight of us, but the aircraft were so spread out from doing missions all day long we were missing people. We had no idea where they were. My commander was gone. So, I took over our element in Charley company. I was the senior person at the time for the next day's assault which was the 3rd Brigade up to the Euphrates. We had

various problems with aircraft. We had aircraft all day long flying single engine. We had aircraft flying with all kinds of maintenance problems, keeping the flow of the mission going on. If you had a problem, you landed at the LZ and the maintenance team came out and fixed you on the spot and drove you on. My own personal aircraft--the forward heads kept draining oil. The lubrication system was bad. It could cause you to crash; cause the transmission to seize.

COMBAT SERVICE SUPPORT 9.7

The following is an 11th Aviation Brigade interview with Captain Quistorf, a liaison officer at 2nd COSCOM (Corps Support Command):

Q: Did you feel properly trained and prepared for your position?

Quistorf: Yes, based on the experience I've had in past CH-47 units, both in Korea and Alaska. Utilizing this experience, I felt I was adequately trained as a CH-47 LNO and that I could handle all the requirements placed on me in that position.

Q: Was your section adequately manned?

Quistorf: In the LNO section at 2nd COSCOM, we had at first myself, a CH-47 LNO and also a UH-60 LNO. What we did is we split a twenty-four hours shift, each working twelve hours a piece. This was adequate during the commencement of the war prior to and during the war. Things got hectic at times and there were times when I would be on the phone non-stop for my entire twelve-hour shift, but yes, I felt that one LNO at each twelve-hour shift was enough.

Q: What was the most effective means of passing orders and instructions?

Quistorf: Most effective means by far was the TASS phone lines that we had. We had no type of FM, VHF, or UHF communications with any of the units so we relied strictly on the TASS lines. The only alternate means that we had was the courier service, which was sporadic and was easily delayed. Very, very rarely would I use the courier service; it was strictly TASS phone lines.

Q: Did you see any good or bad examples of staff interaction with other staff sections?

Quistorf: The staff section that I dealt with at 2nd COSCOM was the 229th Movement Control Center and 800th Material Management Center. Those were the primary staff sections that I dealt with at that location. I felt that the material people had a rough time trying to manage the material, specifically an example--ammunition. Prior to starting the operation, we had major ammunition that we had to haul from the port inland and the material people could never give me an adequate, accurate number of rounds and tonnage of ammunition. I had to call directly to the port myself a number of times, trying to figure out how much space we needed on the aircraft, what the cargo capacity was, and so I took the initiative to find out on my own, so I could pass the information to the unit. They weren't very helpful. There were a lot of things during the whole course of Operation DESERT STORM--a lot of instances where material management center would pass on faulty information for either rations, ammunition, or whatever logistical supplies that we were hauling. I would just have to trust their numbers and pass that on to the unit. And then I would only find out later after the unit arrived that the material wasn't in position, it wasn't rigged or it was that the number of cargo, tonnage of cargo was incorrect. And so interaction between material side of the house and movement side of the house wasn't as tight as it could be. As far as other sections, I worked a lot with division transportation officer, and movement control officers and I felt that they were very well briefed in their duties and they were highly-skilled. And, there were a couple of division we had continuous problems with, we ended up having to give some ultimatums. Either they get their act together or they're just not going to get all the support that they are asking for. And in those cases, for the most part, they cleaned up their act and they got all the information that we needed to do the missions. I worked with the EAC (Echelons Above Corps) theater Chinook units; after a while we did have a CH-47 LNO from the EAC come on board and work with me. He worked for about a month and then left, so I took over the job of calling in missions to the theater units. I had difficulty working with them only in the sense that they wouldn't except any missions unless everything was filled;

every blank on their mission sheet was filled in. And a lot of times I had information from the units that was sketchy at best, and so I had a hard time dealing directly with them. These units, the pilots would get to the sites and tell the supporting unit that they weren't going to do the mission because it wasn't as briefed. And so a lot of times the costumers would call me specifically asking for Alpha Company, Big Windy to support their unit. Well, my hands were tied because Alpha Company had only so many aircraft that they could support missions with. EAC had a lot more aircraft but were usually only willing to give up anywhere from 8 to 10 of those aircraft for support missions. All the missions that I called in to Alpha Company were performed without any reservations. I never had any problem calling in missions at all to Alpha Company. And based on that, I would say interaction between the supported and supporting unit, Alpha Company and whatever supported unit was exceptional.

Q: Did you fly during the operation?

Quistorf: No, I was strictly working at 2nd COSCOM for the entire duration.

Q: How important were liaison officers to your duties and to the overall operation?

Quistorf: They were very essential. We had liaison officers from each division working at COSCOM and there were times when problems could not be rectified unless we went directly through the liaison that was there. I felt their presence smoothed things out a great deal. That personal interaction versus dealing on the phone was helpful in almost all cases. Myself, I felt the duties in my job as liaison officer was essential to freeing up the burden on the unit. All the customers could call me directly and I could deal with priorities of shipment of cargo. This would then free up the operations officer and the operations section, from having to deal on the phone with the customer and tying their time up. The one note I would like to add at the end here is that prior to my leaving the 2nd COSCOM battalion commander, Lt. Colonel Pittman, there at 229th MCC (movement control center) said that by far the most successful story of all transportation within VIIth Corps was LOGAIR. He said the responsiveness that LOGAIR had,

compared to ground transportation, was his one shining example of success throughout the entire war, during the deployment and re-deployment and during the entire duration of Operations DESERT SHIELD and DESERT STORM. I know I feel confident that the duties of the LNO the mission accomplished by the unit itself were all highly successful and I feel that this was shown time and time again and everything worked out to the best.

COMBAT SERVICE SUPPORT 9.8

The following is an excerpt from an interview between Major Kevin Smith and a senior staff officer, VII Corps:

Major Smith: Getting off that for a minute, sir, the corps aviation brigade and the lift... The combat support or service support, the transportation, the Chinooks, the need for a heavy division, a heavy element when they get into a case where there is tremendous distance involved to be able to fully utilize or over-utilize or just drive the Chinooks into the ground...would you have wanted more Chinooks?

Senior Staff Officer: Yes. Fuel-wise it is the answer. A Chinook cannot carry a lot of fuel compared to how much fuel it burns getting from point A to point B. But, we're not talking about a whole lot of fuel. We're talking about enough fuel, for example, when you do a hot refuel you pull in, you give everybody two minutes' worth of fuel. Two minutes' worth of fuel may be the difference between success and failure. So, if you had 10 or 12 Chinooks each carrying one of these bladders, that's a lot more fuel and you know that they can get there, in a hurry, and you have the fuel on the ground ready to roll. Food, water, a lot of those things... That's what I was saying today, you get these loops in the turn-around time, as I keep going headed that way, these loops keep getting longer if they're coming from a fixed base. The amount of time it takes a wheeled vehicle to get there becomes almost unacceptable. You need fuel faster than that, even if it is in little blurbs. I would say we under-utilized the Chinooks to start with and it wasn't until after the war was really over that we started flexing groups of people, water, food...you know we ate MREs and rations for four weeks and

then we started flying A and B rations out on a daily run and the Chinooks brought that in every day.

Major Smith: There's a case where the 2nd ACR runs out of ammunition or gets close to critical on some class/type of ammunition.

Senior Staff Officer: I think it was Bradley ammunition.

Major Smith: Yeah, could have been. There were like 4 or 5 Chinooks that went out at night during a "shamal" and delivered that stuff.

Senior Staff Officer: I can remember...as I recall, if I don't remember anything about aviation instruction at Leavenworth it's emergency resupply of anything comes over the command net. If you need an emergency resupply that's not the admin log net. Then a commander gets on there--boom. Commanders are reticent to do that. What we had, we had the chief of staff handling it back at the main. John Landries is a great guy, an intense guy. He was all upset that nobody let him know. I said that I'm not Houdini, I didn't know this was going on -- that they were that critical on ammunition. So, he had done it through log channels, but I can't remember the weather conditions, but I know they were short and Bradley ammunition sticks in my mind and they were far away and they needed the ammunition. But, that is what you are supposed to do. And you are supposed to have stores put aside, ready to roll, just for such an emergency.

Major Smith: Pre-palletized.

Senior Staff Officer: Yeah, now whether we were that sophisticated, I don't know. What happens, we talk a lot in doctrine about what should be. There just becomes so absolute much to do that a lot of these things are very, very important, but they are nuances and they just don't get done until whoops! there's a target, let's put fire on that one there. Pretty soon, you get to a reactive mode, you can't think of everything. But, Chinooks react in a hurry. Using Chinooks, if we are going distances like this, hauling fuel by air--a C-130 with a blivet in it is another way. They had talked about a "bladder bird" using C-130s.

Major Smith: The Air Force is reluctant to do that. We've gotten away from the old philosophy that they built

the 1st Cav Division (AA) where they would bring a bulldozer in and bulldoze a strip for the C-130 and he would bring gas right to the user.

Senior Staff Officer: And then you have to survey the strip before they will land some where.

CHAPTER TEN

AVIATION MAINTENANCE

In the decade before World War I, the German Army developed an operational plan named for its creator, General Count von Schlieffen, to invade and conquer France. This plan's success depended on the ability of the German Army to attain its strategic objectives within a very tight time schedule.

One of the critical parts of the plan was supplying the Army as it moved into Belgium and France. Railheads were to be set up in France and Belgium so that supplies could be moved to user units by a new invention, the motorized truck.

The normally efficient Germans hadn't calculated one important factor. In their pre-war drills, the trucks used had not been driven the same distance (most railheads were at least 80 miles from their user units and often more) that would be required during the actual operation.

When driven during the operation, so many trucks broke down that the carefully planned supply system fell to pieces, and lack of logistical support was one of the principal reasons for Schlieffen Plan's ultimate failure. The Germans did not know the system was broken until they activated it.[1]

An unofficial quote, expressed often, goes somewhat like this, "If it ain't broke, don't fix it." Unfortunately, that couldn't be said of the Army's rotary winged aircraft operating in the deserts of Saudi Arabia, Iraq, and Kuwait. The extremes of temperature and other environmental problems caused considerable mechanical turbulence with all types of rotary winged aircraft translating into constant headaches for maintenance officers and overtime for aircraft mechanics.

One of the hardest if not <u>the</u> hardest working group of military personnel in Saudi Arabia were the mechanics; especially, those involved with Army aviation. To them goes much of the behind-the-scenes credit for the success of

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[1] See: Martin van Crevald, <u>Supplying War -- Logistics from Wallenstein to Patton</u>, (New York: Cambridge University Press, 1977), p. 108-141.

aviation during Operation DESERT STORM. The fabled flexibility and phenomenal operational readiness rates of Army aircraft were due DIRECTLY to the round-the-clock work of aviation maintenance personnel and their ability to beg, borrow, steal, or improvise repairs.

The first selection (10.1) in this chapter highlights a very important part of the maintenance chain created out of dire necessity during Operation DESERT SHIELD -- the AOG or aircraft on the ground system. It was a code adopted early in Operation DESERT SHIELD and used to identify critical aircraft parts when they arrived in Saudi Arabia so that the parts could be acquired and sent to the unit in the fastest time possible. .

The next two selections take the reader down to Aviation Unit Maintenance (AVUM) level at 4/2 Cavalry (10.2 and 10.3). The fifth selection (10.4) describes the establishment and functioning of AA (assembly area) CADIZ that served the 101st Aviation Brigade. The fifth selection (10.5) takes the reader into the operations of an Aviation Support Battalion (9-227th) and how it prepared the 227th Aviation for deployment to Saudi Arabia, and then maintaining the unit's aircraft in the desert before and during Operation DESERT STORM.

The next two selections (10.6 and 10.7) cover operations of the 4/2 Cavalry's AVUM in combat. The next selection (10.8) continues down the chain of mobilization. It covers the operation of the Aviation Maintenance Company, TF (Task Force) Phoenix, 4th Brigade, 1st Armored Division.

Selections 10.9 through 10.12 are separate excerpts from an interview with Colonel Thomas Green, XVIIIth Airborne Corps Aviation Officer as he discusses various aspects of aircraft maintenance from his perspective at Corps level. In selection 10.9 Colonel Green discusses his views on the size of Aviation units and how that affects operations and maintenance. In selection 10.10, Colonel Green discusses some of the maintenance quick-fixes used in the desert, and how the French, in particular, with their experience in Chad, adapted to desert flying. In selection 10.12, Colonel Green discusses the size, structure, and operations of AVUM's and the maintenance problems and fixes of the AH-64.

Selections 10.13 through 10.16 cover slightly different aircraft maintenance operations, but from the perspective of Colonel Robert N. Seigle who was the 18th Aviation Brigade's Commander in the Gulf. In Selection 10.13, Colonel Seigle discusses how his brigade conducted maintenance operations, and the origins of maturation of the weekly aviation maintenance meeting in Saudi Arabia. This is, perhaps, the most interesting selection of all because Colonel Seigle describes how the consolidated maintenance meeting brought all elements of Aviation logistics and maintenance together to identify problems and work out solutions. Initially growing from a cast of a dozen or so, the meeting eventually grew to more than 100 participants who discussed all their problems and often provided on the spot solutions. In Selection 10.14, Colonel Seigle discusses the operational readiness rates of aircraft. In Selection 10.15, Colonel Seigle discusses how OPTEMPO (operational tempo) affected maintenance, and how OPTEMPO was determined by calculating flight hours. In the final Selection (10.16), Colonel Seigle discusses specific maintenance problems that plagued various flight systems in the desert.

AVIATION MAINTENANCE - 10.1

Aircraft on the Ground (AOG) System. The number of NMCS (National Military Command System) requisitions received quickly ballooned far in excess of the number of aircraft physically in theater. Operation DESERT SHIELD (ODS) requisitions carrying the 9BU project code were all priority 01, 02 and 03. Everything was a priority requisition. It was clear that a new system had to be developed in order for AVSCOM (Aviation Systems Command) to identify those parts that were truly critical. Units were instructed to order replenishment parts using 9BU with their normal priority; if they had a NMCS requirement to order using 9BU with the priority, but if an aircraft was on the ground for lack of a part, to send it in electronically, followed by a phone call directly to the AVSCOM EOC (Emergency Operations Center). AOG parts were defined as those parts without which an aircraft system could not perform its mission in SWA (southwest Asia). For example, a main rotor blade with defective deicers would not qualify as

an AOG part, since deicing was not required in SWA. AVSCOM's goal in satisfying AOG requisitions was 72 hours from time of receipt until the unit had the part in hand for units in CONUS, and 120 hours for SWA units, a goal that was largely met. Units began complying with the AOG guidance, but AVSCOM still had difficulty in getting AOG parts moved through the normal transportation system. AVSCOM delivered them to the POEs (Ports of Embarkation), using the ARNG (Army National Guard) CONUS Log Air system, and overnight direct shipment directly from contractors. Although those shipments were identified with the high visibility aviation material labels developed by AVSCOM, those shipments were often intermixed with other 9BU cargo at APOEs (Air Ports of Embarkation) and did not always receive priority transportation consideration. As a result, commercial carrier airlift of those items to theater was utilized until the Air Force established Desert Express in mid-October 90.

AVIATION MAINTENANCE - 10.2

The aviation support structure for 4/2 ACR maintained its presence forward by jumping support bases forward. For example, on G-day the support bases pushed forward to tuck up behind the 2/2 Field Trains. The goal was to provide one set FARP at all time while simultaneously maneuvering the bulk support forward behind the ground units. Success under these conditions can be primarily attributed to the C&C support structures, detailed maintenance procedures and specific and comprehensive pre-mission training. The next, and greatest, hurdle was the need for increased mobility and flexibility. Two factors played a major role and were key to negotiate this obstacle. First, vehicles and equipment had to hold up under the harsh desert conditions. This was particularly important considering the scarcity of class IX repair parts. Second, the individual operators had to be able to use they're equipment to its maximum potential under the worst conditions. This required in-depth and extensive maintenance training at all levels.

AVIATION MAINTENANCE - 19.3

The days before the ground offensive found the Aviation Unit Maintenance (AVUM) of 4/2 ACR (armored cavalry regiment) preparing for the anticipated requirements of a prolonged offensive operation: "We developed several programs to meet these requirements. First, the Squadron developed "Slide" packages which combined a support package with the line troops. The AVUM element, one per slice, included an armament team, airframe mechanics, and a Technical Inspector (TI). They were designed to quickly repair on-site problems particularly at the FARPs (forward arming and refueling points). Second, the battle damage assessment and repair (BDAR) team evolved to provide rapid aerial response to downed aircrews. The BDAR teams used a UH-60 helicopter to transport a test pilot, avionics repairman, airframe mechanics, TI, and a medic. They made rapid aerial recovery of both aircraft and crew their hallmark. Third, we had an OPCON (operational control) aviation intermediate maintenance area (AVIM) contact team to provide minimum AVIM on-site support. The team had no special test equipment or PLL (primary load list). The Augusta Maintenance Contract Team completed AVUM/AVIM maintenance which required a stable work area. This was accomplished in the TAA's (tactical assembly areas) prior to hostilities and from Scorpion Base Airfield in Saudi Arabia after hostilities commenced. They performed six engine changes, and one transmission replacement during the ground war. Fourth, the hub of the effort revolved around the AVUM Main which moved with the Squadron. Command and control, parts supply, and special tools peculiar to aviation remained with the AVUM Main. The most difficult tasks during preparation focused on the effect of the desert environment on our aircraft. Sand proved to be "death" of the turbine engine. Of the 74 aircraft within the squadron, AVUM replaced 10 OH-58, 10 AH-1F (Cobra), and one UH-60 (Black Hawk) engine. Several other engines met marginal performance standards implying pending engine changes. Avionics and radios were a constant problem because of the fine Silicon dust. The armament systems required special care from the crew and armament teams daily. Particular problems surfaced with the exposed 20mm carriage and

housing. The 20mm averaged 50-100 rounds prior to jamming even after detailed preventative maintenance. The TOW launcher contacts were very susceptible to dust and corrosion. Great amounts of time and effort produced maintenance procedures which, unwritten, provided the safest and most reliable weapons for our "gun" crews in this environment. AVUM (aviation unit maintenance) contended with several problems within the aviation logistics system, which, if neglected, could have been catastrophic to the Squadron's mission. Repair parts, Class IX(A), became our achilles heel. The relationship with the AVIM (aviation intermediate maintenance [unit]), 7/159th Aviation Battalion, strained under the pressure of organic transportation assets both at the Squadron and at the AVIM posed a threat to our repair parts (Class IX(A)) supply line."

"Parts acquired were found in neighboring divisions as the norm for maintenance survival. The distance worsened a sluggish supply system which gave an average 45 day order-to-ship time for most requisitions. The PLL at one time had greater than a 30 percent "zero" balance without hope of replenishment. We could not reconcile our requisitions for 3 months in country due to AVIM computer problems. We depended on the special purchase agreement (SPA) at Arabian Helicopter, Inc. to supplement the shortfalls of the Army supply system. Aircraft requiring AVIM-level work often required evacuation, hence, removal of the airframe from the combat zone. Some aircraft and crews were separated from the squadron for weeks while waiting for work completion at the AVIM. Command, control and safety for returning crews into the combat zone from the AVIM was the source of great concern. Several support agencies were available to assist us but whose headquarters were so distant that too many organic assets were expended to coordinate actions. TAMP (Theater Aviation Maintenance Point), at Dhahran, provided IPS modifications. AVIM support was initially mustered from the 101st Airborne Division at King Fahd Military City. 7/159th provided support 30 days after we arrived. They were located at LOG Base Alpha initially then moved to Quasimah. AVSCOM provided several soldiers to be "on the road" for several days to complete actions. AVUM began the

ground offensive in the rain. February 24, 1991, was supposed to be a "light" day for activity. The coalition successes made this day one of the heaviest for AVUM. The unit performed four BDAR missions. The most noteworthy was the effort of the test pilots who flew a Cobra helicopter with impending engine failure from the front line trace to a secure area. The BDAR team made immediate response and repair to allow the engine enough power to return to AVUM main. Daring and courage exemplify the day-to-day demeanor of the unsung heros who constantly fly aircraft which others are unsure of. The troop moved flawlessly by ground. This was a considerably training and mental maintenance adjustment since the troop gained the mobility (upload capability) it required only shortly before Operations DESERT SHIELD and DESERT STORM."

AVIATION MAINTENANCE 10.4

The month of October saw the establishment of AA (assembly area) CADIZ, which would serve as the 101st Aviation Brigade's forward assembly area and command post during the remainder of Operation DESERT SHIELD. The 1-101st, 2-229th, and 7-101st, under brigade control, established forward positions in vicinity of Cadiz. The three assault battalions established forward assembly areas collocated with the infantry brigade to which they ere task-organized. With a mission to screen the Division's left flank, the 2-17 Cavalry established a forward assembly area near the Munaysifah airstrip. Throughout the month, all battalions cycled through their forward positions to conduct training and rehearsals, then returned to Camp Eagle II to conduct intensive maintenance and to get the troops out of the desert.

The effects of the harsh desert climate and fine sand combined to take a tremendous toll on all moving parts of aircraft and vehicles. Turbine engines and rotor blades were particularly effected with the life expectancy of an aircraft engine reduced from 1000 to 1500 to as low as 40 hours. Sand would be ingested during every take-off and landing, wearing like sandpaper on the finely machined turbine blades. Similarly, aircraft blades made of composite materials to save weight and enhance survivability

were literally melting under the hail of sand. It became obvious that the most immediate enemy was the environment, and immediate measures had to be taken to stop the deterioration of the Division's prime movers.

One of the first countermeasures used was the taping of the leading edge of main rotor blades. The tape would absorb the punishment for 15 to 25 hours of flight, then be removed and re-applied. This proved to be an inexpensive and invaluable preventative measure. To reduce engine wear, the first initiative was to limit the exposure to take-offs and landings in the sand. While tough to do in the desert, landing areas were scrutinized to use the least sandy spots, and heavy use landing areas were improved with the use of diesel or slurry-tar mixture to reduce dust. Some aircraft, such as the UH-1 and AH-1, which lacked a particle separator, were restricted to hard-stand operations for training until improved particle separators (IPS) were obtained and installed. While all of these measures improved the situation, the maintenance and parts demand was still tremendous, and the Aviation Brigade and Division staffs agreed on a plan to limit the flying hours per airframe. They accomplished the reduction by setting an "OPTEMPO" based upon the training cycle for the unit for the given month. Infantry and artillery commanders were thus limited to the number of flight hours they could plan to use, and aviation commanders would be able to forecast their maintenance requirements. With months in the sand still ahead of the Brigade, "preserving the force" became a command priority.

AVIATION MAINTENANCE 10.5

The 9-227th Aviation Support Battalion (ASB), formed from I Co, 227th began a concept in 1988 by the Department of the Army titled the Division Aviation Support Battalion (DASB). The mission to activate the unit was entrusted to Lt. Colonel Donald P. Townsend and Sergeant Major Allen Daniel in July of 1989. Over the next seven months, they worked to refine and develop this new concept. This work culminated with the publishing of the Test Table of Organization and Equipment in the fall of 1989. On February 15, 1990, the unit provisionally activated at Hanau, Germany with a mission to provide Combat Service Support (CSS) to the Combat Aviation Brigade. The battalion was assigned to the 3d Armored Division Support Command (DISCOM). The 9th Battalion performed well at field training exercises in March.

From August 3 until September 11, the Battalion worked 24 hours a day. Assisting in all aspects of 3d Battalion, 227th Aviation's deployment to Southwest Asia. The Battalion then participated in field training exercises in September, October, and November.

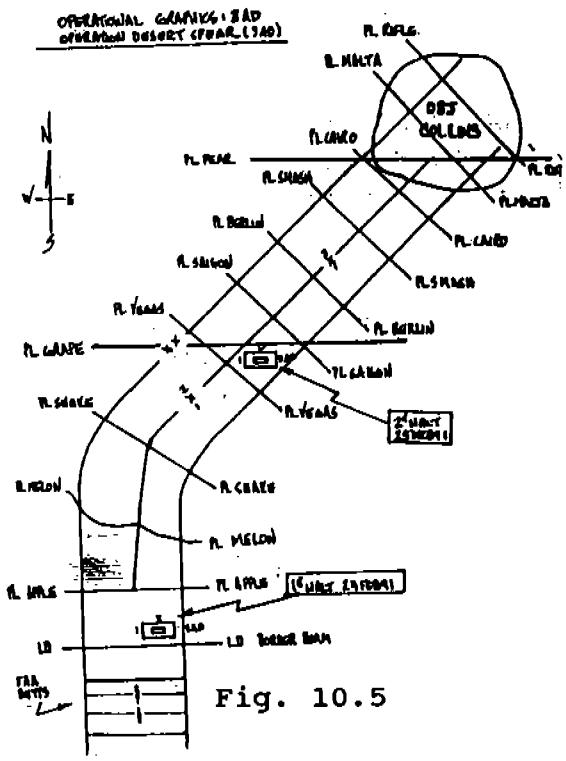

Fig. 10.5

On November 11, 1990, the battalion received orders to deploy to Southwest Asia with the 3d Armored Division in support of Operation DESERT SHIELD. With renewed urgency, the battalion began to prepare for deployment. Personnel and equipment shortages began to be filled allowing 9-227 ASB to deploy at nearly 90 percent strength.

During the first week of December, the battalion began to load equipment on to barges on the Rhine river for shipment north to seaports and ultimately Saudi Arabia. On December 27, 1990, the battalion's main body arrived in Saudi Arabia, flying into King Fahd International Airport. A battalion advanced party, which had arrived in country 10 days prior, received the unit. At that time the battalion, with attached personnel, numbered over 360 in Saudi Arabia.

Throughout the month of January 1991, equipment began to arrive and the unit prepared for movement to TAA (theater assembly area) Henry. The unit unfurled its new colors.

On January 17, 1991, President Bush announced the commencement of Operation DESERT STORM, beginning with a major air campaign in an effort to remove Iraq from Kuwait. Iraqi forces responded by firing SCUD missiles at Dhahran, Saudi Arabia, in an effort to terrorize allied forces. The 9th Battalion now located near the Port of Dammam spent many nights in MOPP (mission oriented protective posture) Level 4 prepared to receive incoming missiles. The SCUD attacks were largely unsuccessful due to the U.S. Patriot missile batteries, which intercepted and destroyed incoming missiles.

On January 24, 1991, 9-227 ASB (aviation support battalion) deployed by convoy from port to TAA Henry, located 45 miles Southeast of Haf Al Batin in the open desert. The 9th Battalion and the rest of 3d Armored Division prepared for movement to FAA (forward assembly area) Butts, located 90 miles to the northwest while acclimating to a desert environment.

On February 27, 1991, the Combat Aviation Brigade began its desert movement cross-country to FAA Butts. This move included a night convoy under blackout drive that proved a dangerous lesson in controlling convoys in darkness. This movement was a carefully orchestrated rehearsal for the

battalion's eventual movement to AA (assembly area) Collins located in Southern Iraq.

The 9th Battalion received additional HEMTTs (heavy expanded mobility tactical truck) and HMMVS, which improved its cross-country mobility, but still lacked considerable hauling capacity. The battalion combat-packed all mission essential equipment. Equipment that could not be carried was positioned at LOG (logistics) Base Echo under the control of the battalion executive officer, Major Ostermann.

On February 24, 1991, 9-227 ASB crossed into Iraq on a cross-country, 90-mile journey toward AA Collins. Personnel and vehicles performed superbly during the move with minimal breakdowns or delays during the 100 hours of movement. The battalion's intricate logistical plan was modified as necessary as it became apparent allied forces avenues of advancement. The division passed through AA Collins and continued its exploitation to the east.

This change in the mission placed considerable strain on an already stretched logistics system. Fuel support became critical. Major Wheatley, Captain Bell, Captain Kapplan and Captain Barkley were dispatched independently by the battalion commander to locate and escort aviation fuel tankers to specified locations in support of attack helicopter operations against Iraqi forces to include Republican Guard divisions. Eventually, all classes of supply were made available to the Combat Aviation Brigade as they sustained operations in Southern Iraq. The battalion's convoy movement success was due to the control and leadership of the company first sergeant and the battalion sergeant major. Throughout the offensive, Company A continued to push fuel to the brigade. Company B provided expert vehicle repair and recovery, and Company C proved it could become mobile and provide complete AVIM support well-forward within the division.

The 9th Battalion soldiers endured the stress and uncertainties of combat, potential enemy artillery, harsh driving conditions, mine fields, unexploded ordnance, adverse weather, and lack of sleep and remained completely disciplined throughout the offensive.

On February 27, 1991, with an announced cease fire and victory assured the battalion quietly celebrated. The

American flag, the battalion colors and company guidons flew proudly in the Iraqi desert. The soldiers gladly removed their chemical protective suits and reflected on what had occurred. The role of 9th Battalion was still key to the brigade's success as the battalion made a final move east to the border of Kuwait and began to settle into an occupation role.

Soldiers wanted to collect Iraqi equipment and clothing; however, warning of "booby traps" stopped most hunting. The movement of EPOWs (enemy prisoners of war) back to Iraq began. The U.S. military returned their dead to the United States. No 9th Battalion soldiers had been lost to enemy fire or accident as of March 4, 1991

AVIATION MAINTENANCE - 10.6

February 25, 1991, found the AVUM of 4/2 ACR on the move again. "AVUM performed six BDAR missions that day. The most significant was the recovery of the Cobra crash. Within minutes the BDAR Team was on the scene quickly to evaluate the accident. The crew received prompt care and the aircraft assessed a complete loss. Throughout the day more Cobra unscheduled maintenance problems than we could have ever forecast developed. As an example, one Cobra lost a complete hydraulic system; another had a compressor stall, requiring an engine change. The armament teams worked around the clock to clean and repair weapon system problems. The stock of repair parts dwindled fast. The Class IX(A) shortage was compounded by the 150 to 250 kilometers to the AVIM support base without sufficient transportation to push parts forward. The movement by day was long and hard on the vehicles. The troopers, after driving all day, used the night to repair three vehicles and six helicopters. On repair was a complete transmission seal replacement on a Cobra. Night maintenance, without a covered maintenance area, became the standard throughout the war. The biggest hurdle to timely maintenance was working under light discipline. February 26, 1991, gave AVUM five BDAR missions. One Cobra experienced a complete engine failure, hence, the second one-day engine replacement. Another helicopter developed sever tail rotor problems. The prop and rotor shop spent the evening balancing the tail rotor

assembly for the aircraft to make the mission the following day. One of the BDAR missions involved the capture of 20 Iraqi prisoners of war."

AVIATION MAINTENANCE - 10.7

The action on February 27, 1991, resulted in six more BDAR missions for 4/2 ACR AVUM: "One Cobra maintenance crew repaired a potentially catastrophic fuel leak. Another aircraft had a compressor stall. The shops platoon spent the evening repairing difficult radio problems. The sheet metal shop repaired several brackets that were wearing through aircraft vibrations. One BDAR mission was the recovery of an OH-58. February 28, 1991, began with our day amidst the "ghosts" of the Tawakalna Division of the Republican Guard. Our final move into Kuwait proved relatively uneventful. The BDAR teams responded to five downed aircraft with quick return to service. AVUM provided rapid response to "fix forward-fast" during its participation in Operation DESERT STORM. We supported nearly 1,000 combat flying hours in 100 days of weather restricted combat. The squadron enjoyed an average aviation operational readiness rate of 90.2 percent. We performed 23 BDAR missions without incident. The unit moved well over 200 kilometers in desert terrain with minimal vehicle problems. Most important, however, is the fact that AVUM returns to station with all of its soldiers."

AVIATION MAINTENANCE 10.8

During Operation DESERT STORM the forward aviation maintenance company (FAMC), Task Force Phoenix, 4th Brigade, 1st Armored Division, supported a fleet of 30 aircraft including 15 UH-60, 4 OH-58D, 6 UH-1H, and 3 EH-60 helicopters. The company was comprised of approximately 32 personnel, 35 wheeled vehicles and a multitude of aviation support equipment. A FAMC (forward aviation maintenance company) is an AVUM aviation maintenance company; however, supported the battalion's and other units' aircraft with AVUM, AVIM, and limited depot repairs throughout the duration of the war. FAMC was a self-supporting unit and passed only a small amount of maintenance to the AVIM support unit.

FAMC was split between two locations -- one element located at LOG Base Echo had the primary mission of conducting fixed base maintenance operations to include phase inspections and repairs on aircraft that were evacuated from the battlefield. The other element was attached to the battalion and brigade forward element that crossed the line of departure with the division. This element, comprised of 25 men and a support package, had the primary mission of recovering downed aircraft from the battlefield and battle damage assessment and repair.

The FAMC performed nine each combat phase inspections and a large variety of unscheduled maintenance operations. The utility helicopters (UH-60, UH-1H) were the aircraft requiring the bulk of the maintenance. This unit replaced major assemblies to include engines, APU (auxiliary power unit), and main/tail rotor blades in a short period of time. MOC (maintenance operational check) and MTF (maintenance test flight) were completed and aircraft returned to mission capable status. A large portion of the repairs were performed in Iraq. The fast-paced movement toward enemy objectives did not allow for repairs to be performed 130 miles to the south at LOG Base Echo. Class IX aviation repair parts were the unit's main problem. The shortage of parts and inability to transport them to the forward units required us to fly numerous parts missions to locate the parts needed. We were very successful finding the parts; however, this cost the unit valuable flying hours.

On or about February 26, 1991, one of the UH-60 helicopters had a hard landing resulting in major damage to the stabilator, left main landing gear, and left SSSS external fuel tank. This incident happened about 30 miles to the south of our location. The 4th Brigade convoy had just arrived at AA Python when we were notified of the downed aircraft. The aircraft could not be evacuated safely. Another UH-60 landed at the same location and had an APU failure. FAMC loaded the recovery helicopter with a variety of equipment and personnel and departed AA Python for the two downed aircraft. Both aircraft were repaired and returned to the unit in time to take part in the division's assault on the Republican Guard.

The FAMC, Task Force Phoenix, was able to support the tremendous flying hour requirement. The maximum amount of aircraft were available throughout combat operations.

AVIATION MAINTENANCE 10.9

The following is an excerpt from an interview between Dr. Wright, Deputy Branch Historian, and Colonel Tom Green, who served as the XVIIIth Corps Aviation Officer during Operation DESERT STORM.

Colonel Green: Now one of the things that happened that I think that everybody has got to understand, the boss said he wanted us to go 90 percent availability on most aircraft systems. What we did was 90 percent mission capable. Now 90 percent mission capable means that if you go to an Apache battalion and you have 10 Apaches, that means 9 of those Apaches are capable of performing their mission, killing tanks and attacking troops. Some of those 9 might not have an auxiliary power unit (APU). We lost a lot of APUs because of dirt. You might have to jump start it off another helicopter to get it started. It wouldn't be unusual to loose 7 or 8 APUs in an 18-ship battalion. If we had used the strict interpretation of the rules, full mission capable, we wouldn't have made 30-40 percent. I think there is a misunderstanding in that rating system. The 30-40-50 percent we have been reporting on the Apache in the past was full mission capability. I don't ever think we had much more than that. But mission capable, 90 to 100 percent wasn't unusual. I was having trouble with the numbers as the Corps Aviation officer. I got the reports every day, or my guys did, and they gave them to me on what was available to fly. I thought they were high. I've been an Inspector General before and I'm critical of that sort of thing. I know how hard my guys had to work to make 75 percent and these guys were reporting 90 percent. So I used to go down and watch them take off and I'm firmly convinced they were making those rates and better. They might have actually been bringing rates down a little bit to focus on a specific need for parts. In other words, if you didn't have an aircraft on the ground, you didn't get the focus. There were a couple of instances where guys were bringing aircraft down on the ground, non flyable, so that specific parts for

that aircraft would be sent right to him. In terms of how much it would fly? Almost everything was flying. Chinook battalions that were hard to maintain would be moving from one place to another, 42 would move one day and the other 3 would go the next day. It was incredible, I never saw anything like it in my life. I saw them fly and I can tell you they were moving from place to place and hauling loads, doing their jobs. That's mission capable. I am pretty much assured in my mind the numbers were alright. But the way you account, you have to understand the accounting system, I suspect there were Apaches flying were the guns didn't work. There might have been an Apache whose gun was broken but his missiles were firing, his night system worked etc., so they flew missions. I also suspect there might have been Apaches whose night systems did not work but they were flying day missions while they were waiting for their parts. He was mission capable, but he was day mission capable not night mission capable. I think all of those things were happening but they were flying. Really kicking the enemy all over the place; the equipment was in pretty good shape. I think the status of our equipment is yet to be seen. my assessment is that it is very possible that we have torn the fleet to hell. I mean we flew it and flew it. And as I looked at the problems that he fleet was having, all of the stuff that you would see in the field, it seems to me, and you know how old soldiers are so conservative, but looking down range, I have a funny feeling that in six months to a year from now we are going to have a lot of trouble with those air planes. They were parking aircraft in dry, salt lake beds. Blowing salt and other types of sand all through them. It was real dry most of the time. So all of that salt is inside them. They have cleaned them, but I just wonder. Everything was wearing, literally sandpapering your blades. They would just shine. They went through a process of taping the blades. They taped the leading edges, depending on the type of system and in a very short period of time you could hear all the aircraft coming because it sounded like a flock of birds going tweet, tweet, tweet. The tape package looked like 3M or something. I mean it looked like tape obviously put together for a dry benign environment with a lot of dirt and sand. It worked good. The first rain you got, and this

was January/February that the war happened, that stuff started coming off. Re-taping was a pain because you had to take the blades off the aircraft, take them inside, sand them down, put a special treatment on them where they didn't get all the sand and dirt and then reapply tape. It wasn't just run out and glue something on the leading edge. I wish it was but it wasn't. It was a major problem in terms of tearing the aircraft apart. You didn't have a mission capable aircraft when you were taping. You had the blades off and it didn't fly. A lot of our down time we had prior to January. February and March was down time for taping. You ended up taking the rotary systems apart.

AVIATION MAINTENANCE 10.10

The following is an excerpt from an interview between Dr. Burton Wright, Deputy Branch Historian, and Colonel Tom Green, who served as the XVIIIth Airborne Corps Aviation Officer during Operation DESERT STORM.

Dr. Wright: What are your thoughts about the size of aviation units sent to South West Asia?

Colonel Green: The Apache, the upgraded Apache battalions were right. I'm talking about like the 2-229th it was a jewel. In almost every case we upped the number of pilots in all of the units. We gave the units about a one and a half guys per seat and that was about the magic number. Two guys per seat left a lot of guys standing around. One and half was just about right. Almost everybody was set up that way. Equipment, I could talk another 10 hours on this particular subject. We had to establish a lot of special maintenance facilities. We really built a depot in Abu Dhabi. No matter what anybody tells you that thing at Abu Dhabi that they called, oh I don't know, it was a depot. It was a hangar big enough to put three 747s, and they did engine maintenance and transmission repair and all the spare parts were there. It was a huge place and it was a depot. We had to have a lot of special repair activities SRAs that they sent things to and electronics, special electronics. Instead of sending it to California, a little place where these repairs were done. That is all documented very well, I've got the documentation right here. AVSCOM (Aviation Systems Command) documented

it. If we had to plug those things in to keep ourselves going in war time, it would seem to me that is an obvious example of our failure in our system or our present organization. If our systems and organizations are correct and they go fight and fight them the way we've got them. If you have to plug and chug a bunch of junk, not junk but a number of special facilities for repair, maintenance and supply and support. Those facilities are supposed to be there. You don't just add them during war time. You have to have them all of the time. It would be easy to figure out what we were short, just look at what we had to plug. We plugged in hundreds of civilian maintenance guys. Hundreds. You walk out into the desert into the middle of a unit, an attack unit, and there would be a civilian putting a tail rotor on an Apache. Hundreds of them. Now, what we have done is saved the manpower in Army Aviation by creating a shadow Army, an Army of contract repair people. I guess that's what you got to do to hold the cap and end strength and still be able to produce the product then that's what you got to do, but it just seem kind of hypocritical. I mean those guys should probably have been in uniform in that unit working on those aircraft anyway.

AVIATION MAINTENANCE 10.11

The following is an excerpt from an interview between Dr. Burton Wright, Deputy Branch Historian, and Colonel Tom Green, who served as the XVIIIth Corps Aviation Officer during Operation DESERT STORM.

Colonel Green: We developed filters for all of the engines and a lot of the filters on the engines, transmissions, fuel systems, hydraulic systems were modified to take care of that sand and dirt. Actually calling it sand and dirt isn't fair. It was talcum power. It was the kind of stuff in a building like during a dust storm the whole building filled up with dirt. It was like the place was on fire. Inside a building with an air conditioning, filters and the doors closed, the whole building was full of dirt. If you were in a tent, you were just filthy. Dirt and dust everywhere. It was such fine stuff almost everybody had a cough, kind of a low wheeze, an accumulation of dust and dirt. It was really awful stuff and it tore

your equipment all to pieces. I just listened to a briefing by the AVSCOM deputy who said that they normally replace, or save, when they bring an engine in for repair or for a rebuild on a 1500 turn or whatever, they normally are able to recover 85 percent of the parts out of the engine for reuse. They are right now making 10-15 percent. That dirt tore up the front end, the cold end compressor section of the engines, it tore up all the linings in the compressor section, ruins all the blades as the air is compressed and goes into the hot end where the fuel is mixed and you get your power and it drives the power turbine blades, all of that dust that was in there turned to glass and the glass lined the inside of the systems and destroyed it. So the engines are destroyed. The stuff that is coming in for them to repair is all full of this talcum glass. It is just a mess and the engines are not replaceable. It is really awful bad stuff. It is hard to realize how abrasive that stuff was.

Dr. Wright: During the time you were there was there any effort made, or did you see any effort or anything done to query people who had experience in flying in the desert. The British and the Israelis certainly had experience. Did anybody look into that?

Colonel Green: Yeah, they were crashing too. The French especially had some accidents that were related to the same type of accidents that we had. But not as many. They only had two or three. Maybe four. The Brits? I don't know what the Brits did although they busted up some stuff. I wouldn't have known about the French accidents by the way if I hadn't been over there and seen them hauling them out by trucks. Yes, we went over and looked at what they were doing. The French had a lot of mats that they put out on the ground, fiber mats and staked them down. Trying to make it a little bit better. That worked ok. They had different techniques that they had developed in Chad but the Chadian developments were for a different kind of desert. The French and the Americans all did about the same thing. We tried to find an area that wasn't so sandy. There were some areas that were rocky, kind of pebbly, fist-sized stone. Everybody tried to get in there where there wasn't so much loose sand. We stayed away from some of the

prepared areas and I would have tended more towards the prepared strips. There is a real trade-off there and that is that Army Aviation lives with the unit it supports, etc. The units all went to the desert and so they went too. It cost you in terms of accidents and wear and tear. On the other hand, the guys that you are working with, see you right beside them, communications are a lot better.

AVIATION MAINTENANCE 10.12

The following is an excerpt from an interview between Dr. John W. Kitchens, Aviation Branch Historian, and Colonel Tom Green, who served as the XVIIIth Airborne Corps Aviation Officer during Operation DESERT STORM.

Colonel Green: The AVUMS (Aviation Unit Maintenance) guys here, were supporting the 82d and the 101st and the 24th and 3d ACR (armored cavalry regiment), but they are handling it on an area support basis. These guys get something that breaks. Something breaks down in the 82d. He puts in his request and the AVUM sends it on the wire, through the satellite, gets in and the folks, if it was an aircraft on the ground they had the stuff to us in theater pretty much in five days. 3d ACR called me one day and almost gave me a heart attack, twelve engines, I will never forget it as long as I live, twelve Black Hawk engines right now. They only have eighteen UH-60s. They got to have twelve engines right this minute. And we got them in three days. Three or four days.

Dr. John W. Kitchens: Was it a legitimate requirement?

