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Employment of Airborne Air Cavalry in the Airborne Antiarmor Defense.

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A Master of Military Art and Science thesis presented to the faculty of the U.S. Army Command and General Staff College, Fort Leavenworth, Kansas 66027.

EMPLOYMENT OF AIRBORNE AIR CAVALRY IN THE AIRBORNE ANTIARMOR DEFENSE

A thesis presented to the Faculty of the U.S. Army Command and General Staff College in partial fulfillment of the requirements for the degree

MASTER OF MILITARY ART AND SCIENCE

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ABSTRACT

EMPLOYMENT OF AIRBORNE AIR CAVALRY IN THE AIRBORNE ANTIARMOR DEFENSE, by Major Theodore T. Sendak, USA, 98 pages.

This study attempts to determine the most viable employment techniques and tactics that the air cavalry squadron (airborne) can use in the conduct of the airborne antiarmor defense. The investigation is focused on a general analysis of the airborne antiarmor defense, the threat facing the cavalry squadron and how these combine to allow the cavalry to survive and accomplish their mission on a mid-intensity battlefield in support of an airborne division.

The investigation reveals that improved tactics and employment techniques will enhance mission accomplishment and survivability of the air cavalry squadron. It also confirms that developments to improve the mission capabilities of the air cavalry squadron in the airborne antiarmor defense are well within current technology.

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CHAPTER I

DEVELOPMENT OF THE AIRBORNE ANTIARMOR DEFENSE

INTRODUCTION

The employment of the Air Cavalry Squadron (Airborne) assigned to the United States Army Airborne Division has been considered by the 82d Airborne Division to be a key factor in planning both offensive and defensive operations. The abilities of the air cavalry to perform their traditional missions of reconnaissance, security, and economy of force have been greatly enhanced with the additional ability to defeat tanks, either in conjunction with the traditional missions or as a primary mission. In the light infantry division, the mobile, heavily armed, and responsive assets of the squadron are a combat multiplier with which any enemy must reckon. However, the anti-tank capabilities of the air cavalry are only a recent addition to the airborne division's arsenal with the introduction of the TOW missile firing AH-1S attack helicopter. This thesis examines the employment of the air cavalry squadron (airborne) as it should participate in a relatively new concept, the airborne antiarmor defense (AAAD).

BACKGROUND

General

Since the tank was first introduced to warfare in World War I, the problem of countering an armored force with light infantry soldiers has been the tactician's nightmare. Many preached that the light infantry division had seen its last fight on the mechanized battlefield. The infantry division was out gunned and out maneuvered by fewer men, more machines, and ever increasing technology of the mechanized force. Many others have justified retaining light infantry divisions by arguing that they can fight in all environments, they provide the light, quick reaction forces which are a necessary military element of national power, and they are relatively inexpensive to maintain

when compared with mechanized divisions.

Although my purpose is not to argue the pros and cons of the light infantry, it is necessary to glance back into history to understand the reasons for and development of the infantry antiarmor defense and the tactical doctrine which developed to contribute to the airborne adaptation of this defense. Realizing that the airborne division is the lightest of light infantry, this background will make it easier to understand the integration of air cavalry assets into the current AAAD.

World War I

> The purpose [of defense] is to break the strength of the attacker, to parry his blows, to weaken him and bleed him white.[1]
>
> Field Marshall General Ritter von Leeb

On the stagnated, trench war battlefield of World War I, Germany's light infantrymen were faced with the challenge of survival, and, thus, their commanders had to find a means to defeat the Allies' new threat, the "tank." Tacticians such as Field Marshall General Ritter von Leeb developed the principles of defense to counter tanks with the strategy of attrition. Using a "constant, well-measured resistance" he would make enemy armor fight for every foot of terrain, using every weapon to its best advantage.[2] This defense was exemplified on 20 November 1917 at the First Battle of Cambrai. The British, about to attack the German positions with tanks, sent a squadron of Sopwith Camels from the Royal Flying Corps to destroy German anti-tank positions. However, facing well camouflaged positions that used terrain to the maximum advantage, the aerial mission was unable to neutralize these strong points. When the attack commenced, the British, without accompanying infantry to hunt out the anti-tank positions, lost sixteen tanks, and the attack was effectively blunted.[3] The infantry antiarmor defense, though in its infancy, had made a

positive step forward.

Von Leeb in his book Defense later summed up what he felt was necessary for the infantry to defend with effective stopping power:

1. A strong air reconnaissance,
2. A strong committed air force,
3. Mobile anti-tank weapons pushed well forward,
4. Obstacles employed to the front and flanks, in the gaps, and to the rear,
5. Choke points blocked,
6. Artillery well planned and accurately placed,
7. Effective use of smoke (and gas), and
8. Good communications and command channels.[4]

Although this is basic to today's U. S. antiarmor defense tactics, it should be noted that von Leeb developed them between world wars, when the United States had turned inward, failing to develop its armor, armor tactics, or antiarmor tactics.

Thus, during the period from WW I to the beginning of WW II, the need for aviation in the defense was recognized to provide reconnaissance and to destroy point targets. In the future air cavalry would be capable of this, as well as, assisting with obstacles, artillery adjustment, smoke, and communications.

World War II

The U.S. was to be shocked as it watched Hitler's armored forces roll across Europe in the late 1930's. With World War II the tactics of light infantry against armor were to gel and be battle tested many times over. The new airborne troopers also needed weapons and tactics to defeat the tank. Thus, in 1942 Germany completely refitted her airborne divisions with anti-tank units.[5] The U.S. also refitted by adding 2.36" bazookas to her airborne

divisions, though they would later be found ineffective against the new heavier German Tiger tanks.[6]

On 10 July 1943 Company A, 505th parachute combat team jumped into Sicily to face German armor. The paratroopers formed antiarmor positions to canalize the armored threat in the attack. Then, using squad sized bazooka teams, they defeated the tanks in ones and twos. Although some tanks were allowed to pass through the defense, they were ineffective, and the engagement was a victory for the airborne infantry over an armored force.[7] Apparently, we had learned a lesson from Rommel's employment of his forces in Africa at the battle of 2d Alamein. In a series of islands of resistance using minefields, infantry with anti-tank weapons and artillery, he blunted Montgomery's armored attacks.[8]

WW II again highlighted the use of airborne troops against armor in operation Market-Garden; this time without great success. In an amazing display of courage and stamina, the British 1st Airborne held out against the German 9th SS Panzer Division in Oosterbeek, Holland, from 17-26 September 1944. With little resupply and constant bombardment, the British attempted to hold the Arnhem Bridge in this now famous battle. It cost the 10,005 man airborne force all but 2,163 men, not including wounded and prisoners of war left on the German side of the Rhine River.[9] Despite the tragic losses, an airborne division had successfully held out against armor for ten days under the harshest conditions. This operation pointed out one more principle that must be followed to successfully conduct an antiarmor defense with airborne soldiers, namely, to insure good logistical support. For the British, an adequate supply of ammunition, food, and medical supplies might have meant success.

General Gavin later pointed out that logistics had been a problem for the 82d Airborne Division in operation Market-Garden also. He said that it took 264 tons of supplies a day to sustain his Division in this operation, more than

in the Italisn campaign, where the Division operated on 175 tons a day. The upward trend not only stretched an already tenuous line of supply, but also required about one third of the ground forces to recover and distribute the air dropped supplies.[10]

Put into the line as conventional forces, but still equiped as airborne, the 82d and 101st Airborne Divisions were again to meet German armor and mechanized forces at the Battle of the Bulge. From 18 December 1944 to 3 January 1945 they held successfully, proving that they could in fact defend against armor.[11] But for the American airborne forces, this was to close out their major concern with an armored threat for almost 28 years.

WW II ended, bringing to light two points that apply to air cavalry in the AAAD. First, the weapons systems would have to be capable of defeating the armor threat; and second, the logistical problems facing airborne forces would still be difficult, but multiplied many times by the tremendous logistical tail of ammunition, fuel, and supplies needed by an air cavalry squadron. The airborne ground forces could defend against armor with correct tactics, and aviation assets would complement this effort in the future.

Post World War II

The Korean War in the early 1950's and the Vietnam War in the 1960's would not produce an armored threat of any significance. With post WW II national and defense priorities set on the policy of mass retaliation, the "brush fire" wars, and a concentration on atomic battlefield tactics such as the pentomic division, the idea of facing armor with light infantry, especially airborne infantry, was not discussed. During the 1960's the 101st Airborne Division was converted to the new airmobile division. The 82d Airborne Division remained as the last readily deployable reaction force, assuming the role of "America's Guard of Honor."

However, the need for change was coming. In 1967 Israel conducted a preemptive attack against a threatening force of Egyptian and Syrian armor. which became known as the Seven Days War. In a masterful execution of three dimensional, combined arms warfare, Israel defeated both forces on two fronts. An armored conflict of this dimension had not been seen since WW II.

But it was not until the U.S. was out of her own war, Vietnam, and the second Arab-Israeli armored war occured in 1973 that the awesome threat of the armored mid-intensity battlefield was realized. To defeat Israeli armored thrusts the Egyptians employed an average of 55 infantry anti-tank weapons every kilometer. Their anti-tank positions were mutually supporting and in depth, using Russian made RPG-7 armor defeating rockets, backed up by Sagger anti-tank guided missiles (ATGM), and Soviet tanks and Saggers in a third echelon.[12] By using the maximum standoff ranges of all anti-tank weapons and eliminating the Israeli air force with an effective air defense umbrella over the main battle area (MBA), the Egyptians repulsed attack after attack of Israeli armor.[13] As the war progressed, the Egyptians rolled out from their air umbrella, away from their position defense in depth and into the offense. Israel was able to then employ a mix of aviation, tanks and anti-tank infantry weapons to turn back the Egyptian offensive.[14] The battlefields were littered with hundreds of tanks, vehicles, and bodies in testimony to the awesome defensive battles that had occurred.