Colonel Green: What happened was, I think, they were doing their daily power checks and as the power available needs came down their own system didn't pick it up. As the engines neared replacement they were giving us ones and twos and stuff. Somehow a maintenance guy got out to the units and, of course, they were way the hell out in the desert, gathered up the information and saw he had twelve bad engines. That's when they called us. After I got done being crazy, Williamson and his guys came through with the engines. 82nd, 101st and 12th Brigade and he is sending his stuff in here. Now the battle has started and these folks attacked up MSR (main supply route) Texas all the way up to objective and their job was going to be to secure that

flank. The 101st went for the Euphrates River and Highway 8 way up in here, probably 200 to 300 kilometers up, the 24th went up and hit their initial objectives, made their turn and started into the north end of Kuwait. The 3d ACR did the same thing and made the turn and Kuwait is over here. They are keeping contact with the guys attacking out of the VIIth Corps on this side. Now as these folks went forward they are dropping their requests for stuff back to their AVUMs and their AVUMs were sending a slice out with them. They system went in. This unit went up this way and then when the big fight started, we started shifting attack battalions up to the big fight so that their area support was coming out of a different AVUM but their parts were being delivered back over here. The area support delivery base was okay as long as you stayed in your area but when we took on an attack battalion and moved them 300 km like we did the 12th, it just completely disintegrated the system. So these guys were dropping 300 km back to their original AVUM to pick up parts. If you could notify the system that now it needs to be delivered over here, that was pretty good, but very often the parts that were delivered over here were messed up. The other thing that we have done also that is really interesting is the DODAC (Department of Defense Accounting Codes) numbers. These numbers are assigned for units. All are different, but the unit designations are not. Now we've got the 1st, the 2d, the 3d of the 229th, 1st, 2d and 3d of the 227th, 1st of the 1st Cavalry, the 1st of the 1st Infantry Attack Battalion, 1st of the 1st Armor Attack Battalion 1AD (armored division), 1st ID (infantry division) and so when a guy goes into a stack of pallets and looks up and sees 227th on it, it goes to the 227th. He didn't look at the DODAC. It's dark, he is in the middle of a desert sand storm with his little fork lift at an airport with 500 yards of pallets in all directions and he sees 227. He has a load going to the 227th so he loads it on with the rest of the 227th. The 227th gets all those parts. Now, this guy, he's a hundred miles from anybody and he looks up all those parts he's gotten and he uses them whether they are his or not. Our internal system of getting stuff around the field to the right units is exacerbated by the way we name units. Our internal system needs a re-look. It is

great for the linear battlefield and for short distances, but when you start talking about the 3d tier of mobility and go 200, 300, 400 miles a day, it don't cut it. I personally think that it probably didn't work for tank battalions either because the M-1 guys were running right along. In most cases, except for wadis, it was pretty good tank country. I looked in the older books, by the way, I had them available, as to the trafficability, "go/no-go" terrain and that kind of stuff. That area that we attacked thru fifteen years ago, ten years ago, was not considered tank country because of the size of the big rocks and boulders not being good for the track vehicles. Our new track vehicles torqued through that crap like it was nothing. The world has changed. Our technology has changed. Army Aviation has a tendency to get focussed only on our capabilities, but everybody's capabilities have gotten much, much better. We were pretty lucky in that regard. Our system of internal logistical supply and support needs a real re-look. We are going to have to come up with a way, probably with computers, of locking down delivery of specific items to specific units. We've got to deliver high dollar, low density items to the guys who need them or we are not going to be able to carry on this kind of war. I talked about [Major General] Williamson [commander of AVSCOM) and his guys, in a situation like that if we ordered five APUs and they were lost in the system, if they didn't show up in four or five days, we would order five more and get them. No questions asked. Somewhere in back of somebody's dump is a pallet inside of which are five APUs. Maybe they found them later and recovered them back into the system or maybe somebody got them and used them. I don't know what happened to them, but Williamson was a hero. You've got five APUs and a pilot night vision system on order and you've got a lot of MMC (Material Management Center) stuff here. I don't understand it. I went out and visited those units and the guys were starting off of somebody else and flying missions. Killing tanks. The night vision guy was flying day time missions. The were mission capable. As those units made those long movements and broad movements and they moved and moved, I would go out and watch them and they were flying everything.

Dr. John W. Kitchens: With that method of determining mission capability the Apache would have been, would have had a better mission capability in the past than we have been using.

Colonel Green: And the other part of that thing is a human thing. The guy that is going to go out at night and do a training mission might scrub a training mission because he might have a radio down or maybe he's got a light that is coming on and off or maybe a circuit breaker that is popping, I don't know about that. But in this fight, every pilot wanted to go. I think they would have flown them with one engine if they could have gotten away with it so they could get into the fight. Guys were flying and fighting in equipment that if you wanted strictly training environment in the United States you probably would have said, "No, I don't want to do this." and would have stayed home. When you are looking at the different factors like staying in a tent while your buddies are out there killing tanks and you have a thing that will go? They all went. I say that there is a factor there. As long as the guy felt safe in the aircraft, you know, it would get him out there, shoot and get him back home, then he went. They didn't have gray. All black and white. If he felt safe, he flew. And that's the difference I think in a war time computation in mind set and a peacetime one. And then, too, like I said, everybody was having problems with faith in the Apache. I mean it was two, three, five years of constantly hearing it can't do it, it's no good, it breaks down, it can't see, it can't shoot on and on and on. They started taking them out there and killing lots of stuff. They broke the enemy elements back in front of us. Everything that died at night out there, whether the Air Force killed it or not, the Apaches got it. The Iraqis got so that they were scared to death of the Apaches. The crews became more and more confident in those things. They learned how to operate it in a combat element and felt good. As they became confident the aircraft capability came up. The calls that a pilot makes on a pre-flight is a confidence call. "Will this rotor stay on?" and "I don't know, that has a lot of play in it." But I tell you, once they got confident in the system it was let's go. No Apache ever let a pilot down. We had a lot of

pilots led down Apaches. We had one guy that did what we call a hard landing. It [landing] broke all the bottom Hellfires off the racks, pushed the wheels up into the bottom, took the tail wheel and pushed it up into the tail boom, and ripped the gun off. It was sitting flat on the ground. That wasn't an Apache problem, that was a pilot problem, I think they had one night vision system fail while the guy was in a real low high speed turn in a desert sand storm and he bumped real hard. Aside from that all the Apache guys felt very confident in their aircraft. They flew them all over the place and when the conditions were hard and somebody had to go someplace, very often they would take an Apache as the aircraft of choice. It had the long range with the tanks on it. They considered it safe. One of the Apache guys in our Corps got hit by a 57mm round. He limped off vibrating, out of range, turned around and killed the 57mm with his own gun. Those things became legends. I don't know how many of them are true or how many of them are not. But everybody is talking about it. An Apache can take a hit. She can take a hard landing and still bring you home. Everybody is worried about the gun jamming the guy in the seat. The gun worked just the way they said it would. The big runners on the bottom? You didn't dig in and tumble, it slid along the desert. The confidence in the Apache went up as time went by and the availability went up at the same time. But then, our system kills us, because what happened at the end while the war was still on, the guys in charge, Colonel Bob Seigle and those guys, were meeting on a weekly basis to share assets. "I got this many engines, I got this many of these, let's cross level." "You can have some of mine." And, at the end of the war they still did the meeting but what happened is that the guys knew the minute they left country that their ability to get parts was almost going to disappear. There was no money left in the world. We flew it all. There are no parts in the system, they were all in Saudi. So everyone dumped his availability to get his gear as close as he could to 100 percent, FMC (fully mission capable), before he left. He knew after he left country he was going to do it. There was a gigantic drop in unavailability. When you would talk to them and ask why they did it they said they were scrambling

for parts they would need for the future. They were restocking and rebuilding in theater. It just devastated our availability figures and it made us look like we were lying. While the war was on it was great, but the war stops, boom. That is a systemic problem, We've got to fix that because it is making us look stupid. How do we fix it? We change our reporting. We clarify it so that people will know what we are doing. It's all self-imposed. We're trying to make sure that the guys in charge know what they really have, so they can go off and fight a war. That is not, in fact, what happens.

AVIATION MAINTENANCE - 10.13

The following is an excerpt from an interview between Dr. John W. Kitchens, Aviation Branch Historian, and Colonel Robert N. Seigle, the XVIIIth Aviation Brigade Commander during Operations DESERT SHIELD and DESERT STORM:

Dr. Kitchens: When the action started did you have any problem with getting parts where they needed to be in the war zone?

Colonel Seigle: I think anybody that says he moved a part in the war zone is probably not telling the truth. We were set up to be able to support a move all the way into Iraq as deep as they wanted to go, and the philosophy that we used is we took all of our non-divisional aviation intermediate maintenance support, all those companies, I Co/159th, H Co./159th, K Co./159th, K Co./158th and A Co. 8th/158th, which had come to us from Europe, we took all those units and we had them in various states of either working out of the tents like H Co./159th, which stayed in direct support of the 101st throughout the entire war. They never moved off of Tapline Road. They never broke down and got boxed up like they were going to move. But two other units, K Co./159th and I Co./159th were completely boxed up and packaged right across Tapline Road from H Co./159th and the entire aviation support battalion from the 101st, and they were ready to deploy forward into several marked airstrips and fields that the engineers were going to build if the need arose to project helicopters that far forward. So, we had a plan. The plan would have carried the parts that we had that were already sitting on the ground at Log

Base Charley that we had flown up there with C-130s and trucked them there in large quantities. The plan would have followed that all of these parts would have rolled forward and then they would have had to be redistributed from wherever we set up the base of operations out to the various units depending on who they were. In one hundred hours we never got that plan initiated because we never moved the 1st Aviation Intermediate Maintenance (AVIM) company forward. It happened so fast that they were ready to roll and by the time that they were actually ready to nose out onto the highway and get in line to go up one of the MSRs (main supply routes), the war was over. So there was no need to move them. Helicopter parts continued to come into Log Base Charley. They continued to be distributed throughout the Corps area. There were some units that will tell you that they didn't receive one aviation part right before the war started and during that time, and it was because we prioritized those units that were in direct contact, those units most likely to be next in contact and right on down the line, we prioritized parts as they came in. Let's say the 101st Airborne Division air assault and their aviation brigade with then about, as you attach the 12th aviation brigade to them with four Apache battalions operating along the Euphrates Valley, if any one of their Apaches broke, they had first priority to get their Apaches fixed and somebody like the 82d Aviation brigade who had a follow-on support mission in the zone behind where they were deployed, if they had a need for a part, they had to wait in line until we got all of them fixed in the 101st. And so there is probably some disproportionate moving of parts, but we knew where they were, we knew how many had come in, they were coming in on a regular basis, and the aircraft remained up. Was it a problem? Sure, it was a huge headache. I mean the system, if we had not instigated an entirely separate system for tracking aviation parts, I am convinced that we never would have flown the kind of hours that we flew. But in retrospect, looking back at the system that we built it was just good business to say we can't afford to be bogged down in the tons and tons of things that the Army Logistics Systems can move because we can't find this special little nut and bolt and stuff that is only for a

helicopter in that system, and so we devised an adjunct system. It wasn't completely separate, it was just a little bit different. We marked packages with a plain visible marking, put special handling on them, and then we put special people there to watch for them when these things came across on a pallet. We had people in Dhahran. We had people in KKMC (King Khalid Military City). We had people at Log Base Charley. They did nothing but watch for aviation parts that hit the ground and then we distributed them. I mean it wasn't a magical system, it was just a lot of people doing a lot of hard work and keeping up with those things and distributing them. Just prior to the ground war I can remember that VIIth Corps was having a disastrous time trying to keep their aviation maintenance alive. They had not instituted the AOG system that Captain Hope Jones had run so effectively for the XVIIIth Airborne Corps, and they were still struggling with needing a lot of specific parts that they thought we had on had and the most specific were the line replaceable units that belonged to the Apaches, the black boxes in the Apaches. I can remember taking the McDonald-Douglas tech rep and I got on an aircraft, and we flew and personally visited every single Apache maintenance officer in XVIIIth Airborne Corps, and we itemized every single LRU (line replacement unit) that we had in the system at every unit. We allowed them to keep some at their unit level where they would have one of a kind, and then we moved up to the aviation intermediate support units and took inventory of what they had on Apache parts, and we ended up sending on low boys down to the VIIth Corps about 40 truck loads of aviation parts. Now the 40 describes the total number of parts that we sent prior to the ground war that were parts that they were searching for in country and that we found that we had. Not all those parts were Apache parts, but a good number. We split up Apache parts and we said we were going to make as much of the whole system 100% flyable before we ever start across on the ground war even if it means that we don't have something left here on the shelf that we should have one or two of sitting in country. And that worked. They got their aircraft up. They had a remarkable flying rate. They had by far the tougher mission in terms of the number of enemy vehicles that they would

face and have to fight their way through and that was just done because we had a good coordination meeting on a weekly basis between VIIth Corps and XVIIIth Airborne Corps.

Dr. Kitchens: At what level was this?

Colonel Seigle: We had aviation brigade commanders there and I attended every one of them, but [Colonel] Rich Roy, who was the ARCENT (army central command) Aviation officer, actually ran the meeting along with the ARCENT Aviation G-4 representative who was Colonel Sonny Rains, and they chaired the meeting and Colonel Johnny Hitt, the VIIth Corps Aviation officer who doubled as the 11th Aviation Brigade Commander, and myself always came to those meetings with all of our maintenance guys, and that is where we shared information about how many aircraft were down, how many parts we had and what needed to move. We had been doing those meetings since we got on the ground in Dhahran. Now, you've got to remember that XVIIIth Airborne Corps was there through December before VIIth Corps got there and when VIIth Corps arrived, we were holding these meetings in the Saudi Air Force auditorium on Dhahran Air Base, and it got to the point where we would have two or three hundred people in attendance at these meetings on Friday morning because you just knew in the XVIIIth Airborne Corps, if you came to that meeting with a problem, you'd go home with an answer and if you sat out in the desert and waited for someone to come an solve your problem, it wasn't going to get solved.

Dr. Kitchens: And you continued holding these meetings?

Colonel Seigle: We never stopped holding those meetings. Now another thing that we did, it probably aggravated some people, there were some hot phone calls about this issue, when we decided that we were going to move to the areas to launch an attack and we knew that something was up, that an attack looked probable, we were issued, can't remember the specific numbers, but we were issued float aircraft. Now float aircraft have a specific description. They are aircraft that are repaired and available so that if you loose aircraft due to combat damage and you've eighteen Apaches in your unit and one is shot down, you are now minus one, we issue you a floater aircraft. We didn't do that in the XVIIIth Airborne Corps

because we didn't have the capability to maintain those aircraft or to fly them forward from Dhahran to the operational areas outside Rafha so, with every single aircraft that we got that was designated a float aircraft, we pushed it down to an operational unit and asked them to maintain an additional aircraft on their roles, and it would be a float aircraft so that every single Apache battalion in the XVIIIth Airborne Corps, by the time we moved to our Operation DESERT STORM operational locations along the Tapline Road, every single Apache battalion had nineteen operational Apaches, and they knew that if they lost one they were eighteen and that is what they were authorized. Now, if they lost two and some of the units still had nineteen, we would move that nineteenth from one unit to backfill the other, but we would always try to keep them at eighteen, and that is the way that we managed the float. It was by no stretch of the imagination a float that was kept in reserve. It was force fed to the units, and, I might say, the units welcomed that addition. As a matter of fact, the units asked for the float to manage because they had the pilots and the maintenance capability, and they had everything they needed to keep those aircraft up, and they welcomed the additional aircraft. We did that on every single Apache. I am not certain if we ever got any additional OH-58Ds. I don't know if there were any in country. We got a handful of UH-60s, and those were the result of the Army modernizing the 82d Airborne Divisions 30 UH-60As, by bringing in 30 brand new UH-60Ls. We issued those to the 82d Airborne Division and on January 15, we met and redistributed the displaced 30 UH-60As that had come out of the 82d and we, the whole idea was fill all the aircraft holes, wherever there was supposed to be an aircraft and there wasn't, we issued them another UH-60 and in those areas where you had enough aircraft, but if you had one that was badly broken or an old dog or something, the idea was to fill everybody to authorization plus a handful more, one or two more is the way it worked out and get only the real dogs out of the system and left behind because they wouldn't fly, and that is the way that we deployed the Black Hawks. So, we put as many in the air as we could, and we gave them to the units to maintain.

AVIATION MAINTENANCE - 10.14

The following is an excerpt from an interview between Dr. John W. Kitchens, Aviation Branch Historian, and Colonel Robert N. Seigle, the XVIIIth Aviation Brigade Commander during Operations DESERT SHIELD and DESERT STORM:

Dr. Kitchens: I want to ask you a follow-up question on the combat ready capacity of aircraft. You mentioned that certain aircraft were 90 percent combat ready. Does that mean that they were, that 90 percent of the aircraft were ready to do any kind of mission that they were assigned, that is normally assigned to the aircraft or does that mean that they could perform some mission or another, not necessarily any mission that they might sometime be capable?

Colonel Seigle: Let me see if I can put that in very specific terms. For an Apache, the gun ship, the Army bought the Apache for a very specific reason. To kill tanks and specifically to kill tanks at night. And so I reasoned that since the Apache was a tank killer, and this was primarily an armored combat operation that we would be involved in, I didn't check the book to see what a fully mission capable Apache consisted of. You would probably have to have more systems a go. What I described for the XVIIIth Airborne Corps was an Apache that could fly its night vision system. In other words, it could fly and see and fight at night, and it could fire as a minimum its Hellfire weapons system, that was a mission capable aircraft and it was counted up.

Dr. Kitchens: The Hellfire was essential?

Colonel Seigle: The Hellfire was absolutely essential because it was a tank-heavy environment.

Dr. Kitchens: But it would not necessarily have had to have had the rockets or the machine gun or both?

Colonel Seigle: Right. But now my experience is with most of these kids is the only thing that they had a real problem with was the 30mm chain gun. And if you had the old feed chute you had more problems than if you had the new feed shoot, and there were all sorts of indicators that they were fixing all the little bugs that were involved in that thing, but I was not so much concerned about the suppressive fire of the 30mm cannon as I was the absolute-directed fire

of the Hellfire weapon and then the rockets could make up for the lack of aerial weapons suppression that you would get out of the 30mm gun. We did have a problem with rockets. We didn't get the number of Mark 70, Hydra 70 rockets that we really needed. They were not in abundant supply, and so, they had to be rationed out. And it very quickly became, as the Apaches went across the border and saw the majority of their targets, there were a lot of targets that the Apaches would have shot that were soft skinned, that they would have shot with Hydra 70 rockets and/or 30 mm, but either because of the limit of the weapon, the 30 mm jamming a lot, or the lack of ammunition, the rockets, very often Hellfires were shot instead. It became the weapon of choice because it was directed, it would find the target every time and the other stuff was not as readily available.

Dr. Kitchens: And with other aircraft, such as the Black Hawk or the Huey or the Chinook or whatever, if you said 90% combat ready capability, you meant they could perform their major mission?

Colonel Seigle: They could perform their major combat assault mission. For a Chinook it meant that they had to be able to carry things on each of their three hooks, so they had to be able to carry their full load that they were designed for. For a Black Hawk it meant that it could go either way. As long as it could fly and they could get troops or cargo inside, I wasn't as concerned about the hook. The hook didn't make the Black Hawk up or down. It would make a Chinook up or down...Huey, could it just fly?... OH-58A and OH-58C, could it fly? If it could fly, it could do the full range of missions it was capable of doing.

AVIATION MAINTENANCE - 10.15

The following is an excerpt from an interview between Dr. John W. Kitchens, Aviation Branch Historian, and Colonel Robert N. Seigle, the XVIIIth Aviation Brigade Commander during Operations DESERT SHIELD and DESERT STORM:

Dr. Kitchens: Do you think of anything else that you would like to say about the Operation DESERT SHIELD portion?

Colonel Seigle: Three more topics that I can see here, the Desert Shield hours flown versus OR (operational readiness) rate, the MEDEVAC organizations and who they belong to and where they got their information to fly, and then the utility of the fixed-wing detachment and who ought to control that at echelons above corps in the structure. First Desert Shield, hours flown and the OR rate. We maintained impressive availability rates of aircraft at an accelerated pace of training called OPTEMPO (operational tempo). OPTEMPO is figure described as the number of hours per airframe per month. The normal OPTEMPO for a UH-60 unit, a Black Hawk unit, was about 15 hours +- per airframe per month. We very quickly, once we got into the desert and guys said we got to train in this environment because we don't have anybody that knows anything about it, we very quickly doubled the OPTEMPO of the Black Hawk units. We more than doubled the OPTEMPO of the OH-58s and the Hueys, and we probably almost doubled the Apache rate. So, in effect, we were flying close to two times the peace time OPTEMPO. It became very obvious in September, leading into October as I talked on an almost weekly basis with [Colonel] Dave Carothers, the DSCOPS of the Army's Aviation Office and officer, that we were, being the XVIIIth Airborne Corps, if we maintained the OPTEMPO that we had originally established at twice the OPTEMPO in country that it would not be long that we would eat through the entire parts base of each airframe in the Army inventory and that something had to be done to artificially restrict the number of flight hours that we were going to fly in country. This was all done before we ever knew that the VIIth Corps was going to deploy and nearly double the number of aircraft involved in the war. Consequently, we settled on a figure that was probably half again as large as the peace time OPTEMPO recognizing that you've got to do some training, some increased training, in a near-war environment in order to make sense out of the training program in the go-to-war status that the division expected to maintain. And so, that is what we did. We settled on a set of numbers that the Army said they could support from Washington DC and then General Irby and General Williamson went out and beat the trails of all of the parts suppliers for all of the aircraft in the inventory and, if I

am not mistaken, General Irby told me that he talked to nearly five hundred suppliers of Army aviation parts and beat them into a patriotic fevered pitch to caused them to jump schedules, to make them move faster, get things delivered on a more timely basis and, because of that, to my knowledge we never had a parts problem. There was never a time that we called back to AVSCOM where the next day when we called to check on a part where they would say they were sorry that they didn't have that one and they weren't going to get it. So, the system must have worked. We came very close to training ourselves out of the availability to be able to fly in combat should combat arise. And so we artificially withdrew the number of flying hours and just told everybody that they were just going to have to meet the OPTEMPO requirements of a near war time situation. Until somebody started shooting at us, we were restricted to a certain number of hours per aircraft. And that worked. There were some guys, after the fact, that would come back and tell you that we didn't have enough training, but I don't think there is a pilot that went into combat that would tell you that he had enough training up front. So, we will never solve that problem. Then the job is how close do we get to enough to make it reasonable and survivable, and that is where we were trying to head.

MAINTENANCE (SURVIVABILITY) - 10.16

The following is an excerpt from an interview between Dr. John W. Kitchens, Aviation Branch Historian, and Colonel Robert N. Seigle, the XVIIIth Aviation Brigade Commander during Operations DESERT SHIELD and DESERT STORM:

Dr. Kitchens: Those are the only follow-up questions. Where we think we are, unless you have something to add, we think we are up to the beginning of Operation DESERT STORM. We think we have pretty much covered Desert Shield the preparation and training and that sort of thing except for possibly accidents or something that we may cover along with it. But do you have anything else that you would like to say about the Operation DESERT SHIELD portion of it before we go on?

Colonel Seigle: I am not sure that some of these topics that I have covered in sufficient detail. I can tell

you that aircraft survivability equipment is one issue that I would raise as a red flag for those of us deployed early on and, as a matter of fact, for VIIth Corps when they piled on up until we got ASE (aircraft survivability equipment) project manager, Colonel Rancover, we didn't have enough ASE equipment fielded in the various units in Operation DESERT SHIELD to protect all of the aircraft. We had some equipment. The APR 39, the radar warning receiver, we had those in most all the aircraft. We did not have radar altimeters in all the aircraft that needed them. There was a rush order to put those in the [OH]58Ds and to make sure that they added a microchip in there to give them an audio warning at the same time it gave them the read out. Some of the ASE that we had employed on our aircraft, I think specifically the UH-60s in the 101st, there was so much dirt and dust collected in those things that the system wouldn't spin up to be fully protective.

Dr. Kitchens: Something that happened after you got there?

Colonel Seigle: Something that happened after we got there. It was because of the dirt and what not got into the actual mechanism of the revolving portion of those mirrors back there on the 144, the IR (infrared) jammer, and they just didn't work. So in many cases we were missing the item of equipment altogether. In very many other cases we had the item of equipment installed, but it was so gummed up with dust and sand and what not that it wasn't working and then only in very limited numbers of cases did we have mounted operationally correct, checked by the pilot, knew what he was doing. So you had the full range of problems initiated by ASE. And those problems are problems that the aviation community, prior to Operation DESERT SHIELD, we had not punched hard enough on the system to make sure that we had them all on our aircraft. I mean they just weren't bought. There weren't enough of them. Now, it was amazing to watch the PMs (program managers) office, that was just newly created, recover from that by sending two, it was either four or six-man teams into Saudi Arabia and those guys were busy twenty-four hours a day, seven days a week chasing into units, they actually brought things with them. They had more mailed to them while they were over there.

They either came Desert Express or some other way that they were finding to get these systems into country and before we ever went across the border on "G-day" most of the aircraft had fully operational-ASE equipment. It was an amazing short-term recovery. Now there were a lot that had to go across the Corps, I mean, my Hueys were the last ones to get the ASE equipment and many of them didn't get any, and I will just tell you that had we been in a sophisticated threat environment like it could have been, we would not have done a lot of the flying that we did just simply because we couldn't have been out there. We didn't have any systems to protect ourselves, and the land was so flat you couldn't hide. You couldn't fly much NOE (nap-of-the-earth). NOE meant you were flying two feet off of an absolutely flat desert floor. So ASE is probably one thing that is probably noteworthy from this exercise in the fact that we understand that, without an enemy, we were fortunate that ASE did not become a real Achilles heel for Army aviation, and we are rushing now to fix that problem. Corps level-life support equipment is probably tied directly to ASE. It is the kind of thing that we leave up to every individual organization. They support what they can, but they don't have the right numbers of helmets, flight suits or, we ran out of things.

CHAPTER ELEVEN

LOGISTICS

The vital importance of logistics runs like a massive thread through military history. Even small logistical problems can lead to disaster. For example, in 1879, the British Army fought a campaign against the Zulu nation of King Ceteswayo in Natal Province (present day South Africa). The British were armed with Henri-Martini breach loading rifles and their Zulu opponents with cowhide shields and a short spear called the assegai. At a battle called Isandalwana, thousands of Zulus defeated a British column of nearly 1,200 men because of one factor tied directly to logistics. British technological superiority alone should have guaranteed victory.

British ammunition boxes were fastened with nine large screws which required a particular screw driver to open. Because of the lack of this one simple and inexpensive logistical instrument, the British lost the battle. Even though there were thousands of rounds of ammunition available within the British position, it was not made available to the troops on the firing line who quickly ran out of ammunition. Seeing the British fire slacken, the nearly 20,000 Zulus charged, and all the soldiers on the firing line died within minutes.[1]

Today, in a modern army there are literally thousands of military implements that can mean the difference between victory and defeat. In the late 1970's, there was a unique quote beneath the sign that identified the 82nd Airborne Division's DISCOM (Division Support Command). It read: "Try to Fight a War without Us."[2] Never were truer words written.

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[1] Bryan Perrett. The Battle Book. Crucial Conflicts in History From 1469 BC to the Present. (London: Arms and Armour, 1992), p. 142.

[2] Personally seen by the author while on active duty at Ft. Bragg in 1982.

Today's technically oriented army has a great need for logistics that goes way beyond simple beans and bullets.[3] The complex weapons systems now employed by the U.S. Army need enormous logistical support to function; especially so in extremes of climate or environment.

As one of the most technical branches in the U.S. Army, Aviation requires continual support to function effectively. This chapter deals with the very critical factor of aviation logistics during Operations DESERT SHIELD and DESERT STORM. The vignettes contained in this chapter demonstrate that Army Aviation reinforced its emphasis on aviation logistics, and saw it pay off during combat.

When it rained in the early days of gunpowder, both sides were so affected that no battle could be fought until the sun came out and the powder dried. In the modern era, only one side is normally affected in a like manner. The trick is to be the side that is unaffected. For example, if Army aviation is affected by having to ground its aircraft because it cannot logistically support them, the outcome of the battle could be in serious doubt.

The first two selections cover the critical work of AVSCOM (Aviation Systems Command) in keeping Army Aviation flying in the desert. Although this organization never fired a shot in battle, its outstanding performance was one of the keys to victory. They adopted the old motto "keep 'em flying" as their theme and carried it through. The first of the two selections (11.1) shows that AVSCOM began to develop early fixes for the many maintenance problems cropping up in the desert.

Selection 11.1 also describes the use of the National Guard aircraft to fly critical parts from aviation parts suppliers in CONUS to central locations where they could be packed and shipped to SWA (Southwest Asia). AVSCOM also developed the use of Foreign Military Sales (FMS) to help the units in SWA so that they could purchase off-the-shelf parts when necessary. Selection 11.2 continues the AVSCOM story of its support for maintenance by showing the development of its not inconsiderable ability to provide

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[3] Logistics was always uppermost in the minds of the senior commanders. See: Brigadier General Robert H. Scales, Jr., USA, Director. Certain Victory: United States Army in the Gulf War. Washington, D.C.: Office of the Chief of Staff, 1993. pp. 57-65.

fixes to desert problems, and taming an out of control distribution system for the thousand and one parts it had to send to the thousand and one aviation units in Saudi Arabia.

Selection 11.3 details the development and functioning of "Desert Express". The development of this critical lifeline was one of the most imaginative of the war. Because parts were wearing out far faster than anticipated, the Army supply system had to be slightly remolded to provide the critical parts when and where they were needed. The fourth selection (11.4) covers the Intra-Theater Transportation/Distribution System and its responsiveness.

In Selection 11.5, the efforts of the 4th Aviation Brigade to keep its aircraft flying are highlighted. The next five selections are parts of a long interview with Colonel Green, the XVIIIth Airborne Corps Aviation Officer in the Desert, in which he discusses the problems of getting the right parts to the people who need them most for several different angles. For example, in Selection 11.6, Colonel Green describes the ad-hoc development of an airstrip to land aircraft so that critical aviation parts could be moved to units more quickly. In Selection 11.7, Colonel Green discusses what the work of AVSCOM meant to Army Aviation's ability to perform in the desert. In Selection 11.8, Colonel Green offers his general comments on logistical support as it was applied to aviation in his Corps, and the important work of the various FARPs. In Selection 11.9, Colonel Green uses his experiences to assess aviation's relationship with the various supply channel it had to use to keep flying. In his last selection in this chapter (11.10), Colonel Green describes the critical importance of the HEMTT (heavy expanded mobility tactical truck) to aviation's operations.

The next selections are portions of a long oral interview with Colonel Robert N. Seigle who commanded the 18th Aviation Brigade. In Selection 11.11, Colonel Seigle describes the XVIIIth Airborne's fueling plan for its aviation assets. In the next selection (11.12), Colonel Seigle discusses the various uses of a fixed-wing detachment at Corps level that was put together in the latter states of the Gulf War. He offers insights on how it could be used in the future. In Selection 11.13, Colonel Seigle discusses

his views on the importance of "Desert Express". In Selection 11.14, Colonel Seigle discusses how the parts crisis affected him and how it was handled. Colonel Seigle in Selection 11.15 describes in detail his experiences and views on maintenance operations and logistical support.

In selection 11.16 Logistician of the 11th Aviation Brigade discusses maintenance operations from his perspective as the maintenance quality control technical officer for the brigade. In the final selection (11.17), several members of the 2-229th describe the personal experiences at FARPS during combat operations, and end the interview describing how the Hellfire missile performed for them in combat.

LOGISTICS 11.1

Aviation Systems Command (AVSCOM) faced a formidable challenge in supporting first, a one corps force, and later a two corps force almost half-way around the globe. Compounding problems associated with aircraft units deployed by air while their supporting units deployed by sea, were the harsh desert environment; lack of an established logistical support base in theater; under-funded war reserves; and under-funded spares inventories based on a peacetime flying hour program. AVSCOM had information on the effects of sand, ultraviolet radiation, extreme temperatures and pilot disorientation from prior studies of desert operation, as well as more recent information from the Saudis on the effects of sand and heat on the S-70 Desert Hawk, a derivative of the UH-60. Of the desert environmental factors to be overcome, the most intractable was the ever-present sand. Full appreciation of just what kind of adversary the three types of sand found in the SWA theater, some as fine as talcum powder, was would not come until weeks after Operation Desert Shield (ODS) began. Work began as early as the second week of August 1990 to develop an aviation logistics support structure to be emplaced in SWA; to develop and field material fixes to counter the expected erosion of engines, rotor blades and other components by the sand; to revise maintenance and operational procedures and techniques which would mitigate the effects of desert operations; to develop covers, tarps

and other devices to shield aircraft from the deteriorating effects of sunlight induced extreme temperatures and ultraviolet radiation, as well as provide some protection from the sand to aircraft on the ground; to increase supply availability through acceleration of delivery on contracts, award of new contracts and surge of maintenance and overhaul; to provide assistance to deploying units; and a host of other measures. Throughout ODS, the AVSCOM, PEO (program evaluation office) aviation and its PMs (project managers) assumed a proactive stance, trying to anticipate and take action on requirements before they were received. The following are some of the more significant issues, events and actions related to logistics:

a. August 1, 1990 through September 30, 1990

(1) Pre-deployment Assistance. An AVSCOM goal from the outset of ODS was to get deploying units in the best shape possible before they moved to SWA. AVSCOM also needed to get the word out that the Command was ready to assist units in any way it could. To that end, the AVSCOM Deputy Commanding General, readiness, maintenance, supply and transportation experts were "on the road" the week ending August 15, with visits to the 82d Airborne Division at Fort Bragg and the 24th Infantry Division at Fort Stewart trying to identify problems the commands and units had or would encounter. The following week the team visited the 1st Calvary and 2nd Armored Division at Fort Hood. In early September 1990, similar visits were made to the 101st Air Assault Division and Task Force 160 at Fort Campbell, and again in mid-November 1990, to 1st Infantry Division elements at Fort Riley. Subsequent assistance visits were made in late November 1990 to Forts Polk, Sam Houston, Hood, Sill and again to Riley. Parts shortages, requirements for maintenance assistance for phase material for protecting aircraft during surface shipment were communicated via telephone or data FAX to the AVSCOM EOC (emergency operations center) to be worked. One item which was in demand at almost all locations was "shrink wrap" material to be used for wrapping aircraft for surface shipment. Although not an AVSCOM managed item, AVSCOM contracted for overnight delivery of shrink wrap materials to Forts Bragg, Stewart, Campbell, Hood, Riley and Bliss. Material Release

Orders were cut for parts shortages, to include authorized stockage list (ASL) and prescribed load list (PLL), with overnight delivery to be accomplished either by commercial carrier or via the ARNG (Army National Guard) CONUS Log Air system. Maintenance assistance teams were rapidly assembled and dispatched to unit locations to help them with phase maintenance and inspections, application of erosion protection paint to rotor blades, and a host of other activities. AVSCOM also dispatched preservation and loading teams to ports to assist units in the preparation of their aircraft and ancillary equipment for shipment. Pre-deployment assistance continued until the last units embarked.

(2) Team Approach/Concept. Process action teams, using total quality management principles, were established beginning in mid-August 1990 to expedite actions related to given systems. AVSCOM established teams for such things as Apache, CH-47, etc., and common system emphasis or problem areas such as covers, blades, engines, filters, surge, glass, etc. Composed of representatives of all AVSCOM and PEO/PM elements which had any part in a process, such as maintenance, readiness, material management, resource management, engineering, procurement and production, product assurance, legal and the appropriate PM, as well as representatives from industry where appropriate, their goal was rapid resolution of identified problems or the development of better methods. The teams evaluated the process, identified improvements which could be made, eliminated non-value added activities, and identified beneficial changes in the process resulting from ODS involvement which could be carried over into normal peacetime operations. **The teams operated using brainstorming, prioritizing issues and setting common goals (author's italics).** Process problems were identified, tasking assigned, actions taken, and the outcome reported back to the teams. Team recommendations were made based on the findings. Top management visibility was instrumental in getting the priority attention needed. These process teams operated throughout the duration of Operation DESERT STORM, with additional teams formed or existing teams disbanded as necessary.

(3) ARNG Log Air in CONUS. Experience gained during Operation JUST CAUSE had previously highlighted the value of having dedicated airlift to pick up high priority aviation cargo from the depots for delivery to units deploying or aerial ports of embarkation (APOEs). Arrangements were quickly made with the National Guard Bureau for similar support. Two scheduled routes were set up, the first flying a circuitous route between New Cumberland Army Depot (NCAD), Fort Bragg, Fort Stewart and Fort Campbell; and the second flying a circuitous route between Corpus Christi Army Depot (CCAD), Red River Army Depot (RRAD), Fort Bragg and Fort Stewart. The first flight occurred August 10, 1990, with parts being flown from NCAD to Fort Stewart. Through September 90, daily ARNG C-12 flights transported aviation parts from CCAD and RRAD to deploying units at Fort Campbell, Fort Bragg and Fort Stewart, with missions to other unit locations as well. The ARNG C-12s also picked up aviation cargo directly from contractor sites and transported it to deploying unit locations or to Charleston AFB (air force base) for airlift to SWA. Once the Air Force Desert Express began, the ARNG C-12s were utilized in transporting high priority aviation parts from RRAD to Charleston AFB for airlift to theater via Desert Express. In the November to December 1990 time frame, ARNG C-12s airlifted aviation parts to aviation units located at Fort Riley. The ARNG also supported various special air mission requests throughout ODS. Total ARNG Log Air support from August 10, 1990 through March 16, 1991, amounted to 121 missions, carrying 77,838 pounds of aviation material and 18 passengers.

(4) Establishment of Theater Aviation Material Program-Southwest Asia (TAMP-SA) FWD. Beginning in mid-August 1990, actions were underway for the establishment of TAMP-SA FWD, located at Dhahran, Saudi Arabia. A foreign military sales (FMS) contract with Sikorsky Internal Products, Incorporated (SIPI), was modified for Army use, arrangements were made with the Air Force to invoke existing contractual arrangements for general field maintenance teams and aircraft modifications through Lear Siegler, Incorporated (LSI), which had a large work force in Saudi Arabia supporting Air Force FMS, and an agreement with the

Saudis to provide support and cooperation, to include tools, equipment, facilities, spare parts and components to the extent they were available was concluded. While assemblage of these was underway in Dhahran, contracts were let with DynCorp to furnish maintenance support for phase maintenance, port operations, AVIM (aviation intermediate maintenance [unit]) augmentation, structural repair and modification work order (MWO) application. Personnel in the form of contract field service representatives (CFSRs) to provide technical support from McDonnell Douglas Helicopter Company (MDHC), Martin Marietta (MM) and General Electric (GE) to support AH-64s; from Bell Helicopter and McDonnell Douglas Electronics Systems Corporation (MDESC) for the OH-58D, from Sikorsky and Lycoming for the UH-60; and from Boeing and Lycoming for the CH-47D, as well as contractors for maintenance teams, component repair and MWO application, and LARs, who were to provide technical support, were processed for movement to SWA and TAMP-SA Fwd began to take shape. Arrangements were made with CCAD to provide armament repair teams for the AH-1 Cobra. TAMP-SA FWD achieved initial operational capability in mid-August 1990, peaking in size and capability in mid-February 91 with the assignment of 532 contractors, 10 Department of the Army civilians and 21 military personnel. It included an Engine Service Center. The Engine Service Center was designed to provide quick turn around for cleaning and repair of engines that were eroded during desert operations. Approximately 288 engines were work ordered through the Engine Service Center during ODS, of which 192 were repaired and returned to service. This effort significantly reduced the number of demands on the supply system. In addition, the Engine Service Center responded to technical calls from the field and was responsible for minimizing unnecessary removal of engines and "on wing" repair. The Engine Service Center and the depot level engine overhaul facility at TAMP-SA Base were both augmented with technical representatives from all prime manufacturers of Army aircraft engines.

(5) Increasing Parts and Assemblies Availability. AVSCOM began ODS with under-funded war reserves and an under-funded spares inventory based on a peacetime flying hour program. It was clear that for AVSCOM to be able to

support expected parts requirements, an all out effort to increase parts availability was in order. That effort basically took shape as a four-pronged attack; to accelerate delivery on all existing contracts; to surge existing repair and overhaul programs; to establish new repair and support was critical to these efforts. Telephone calls by the AMC and AVSCOM commanders to presidents and chief executive officers of industry were placed to assure them of the requirements and to solicit their support. Their reaction was immediate and positive. Throughout ODS, contractors participated in AVSCOM meetings and took extraordinary measures to expedite deliveries. Without the excellent support of industry, AVSCOM's efforts would have been doomed from the start. Identification of critical items was mandatory in order to establish priorities for action. Critical parts requirements to support ODS aircraft were identified in August 1990, and a "War Stoppers Team," which met daily, was formed to provide intensive management of those parts without which aviation operations in SWA would quickly cease. Priority focused on "war stopper" items, aircraft intensely managed items (AIMI) items, items that were keeping an aircraft on the ground, and the reduction of items for which no stock was on hand. Beginning August 26, 1990, 517 existing repair and overhaul programs for components for the AH-1, OH-58, OV-1, UH-1, AH-64, UH-60 and engines for all systems were surged, an effort that would continue until March 1991. New maintenance and overhaul programs were established. A massive effort was undertaken with industry to accelerate deliveries on all FY90 and earlier contracts, to include the address of delinquent deliveries. First article inspections (FAIs) were waived in many cases involving contractors with past successful performance. AVSCOM quality assurance inspectors provided on-site FAIs at contractor plants in many cases to expedite the process. Assistance was provided by AVSCOM to DLA in resolving non-conforming First Article Test Reports, Material Review Board actions, or overdue requests for waiver/deviation. By the cessation of hostilities, deliveries on over 1,770 contracts has been accelerated. Beginning in August 1990 and continuing through March 6, 1991, almost 3,000 new contracts were awarded. To reduce

procurement lead time, contract specialists made use of unpriced contractual actions, waived responses, and other measures. Throughout ODS, close and continuous contact with industry was maintained, with industry representatives attending many of the meetings at AVSCOM in an effort to accelerate deliveries on contracts or initiate new development items. To expedite receipt of parts, non-standard commercially available substitute items were procured when available in lieu of the standard military items, alternate sources of items were utilized, as was the use of alternate materials. When required, parts and assemblies were removed from aircraft on production lines, and from aircraft belonging to non-ODS units. Warranty procedures were modified for the SWA theater, allowing local repair of warranted components when that capability existed, rather than the warranted part being returned to the manufacturer for warranty work. Agreements were reached with the prime contractors for that paperwork, cost of repair, etc., being forwarded to AVSCOM for further action. The holding period for Category II Quality Deficiency Reports (QDRs) was reduced from 55 days to 15 days as a trade-off between availability of a repair part versus a QDR investigation. For those instances where exhibit availability for QDR investigation outweighed its availability as a repair part, e.g., evidence indicating the defect applied to the whole contract quantity, or having safety implication, telephone and data fax was used to determine if the exhibit was required, and if so, shipping instructions for the exhibit were issued by message or data fax to the QDR originator. Parts inventories of non-ODS units was also made available to SWA when required. The support forward concept, with depot capabilities established in theater, as well as the use of special repair activities (SRAs) for sophisticated components, also contributed greatly to increasing availability of assemblies/components during ODS. While efforts to increase parts and assemblies availability began in August 1990, it continued throughout ODS, with even increased emphasis after the commitment of VII Corps in November 1990.