There were many lessons learned from the 1973 War, but most significant to the air cavalry was the need to dominate the skies in order to conduct an effective defense. The complementing air defense systems of our potential enemies, the vast numbers of targets presented on the battlefield, and the speed of the modern mid-intensity battle all contributed to the recognition of the need for air cavalry assets in the AAAD.

Current Developments

The 82d Airborne Division was alerted in 1973 for possible intervention as a stabilizing force in the Middle East. It was immediately realized that against the massive number of tanks involved, the chances of conducting defensive, much less offensive operations would be perilous, if not futile. Twenty-eight years after the Battle of the Bulge U. S. airborne infantry faced an antiarmor weapons and tactics void.

Although the 82d Airborne Division had been developing antiarmor techniques since 1972, it was not until after the 1973 Arab-Israeli War that they began to seriously develop an antiarmor doctrine and training program.[15] In March 1974 an article entitled "The Archipelago Defense" in Infantry magazine summed up much of the doctrine developed for mechanized infantry against armor by the Infantry School at Fort Benning, Georgia. The article related a viable solution to the contingency missions of the 82d Airborne Division on the modern armored battlefield. The principles of this defense were drawn from historical principles and examples. In fact the mix of von Leeb's principles and Rommel's defensive islands appear readily in the following description.

The Archipelago Defense is a series of tank proof islands in depth, organized to attrite the enemy armor as it penetrates the defensive area. The islands are mutually supporting and are supported by artillery, air (both Army and Air Force close air support (CAS)), and engineers as needed. As enemy armor progresses through the defense, they are attrited by engagements from the defensive islands on the flanks and rear. The islands avoid decisive engagement, and stay behind forces serve to break up and disrupt logistical lines of communication. A mobile armor/mechanized force is held in reserve to destroy the enemy piecemeal after it has been segmented.[16]

The key areas that attract airborne planners include the following:

1. The island defense provides "all around" defense, so that there are no linear positions to roll up. This is especially applicable to the 360 degree airborne area of operation (AAO), after dropping into hostile territory.

2. Islands are in maximum depth across the diameter of the airhead or AAO.

3. Towns, marshes and other natural tank-proof areas or antiarmor strong points, as well as other obstacles created by the engineers, serve to canalize the enemy into the kill zones or the other anti-tank islands of the defense.[17]

4. The threat faces a defense that poses new challenges to his fast moving, force oriented offense.

a. The units present an almost invisible defense.

b. Every piece of tank proof terrain is a possible ambush.

c. There is no linear defense to penetrate and no force to envelop.

d. Many of his supporting fires are wasted on unimportant targets.

e. His forces face a series of small battles, rather than one large one, as he is hit from many directions, often simultaneously.

f. Finally, the units do not present any obvious nuclear targets.[18]

The Army's follow-on to the Archipelago article was the publication of TC 7-24, Antiarmor Tactics and Techniques for Mechanized Infantry. It is still current antiarmor doctrine for mechanized infantry. The training circular stresses that the "position defense in depth" is now a feasible concept with the introduction of the new families of ATGM with ranges out to 3000 meters. Oriented toward conventional lines of defensive battle, the infantry doctrine emphasizes detailed planning at all levels to optimize the interlocking ground fires, as well as supporting fires. Armor kill zones (AKZ) are established in

areas where the enemy is forced to traverse, and all fires from the defending units are oriented into their respective kill zones. The weakness of command and control of such a defense is eased somewhat by the mechanization and organic radios associated with a mechanized force, but the need for stringent control measures is stil emphasized. Measures such as the designation of specific AKZ boundaries, target reference points (TRP), sectors of fire, ground and air routes for use by uncommitted forces, unit boundries, and tactical areas of responsibility (TAOR) are critical.[19]

Finally, between 1975 and 1977 a combination of concepts developed by the 82d Airborne Division and the compilation of staff work and war gaming by members of the Division culminated in publication of the Airborne Antiarmor Defense or "Blue Book" in February 1977. Using the basics of the Archipelago Defense, the airborne infantry organized for the antiarmor defense with a position defense in depth, occupying a series of mutually supporting platoon and half platoon size battle positions. Each battle position was organized around antiarmor weapons (TOW and Dragon).[20] A typical antiarmor position looks like figure 1-1. Additional fire support from all available means is concentrated on kill zones throughout the positions. This now familiar defense was modified to the airborne division's AAO under the following assumptions:

1. Units would either occupy terrain that the enemy needs to obtain freedom of maneuver, or

2. Their presence would threaten the success of the enemy mission.[21]

The position defense in depth from figure 1-1 is set up by brigades in a circular configuration as part of a division defense shown in figure 1-2. With units being supplied by improved air support directly in their battle positions, the center of the AAO may contain only one or two mobile headquarters and the mobile assets of the air cavalry squadron. Brigade security

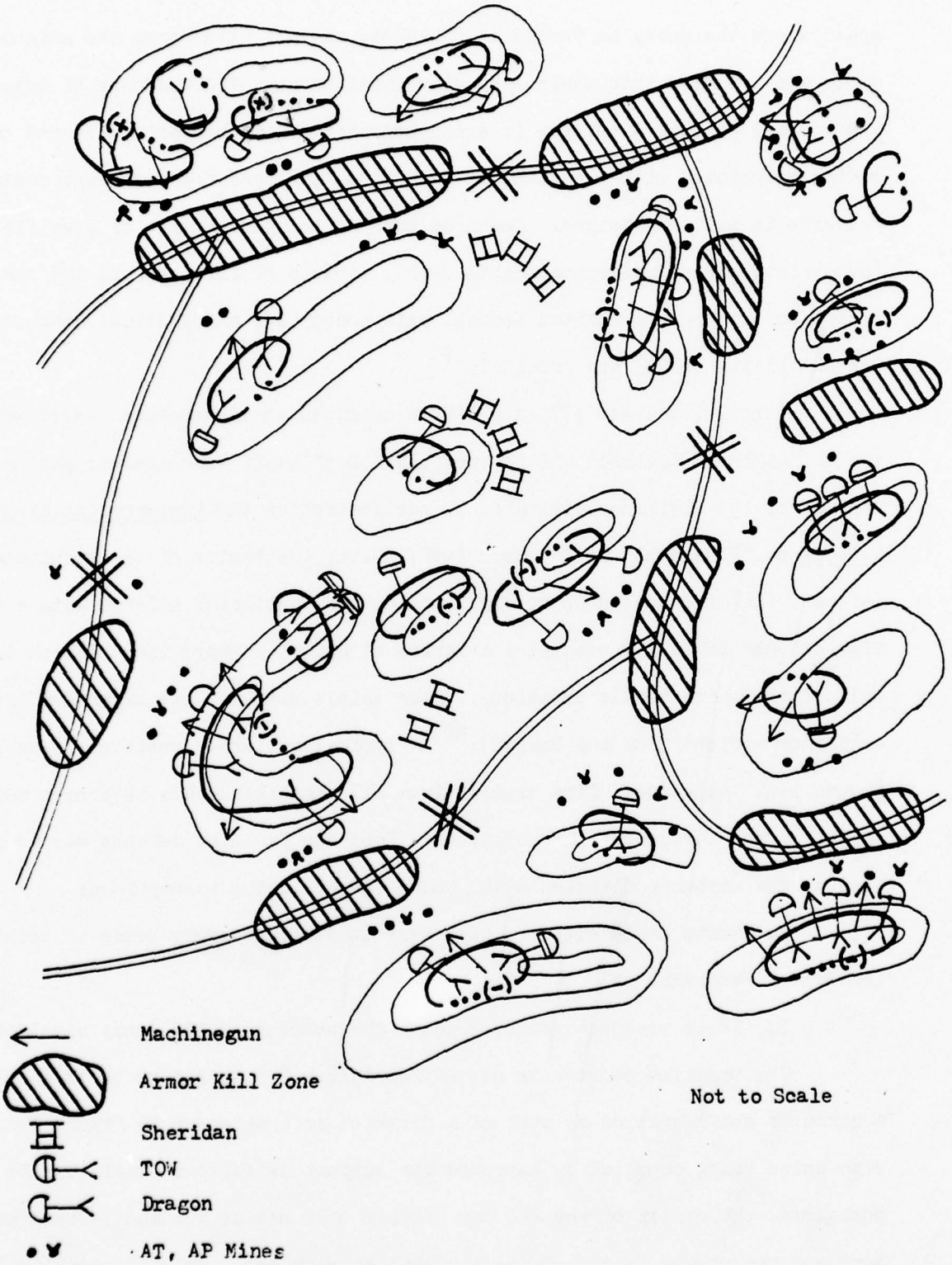

Figure 1-1: Type Antiarmor Position [22]