(6) Establishment of TAMP-SA Base. Establishment of TAMP-SA Base at Abu Dhabi, United Arab Emirates (UAE) began in September 1990, a process that would take some months to complete. Arrangements were made with Johnson Controls, a management company controlling the activities of the Gulf Air Maintenance Company (GAMCO) for use of a large maintenance complex, to include one hangar large enough to hold two or three Boeing 737s at once, to serve as the site of maintenance and supply activities of TAMP-SA Base. GAMCO, a general commercial aircraft maintenance firm, had been in the UAE for several years and had a large work force, however, it was focused on commercial aircraft repair and lacked the experience with small turbine engines and the proper tools and technical publications to effect repairs so AVSCOM personnel from Material Management, Procurement and Production, Product Assurance and Engineering were sent to Abu Dhabi to assist in the establishment of that facility and to identify requirements. Tools, manuals and parts requirements were identified, and direct shipments commenced. A CCAD team was dispatched to train the GAMCO work force in repairs of Army aircraft. Special repair activities were established, the first being the Martin Marietta Target Acquisition Designation System/Pilot Night Vision Sensor (TADS/PNVS) from Fort Bragg in September 1990, to be followed by the McDonnell Douglas Electronics Mast Mounted Sight (MMS) SRA (special repair activity) for the OH-58D, the McDonnell Douglas Helicopter Company SRA for the AH-64, the Honeywell Integrated Helmet and Display Sight System (IHADSS) SRA, and a Communication and Electronics Command (CECOM) SRA operated by Litton Industries for the Heading Attitude Reference System (HARS) and Attitude Heading Reference System (AHARS). The first shipment of AIMI items, 339,000 pounds, to be controlled from TAMP-SA Base, arrived the first week of September 1990, to be followed soon after by plane load after plane load of battlefield spares and depot parts. By early December 1990, TAMP-SA Base was staffed by 45 personnel, not including all the contractors. The warehouse was fully automated and functional, rotor blade taping was nearly completed, over 60,000 items for battle spares were on hand (enroute to a total of over 122,000 items by the end of February 1991), T-

55 engine repair was being accomplished and some T-700 engine work was being done. Capabilities of TAMP-SA Base would continue to grow through February 1991. The capabilities of TAMP-SA base centered around airframe repair, to include heavy sheet metal, corrosion control and painting; component repair of engines, rotor blades and hydraulic systems; specialized repair of sophisticated components by the SRAs, and wholesale supply operations. Those supply operations centered around the receipt, stockage and issue of 1000 lines of battlefield spares, 142 lines of AIMI and 2100 lines of repair parts to support depot level component repair.

(7) TAMP-SA Operations. From the rudimentary beginnings of TAMP-SA in August 1990 through March 6, 1991, TAMP-SA operated in basically two phases, the deployment phase and the sustainment phase. During the deployment phase, TAMP-SA concentrated on aircraft processing by assisting units with port operations and their movement to the tactical assembly areas. The TAMP-SA was also responsible for applying urgent MWOs required for successful operation in a desert environment; establishing technical support via field engineers, AVSCOM LARs and CFSRs; developing a National Inventory Control Point (NICP) operation in theater; developing the capability to perform depot level component and airframe repair; and developing a mechanism through which non-divisional AVIM battalions could receive augmentation and a channel through which they could pass work back which was beyond their capability or capacity. In the sustainment phase, emphasis shifted to crash/battle damage repair, retrograde of unserviceables and the availability of maintenance/supply support to deployed units. The maintenance support forward philosophy was achieved through the organization of 12-person contractor furnished technicians (CFT) contact teams pushed to each of the non-divisional AVIM battalions. This freed soldiers from within those battalions for forward deployment in support of each division. One hundred members of the 1009th Aviation Classification and Repair Activity Depot (AVCRAD), Groton, Connecticut, was activated on February 13, 1991, to provide classification and battle damage assessment and repair teams to forward locations. Supply support was

accomplished through the development of 1000 lines of battlefield spares pre-positioned at TAMP-SA Base during the deployment phase. These were distributed during the sustainment phase via MAC (Military Airlift Command) supplied C-130 intra-theater airlift, and later by ARNG supplied C-23 Sherpa aircraft. AIMI items were distributed in the same manner as battlefield spares. The supply concept entailed moving critical aviation repair parts and components as close to the battlefield as possible to reduce the impact of a 12,000-mile pipeline and to ensure individual high priority items were not misplaced or delivery delayed among the tons of other cargo. In short, approximately 90 percent of the worldwide inventory of critical aviation assets such as AIMI were pre-positioned within the SWA theater of operations.

(8) Call-In Requisitions. The first units in SWA required some method of requisitioning aviation parts directly until the first (XVIIIth Airborne) Corps Support Command (COSCOM) became operational. AVSCOM issued instructions that units could telephone parts requirements directly into the AVSCOM Emergency Operations Center (EOC). Those call-in requisitions began very early on, with 388 such requisitions being received on August 17, 1990. Once the COSCOM became operational, units were to requisition through their normal channels. If their normal support elements did not have the parts required, the requirement was passed to AVSCOM. Those requirements were received via telephone or data fax. To compensate for abuse of the existing NMCS system, the term AOG (aircraft on the ground) was coined.

(9) Environmental Countermeasures. A tremendous effort was undertaken to mitigate the adverse effects the hostile desert environment would have on equipment, as well as pilot/crew disorientation resulting from operations in the featureless desert terrain. Of all the adverse effects of operating aircraft in the hot, sandy SWA environment, the two most serious equipment problems involved erosion of engines and rotor blades, followed by effects of high temperatures and ultraviolet radiation. Early reports from SWA indicated rotor blade wear rates of five to ten times those normally encountered. Chinook (CH-47) engines,

unprotected by a particle separator, were showing substantial power losses after as little as 35 operating hours, with compressor failures as early as 25 operating hours. Similar effects were reported on unprotected AH-1 and UH-1 engines. Although the UH-60 and AH-64 had integral inertial particle separators (IPSs) for their main engines, they were nonetheless also adversely affected. Sand ingested into engines filed away compressor blade leading edges, rounding them off, and once the sand reached the engine hot section, it melted and was deposited as a glass-like coating throughout the hot section. These problems not only surfaced on the main engines, but on turbine powered auxiliary power units. The sand also pitted windscreens and other exposed parts of the aircraft. The heat in SWA was so intense it resulted in the melting of plastic forward transmission cooling fan shrouds in CH-47s, necessitating the design and procurement of replacement shrouds made of fiberglass.

LOGISTICS - 11.2

The Operations DESERT SHIELD and DESERT STORM story was not only about deeds on the sandy ground or in the air over Saudi Arabia and Iraq. A vital role was played in St. Louis, Mo., as well, at the Army Aviation Systems Command (AVSCOM). Its logistics support kept Army aircraft flying despite numerous environmental problems. At the recent Army Aviation Association of America (AAAA) conference in St. Louis, Maj. Gen. Don Williamson, AVSCOM's commanding general, and his team were praised for keeping even the smallest items flowing to helicopter maintenance personnel in the field. At the height of the conflict, demand for helicopter parts and equipment was 10 times the peacetime rate.

Aviation Systems Command set up a "1-800-type" direct line to AVSCOM for field-based aviators to use. Anticipating a spares crunch, AVSCOM officials shifted into high gear when Operation DESERT SHIELD began in August. Suppliers were contacted and critical spares production rates were increased. By the end of the war, 3,794 contracts worth $470 million had been signed with vendors. More than 120,000 spare parts were eventually sent to the

Southwest Asia theater. Williamson's team implemented a "Desert Express" supply line to ferry aviation supplies from Pope AFB, N.C., to Dhahran. Dharhan was chosen as the central receiving point because it was considered to be out of SCUD missile range. Other support facilities were established in Abu Dhabi and at King Khalid Military City (KKMC) in northeast Saudi Arabia.

The Dhahran base was used for major Army aircraft "phase" inspections, armament support, engine and component servicing, and structural repair. The Abu Dhabi base provided airframe repair, painting, rotor blade and hydraulic system care, and maintenance for the AH-64 Apache's avionics. At KKMC, AVSCOM officials set up an aircraft recovery section, maintenance augmentation activities, and supply operations. At all three centers, but particularly at Dhahran, civilian contractors provided essential support. "They became just like the rest of us. They were the glue holding it together," Williamson said.

AVSCOM named its high-intensity support operation "Theater Aviation Material Program--Southwest Asia," or TAMP-SA. Williamson produced charts that showed AVSCOM pumped nearly 800 support people, including 655 civilian contractors, into the field by the time the ground war began.

Meanwhile, AVSCOM personnel handled 390 engines, 710 airframes, 1,019 avionics components, 1,832 preparation checks, and 5,800 blade tapings. (Blades were taped with a polyurethane material to prevent sand erosion.) Other figures testify to the scope of the operation: Of the 2,551 AOG calls made to AVSCOM, 100% were satisfied and the aircraft put back into the air, sometimes within hours. Of 80,000 supply requisitions processed, 77,680, or 97.1% were met.

An operation of this size faced enormous distribution problems. Williamson said it took a lot of initiative to figure out ways to deliver the goods. One way of moving goods from Dhahran to the field was on board Army National Guard Short Sherpa supply planes. Colonel Tom Reinkober, responsible for the distribution of electronic warfare kits, corralled a UH-1H and used it as a taxi to get parts to far-flung helicopter units. He also rented two Toyota Land

Cruisers from a commercial firm in Dhahran and sent them miles into the desert when needed. In addition to the military supply routes, AVSCOM used DHL courier service to get packages to Saudi Arabia fast during the early stages of the conflict.

Aggravating the whole supply problem was the harshness of the sandy desert environment. Eventually, AVSCOM personnel and civilian contractors ironed out fixes for most of the problems. One such fix involved protecting pitch control rods with tiny velcro jackets.

AVSCOM instituted a special "Team Apache" approach to speed components to fielded Apache battalions. Apparently it worked. Apaches took part in some of the most punishing operations of Operation DESERT STORM, including a 1,000-mile round-trip opener, which paved the way for U.S. Air Force ground attack aircraft to destroy radar sites near Baghdad.

The well-deserved respect Army aviation gained for its support of Operations DESERT SHIELD and DESERT STORM is shared by the civilian manufacturers, engineers, and technicians whose efforts contributed to the success.

AVIATION LOGISTICS 11.3

Desert Express. As ODS progressed, AVSCOM's analysis of the transportation system revealed that AVSCOM critical aviation material destined for SWA through normal channels was experiencing excessive transit time. One work-around was the use of commercial carriers; however, that method was costly, and U.S. carriers from point of origin to destination could not be guaranteed. AVSCOM did make use of commercial carriers on a regular basis from August through mid-October 1990 to airlift the most critical aviation material, the small items, to theater. AVSCOM's concern with the transportation system was discussed with the U.S. Transportation Command (TRANSCOM). Specifically, a meeting between CINC, TRANSCOM, General Johnson and the AVSCOM Commander was held after TRANSCOM had queried AVSCOM on its reasons for using commercial carriers, rather than MAC airlift. That meeting was followed by a working meeting with TRANSCOM's Major General Cross, the AVSCOM Commander and other AVSCOM officials and led to the creation of the Military Airlift Command's (MAC) Desert Express. The Desert

Express was created to be a joint services operation. The mission was supported by a dedicated C-141 which flew a daily flight from the port of embarkation (POE) at Charleston AFB to the ports of debarkation (PODs) of Dhahran and Riyadh, Saudi Arabia. The Army was allocated five pallet positions on each flight which accommodated 15,000 pounds or 2,500 cubic feet of material. The inaugural Desert Express flight was October 20, 1990. Desert Express was an adjustment in Air Force doctrine but much in line with in-transit visibility of high priority cargo. A second Desert Express flight was established with another dedicated C-141 to fly daily from the POE of Charleston AFB to the PODs of Dhahran and King Khalid Military City (KKMC) Saudi Arabia. The daily Army cargo allocation was increased to 28,000 pounds or 5,600 cubic feet. The inaugural flight of this second flight was February 13, 1991. The second Desert Express flight was canceled by Military Airlift Command on March 10, 1991. At this time, the Army allocation and the PODs reverted to that specified for the original Desert Express run. With the advent of Desert Express, AVSCOM finally had a means of getting "war stopper" items to the theater without resorting to commercial carrier. From its first flight on October 20, 1990, through May 21, 1991, over 500,000 pounds of Army aviation items were transported by Desert Express flights to SWA.

LOGISTICS 11.4

Intra-Theater Transportation/Distribution Systems Responsiveness. A large amount of cargo, especially multi-packs for a single corps unit and multi-packs containing material for units in both corps overwhelmed existing capabilities to process and ship forward in a timely manner. Lack of in-transit visibility and a break down between CONUS shippers and Theater receipt activities resulted in more than 5,000 sea/land vans being handled as frustrated cargo with no visibility of van contents. At least one shipment of critical AIMI and other aviation material was not being placed in frustrated cargo areas and ultimately discovered only after intensive search by aviation personnel. The Army must develop an in-transit visibility capability and develop an inter- and intra-theater supply and transportation system

that differentiates between short tons and critical low density, high dollar material.

LOGISTICS 11.5

The 4th (Aviation) Brigade's (1st Armored Division) major challenge at the outset appeared to be the same as that for the Division--the logistical support required for sustained, mid- to high-intensity combat operations. The importance of the personnel entrusted to provide fuel, ammunition, and maintenance cannot be overstated. Because of the distances involved and the tactical scenario envisioned, the brigade required a multi-faceted and flexible support plan. The ammunition hauling capability of a typical Apache battalion had to be enhanced in order to carry more Hellfire missiles, 2.75 inch rockets, and 30mm rounds required. Seventh Corps provided six additional cargo HEMTTs, as well as six more tanker HEMTTs per attack battalion. Even without the personnel augmentation to go with it, this move was instrumental in the success of the future operations of the brigade.

Well in advance of G-day, brigade and battalion XOs, S-4s, and III/V (POL (petroleum, oil, lubricants) and ammunition) platoon leaders, war-gamed the various options available for supporting the brigade's aircraft and vehicles. An ambitious, but incredibly simple concept arose. The brigade would plan for several FARP (forward arming and refueling point) locations throughout the Division's zone of advance. Lt. Colonel Ken Travis' Task Force Phoenix would be on call to provide UH-60 support to sling load 25 500-gallon blivets of JET-A fuel, all day, all night. The 3-1 Attack Helicopter Battalion's (Night Eagle) III/V assets who subdivided into two teams--FARP heavy and FARP light--under the operational control of the battalion XO, Major(P) Jim Shivers. Ultimately, Shivers' teams rolled across the LD (line of departure) with 30,000 gallons of JET-A fuel and two tiers of ammunition. Also included in this organization were the crew chiefs, medical personnel, ADA (air defense artillery) Stinger teams, NBC decontamination teams, and armament technicians whose services might be required.

LOGISTICS 11.6

The following is an excerpt from an interview between Dr. Burton Wright, USAAVNC Staff Historian, and Colonel Tom Green, who served as the XVIIIth Airborne Corps Aviation Officer during Operations DESERT SHIELD and DESERT STORM:

Colonel Green: A real interesting story, not part of mine unfortunately, but interesting. I think we generated a fixed-wing requirement in this thing for logistics and MEDEVAC (medical evacuation). Without question we could have used additional fixed wing. The distances were so long that to fly Hueys, Chinooks, and Black Hawks, even though the later two move very quickly, we were just burning them up with flying time. Ten, eleven and twelve hours, at a crack on one mission was not unusual. What we needed to do, because of the extreme ranges, was to consolidate a facility where we could haul with our C-23s or whatever the Army gets for fixed wing medium sized cargo. Probably five, six seven ton load capability aircraft to haul MEDEVAC and specific items of resupply. The Air Force hauls tons. C-130s. We made a road into a runway right near a log base on Tapline road. We chopped out a hunk of road and we landed C-130s loaded with supplies and fuel, even bulk fuel. That was fine but the Air Force hauled in pallet loads that can hide and obscure specific items you need such as Pilot Night Vision Systems for the Apaches. Super high dollar items, one of a kind, and only 43 line replaceable units for lasers in the whole world. You couldn't have that thing getting lost on a pallet load and we lost a bunch of them. What we needed was something to handle specific, high dollar items that were critical items separately and that's what we should have had the fixed wings for.

LOGISTICS 11.7

The following is an excerpt from an interview between Dr. Burton Wright, USAAVNC Staff Historian, and Colonel Tom Green, who served as the XVIIIth Corps Aviation Officer during Operations DESERT SHIELD and DESERT STORM:

Colonel Green: AVSCOM and Major General Williamson is a hero. He cut red tape. He hammered bureaucrats, both "green suiters" and civilians. Logistics, I mentioned Major General Williamson, the system from the states to the

theater worked well. Inside the theater, distribution was lousy. We were very inefficient.

That inter-theater delivery of specific high value parts is one of the things we've got to look at. Our parts, our engines, our electronic, line-replaceable units are a million dollars a piece or more. The Apache can run you $14-15 million or more. You buy the individual parts, it would probably cost you more. What happens is, the guys coming out of the country from all the depots were getting the stuff to us. They established special things to do that, but first they came in on DAL (a Dutch Express company), like an overnight mail. We hired a service to carry aviation parts to the theater. Then the U.S. Air Force came on line, MAC (Military Airlift Command), with a flight every day. That single C-141 came in with aviation parts every day with parts for us and they actually did up to two flights a day. The supply guys really busted their behinds for us. Now there is a hook in that a lot of the parts and supplies that we were using were not replaceable. They were coming out of the system but they had one or two year lead times in construction so that there was a flat number that were available. What we had intended to do was to strip the whole fleet to support the war if it had to go that way, but it didn't have to. Probably a lesson learned in our construction of specific aircraft is to take a look at special things that are on that aircraft that would take years to produce them. Stuff made of special metals that are hard to come by, stuff of special steel. There is a special kind of hard steel that we use in the Apache so that you can shoot at it and not hurt it. It takes you a year to get the steel and a year to make the part after you get the steel. Those long lead time items I think we have to identify on an aircraft and try to hold them down to the absolute minimum because even if you have all the money in the world and it still takes you two years to make an item its not good to you in a protracted war. In this particular case, the war was even shorter than we thought it would be. So it wasn't a problem but the equipment and the logistics were really superb.

LOGISTICS 11.8

The following is an excerpt from an interview between Dr. Burton Wright, USAAVNC Staff Historian, and Colonel Tom Green, who served as the XVIIIth Airborne Corps Aviation Officer during Operations DESERT SHIELD and DESERT STORM.

Dr. Wright: You mentioned distance. The distance flown in Vietnam flown very small in operational terms. But we are talking some 800-900 miles in some areas of Saudi Arabia.

Colonel Green: The distances were not anything we had worked in my experience of the last 20 years. The distances were much greater. It was also not the same distances in terms of corps and division frontages that we had learned about in school. The distances were much greater. Extended range tanks were in great demand for everything from Apaches to Black Hawks. We were even trying to figure out how to run an extended range tank on 58D's and I think we got it figured out. But everybody was looking for extra gas mileage and we were working hard to get it. Another side of that was the FARP (forward arming and refueling point) system that we have presently is still not satisfactory. To explain the FARP thing would take awhile, but the Forward Area Rearm/Refuel Point is done in a number of ways. The primary way of rearming and refueling is using our HEMTT trucks and tankers. The truck only carries about 1500 gallons of gas. It doesn't carry much fuel. Great cross-country vehicle. I don't think in this desert environment that it got stuck or rolled over. They were mechanically sound and we used them a lot. But it's a truck and it only does 30-45 miles mph on the road. When you are driving a helicopter that does 145 knots, 150-160 miles an hour, it's a pain in the can to dash out, stop and wait until your truck catches up. What you have to do is use your HEMTT truck, your truck tankers and FARPs for the area where you will probably be for a little while, your base camps or whatever, and then carry pumps and fuel bladders out forward to refuel a lot of those tanks. Those are called jump FARPs or aerial FARPs or whatever. And we really need to do a lot of work to get this FARP thing under control. I wouldn't use anything else other than a FARP that could fly at the same speed as my aircraft. If I have to wait for the truck

to catch up, then my mobility differential is gone, so why bother. Now the HEMTTs are nice and I would not want to get rid of them, but I can tell you that they don't carry enough gas. It's too slow of a truck for the kind of warfare we had in this case. We used a lot of bladders. Over and over again units went forward with the bladders with enough fuel to hold out until the truck got there. And that happened over and over again. The truck is beautiful, it pumps 4 aircraft simultaneously, it has plenty of pressure, pumps lots of gas, easy to maintain, so everybody likes it.

Dr. Wright: Have you ever seen blivets? I've seen them back in the 70's where they are essentially big truck tires and tanks tow these blivets along with them in certain situations. You can't fire them, you can't shoot them up, but that's how they did it. If you went back to those blivets you could tow an extra blivet or two and refuel them off of that.

Colonel Green: There is also a trailer for the HEMTT that is made to haul blivets and they didn't have them. For some reason, something has gone awry in the production of that trailer. It's not just for us, but everybody didn't get as many HEMTT trailers as they were supposed to. I think it was a safety thing that made them stop or it might have been a manufacturing defect, I don't know. The FARP, Army aviation needs to really work and upgrade our capability to do that forward rearming refueling business. We did it good enough, good enough to fly 3-4-500 miles but I can tell you that we need to improve our capability to do that. Air-to-air refueling for the CH-47 that are in special operations and some of their Black Hawks, some of that capability is available. How far we want to take that I don't know, but that's something we have to look at. They can refuel off of a C-130 or another CH-47. We also used "fat cows", a CH-47 full of blivets and you run the hose out of the back of the CH-47 and refuel like it was a truck. We also used C-130 bladder birds which landed on our little road and downloaded bulk fuel into a bulk fuel storage area. You could also have the bladder bird land and refuel off of it if you wanted, but we didn't bother to do the retail part, we just did the wholesale with the C-130s hauling bulk. They only haul about 4,000 gallons though and we were

burning about 300-800,000 gallons a day in our Corps. I think, I don't know for sure, but I think we flew more. Our corps, XVIIIth Corps. had a lot of people back in the States. It was a light contingency corps and hooking it up with armored divisions and stuff might not be a good thing. In fact, internally the corps staff, planners, G-4s and logisticians had a hell of a time adapting to the new requirements of track pads and all that kind of thing. What happened actually, on the positive side of that, was that with the Corps, being relatively small in numbers people-wise and almost all hand picked, very well trained, knew the doctrine. It was just a lot faster to get decisions made and the Corps Commander was more likely to let his divisions commanders do what they needed to do to get the job done. It wasn't like big brother is watching. This was a relatively small thing and very, very flexible. That was probably its best part. I could go on and on about logistics. Ninety to ninety-five percent of what we did was logistics and the other five percent was combat. **Since they did all of the logistics right, the war was short.** (author's italics).

LOGISTICS 11.9

The following is an excerpt from an interview between Dr. Burton Wright, USAAVNC Staff Historian, and Colonel Tom Green, who served as the XVIIIth Corps Aviation Officer during Operations DESERT SHIELD and DESERT STORM:

Colonel Green: As the Corps Aviation Officer, we were monitoring aviation availability, resources, and the other stuff that's normally reported in G-4 channels. They left all that to aviators. Everyday at the briefing the guys would brief and G-4 would brief the availability of tanks etc., etc., and then my guy would get up and brief the availability of aviation. He's not a G-4 guy. We're operators. But they left that to the aviators and more and more they were being broken down along branch lines and being isolated. Now the guys who are loosing are the field commanders, the ground commanders are loosing. I talked about this at the infantry conference last week when I went over and spoke. Aviation is too damn important to just be left to aviators. Its the ground commanders ability to

maneuver, pick stuff up, get over things, go fast, haul troops, put fire on targets that belongs as an integrated part of the Army team and we are not using it that way.

LOGISTICS 11.10

The following is an excerpt from an interview between Dr. John Kitchens, Aviation Branch Historian and Colonel Tom Green, who served as the XVIIIth Airborne Corps Aviation Officer during Operations DESERT SHIELD and DESERT STORM.

Dr. John Kitchens: You said for a war of this type, moving distances like this and this fast, that the HEMTT was inadequate? Is the solution for the Army Aviation to provide its own fuel, transport it by air?

COL Green: I think so. The HEMTT was a great vehicle. Mechanically, it worked perfectly, drove over the rocks and survived well. The HTARRS fueling system was great. We loved it. The problem is when you move 3-400 miles a day and that poor guy is driving 12-14-16 hours a day with only 1500 gallons of gas. The HEMTT is not a long haul fueler. It is a local area, best refuel system I have seen, but its a truck. It doesn't work in the third tier of mobility and it can't keep up with us in the nonlinear battlefield. It can't keep up with the M1 tanks. That's the thing you have to be careful of. We all loved the HEMTT. Maintenance availability was superb. Never saw one turned over. <u>The problem is that we built a system that goes 30 miles per hour to refuel an attack system that goes 140</u> (author's underline). That is the delta that I was thinking about. I wasn't criticizing the HEMTT. It was the most widely used and popular system on the battlefield. You will find brigade commanders that liked it. The problem that I had from a divisional level was that I had to move attack battalions, groups and brigades 400 miles a day maybe on this type of thing. An example, 12th Aviation Brigade started its HEMTTs up the road right behind the attack in support of OBJ White in the French and 82nd sector, working nights, and then we move them completely across the Corps. I don't think they saw their HEMTTs again. HEMTTs never closed. On and on and on I saw guys like the 2nd of the 17th Cavalry, the 101st, and their cavalry squadron. They had a Quartermaster Lieutenant taking these little HEMTTs

across the desert to set up a FARP out in the middle of nowhere all by himself. Fuelers, rifles, that sort of thing. I'm talking about unrealistic security, and he didn't have any trouble. He did it fine, got set up right and served his unit great, but boy, oh boy, oh boy. HEMTTs in the attack ain't a great idea!!! They literally had to do that. The 101st went up the road after that gigantic air assault went in. They went in with HEMTTs and HMMers and they did a great job. They got there and all that jazz. Really super human efforts. The Aviation Brigade no longer has a long haul capability 5,000 gallon tankers. They had a lot of trouble getting those 5,000 gallon tankers off the road anyway. They've got a road type tractor pulling them anyway in most cases. It was a good tractor. The Division Corps logisticians had to bulk haul jet fuel and then where they put the bags down on the ground is where you had to go and pick it up. Initially, they drove those bags right up your butt or right on you. The logisticians did a great job, but within hours you were 150 ks away from there. Within hours. And so it would take you 150 ks to 30 ks an hour. That's 5 hours if you don't stop to eat an MRE and go to the bathroom.

LOGISTICS - 11.12

The following is an excerpt from an interview between Dr. Burton Wright, USAAVNC Staff Historian, and Colonel Robert N. Seigle, the XVIIIth Aviation Brigade Commander during Operations DESERT SHIELD and DESERT STORM:

Theater Corps Fuel Plan

Colonel Seigle: "Some years ago we took the corps fueling company or battalion, wherever it was, out of the structure to save spaces. It turned out to be a disastrous plan as we tried to hodge podge things moving student body west from Dhahran to Rafha. We very quickly ran out of assets that units couldn't have their gas tied down to a corps move and at the same time deploy into an area and be ready to conduct combat operations. So, we need a theater or corps aviation fuel management system, plan, unit, something like that, that has responsibility for bladders, trucks, large bags of fuel and what not. It was 1,000

aircraft and I cannot tell you how many JP4 or 5 we consumed in a day, but it was a lot and it was more than the units could individually handle. There was a lot of gas out there provided by the COSCOM, but it was brought into wholesale storage points and didn't have any way of pumping it into aircraft plus you didn't want 1,000 aircraft landing around your wholesale storage point for fear that one of them might fly into it, and then the whole thing goes up and you have burned up all of your gas. But that is a simple thing to fix. We have got to have the units and equipment to do that, and piggy backing right on that are slings, cargo nets and bladders. The only unit that had its full compliment of those items was the 101st Airborne Division Air Assault and that's because they practice with 350 aircraft on a daily basis at Fort Campbell. They pay attention to moving things in an air mobile way. The doctrine calls for the supported unit (unit on the ground) is supposed to have its own straps, nets and bladders and things like that. They just weren't there. Don't know where they were. We could not provide emergency support in many cases because slings, nets and stuff were not available, and those things were available in such large quantities in Vietnam that we probably threw away thousands of them. And so it's a matter of somebody getting to the point where they are made and getting enough manufactured and then getting them in the warehouse so that we know that they are war deployable supplies to take with us. And that should just about do it.

LOGISTICS - 11.13

The following is an excerpt from an interview between Dr. Burton Wright, USAAVNC Staff Historian, and Colonel Robert Seigle, the XVIIIth Aviation Brigade Commander during Operations DESERT SHIELD and DESERT STORM:

COL Seigle: And the last topic is the fixed-wing detachment utility. Really the echelons above corps aviation brigade that never materialized in theater until it was almost to late to give them effective command and control of an area of responsibility that was crucial in this particular war. The echelons above corps (EAC), in the force structure of the Army Aviation business today, are in the reserve component forces. They are U.S. Army Reserve

forces. Because of the strange nature in which we procure stuff and get it to the reserves and what not, there was not an EAC unit that had any equipment that would have added anything other than trouble to the theater. The only EAC unit that I have talked to was in Chicago somewhere and they are flying U-8s. That is the kind of equipment that is 1940's and late '50s technology that just wouldn't have held up. Nobody in their right mind would have flown a U-8 in Saudi Arabia if the thing could get off of the ground in the heat, but you would die of heat stroke on the aircraft just trying to get from one place to the other. So, because they didn't have modernized equipment, because there was not an EAC structure that you could put on the ground, they had to ad hoc this thing, and they brought in the brigade commander from the 2d Armored Division where the aviation brigade was going to be a quick silver asset return to the Army and the second Army division was in the process of deactivating, and so his attack battalion, Apache battalion, got added to the 1st Cavalry Division before it came to Operation DESERT SHIELD and then some elements of his brigade structure just got sent over to Saudi Arabia to begin to pull pieces from all over the Army together into a command and control structure that eventually ended up with about, I think somewhere in the neighborhood of about 10-15 C-12 aircraft from various commands around the Army and around the world. They had at least 15 Black Hawks, I think mostly brought in from a reserve unit in Missouri, and then they had a unit of, I think it was 16 Chinooks, 8 of which had come from the National Guard or reserve and another 8 from units in the IIIrd Corps left back in post, camp and station. So, it was a mixture of everything that you could possibly mix, and, on an ad hoc basis, it was just fortunate we didn't need all of their support at the time that it should have been available because there just wasn't an organization there. So, we needed the fixed-wing airplanes. We could use the C-12s. There were tremendous distances to be covered. We needed the CH-47s for support movement around the theater to be able to get additional support to VIIth Corps, and we needed the Black Hawks from the ARCENT and theater level command and control, which they never had until they jerry-rigged these things when they first got them in country, and that

is a system with a gigantic hole out there. It's a hole that is called we need to have more resources to fill that and we either have to do in an active duty brigade and build up an echelons above corps brigade if we expect to fill that role or we just have got to tag one the next time something like this happens from a unit that is not going to be deployed."

LOGISTICS - 11.14

The following is an excerpt from an interview between Dr. John Kitchens, Aviation Branch Historian and Colonel Robert Seigle, the XVIIIth Aviation Brigade Commander during Operations DESERT SHIELD and DESERT STORM:

Dr. Kitchens: The aviation logistics support before the creation of Desert Express, was it DHL or DAL, what?

Colonel Seigle: DHL. I don't know what the letters stand for.

Dr. Kitchens: It is a private company?

Colonel Seigle: Oh, it's just like Federal Express.

Dr. Kitchens: Dutch?

Colonel Seigle: Don't know. All I know is that it operated into Dhahran Airport. They had, just like you see these little Federal Express trucks running around delivering things. They had trucks just like that in Dhahran. We couldn't go onto the civilian side of the airfield so, they would truck it around to us, and it was I Company of the 159th Aviation Regiment, the AVIM (aviation intermediate maintenance) unit in the 1st COSCOM (Corps Support Command) that set up the receiving point that became the address for all DHL shipments because they were already set up at Dhahran Airport and they system worked like clockwork. Just like when you would be at home and ordering a part for something that you needed and ordering it express mail, the express mail system into Saudi Arabia was DHL.

Dr. Kitchens: So after the Desert Express came into operation, you discontinued using the DHL or did you continue to use it?

Colonel Seigle: No. Part of the agreement that the TRANSCOM commander got from General Williamson and General Irby was if I start Desert Express will you stop using DHL?

And Williamson's answer was "Yes, we will as long as it's effective." And it was.

LOGISTICS - 11.15

The following is an excerpt from an interview between Dr. John Kitchens/Dr. Burton Wright of the USAAVNC Historian's Office, and Colonel Robert Seigle, the XVIIIth Aviation Brigade Commander during Operations DESERT SHIELD and DESERT STORM:

Colonel Seigle: Try to eliminate that eight months of no training at all that Ham Howze had as a G-3 of the 1st Armored Division [World War II] when he fought Kasserine Pass and got mauled, I am trying to think of who I was reporting this to the other day, I was sort of dumbfounded when you talk about logistics, there were some simple things that I thought XVIIIth Airborne Corps (ABC) put into effect that was a give and take between the XVIIIth Airborne Corps when we were the only guys on the ground and DA. [Colonel] Dave Carothers and I used to talk about at least once a week and he would tell me that we were running the risk of eating through the entire stockage of aviation parts in America based on the flying hour program that we had when we first hit the ground because nobody knew when the war was going to come. Nobody knew that terrain. Nobody knew flying and training in that kind of environment so we were racing to train rapidly for these hordes expected to come out of Kuwait and roll down south on this mega-lane highway and we were flying at the time, I think I can remember some of the figures, our UH-60 fleet which is normally controlled at about 12 to 15 hours a month peace time was somewhere where in almost the thirty hour a month flying hour routine and building more rapidly. That is during the building phase. That is when you started out with small numbers of units and kept building to larger numbers of units. So, we were eating parts faster than they could be brought off of the shelf and the procurement lead time was such that we would never see replacements for some of those things. So, Dave Carothers and I we just came up with some numbers that we thought the parts systems could live with and I put those numbers out through Lt. General [Gary] Luck to the corps and said you will manage your fleet so as to be below these

numbers in flying hours for each time period and we controlled them so that we could watch them by unit, by division and then the maintenance, you know, as we were seating and talking around how to share these parts and set up the processing for when parts came into kingdom, the maintenance started getting bad in some units, it was great in others, but bad in some and so Lt. General Luck looked at that and he said as I told him about, you know, if we don't slow down our flying hour tempo, we are going to eat through the parts and we will be well trained for a war we can't help with and he understood that intuitively. He said I will tell you what we are going to do. He watched us for about a month and then he said this is how we are going to fly in the XVIIIth Airborne Corps. We are going to fly until a unit hits 75% availability on its aircraft and when it goes below 75% of its availability, it stops flying for 4 to 5 days and it fixes its helicopters because I have watched these guys train out here and when they have got 100% of their fleet available and they are doing their normal training, they are only using it a few hours a day but if they go down to less than 3/4 of their fleet available they will still try to do 100% of the training which means the hours per air frame will go up dramatically and that's when things start breaking. He said and he just said that this is an intuitive feel. That is I have just watched it over the years. Seventy-five percent is the line to which we will train. We had some trouble getting that established with the units but we briefed in the corps briefing every single night the aircraft availability for that day for that division by aircraft type for each of the divisions, actually for each of the aviation brigades because we had two separate brigades in the regiment in the corps and when they got down below 75% the next slide that would come up would be the hours flown by unit by aircraft type and Luck would check and say go back to that one where is the one that was below 75%? Did they have any flying hours? Ok. Good. They are following the guidance. He would be on the phone to that division commander and say pay attention baby or I will put you down permanently. Alright. Now. I thought that was a masterful stroke. We had to have some measure that said to the force in the field guys you

are capable of flying through all of the parts that exist anywhere in the world on all of our helicopters so you have got to figure out, you've got to train more smartly and use your time more wisely and if you don't I am going to have to slow you down artificially and while that was working I take that and I go all of the way to the end when I did the after action review with the aviation brigade commanders after the fact, when the war is over and we are still sitting in Rafha and I bring them all in there while it is still fresh in their minds one of the first comments that I get back from a couple of the brigades was we really left for this war thinking that we were almost untrained because of this artificial 75% rule. We literally had to keep helicopters on the ground in order to make the 75% on some days and that meant that guys weren't trained and our guys went out there thinking that they had been hung out on the ragged edge without the training opportunity because of this 75% rule. Now what does that tell me? That tells me that we didn't do a very good job of explaining why that 75% rule was necessary by the time that it got down to the units that had to employ it. And what it really tells me is that I never got that sensing from the individual pilots but it was the individual pilots that were bringing it back up was that they didn't feel comfortable when they didn't get to fly a pretty fair amount particularly the closer that it got to them knowing that they were going to war. Now, they never did know the actual day that they were going to war but they could see the handwriting on the wall, you know, for five or six months we were or five months we were in Dhahran and then all of sudden it is student body left and we all find ourselves along one little road way just south of the Iraqi border sitting in northern Saudi Arabia. I mean these ain't dumb guys we raised up in the Army. So, they know that something is up. They know the air campaign is on and we are at war they just don't know when they are going. So, I mean their training antenna go way up and so that is what they were responding to. Let me tell you if we had an Apache combat mission simulator there we could have solved that problem, drug that baby right along behind us, plugged it into some 60 kw generators, fired it up just like we did the EETF (Electronic Equipment Test Facility) the thing that

checks black boxes you pull out of Apaches to see if they are a go or a no go and send them back to the depot for repair or not. We would have had that thing right out there with us and those guys would have never missed a minute's training.

LOGISTICS - 11.16

The following is an excerpt from an interview between Dr. Burton Wright, USAAVNC Staff Historian, and Colonel Robert N. Seigle, the 18th Aviation Brigade Commander during Operations DESERT SHIELD and DESERT STORM:

Dr. Wright: Could you describe for me sir, your maintenance support and logistics system and were you satisfied with it?

Colonel Seigle: I could probably describe it for you if you got four or five of those cassettes and put them into that machine. This is probably the most talked about, most misunderstood and the most vilified portion of Operations Desert SHIELD and DESERT STORM. Now, I don't care who you are or what you are doing, you go back to our experience in Grenada, I can't even remember, but I bet that we didn't get a single part in Grenada that was brought down there for our aircraft during the two weeks that Grenada was ongoing. I know for a fact that not one aviation part ever reached Panama during Operation JUST CAUSE and that wasn't all to do with aviation or log system. That had to do with some national command authority decisions to put humanitarian aid up front and just fly with what you have and do the best that you can in Panama. But the fact of the matter was that we never got a single part. Now, and those were relatively close, within a four hour-C-141 flight from the United States you are either in Grenada or Panama. When you go twenty hours away and the steaming time for vessels is anywhere from fifteen to thirty days and that is dependent on weather and some other variables, I don't care who you are or what you are taking if you don't have a log problem you are not paying attention. So, you go into something of this magnitude understanding that there is going to be a problem of the numbers of thins that you can move versus the number of things that you have got to move them on. That was no different in Saudi Arabia than it would have been

moving anywhere else. Now, you know the country mobilized its civil reserve air fleet called a Civil Reserve Air Fleet (CRAF), we mobilized the whatever we call the same thing for the ships and some of those ships turned out to be a little rickety. Now, not that anyone who has ever flown over the James River or the Hudson River had seen those fleets in moth balls. What do you expect? I mean some of them I am sure had to be practically blown apart from rusting together. They had been sitting there that long. But to say that there was a problem, certainly there was a problem. To say that it wouldn't have been expected would have been in my estimation would have been sheer stupidity on somebody's part to expect that there would not have been a problem. Now, you take the distance over which you have to move, the number of things that you have to move, the number of boats and planes you have to move them in, then you say there has got to be a reception program on the other end and so you look at Saudi Arabia and you say well we are going into an area where there is no infrastructure. That is not entirely true. There was for the first units that got there out of the corps, if you could talk to Major General Ed Sculls who was the corps [XVIIIth Airborne] chief of staff at the time he deployed, he was the first, if I am not mistaken, he was the first general officer on the ground from XVIIIth Airborne Corps in Saudi Arabia on the 8th or 9th of August and they couldn't get any food. I mean they ended up eating on a contract basis Hardee's hamburgers, three meals a day, seven days a week for about 2 1/2 weeks before they could get a mess hall set up in the place that they were staying which was an old abandoned air defense artillery camp probably a kilometer and a half outside the wire of the Dhahran Air Base which sits right in Dhahran, Saudi Arabia. The johns would overflow because in Saudi Arabia they do not use toilet paper and so if you are Americans and using toilet paper, you are clogging up everything. there were just some interesting things, but this idea of not being able to eat was the most intriguing to me. You have got Hardee's, you had Pizza Hut, you had other food firms there and you had all kinds of civilian contractors that were working in Saudi Arabia and they were working all over the country and they were eating and they

were not eating Saudi stuff plus you had most of the American compounds of Saudi/ARAMCO right there at Dhahran, right outside the air base. I mean you couldn't tell from the air almost, you couldn't tell where Saudi/ARAMCO started and stopped compared to Dhahran Air Base. So, it was not like they weren't feeding large numbers of people there already. Now, did we put a lot of pressure on that system? Yes. It just seemed unbelievable to me that the best we could do was to come up with a contract for Hardee's hamburgers for about a two week period to get these guys by and everybody ended up sick with dysentery or with something from these greasy hamburgers and what not three meals a day not to mention the fact that they just couldn't stomach them after a while, but now you take that aside, local contracting problems or probably not getting to the right guy that owned the food warehouse that could get the right kinds of food in there for you. You look at what they had in Saudi Arabia that just turned out to be better than pure coincidence. You had Dhahran Air Base which with its two 1200-foot runways and duplicated some 30 kilometers north of that, King Fahd International Airport with an additional set of two 1200-foot runways, all within a very small space you could not have a place that was more ideally suited to land any number of airplanes that you needed to land to begin to do an air flow into the Kingdom of Saudi Arabia. I mean you had plenty of runway space to get people on the ground and off-loading space to get them off and sent out of the area. But since you know that you don't have a sizable enough C-141 and C-5 fleet to be able to take that kind of time in the air and so you start looking for port facilities. The port facility at Dammam, Saudi Arabia was a minimum of ten times the capacity that Saudi Arabia needed for the population that has ever occupied their Eastern province. When you look at that you think my goodness, why would they have built a port ten times the size that they needed?