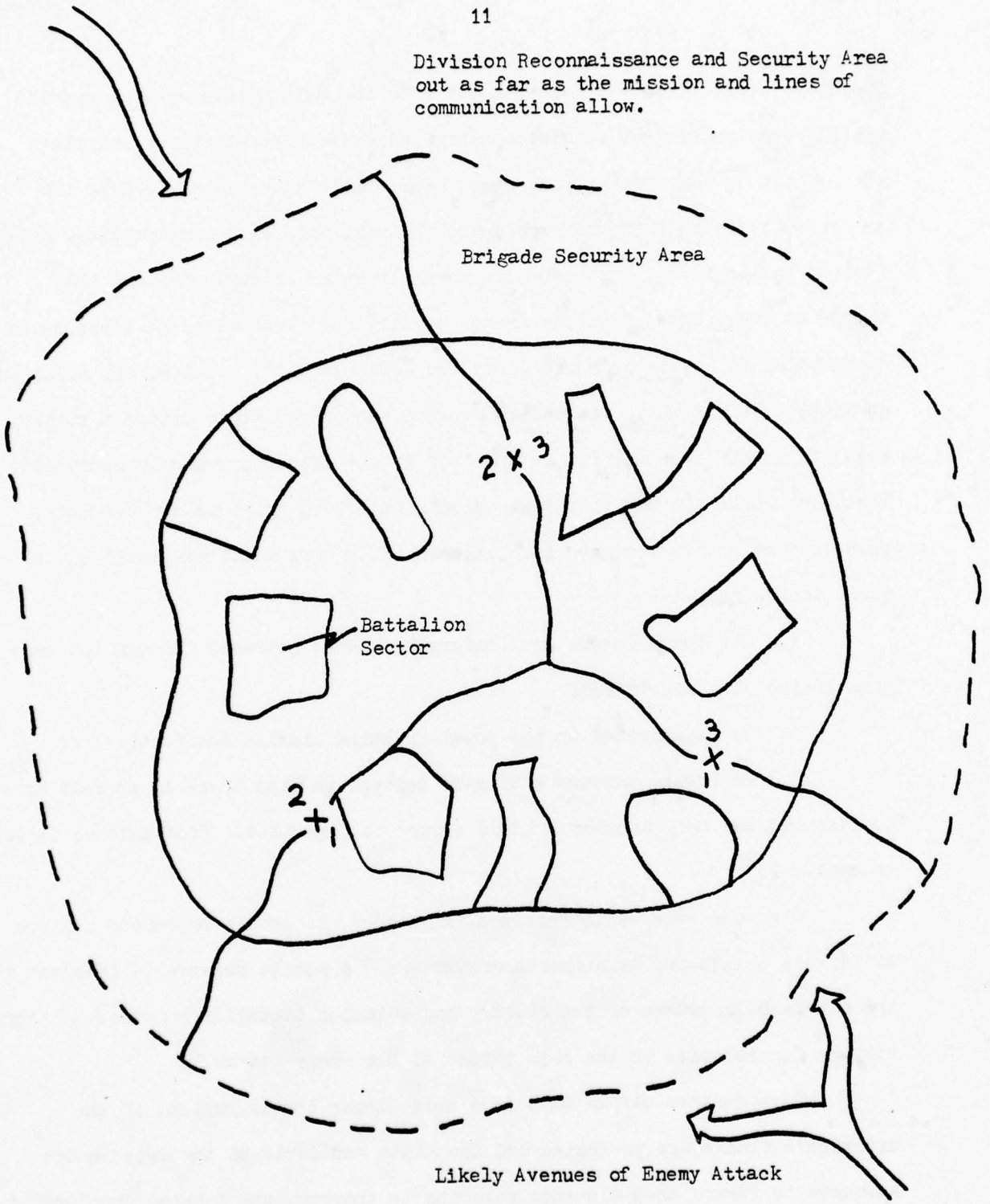

Figure 1-2: The AAAD Area of Operation[23]

areas are formed 4 to 8 kilometers out from the main battle area to provide intelligence and target acquisition/fire adjustment to artillery and close air support as the enemy approaches. As possible stay behind forces, the combat outposts in this area could aid in attriting follow-on echelons, reserve forces, and logistical lines before they can enter or influence the MBA.[24] Forward of the brigade security areas, cavalry and reconnaissance elements in conjunction with available artillery and CAS interdict, attrite, and delay the enemy back to the MBA. The threat armored/mechanized force enters a brigade area and is hit from the flanks and rear in the manner previously discussed. The enemy works his way into what appears as a weak point in our defenses, only to find he has ventured into another AKZ. This continues until one of three things happens:

1. The enemy losses are too great, and he retreats through the same gauntlet he just negotiated;

2. He is attrited to the point of being mission ineffective; or

3. He breaks through a brigade defense to find there is no rear area to disrupt, but only another brigade sector to negotiate. From here he is back to option 1.[25]

A ground reserve is retained, if needed, to secure or defend a piece of terrain designated by higher headquarters. A mobile reserve is inherent in the attack helicopters of the cavalry and aviation battalion's attack helicopter company for reaction to the main thrust of the enemy attack.[26]

This defense can be used in a more linear configuration, if the division's flanks are protected and the width and depth of the defense are adequate to insure that elements managing to traverse the defense are ineffective. Rather than a 360 degree configuration, the division would occupy a

block of terrain molded to the terrain's most defendable features and oriented on known directions of enemy attack.

Summary

Because weapons systems since WW I have steadily improved in range, accuracy and lethality, all of the lessons learned from light infantry against armored forces in the past cannot be taken to be absolute. However, as weapons have improved, so have the many other factors that enter into the battle, such as armor protection, communications equipment, other combat multipliers, and even the skills and abilities of the soldiers and leaders. Care must be taken to insure the principles discussed are taken in their historical perspective and that those which still apply are used cautiously. Also, since this thesis will deal with worst case situations when options are to be studied, it must be understood that the AAAD could appear to be extremely tenuous when, in fact, a lesser degree of seriousness might and probably would occur.

This overview of the historical precedent up through the documention of the airborne antiarmor defense in the Blue Book should help the reader understand and, hopefully, appreciate the need to develop the air cavalry's role in the AAAD. Although the current airborne adaptation of this doctrine has not been proven in combat, the various principles of the position defense in depth have been proven effective historically. The major weaknesses of command and control, logistical support, and piecemeal defense are realized, and they provide the need for this thesis and the eventual optimization of air cavalry utilization in the AAAD. It is hoped that future studies into all aspects of the AAAD will provide the best solutions to these problems before the concept is tested in combat.

PROBLEM STATEMENT

The problem of correct employment of the air cavalry in the airborne version of position defense in depth can best be expressed in the following question: What are the most viable employment techniques and tactics that the air cavalry squadron (airborne) can use in the conduct of the airborne anti-armor defense?

Although this question provides the main thrust for my thesis, questions inherent to the problem are stated below.

1. Can the air cavalry squadron's assets survive the intense environment of enemy and friendly smoke, artillery, antiaircraft, small arms, and air-to-air fires in the AAAD battle area?

2. What impact will threat tactics have on air cavalry employment in the AAAD?

3. Are current tactics and methods of employment of the air cavalry squadron, as described in the Blue Book, making optimum use of their reconnaissance, security, economy of force, and combat power capabilities?

4. What might be the best organization for combat and employment for the air cavalry squadron during conduct of the AAAD?

5. What mid-term developments will enhance the mission capabilities of the air cavalry in the AAAD?

ASSUMPTIONS/LIMITATIONS

The following assumptions are basic to the thesis topic being researched.

1. The airborne antiarmor defense as generally conceived and practiced by the 82d Airborne Division is a viable employment technique for an airborne division.

2. No short term unit reorganizations, technical breakthroughs, or doctrinal changes will occur which will invalidate the AAAD as a concept or

eliminate the participation by an air cavalry squadron.

3. Air cavalry assets are selfdeployed into the AAO from an initial staging base (ISB) or are air landed in the AAO prior to preparation and conduct of he AAAD.

This thesis will not be limited to unclassified material. However, every attempt has been made to avoid classification when no clarity or meaning is lost. Classified material is consolidated as conveniently as possible to facilitate publication or dissemination of all or part of the text.

METHODOLOGY

This paper is organized to approach each of the five inherent problems, as stated under PROBLEM STATEMENT, to come up with a suitable answer or family of answers to each. Chapters are organized to give the reader necessary introductory background, the facts bearing on the problem with appropriate discussion, and conclusions or recommendations. Summaries are used when needed to glean the salient points from a long text.

The text does not follow a scenario because of the diverse mission contingencies normally assigned to an airborne division. A worst case approach is used for all factors, such as the strongest or most dangerous armor threat.

War gaming results are used to provide statistical data when actual experience factors are not available. These areas result in most of the classified data and appear in appendix A, classified SECRET and published under separate cover.

The final chapter provides the summary, conclusions and recommendations as they relate to the primary topic.

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CHAPTER II

AIR CAVALRY SURVIVAL IN THE MAIN BATTLE AREA AND BEYOND

INTRODUCTION

When we speak of environment in the main battle area (MBA) there are really two aspects that can be considered. First are the natural factors of terrain, cover and concealment, observation and fields of fire, and weather. This aspect is God-given and for the aviator cannot be altered significantly in any given situation. Second is the combat environment presented by anti-aircraft fires, electronic warfare, artillery, smoke/obscurants, small arms and anti-tank (AT) fires, and air-to-air combat by all adversaries involved in the conflict. If the aviator is to survive to fight the next battle, he must reduce his risk by using the most effective tactics and counterfire.

It is my intention in this chapter to briefly cover the natural environmental factors as they might affect the air cavalry in the airborne antiarmor defense (AAAD) through a basic look at the physical geography of the most probable areas of AAAD employment. Next, using templating techniques, I will analyze the environment as presented by friendly and enemy fires and EW inside and around the MBA of the AAAD. It is hoped that the lessons learned from this exercise will provide a picture of the relative risks involved in flying and fighting in both areas.

THE PHYSICAL ENVIRONMENT

Environments to be examined can easily be narrowed by simply determining where an airborne force might be employed against an armored threat. As of this writing, there are only three areas which present a mid-intensity armor environment to an American airborne division. They are central Europe, the Middle East, and Korea. While this study is for current contingencies, the

AAAD can be adapted for other threat areas as they arise. It might also be noted that these three areas cover a wide range of climatic conditions and terrain types: rolling hills of Europe, arid deserts of the Middle East, and the mountains and paddies of Korea.

Central Europe

The rolling hills and open terrain favoring armor are familiar to all who have studied the two world wars or have served in or visited Germany. Large north-south rivers such as the Fulda and the Rhine are in current operation plans for all of the allied forces of NATO, and in the U. S. sectors the weather characteristics of frequent fog, damp cold winters and mild summers are also well known. But to the casual observer several things must be emphasized. First, the growing population and individual wealth in the area have fostered an urban sprawl around most of the mid-sized and larger cities. For ground forces this becomes a major source of hindering terrain, an area that would be politically significant if combat were to occur there, and an area requiring specialized warfare differing from the tactics of rolling armored columns. Second, the numerous isolated wooded areas, famous for their manicured appearance, have been densely planted. Movement through them by mechanized forces is virtually impossible without either an unacceptably slow speed and high vulnerability or significant advanced engineer support.[1]

The terrain and weather actually favor U. S. Army aviation and the employment of air cavalry. There are many folds, hills, tree lines, and cities that provide excellent cover and concealment for flight routes. Observation and fields of fire are limited only by the weather. The European terrain that allows enemy tanks to get within 1500 meters of friendly defensive positions before they can be effectively engaged is partially overcome by the elevated platform of the attack helicopter and the maneuverability of the air cavalry

teams. The frequent low cloud ceilings provide helicopters with concealment from high performance aircraft. Most of the current mid-intensity tactics for aviation are oriented on European terrain, and it would serve no purpose to repeat the information here. Excellent sources are FM 1-1, FM 17-50, and FM 90-1, all dealing with aviation employment.

Middle East

One of the most hostile environments for men and machines is the desert. Temperatures fluctuate as much as 72 degrees Fahrenheit in a 24 hour period, and winds are as high as 75 mph, carrying suspended sand and dust. Rain is a rare occurrence, but when it comes, there is flash flooding and tremendous errosion. Sunlight is so bright and glaring that mirages and heat shimmer can limit visibility to several hundred meters. In such a climate fatigue of personnel, their machines, and weapons is intense.[2]

The three types of desert common to the Middle East are all time proven battlefields. The mountain desert of Yemen is characterized by scattered ranges of barren hills and mountains separated by low flat basins. The rocky plateau deserts such as the Golan Heights exhibit little relief, extensive flat areas covered with a rocky surface, and eroded valleys or wadis. Finally, the sandy dune desert of the Western Sahara is the "Lawrence of Arabia" sea of sand and gravel, where wind erosion builds sand dunes as high as 1000 feet for lengths up to 15 miles.[3]

While this sounds uninviting, the constraints placed upon air cavalry make it even worse. Sand erodes main and tail rotor blades, turbine vanes, and plexiglass wind screens rapidily.[4] The maintenance to correct this wear requires large amounts of water, already scarce, and maintenance facilities that are continuously subjected to the same climate that caused the original damage.

The desert is fightable by an air cavalry unit, however, and FM 90-3 provides an excellent beginning reference to prepare for and conduct desert operations.

Korea

Korea presents another environment for the possible employment of airborne units against tanks, definitely favoring the dug-in soldier and his supporting aviation assets. The Korean peninsula is characterized by lowlands and very mountainous terrain. The lowlands are heavily populated with over 250 people per square mile, and present intensely cultivated, open, paddy filled terrain.[5] All of the lowlands are dominated by hills and ridges. In the mountainous areas, Korea has terrain with high, steep slopes (in excess of 30°) that are virtually impassable to wheeled and tracked vehicles.[6] The valleys below are controlled by the many ridgelines that cover central Korea. Although the armor threat is present from North Korea, its employment would be extremely vulnerable to all antiarmor defense weapons and techniques the AAAD provides. The cold winters and heavy precipitation present climatic problems to the aviator, but the terrain makes up for these difficulties by providing an excellent nap-of-the-earth fighting environment. Cover and concealment are excellent, and maximum standoff ranges can be used in all favorable visibility conditions.

Summary

Every deployment location will provide the airborne division with a new environmental challenge. Employment of the air cavalry's available reconnaissance and weapons systems will depend on weather (the best consistent visibility occuring in the desert), terrain (again the longest fields of fire occuring in the desert), and cover and concealment (the best being in the rolling terrain of central Europe). Terrain such as the Korean ridgelines and roads through the Mid-East deserts will canalize enemy mechanized and armored

columns, providing excellent targets for cavalry reconnaissance and gun platforms. Training and experience in terrain similar to these three areas will enhance the employment of aviation assets with any airborne force package deployed against a current armored threat.

THE COMBAT ENVIRONMENT

The combat environment brings immediate thoughts of air defense (AD) weapons to the Army aviator. But there are many other factors to be found in the midst of and surrounding the main battle areas. In addition to enemy and friendly antiaircraft systems, there will be a profusion of smoke, artillery, small arms fire, light machinegun fire, fixed wing close air support and possibly air-to-air combat. These latter factors will probably have a more significant effect on employed Army air than the umbrella of air defense over the battlefield. I will first look at the AD threat facing the air cavalry through a series of templates and then present the remaniing factors using both templates and word pictures.

Air Defense Weapons

Both friendly and opposing force air defense systems will be dense throughout the main battle area. With an effective "identification friend or foe" (IFF) system on every aircraft, an effective air space management system, and alert crews, the chances of being shot down by friendly AD fires are reasonably slim. Of course, adequate preflight and during flight precautions will be mandatory for survival against our own and opposing force (OPFOR) AD systems.

In the likely areas for airborne antiarmor employment discussed earlier, we have potential foes that are armed and taught tactical doctrine by the Soviet Union. Thus, a "worst case" look at an OPFOR AD threat would be the

air defense systems as deployed and employed under Soviet doctrine.

Figure 2-1 shows the surface-to-air missile (SAM) threat for a Soviet Army deployed on a 50 kilometer front, 100 kilometers in depth. The significance of this figure is the complete coverage in depth using multiple missile systems in a redundant configuration. Figure 2-2 reduces the scale of figure 2-1 and adds the coverage for each of the four missile systems that could be expected in an OPFOR army on the offense. As can be seen from this figure, the SA-6 Gainful is employed close to the front of the advancing army with a total of 5 batteries. Batteries consist of a radar unit, a loader vehicle and three triple launcher vehicles. The first three batteries could be expected to be found about 5 kilometers behind the FEBA (reaching 32 kilometers into our area of operation) with a second row of two batteries filling the gaps about 10 kilometers behind the FEBA.[7]

The SA-4 Ganef is employed in six batteries, starting about 10 kilometers behind Army Frontal units and reaching 50 kilometers beyond the FEBA. Batteries consist of the radar unit, a loader vehicle, and three twin launch vehicles. The remaining batteries are deployed starting about 25 kilometers from the FEBA and are scattered throughout the operational area for a total of nine batteries.[8]

The SA-8 Gecko is a relatively short range (about 12 kilometers) missile, deployed in the central operational area to protect high priority targets.[9] It is a relatively new addition to the Soviet air defense missile arsenal, but we do know that it is mounted on a wheeled four missile carrier, and it has an electro-optical tracker.[10]

The SA-2 Guideline is a larger missile employed at locations about 45 kilometers and 80 kilometers from the front line, with coverage extending about

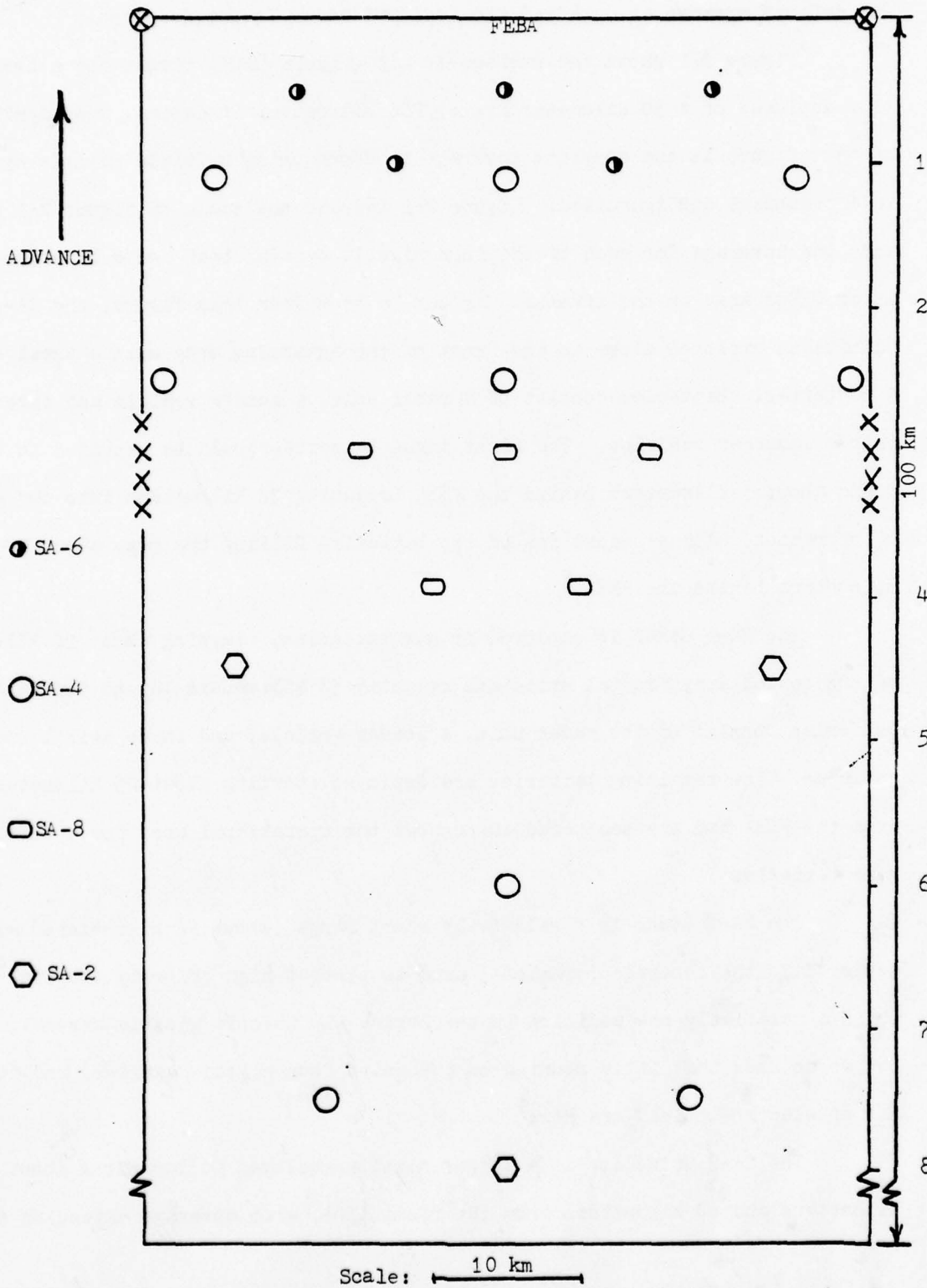

Figure 2-1: SAM Defensive Pattern for a Soviet Army (3-4 Divisions) Advancing[11]