So, anyway we had, anybody that doesn't think you are going to be deployed over a long distance and have log problems just doesn't know what they are up against and the real problem in a major war effort has always been the guy that can get there with the most and sustain it is going to win. Superior tactics and things like that, have some

effect on the battlefield, but mostly it is power against power. And power is generated by the numbers of things, kinds of weapons systems that you can bring to bear on your adversary and so those that spend their time making certain that their poser is patched up, that if it doesn't work you've got a part that can fix it, are the guys that are going to win. So, we went into this thing with the expectation that we were going to do what was necessary to bring parts on line. Now, having watched the Army system for 20 some odd years provide parts as it does in peace time the Army system will tell you that it works at the 90-95% demand/accommodation satisfaction all of the time and that is fantastic from a supply standpoint. The supply system would tell you 90-95% of the time we get these things and get them to you in the time frame that we guarantee. That is fine unless you find yourself consistently in the 5-10% that is not there. Aviation has found itself over the years because of the speed with which we have to be able to work consistently in the 5-10% parts machine that cannot be responded to quickly. Now there are several major reasons for that. One is the Army never bought the numbers of spare parts it needed to fund all of its aircraft through combat levels. So, you had this thin veneer of parts as a back drop to I don't know how many different kinds of aircraft and it is enough to drive any supply or distribution guy nuts. Consequently, you have got to do something unusual. If you only have a few parts then you have got to make certain that the parts you have are where something is going to break or you will break the system and so what we did when we first got into Saudi Arabia is we set down with each of the brigade commanders that came into Kingdom and we had ourselves a little meeting. It started out with [Colonel] Gene Cole and I and our maintenance officers and XOs sitting on the ammunition boxes at Dhahran Air Base and I can remember it like it was yesterday right outside of the hangar about half of Gene's guys were sleeping in and we sat there each morning and divided up the parts as they came in. We actually, we knew what parts were coming across through DHL because AVSCOM (U.S. Army Aviation System Command) had set up a pay-as-you-go-special parts Federal Express and DHL was just the Saudi equivalent of Federal Express and we set

up a system to receipt for those. (In actuality DHL is either Deutsche or Dutch in origin). We set up a system to receipt for every aviation part that came into country would come through initially I Company, 159th Aviation Regiment which was the corps AVIM unit at Fort Bragg and that was the corps AVIM non-divisional AVIM unit. It was set up to support both the XVIIIth Airborne Corps and the 82d Aviation Brigade. And those guys were there early and so they had the only supply/distribution system on the airfield and they just became the address that we used for everything special. Now when you back that up, you have got to understand that Major General Don Williamson, Brigadier General T. Irby both had experience in satisfying the requirements of Operation JUST CAUSE when they were frustrated and couldn't get parts delivered down to Panama. Major General Williamson's ploy at the time was that he needed a dedicated airplane just for aviation parts because the Army system was good at delivering tons, but it was not very good at delivering things and individual things are what kept aviation units alive. They had to have the right part at the right time in order to keep their systems alive. Consequently, the DHL was a matter that he used, they started putting a blue metallic, square sticker that had the aviation emblem in silver in it so that nay aviation part that came into Dhahran on a pallet could be immediately identified from somebody walking around the pallet yard they would see an aviation part with that bright blue sticker on it. And some of these grew on into a month they decided to go even further and we started directly calling in to AVSCOM on a commercial line those aircraft that were on the ground and specifically what they were on the ground for and then AVSCOM built a second little sticker, it was a bright orange lettering that said AOG and those came through on priority air and were easily identifiable in the pallet yard. So that each day that we were meeting we were deciding what parts would go where depending on whose airplanes were down, regardless of who they had been ordered for. Within weeks of doing that day by day we set up a meeting at the Dhahran Air Base auditorium. We started bringing in all of the civilian contractors, anybody who wanted to come was invited because it was about a five hundred-seat auditorium, and

about three times a week, we were meeting Monday, Wednesday and Friday then, we had all of the maintenance officers from all of the maintenance units and the brigade commanders when they could make it and the value of that particular meeting was that any maintenance trouble or supply trouble that was brought up could usually be solved by somebody in that room. They had the information. In very many cases it worked out to be the point where a particular brigade had a problem with something like an auxiliary power unit (APU) for a Black Hawk or something like that and we would find out that another brigade had one or two extra and we would get those things distributed that day. Eventually that meeting boiled down to once a week where all we had to do was come together Friday and every maintenance officer in the XVIIIth Airborne Corps knew if you wanted to get help, you came to that Friday meeting because maybe the corps maintenance guys couldn't help you directly, but one of your buddies in that meeting would often come up with a solution and that is again now at a macro level across the corps. We were distributing parts on a weekly basis based on what we knew of the, what units were going to war first, what units were most heavily committed, what units had to have the aircraft up first and by type and kind and then we would redistribute the parts at that time. That meeting kept going all the way to the end of the war until we actually deployed out of Dhahran. The, when we moved up on the Tapline Road, the 8/158th AVIM battalion that was subordinate to corps, that came to us out of Europe, we used to hold that corps level meeting in their maintenance operations tenet on Tapline Road and we kept it every Friday morning as per normal and even though combat operations and even though some of the units found it a lot more difficult to be able to get there it still paid off handsomely as to who had the biggest problem and how we could solve the problem at the time. We fostered from that meeting a theater-level meeting that [Colonel] Rich Roy ran that we held at KKMC so that I knew what was going on and how we were distributing parts in the XVIIIth Airborne Corps and then we would take that information and we would share that with the entire theater in VIIth Corps at a meeting every Thursday at KKMC and as a result of that Thursday meeting that the XVIIIth having

managed to do a lot of unusual things to get parts delivered to them was able to share 20 S&P (stake and platform) loads of aviation peculiar parts with VIIth Corps just prior to the war kicking off. I think there is some measure of success that we ought to be able to report in that aircraft in the XVIIIth Airborne Corps for the period of time that they were in Saudi Arabia and Iraq were combat ready 90% of the time or greater because of those unusual systems that we established and even when we sent all of those parts down to VIIth Corps we still maintained that over 90% capability. You need to look at that in terms of what kind of extra effort was put into doing that, the fact that the Army system has only purchased, the parts are only purchased to maintain the fleet at 75% and yet we were able to manage 90% availability across the board when most everybody said that it couldn't be done. You look at the aviation systems, every one of the float aircraft that was brought into Kingdom in the XVIIIth Airborne Corps we pushed down to a unit. We did not keep those floats aggregated in Corps and just issued them when someone suffered a loss or a long down-time damage. We issued the floats right up front and didn't keep any of the floats in the Corps stock and so the units were flying those additional aircraft and each one of those units for the type of aircraft that we had one additional aircraft and even with that we were able to keep the maintenance stats up and you contrast that with the, I want to say that the number is 17 M1 [Abrams] in the float distribution of VIIth Corps that General Walt Yates told the story over in VIIth Corps after action review in Graffenwoehr in August of this year. He said that before crossing the line of departure, about four days before crossing the line of departure, VIIth Corps took those M1A1 tanks and turned them into hulks in order to use the parts to bring up the rest of their fleet. That was not necessary to do with any aircraft in XVIIIth Airborne Corps and most of that had to do with the fact that we had all of those parts and all of those people dedicated to finding aircraft parts. Now there is another measure of the maintenance system that cannot go unrecognized and that is when you look at parts distribution and how things ought to be done, you look at a requisition to be submitted should cause a part to

be working its way to your unit and it has got to be done accurately. We had a young captain, Captain (P) Hope Jones, who we got by virtue of being pulled from an ROTC assignment somewhere in Missouri. She came through Fort Hood, Texas for processing and over to XVIIIth Airborne Corps along with the elements of the 1st Cavalry Division that were originally attached to XVIIIth Airborne Corps, and she was part of the MMC, the 4th MMC (Maintenance Management Center) in the COSCOM (Corps Support Command). The 4th Material Management Center (MMC) out of Fort Hood was not an automated material management center. The 2nd MMC which was organic to the 1st COSCOM at Fort Bragg was automated, but it didn't have all of its automated systems and enough phone lines to make its automation work until late November 1990 so when Hope Jones got there she was doing all of her aviation parts tracking on a stubby-pencil worksheet and she had about nine enlisted soldiers that worked with her and their jobs were to keep track of aviation parts in a stubby-pencil-drill exercise. When we started working the special management of DHL turning into Desert Express (DE) because Generals Williamson and Irby were told by the, I want to say TRANSCOM commander, an Air Force four star, said, "Look, if I give you a dedicated aircraft every single day, 141 from Charleston to Dhahran, air-to-air refueling so that it doesn't have to stop anywhere and experience a delay, will you stop using DHL? "Yes, we will." DE was born and aviation parts started coming across DE. Unfortunately, when DE was first initiated, it was such that a general officer had to sign a requisition to put it on DE. Within about two weeks time that was overcome and it got to where anyone could sing a DE requisition and knew, I have forgotten what the code was, 9BU or 9AU was the code that we used for all of Operation DESERT SHIELD and DE took on a new project code of 9BU or something like that. Whatever the code was it very quickly fell out of the general officer-only realm and it became specific to anybody who submitted a 9BU requisition got it filled through DE and then we experienced the backlog on DE. Well Hope Jones realized what was happening in this and she realized for us to have any real sensibility about aircraft on ground reports and to get special commodities sent to directly from AVSCOM and

Dhahran and specifically to the XVIIIth Airborne Corps we needed a system that was absolutely fail-safe on number one, aircraft on the ground; and number two, were the parts on the way?; and number three did we know where they were and could we track them into the unit where they needed them? So, without a whole lot of help from outside the system, no commercial phone line ever from the time she was in Saudi Arabia all the way from the time we were deployed on Tapline Road and into Iraq, she operated off of the Tactical Telephone System (TTS) and she divided up those nine enlisted soldiers and herself and they got on the phone twenty-four hours a day and they called down to units and they verified from units that they had certain aircraft on the ground and that they needed the following kinds of parts and that eighty column format, she would then take that requisition card and the 80-column format and she would call into AVSCOM to the EOC (Emergency Operations Center) and she would read over the phone every single night the Hope Jones AOG report to AVSCOM and she would do several things. She would update their data bank, she would tell them what parts that she had received so that they could strike them from their AOG list and she would tell them what parts we had borrowed internally so as not to have to ship anything specially if we had already found a way to solve the problem from either an individual contract with Saudi helicopters or something like that and then she would pass the new requisitions and every single night the next day when Williamson came to work they started every single day at AVSCOM with an AOG Jones report and they would go down the list and those things that they had not been able to cut a material release order that night, during the night then Williamson would run to ground so within a twenty-four hour period every part was on its way towards Saudi Arabia. AVSCOM even designed a special program where they had National Guard fixed-wing aircraft flying around various depots picking that stuff up and delivering it to Charleston so that it could be on the next days flight. Now Hope Jones, it is just impossible to describe the intensity and the level of effort that she put into this thing because a lesser person would have been able to slide back and say, "That is not my job to have to verify all of this

information." It should not have to be done that way. The system should be set up so that is automatically verifiable out at the units. It ought to come into the COSCOM, they report it forward, the various depots get the stuff and they ship it over here and it ought to all work according to the design of the program. It just didn't work. Without Hope Jones and her nine kids on those telephones verifying with units that they still had these airplanes down, then taking that information and calling it to AVSCOM to make sure they purified the AVSCOM list and kept the numbers of AOG parts down to a manageable number and then when they had time on the phones and they did this almost every day, calling into the logistics information system, the lift file in California, they were able to verify whether the requisitions got through and whether they had a good requisition or not and then she also got about six to eight people out of the various MMCs at COSCOM that she put on the ground in Dhahran as parts chasers. They would walk the pallet yard every single day in Dhahran and look for those blue and orange (AOG) stickers on any parts and they would have a pallet, if they had just one part on a pallet, they would have it pulled over to the break-bulk yard and they would break that pallet apart, they pulled that aviation part out of there and they would get it on its way to KKMC for further delivery on to XVIIIth Airborne Corps at Log Base Charley. And so, she ended up having to put about six people in Dhahran and an additional four or five people in KKMC and of course she ran the distribution point at Log Base Charley for the aviation parts, they all came into there at the 1st COSCOM and she would distributed them, but she knew because of having her people on the ground in Dhahran and then KKMC where the parts were nearly all of the time and so she knew what was coming in and what was going to be allocated to here and then she was the one who decided how we would break down the parts after that and move them to a unit. Let's say that the Apaches in the 101st had ordered a lot of APUs for their Apaches, but the guys in the 24th were doing all of the fighting at the time and had two Apaches down for APUs, we would take the APUs that came in for the 101st and divert them to the 24th. But anybody would do that. It didn't take any rocket scientist to

figure that one out. But the fact of the matter was you had to have a system set up to do because it wouldn't happen automatically. The system, the supply system, to code it that way, just wasn't working.

LOGISTICS - 11.17

The following is an 11th Aviation Brigade interview with CW2 Robert McNichols, a maintenance quality control technical supply officer:

Question: What was the most difficult task to accomplish during the war?

CW2 McNichols: As the technical supply officer, the hardest task I had to accomplish was to locate class EIGHTS repair parts. The logistics system for class EIGHTS air did not function in Saudi Arabia. Even though there seemed to be a lot of "command emphasis" on this area. The only way the system worked was the "old boy network" in which units traded needed aircraft parts among themselves. This involved a lot of man hours and in some cases aircraft hours were wasted to accomplish the mission. The Army needs to develop a system comparable to the one the Marines and Navy utilize where they have prepositions and pre-arranged support packages which are full up, not used and start with a high zero balance rate.

Question: Was your unit trained to do this job?

CW2 McNichols: Yes, the unit responded excellently to the mission and even the environment in which we were placed. Each soldier knew his job and when called upon to perform under pressure did an excellent job.

Question: What additional training would you have done?

CW2 McNichols: I feel we need to train more in different environments: the heat could have become a problem if we had stayed longer. We have very little desert training.

Question: How did the desert environment effect your equipment? Personnel?

CW2 McNichols: For the most part our equipment held up very well in the desert environment. We had minor problems with blade erosion and engine blade erosion. Fixes for blades were quickly developed. The main rotor hubs on the

UH-1H helicopters with the oil hubs performed poorly due to the sand being forced under the grip seals. When the oil hubs were replaced by the new grease hubs, the problem was rectified. In the area of tech supply the Zenith computer used for the EIGHTS system was a total waste. It was not made to work in this type of environment and quickly became useless. It was designed as a desk-top, indoor, controlled-climate computer, not a portable. It responded as such by the drives jamming and the system dumping on numerous occasions.

LOGISTICS 11.17

The following is an excerpt from an interview between Major Kevin Smith and officers assigned to the 2-229th:

Smith: Where did you have to go to get it? Somewhere in COSCOM?

Answer: I had my feelers out and I had sources. For instance, we had over 1200 Hellfire missiles in our battalion alone.

Smith: Did you come over there with those or did you requisition them after you got into company?

Answer: We were able to requisition those and for instance, the 1-101st, had I believe under 800. We were often limited by our carrying capacity but we revised a few elements that would accommodate us.

Smith: What are the "HEMTTS from hell"?

Answer: They are 2-story busses, 3-story busses, stacked with Hellfire missiles.

Smith: These were like civilian busses?

Answer: No, they were HEMTTS that were stacked 3 or 4 high or 5 on some.

Smith: Five Hellfire boxes high?

Answer: Yes, and then you would put external tanks with the Apaches. Strap those on top, too, sometimes two high.

Smith: So the huge truck loaded up...

Answer: The HEMTT was almost as tall as it was long.

Smith: What? Tall as it was long?

Answer: Yes. To see these things move through the desert, can you imagine if you were an Iraqi or a spy? Looked like a SCUD missile. A big launching-type thing.

Anybody who saw that moving through the desert would be scared to death of that thing.

Smith: But they were good. They never tipped one over?

Answer: Well, we had a few incidents. One of our HEMTTs got shot with a machine gun in our own cross-fire operation. We thought we were getting shot at.

Smith: Oh, really? This is good.

Answer: I got most of my support--I'd go directly to theater. I knew where all theater stocks were.

Smith: So we're not even talking COSCOM. You are talking ARCENT.

Answer: You are right--I'm talking ARCENT.

Smith: Did you take a helicopter with you?

Answer: No. I'd drive my trucks sometimes a hundred miles. I'd turn them around. I'd down move my cargo HEMTTs and go into the theater ammunition reserves.

Smith: Paperwork?

Answer: No. Same thing. We'd be running low on rations, MREs, water. Guys would wake up the next day and there would be three or four truckloads of MREs.

Smith: Could you guys feel an impact to this, what he was doing?

Answer: Yes. He could get his hands on all the fuel we needed. So for us, it was like ...

Smith: Did he kind of branch out of other things like sundrie packs and goodies?

Answer: That was part of it but that came through the S-4. I think the whole battalion ate better than anybody. The S-4 and I would get in my 58 and we would fly to the entire corps sector and the other corps sector looking for anything that was available and land and trade. We had As and Bs and such but I think the other people were just eating MREs. The 101st was eating strictly MREs. We were on As and Bs. We never had a problem with food at all. We were always supplied. If we started running low, we'd look up and say, hey, we have no food. The next morning we'd wake up and have food. At one time we went red on water. That was you weren't allowed to take showers. It was strictly for drinking. We were that way for one day. The next day we went to the mess hall there was a semi-truck

load of water. We had all the water we needed right then. We went one day red and the next day we woke up and had all the water that we could ever want.

Smith: Did we? Was it like a big tanker truck or a cargo truck?

Answer: It was a cargo truck with lots of water on it. Lots of water. In addition to 2915 and 3915's carrying water.

Smith: I use to be a support platoon leader and I find it an amazing accomplishment for a support platoon.

Answer: We found the 58's for trade--make acquisitions, etc.

Smith: Trade helicopter rides for goodies.

Answer: You would be surprised.

Smith: Hey, helicopter rides would buy a lot of stuff.

Answer: I tell you what, we did some good trading with the French. They had good stock also. Our biggest nightmare was pushing it forward with us but we didn't seem to have a problem. But Aviation did get political and we had a bit of a shortage with rockets, MPSM and 30mm and I was finding out that we were being told one thing through Brigade Corps yet the golden boys, the 1st Battalion, was getting all this.....And, so we would go out and sample their stocks, balance things up. They tried to do the same thing to us as far as Hellfires were concerned but they just weren't able to make this transaction. We were decisively engaged.

Smith: Paper work. Yeah, I understand.

Answer: Navigation did good for us.

Smith: You go tell Major Brown we'll wrestle the best two out of three falls when I quit talking to these guys. Real warriors here, I need to get their story.

Answer: They had GPS in Iraq and I had a compass.

Smith: Now Colonel Bryan said when you went from FOB Cobra to FOB Viper that he had given both his GPS to you guys.

Answer: He gave me one and there was through Bob Porter and there was four minutes left on it. I had never operated a GPS in my life so he walks up to me and says here is how it works. I took my brief. We executed actually FOB is the perimeter and 101st is in there and we were jumping. Let me

back out. We had to jump forward that night to establish the FOB and spent the night. The next day we had to jump forward to Euphrates and establish a FARP up there--that's when I got the GPS with less than 4 minutes battery time on it. So I took a HEMTT convoy--two cargos and four tankers and it was in the middle of that smog the second day and I went all the way up north with my guys with a compass and we put a FARP down. When nightfall came, I got the orders to fall back to the division line. So we executed a passage of lines at night uncoordinated and we were forward of the division. The only thing I got for armor is an HQ4 that I am carrying and an M16.

Smith: HEMTTs in the attack? What is this?

Answer: Well the smog was so bad that the aircraft had gone up there and landed and that's when guys had problems with the APUs and stuff like that. Right from the FARP bed. It had gotten dark now and they all fall back and I'm driving my HEMTTs back. We've all been briefed that these bad guys are coming south. Here we are coming into the perimeter of the 101st--smog, I had a compass and I don't really know where I am going in this time and distance. Probably 50 miles--came home right on point. The next day Chinooks and came and took my jump team to FOB Viper and then ground convoys. I'd be flying in a Chinook and the compressor was stalling all the way. In addition to that, we got involved in pathfinder operations. That's something Aviation needs to have. They can affect search and rescue and also they can place FARPs and also ground navigators.

Smith: You got involved with a Pathfinder at FOB Viper when you came in with your FARP.

Answer: No, we were the pathfinders.

Smith: You were the pathfinder team.

Answer: As a matter of fact, on G-Day operations, myself and another lieutenant were the first guys in the Corps on the ground. They put us in what was the proposed FOB Cobra location. We were an hour early and we run our artillery attack with Iraqis. Got extracted about 45 minutes later by...

Smith: This is before the division went into FOB Cobra? How did that happen? Timing was bad?

Answer: Everything got pushed back, first of all two hours because of weather and we never got the word on the ship I was going in on. We got put in and got extracted 45 minutes later. Then FOB Cobra was shifted from where it was originally supposed to be 10-12 miles to the southeast. It was pretty nasty.

Smith: So you and another guy air assaulted into the middle of nowhere except for Iraqis.

Answer: That's right. We were under artillery attack from our guys and CAS and 64s and Cobras and whatever else. I remember looking at Iraqis turning around looking at us. We were both under attack--you guys can't be Americans, you guys are shooting on us.

Smith: You were in visual range of Iraqi soldiers on the ground and you were the only Americans on the ground?

Answer: We were the only two on the ground. I had an AT4 he had ....I had 5 MREs and a set of BDUs and a gas can, canister filter and the rest was 556 ...weighing 90 lbs. It was something else. So we got extracted out of there by Dave Parker--General Parker's son. He put us in there and he got all the way back to where things were going on and figured out that he put us in an hour ahead of schedule and put us in the wrong place because he could hear the artillery calls on the grid locations and said, "I put them in there in the wrong place." And flew back in and pulled us out. I'm glad he did.

Smith: I bet you are.

Answer: We had to go back and refuel and go back into the proposed FOB Cobra on time with other good guys there with their Chinooks. About that time the pathfinders were arriving.

Smith: How does a support platoon get himself into that?

Answer: He does it to himself. Kind of like with the bunker deal they were talking about. These guys were shooting up this complex and the Iraqis are giving up and there were such a multitude of those guys down there that we had to corral them somehow. And we had a search and rescue team on the Black Hawks, which consisted of two to three men. On that particular day I was on the team and they sent for the Chinooks and the crunchies [infantry]. The

crunchies come back and after we had already herded these guys up, they checked them again and put them on the ship. I got a two man team and myself and what we did was go into the bunkers and these guys would surround us like cowboys and Indians kind of thing and we'd go into the bunker and flush the Iraqis out of the bunker.

CHAPTER TWELVE

SEARCH AND RESCUE

During World Wars I and II, crews of aircraft shot down behind enemy lines had almost no chance of being rescued. They had to make their way back to friendly lines as best they could. In 1944 in the China-Burma-India (CBI) theater, downed pilots were rescued by Sikorsky R-4 "Hoverfly" helicopters; but they were the lucky few. Those who went down behind German lines in Europe normally ended up in Luft Stalags.[1]

In Korea, helicopters were used to pick up downed flyers. A fictional sequence from the movie Bridges at Toko-ri showed just such a rescue attempt. Only during and after the war in South East Asia have pilots possessed a better than even chance they can be rescued before capture if they went down behind enemy lines.

Both Army and Air Force Helicopters flew search and rescue (SAR) missions. The U.S. Air Force's famous "Jolly Green Giants" were welcome sights to Army or Air Force crews down in the jungle. Even if a crew went down in Laos or North Vietnam, they knew that great efforts would be made to find and extract them to include insertions of Special Forces teams [under the code name PRAIRIE FIRE].[2] This attitude of always attempting to rescue downed flyers has continued to the present day. In Southwest Asia, Army helicopters were called upon to rescue down pilots even though that was not a mission they normally performed.

The first selection (12.1) of this chapters chronicles the ill-fated rescue mission to pick up an injured F-16 pilot. A Search and Rescue (SAR) UH-60 on the way to the pilot's

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[1] The raids conducted by the Army Air Forces were so deep into Germany that there was almost no chance the crews could make it back to friendly lines. Still, there were a number of instances were individual air personnel managed to walk through Germany and into France where the allies had set up an escape organization which would then send the individual from one safe house to another and into Spain or Switzerland. See: Aidan Crawley. Esacpe from Germany: A History of RAF Escapes During the War. (New York: Simon and Schuster, 1956.), pp. 129-130.

[2] This was the code name used for special operations in Laos and one type of special operation was to send in Special Forces teams to rescue crews of downed aircraft. See: Christopher Robbins. The Ravens. The Men Who Flew in America's Secret War in Laos. (New York: Crown Publishers, 1980), pp. 149-151, 228. One of the most famous of these operations was a massive search and rescue to find the sole survivor of a intelligence aircraft code named BAT-21. See: Drew Middleton. Air War-Vietnam. (New York: The Bobbs-Merrill Co., Inc. 1975), pp. 134-136.

assistance was shot down by Iraqi AAA with the loss of five of the eight crew members on board. Search and Rescue missions also have a far wider connotation today than just picking up downed pilots.

During Operation DESERT STORM, SAR was also used as a general description of medical evacuation missions. Although the number of casualties suffered by U.S. and coalition forces during the war was thankfully small, SAR missions were again flown largely by Army aviation. Selection 12.2 describes one such mission flown to pick up wounded of the 1/1 Cavalry.

Selection 12.3 involves an SAR in over water. When an OH-58D crashed at sea, the crew had to be rescued by another OH-58D and taken to a Navy destroyer. It makes for some interesting reading because Army crews aren't normally trained for this type of mission but the two senior warrant officers of the rescue helicopters performed their mission under less than ideal conditions.

The fourth selection (12.4) is an excerpt of an oral interview with Colonel Robert N. Seigle, the commander of the 18th Aviation Brigade during Operation DESERT STORM. He talks in some detail about the MEDEVAC system.

Selection 12.5 describes a February 27 medical evacuation mission to pick up several casualties. The pilots were startled when they learned that there were mine fields in the pickup area, and fighting going on. The rescue helicopter managed somehow to land in the middle of a mine field with one of its landing wheels just 10 inches from a mine. While the aircraft was located in the mine field, it was fired upon by some Iraqi troops still holding out in a town nearby.

Selection 12.6 deal with a number of "Dustoff" missions over 25 and 26 February (1991). One of the missions (26 February) was particularly tough because it was flown at night under NVG (night vision goggles) during fog. Normally, adverse flying conditions would have canceled the mission, but a life threatening situation needed evacuation to a hospital. Several missions flown on 27 February by Dustoffs involved flying wounded enemy prisoners-of-war (EPOW) to hospitals. In Section 12.7, the dangerous world of MEDEVAC missions comes full circle when several MEDEVAC aircraft are involved in a search for a MEDEVAC aircraft that was overdue. The MEDEVAC aircraft was eventually found and all aboard had been

killed in the crash. The unit held a memorial service that the author describes in moving detail.

Selection 12.8 involves the adventures of "Dustoff 57" as it performed two evacuation missions pleasing to the crew. Two Arab civilians had been wounded. One was a two year old boy whose hand had been badly mangled by a bullet.

In the final section (12.9), the 57th Medical detachment moves into Iraq and spends a considerable amount of time flying wounded Iraqi soldiers from the Medina Division back to the hospital.

COMBAT SEARCH AND RESCUE (CSAR) - 12.1

Late on the afternoon of 27 February, the 101st Aviation Brigade received a radio report through Division that an F-16 pilot had ejected from his aircraft in the vicinity of the causeway. This information was passed to the 2-229th, who established contact with AWACS and sent its SAR UH-60 with two AH-64s to attempt to extract the downed pilot. The AWACS vectored the team south of the causeway area over territory later known to be held by an RGFC (Republican Guard Forces Command) Division. The three aircraft received heavy anti-aircraft fire, and the UH-60 hit the ground at 130 knots and disintegrated. The two AH-64s were also damaged but returned to FOB Viper. The eight volunteer crew members on board were thought to have died in the crash. A recovery mission was planned, but another dust storm on February 28 precluded any rescue operation, and on February 29, the mission succeeded in finding the wreckage and recovering five bodies. While the condition of the wreckage indicated a non-survivable crash, the other three crew members were listed as MIA. Miraculously, the remaining three all survived the crash and were turned over to the International Red Cross two weeks later. All had suffered at the hands of their Iraqi captors.[3]

COMBINED SEARCH AND RESCUE 12.2

On the afternoon of February 27, 1991, after having just refueled at FARP (forward arming and refueling point) Victory, a UH-60A aircraft was ordered by the task force commander to fly to a PZ (pick-up zone) for a medical evacuation of U.S. soldiers.

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[3] Carleton R. Bryant. "POWs Treated Harshly by Iraqis, Doctor Says." Washington Times, March 12, 1991, p. 1.

1/1 Cavalry soldiers of the 1st Armored Division had been injured when their track vehicle ran over Iraqi mines. The aircraft arrived to the PZ within 5 minutes after notification. The evacuation required an additional UH-1H MEDEVAC helicopter which arrived shortly afterwards. Two litter patients were loaded on the UH-1H and the remaining patients were placed on the UH-60A. The patients were then evacuated to the 13th Evacuation hospital 30 kilometers to the southwest within 10 minutes after loading.

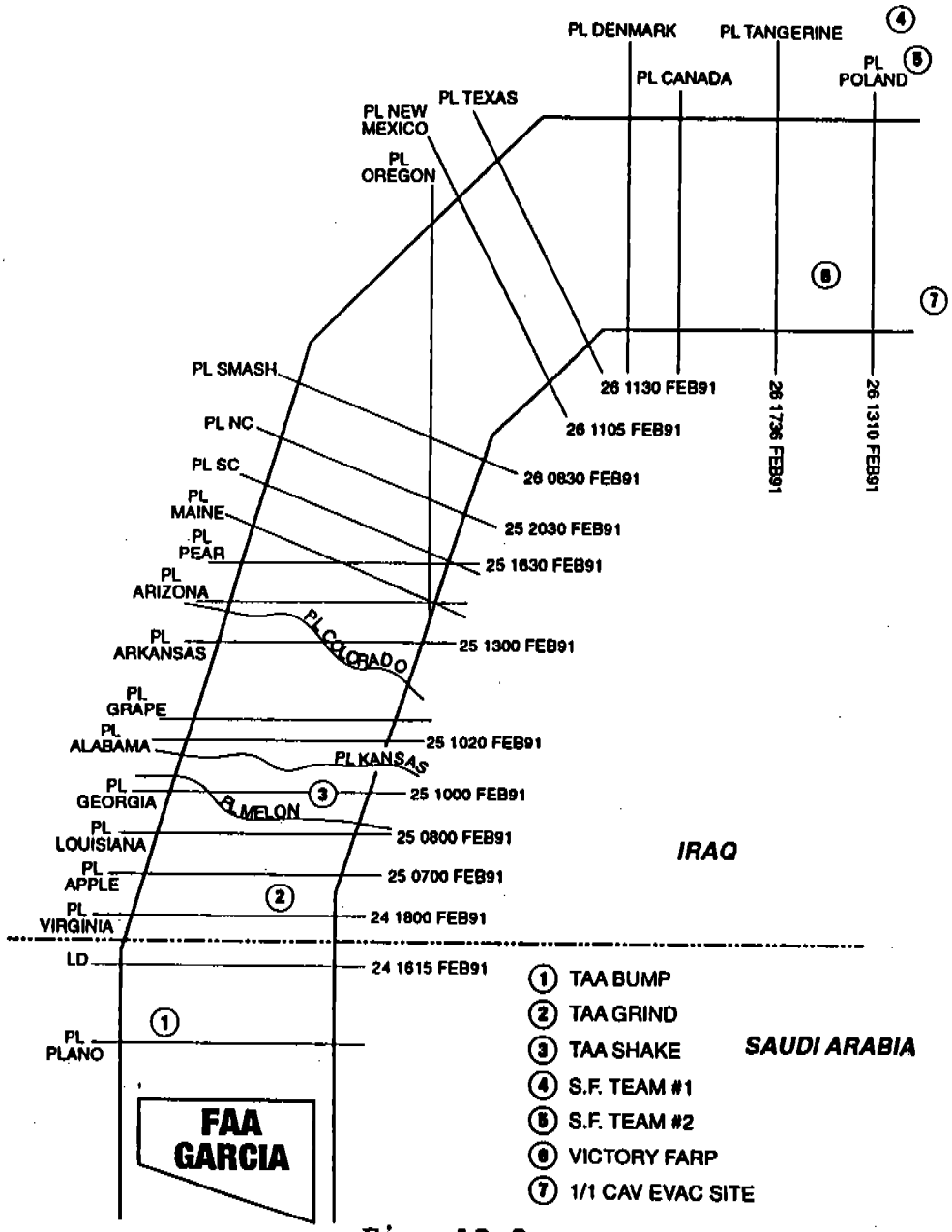

Fig. 12.2

COMBAT SEARCH AND RESCUE 12.3

On the night of September 20, 1991, Chief Warrant Officers (CWOs) Berrier and Council were in the trail aircraft in the flight of two OH-58D (Armed) Kiowa Warriors returning to the USS STARK after completing a surface surveillance mission.[4] At 2315, the lead aircraft in the flight experienced an engine failure, crashed, and sank in the Gulf. CWOs Berrier and Council circled overhead until both pilots surfaced. They then initiated a call to the USS STARK requesting a radar position fix and recovery assistance. The USS STARK responded that they would close on the site at top speed with estimated time of arrival of at least 20 minutes. CWO Berrier continued to circle the downed pilots while CWO Council attempted to establish communications with the downed pilots on their survival radios. Recognizing that the pilots were able to transmit but not receive on their radio, he then began to acknowledge their transmissions by flashing his landing light. After 20 minutes in the water, the pilots asked for immediate extraction. CWO Berrier again requested an estimated time of arrival from the USS STARK. The USS STARK responded that they were still 15 minutes out. After reviewing his own fuel status, CWO Berrier realized that he would have to break station before the USS STARK could arrive at the site. Also realizing that the USS STARK might not be able to find the downed pilots again, Chief Warrant Officer Berrier wisely decided to recover the crew from the water with his own aircraft. To give his aircraft sufficient lift capability for the recovery, he jettisoned his aircraft's rocket pod, then lowered its caving ladders. With CWO Council directing, CWO Berrier skillfully maneuvered his aircraft into position to allow first one pilot, then the other to fasten on to the ladders. CWOs Berrier and Council then transported the two pilots back to the USS STARK, conducted a night vision goggle approach to a high hover over the ship, and carefully lowered them on to the flight deck where they received immediate medical treatment until a MEDEVAC aircraft arrived to transport them to the hospital.

CWOs Berrier and Council's quick thinking and superb piloting skills helped to minimize the shock and blood loss

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[4] This was the same ship struck by an Iraqi Exocet missile several years earlier with the loss of nearly 30 crew members. The Iraqi government apologized and paid indemnity for the crew and the repair of the ship. See: James Blackwell. Thunder in the Desert: The Strategy and Tactics of the Persian Gulf War. (New York: Bantam Books, 1991), p. 23.

experienced by the downed pilots. They unquestionably saved them from lengthy exposure time in the water that would have resulted had the USS STARK had to relocate and recover them.

COMBAT SEARCH AND RESCUE (MEDEVAC) - 12.4

The following is an excerpt from an interview between Dr. John Kitchens, Aviation Branch Historian, and Colonel Robert N. Seigle, the 18th Aviation Brigade Commander during Operations DESERT SHIELD and DESERT STORM:

Colonel Seigle: MEDEVAC organizations became a real aviation anomaly in Desert Shield and in Desert Storm. They worked for the right people as far a being medical evacuation units. They worked for the doctors, and in the XVIIIth Airborne Corps they were attached to the 44th Medical Brigade which had, as its base unit back at Fort Bragg, one small six-aircraft detachment called the 57th Medical Detachment, and aero medical detachments are aligned like this throughout the world where there are small numbers of aircraft and the only one that I am aware of that is actually integral to a division headquarters are the 12 aeromedical evacuation Black Hawks attached to the 101st Airborne Division, and they work with them on a regular basis, and they stayed with them as they deployed to Saudi Arabia, although they operated on an OPCON (operational control) basis with the 44th Medical Brigade, and that is who they took direction from to go pick up people, take them to the hospital, things like that. The problem with the MEDEVAC organizations became that the pilots, first of all, the detachments themselves had only organizational maintenance on their aircraft. They had a crew chief and they had the pilots and that is all that they had and the crew chief's tool box. That was it. They had no back up support for maintenance. They had no maintenance organization worthy of the name. The theory being that they would be supported on an area support basis. That sounds good in theory and in contingency operations it's easy to make happen because you plan those things ahead of time, and you just hustle up some extra support and build your AVIM (aviation intermediate maintenance) organization with a little bit of extra capability to handle the few MEDEVACs that you are going to get assigned in a contingency operation. In this operation, the MEDEVAC aircraft equal about 115, that is a guess, but let's say 115 aircraft, that is a significant maintenance problem for anyone maintenance

organization to undertake without additional support. So, the way that it finally worked out, not only from a maintenance standpoint, because they had to get their parts and their specialized maintainers, avionics transmissions specialists, engine specialists, the whole nine yards, they not only had to get their maintenance done in these units, but they also had to get their operational information from somebody that was operating on the forward edge of the battlefield all the time because that is where the MEDEVACs would be deployed, and it didn't know any good to know where the hospital was if you didn't know the friendly and enemy situation where you were picking up the wounded and trying to extract them. And so, it just so happened that we didn't lose any MEDEVACs because of enemy action, but it's only by the fact that the Iraqis didn't fight that we probably didn't lose any because the MEDEVAC organizations themselves did not get timely distribution of the current situation of the war, and, because of that, their pilots never knew what the daily and current intelligence summary read where there were places that they shouldn't fly, what were the latest updates on the control measures in the air space management, and, so from that standpoint, their pilots were at risk every time that they took off, except for the fact that in Iraq anything that flew was friendly, and so they didn't have to worry about too much, but we recognize that is a long term problem. The Aviation Center has got to solve it with the Surgeon General. **We need MEDEVAC organizations need to fall under the purview of the aviation brigade in the area in which they are assigned only from an aviation care and control and feeding standpoint** (Author's italics). They should then be OPCONed back to the medical brigade for their daily missions, but they get all their relative combat data from the aviation brigade that is hard wired right into the division and so they can get that information on a timely basis.

Dr. Kitchens: Seems like we need something like the role that the 1st Aviation Brigade played in Vietnam.

Colonel Seigle: Well, Lt. General Bob Williams and Harry Kinard and those boys would tell you that that's the case and there is some of that, but I think that we can do the distribution better. There is nothing really special about the aircraft itself, being a MEDEVAC aircraft, some of the medical gear is special and we can move that because of the airframe

flexibility, we can move that medical gear to a place where it can be worked on and you can slide in a unit and slide out a unit and do ok, but you cannot do easy maintenance in a medical outfit of a helicopter. So we need to provide these guys with the care and feeding and tender maintenance care in an aviation unit and then OPCON them out on a daily basis to the medical unit that they are going to work for, but everyday they go out, they get a current enemy/friendly situation of where they can go and can't go and stuff like that so that they can put that into the combat equation as they take off trying to pick up wounded and casualties.

COMBAT SEARCH AND RESCUE (MEDEVAC) - 12.5

Delta Company, 326th Medical Battalion
101st Airborne Division (Air Assault)
February 27, 1991
PC 1st Lieutenant Gregory Fix
PI CW2 Doug Jacobs
CE Sergeant Leroy Hall
MO Specialist Wesley Hanlon

At approximately 1800 hours on February 27, 1991, our crew received a 9-line medical evacuation request on short final for FOB Viper in Iraq. We were returning from the 28th Combat Support Hospital, where we had transported several wounded. The request was not unlike most we had received over the previous few days. The main difference we had noticed was line 6 of the request, which was transmitted: "enemy troops and mines in area, approach with caution." I plotted the grid on the map and found the location to be approximately 45 kilometers southwest by the town of Al Busayyah. We approached the PZ (pickup zone) and as usual could not communicate with the requesting unit; however, we spotted the VS-17 panel, which was the method of marking. An approach and touch down was made at the panel in desert fashion, with ground run. I looked out and noticed everyone ducking or hitting the deck! After the rest of the sand cleared, perfect circular patterns began to appear in the sand and our guide was hopping toward the aircraft in a strange manner. When he arrived at the aircraft, it was explained that we had landed in the middle of an enemy mine field. He also explained that some Iraqi resistors were in the town, but they would try to contain them behind the stone walls while our mission was going on. As I

watched our medic dance through the mines to the patients, our crew chief shouted to shutdown the aircraft, because fuel was spraying out the left side. We shutdown and helped the crew chief tighten a loose fuel line and noticed that the main landing gear had stopped 10 inches short of two mines. As we strapped back in and began to start the aircraft, small arms fire could be heard coming from the town. After the patients and medic were on board, we quickly took off while two explosions simultaneously took place about 350 meters to our front. We avoided the town and began a search for a Mobile Army Surgical Hospital (MASH), which had been spotted the day before. It was out best option at the time based on the medics assessment of the patients' condition. After 10 minutes of searching, we found the hospital 15 kilometers south of the PZ. By this time, we were under night vision goggles and had only enough fuel to return to FOB Viper. Through good crew coordination and assistance by the ground unit at the PZ, the mission was successful. Our aircraft and crew returned intact and both patient's lives were saved.

COMBAT SEARCH AND RESCUE (MEDEVAC) - 12.6

G+1, February 25, 1991

At 1300 hours, a flight of CH-47s assaulted into LZ Sand, 160 kilometers behind enemy lines carrying vehicles that will convoy further north to AO (area of operations) Eagle near the Euphrates. One MEDEVAC UH-60A, Dustoff 17, accompanied this flight to provide MEDEVAC support to the air assault. No resistance was met at the LZ (landing zone). Dustoff 17 then flew south to refuel and continue MEDEVAC coverage for the convoy from FOB (forward operating base) Cobra, a division FOB being established 120 kilometers into Iraq. Two MEDEVAC UH-60As, Dustoff 22 and 13, departed TAA (theater assembly area) Campbell and flew to FOB Cobra to link up with Delta Company, 326th Medical Battalion. After refueling, the two aircraft join up with 1-101st Attack Battalion and fly north to LZ Sand as the sun sets. MEDEVAC support was provided from LZ Sand for attack missions and air assaults of two separate flights of Black Hawks, each carrying a battalion of infantry into AO Eagle to take place that night. The first assault on AO Eagle is accomplished at 1605, meeting mild resistance at all LZs. The weather was deteriorating rapidly and the second assault was canceled.

G+2, February 26, 1991

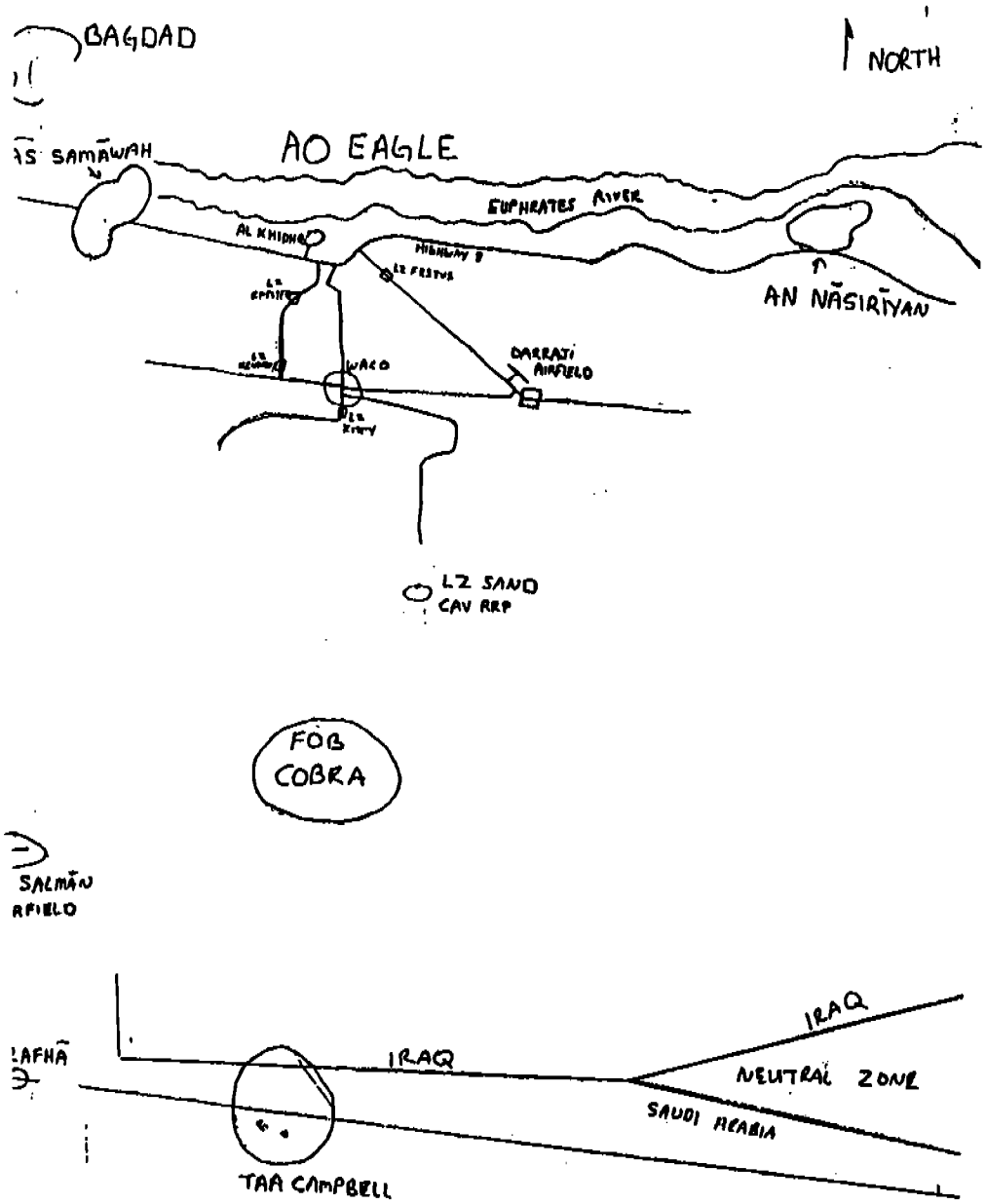
Dustoff 22 and 13 launched in the early morning hours from LZ Sand enroute to AO Eagle to link up with the lead elements of TF (task force) Rakkasans at LZ Waco, only 8 kilometers south of the Euphrates River and Highway 8, establishing the most-forward MEDEVAC operations in the theater. Later that morning, Dustoff 22 flew to LZ Festus and picked up the first casualty to be transported for 3rd Brigade, an Iraqi prisoner of war with a broken jaw, and brought him back to LZ Waco. Early that afternoon both Dustoff 22 and 13 repositioned to LZ Kitty where the brigade clearing company, operated by C Company, 326th Medical Battalion, was now established. Just after sundown, Dustoff 22 was low on fuel as a request was made to fly the wounded to FOB Cobra. Initially, the mission was declined because of the poor visibility caused by a combination of darkness and fog. All attack, air assault, and other aviation missions within the division had been canceled because of this weather. One of the casualties had a wound to the chest and the medical procedure required to save his life could only be performed at a higher level medical facility. Driven only by the desire to save a human life, I decided that the mission would be flown despite the adverse weather. Because of low fuel in Dustoff 22, I decided that Dustoff 13 would carry the casualties while Dustoff 22 would follow enroute to an isolated Cavalry refueling site at LZ Sand. The reason I made this decision was in case we went inadvertent IMC (instrument meteorological conditions). Utilizing night vision goggles and exercising great skill, the two aircraft navigated to the refuel site, only finding it after an extensive search and landing with very low fuel. After taking on fuel, both aircraft once again departed into the inclement weather. Dustoff 22 to the north to resume duty at AO Eagle, while Dustoff 13 continued south enroute to the forward area surgical team at FOB Cobra. The actions of Dustoff 22 and Dustoff 13 directly contributed to saving the life of this Iraqi soldier. Because of the weather conditions, Dustoff 13 remained at FOB Cobra. At 2300, the second lift of 65 Black Hawks landed at LZ Kitty, LZ Kentucky, and LZ Waco bringing the brigade's strength up to 2200. Attack helicopters from 1-101st Aviation Regiment blew up the bridge at Alkhidr with Hellfire missiles.