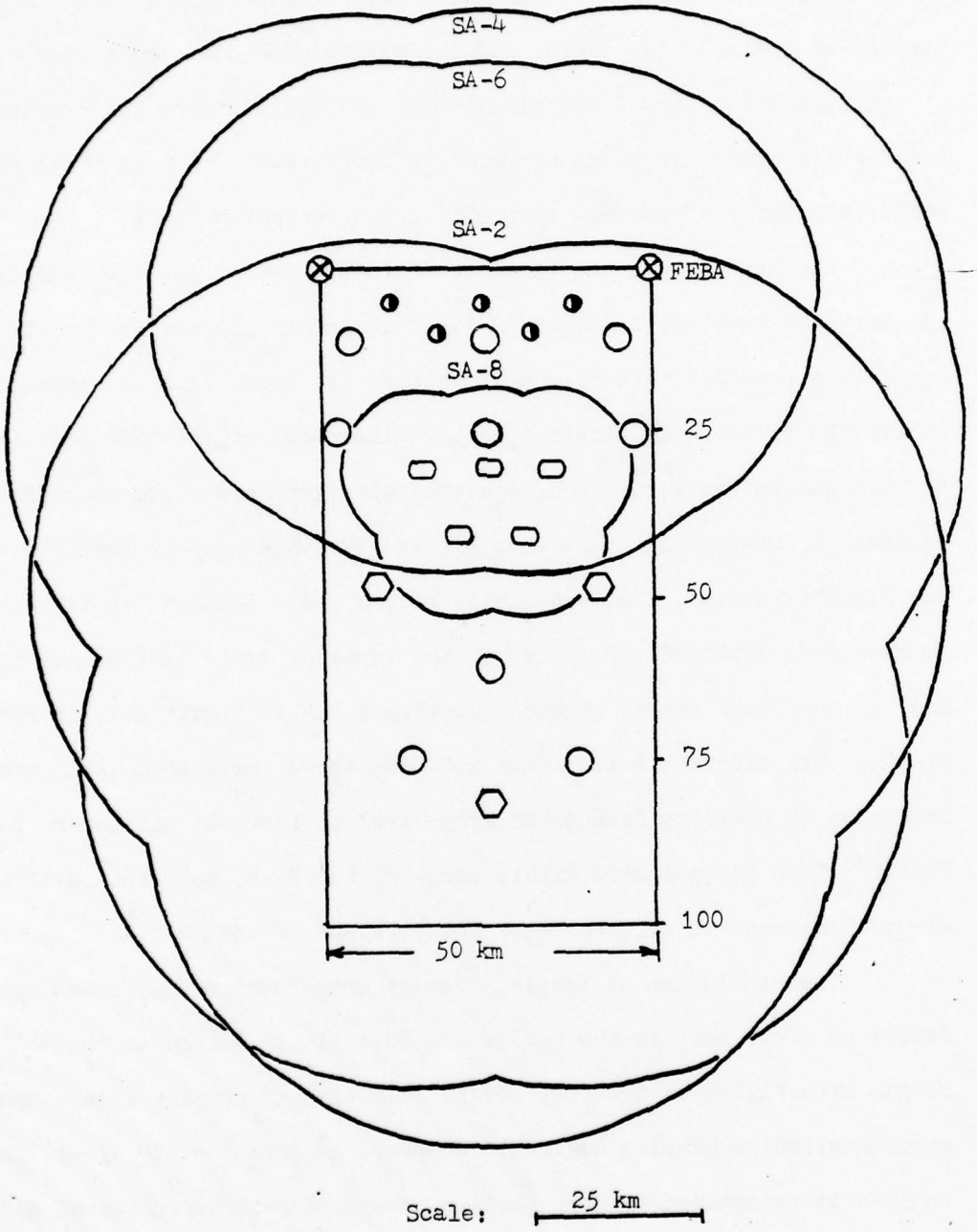

Figure 2-2: Effective SAM Coverage for a Soviet Army (3-4 Divisions) Advancing on a 50 km Front[12]

8 kilometers past the FEBA. The three batteries belonging to the Army each consist of 6 single launchers, a radar control vehicle, and a loader vehicle.[13]

The other Army level missiles of the Soviet Union are considered obsolete or are currently being replaced in Warsaw Pact Armies. Their employment would only imply a reduced capability by any opposing force.

Now let us turn the template of figure 2-2 on its side and look at the vertical envelope in figure 2-3. This is an interesting view in that it emphasizes the fact that flight above tree top level in a mid-intensity conflict is certain to be fatal within about 30 kilometers of the FEBA over friendly terrain unless the aircraft is equipped with very effective countermeasure equipment. Disregarding the 23mm AAA and 57mm AAA weapons normally found in the division sector, the reader will note a space between the terrain and the AD envelopes depicted. In fact, if the vertical scale is blown-up and reexamined at the lower levels of these envelopes, as in figure 2-4, it becomes obvious that aircraft below about 250 feet above the ground (AGL) are relatively immune to AD missiles from OPFOR army-level to about 15 kilometers beyond the FEBA.[14] Even after coming within range of the SA-8, helicopters flying below about 47 meters AGL will be below the envelope of the SA-8.[15]

The conclusion is simple. Soviet army-level missiles employed by forces we might meet in the AAAD would have little effect on the well trained flight crew flying at tree top level, even without counter radar, chaff, and other survival enhancing devices. However, because the low level limitations on SAMs is recognized by most foriegn powers, they have continued developing improved SAMs and air defense guns.[16] The next step, then, is to look at the missiles and guns employed at Soviet division level and lower against our aviation.

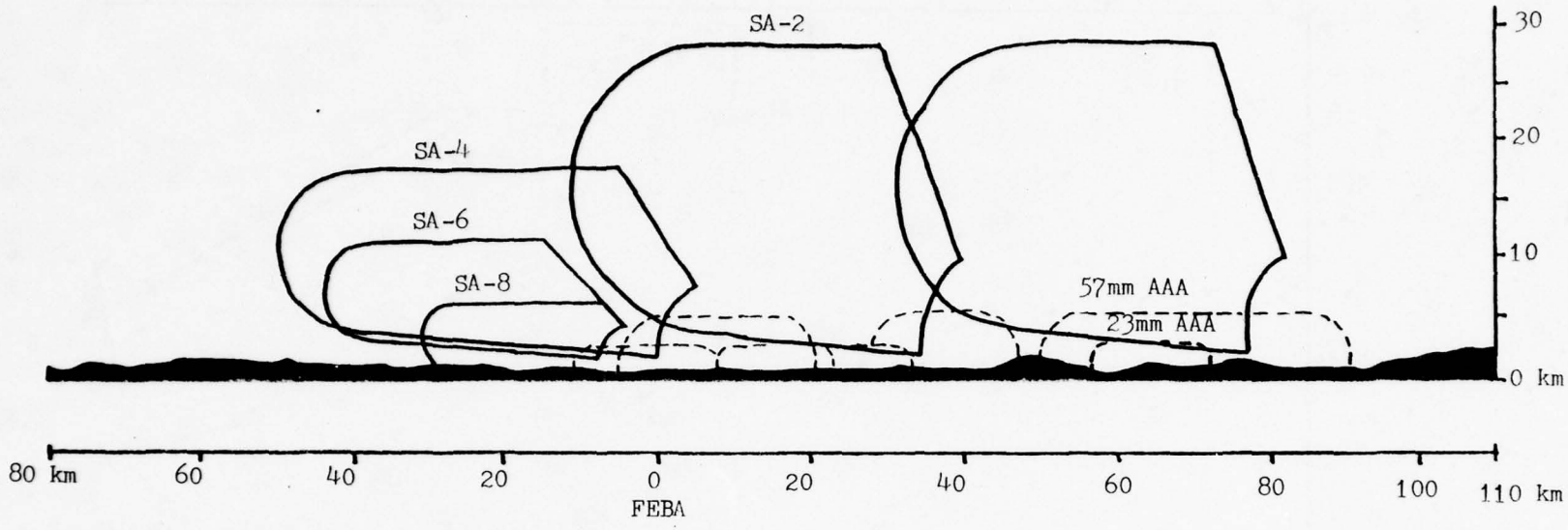

Figure 2-3: Soviet Army Air Defense Envelope, Not Including AD Weapons for Regiment and Lower[17]