G+3, February 27, 1991

In the very early hours of February 27, another call went out for Dustoff support from 2/187th Infantry Battalion at LZ Festus, this time for numerous Iraqi prisoners wounded in a late night engagement. Dustoff 22 responded to the call, picked up six prisoners and proceeded south on the 60-mile flight to FOB Cobra. When within radio range of FOB Cobra, I notified Dustoff 13 and Dustoff 17 there were more casualties awaiting transport. Dustoff 13 was the first to respond and proceeded north to AO Eagle arriving at LZ Festus picking up six casualties and again departing for FOB Cobra. Minutes later, Dustoff 22 arrived at LZ Festus with Dustoff 17 in trail. The remaining six casualties were loaded aboard Dustoff 22. As Dustoff 22 was enroute to FOB Cobra, Dustoff 17 repositioned to LZ Kitty to assume MEDEVAC coverage of 3rd Brigade. Both Dustoff 13 and Dustoff 22 arrived at LZ Kitty as the sun was rising over the Euphrates River and LZ Kitty. Later in the afternoon, Dustoff 13 provided one more MEDEVAC mission to a 3rd Brigade soldier injured in a non-combat related accident.

G+4, February 28, 1991

At 0800 hours, a cease fire was declared throughout the theater. The 3rd Brigade had successfully accomplished its mission of interdicting the Iraqi main supply route [Highway 8] between Baghdad and Kuwait. The 3rd Brigade captured 51 EPOWs within AO Eagle. The number of enemy killed will never be known. Total EPOWs evacuated by Eagle Dustoff was 23.


BAGDAD
NORTH
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EUPHRATES RIVER
AL KHIDHR
HIGHWAY 8
LZ FESTUS
AN NĀSIRĪYAN
WACO
DARRAJI AIRFIELD
LZ SAND
CAV RRP
FOB COBRA
SALMĀN
RFIELD
IRAQ
IRAQ
NEUTRAL ZONE
SAUDI ARABIA
TAA CAMPBELL

Fig. 12.6

COMBAT SEARCH AND RESCUE (MEDEVAC) - 12.7

For the past week, our crew had provided aeromedical evacuation support to units redeploying to Saudi Arabia, through the small Iraqi town of Al Busayyah. With the majority of the units now to the south and the 24th Infantry Division RTAC (rear command post) on the road, we were released to rejoin with the 57th Medical Detachment. The detachment was regrouping with the 34th Medical Battalion at assembly area AA Dustoff, located about 15 kilometers south of King Khalid Military City (KKMC), in Saudi Arabia.

Enroute we heard a radio call from Dustoff 32, one of 36th Medical Detachment's aircraft, to "Rainbow" on UHF-guard. Rainbow is the Airborne Warning and Control System (AWACS) aircraft call sign for the sector we are flying in. The call was answered by another AWACS aircraft under the call sign "Cougar." The MEDEVAC aircraft tried calling again, but did not hear the second call from Cougar. We tried calling Dustoff 32 on FM 37.15 (the MEDEVAC frequency) and on UHF. They did not answer either.

We continued south towards AA Dustoff, crossing the berm into Saudi Arabia at exactly 1005 hours. Upon debriefing Lieutenant Colonel Frank Novier, the 34th Medical Battalion commander, of our radio calls with Dustoff 32 earlier this morning, we were made aware of a potential problem. The 36th Medical Detachment, with UH-60A Black Hawks from Fort Polk, Louisiana, had an aircraft that did not return last night. Lieutenant Colonel Novier looked very worried as he sat in a chair at the battalion TOC (tactical operations center). Shortly after our briefing, the 57th Medical Detachment launched two aircraft to help search the area for the lost aircraft. At dusk, one of the aircraft returned from Iraq. They were unable to find the aircraft and the other crew would stay up there until tomorrow to help search again.

On the afternoon of March 17, Major Randy Maschek, commander of the 498th Medical Company, walked into our area and reported, "They found the missing aircraft. Nobody survived--the memorial service is tomorrow at 1000 hours."

Two hours later, the search aircraft returned and shut down next to us. They had been the third aircraft to the crash site and detailed what they saw. The crew had been flying an urgent MEDEVAC mission using night vision goggles with low illumination when a sand storm developed. The only section still intact was

the tail boom as the helicopter had crashed nose down. Parts of the aircraft and the contents were scattered across the desert sand.

The following morning at 0930 hours, units of the 34th Medical Battalion marched outside of the camp perimeter to a memorial service site. There was a covered table on which a display was set up in memory of the deceased crew. On the table was four pairs of polished boots with a flight helmet along side each pair. Stuck in the ground in front of each helmet was a M-16 rifle, with the bayonet stuck in the sand. As we looked at the memorial to the four crew members, the impact of their death caught up with us. At 1000 hours, the battalion was called to attention and the ceremony started.

After Chaplain (Captain) Shaw's invocation and commendation, Lieutenant Colonel Novier gave his battalion commander's remarks. These soldiers were like family to him--something that develops within the assumption of command by a commander that cares. The 36th Medical Detachment commander provided his remarks followed by the reading of the soldier's service records. The next item on the agenda was the delivery of the "Dustoff Prayer."

Following the prayer, four soldiers from the detachment went forward to give memorial tributes to the deceased. This gave the soldiers of the battalion a good description of "our fallen comrades whom we honor:" First Lieutenant Joseph D. Maks, Chief Warrant Officer Two Patrick A. Donaldson, Sergeant Michael S. Smith and Specialist Kelly D. Phillips.

After a pastoral prayer, the entire battalion said the Lord's Prayer followed by the singing of "Amazing Grace." Chaplain Shaw said a benediction and the detachment first sergeant conducted roll call for the 36th Medical Detachment. When the fourth deceased soldier's name was called for the third time, a bugler played "Taps" from across the desert and the battalion immediately saluted. It was an emotional moment and signified the end of the memorial ceremony.

The majority of the soldiers of the battalion paid their personal respects to the four by coming forward to the perfectly positioned memorials. Each private prayer was concluded by the position of attention and execution of a crisp salute. We walked back to our aircraft alone, thoughts were on the dangers of this profession and the value of human life. Despite the risk involved with this mission, flying MEDEVAC is what we truly enjoy

doing. By accepting this mission, we accept the possibility of my own death.

(Prepared by Captain Randall Anderson, S-3, 498th Medical Company (AA), Fort Benning, Georgia 31905)

COMBAT SEARCH AND RESCUE (MEDEVAC) 12.8

AEROMEDICAL EVACUATION OF IRAQI BEDOUINS

As shown in Operations DESERT SHIELD and DESERT STORM, the United States continues to have one of the most competent and humane military forces in the world. As much time and effort was placed into defeating the enemy as was put into protecting and caring for him in the aftermath.

The majority of the patients transported by U.S. Army medical evacuation helicopters were Iraqis. Not only were injured EPOWs evacuated to medical facilities, but also hundreds of sick and wounded civilians and desert Bedouins. One memorable mission occurred on February 28, 1991.

While providing aeromedical evacuation support from OBJ Red Prime, the crew of "Dustoff 57", 57th Medical Detachment, was notified of an urgent MEDEVAC mission. Like most urgent missions transmitted over the radio, the request is quickly transcribed onto the nearest available piece of paper by the radio telephone operation (RTO) on duty. This request came to us on a MRE "Ham Slices" brown cardboard box. The mission was:

1) VIC PU 157614; 2) 64.40; 3) 1-1; 4) NONE; 5) 9-1 & 1 CHILD; 6) 1; 7) G SMOKE; 8) 7; and 9) NONE.

Following the standard nine-line MEDEVAC request, the mission was deciphered for the unit in the vicinity of the coordinates PU 15706140 and monitoring the FM frequency 64.40. They had one urgent patient that required no special equipment. The one patient was on a litter and had a small child to be transported as well. There were no enemy troops in the area and the pickup site would be marked with green smoke. The patient was not military and not an American civilian. There was no chemical (NBC) contamination of the patient or pickup zone. The use of brevity codes in requesting MEDEVAC missions allows for minimum radio transmissions and provides additional measures for securing communications between units.

Departing at 1046 hours, the eight kilometer flight took only a few minutes and we started scanning the area for requesting unit. Located next to a rocky ridge was a Bedouin

camp with hundreds of sheep, donkeys and other animals. As we approached the area, the troops on the ground popped a canister of green smoke, verifying that this was the pickup location. In addition to providing confirmation of finding the right unit, the smoke provided an excellent wind direction indicator to the pilots. Medical evacuation aircraft in Vietnam confirmed the color of the smoke spotted on the ground to avoid ambushes by the enemy. Most Dustoff pilots in the desert continue to verify the smoke for practice of good technique.

Landing just outside of the Bedouin camp, we were able to observe the activity between the numerous cloth tents. Parked next to one tent was an Army HMMWV ambulance. Sergeant Randy Simington, our flight medic, immediately departed the aircraft and ran into the camp with his aid bag. Upon completing the necessary treatment, Sergeant Simington returned to the aircraft with three soldiers carrying an Iraqi woman on a litter. At her side was an old man, holding her hand for comfort. The medics on the ground confirmed that the child was not serious enough to warrant evacuation. The woman had been wounded by gunfire and shrapnel. Her heel was almost gone and she had wounds to her femur. She required immediate surgery.

The flight back to OBJ Red Prime was a short one. The smell in the aircraft was terrible--comparable with the smell of a herd of sheep. We turned on the vent blower and opened the windows. Within minutes the woman was back at the medical troop and being rushed into surgery.

Just as we were shutting the aircraft down, another call came across the command frequency for a MEDEVAC mission at the same location. After further examination of the Bedouin occupants, another young child was discovered to have shrapnel wounds as well. Minutes later we were back at the pickup site and Sergeant Simington disappeared into the camp for a second time. He returned to the aircraft with a two-year-old child in his arms. The young boy's wrist was partially amputated from a bullet passing through it. Around his head was a muslim head wrap, with the traditional red and white checkered pattern. He was crying from the pain of the wound and fear of his strange surroundings. Sergeant Simington held the child in his lap during the flight. Our crew chief, Specialist Johnny Arnett, found a box of "Nerds" candy and Sergeant Simington fed one to

the young boy. The tears stopped and there was even a faint smile from the wide-eyed child.

Missions like this occurred all across the battlefield and continued months later as aeromedical evacuation units assisted in the support of operation "Provide Comfort." Defeat of the enemy is the ultimate goal of the military, but humanity and ease of suffering to mankind should continue to increase America's pride in their soldiers.

(Prepared by Captain Randall Anderson, S-3, 498th Medical Company (AA), Fort Benning, Georgia 31905)

COMBAT SEARCH AND RESCUE (MEDEVAC) - 12.9

The aeromedical evacuation mission is different in many ways from the traditional aviation roles of attack, reconnaissance and airmobile operations. The traditional roles require detailed planning, precision timing and rehearsals. The MEDEVAC pilot does not have the luxury to fine-tune his mission. The flights are almost always flown single-ship and into areas to evacuate a patient without detailed battle analysis of the area. Saving lives depends upon enroute medical care and the speed from point of injury to medical treatment facility.

On February 25, 1991, the 57th Medical Detachment, "Original Dustoff," crossed the Saudi Arabia-Iraq border with its six UH-60A Black Hawk helicopters from Fort Bragg, North Carolina. Harsh winds and pelting rain tormented the crews as they tried to rest for a few hours the first night in Iraq. Living conditions consisted of the crew of two pilots, one flight medic and one or two crew chiefs sleeping inside the aircraft cabin. Since this area was not conducive to five adults trying to sleep, numerous crew members weathered the elements and slept under the stabilators of the helicopters. To avoid being soaked by the rain, some of us placed our sleeping bag inside of the large, black plastic body bags. This technique seemed morbid at first, but was successful in keeping the sleeping bags dry. The following night consisted of a midnight flight to AA (assembly area) Cactus in Saudi Arabia to initiate the movement of more medical elements during the night and to transport vital medical equipment into forward locations before morning. The regiment was preparing for a major battle and the regimental commander had decided to deploy the medical assets as far forward as possible. Upon arrival at OBJ Red Prime, about 0200 hours, our crew joined

up with the detachment for a night vision goggle (NVG) formation flight to OBJ Red Prime. The six UH-60A helicopters closed on the objective early in the morning and were ready to evacuate patients from the battlefield.

In the early phases of the ground war, the detachment was tasked to provide aeromedical support from logistics bases throughout the 3rd ACR (armored cavalry regiment) battle sector. The plan entailed launching them from this location on missions received across the medical troop command radio frequency. Due to the speed of the armored vehicles and the vast distance to cover, it was decided that a more-forward support plan was required. The ideal solution was to position and move the air ambulances with the regimental tactical operations center (RTOC). This new procedure was implemented and working on February 27, 1991, as our crew, call sign "Dustoff 57" was providing support to the advancing line of M1A1 tanks and Bradley fighting vehicles.

At this point in the battle, most of the 57th Medical Detachment crews were flying with only four hours of sleep within the past three days. At 1100 hours, the RTOC was on the move again. We flew as a formation of three aircraft in loose trail to the new RTOC site. Crossing over a ridge line at 30 feet and 120 knots, we flew into the middle of another formation of 4th Squadron, 3rd ACR AH-1 Cobra and OH-58 Kiowa helicopters. They were on a tactical mission moving towards the front. We had to take evasive maneuvers to avoid a mid-air collision.

Once at the new RTOC site, our crew was designated "first-up," ready to respond to immediate missions. We spent the first hours of the afternoon completing inspections of the aircraft and started preparing defensive positions for out crews. Elements of the RTOC circled their vehicles and started digging foxholes. They do this many times every day and still complete the tiring task quickly and efficiently.

At 1620 hours, Captain David Bradshaw, the regimental surgeon, ran up to our aircraft with a mission. It was to pick up four enemy wounded soldiers. We threw everything on the aircraft and readied for takeoff.

The pickup site was about 38 kilometers to the east and towards the enemy. We were presently about 20 kilometers south of the triple runway at Jalibah Southeast airport. For the flight we had to pass by the Qalib Al Luhays airport--depicted on

the map with many oil wells, pipelines, and improved roads around it. As we took off at 1624 hours, we decided to avoid the airport and fly to the north of it. This had been the objective of the 3rd ACR a couple of days prior. As we passed the area, we saw the many pipelines leading up to the main collection point (labeled as "GOSP" on the map). We also crossed two sets of power lines (at 70')--the first obstacles we had seen since entering Iraq.

Communications on the battlefield can be complicated by unit's monitoring other than prescribed frequencies and during times of commotion. Since we did not have "secure voice" capability, our calls were made as "...Dustoff Five Seven in the red." No one responded, but continuing forward we noticed a large formation of M1A1 tanks abreast in a line heading east. We realized that this area may be the forward line of tanks entering the battle area. Finally spotting two armored personnel carriers (APCs) side-by-side, we landed to ask about the mission. As it turned out this was the RTAC, the highly-mobile, tactical center. The mission would initiate here once the armored ground ambulances evacuated the casualties back from the front.

At the RTAC was Colonel Douglas Starr, the regimental commander. He is called the "63rd" by the troops as he is the 63rd commander of the 3rd ACR. Our crew members went to the RTAC for an update as Lieutenant Puckett and I stayed in the aircraft, pulling the engines down to idle to conserve fuel.

The 3rd ACR was in the process of fighting a division of the Republican Guard--the Medina. The objective was to push towards Basrah. The resistance was strong and for the first time, they were pulling back some, still drawing fire. We arrived at the site at 1636 hours and by 1650 hours we were still waiting, noticing the increase of activity in our area. The M1A1 tanks and Bradley fighting vehicles started appearing from across the desert horizon. They were moving at full speed and started circling our location, setting up a perimeter. It was about that time that we saw incoming enemy artillery rounds impacting in front of us--sending up clouds of dust as they hit the ground. I slid my armor side-plate forward and Lieutenant Puckett did the same. Word came from Colonel Starr that the enemy was getting closer and that he would not keep us there more than five minutes.

At the top of the hour, armored personnel carriers started arriving, kicking dust and dirt up with their tracks as they turned sideways to our helicopter. The backs opened and they brought out wounded EPOWs from all over. One soldier was shot in the legs and was carried in our medic's arms to the helicopter.

Once all of the tracks were unloaded, we had a total of five casualties--two quite serious and bleeding. The other three had wounds, but were not as urgent. Sergeant Simington went to work treating the soldiers. I turned around to look and one of the skinny, dark Iraqis gave me a "thumbs-up" and a slight smile.

The flight to the medical troop was about 15 minutes, taking off from the pickup site at 1705 hours. Just prior to departing, the RTAC told us not to fly straight to the west (towards the medical troop). They explained that friendly artillery rounds would soon be fired at the approaching enemy troop. We modified our flight route hoping to miss the artillery, but having no idea where the American artillery unit might be.

At 1720 hours, we arrived back at Prime Red and the medical troop. Enroute, Sergeant Simington had cut the clothes away from the Iraqi soldier who was severely wounded in the legs and back by the gunfire. There was blood everywhere as the soldier lay face-down on the litter. The bleeding had stopped from the bandages, but the soldier would still need surgery. Sergeant Simington tapped the guy on the shoulder and I saw his head move slightly--he was still alive.

Missions like this were conducted everyday by MEDEVAC units throughout the combat zone of Iraq. This is just another illustration of the dangers that MEDEVAC crews must face. Crews are often placed in tactical situations without prior coordination or current intelligence reports for enemy and friendly locations. Only through proper knowledge of the evacuation system and the ability to operate with flexibility and in a tactically-sound manner do these crews survive. The experience and awareness learned by flying life-or-death missions in the single-ship mode allows these aviators to make quick, precision decisions. Without this insight, not only is the life of the patient at risk, but those of the crew.

(Prepared by Captain Randall Anderson, S-3, 498th Medical Company (AA), Fort Benning, Georgia 31905)

CHAPTER THIRTEEN

DEPLOYMENT

After the Korean War, few units of the U.S. Army had to prepare to deploy somewhere in the world on a moments notice. True, U.S. units frequently deployed to Europe during the Cold War, but because of POMCUS (pre-positioned overseas material configured to unit sets) dumps, they brought only minimal equipment. In 1976, the 101st Airborne (Air Assault) Division deployed to Germany on a REFORGER exercise.[1] This was the first time that a major army unit had deployed to Germany and taken all of its equipment. No POMCUS stocks were used. In the years between 1976 and DESERT SHIELD/DESERT STORM, Army aviation units were afforded the opportunity to practice complete deployment.

During Operation URGENT FURY in Grenada, and Operation JUST CAUSE in Panama, Army aviation units deployed, but only short distances, and much of the deployment was self-generated. When Operation DESERT SHIELD began, Aviation units had to do something most had never really done before -- deploy for war and quickly prepare all their aircraft and support vehicles for shipment by sea.

Deployment takes a considerable amount of planning. The first selection (13.1) of this chapter chronicles the preparation for and deployment of the 2-229th Aviation from Fort Rucker, Alabama to Saudi Arabia. Selection 13.2 somewhat echoes the first, and highlights the deployment of the 101st Aviation Brigade to the Gulf.

The next selection (13.3) again deals with deployment, but from a different location -- Germany. The aviation brigade of the Third Armored Division deployed from Germany to the Middle East. This deployment generated slightly different problems than experienced by those units coming from CONUS.

Selection 13.4 covers the alert and deployment of the 4/17 Cavalry. This unit, when notified, was then undergoing training at Oceana Naval Air Station when it was ordered to redeploy back to Fort Bragg. Selection 13.5 is another deployment involving a German scenario, but is much more detailed than the AAR from the

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[1] PHONECON with Captain Ida McGrath, 101st Airborne Division Historical Officer, Ft. Campbell, February, 1993.

3rd Armored Division. This selection educates the reader on the trials and tribulations of the 1st Armored Division's aviation brigade as it moved from Rotterdam to the Middle East. This particular selection is rich in the details of deployment -- what to bring, how to prepare it, and how to ship it to its intended destination.

Selection 13.6 is how to prepare a unit for deployment by a unit member. Captain Michelle Barlean, Company C, 7-101st Aviation Battalion, prepared her platoon of CH-47Ds for deployment. It is a most interesting story from the "nuts and bolts" angle.

In the seventh (13.7) and final selection, a troop commander, 1-1 Cavalry, 1st Armored Division discusses the ins and outs of deployment in an oral interview with Major Kevin Smith.

DEPLOYMENT - 13.1

The 2-229th was alerted for possible deployment on August 9, 1990. Personnel and equipment shortages were filled by assets on Fort Rucker, DynCorp began phased maintenance on all of the battalion's aircraft and had completed four phases by August 15. A security brief was held in the battalion classroom on August 11 by the post intelligence community. Small arms ranges were run on August 13 to verify weapons zero or qualify. CPOGs and related chemical defensive equipment were issued on August 14. Desert uniform issue started on August 15.

Preparation for Overseas Movement (POM) was initiated in Yano Hall on August 10 and continued until all deploying members were completed August 21, 1990. Soldiers joining the battalion after it was deployed to Saudi Arabia were processed by the rear detachment and the various post agencies involved with POM. A dependent brief was held August 13 in the Post Theater by Colonel Mullady, Lt. Colonel Bryan, and Mrs. Bryan.

The battalion wound up conducting ground and air deployment simultaneously, which made it very difficult to meet both objectives at separate locations at the same time. Half of the battalion's basic load was transported by air. Vehicles and rolling stock departed for either Jacksonville, Florida, to be shipped by FSS (fast supply ship) or Lawson Army Airfield at Fort Benning for air movement.

The port at Jacksonville, Florida, was identified by the 101st as the battalion's sea port of embarkation (SPOE). The 2-229th had all vehicles and equipment available for shipment by August 16, 1990. Equipment was turned over to the port authority for loading and was eventually spread over three vessels. The half of the basic ammunition load that was not flown to Saudi Arabia with the aircraft was sent to the port to be shipped over. The last of the battalion's property arrived at the port in Dhahran, Saudi Arabia on September 30, 1990.

It was unclear at first if battalion elements would have to deploy to Fort Campbell, or be able to fly out of Dothan Airport in Alabama or Lawson Army Airfield (LAAF) at Fort Benning. Dothan Airport was quickly eliminated as a possibility because it does not have USAF ALCE (airlift control element) support permanently stationed there, and because facilities are limited. Fort Benning elements were departing from LAAF, so it became apparent that Fort Benning was the best APOE for the battalion. The 2-229th flew its aircraft to LAAF August 15, 1990.

Upon arrival in the Kingdom of Saudi Arabia in the early morning hours on August 24, 1990, the 2-229th quickly assembled all aircraft with the help of the AVIM (aviation intermediate maintenance [unit]) from the 82nd Airborne Division, and AVIM elements from XVIIIth Airborne Corps (I Company, 1-159th Aviation Regiment). The Assault CP was the first element in country with a C&C HMMWV and some aircraft TIs (technical inspectors). The S-3 set about finding a location to billet soldiers and re-assemble aircraft. Bravo, Alpha, and then Charlie company aircraft, aircrews, and crew chiefs arrived next. Aircraft were assembled, inspected, and then flown to King Fahd International Airport (KFIA), where the 101st Aviation Brigade had set up a temporary headquarters. Alpha company had been delayed by C-5 aircraft maintenance problems, and Charlie company was held up at LAAF for five days awaiting USAF aircraft. The other half of the basic load that had been shipped from Jacksonville never made it, so it was a very prudent decision to ensure space was available on the C-5/C-141 flights over to Saudi.

DEPLOYMENT 13.2

On August 7, 1990, the 101st Aviation Brigade was officially notified it would deploy to Saudi Arabia along with the entire Division. The Division led with its Division Ready Brigade (2nd

Bde), the Division Assault CP, and the Aviation Brigade (-). The Aviation Brigade forces included TF 9-101 (30 UH-60, 3 Medevac, 2 C&C, 2 EH-60, 5 UH-1, 10 CH-47); TF 1-101 AATK (19 AH-64, 19 OH-58C, 6 which were attached from A/217 CAV, 3 UH-60); and an attached battalion from Fort Rucker, the 2-229 AATK (18 AH-64, 13 OH-58C, 3 UH-60L). These initial forces deployed via strategic airlift (C-5s and C-141s) and arrived in Saudi from August 18 to August 28, 1990.

During the strategic airlift, the remainder of the Aviation Brigade self-deployed their aircraft and vehicles to the port of Jacksonville, Florida, for sealift to Saudi Arabia. Equipment and limited personnel deployed on ship, while the majority of troops were airlifted to Saudi Arabia on jets from the Civilian Reserve Air Fleet (CRAF).

Despite the devastating summer heat (daytime highs normally surpassed 130 degrees Fahrenheit), the 101st Aviation Brigade moved quickly upon arrival to establish a permanent base of operations at the King Fahd International Airport near Al Khobar. Simultaneously, the Brigade performed debarkation operations, coordinated with the XVIIIth Airborne Corps and the Saudi Army Land Forces, and performed aircrew orientation training during the last weeks of August 1990. The 2-229 AATK Bn from Fort Rucker arrived at the end of August, was attached to the Aviation Brigade, and augmented the attack aviation deployed forward to blunt the expected Iraqi armored attack. The Target Acquisition Platoon of E/1-9 CAV with 6 OH-58Ds from Fort Lewis, WA arrived via strategic air and were task organized under 1-101 to enhance target designation and scouting, especially at night.

DEPLOYMENT 13.3

On August 1, 1990, the Combat Aviation Brigade of the 3rd Armored Division, consisted of: two AH-64 (Apache) Attack helicopter battalions, 2/227th (commanded by Lt. Colonel Billy Stevens) and 3/227th (commanded by Lt. Colonel Anthony Jones): a Division Support Battalion, later named 9/227th Aviation Support Battalion (commanded by Lt. Colonel Donald Townsend): a helicopter support aviation battalion, flying UH-1 (Huey), UH-60 (Black Hawk), OH-58D (Kiowa), designated Task Force VIPER (commanded by Lt. Colonel(P) Dan Poston); and a Cavalry Squadron, 4/7th CAV (commanded by Lt. Colonel Terry Tucker).

On August 16, 1990, 3/227th Aviation Battalion was notified that it was to be deployed as part of Operation DESERT SHIELD. They were OPCONed to 12th Aviation Brigade and attached on order. Attachment then became effective August 22, 1990.

While the rest of the Combat Aviation Brigade was preparing for a gunnery at Grafenwoehr Training Area, September - October, 3/227th was preparing to deploy to Saudi Arabia. There were POM sites established for all of 12th Aviation Brigade. The 3/227th's POM (preparation for overseas movement) site was building 1306, a hangar located on Fliegerhorst Kaserne, in Erlensee. At the POM site, medical and dental records were checked, wills made, power of attorneys created, finance and personnel records updated, shots given, and the screening process created to determine who could deploy and who would stay.

On September 16, 1990, the day before the brigade sent its advance party to Grafenwoehr, 3/227th sent their advance party to Saudi Arabia. Third Armored Division and VIIth Corps were notified of their impending involvement in Operation DESERT SHIELD on November 8, 1990. As was the case with 3/227th, POM sites were created. This time, however, they were created all over Germany. Thousands of soldiers and their families were affected by the greatest mobilization of troops in over 20 years.

The brigade advanced parties arrived in Saudi Arabia between December 18 and December 22. The main body arrived between December 23, 1990, and January 3, 1991. There were soldiers arriving from the brigade in theater as late as February 4.

As each soldier arrived in Saudi Arabia, at King Fahd or King Abdul Aziz Airfields, they were greeted by contracted bus drivers who spoke no English (or very little). These bus drivers were to treat the soldiers to their first experience of the Middle East--the "bus ride from hell."--which was a 1-1/2 hour bus ride that took anywhere from 4 to 12 hours depending on the driver, the time of arrival, and the site of ultimate destination.

There were three destinations for the soldiers of the Combat Aviation Brigade. They were affectionately known as "Cement City," "Seaside" (or Tent City), and "the Port." Each had its particular good and bad points. If you asked the soldiers, the good significantly outweighed the bad. If you asked the same soldiers later, all three would be better than "standing to" at TAA (Tactical Assembly Area) Henry.

On January 5, the advance parties left the port, in whichever vehicles had arrived by sea from Germany (and there weren't many), and headed to TAA Henry with the rest of the 3d Armored Division's advance parties. For the rest of the soldiers left at the port, the trip to TAA Henry would come between January 23 and February 4. Each newly arriving soldier at the TAA was greeted to a foxhole and "stand-to." "Stand-to" was a "wake-up and stand by a foxhole" that occurred daily at varying times. Initially, it began at 0500 and lasted until four beeps of the horn, or 0730, whichever came earlier. It meant standing-to in all sorts of weather (yes, it rains in the desert) and in all ranges of temperature (there were mornings that there was frost on the sand).

By February 4, the last of the brigade's soldiers had arrived by land and air and stand-to became ritualized from 0545 until 0645. Movement to TAA Henry meant more than beginning stand-to, it meant an end to the SCUD missile attacks (surface to surface missiles launched from mobile and fixed launch sites inside Iraq). Further, it was at TAA Henry that the finishing touches kept being made to the plans for the Corps attack on the Tawalkana Division of Iraq's elite Republican Guard. There, the Brigade had aerial gunnery with both Hellfire missiles and TOWs, the CAV squadron fired their Bradley 25mm guns and TOWs. There were also two dress rehearsals for the division move called "HMMWV 1" and "HMMWV 2" on February 4 and February 8, respectively.

DEPLOYMENT 13.4

On February 14, 1991, elements of A Troop, 4/17 CAV, conducting training at Oceana Naval Air Station received notification to redeploy to Fort Bragg, North Carolina. The commander and platoon leader returned that night to Fort Bragg while all aircraft and crews redeployed the following morning on February 15, 1991. A Troop received notification to deploy to Saudi Arabia in support of Special Operations Command (SOCCENT) with no time sequence given for the movement. Plans for the movement and identification of all required equipment for deployment occurred on February 15, 1991. Development of a list of minimum mission essential equipment (MMEE) took immediate priority for the troop to deploy. Development of load plans and pallets occurred on February 16 and February 17, 1991.

On February 17, 1991, the first C5A departed Fort Bragg at 1600 and arrived in Saudi Arabia on the morning of February 20. The second C5A departed Fort Bragg on February 24 at 0300 and arrived on February 25 at 0930. The soldiers who arrived on February 20, spent the first two days in Saudi Arabia setting up the area and getting organized. This included taping the main rotor blades of the four aircraft that arrived on the first flight. On February 20, aviators conducted initial flight training in Saudi Arabia. Initial guidance provided ten training days in theater before commencing operations for SOCCENT (Special Operations Command). The purpose of the training plan was to train all aviators in day and night vision goggles (NVG) operations in a desert environment. This training consisted of a total of 4 flight hours in which aviators flew 2 hours in the pilot station and 2 hours in the observer station. Aviators flew for 2 hours during the day and 2 hours under NVGs. Aviators performed the following flight maneuvers during training: low level flight, normal approaches and takeoffs, desert navigation, hovering flight, slope operations, out of ground effect checks, nap of the earth decelerations, terrain flight approaches, mast mounted sight (MMS) operations, aerial observation techniques in a desert environment, aircraft survivability equipment operations, and masking and unmasking. Academics training consisted of desert flying techniques, effects of density altitude (DA) and temperature on the aircraft, depth perception problems, pre-flights in a desert environment and flight characteristics. This did not include any collective training or team tactical training. Two instructor pilots initially flew together and met all training requirements. The instructor pilots then completed training on all other aviators from the first C5A by February 25. On February 26, training began on four aviators that arrived on the second C5A.

DEPLOYMENT 13.5

The "job" started immediately, with almost round-the-clock briefings, updates, planning sessions, and reviews of the "lessons learned" by the aviation assets in the Kuwait Theater of Operations (KTO). Many things became instantly evident.

Although it was apparent that we would not have to fight our way off of the boats and airplanes to enter the KTO, we would have to deploy with anything and everything we think we would

need immediately. "If you want it, bring it with you," admonished the After Action Reviews (AAR) of the 101st, 82nd, and 24th Divisions. Class IV materials for defensive positions, package POL (Petroleum, Oil, Lubricants) products for aircraft and ground vehicles alike, batteries for lights, radios, night vision devices, global positioning or LORAN systems, and luxury items such as coolers and portable showers were among the most critical and desired assets. To obtain many of these meant scaling and sifting through the kilometers of red tape surrounding local procurement procedures. In many cases, the regulations governing the Field Ordering Officer and S-4 functions often inhibited immediate acquisition, frustrating commanders and sergeants major. DISCOM (division support command) and Material Management Center leaders told us that all of our needs would be met. "The check's in the mail," became a favorite response to such promises.

Because of the massive amount of equipment, personnel, and material, planning would be critical in getting the brigade's essential assets to the KTO on time and mission-ready. The responsibility for identifying, pre-positioning, and prioritizing such equipment for loading on vehicles, MILVANS, sealand vans, and conexes fell largely on the noncommissioned officers of the brigade who did a great job. As it turned out, almost every critical item that the brigade needed was immediately available because the NCOs had the foresight to place it on vehicles. Early on we had been directed to expect an allowance of only a rucksack, A-bag, weapon, and chemical protective mask for our flight to KTO. The arrival, location, and delivery of these containers became a matter of some difficulty at brigade level, and will be discussed in a future article.

Initially, we had been told that we could depart from Bremerhaven, Rotterdam, or Antwerp. Rumors again multiplied, with reports that aircraft might go to one place, vehicles to another, by rail, by road march, by barge. Ultimately, all aircraft flew to Rotterdam, while our wheeled vehicles ended up road marching to Rotterdam and Bremerhaven for deployment. These two events seem remarkable in their simplicity and efficiency. Between the period November 29 to December 5, all of the brigade's wheels and aircraft made it to port without incident, breakdown or significant delay. Again, the leadership provided by the noncommissioned officers, under the watchful eye of

Brigade Command Sergeant Major, Kenneth R. Weast, was the key factor in the safe and successful road marches to Bremerhaven and Rotterdam. More than 300 vehicles drove over 600 kilometers in some of the most hazardous winter road conditions Germany has experienced in years.

The aircraft of 1-1 Cavalry, 2-1 and 3-1 Attack Helicopter Battalions, Task Force Phoenix, and 9-1 Aviation Support Battalion deployed to Rotterdam from November 29 to December 5. Except for weather, there was nothing to inhibit their safe and timely arrival at Valkenburg Air Base and the port facilities of Rotterdam.

The decision to ship our equipment from Rotterdam turned out to be a very pleasant experience for all of the 4th Brigade (Iron Eagle), many of whom were visiting our NATO ally for the first time. The Dutch people and soldiers we encountered went out of their way to make us feel welcome, supported, and secure. The Dutch authorities were extremely helpful in every respect, assisting in what they termed, "DEFORGER." Mess and accommodations were provided at Valkenburg for the soldiers assigned to prepare the aircraft for loading onto ships. Each day these personnel would bus from Valkenburg to the port, put in a 14-hour day, and then bus back for a great meal and a well-deserved night's rest in the Valkenburg gymnasium. The port was really an around-the-clock operation which appeared frenzied on the surface, but was in reality a coordinated and synchronized effort. The soldiers at dockside from various transportation units provided their expertise and support, insuring the success of the Brigade's load-up and deployment. Although the trip from Katterbach to Rotterdam encompassed only 7 days, it would be an additional 3 weeks before all of the brigade's aircraft and vehicles actually were placed aboard ship and enroute to the KTO.

Back in Katterbach, the brigade and battalion commanders continued observing the military and political situation, as well as preparing their units for the deployment and follow-on employment. Even with all of the various lessons learned, there were always activities to prepare for and carry out. The brigade would have to go through a preparation for overseas movement, or POM. This process allowed all of the Brigade's soldiers and their families the chance to review finances, medical records, get immunizations, make up wills and powers of attorney, and otherwise take care of critical business prior to departure. It

was an opportunity to educate those family members who were not already involved in the mundane affairs of their spouse. The Iron Eagle Brigade's goal was to have every soldier's family comfortable in the knowledge of what to do and how to take care of business in the absence of their service member.

After the brigade's departure, the role of the family guide and advisor fell upon the various battalions' family support groups. These organizations composed of spouses and families left in Germany, provided a vital link to all of the family members with their soldiers. Commanders' and senior noncommissioned officers' wives formed a dedicated and selfless nucleus of a tight-knit and efficient operation designed to lessen tension, defuse rumors, and bring the far-flung elements of the command into a united and motivated group. The value of such an organization is priceless, intangible, and a combat-multiplier. To provide security and assistance to every family member left in Germany allowed the soldiers of the 4th Brigade to concentrate on the business at hand--the freeing of Kuwait.

With the aircraft and vehicles loaded, milvans and conexes stuffed and picked up by commercial and military carriers, training, briefings, and bag-packing complete, all that remained was to organize the advanced and quartering parties, and await determination of the sequence of deployment to the KTO.

With all of the 4th Brigade aircraft and vehicles safely at the ports of Rotterdam and Bremerhaven awaiting shipment to Saudi Arabia, the plans to phase its personnel into Operation DESERT SHIELD began to take shape. The advanced and quartering parties would need to accomplish a number of critical tasks to pave the way for the brigade to enter the Kuwaiti Theater of Operations (KTO).

The 1st Armored Division's advanced party, under the command of Brigadier General John Hendrix, the assistant division commander, maneuver (ADC-M), arrived in country on December 14, 1990. Along with five personnel and two vehicles from the 4th Brigade, this group quickly left the Initial Staging Area (ISA) at the port of Jubail for the desert. VIIth Corps had given the Division a large "goose egg" tactical assembly area about 20 miles south of Qaysumah, named TAA Thompson. The advanced party, capitalizing on a leader's reconnaissance conducted by the Commanding General, Major General Ronald H. Griffith some weeks prior, quickly surveyed the major subordinate commands' sectors

and established contact with the VIIth Corps' LOG Base Alpha. This huge entity incorporated all classes of supply, maintenance units, transportation, and administrative resources. VIIth Corps' 2nd COSCOM (corps support command) became the focal point for acquiring tentage, POL, food, and water, in the nascent arena.

As the advanced party prepared the division's sector, the first quartering parties arrived on December 15 and settled uneasily into a blessedly short stay in the ISA (initial staging area). Despite the best efforts of the ISA's management, it soon became overcrowded and unsanitary. Thousands of soldiers moved into whatever spaces they could find to live until word came to move to the desert. Contracted services for feeding the soldiers and emptying the latrines often fell short of expectations. Fortunately, it can probably be said that the experiences of the ISA hardened the troops and made them eager to occupy their places in the Saudi wilderness.

The 4th Brigade's quartering party arrived at TAA Thompson on December 22, just in time to settle in for Christmas. Among the first tasks to be accomplished for preparing the desert for the main body's arrival were securing the sector, dividing the Brigade area into sufficient and workable terrain for its 125 aircraft, 250-plus wheeled vehicles, and 40 Bradley fighting vehicles, and establishing sites for a division FARP (forward arming and refueling point) and ammunition holding area (AHA).

Perhaps the most challenging aspect of the brigade's occupation of the desert sector was the finding, acquiring, and placement of 1-19 aluminum matting. These 4-foot by 4-foot sections, when pinned together, formed aircraft landing pads and maintenance areas. The 4th Brigade, seeking a proportionate share of the limited number of sets remaining in theater, was allocated just over 3,000 mats. The division engineer, MAJ John Brewer, recommended that this number would allow the construction of a pad for each of the 36 AH-64 Apaches, the 6 OH-58Ds, 12 FARP pads (four each for the attack battalions and the Division FARP), and 1 CH-47, resupply pad. While falling well short of providing sufficient pads for the brigade's aircraft, we determined that these were at least a partial fix. When combined with extensive spreading of diesel fuel or some form of blacktopping, the brigade made the best of the bad environmental situation caused by the blowing sand and dust around delicate turbine engines.

Also essential was the acquisition of Saudi-constructed, pre-fabricated showers, latrines, and wash basins. Division allocated these on the basis of one shower and latrine for every 50 soldiers, one set of wash basins (8-places) for every 80 soldiers. As they arrived on the trailers of seemingly endless convoys of cargo trucks, every brigade XO or S-4 in theater queued up for at least his unit's daily allotment. In the long run, each brigade got a reasonable amount of "soldier support" items, allowing them to pursue other problems such as finding a source of water to fill those showers.

Meanwhile, back in Katterbach, Germany, the last elements of the 4th Brigade loaded onto buses on December 21 to make the short, first leg of their journey to Nuernburg Flughafen (airport), the aerial port of embarkation (APOE). Carrying weapons, chemical protective masks, load-bearing equipment (LBE), ruck sacks, and one "A" bag, the main body departed Nuernburg on civilian-chartered aircraft. Once the soldiers of 1-1 CAV, 2-1 and 3-1 Attack Helicopter Battalions, and Task Force Phoenix, arrived at King Fahd Airport, they committed themselves to getting the Brigade ready for combat.

As the AH-64s, UH-60s, OH-58Cs and OH-58Ds, AH-1s, and UH-1s of each unit trickled into the ports of Jubail and Dammam on four ships, the rest of the brigade's equipment was arriving or en route on 27 different ships. When the aircraft came off of the boats, eager teams from the battalions took possession and began the tedious and labor-intensive steps of reassembling the helicopters, taping the rotor blades (against the tremendous erosion encountered due to sandy conditions), and conducting maintenance and flight operations. The men of 1-1 CAV, the "Blackhawk Squadron," quickly regrouped their assets and moved out to TAA Thompson, becoming the first combat unit in VIIth Corps ready for action. Under the command of Lt. Colonel William A. Reese, the squadron immediately took the lead in securing the sector and initiating training for combat operations.

The intent was to deploy the 4th Brigade's aviation units to the TAA as they became 100 percent ready. Moving into the desert as whole battalions unified them in both mission and sense of purpose, and precluded the possibilities of piecemeal, catch-as-catch-can training. By December 31, the 4th Brigade had moved all of its assets, personnel, and equipment, from Katterbach to TAA Thompson. There were no accidents, no incidents, and nothing

left behind except for our loved ones at home. As the end of the year rapidly approached, the men and women of the Iron Eagle Brigade had safely deployed to the KTO, and remained motivated to accomplish their missions, and to get the job done.

For 4th Brigade (Iron Eagle) of the 1st Armored Division, the new year began with 100 percent of the 125 aircraft, 250-plus vehicles, and 1800-plus soldiers deployed in the KTO at TAA Thompson. The journey for 1-1 CAV, 2-1 and 3-1 Attack Helicopter Battalions, and Task Force Phoenix had been a long, tiring, and fascinating experience. Many of the officers and noncommissioned officers had studied scenarios in which U.S. forces would have to deploy long distances in a short period in order to fulfill obligations as the free world's champion. Few believed that they would actually get the chance to conduct an operation the size of Operation DESERT SHIELD. It's one thing to fly the 82nd Airborne someplace, drop them out of C-141s, and ask them to fight briefly and furiously. Of course, this is a gross oversimplification of the magnificent job they and the rest of the RDF (rapid deployment force) have done over the past few years. But who could possibly envision REALLY moving not one, but two armored divisions (plus much more) from Europe to Southwest Asia? We were there to see it with our own eyes, and to participate in the joys, sorrows, trials and tribulations that went along with it. Now that we were there, the mission came into crystal clarity.

The 4th Brigade, as the first full-up divisional aviation brigade in USAREUR, found itself as the first combat-ready VIIth Corps brigade of any type deployed in the Saudi desert. By January 1, all of the Brigade was actively involved in day and night desert flight training. The pilots and maintenance personnel of each unit, as well as the CAV troopers in their Bradleys and HMMWVs, found that all of those lessons learned by the XVIIIth Airborne Corps with regard to training in Saudi Arabia were true. Sand gets in everything. Flying at night with goggles is a real challenge. Targets show up very clearly at night on the Apache and Bradley IR systems.

As time passed and the UN-imposed January 15 deadline approached, opportunities to train were many and geared for realism. The two attack battalions, 2-1 and 3-1, under the command of Lt. Colonels John Ward and William Hatch, respectively, practiced frequent night company- and battalion-level battle drills. Additionally, the sudden and pleasant

availability of Hellfire missiles offered the Apache crews the chance to fire a real missile--a first experience for all but a few of the pilots and gunners. The hours in the combat mission simulator in Illesheim, firing hundreds of computerized Hellfires at hundreds of computerized T-72s, BMPs, and ZSU-23-4s would soon be replaced by the opportunity to test their skills against real targets--Saddam Hussein's Republican Guard and other motorized and tank divisions.

Throughout the period leading up to the start of the Air War and the first days of Operation DESERT STORM, the Iron Eagle Brigade flew over 4500 accident-free hours. They fired 52 Hellfire missiles, and enough 2.75" rockets and 30mm HE to validate their confidence in the Apache and its systems. The AH-1 Cobras of the 1-1 CAV also honed their skills with TOWs, rockets and 20mm. The Bradleys zeroed, fired, and practiced screen missions, area and route reconnaissances. The only casualty during this ramp-up to combat was a fractured hand suffered when a soldier fell as he attempted to light an immersion heater atop a shower tank.

DEPLOYMENT - 13.6

The following is an interview conducted by Dr. Burton Wright, USAAVNC Deputy Branch Historian, with Captain Michelle Barlean, whose unit during Operation DESERT SHIELD and DESERT STORM was Charley Company, 7-101st, 101st Airborne Division (Air Assault), XVIIIth Airborne Corps, as a CH-47D flight platoon leader:

Dr. Wright: Describe for me what your unit did and what you personally did to prepare your unit for mobilization and deployment.

Captain Barlean: We were one of the first units that were mobilized. We were mobilized in early August, as I am sure that the rest of the XVIIIth Airborne Corps was. The aviation assets were very critical. We got the call and we immediately sat down and planned what we needed to take. We determined that we were mostly going to be deploying, my personal company was being deployed by ship, so we had to plan our vehicle movement to the port and a Chinook company has a substantial amount of vehicles.

Dr. Wright: How many?

Captain Barlean: At least 20 vehicles to include tanker HEMTTs and cargo HEMTTS, HMMWVs, that sort of thing. We also had

to deploy 16 aircraft, 8 of which were my responsibility to deploy. We also took associated CONEXs (container express) full of Class IX maintenance material (because we have our own maintenance section as part of my company)...stockpiles of parts that we would need, tentage equipment, anything that we would need for desert operations.

Dr. Wright: Did you have any problems, particularly in the areas of personnel, equipment or training?

Captain Barlean: Certainly. Up to this time, the CH-47 community had been historically short of pilots and this became especially evident during the mobilization. We didn't even have enough pilots to fill all of our airplanes to deploy them to the port. As a result of that we had two retirees that had been retired over a number of years, that came to our unit to augment us. We also got a slew of WO-1s that were just out of training and that we re-routed within a 24-hour time period to our station. We also had people that we were attempting to put through our own transition at Fort Campbell whose training was put on hold and we completed the training as available in Saudi Arabia. As I mentioned, we did not have enough people that were qualified, we certainly did not have the bodies. We had to pick up a brand new aircraft at the factory to fill out our TO&E. That aircraft ended up being transferred later on in the operation to a unit that lost one. Equipment-wise, we were critically short many pieces of essential maintenance equipment, but it was amazing how the supply system caught up with us and we ended up getting most of the stuff that we needed. Even up into the November time frame, however, we were still critically short of pilots and we continued that way all the way up into February.

Dr. Wright: What condition were your aircraft in prior to departure?

Captain Barlean: Well, deployment ended up wrecking a little bit of havoc with our phase system of maintenance. CH-47 aircraft are maintained on a phase system. We had a couple of aircraft that were in phase that had to be accelerated radically and farmed out to different AVIM (aviation intermediate maintenance) units in order to facilitate our movements to the docks in our deployment. Then we ran into some problems along the way because the AVIM units were also deploying and there were times when they couldn't finish the phases for us. So we would have our own guys that were with their aircraft which had been

abandoned by the AVIM companies and they were trying to put it back together at the 23rd hour for deployment.

Dr. Wright: Your AVIM is located at Fort Campbell?

Captain Barlean: Yes, it is. We have an entire AVIM maintenance battalion at Fort Campbell. We have a specific company that has the responsibility of doing our maintenance.

Dr. Wright: Is your unit task-organized with a larger unit within the 101st?

Captain Barlean: Yes, normally we are. We normally work as a task force with the 3d Infantry Brigade which is the 187th and the associated task force units within that brigade, such as the artillery. As a follow-on mission, we also normally support the DISCOM (division support command) which also ended up being a problem because you wear two hats - two bosses. We ended up basically breaking it down to platoon responsibilities.

Dr. Wright: As a platoon leader of a Chinook unit, what does that encompass for you? How many people do you command? How many ships do you have?

Captain Barlean: I have eight CH-47Ds, which all had five-man crews. Each aircraft has a pilot, a co-pilot, a flight engineer, a crew chief and a gunner. So, we ended up having approximately 40 people and then I also have a platoon sergeant which is another TO&E slot and a driver. So, I had about 42 people that I was responsible for, along with vehicles and other assorted equipment.

Dr. Wright: When you deployed, how were your equipment and aircraft deployed?

Captain Barlean: Aircraft are all deployed by ship. We sent a maintenance representative with the aircraft. We flew them to the port which was a day-long mission. We basically shuttled pilots, as I mentioned, we didn't have enough to crew the airplanes so we shuttled pilots back to Fort Campbell to fly the aircraft back down to Florida. Our non-aviators, our non-crew members, drove the unit's vehicles. A lot of our equipment, such as our CONEXs were taken by civilian transportation down to the port and we loaded out all our extraneous equipment, our camping gear, by CONEX. We deployed unit personnel by civilian aircraft on the 4th of September.

Dr. Wright: When did you arrive in Southwest Asia and when did your equipment arrive?

Captain Barlean: I deployed the 4th of September. I was in the second chalk of people from our company to deploy. We had two or three people that had gone earlier. When I arrived in Southwest Asia, it was very early in the morning of the 6th. Our aircraft arrived on the 7th. Now we had sent out that equipment, you have to realize though, around the 15 - 20th time frame of August, so it took three weeks. Many of our CONEXs didn't arrive until the first part of October which meant we were left without a lot of our equipment. We had most of our maintenance equipment, but we didn't have cots, we didn't have tentage, we didn't have that type of equipment with us.

Dr. Wright: What was the condition of the aircraft when you picked them up in port?

Captain Barlean: I though that they were in pretty good condition. I was really actually surprised because you never know what is going to happen on a ship for three weeks. You don't know who was there before you or they might have needed something off your airplanes. Chinooks are loaded with avionics and stuff. The aircraft themselves were in very good condition. I would say that the only complaint that we had is that some people had rifled through and stolen tools and things that had been locked on the airplane. That was a risk you took by loading it in the aircraft.

Dr. Wright: Tell me about your first week in theater, about your base camp, logistical arrangements, the type of training and the missions you ran for the first weeks that you were there.

Captain Barlean: Well, when we got there we hit the ground running. We really didn't know what the threat was. We didn't know how soon we might be involved in any kind of situation. We had W-4s that were combat vets, but overall, the situation was unclear. Our equipment was coming in sporadically. We got off of the plane, we went to a large parking garage at an airfield that was under construction near Dhahran. We slept on the floor. Vehicles were not yet in so we didn't have to worry about fuel for those. Fuel for the aircraft was available at King Fahd. Our aircraft came in, our first training mission while in-country was to go and pick up our aircraft. We took a bus down to the port and flew our aircraft back. So, what they basically tried to do was the first people who went down were the maintenance test pilots responsible for doing a quick traffic pattern with the aircraft prior to going back to our base camp. They went

first and as soon as the aircraft started to come up we took the instructor pilots and the pilots-in-command, which are your aircraft commanders, and then finally the co-pilots and we tried to get a little bit of training while en route although it was mostly flown at altitude. Eventually, as soon as we got all of the aircraft flyable and cleaned and washed because we had to wash off the salt water and everything to prevent corrosion, we started to fly some training missions. We still had people who were not yet qualified in the aircraft that we needed to try and qualify while we had time, but they were very, very conscientious of keeping our flight time down due to maintenance concerns. We didn't have a lot of parts nor were the supply routes intact yet to ensure that we would have. We didn't know whether or not hostilities were imminent. We went out to see what goggle flying was going to be like with mostly our senior pilots. We have basically what I would consider to be an "A" team of eight crews and those were our NVG (night vision goggles) crews. The other people, the reserve people, the older guys that had never been goggle qualified, they got the las priority and they were held in reserve until such time as we knew that there would be some time to train.

Dr. Wright: How long does it take to qualify these crews?

Captain Barlean: Well, normally here at Fort Rucker, it is about a three and one-half month process. These guys had been in our own local transition for about a month. They had the necessary academic training here at Rucker and had come back and had just basically started so, it got to be fast and furious. The question was brought up, "...how do we know when these guys are qualified because we don't have somebody from Fort Rucker to give them a final evaluation?" So, our battalion standardization IP (instructor pilot) was given the authority by Fort Rucker to bless these guys as Chinook pilots. It ended up taking, I would say, about another month before they flew and they were given last priority. They were prioritized after the reserve guys because they required the most amount of time to become proficient. But it took them about a month. I was impressed. They did a really good job.

Dr. Wright: When you say goggle-qualified, I assume that you mean you flew night missions?

Captain Barlean: Yes, we did. A lot of it was experimental. What can we do? A Chinook generates an awful lot

of downwash. In a sandy environment, if you close your eyes right now, that is what it is like flying night vision goggles in the desert when you land. You can't see anything.

Dr. Wright: A brown out?

Captain Barlean: Exactly. All the time. You have it in the day, but a lot of times you can pick up references you know and control your terror because it is day, put it on the ground and it is not that big a deal. But to get very comfortable at night--even for the instructor pilots and the very senior guys--it takes a great deal of training to become comfortable, and there is a difference in liking it and becoming comfortable with having to do it. I was a relative senior night vision goggle pilot with over 200 hours and I can tell you definitely, I didn't like a single night that I flew out there.

DEPLOYMENT 13.7

Major Kevin Smith interviews a troop commander, 1-1 CAV, 1st Armored Division:

Major Smith: Let's start with deployment. Start about the movement and preparation and the deployment overseas and some of the lessons of some of the things you did.

Troop Commander: First problem we had to overcome was we had "Alpha" model 58s which did not have the power to fly in the desert. We made sure the brigade commander and his staff were aware of the problem and let them work on getting us Charlie or A+ models. We picked up six A+ and Charlie models prior to deployment. I forget the exact mix of A+ to Charlies. We picked them up from the rebuild facility in Belgium. Pilots from the Third Infantry Division came down and took our Alpha models. The aircraft from Belgium gave us half of the OH-58s we were authorized. Brigade said we could pick up the rest of our OH-58s in the desert. We picked up the remaining six OH-58 Charlies with flat plate windshields at the port of Jabail from the 2d ACR (armored cavalry regiment). Naturally they weren't the best aircraft the ACR had to offer. They had a lot of hours on them (close to phase) and were missing parts like radar altimeters. Another problem we ran into were the Cobras. We were equipped with MILES TSUs (telescope sight units) to fight at the Hohenfels training area. Once we got the word that we were deploying we ordered Laser TSUs. Due to the classification of the Laser and MILES TSUs we were not allowed to have one of each in our

inventory. We finally received the laser TSUs but then we had to have the aircraft bore sighted. Our direct support maintenance facility said they had to pack up a month prior and that we would get our aircraft bore-sighted after we deployed. Once the aircraft arrived in Saudi (mid January) we found out that the boresighting equipment had not arrived. I don't know who coordinated for civilian maintenance from the 101st or 82d but they were excellent. They arrived and did a superb job with our weapon systems. We had always been suspect of our bore-sight quality because whenever we went to Grafehwoher, we had never been able to put the cross hairs on the target and hit the target with all three weapons systems. The civilian maintenance teams confirmed our suspicions. Many of our black boxes, TOW launchers, and rocket pods were bad. We also asked for the improved particle separators because we'd heard about the problems that Cobras were having over there. We were told we'd get those in-country. I eventually got one of my Cobras equipped with the particle separator.

Major Smith: How about ground vehicles?

Troop Commander: Ground vehicles: each ground troop had a CUCV, a 10-08A1, a 10-08A1B with a communications package and a deuce and one-half. The important thing that everybody had to realize was that you had to be able to transport everything you owned on your vehicles. We had some people that asked for extra trucks from the HHT (Headquarters and Headquarters Troop) and thought that they were going to have those transportation asset throughout the war. But, that wasn't going to happen because they needed to transport ammunition, food and water and gas. So, some equipment was left at log bases in the desert because it couldn't be carried. We always made a conscious effort to plan to only use our organic transportation assets to carry our people and equipment. **I firmly believe you have to plan to take care of yourself as much as possible and never depend on anyone else for the accomplishment of your mission** (Author's italics). That's hard to tell your soldiers when they see other units with more transport assets packing large amounts of comfort items. We did get MILVANs and I told the soldiers they could put comfort items on the MILVANS under the stipulation that they may never see it again. Some of the wives went out and bought games, toilet articles, and other comfort items for the soldiers that also went

on the MILVAN. We did not see the MILVAN until we were back in Saudi Arabia ready to deploy back to the United States.

Major Smith: The amount of transportation that you had, could you live safely...could you maintain operations? Was it a strain? Were you expending more effort trying to do "work arounds" to carry stuff than you were doing concentrating on the fight?

Troop Commander: No, we had enough time on our hands where the guys managed to the point where they could pack everything on the trucks. Even with detailed load plans it took time to pack everything and everyone into our vehicle. We could not move at a moments notice. There was a notification problem when we moved west our of our staging areas in the Saudi desert. We received a movement order late from division, I'm not sure what happened, but we met our departure time because of a tremendous effort of the entire unit. I was also advised not to take tents forward because the troop might not have enough vehicles if we had to haul our own ammunition. I took two GP mediums forward with me because my crews and mechanics had no were else to go. If the war was going to last for any length of time I knew my soldiers would need some place to get out of the elements. The vehicles were packed to capacity and I did not want the soldiers sleeping on the ground because of the scorpions and other native creatures. We didn't take any stoves due to a lack of space. I just needed to put a roof over their heads. It would have helped if we were authorized additional vehicles. We made do with what we had; we could have used another deuce and a-half or another 1008 or HMMWV.

Major Smith: You're getting ready to go over. You're going through the deployment sequence, what are you hearing from the desert as far as information on the Iraqis, your intelligence stuff, your S-2s?

Troop Commander: The threat preparation by our S-2, Tom Wilson, was excellent. He was getting photographs and diagrams; not only of vehicles, but of battle positions. We're getting manuals about how they fight and classes on Iraqi techniques and tactics. In addition the intelligence updates we were very concerned about field sanitation. Our Physicians Assistant had desert fighting experience with the Israelis. His experience was invaluable. He stressed field sanitation expanding on the army approved procedures with detailed classes and explanations of

procedures that we were going to have to maintain a healthy unit. You could not appreciate the fly problem unless you were there. You have to serve and eat meals rapidly so that people do not get sick. You can't let food set out and you have to constantly cover it up after you serve it. If you are in any one place for any length of time the fly problem multiplies. You have to burn your garbage a couple of times a day. The garbage has to be burnt completely. The only problem with the burn pits were the smoke and thermal signature. Regardless of your best efforts the flies are going to be there but you have to do your best to keep their population down.

Major Smith: Is this both garbage and feces that you are burning?

Troop Commander: Yes. The garbage you just basically use diesel and it burns well. The feces takes a while to burn and you have to do that twice a day. We used a mix of diesel and gas. Mostly diesel, because the gas burns off too quick. If you put much gas in there it burns off too quick and you don't get a clean burn. You also have to make sure your soldiers don't urinate in the toilets. Urine doesn't burn. Soldiers have to use the urine tubes prior to the toilets.

Major Smith: How did you divvy up that responsibility?

Troop Commander: The First Sergeant ran a duty roster. Unless somebody got on his bad side and then he got it for an extended period. The important thing was the screen around the toilets. You have to have rubber straps on the doors (we used rubber inner tubes on the doors) to keep the doors shut and the flies out. Inside the toilets we always had insecticide and fly swatters to kill what ever flies were in the toilet. It worked quite well. Nobody to my knowledge in my troop got sick while we were in the field. Soldiers only got sick from contract food once we were back in Saudi.

Major Smith: Before we get too far into that--the field living part--go on back to the intelligence thing for just a minute. Did you start hearing things about your survivability gear that was on your aircraft that you knew you were going to have to change once you got in-country based upon what the Iraqis had?

Troop Commander: We were concerned about getting the upgrade for ANLQ-144s. We received the upgrade in the desert.

Major Smith: Ok, what about the 136s?

Troop Commander: That never happened. We heard about it, but it never happened.

Major Smith: Flare dispensers, chaff dispensers, did those go on the aircraft?

Troop Commander: We had the control head, but we never received the dispensers.

Major Smith: How about the laser spot tracker?

Troop Commander: No, we didn't put it on because of the weight. We looked at the weight of the spot trackers and decided against them. The IP (instructor pilots) and Platoon Leaders went over weapons loads and trading off fuel for ammunition. Everyone was concerned about weight. We had two TOW Missile Launchers (TML) on each aircraft. We also used the 19 shot rocket pod. One problem we were experiencing was we were having problems with the MARK 66 rockets inventorying. The MARK 40s did fine, but only certain tubes worked for the MARK 66s, so by having more tubes, it gave us an increased probability of being able to shoot the MARK 66 and the MPSM (multi-purpose submunitions) round.

Major Smith: You went through Germany into Belgium and the Netherlands. Your final point of departure was Rotterdam? Airplanes on the boat?

Troop Commander: Airplanes went on RO-ROs (roll-on/roll-off ships). The port operations in Rotterdam went very well from what I saw. My crew chiefs were very pleased with the life support that they received. The only problem we experienced was the flight to Rotterdam. We flew in the worst possible weather. We got diverted the first day because of the snow. Nine cobras in a snow storm is difficult at best.

Major Smith: Coverings on the aircraft before you put them on the boat--did you cocoon them?

Troop Commander: No. They just went straight on the boat.

Major Smith: What were they like when you got them off the boat back home. Did you have corrosion problems?

Troop Commander: Once we got to the desert they were in good shape.

Major Smith: Personnel only with personal weapons?

Troop Commander: Right, protective masks, protective gear.

Major Smith: A or B bag on the airplane? Out of what, Frankfurt?

Troop Commander: No, Nurenburg. When we got there, first thing they did was move us into an Intermediate Staging Area (ISA) which was horrible. They had 10,000 people in a 4-kilometer area just west of the port of Jabail. We ended up going to the port of Jabail to recover and fix the aircraft and do a little bit of goggle training. The ISA had too many people packed into too tight an area. Sanitation conditions were horrible, food was terrible. The Squadron commander's first concern was "let's get to the desert where we can enforce our own standards" rather than be a part of the ISA.

Major Smith: I understand. Just a mass of people waiting for stuff.

Troop Commander: We were the first ones out. Once our Bradleys got in they put the Bradleys on HETs (heavy equipment transporters) and moved to the desert. We started getting our aircraft in and we started taping and painting the tail rotor blades. The painting lasted the longest. The taping didn't last long at all--it would last about a couple of hours. Some of the paint lasted 10 or 15 hours. A lot depended on how you flew. You had to limit your time ingesting sand in the rotor system. Limit the numbers of landings and take-offs.

Major Smith: Let's talk about flying in the desert. We discussed this before, but the general, overall techniques as far as safety of flight stuff--taking off, landing, in route...

Troop Commander: First off, you had to get off the ground immediately to save your engine and rotor system. You did your HIT checks in the air. Whenever possible you used cold refuel to limit time spent sitting at engine idle in the sand. When you landed, you had to do a run-on landing and get the aircraft to flat pitch before the dust cloud caught up with you. At stand to in the morning, you don't run up your helicopters and ingest everybody else's sand from their rotor wash. When you take off, especially when you have all your aircraft taking off at once, you have to be cautious of the spacing and the positioning because you don't want the people who are last to take off to ingest everybody else's sand from their rotor wash. If the wind has shifted, you have got to put the aircraft into the wind before you take off.

Major Smith: A lot of units had accidents because they didn't.

Troop Commander: Well, also you've got to figure other units had an additional 1,000 pounds for the Cobras.

Major Smith: You went to 11,000 pounds?

Troop Commander: They gave us an extra 1,000 pounds. I wouldn't let my guys take it because you need that margin when you're taking off if you brown out. You've got to have some power left in case you brown out. Really, when it comes down to it, what are you going to gain--I want more gas anyway. I'm not out there to kill tanks. I'm out there to find them, mark them, how broad his front is, how deep he goes and a way around him. That's my job. Hit him with CAS (close air support), artillery and bring in the tanks and the Apaches. Now the Cobra drivers didn't want to hear that, of course. They wanted to rip turrets.

Major Smith: Talk about sand and environmental flying conditions again. You mentioned before that you were going to get the improved particle separator (IPS) or that was going to be made available to you.

Troop Commander: Never got it. All along the C Troop commander, and I were asking for the separators. The problem was it was going to take five days per aircraft to get the IPS on. The brigade commander, Colonel Petroski, said he was not sure when the battle was going to start; therefore, he could not take the chance of not having our Cobras ready to go.

Major Smith: When was this decision made? December, January?

Troop Commander: January. We were constantly asking for the particle separators.

Major Smith: Was this before you moved west or after?

Troop Commander: No, this is long before we moved west. Matter of fact, once the Cobras came off the boat, there was a fear that the Iraqis were going to send a counter attack down the Wadi Al Batin and they wanted the Cobras out in the desert immediately. I was back in the port of Damman getting the Cobras bore-sighted. We had a civilian team, I believe the 82d or the 101st, that somebody let us use. They brought in the BAGSE and the TSGMS and they found a lot of our TOW missile launchers (TMLs) and black boxes were bad. We would have not lasered any TOWs had we fired. Some of our rocket pods were bad. The bore sightings were so far off....

Major Smith: Did they fix before you took the planes out?

Troop Commander: Yes. I was being told to get them out immediately, but I waited to get them fixed because what good is a Cobra if it can't hit what it's shooting at? We were being told, "we'll do it in the field". You can't do a TSGMS (test set guided missile station) and BAGSE (boresight alignment ground support equipment) in the field, it has to be in a no-wind condition on a hard stand. As the aircraft were fixed, I sent them out. It worked.

Major Smith: 58s?

Troop Commander: We picked up six more aircraft from the 2nd ACR. They picked up Deltas and had excess 58 Charlies. They gave us all flat plate Charlie models and they were not in the best condition. As a matter of fact, we were missing two radar altimeters, which were key for the desert flying. They had been flown a lot and they were needing phases and our guys did it.

Major Smith: Let's go back to engine--the IPS again. The decision was made long prior to the start of the ground war not to put the IPS on the aircraft; in your opinion the final result of that when everything was tallied up...was that a good decision or was that a bad decision and why?

Troop Commander: Anything that could have given us extra hours on the engines was worth it. If they had been put on earlier, we would have gotten more out of the engines. I ended up having one particle separator put on one of my Cobras, but it already had 45 hours in the desert on it. We had a problem with that engine later. I don't think it was because of the particle separator, because the engine already had a lot of sand in it. Hindsight is wonderful, but I think we should have had them on. Anything that we could have done to extend the life of the Cobra engines, we should have done.

Major Smith: Other troops in the same shape?

Troop Commander: Yes. Matter of fact, C Troop lost three of their Cobras prior to the end of the war to compressor stalls.

Major Smith: Without IPS?

Troop Commander: Without IPS.

Major Smith: During combat?

Troop Commander: Well, one never crossed the berm. One was during a major JAAT (Joint Air Attack Team) going on where he landed probably within 1500 meters of the enemy tanks. But, they landed it, shot off all the ordinance and still couldn't get it off the ground. They ended up having to leave it there and

evacuated the pilots in Bradleys and came back to get it later. We should have had the particle separators. If nothing else, this is kind of a "touchy-feely" point...but it would have given the pilots the feeling that everything was being done to give them every advantage possible. We wanted to paint the helicopters, but we weren't allowed to because of the IR paint and weight and balance. I feel that paint should have been made available for the aircraft. It would have made a big difference if nothing more than to give us a little edge.

Major Smith: Describe flying with radar altimeters.

Troop Commander: You had to have it. We went through daily exercises where you would take the controls from the other guy, fly around for a little bit and then ask, "well, how high do you think you are off the ground?" You couldn't even get within 150 feet of being close because there was no contrast. That was important for emergency procedures. You had to have faith in that radar altimeter because that was your life line. Until you got close, and I mean very close, to the ground or had a dust cloud around you from the ground, you didn't know you were close to the ground.

Major Smith: And this was standard throughout the war?

Troop Commander: Yes. As we moved forward, and there were some bushes around, or vehicles in the area, then it made a difference. Then you had some contrast, but when it was just you and the desert, you had no idea how high you were.

Major Smith: Goggle flights?

Troop Commander: We had our goggle program canceled on us before we left Germany. We were told that there was no goggle mission for the CAV and so we were not allowed to maintain goggle currency. We were told we were allowed to have two OH-58 crews goggle current for the entire Squadron.

Major Smith: Did you take them with you?

Troop Commander: Yes. We were hoping to get some time in the desert to get current again. If we had to, if a life or death situation required it, we were going to move them. When we got to the desert we were told to train. It became a fine line between training and maintaining. How long do you train...to the point you jeopardize your maintenance status and you can't fight? We trained the crews to the point that they could take off, go from point A to point B under goggles and land. And that was it. That was all we could do. The brigade commander asked me what my

concern was because I was pushing hard on the particle separator. I told him, I said, "Sir, my concern is getting on OBJ Collins and having all my engines quit. We got the guys to the point where they could take off and land at night and then that was it: we stopped, we couldn't fly anymore, we had to save them.

Major Smith: Maintenance parts?

Troop Commander: I don't know how they did it (the supply system wasn't working), but Captain Mike Atkins, our AVIM platoon leader would go out and scrounge parts. He and CW3s Sean Leary and Ed Lance would go out, and I don't know how they got them or where they got them, they were traveling all over that desert looking for parts. The ACRs, the Airborne division--they were everywhere!

Major Smith: Even back to the ports of arrival? Did they go back that far?

Troop Commander: If they could make it. A lot of times they would catch rides on Black Hawks and go back and just scrounge. They were amazing.

Major Smith: This would indicate to us then that if your PLL and ASL was not quite what you needed, then it may be the only thing you're living off of once you get out there.

Troop Commander: Most definitely.

Major Smith: The only horizontal visibility that parts got between units was the maintenance officers themselves, face-to-face?

Troop Commander: There may have been requisitions that were filled, but I don't recall them ever mentioning that things did get filled along normal chains. I'm sure that our support units were able to get us some parts, but again, I was pretty far removed from that. Atkins, Lance and Leary were doing such a good job that I just stayed out of the way.

Major Smith: OK, crew chiefs, normal forms and records, all that stuff, took all that stuff out to the desert?

Troop Commander: We didn't change the rules one bit. Either flight or maintenance.

Major Smith: Full phases?

Troop Commander: Up until the time the war started and then we went into inspections and lubrications only.

Major Smith: Let's talk about personal hygiene. You talked about the toilets. Let's talk about baths and showers.

Troop Commander: Well, you had to brush your teeth, you had to shave. You cut your hair as short as possible to reduce the fact that you have to shampoo because your hair got filthy and you could never keep it clean. Dust on you all the time. You have to wash the sweaty points of your body daily. I kept my sleeves down the whole time. The big thing was having water. We had to control showers. The guys policed themselves, which was kind of interesting. You didn't have people...there may have been people abusing it, but I wasn't aware of it. The guys policed themselves in as far as watching. If you didn't take a shower but every three or four days, you're OK. Some guys didn't even take showers. Plus, the water in the showers was so cold it hurt. It hurt when it came out. So, that kind of speeded up your shower. We fixed that after we got into Iraq, though. We made a water heater. Sanitation wise, the guys...people watched out for each other. Total team effort. They cared about each other and watched out for each other and were always checking on each other. Always inspecting weapons, talking to guys, finding out when they wrote their last letters home, when they washed the last time. The flight surgeon came to us and talked to the guys. The guys stayed healthy.

Major Smith: MREs...primary chow?

Troop Commander: Yes. You had to heat them or the guys wouldn't eat them. Forced water drinking. The guys drank their water. We had some T-rats. They were OK, they were a welcome relief, unless you got the same thing every day like we started getting. It got to the point every morning where we were getting ham slices in brine and bread pudding. I don't know what the problem was with the variety of meals but there has got to be a better way.

Major Smith: Fresh fruits?

Troop Commander: Sometimes, not often. Whenever we got it, the guys ate it. Now when the mess hall would try to cook our dinner meal for us that worked out pretty well. The guys ate real well until the point where we picked up an S&T (supply and transport [truck]) of chili and we had chili macaroni for 14 days. The guys stopped eating. I still won't eat chili macaroni.

Major Smith: You had an S&T loaded with chili macaroni.

Troop Commander: Well, HHT did and that was all we got. It was either chili macaroni with or without corn. Those were the only variations. But we always had enough water.

Major Smith: I can't image the ration break down point back in DISCOM somewhere...where they're going "ok, you get this and you get chili macaroni and you get the S&T of banana pudding.

Troop Commander: Well, the meal was hot and soldiers ate it if they could.

Major Smith: That was a B-ration, though. That's not a T-ration.

Troop Commander: Yes, a B-ration. They would try to cook a B-ration dinner--they would try. But, normally once we got going on the war, really we were going on two MREs per day. The big thing was water--that was my big concern. Keeping the guys supplied with water. We had picked up an S&T full of Evian water before we left and we packed it. We always kept a five-day supply of water in my deuce and a half. I had it in big plastic racks.

CHAPTER FOURTEEN

THE LESSONS OF THE WAR IN THE GULF

There were many lessons learned from the Gulf War. The most important lesson of the war in the Persian Gulf was **not to overestimate victory** [author's italics]. Pictures of surrendering Iraqi soldiers could have given Americans a false sense of security as they contemplated an uncertain future. It's only human to feel a surge of pride and not a little superiority because of the outcome of the war -- the victory was so overwhelming. Many Americans may wrongly assume similar outcomes will always occur in future conflicts.[1]

DESERT STORM was happily different in this regard. U.S. soldiers went into battle anticipating a hard fight against a tough and experienced foe. Overconfidence such as that displayed by Task Force Smith in the early days of the Korean conflict would not dog American actions during DESERT STORM. Those who took part in the Gulf conflict have a right to feel a surge of confidence when they remember their days of combat in the desert and a right to feel pride in their professionalism and their abilities. Respecting an enemy is something that many professional soldiers do because it's more than courtesy, it's smart.

When victorious generals were welcomed back to Rome, they led their army through the city with the defeated enemy driven before them in chains. However, behind the general was a man who continually whispered in his ear " all glory is fleeting [sic transit gloria mundi]."[2] Glory also included memories and experiences. As time passes, what was done during any particular conflict fades in the memory of the public, and those who fought in it.

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[1] This was the attitude of many members of Task Force Smith. As they approached battle with the North Korean Army, they felt that all the NKPA had to do was see Americans, and they would turn and run. See: T. R. Fehrenbach, This Kind of War, (New York: The MacMillan Company, 1963). p. 98. Also see: Max Hastings. The Korean War. New York: Simon and Schuster, 1987. pp. 15-22. Also, the Somalia action where three helicopters were shot down, and a Ranger battalion suffered considerable casualties. This shocked the American people to see U.S. bodies being dragged through the street. U.S. troops went on the defensive, and have remained so as they withdraw.

[2] Quoted with telling effect in the last minutes of the award winning film "Patton" starring George C. Scott.

The only way to bring that memory back is to consult history. Prior to battle the Army's senior leadership looked to the past for important critical memories and for a simple sentence never to be forgotten: "No more Task Force Smith's."[3] They understood the importance of that peculiar Roman admonition about glory. If the lessons of history are forgotten, what has gone before can happen again.

Another important lesson of the Gulf War was the rediscovery of flexibility and initiative. Peacetime armies develop different personas in war.[4] In peacetime, regulations were stressed; new thoughts and innovations often ignored. Those who advocated major change were considered pariahs, and rarely advanced to greater responsibility.[5] Historically a peacetime army was one where time effectively stopped. Seven times in this century, war brought different pressures and different responses to and from the U.S. Army at it moved from peace to war and back again.[6]

The U.S. Army was presented with problems during the Gulf War ranging from lack of latrines to lack of critical spare parts. A majority of these problems were solved by exercising flexibility. And with flexibility during Operation DESERT SHIELD/STORM, came another critical success factor, initiative.

The somewhat rigid system of peacetime operations was modified where and when needed to get the job done. This does

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[3] At the beginning of the Korean War, the first U.S. unit to arrive to defeat South Korea was an understrength battle of the 24th Infantry Division commanded by a Lieutenant Colonel named Smith. When they contacted North Korean troops, the battalion was routed. It was totally unprepared for combat, had inferior equipment much of which did not work, and was not properly trained. They fought an enemy experienced in war, well trained, and that had modern weapons that worked. The resulting defeat was inevitable. See: Clay Blair, Korea - The Forgotten War. (New York: Times Books, 1987). pp. 101-103. Also see William I. Davies (Colonel, USA). "Task Force Smith, A Leadership Failure." May, 1991, pp. 14-28, USAWC Military Studies, U.S. Army War College, Carlisle, PA.

[4] The United States Army that fought World War I was entirely different from the one preceding the War. See: David F. Trask. The AEF and Coalition Warmaking, 1917-1918. Lawrence, KS: University of Kansas Press, 1993. p. 4.

[5] For example, Brigadier General William Mitchell advocated an increased role for airpower in an army dominated by ground oriented commanders. He consistently forced his views on higher authority; frequently going out of channels to do it. It eventually earned Mitchell a court-martial, and a ticket to retirement. World War II vindicated many of Mitchell's ideas concerning airpower. See: Burke Davis. The Court Martial of Billy Mitchell. New York: Random House, 1965. Also see: DeWitt S. Copp. A Few Great Captains. The Men and Events that Shaped the Development of U.S. Air Force. (Garden City, N.Y., Doubleday and Co., 1980). pp. 37-51

[6] World War I, World War II, the Korean War, South Vietnam, Operation Urgent Fury, Operation Just Cause, and the Gulf War. None of these conflicts were related to the other. They each required different tactics and attitudes.

not imply that the system then in place was bad because it functioned well enough during the slower pace of peacetime. Since it was the accepted method whereby the Army obtained its replacements/supplies, etc., this system needed to be modified where necessary to be responsive in future wars. A new system need not be created every time the Army goes to war. If at all possible, fix the one in place.

The ability to face problems and solve them in the most logical way possible was one of the great contributors to victory. History has amply demonstrated the folly of inflexible actions.[7]

DESERT SHIELD/DESERT STORM was a conflict filled with unique first time pressures. One important first was that this conflict was fought wholly with professional soldiers. During World Wars I and II, Korea, and Vietnam the U.S. Army contained a mixture of draftees, reservists, and regulars. This time, all those who fought in the Gulf were professionals -- regulars and reservists. As Conduct of the Persian Gulf War - Final Report to Congress noted:

> Warriors win wars, and smart weapons require smart people and sound doctrine to maximize their effectiveness. The highly trained, highly motivated all-volunteer force we fielded in Operations Desert Shield and Desert Storm is the highest quality fighting force the United States has ever fielded.[8]

So far, so good. But, since highly trained personnel were responsible for victory, what if the war had gone on for a long time? Would the organized Reserves have provided enough trained personnel? In coming years the size of the Army will be lowered, but in light of the sobering experiences of DESERT STORM, great care should be taken as to how much is cut.

Operations DESERT SHIELD and DESERT STORM was the first time since 1941 that the United States Army executed a mobilization

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[7] For example, Hitler's handling of the Me-262 fighter. This prototype jet was available for mass production as early as 1943, but Hitler ordered it re-designed as a fighter-bomber, and as a result, the jet did not reach its full potential until 1945 when the war was already lost. The Chief of the Fighter Staff, Field Marshal Milch was removed from his office for defending the 262 as a fighter and circumventing Hitler's orders to re-design the plan. See: David Irving. The Life and Death of the Luftwaffe. The Life of Field Marshall Erhard Milch. Boston, Mass: Little, Brown, Inc., 1972. pp. 281-282.

[8] Conduct of the Persian Gulf War - Final Report to Congress. Pursuant to Title V of the Persian Gulf Conflict Supplemental Authorization and Personnel Benefits Act of 1991 (Public Law 102-25). Chapters I through VIII, April, 1992. p. xvii.

under pressure. The system that had been developed to handle this did not work smoothly for many of the same reasons identified in earlier mobilizations. It must also be remembered that this was a partial and not a full mobilization.

Throughout history mobilization was all or nothing, executing something in-between triggered major changes in thought and action. Surmounting this problem was possible providing the right mix of training, flexibility, and team work was brought to bear. This was particularly important given the fact that the war in the Gulf was a technology driven conflict, the first in U.S. history. Technology affected mobilization in many ways.

When the definitive history of the Gulf War comes to be written, technology will get high marks for its successful outcome. There is, however, an important lesson here obscured by the glamour of technology.

> Although technology is a critical component of U.S. military power, **high technology weapons and military systems are useless in the abstract. Only a well-trained, professional military capable of using technology in concert with allies and in the service of an appropriate strategy will continue to win wars.** [author's italics] U.S. investment strategy must reflect that international coalitions, training, strategy, and other factors are just as important to winning wars as expensive weapons.[9]

DESERT STORM amply demonstrated one of the best ways to maximize technology's contribution to victory was training. Training <u>was</u> the key to a smooth running military operation. You can practice tactical problems to develop teamwork, and you can practice almost every type of combat scenario in a simulated environment, but it was different and far more difficult to truly practice mobilization. Mobilization has always been a "hands-on" exercise. Hence, it needs highly trained personnel to execute it.

Some units were able to practice mobilization during REFORAGER exercises. But because of pre-positioned equipment in Germany, unit equipment was normally not taken. Some units that

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[9] James Blackwell, Michael J. Mazarr, and Don M. Snider. <u>The Gulf War. Military Lessons Learned. Interim Report to the CSIS Study Group on Lessons Learned from the Gulf War</u>. (Washington, D.C.: The Center for Strategic and International Studies, 1991), p. 23.

trained at Fort Irwin (National Training Center) got a small taste of mobilization, but this was not enough.

Mobilization can be tested with small units, but practicing total mobilization had always been out of the question because of the cost and disruption involved. **Mobilization can only be tested in war** [author's italics]. Mobilization was also difficult to test with computers because of its "hands-on" nature.

If historians were sent to the National Archives in Washington, and studied World War I, and World War II's mobilization when the Army expanded from thousands to millions in a short time, they would find the same problems that were experienced during the partial DESERT STORM mobilization of 1990: Lack of trained personnel, lack of equipment, conflicting directives, lack of experience in combat loading, lack of shipping, lack of training time, lack of spare parts, and units unprepared for deployment.[10] All of these initial mobilization problems were surmounted over time. Just then, time was something that America had in quantity. But there was no reason for such problems to ever occur again as they had been recorded in history.

History demonstrated in WWI and WWII that mobilization was both and art and a science, and can only be speedily and successfully implemented by experienced personnel. Mobilization must be understood in all its parts.

The best way to plan that mobilizations will go smoothly from now on is to insure that all are familiar with past mobilizations -- what worked and what didn't -- and that the written mobilization plans are from time to time taken off the bookshelf, thought through to insure that they are still valid, and then tested to see if they are still sound.

The type and extent of the war effect how the mobilization will be conducted. **Plans need to be written that address partial mobilization which is the most likely type of mobilization well into the next century, and that activate Reserve support on that basis** (author's italics).

In the final analysis, it was **people** (author's italics) that made the difference in DESERT SHIELD/STORM -- civilian and

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[10] That aptly described the U.S. Army as it prepared for World War I. See: David F. Trask. The AEF and Coalition Warmaking. op. cit., pp. 4-5.

military.[11] They worked together as a team, changed the system as necessary, cut corners, and worked as long as it took to get the job done. **That spirit of cooperation must not be lost** (author's italics).[12]

One of the enduring lessons of history was that nations are often unprepared for the type of war they have to fight.[13] This was not necessarily because authority was blind to the situation; rather, it was the larger picture involving a mix of economics, politics, and the attitude of the citizenry. Our historians and our opponents have often wondered if the United States ever paid attention to its own historical experience.

Operations DESERT SHIELD and DESERT STORM prove that the U.S. Army did pay attention to history and apply lessons learned. The Army was professionally ready for the conflict by design, and equipped with the finest weapons systems. Individual and unit training prior to the Gulf War was tough and realistic. Soldiers were in prime physical condition. This did not happen by accident, but because of painful experiences of the past.[14]

> The quality of the people in the U.S. military today is in part due to the disastrous experience of the 1970s, when the military was very demoralized and morale was low ... Determined to improve the morale and quality of the services, leaders of the U.S. armed forces embarked in the 1980's on a comprehensive program of discipline,

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[11] For example of mobilization for a station or post perspective, see: Burton Wright III. U.S. Army Aviation Center in Desert Shield/Desert Storm. Fort Rucker, AL: Aviation Branch History Office, 1992.

[12] Happily, major interservice rivalry was muted during the Gulf War. That was not always so in past wars. The two major branches of the U.S. Army fought a bitter manpower battle in late 1944. The U.S. Army ground forces were desperate for prime infantry leaders, and the Army Air Force had thousands of aviation cadets undergoing training who would make excellent combat officers. Eventually, the desperate situation of the ground forces the USAAF to turn some of its aviation cadets for ground forces training. See: Russell F. Weigley. Eisenhower's Lieutenants. The Campaign of France and Germany, 1944-1945. (Bloomington, Indiana: University of Indiana Press, 1981), pp. 568-570. Similar inter-service rivalry arose just after World War II. See: Clay Blair. Korea. The Forgotten War. op. cit., pp. 7-11, 13-14.