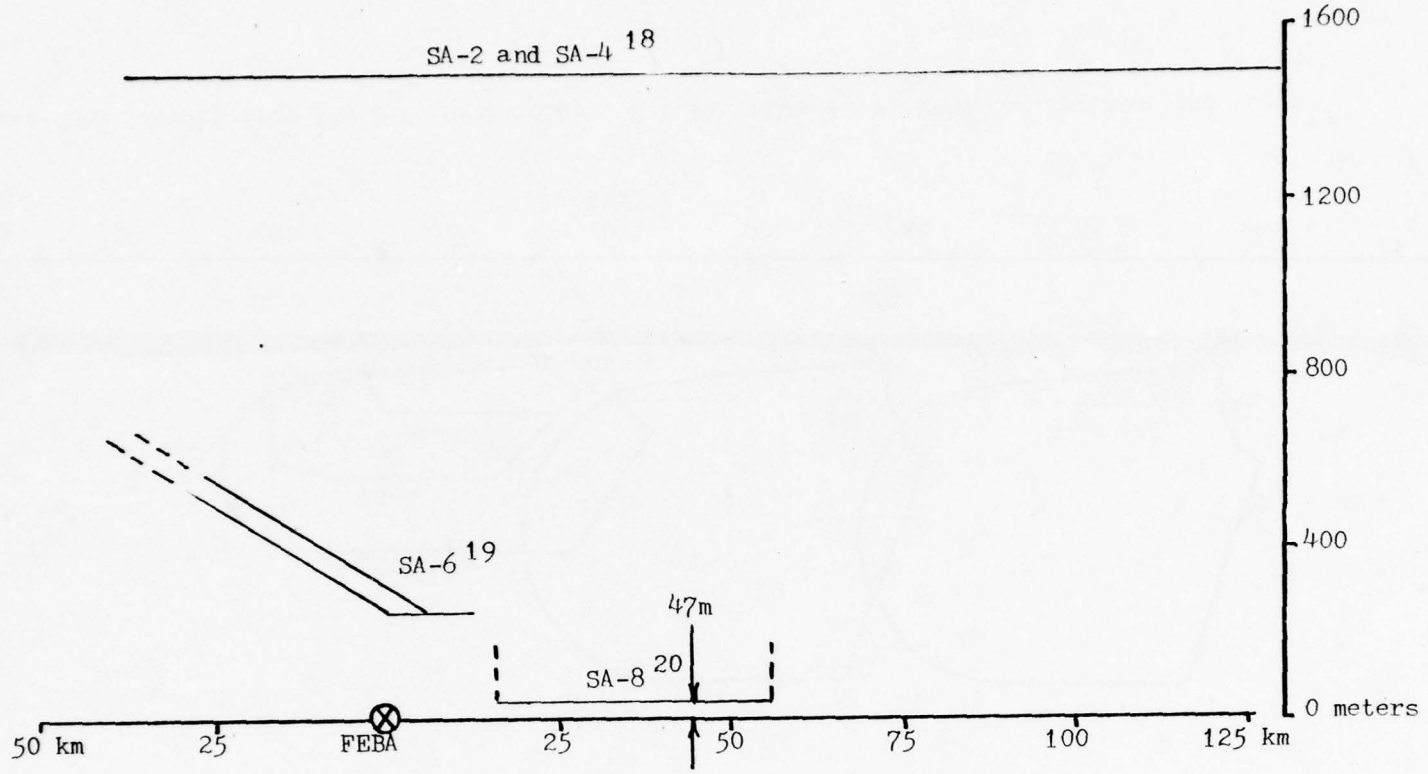

Figure 2-4: Lower SAM Envelope for a Type Army Air Defense (Vertical Scale Exagerated). Terrain Masking is not Considered.

The basic Soviet AD weapons for division troops are the SA-9 Gaskin and SA-7 Grail missiles and the ZSU-23-4, ZSU-57-2, and S-60 antiaircraft guns. Figure 2-5 illustrates the probable employment pattern of division AD weapons as they would be found in an advancing tank division with the first echelon deployed for the assault. The S-60 and ZSU-57-2 are being phased out of the Soviet antiaircraft (AA) regiment; however, they will probably be in armies that are supplied by the Soviets for some time. The SA-6 or SA-8 SAM will take their place.[21]

The S-60 is a radar directed 57mm AA cannon deployed in belts across the division front at depths of 10, 15, and 25 kilometers. It is employed in 23 batteries of 6 guns each, and, as can be seen from figure 2-5, will have little effect on U. S. Army aviation employment until we have flown about 6 kilometers past the FEBA.[22]

The ZSU-23-4 is a radar or visually guided 23mm four-barreled cannon that is self-propelled.[23] It is normally employed throughout the operational zone to protect the advanced guard and first and second echelons in the offense.[24] There are 16 ZSU-23-4 per Soviet division, further subdivided into 4 per regiment. These weapons are employed about 200 meters apart and about 400 meters behind the lead assault elements, while for the rear echelons still in column, they are employed one behind the other.[25] Although the published range is 3000 meters, most references refer to 2500 meters as the effective range. The ZSU-23-4 is probably the most dangerous AA weapon used against helicopters by the Soviets. Maximum crew training and use of available EW devices will be necessary to fight and defeat this weapon.

The last gun considered to be a significant threat is the optically controlled ZSU-57-2, twin 57mm self-propelled AA gun. The 6, six gun batteries are also doctrinally deployed throughout the army area, filling in air defense

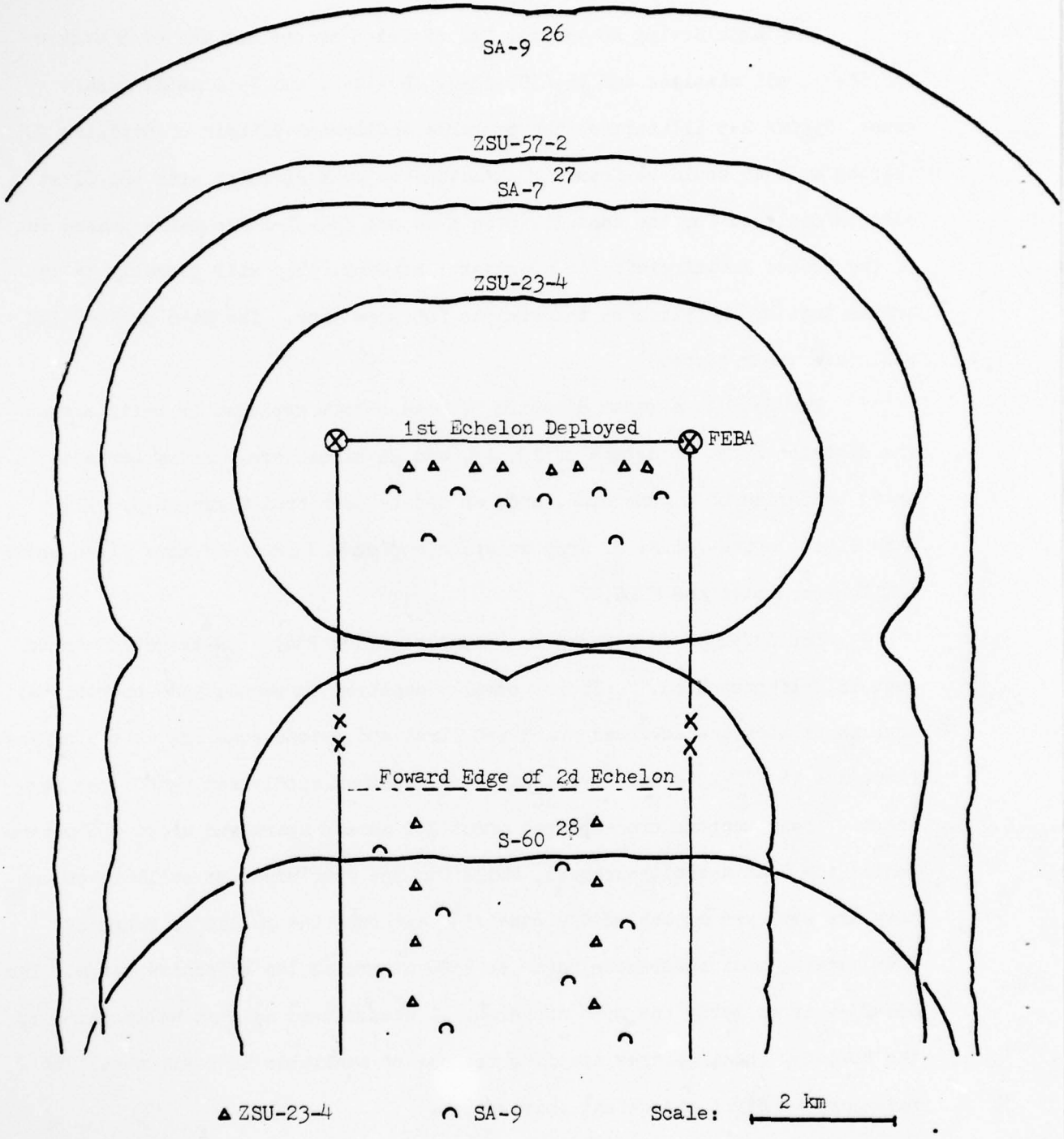

Figure 2-5: Effective Coverage of Air Defense Systems of a Soviet Tank Division in the Attack [29]

gaps.[30] Because this weapon is being replaced by SA-6 or SA-8 units, U. S. Army helicopters will actually benefit, as was shown in figure 2-4. As with the S-60, the ZSU-57-2 will probably appear in armies supported by the Soviet Union for several years to come.

The missiles at division level include the introduction of the SA-6 Gainful and SA-8 Gecho previously discussed under army-level air defense systems. As was noted, they will be of little threat to helicopters flying at or below tree top level.

The SA-9 Gaskin is a heat seeking, passive IR missile with a range of 7 kilometers and is effective down to 20 meters AGL.[31] It is employed at regimental level in conjunction with the ZSU-23-4 in the antiaircraft battery.[32] Thus, there are a total of four batteries, each with four launch vehicles, for 16 systems per division.[33] As shown in figure 2-5, its coverage reaches well into the friendly defensive sector and poses a continuous threat during daylight hours.