[13] The United States was certainly unprepared for the Spanish-American War. See: Jack Cameron Dierks. A Leap to Arms. The Cuban Campaign of 1898. (New York: J. B. Lippincott Company, 1970). pp. 40-42.

[14] See: Brigadier General Robert H. Scales, Jr. USA, Director. Certain Victory: U.S. Army in the Gulf War. Washington, D.C.: Office of the Chief of Staff, 1993. pp. 10-12.

training, and rebuilding the military's pride in itself.[15]

All Army branches increased the level and sophistication of training, and this trend was as strong in Army Aviation as any. As units began operating in the desert, commanders quickly discovered that even more training was necessary.

At the start Army aviation training was hampered in Saudi because it was difficult to foresee and plan for ALL necessary training. Once a problem had been identified, its fix, especially if it was by development and production of a particular training device, took time. Some things can't be hurried.

Simulators were and are the wave of the future in a downsized military. Although they can never totally replace the real thing, simulators can give crews an accurate appreciation of the problems of flying without any danger. Unfortunately, there were no simulators in the desert; simulators were the actual aircraft. This simulator absence quickly translated into increased flying hours and given the unforgiving nature of the environment, training caused aviation maintenance considerable problems in keeping aircraft repaired.

Portable simulators that can interface with the aircraft's systems, and large ones that can be transported anywhere were being developed but were not ready for the war. The U.S. Army will not be caught short again in a negative portable simulator paradigm.

Tough, realistic training combined with simulators proved their worth <u>before</u> the battle. This was especially so of the VIIth Corps aviation units who had spent months training to fight using doctrine easily adapted to desert combat. Training was but one part of the equation.

The other part are the various weapons system with which the soldier had to fight. U.S. Army soldiers in the Gulf War had the most advanced combat systems available. Since the Army rated very high during the decade of the 1980's, funds were readily available to acquire the best technology. **It is critical that this funding be continued** (author's italics).

The lessons of history show what happens when defenses were neglected. Poland during World War II was case in point.

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[15] James Blackwell, Michael J. Mazarr, and Don M. Snider. <u>The Gulf War. Military Lessons Learned</u>, op. cit., p. 24.

Although Polish soldiers fought very bravely, they could not overcome the superiority in equipment, tactics, training, and planning of the German Wehrmacht.[16]

Military history has been written and preserved as a help to learning and understanding more about future conflicts. After the apparent failure of the U.S. Army in Vietnam, America turned away from the army. My Lai, the Khaki Mafia, body counts, fragging, etc., had shaken the esteem the public had for the U.S. Army.[17]

This attitude, in turn, caused a deep drop in Congressional funding and Army leaders, as they most likely will in the near future, had to make decisions on what to cancel and what to fund. In the case of DESERT SHIELD/DESERT STORM, they made the right decisions. It took time to get that equipment to Saudi Arabia, and that could have had a negative impact on operations.

For example, when Saudi Arabia asked for American assistance at the beginning of the crisis, the 101st and 82nd Airborne divisions were deployed to reinforce the Saudi Royal Army and National Guard. At that time, Saddam Hussein had 200,000+ troops, 2,500 tanks, and hundreds of artillery pieces on the Kuwaiti border with Saudi Arabia.

What if the Iraqi Army attacked into Saudi Arabia prior to the arrival of the heavy divisions? True, the paratroopers had organic anti-tank protection, i.e., AH-64 Apache Helicopters, AH-1 Cobra helicopters, Sheridan light tanks, TOWs, Dragons, and were well trained in their use. Could the anti-tank capability of both the 82nd and 101st have destroyed Iraq's armor before it penetrated the infantry's positions?[18]

While the paratroopers might have kept Saddam's tanks at bay for a time with their Dragons, TOWs, Sheridans, and Apaches, sheer numbers would have prevailed, and Saddam's tanks eventually would have gotten in among the infantry: the two divisions could have been badly mauled if not wiped out.

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[16] For example, see: Nicholas Bethel. The War Hitler Won. The Fall of Poland, September 1939. New York: Holt, Rinehart and Winston, 1972. pp. 30-32.

[17] Scales, Certain Victory, op. cit., p. 6.

[18] History shows what can happen to elite forces that are lightly armed and do not have the firepower to overcome armored vehicles. A good history example would be the loss of nearly three battalions of Rangers at Cisterna during the Italian campaign. See:Michael J. King, Ph.D. Rangers: Selected Combat Operations in World War II. Leavenworth Papers, No. 11. (Fort Leavenworth, Ks: Combat Studies Institute, 1985), pp. 29-41.

The U.S. Air Force would have intervened, and might well have been decisive in stopping the armored attack, but Saddam could also have committed his air force. It could have taken only a few hours for Iraqi armor to do its work as the paratroopers lacked mobility for an active defense. The U. S. Air Force could have executed the dual missions of ground support and air superiority, but it would have strained resources then present in the Gulf to a dangerous level.

Another lesson from the Gulf War was operational tempo. The modern military with all its capabilities to move troops and equipment is sometimes not up to a high operational tempo in the early stages of a conflict.

While Saudi Arabia had ample port facilities to unload cargo, it took the U.S. Army some time to develop a logistical system responsive to its needs. Logistical support was heavily dependent in the early days on the generous support of the host government. This dependence pointed the way to a crucial truth: "This war demonstrated beyond reasonable doubt that the U.S. military is both politically and logistically dependent upon its friends and allies."[19]

At the beginning of Operation DESERT SHIELD, no support infrastructure existed in Saudi Arabia, and was created on the spot.[20] Had Saddam Hussein attacked early, before the outstanding 22nd Support Command built up by Lieutenant General Pagonis was ready, heavy combat would have exhausted the available ammunition and supplies. Modern warfare used huge amounts of supplies.

> A mechanized infantry division can use up to 3,500 tons of ammunition a day when it is on the offensive...An armored division can use up to 600,000 gallons of fuel a day...In an offensive a mechanized infantry division can consume up to 50 tons of spare parts, up to 75 tons of food and medical supplies, and 108,000 gallons of water a day.[21]

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[19] Major James Blackwell, Michael J. Mazarr, and Don M. Snider. The Gulf War. Military Lessons Learned, op. cit., p. 5.

[20] See: William G. Pagonis. Moving Mountains. (Cambridge, Mass: Harvard School of Business Press, 1992). Also see: Scales, Certain Victory, op. cit., pp. 60-65.

[21] Bruce W. Watson, Bruce George, Peter Tsouras, B. L. Cyr, and the International Analysis Group on the Gulf War. Military Lessons of the Gulf War. (Novato, California: Presidio Press, 1991), p. 167.

Once the Iraqis had defeated the Saudi troops, and the early arriving American units, they could have moved into Riyadh and occupied the major Saudi port cities (Ad Dammam, Dhahran). U.S. Air Force units would have had to relocate, assuming the Saudi government wanted to continue the conflict. The political and prestige loss of face along with the military damage would have been catastrophic. Throughout history defeat has been as much a perception as an actual event.

The lack of a logistical support base impacts on combat performance much like a row of dominos. If there is no infrastructure, the first domino falls, striking the next -- i.e., maintenance domino first, then the readiness rates domino next, and so on.

In DESERT SHIELD/STORM complex Army Aviation weapons systems did remarkable things in battle and the amount of care and maintenance they needed to fight was time-consuming. Take the AH-64 which was, by all accounts, the most complex helicopter in the world. This aircraft didn't take well to the desert; in truth, few systems did.

Apache repair personnel had to work around the clock to keep up the 90+ availability rate that was maintained by attack helicopter battalions throughout the campaign. They frequently had to improvise temporary fixes to keep aircraft systems in the green. Although the Apache flew with some systems inoperative, it performed well. Are the terms mission capable and fully mission capable still valid or is a change necessary?

This problem was partially offset by the simple expedient of first echelon maintenance for aircraft, vehicles, and weapons systems. Taking care of equipment was drilled into every soldier in the Theater once there were enough experienced hands to show the new arrivals what to do. Complex weapons were cared for as never before, and, as a result, were available in all modes for combat. In the final analysis, maintenance problems in the desert were never totally fixed.

As weapons systems became more complex, the lead time necessary to generate replacement parts increased geometrically. For example, the AH-64 Apache required complex replacement parts that could not be created quickly and were very expensive. Some AH-64 systems required two years from the beginning of the contract began until the replacement part was available.

Prior to Operations DESERT SHIELD and DESERT STORM, replacement costs were calculated on the basis of how much had been needed to fly the Apache in good environmental and maintenance conditions (peacetime). The normal failure rate was calculated and parts ordered on that basis. Apaches rarely operated in climate extremes for any length of time. The Army had no experience maintaining the Apache during combat situations or in environmental extremes like the Saudi Arabian desert.

As a result of experiences during the first weeks in Saudi Arabia, the replacement parts system was caught short through no fault of its own. If the war had lasted for more than a few months, most of the Apache fleet not in the Gulf would have been grounded and cannibalized to supply spare parts. Other rotary wing systems would have suffered similar problems over time.

One of the most interesting responses to the parts crisis was the development of "war stopper" teams for critical parts. Teams intensively managed each problem as it came up, met frequently to discuss options, and then acted to break any "roadblocks." "Warstopper teams" worked particularly well for critical aviation systems, but the idea could be used for any critical system.

Another innovation used to manage parts was the weekly maintenance meeting in Saudi Arabia that began humbly enough with just two brigade commanders sitting on boxes outside of an airport hangar discussing their units' problems and ended with several hundred officers sitting in a auditorium discussing every maintenance problem imaginable. This proved to be an excellent way for those who needed help to meet with those who could help. With all the aspects of an open air bazaar with parts and equipment being swapped or traded, the meeting served its purpose. Those who needed help WERE helped.

While quick fixes had to be made to keep the Apache as well as other helicopters flying, so too were quick fixes needed for the human elements. Most pilots, regardless of experience, did not have much flying time in a desert like that of Saudi Arabia. It took many flight hours for them to become use to flying over desert that had no distinctive terrain features. Learning to land and take off in "brownouts" took time. Terrain was a frequent negative factor.

But, Saudi Arabia had some pluses. Saudi industrial infrastructure included many contractors that worked both for the

Saudi government and for the U.S. Army (in CONUS). As a result, these companies had excellent repair facilities in Saudi Arabia or in nearby Abu Dhabi. This infrastructure was also robust, and could handle the needs of its Saudi customers as well as the greater needs of the U.S. Army.[22]

Millions of dollars were used to purchase off-the-shelf repair parts. Contractor facilities and personnel were used to augment Army personnel. These civilian contractors often sent repair parties up to front line units to get the job done. In future wars, that type of infrastructure may not be available (i.e., Somalia), and aviation assets would not have the expertise to repair and service some of its more complex weapons systems.

The part played by civilian contractors in the successful conclusion of DESERT STORM cannot easily be calculated; it should not be assumed that they will be available again! In the future such facilities and experts will be available and able to deploy.

As the weapons systems become more complex, the number of civilian "experts" that will be required to maintain the systems will grow ever larger. Part of the problem was the lack of experience of systems and their maintainers in all types of terrain.

True, the National Training Center was a desert, but not exactly like Saudi Arabia. All deserts aren't created equal. Before, helicopter crews rarely had to move, shoot, and communicate during a Shamal, or experience the frightening sensations of flying under night vision goggles over a featureless landscape. Because combat was not joined quickly, crews had the opportunity to sharpen their flying skills. Thomas A. Edison once described his technique for creating great inventions as "Genius is 1% inspiration and 99% perspiration."[23] In desert training, they were about equal.

The superb performance of Army aviation during Operation DESERT STORM was due in no small part to this training time thoughtfully provided by Saddam Hussein. The acquisition of a Saudi Arabian type desert training facility to keep crews and maintenance personnel proficient in the art of flying and maintaining in a desert could pay dividends in the future. This

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[22] See: Scales, Certain Victory, op. cit., pp. 63-64.

[23] John Bartlett. Familiar Quotations: A Collection of Passages, Phrases, and Proverbs Traced to their Source in Ancient and Modern Literature. Boston: Little, Brown, 1980. p. 661.

principle would be equally as valid for ground units. Training was one of the most important keys to victory. But what about the victory itself? Inspite of the overwhelming nature of the victory, was OPERATION DESERT STORM truly successful?

To truly exploit lessons learned, historical actions must be analyzed with complete objectivity.[24] For example, one of the reasons for the outstanding success of army aviation and validation of AirLand Battle during the Gulf war when used as a reconnaissance force was the environment itself. There are, after all, few places in a desert where an army can effectively hide. The flat nature of Saudi Arabia and Iraq made reconnaissance reasonably easy even at great distances. Perfect country for the Apache to operate at its maximum potential. What about Bosnia, the jungles of Southeast Asia, or the hills of Korea?

This was the first conflict where AH-64 Apaches were used in large numbers. It is a sure bet that potential opposition will now focus attention on what the Apache can do and how it can do it. There will a considerable amount of debate on how to develop AAA systems that defend a ground force from attack helicopters. Given the flexibility and mobility of modern attack helicopters, that AAA system would have to be integrated, mobile, and dense.

In the Gulf, the Iraqi Army, not having had problems with Iranian helicopters, never developed their AAA capability to defend against that type of attack. Also, what AAA the Iraqis did have for the most part did not engage U.S. aircraft as crews had already abandoned their weapons. Had the Iraqis fully employed their anti-aircraft system, the outcome of the battle would still have been the same, but more aircraft and their crews would have been lost.

Any future enemy, aware of how Apaches shot armored columns to pieces from great distances, will develop a system to defeat it. You can bet it will be light, portable, and reasonably cheap. It has happened before.

During the Vietnam conflict, the North Vietnamese and the Viet Cong, using only light automatic weapons and their own ingenuity, shot down nearly 2,000 American helicopters. The

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[24] One of the principal reasons that the German Army was so efficient during World War II was because they carefully analyzed the lessons of World War I. See: James S. Corum. The Roots of Blitzkrieg: Hans von Seeckt and German Military Reform. (Lawrence, Ks: University Press of Kansas, 1992). pp. 37-43.

jungle terrain of South Vietnam forced helicopters into often repetitive operational scenarios that allowed all sorts of traps.

When first introduced, helicopters panicked NVA units. But with the passage of time and experience, NVA units developed ways to minimize the power and versatility of the helicopter. Of course, American commanders detected this and changed SOPs accordingly. In future combat, Army Aviation must stay one step ahead.

When people think of Army aviation, they think of hundreds of helicopters, yet fixed-wing assets that are part of the team, too. The Army could have used more fixed wing capability than it had in Saudi Arabia. Fixed-wing assets were needed simply because of distances and weight of cargo needed to support the Army over the huge expanse of Saudi Arabia.

During the early years of the Vietnam War, the U.S. Army possessed a durable, medium range cargo aircraft called the Caribou (CV-2). This enabled the Army to move modest amounts of supplies to remote areas and land anywhere. The C-23 Sherpa was a good aircraft, but it lacked the range and carrying capacity of say a C-130.

In the Saudi Desert and in Iraq, helicopters did all of the fast moving. The CH-47D was the only heavy cargo carrier available and under direct Army control. Chinooks were nearly flown to death supporting combat operations. Had an aircraft like the Caribou been available, the Chinooks would have been under less pressure.

Normally the U.S. Air Force would have provided C-130s to do such work as was done during the Vietnam War. However, the Air Force in the Gulf had greater responsibilities for transport than just supporting the Army, and could not afford to provide C-130s at the beck and call of the Army alone.

The war of movement into Iraq placed the HEMTT (heavy expanded mobility tactical truck) fuel transporter to the fore. It was more than up to the test, but there was a problem. Here was a heavy ground transport that moved at 30-40 miles an hour while helicopters moved three times faster; you had a ground asset always trying to catch up. This proved to be a irksome

problem to aviation throughout the war. This was not a situation faced by the U.S. Army for the first time.[25]

Although fuel was sometimes a problem for Army aviation, it was not a war stopper. But, this does not mean that consideration of acquiring some medium ranged fixed wing medium cargo aircraft should be relegated to the dust bin of history.

Speaking of fast movement, ask yourself the following question: "can an aviation unit transport all of its equipment on its assigned wheel vehicles?" In most instances, the answer would be "no." The lack of organic transport plagued more than one member of the combined arms team. Had it not been for the availability of civilian tractor-trailer rigs in Saudi Arabia to long haul all sorts of equipment, the build-up for the flanking attack into Iraq would have taken longer. This is one critical area that must be addressed in the future. Army aviation units may have to fly and fight in parts of the world that do not have good roads, and/or civilian heavy transport available for rent.

Another lesson from the Gulf War can be phrased as a questions: "Was Operation DESERT STORM a valid test of Army Aviation and Airland Battle doctrine?" On the surface, the answer would seem to be a resounding yes. However, appearances are deceiving.

Let's say DESERT STORM was a hard battle. The Iraqis did not surrender and fought. Victory would still have been achieved, but losses in attack and support aircraft and crews would have been higher. Losses on the ground, in turn, would have been greater, and the entire operational tempo of the conflict would have slowed.

DESERT STORM commanders knew a slow execution could set up a domino effect resulting in less efficiency and effectiveness over time. At that point, the action would have been resolved by a simple process of time. Someone would have to eventually give up not because of a lack of fighting spirit, but a lack of the <u>means</u> to adequately fight. The soldiers defending Bataan during World

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[25] When General George S. Patton's 3rd Army broke German containment during the Normandy battle, it raced across France and moved toward the Seigfried Line -- then a hollow shell -- against token German opposition. Patton's tanks were brought to a halt because of a lack of fuel. Although Patton set up the famous "red ball express", this did not end the problem of fuel to keep the army moving. In the end, Patton had to stop short of his goal. The Germans were given time to build up cohesive resistance, and the war dragged on months longer. See: Hugh M. Cole. <u>The Lorraine Campaign</u>. (Washington, D.C.: Center of Military History, 1993). pp. 20-25, 43.

War II still had fighting spirit, but not the means to fight, and, thus, had to surrender.[26]

For example, remaining aircraft and crews would have had to fly longer and harder, taxing pilots and machines to the limit. Given the tremendously deterioritating mechanical effects of flying in the desert, the availability of aircraft would have, in all probability, degraded if combat had continued for a considerable period when also combined with combat losses.

This would have, in turn, allowed ground commanders less aviation time to see, strike deep, and logistically support the operation. Given a lack of timely intelligence on what was in front of ground elements in the war, less aviation systems would have resulted in heavier casualties for them as well. Less helicopters would have adversely impacted on the requirement for immediate knowledge of the enemy and terrain. As Conduct of the Persian Gulf War - Final Report to Congress put it:

> In addition, the high speed of movement of the ground forces creates a requirement to know about the locations and movements of friendly and opposing formations to a greater depth than would have been the case in a more slowly moving battle.[27]

The outcome would not have changed. The Iraqis would have been defeated. History has repeatedly shown a less technical can defeat a more technical one. A less technical force was, of course, not as much a slave to logistical support.[28]

For example, the infrastructure of the U.S. Army in South Vietnam absorbed nearly 80% of personnel strength. Of the more than 500,000 troops in country, less than 100,000 were the "teeth troops" out in the bush fighting the enemy.[29] The NVA and VC infrastructure, being less technical, allowed them to put more

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[26] See: Louis Morton. The Fall of the Philippines. Washington, D.C.: Center of Military History, 1993. pp. 254-259.

[27] Conduct of the Persian Gulf War - Final Report to Congress. Pursuant to Title V of the Persian Gulf Conflict Supplemental Authorization and Personnel Benefits Act of 1991 (Public Law 102-25). Chapters I through VIII, April 1992), p. xvi.

[28] The Chinese Army that fought in Korea had a very modest supply "tail" that the U.S. was never able to halt. See: Major Scott R. McMichael. A Historical Perspective on Light Infantry. Leavenworth, KS: Combat Studies Institute. pp. 74-77.

[29] Soviet slang for combat troops.

rifle strength into the infantry fight, and hence accept higher combat losses for tactical or political gains.

The technical side of the Army was not self-generated, but was developed and nurtured within American society. After all, the United States was and still is one of the most technological nations in the world. In the past, as now, a country's ability to wage war was directly tied to the number of personnel its industries could support. Aside from its dependence, the technical side of a military organization is also a slave to doctrine.

It is in the area of doctrine that the greatest lessons of this war will be learned and applied. Modern mobile war has always required close cooperation and coordination among all elements. Cooperation has never been as easy to achieve as it seems.

Infantry officers think in ground terms, aviation officers in aviation terms, and each of the other branches thinks in terms of their own. Future success in war could be likened to a large puzzle. If one or two elements do not fit, the puzzle remains unfinished and the conflict unwon.

During the Vietnam War, the infantry and artillery were joined heart and soul to aviation. Each needed the other for support. Take one part away, and the system failed.

For example, take the second battle of Dak To in 1967. Elements of the 173rd Airborne Brigade and the 4th Infantry Division battled several divisions of NVA regulars for hilltop positions in the Central Highlands. Army aviation provided critical support for the ground battle in the form of aerial rocket artillery strikes, gunships, and transportation of equipment, replacements, and logistical support during the nearly two week long battle.[30] If you took one of the support assets away from the infantry, the Dak To might have been counted as an NVA victory.[31]

After the end of the Vietnam experience, cooperation between army aviation and the other branches slowly began to shrivel from disuse. Operations DESERT SHIELD and DESERT STORM revived that

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[30] See: John J. Tolson (Lt. General, ret.). Airmobility. (Washington, D.C.: U.S. Army Center of Military History, 1979), pp.

[31] Edward J. Murphy. Dak To. Novato, Calif.: Presidio Press, 1992.

cooperation across the board when the combat arms began to realize that they could not do without aviation and vice-versa.

Senior commanders synchronized their operations because the tactical situation demanded it.[32] Soldiers witnessed MLRS (multiple launched rocket system), artillery, jet strikes, and Apaches all attacking Iraqi units in ballet of destructive firepower. All combat, combat support, and combat service support assets took part, but none dominated. DESERT STORM was a truly TEAM effort. The combined arms team's success was built on the experiences of Vietnam. Again, an understanding of history paid big dividends.

> The generation of officers now in command, seasoned in the airmobile environment of Vietnam, is especially well suited for such operations [Middle East]. Accustomed to open flanks, to operating on the basis of ambiguous intelligence, seeing the enemy and not the terrain, concentrating rapidly, and adapting constantly to the follow of events -- these leaders have maneuver in their bones.[33]

One area of problems that impacted negatively on all aspects of the team effort was communications. Many of the units came to the desert with equipment that used 1960s technology. Some Army aircraft like the AH-64 were not equipped to transmit over desert distances.

The Apache's antenna was on the underside of the aircraft. It transmits well to the ants and other creatures on the ground. To provide a quick fix for this problem, aviation units took their OH-58Cs and positioned them as radio relay units as the AH-64s plunged deeper into Iraq. In one case, an Apache unit had to use USAF A-10s as a radio relay to contact their command post and let them know critical phase lines had been passed.

Had Iraq possessed a significant jamming capability, the synchronized performances of air and ground elements could have been thrown badly out of step. In high tempo modern combat, battles can be irrevocably lost in seconds.

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[32] Hans von Seeckt had come to this conclusion in the early 1920s based on his experiences in World War I. Corum. The Roots of Blitzkrieg. op. cit., p. 40.

[33] Although he wrote the words in 1980, General DePuy foresaw the importance of mobile warfare in the desert and how the U.S. Army was prepare to fight it. See: William E. DePuy (General, USA ret.). "FM 100-5 Revisited" Army. (November, 1980), p. 17.

Commanders of the future can now think in terms of real time. Aviation assets can now be used in a variety of tactical roles ranging from security to deception to deep battle missions. Aviation assets can now be the commander's highly responsive reserve moving to any part of the battlefield and directly influencing the action.

In the modern era success in battle has frequently hinged on what time reinforcements reached the field. In the Gulf War Army aviation gave the commander the ability to control a mobile reserve that he could use to his own advantage and placed where he needed it. For example, the use of the two AH-64 battalions of the 101st Airborne to both provide support for the brigade blocking Highway 8, and to attack fleeing Iraqi units at the Al-Hammar bridge.[34]

During the weeks of training prior to the beginning of Operation DESERT STORM, aviation units had to make some hard decisions on training and maintenance. When units first arrived in the desert, the aircraft began to "fall apart." Turbine engines expected to last 1000 to 1500 flight hours before major maintenance were now lasting only 40. Rotor blades were literally melting under the pounding of the sand.

Eventually, aviation battalions had to make decisions about "preserving the force." How much flight time was to be allowed in order to insure that the basic aircraft was ready for combat when the time came. This impacted in two areas -- support for ground units, and unit training.

There were commanders who took career chances and continued to train and support at normal levels. Others played it safe, and curtailed training hours. Who was right? That is a question that has no satisfactory answer.

It should, however, be addressed so that this type of a crucial decision will not have to be made on another battlefield. The most logical fix is to insure that there are enough parts within the system to handle any unexpected surge. Also, that future aircraft be designed with systems that prevent the terrible damage that deserts do.

During World War II in a similar desert, both the British and the German Afrika Korps developed groups of dedicated tank mechanics that followed right behind the armor formations. They

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[34] For a most interesting perspective on the battle, see Oral Interview, Colonel Thomas W. Garrett, 17 December 1993, Oral History Files, Branch History Office.

would check out each abandoned or destroyed tank to see if it was salvageable. If the tank could be repaired, it was, and returned to action. This was particularly important to the German forces as they were not able to bring large number of tanks to the desert. Each time a recovery team could get a tank operating again the Germans capability to defeat the British rose.

The Israeli's developed a similar capability in their wars with Arab forces, and for the same reason. In the beginning Israel didn't have a large number of tanks, and every one that could be kept operating meant salvation. Army aviation, like other members of the combined arms team, developed a like capability. Teams of dedicated aviation personnel roamed the battlefield repairing aircraft that had been forced down. In most instances, they repaired the aircraft on the spot and returned it to action.

Question: How would you like to go into a combat situation where you had no idea what was going on, where the enemy was, or where you were supposed to go?" Sound unappealing? There were Army personnel in the desert who had to do that all the time -- the "dustoffs".

Fortunately, casualties were low during Operation DESERT STORM, but those that flew the "dustoffs" still had to fly life saving missions, and frequently came into situations that were fluid and without benefit of prior planning. Because of the low number of losses, the superb work of these dedicated medical crews might be lost in the shuffle.

Medical Aviation units were frequent orphans in the desert, and had to obtain support where and when they could persuade people to assist them -- it is difficult to maintain a UH-60 Black Hawk in the desert with only a small tool box. They had to fly into combat situations to pick up wounded just as they did during the Vietnam War. These crews were not ones to refuse a MEDEVAC mission -- if there was an ounce of flying capability, they lifted off. One MEDEVAC Black Hawk and its crew were lost flying a critical mission during a sandstorm. In the future, MEDEVACs need to be tied in directly to combat units, and have dedicated maintenance support.

Speaking of the future, given the current trend, the U.S. Army may get the opportunity to mobilize and deploy all over the

world.[35] Given the instability prevalent in nearly every major continent, Army aviation may have to fly and fight in every type of terrain and level of war possible. The information and experience gained from the Gulf War may be used again and again in the coming decade.[36]

During Operation DESERT STORM Corps and Army commanders controlled their own aviation attack and support assets. Using aviation assets as a decisive reserve, they can be committed in several places at once.[37] If artillery can provide reinforcing fires for Corps and Army so can aviation. Extra attack or lift battalions at the right time can mean the different between victory and defeat. Count Galezzo Ciano, the Foreign Minister of Fascist Italy during World War II said it best: "As always, victory finds a hundred fathers, but defeat is an orphan."[38]

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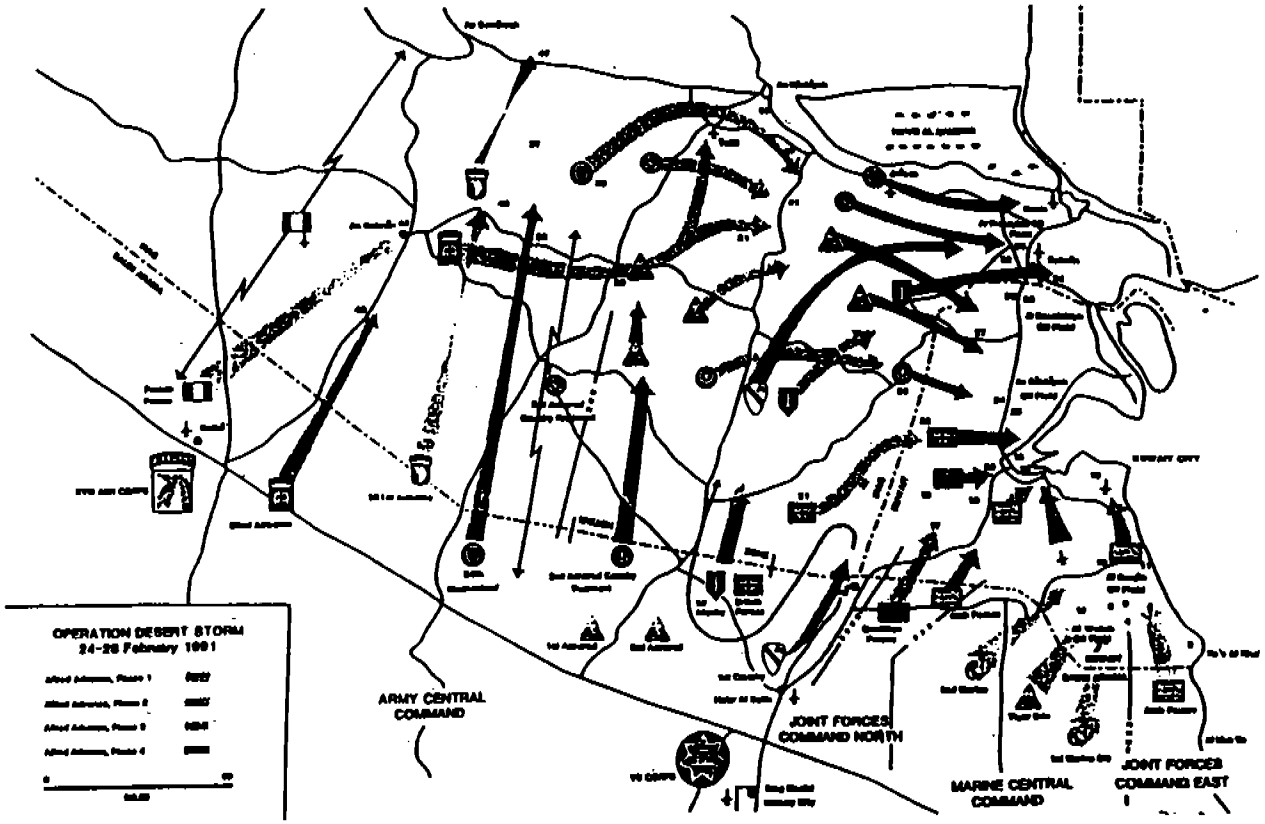
[35] Current "hot spots" that are potential areas for deployment of U.S. troops are Bosnia, Korea, and, if the situation gets worse, India/Pakistan. The UN is responsible for more than two dozen "peace keeping" operations involving the commitment of troops from member states.

[36] Saddam Hussein is still in power in those parts of Iraq he still controls, and the Iranians are steadily arming themselves.

[37] During the Civil War battle of Chickamauga, a special brigade of Union troops was armed with the 7 shot Spencer repeating rifle, and mounted on horses. They were not cavalry but mounted infantry and commanded by Colonel John Wilder. General Rosecrans, the commander of the Army of the Cumberland, frequently used this brigade as his mobile reserve. Although only 1200 men strong, it had the firepower equivalent of a 7,000 man division. See: Peter Cozzens. This Terrible Sound: The Battle of Chickamauga. Southern Illinois University Press, 1992.

[38] Bartlett. Familiar Quotations. op. cit., p. 857.

MAPS, CHARTS, DISAGRAMS AND TABLES



AVIATION DENSITY

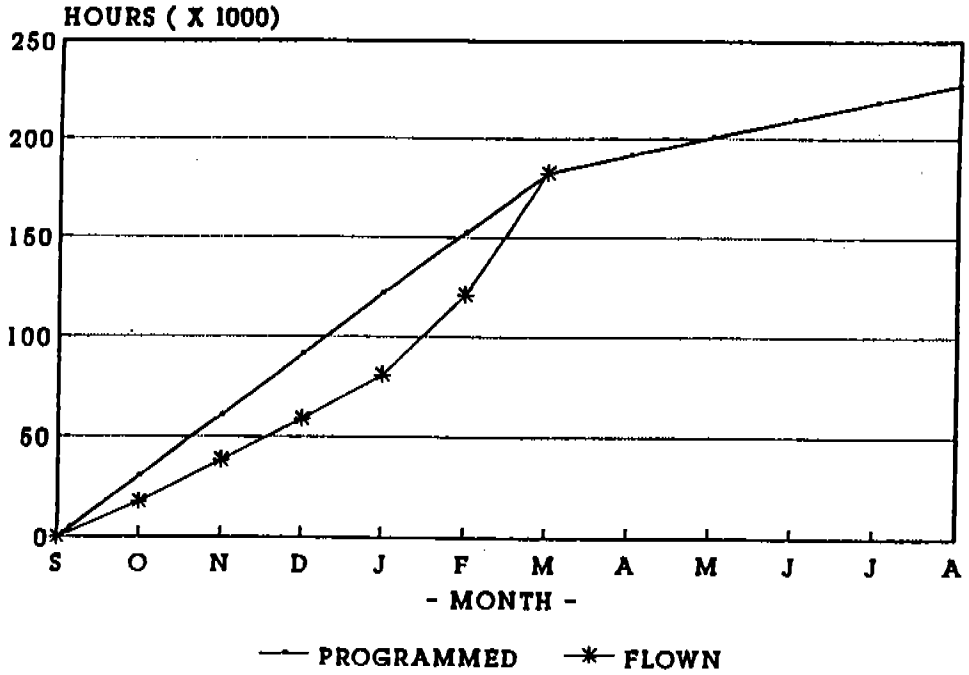
DESERT SHIELD 1	
AH-1	82
AH-64	147
CH-47D	82
EH-60	15
OH-58	171
OH-58D	58
OV-1	26
RU-21	13
UH-1	163
UH-60	253
TOTAL	1011

DESERT SHIELD 2		
AH-1	+52	134
AH-64	+108	255
CH-47D	+84	167
EH-60	+12	27
OH-58	+154	325
OH-58D	+34	92
OV-1	+4	30
RU-21	-1	12
UH-1	+201	364
UH-60	+173	426
TOTAL	+821	1832

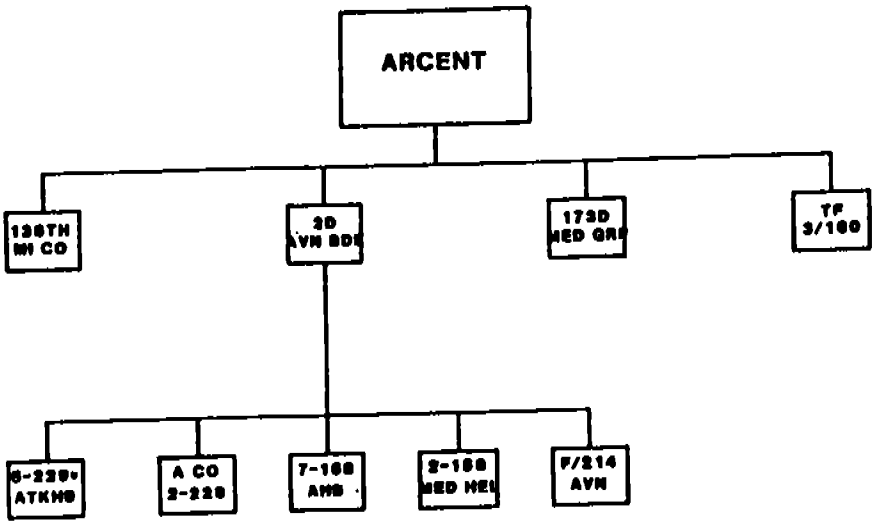
INCREASE BY 81%

DS1 = XVIII ABN CORPS, DS2 = PLUS UP AND VII CORPS

ADJUSTED PROGRAM



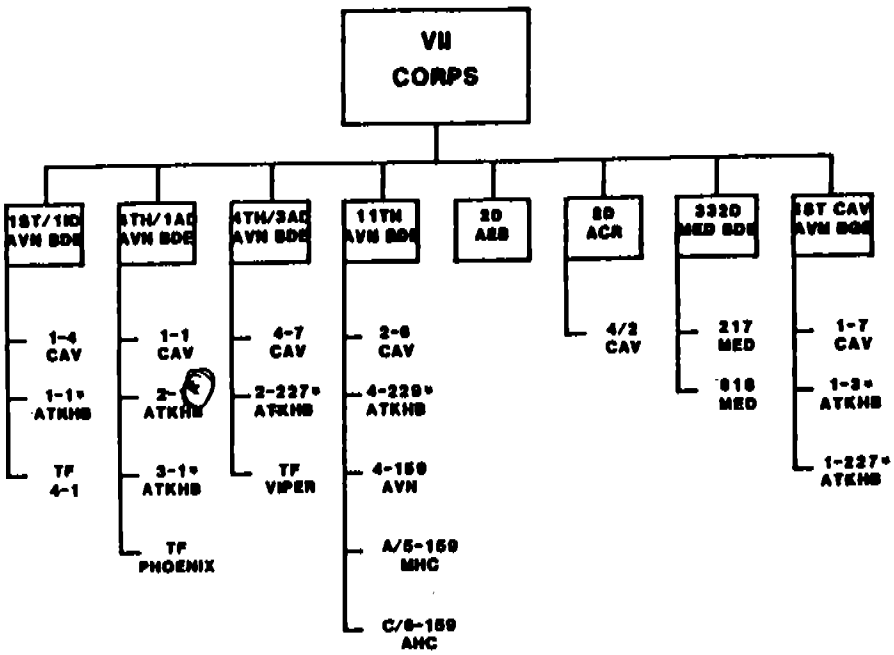
EAC AVIATION UNITS



TF 3/160 SOCCENT

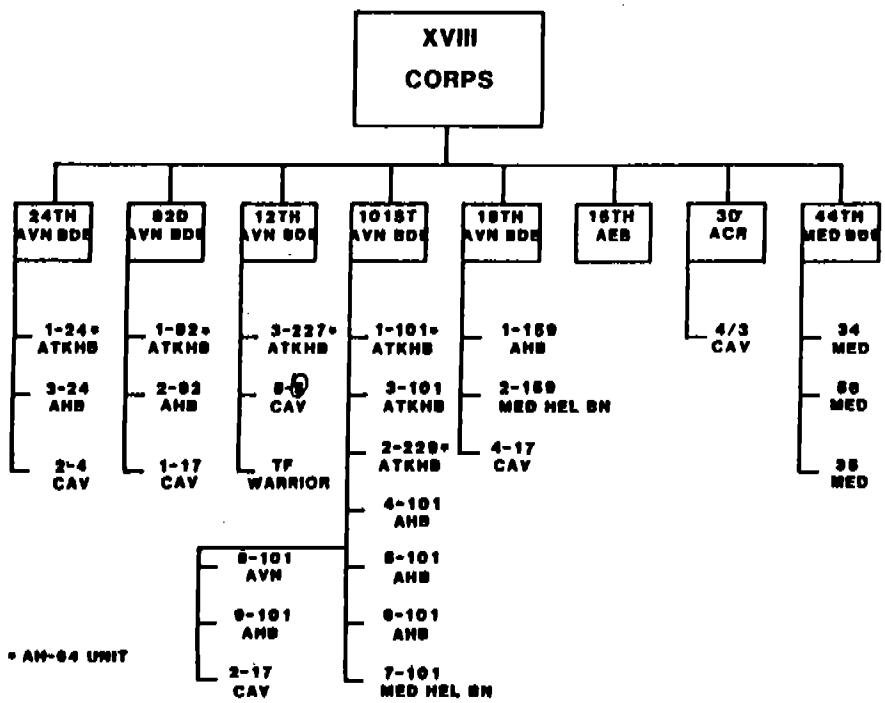
* AH-64 UNIT

VII CORPS AVIATION UNITS

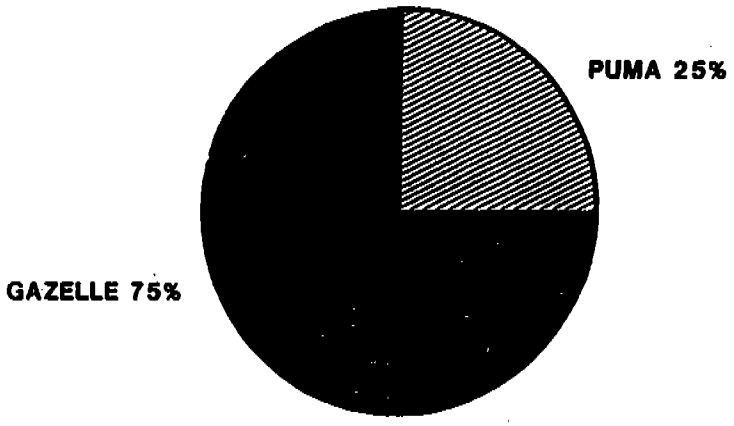


* AH-64 UNIT

XVIII CORPS AVIATION UNITS



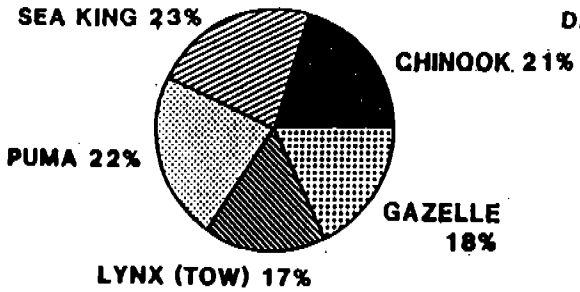
G → G+5
FRENCH ARMY AVIATION



TOTAL HOURS 1000

U.S. ARMY AVN **TOTAL** 21,195

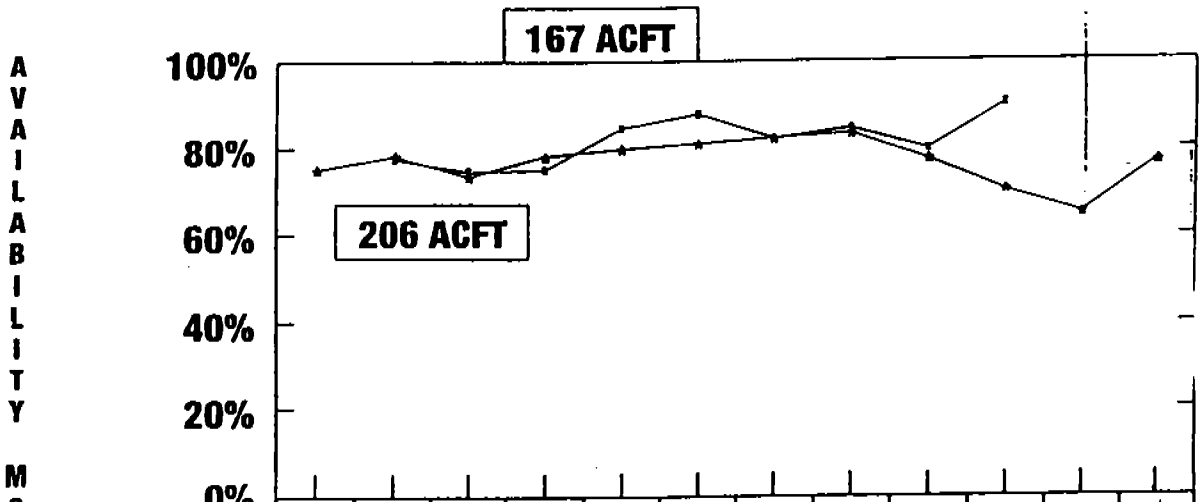
G → G+5
BRITISH ARMY AVIATION



DAY	NIGHT	TOTAL
951	170	1121

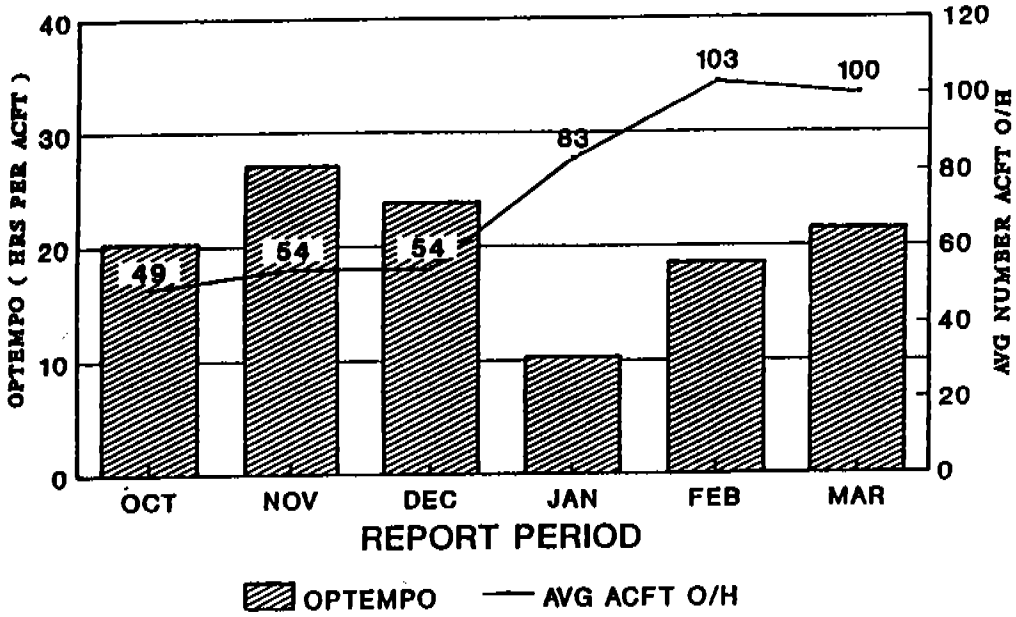
U.S. ARMY AVN TOTAL
21,195

SYSTEMS READINESS
OH-58D

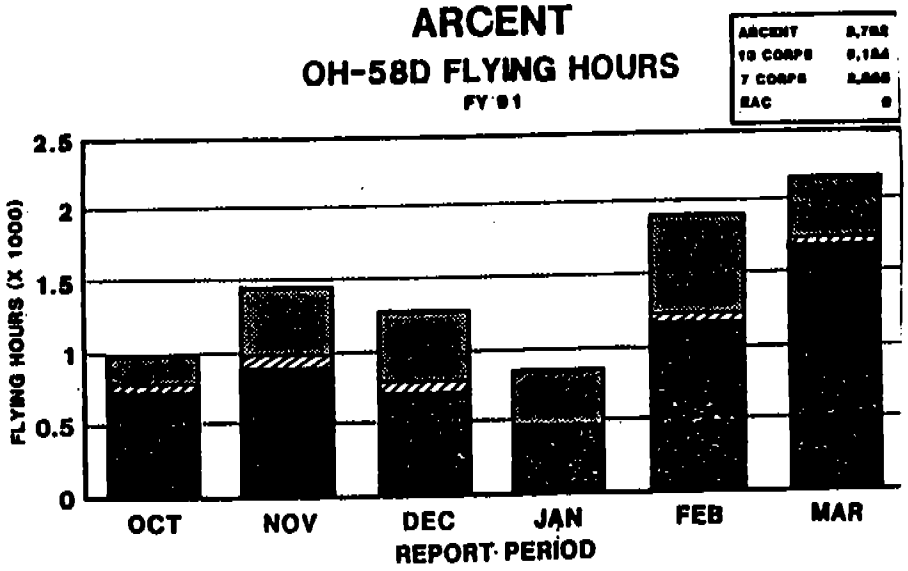


	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL
WORLD WIDE	75%	79%	73%	78%	80%	81%	82%	83%	77%	70%	64%	77%
OPN DESERT STORM		78%	75%	75%	84%	87%	82%	84%	80%	90%		

THEATER
OH-58D OPTEMPO



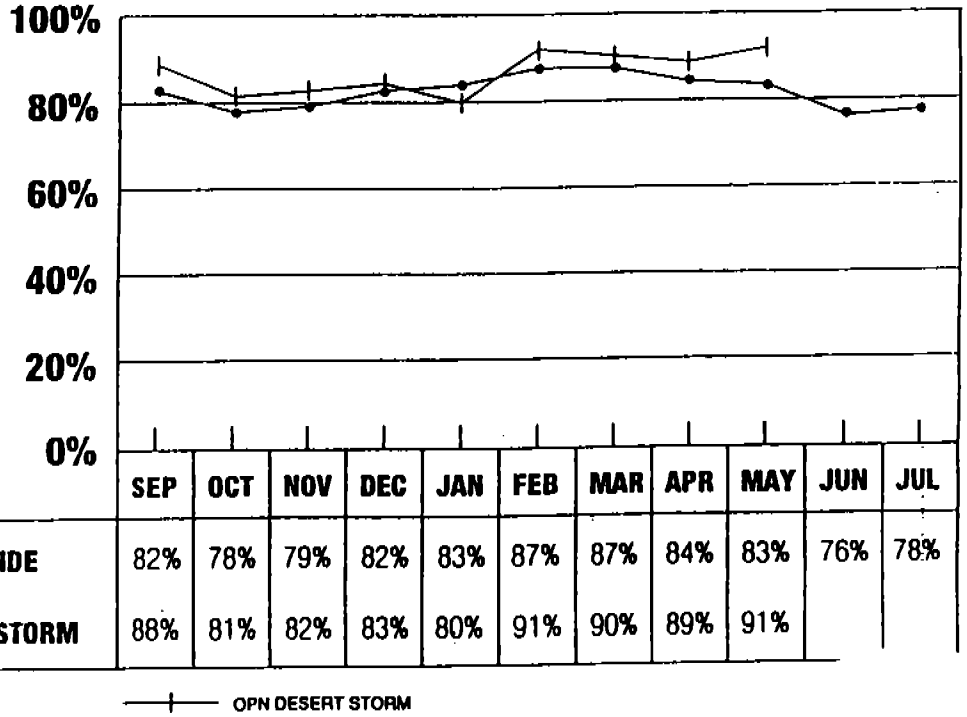
ARCENT
OH-58D FLYING HOURS
FY 91



FLIGHT CONDITION

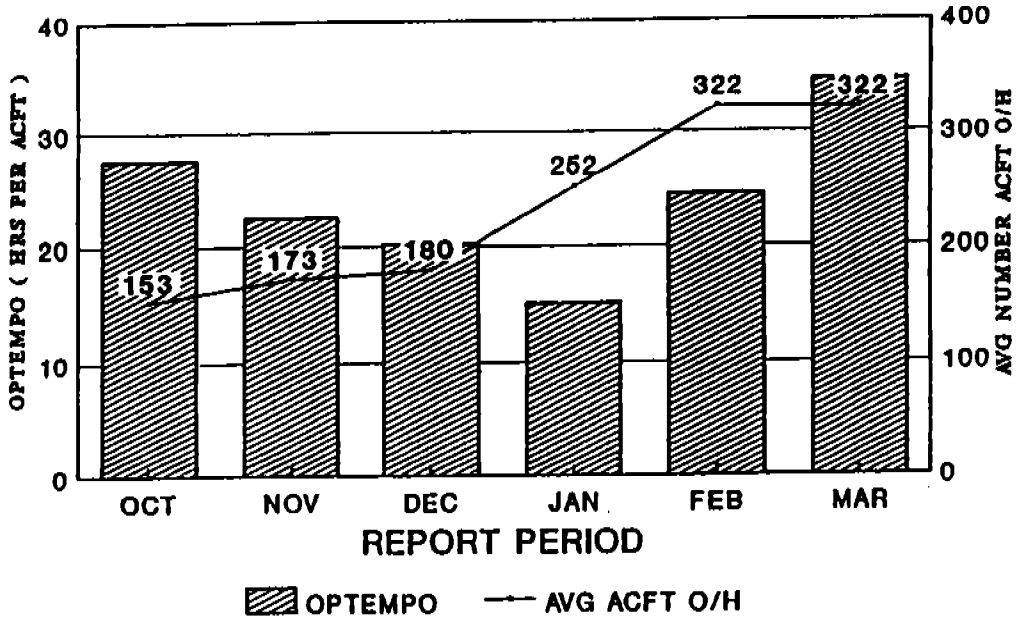
	DAY	NIGHT	NVD
TOTAL HRS	5,702	304	2,696

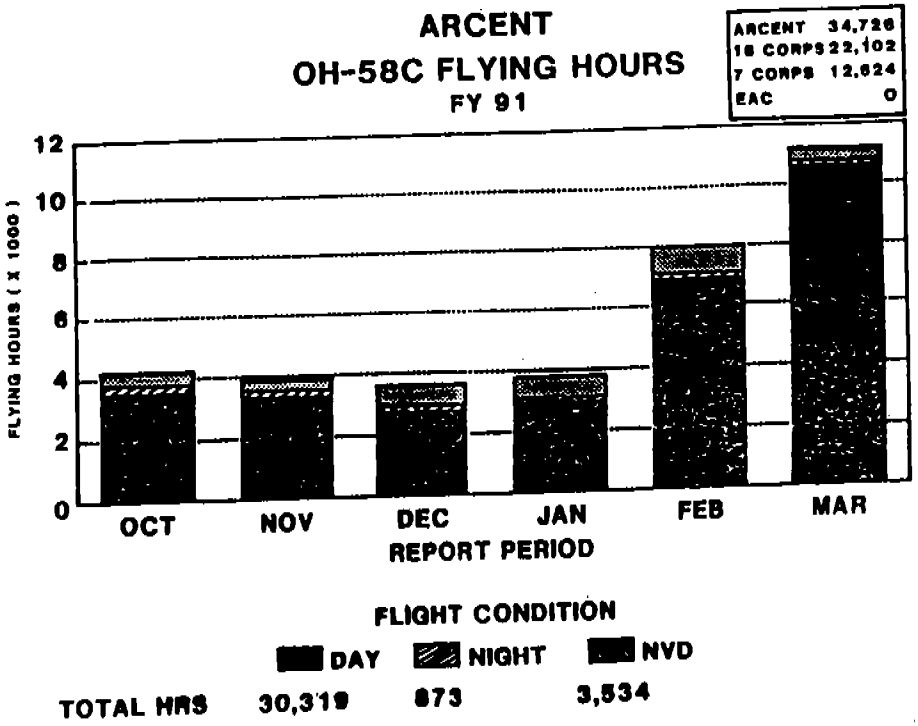
READINESS RATES
OH-58C SWA VS WW



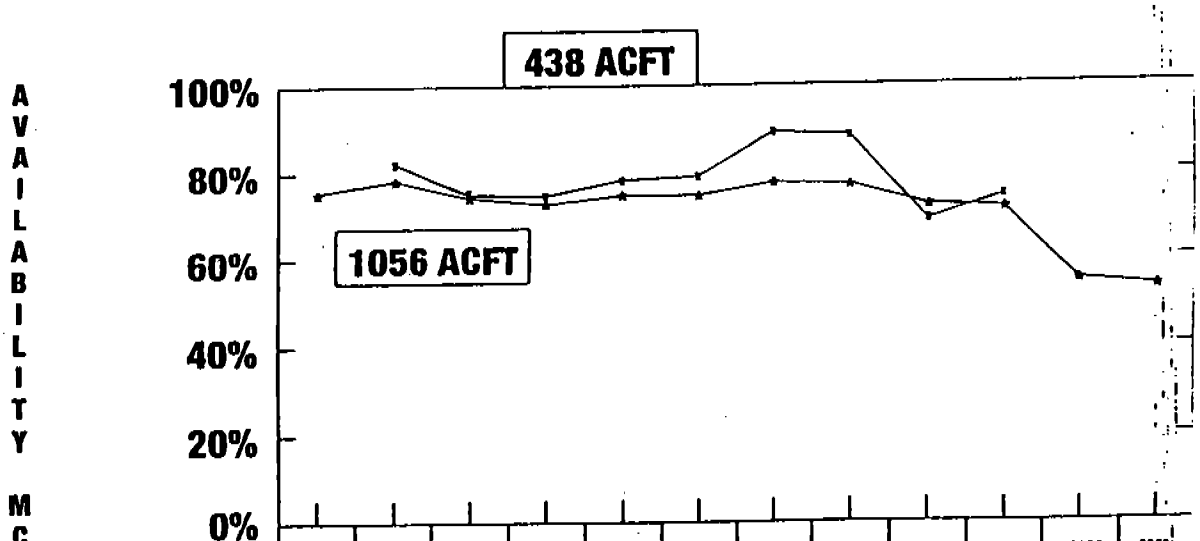
	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL
WORLD WIDE	82%	78%	79%	82%	83%	87%	87%	84%	83%	76%	78%
OPN DESERT STORM	88%	81%	82%	83%	80%	91%	90%	89%	91%		

THEATER
OH-58C OPTEMPO



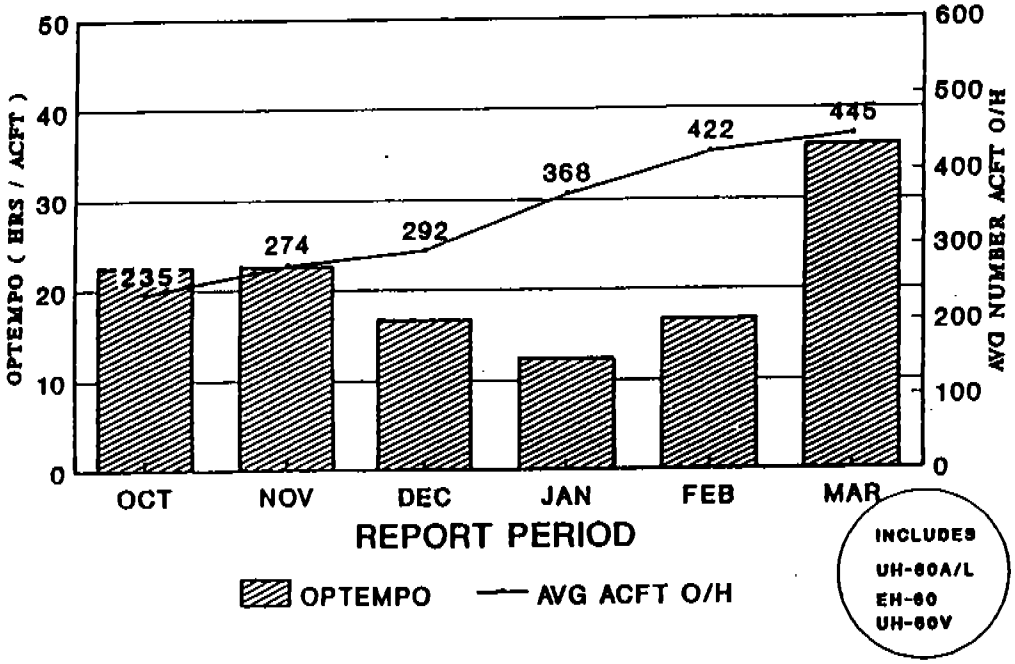


SYSTEMS READINESS
UH-60

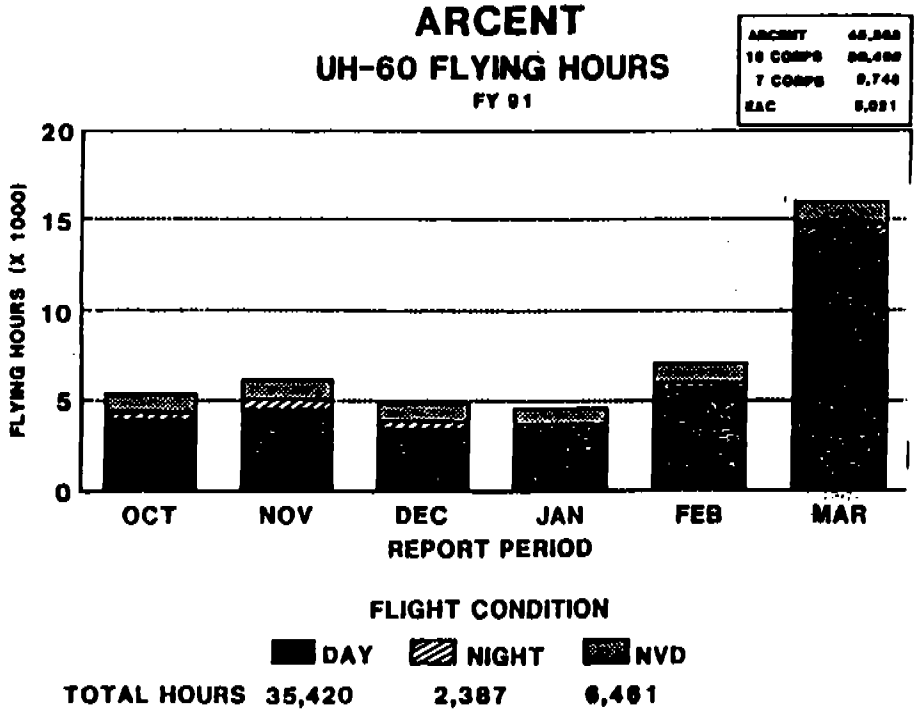


	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL
WORLD WIDE	75%	78%	74%	72%	74%	74%	78%	76%	72%	71%	63%	62%
OPN DESERT STORM		81%	75%	75%	78%	79%	89%	88%	69%	73%		

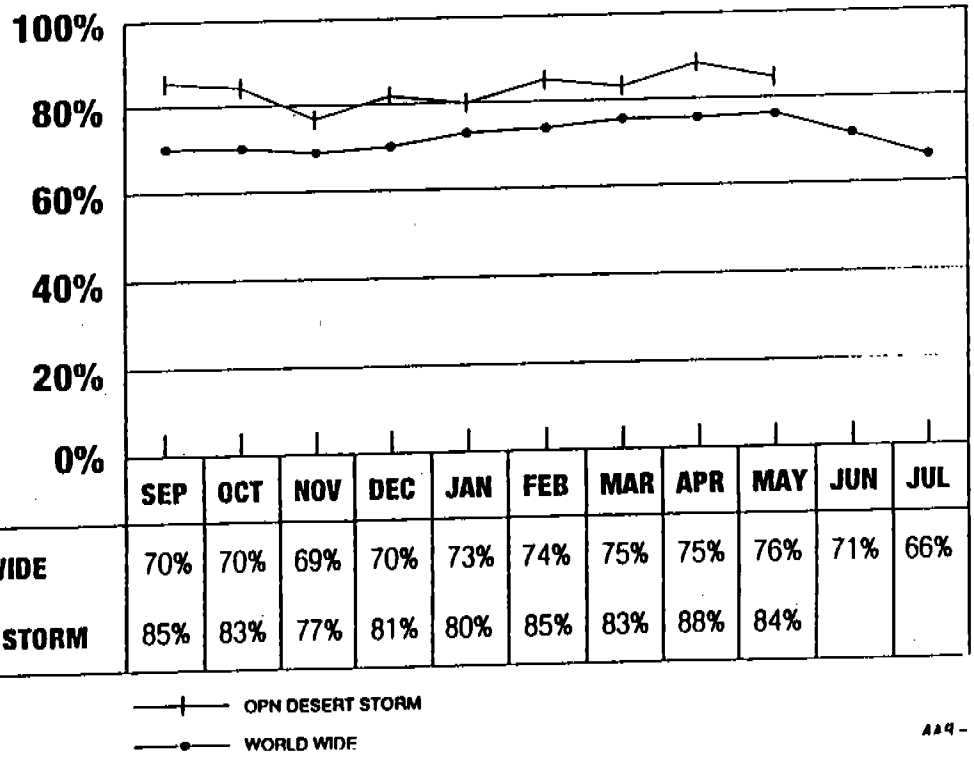
THEATER
UH-60 OPTEMPO



ARCENT
UH-60 FLYING HOURS
FY 91

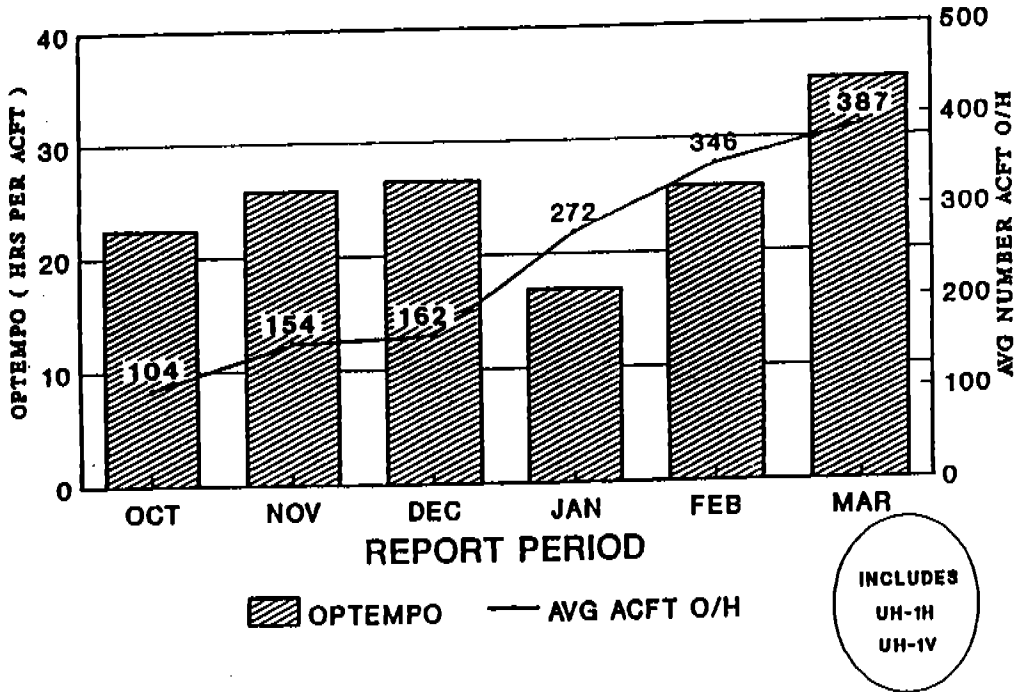


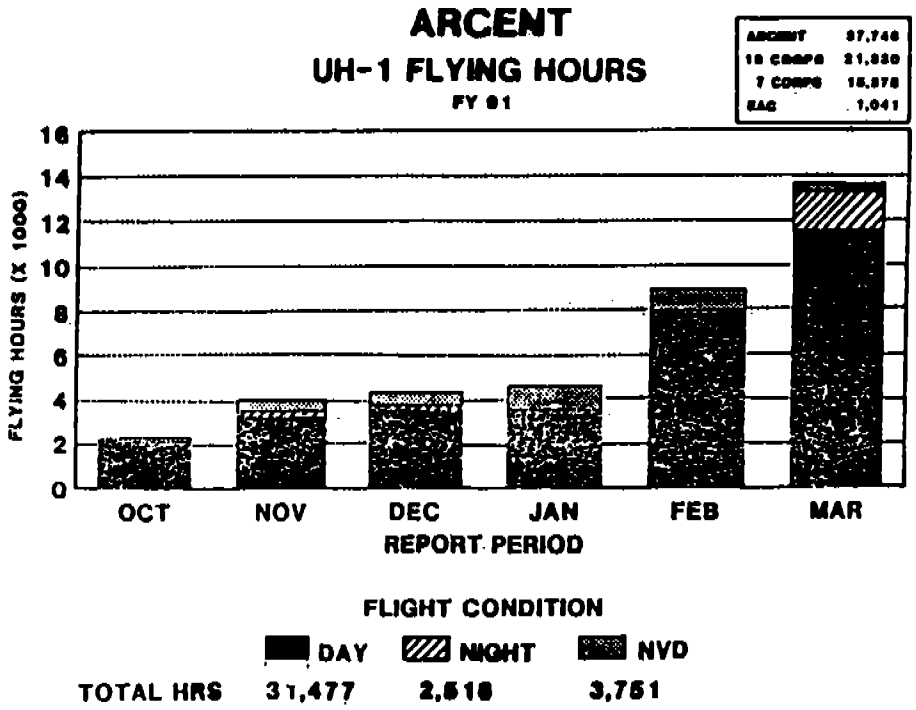
READINESS RATES
UH-1 SWA VS WW



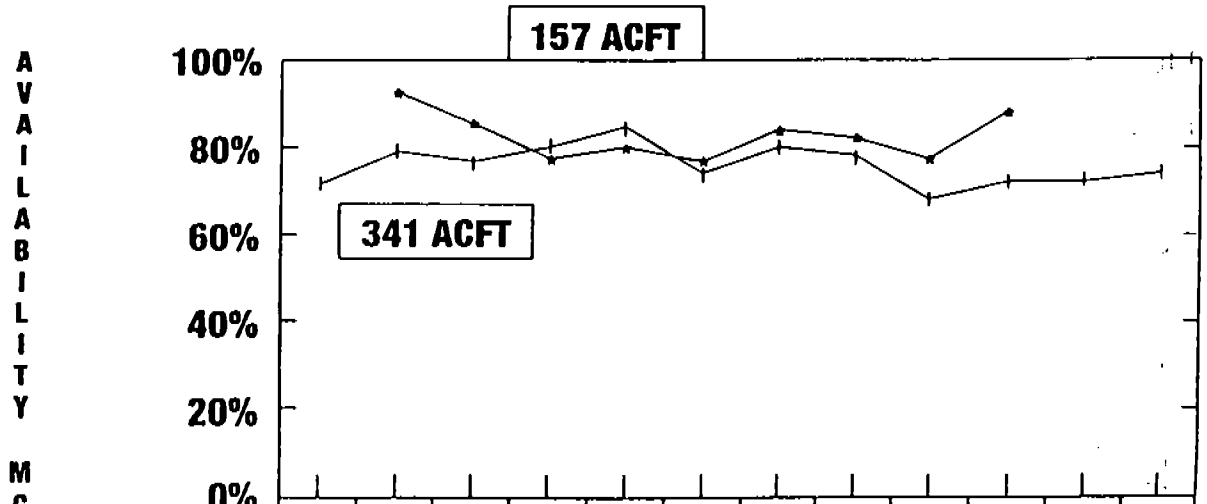
	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL
WORLD WIDE	70%	70%	69%	70%	73%	74%	75%	75%	76%	71%	66%
OPN DESERT STORM	85%	83%	77%	81%	80%	85%	83%	88%	84%		

THEATER
UH-1 OPTEMPO





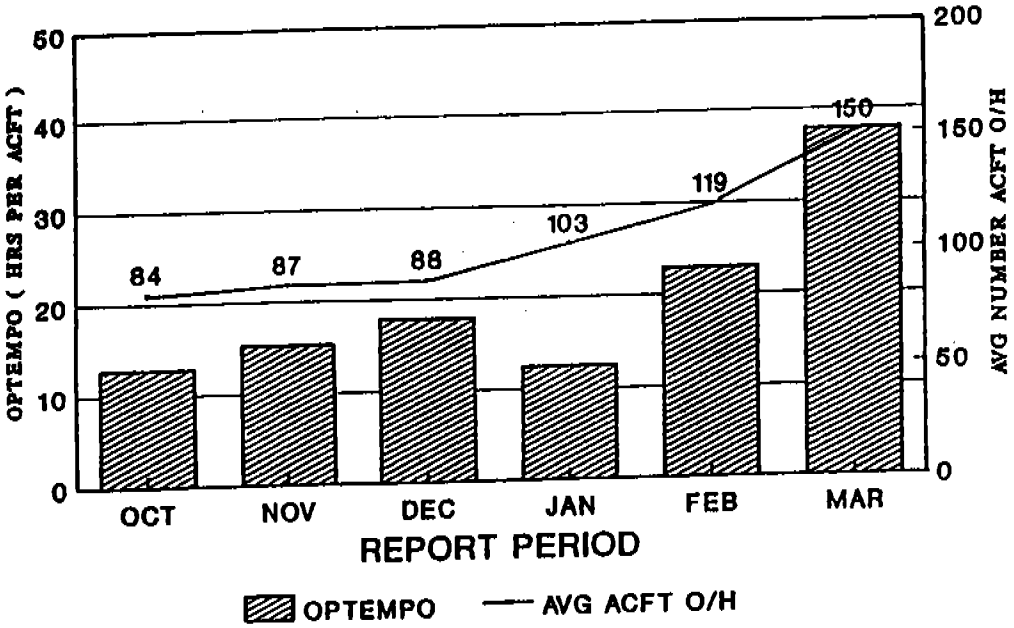
SYSTEMS READINESS
CH-47D



	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL
WORLD WIDE	72%	78%	76%	79%	82%	74%	80%	78%	69%	73%	73%	74%
OPN DESERT STORM		93%	85%	77%	80%	76%	84%	82%	78%	89%		

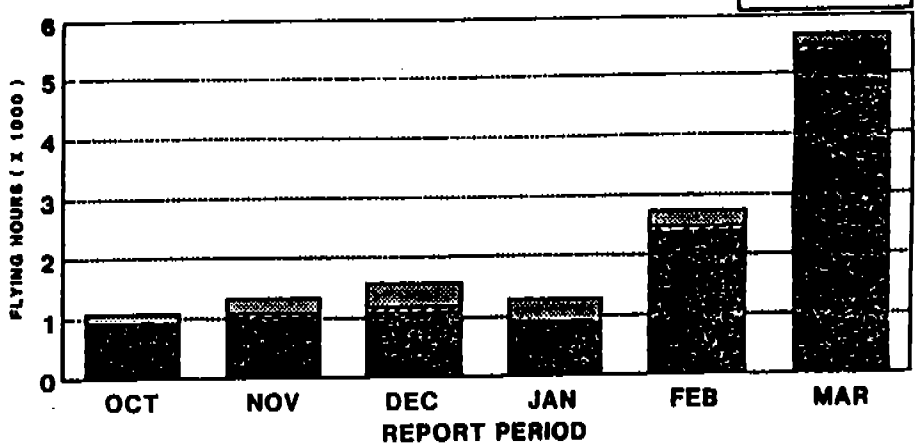
OPN DESERT STORM

THEATER
CH-47D OPTEMPO



ARCENT
CH-47D FLYING HOURS
FY 91

ARCENT	13,724
18 CORPS	8,746
7 CORPS	1,503
EAC	3,476

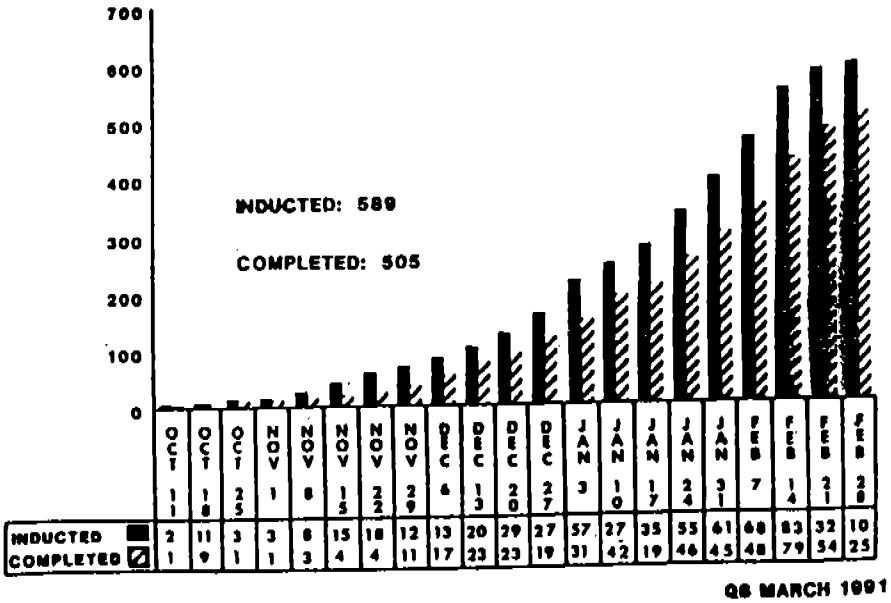


FLIGHT CONDITION

	DAY	NIGHT	NVD
TOTAL HRS	11,697	400	1,627

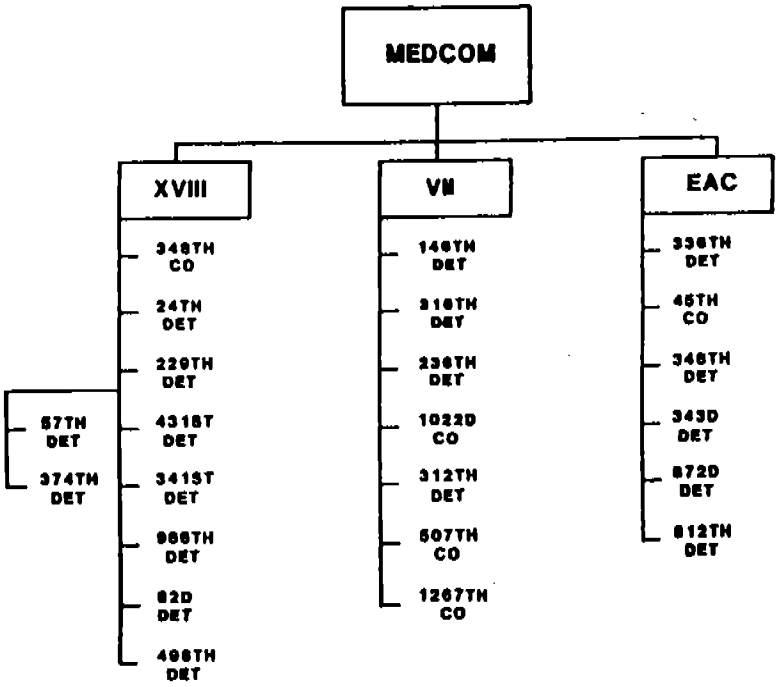
FORWARD MAINTENANCE SHOP

CUMULATIVE INDUCTIONS AND COMPLETIONS



QS MARCH 1991

MEDICAL UNITS



GLOSSARY

AA	Assembly area
AAA	Anti-aircraft artillery
AAAA	Army Aviation Association of America
ABCCC	Airborne command and control
ACC	Air component commander
ACR	Armored cavalry regiment
ACP	Air control point
ACS	Air cavalry squadron
AD	Armored division
ADA	Air defense artillery
ADC-M	Assistant division commander for maneuver
AEB	Aerial exploitation battalion
AHA	Ammunition holding area
AHB	Attack helicopter battalion
AHR	Attack helicopter regiment
AI	Air interdiction
AIMI	Army intensively managed items
ALCE	Aviation control element
ALO	Air liaison officer
AMC	Army Material Command
AO	Area of operation
AOAP	Army oil analysis program
AOG	Aircraft on the ground
APC	Armored personnel carrier
APOD	Aerial port of debarkation
APOE	Aerial port of embarkation
APU	Auxiliary power unit
ARAMCO	Arabian-American Oil Company
ARCENT	Army Central Command; US Third Army
ARNG	Army National Guard
ASE	Aircraft survivability equipment
ASL	Authorized stockage list
ASLT	Assault (designation)

ASP	Ammunition supply point
ASP	Army safety program
ATACMS	Army tactical missile system
ATKHB	Attack helicopter battalion
ATO	Air tasking order
AVCRAD	Aviation classification and repair activity
AVIM	Aviation intermediate maintenance
AVSCOM	Aviation systems command
AVSOC	Aviation special operations command
AVUM	Aviation unit maintenance
AWACS	Airborne warning and control system
BAI	Battlefield air interdiction
BDA	Battlefield damage assessment
BDAR	Battlefield damage assessment and repair
BDE	Brigade
BDU	Battle dress uniform
BG	Brigadier General
BMP	Russian designed infantry fighting vehicle
BN	Battalion
BOS	Battlefield operating systems
BP	Battle position
BRDM	Russian-design armored wheeled Reconnaissance vehicle
C2	Command and control
C3I	Command, control, communication and intelligence
C&C	Command and control
CAB	Combat aviation brigade
CAFAMS	Computer assisted flight management system
CAP	Combat air patrol
CAS	Close air support
CAV	Cavalry

CBI	China-Burma-India (Theater in WWII)
CCAD	Corpus Christi Army Depot
CECOM	Communications-Electronics Command
CENTCOM	Central Command; one of six United States multi-Service commands
CFE	Conventional Forces in Europe Treaty
CG	Commanding general
Chinook	CH-47 cargo helicopter
CINCCENT	Command-in-Chief, Central Command
Clicks	Slang for kilometer (distance)
CO	Commanding officer
CO	Company (unit)
CNN	Cable News Network
COL	Colonel
COMIT	Communications intelligence
CONUS	Continental United States
COSCOM	Corps support command
CP	Command post
CPX	Command post exercise
CPT	Captain
CRAF	Civilian Reserve Air Fleet
CSA	Corps support area
CSAR	Combat search and rescue
CSM	Command Sergeant Major
CUCV	Commercial utility cargo vehicle
CWO	Chief Warrant Officer
DA	Department of the Army
DASB	Division aviation support battalion
DE	Desert express
DHL	Dutch express mail carrier
DISCOM	Division support command
DIVARTY	Division artillery
DMA	Defense Mapping Agency

DOD	Department of Defense
DODAC	Department of Defense Accounting Classification
DPICM	Dual purpose improved conventional munitions
DS	Direct support
DUSTOFF	Call sign for medical evacuation helicopter
EAC	Echelons above corps
EENT	Early evening nautical twilight
ELINT	Electronic intelligence
EOC	Emergency operating center
EPOW	Enemy prisoners of war
ESSS	External stores supply system
FAA	Forward assembly area
FAMC	Forward area maintenance company
FARP	Forward arming and refueling point
FEBA	Forward edge of the battle area
FLOT	Forward line own troops
FLIR	Forward looking infrared radar
FMC	Fully mission capable
FOB	Forward operating base
FRAGO	Fragmentary order
FSO	Fire support officer
FSCL	Fires support coordination line
G2	Intelligence staff officer/section
G3	Operations and plans staff officer
G4	Logistics staff officer
GCC	Gulf Cooperation Council
GCI	Ground control interception
GDP	General deployment plan

GP	General purpose
GPS	Global positioning system
HELLFIRE	Laser-guided antitank missile
HEMTT	Heavy expanded mobility tactical truck
HHS	Headquarters, headquarters and service
HHT	Headquarters, headquarters troop
HMD	Helmet mounted display
HMMWV	High-mobility, multipurpose wheeled vehicle
HOT	French anti-tank missile
HUMIT	Human intelligence
HQDA	Headquarters, Department of the Army
IFF	Identification friend or foe
ID	Infantry division
IEW	Intelligence and electronic warfare
IHADSS	Integrated helmet and display sight system
IMINT	Imagery intelligence
IN	Infantry
INTSUM	Intelligence summary
INTERNAL LOOK	Joint training exercise
IPF	Integrated processing facility
IPS	Inertial particle separator
ISA	Intermediate staging area
ITT	International Telephone and Telegraph
JAAT	Joint air attack team
JCS	Joint Chiefs of Staff
JFACC	Joint forces air component commander
JSTARS	Joint surveillance target attack radar system
JTF	Joint task force

KFIA	King Fahd International Airport
KIA	Killed-in-action
KKMC	King Khalid Military City
KTO	Kuwaiti theater of operations
LAAF	Lawson army airfield
LD	Line of Departure
LORAN	Long range navigation system
LRSD	Long range reconnaissance detachment
LRSU	Long range surveillance unit
LRI	Line replacement item
LT	Lieutenant
LTC	Lieutenant Colonel
LTG	Lieutenant General
LZ	Landing zone
M1	Abrams main battle tank
MAC	Military Airlift Command
MARCENT	Marine Central Command
MASH	Mobile army surgical hospital
MAZ	Soviet model truck or tractor
MBA	Main battle area
MEDEVAC	Medical evacuation
METL	Mission essential task list
METT-T	Mission, enemy, terrain, troops, and time available
MG	Major General
MI	Military intelligence
MILES	Multiple integrated laser engagement system
MLRS	Multiple-launch rocket system
MMC	Material management center
MMEE	Minimum mission essential equipment
MMS	Mast mounted sight
MOC	Maintenance operational check
MOPP	Mission oriented protective posture

MPSM	Multi-purpose sub munitions
MRE	Meals, ready to eat
MSR	Main Supply Route
MTF	Maintenance test flight
MTLB	Soviet style armored personnel carrier
NBC	Nuclear, biological, chemical
NCAD	New Cumberland Army Depot
NCO	Noncommissioned officer
NM	Nautical mile
NMCS	National military command system
NOE	Nap-of-the-earth
NVA	North Vietnamese Army
NVG	Night vision goggles
ODS	Operation Desert Storm
OBJ	Objective
OPCON	Operational control
OPLAN	Operations plan
PARPRO	Peacetime aerial reconnaissance program
PEO	Program evaluation office
PL	Phase line
PLL	Primary load list
PM	Project manager
PNVS	Pilot night vision system
POD	Port of debarkation
POE	Port of embarkation
POL	Petroleum, oil, lubricants
POM	Preparation for overseas movement
POMCUS	Prepositioned material configured in unit sets
PROM	Programmable read-only memory
PSYOPS	Psychological operations
PZ	Pick-up zone

QDR	Quality deficiency report
Quickfix	Electronic warfare system mounted in Army aircraft
RDF	Rapid deployment force
REDCOM	Readiness Command
REFORGER	Return of forces to Germany
RF	Radio frequency
RGFC	Republican Guard Forces Command
RIPL	Reconnaissance interdiction phase line
RO-RO	Roll-on, roll-off
RP	Release point
RPG	Rocket propelled grenade
RPV	Remotely piloted vehicle; unmanned aerial vehicle (UAV)
RTOC	Regimental tactical operations center
SAR	Search and rescue (mission)
SATCOM	Satellite communications
SCUD	Soviet designed short range missile
SEAD	Suppression of enemy air defenses
SEMA	Special electronics mission aircraft
SIGSEC	Signal security
SIP	Senior instructor pilot
silver bullet	Slang for spent uranium sabot tank round
SLUGGER	Slang for global positioning system
SOA	Special operations aviation
SOCCENT	Special Operations Central Command
SOF	Special forces operation
SOP	Standard operating procedure
SPOE	Sea port of embarkation

SRA	Special repair activity
SITREP	Situation report
SUPCOM	Support command
SWA	Southwest Asia
SWT	Scout weapons team
TA	Theater army
TAA	Tactical assembly area
TAC	Tactical air center
TACAP	Tactical air control party
TADS	Target acquisition designation system
TAMP	Theater aviation maintenance point
TBO	Time between overhaul
TF	Task Force
TFW	Task Force Warrior
TIS	Thermal imaging system
TOC	Tactical operations center
TOE	Table of organization and equipment
TOW	Tube-launched, optically tracked, wire-guided anti-tank missile
TRANSCOM	Transportation Command
TSU	Telescope sight unit
UAV	Unmanned aerial vehicle; remotely piloted vehicle (RPV)
UAE	United Arab Emirates
UHF	Ultra-high frequency
UN	United Nations
USAAVNC	U.S. Army Aviation Center
USAAMA	U.S. Army Aeomedical Activity
USAARL	U.S. Army Aeromedical Research Laboratory
USAREUR	U.S. Army Europe
USASC	U.S. Army Safety Center
USTRANSCOM	U.S. Transportation Command
VHF	Very High Frequency

WAO	Weapons allocation officer
WO	Warrant Officer
XO	Executive Officer
ZPU2/4	Model designation for Soviet-anti-aircraft weapon
ZSU	Model designation for Soviet-style anti-aircraft gun system

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