The last missile at division level is the heat seeking SA-7 Grail. There are 112 of these man portable, shoulder fired missiles in each motorized rifle division and 36 in each tank division, scattered throughout the sector down to company level.[34] The Grail is effective out to a range of 3.5 kilometers and down to an altitude of 50 meters AGL.[35] Again, the threat to U.S. Army helicopters, using proper flight techniques, is minimal. As figure 2-5 illustrates, its coverage is very close to the ZSU-57-2, reaching well into the friendly defensive sector. Similar to the U. S. Redeye missile, the Grail was employed by the Egyptians in 1973 on mobile 12 missile launchers. Fired in groups of four or eight, the hit probability increased significantly. It must be noted, however, that because a very small warhead is on the Grail, it was relatively ineffective, even when a direct hit was scored.[36] This was certainly

noted by the Soviets as will probably be corrected, if it has not been already.

If we now flip figure 2-5 on its side to inspect the air defense envelope of a typical tank division, figure 2-6 results. The most significant feature is that only the antiaircraft guns are effective down to ground level, and with the introduction of terrain relief and vegatation, the AA guns are limited in their ability to acquire and/or engage helicopters optically or with radar. In addition both ZSU guns are thin skinned, and the S-60 provides no protection at all for the crew. All three systems are, thus, highly vulnerable to all direct and indirect fires that defending forces can place on them. In the assault all antiaircraft guns employed in the assault echelon will be faced with smoke, EW, and the problem of differentiating between friendly and enemy targets. This is not to take lightly their capabilities to shoot down our helicopters, but only to show that the U. S. Army helicopter will be able to move about the battlefield successfully with the use of good tactics and proper flight techniques. The tactics currently taught to counter Soviet AA guns, plus future electronic countermeasures (ECM) discussed in chapter VI, should eventually lead to NOE flight made with relative impunity to Soviet antiaircraft missiles and radar controlled AA guns in the MBA and beyond.

Other Elements of the Combat Environment

The Army aviator will have many things to worry about besides antiaircraft fires in and around the MBA. These include both friendly and enemy electronic warfare (EW), artillery, smoke, small arms fire, fixed wing aircraft close air support (CAS), and helicopter CAS. I will discuss each of these in turn as they would affect helicopter operations in the area of operation.

The Soviet EW capabilities are good quality and are used in training. Although much of their equipment is withheld from foriegn sales, we can expect that earlier generations of Soviet EW equipment will be found in any anti-

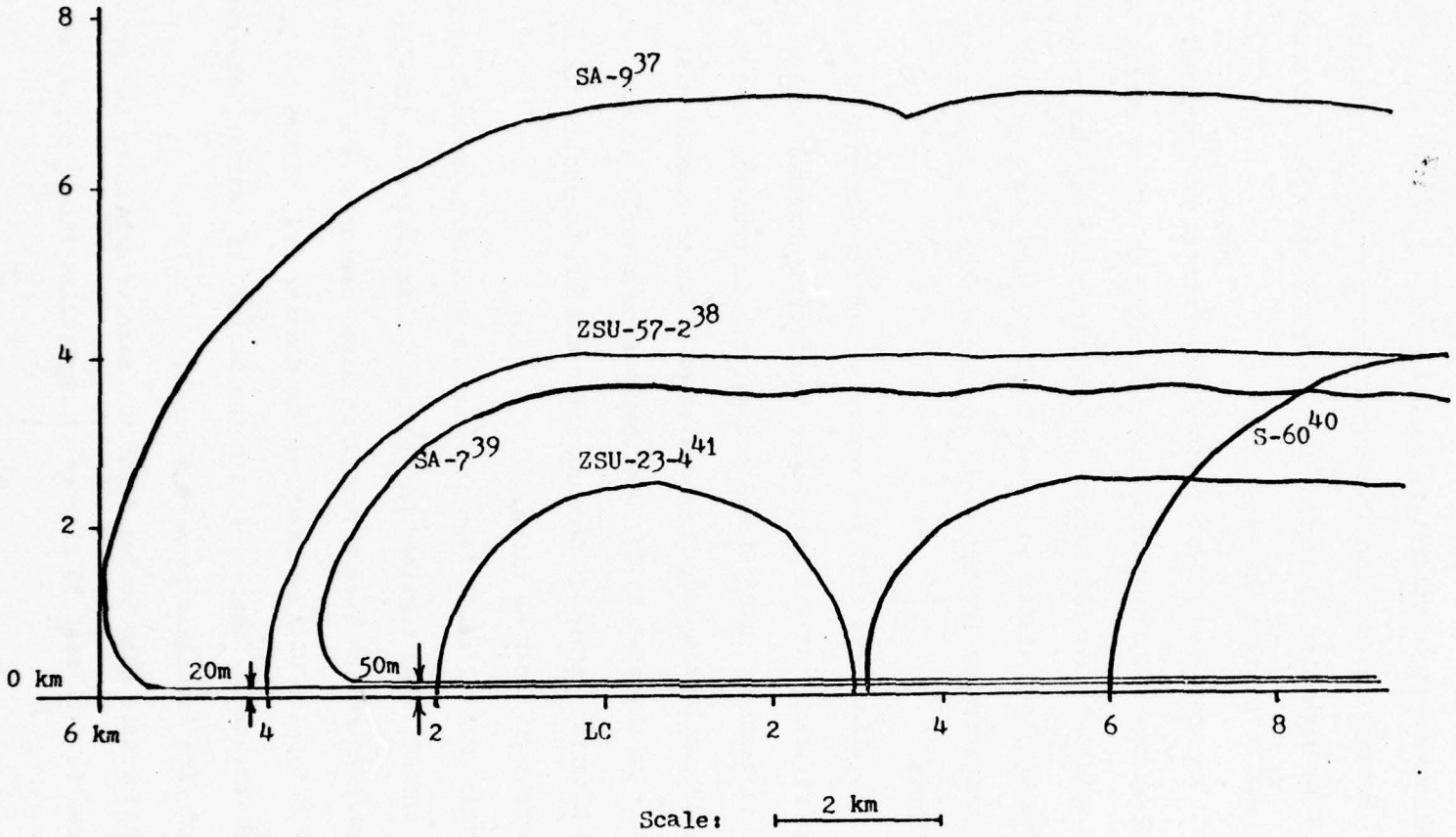

Figure 2-6: Envelope of Air Defense Systems of a Tank Division in the Attack. Terrain Masking is not Considered.

armor contingency operations a U. S. airborne division might face. Soviet doctrine delineates three priorities for employed EW units:

1. Provide information allowing destruction of the emitter,
2. Use deception to confuse and misorient the emission source, and
3. Jam or disrupt the emissions.

These priorities are aimed at our radios, radar units, navigational aids and fire control systems; and they have the capability to affect narrow bands or use blanket coverage over all bands. In addition they may jam or disrupt for brief periods and then listen to see what effect they had or simply begin jamming slowly and increase the intensity so that we are not immediately aware of their efforts.[42]

EW will affect not only the reporting and fire control abilities of the air cavalry teams but will also make the cockpit an even busier place. Radios will be buzzing, navigational and warning instruments will be fluctuating and pilots will be looking for frequencies on which to communicate. The air cavalry cannot be defeated by EW, but they can be severly hampered without training in alternate means of communication and ECM to include being given priority targets of known EW sites.

At this point I would like to focus on artillery, smoke/obscurants, small arms, and AT fires together and template them against a possible OPFOR tank division penetration into a battalion sized sector of the AAAD. Although probable OPFOR tactics will be discussed in chapter III, figure 2-7 provides a simplified version of figure 1-1 with the factors of terrain, observation, and fields of fire idealized to make a point.

In accordance with Soviet doctrine, massive artillery is used in preparatory fires for at least 30 minutes to neutralize strong points and is

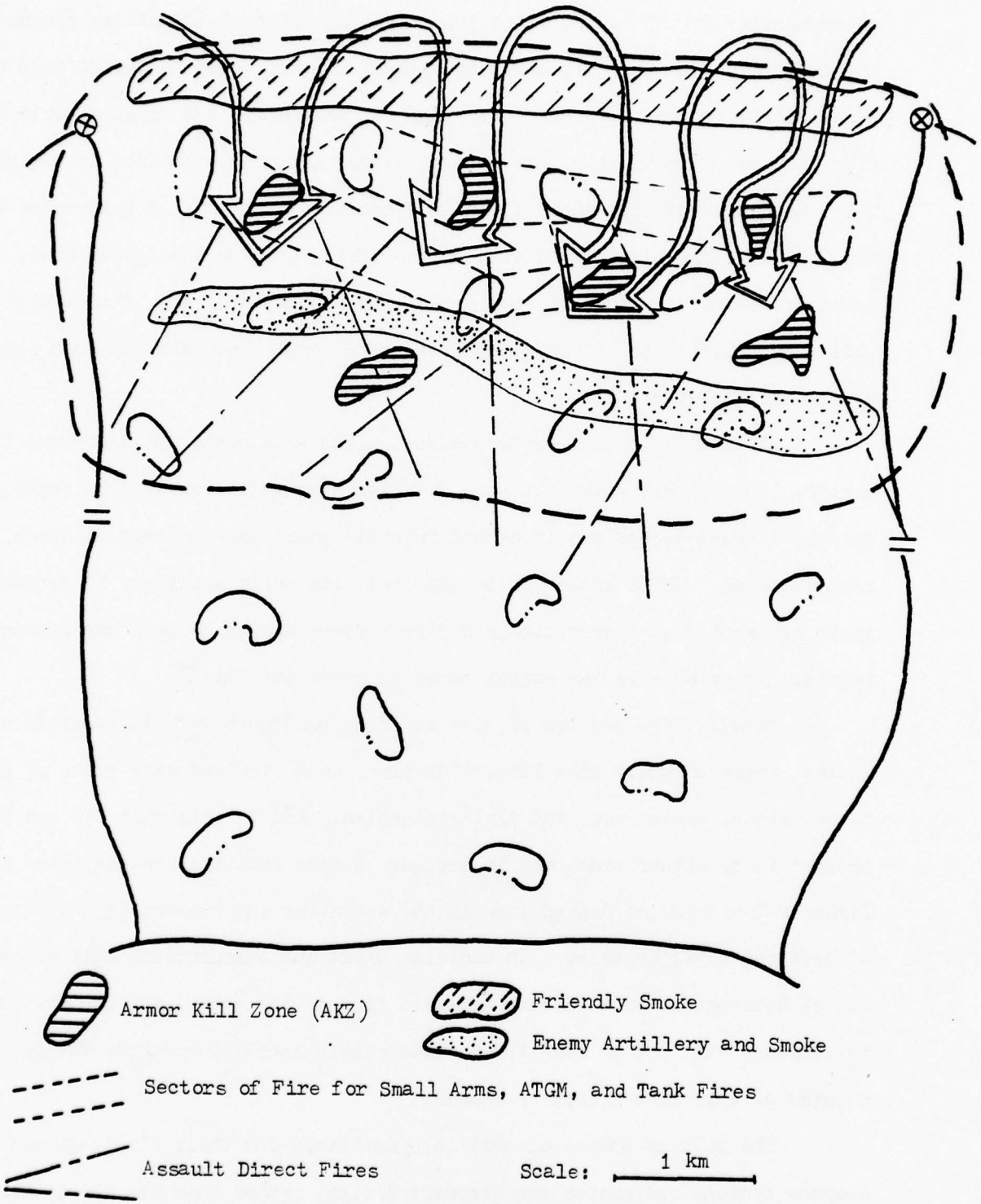

Figure 2-7: Possible OPFOR Division Penetration Attempt into an Airborne Battalion Sector of the AAAD

subsequently shifted foward about 500 meters in front of assaulting elements.[43] The artillery from friendly units to include mortars would be firing into the occupied kill zones, as shown in the figure, and behind the first assault echelon in hopes of confusing follow-on echelons as to the situation in the MBA. This would also disrupt enemy lines of communication. Artillery does not affect the Army aviator unless he flies over the firing unit or the impact area. Both areas are relatively easy to see, especially the impact area, so that artillery will only restrict the air cavalry from using certain terrain and from observation and fields of fire.

Smoke will be used by both sides, mixed with other artillery and by itself. We will put smoke with the artillery behind the enemy first echelon, as just discussed, and use it around friendly positions to cover withdrawl or repositioning. OPFOR smoke can be expected with their artillery to conceal their movement from observation and direct fires and to by pass our strong points. In essence we can expect smoke to cover the MBA.[44]

Finally, the sectors of fire as shown on figure 2-7 will contain a violent array of small arms fire, ATGM fire, tank fire and many types of grenades, mines, explosives, and flying missiles. Add to this what CAS can be brought in by either side, and it becomes obvious that the area depicted in figure 2-7 within the dashed line is not a healthy environment for helicopters at tree top level or below. In addition smoke and obscurations will prevent attack helicopters from placing accurate fire on the enemy, and observation helicopters will not be able to adequately gain intelligence from within or outside of this area except by chance.

The bulk of Soviet aircraft are optimized for their air-to-ground weapons systems and supporting aircraft design, rather than for air-to-air

missions. This reinforces their doctrine of using airpower as an extension of their fire support means to hit targets deep in our rear area. They feel the bulk of the air threat presented by the U. S. or any other opposition will be taken care of by their elaborate air defense missile and gun network previously discussed.[45] The SU-7 Fitter and MIG-21 Fishbed, however, do have the primary design mission of close air support and, thus, must be considered a threat to helicopters operating in and around the MBA. They will use strafing, rocket attacks, and bombing as means to defeat our helicopters.[46] However, the initial problem of acquisition combined with easy helicopter evasive measures, minimize this threat except in isolated instances of overwhelming numbers or surprise by OPFOR aircraft.

Finally, it is necessary to look at the emerging capabilities of the Soviet helicopters in a CAS and air-to-air role. The current helicopter designed by the Soviet Union as an attack helicopter is the Mi-24 HIND-D. The HIND-D can have the following armament or a combination of armaments on the 6 weapons pylons:

128 - 57mm Rockets on four 32 rocket pods, or up to

12 - Swatter or Sagger ATGM, or up to

4 - 100 kilogram iron bombs or machinegun pods.[47]

A 12.7mm or 20mm nose mounted, multi-barreled cannon either optically or radar guided will be on each aircraft, too. The aircraft is also capable of carrying a complete turn around of ordnance internally to facilitate future operations. Improvements to the Soviet's attack helicopter arsenal include possible radar controlled 30mm cannons, an elctronic range finder,[48] and a new shoot and forget ATGM with a range of 7 to 14 kilometers. They also claim to be developing a new gunship styled after the Mi-8 Hip which will be smaller and more adept to flying NOE.[49] We can expect to see other Soviet helicopters

of older vintage with weapons systems strapped on in opposing armies or other Russian backed nations.

What this means to the AAAD is an increased volume of CAS fires into the MBA and an air-to-air threat against our helicopters with the radar guided nose weapon. For the time being Soviet doctrine calls for their attack helicopters to operate in the vicinity of seven kilometers behind the FEBA in order to survive our ADA weapons.[50] However, as our doctrine developes, theirs does too. Russia will probably develop doctrine for operating at and beyond the FEBA as they practice these tactics in field exercises.

SUMMARY

The environment, though terrain and weather dependent, can be as safe or dangerous as the mission requires and as the crews with equipment are trained and employed. The missile threat throughout the area of operation will have little effect on helicopters, other than to force them to fly as close to the ground as possible and to use terrain to its best advantage. Flight below 20 meters AGL should preclude almost all successful missile engagements. The area for 2 kilometers around the assaulting forces will be practically impenetrable for observation or direct fires by air cavalry or other aviation units. Primary threats to aviation in all other sectors of the operational area will be made up of antiaircraft guns, mainly the ZSU-23-4; small arms fire used in air defense, as practiced by most armies today; and the air-to-air threat of OPFOR attack helicopters and possible fixed wing aircraft.

Current inventory EW and ECM devices provide some detection of and protection from radar guided weapons, but until research and development efforts put more survivability systems on our helicopters, tactics, knowledge of the operational area, knowledge of enemy doctrine, and crew training and

skill will be the air cavalry's means to accomplish their mission.

Appendix A, Helicopter Survival, provides data on survival and tank-to-helicopter exchange ratios for air cavalry helicopters operating in various areas of the combat zone. Although the actual numbers and tests are classified, all data reinforces the conclusions drawn in this chapter.

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CHAPTER III

OPPOSING FORCE TACTICS USING SOVIET DOCTRINE

INTRODUCTION

As discussed in Chapter II, there are only three areas today where a U. S. airborne division could be employed against a significant armor threat. The Warsaw Pact, some Arab nations of the Middle East, and North Korea have in common their Soviet made equipment, Soviet tactical training, and potential conduct of armored operations against United States forces or our allies' forces. The most recent example of this threat, the 1973 Arab-Israeli War, provided many lessons to the adversaries as well as the nations who watched. In this chapter, I plan to highlight the awesome forces involved and some of the lessons learned from the 1973 War. Then, using Soviet offensive doctrine as a most probable opposing force (OPFOR) doctrine, I will analyze the probable OPFOR actions and reactions to an airborne assault into their area of operations. The only assumption built into this analysis is the need for a minimum of 24 to 48 hours to adequately prepare the airborne antiarmor defenses. This qualification would have to be considered in planning the antiarmor employment of an airborne unit.

1973 ARAB-ISRAELI WAR

The 1973 Arab-Israeli War brought the massing of combined arms armies in a volume not witnessed since World War II. Tank columns met on the open desert terrain, uninhibited by urban population centers, and the result was battalions of destroyed vehicles and weapons strewn over the desert. Besides the massive armor, concentrated use of the latest Soviet weapons, SA-2, SA-3, SA-6, and SA-7 missiles in conjunction with the ZSU-23-4 radar guided anti-aircraft gun were used effectively to reduce the three dimensional battlefield

to two dimensions.[1] As good as this air defense was, Egypt violated Soviet-taught doctrine, rolling out from under their air defense umbrella, and the Israeli aviation arm was again added to the battle.[2] The results are now history, but the lessons learned can be useful in our understanding of possible tactics to be used against the AAAD.

First, the air defense system as doctrinally employed is an extremely effective aviation deterrent. It is estimated that in excess of 10,000 SAM and AA guns were employed by the Arabs in 1973. In addition most of these weapons were employed within 50 kilometers of the FEBA. However, there were also several weaknesses observed in the air defense system. The SA-7 Grail was ineffective with its small warhead and poor guidance system. Electronic counter measures (ECM) were effective against the SA-6 Gainful, but the prolific use of SAMs precluded both friendly and enemy airspace utilization. Helicopter operations employed by the Israelis were most seriously affected by Arab use of small arms and light machineguns. Finally, Arab use of smoke was extremely effective in protecting vulnerable choke points, such as their canal crossing sites, and in reducing the effectiveness of television guided missiles.[3]

Two other lessons included the fact that the fighter bombers, tanks, and infantry anti-tank weapons were all effectively used as tank killers when employed as a combined force. Artillery counterbattery fires employed in classic Soviet doctrine could be adequately defended against by the mobility of the defending artillery units.[4]

CURRENT APPLICABLE THREAT DOCTRINE

In preparing any military operation it is always essential to have a good understanding of the tactical doctrine of your opponent for successful

planning. To this end many sources were reviewed and experts interviewed in the Threats Division, Concepts and Force Design Directorate, Fort Leavenworth, Kansas. The basic question to be answered was "what would Soviet or Soviet trained forces do in reaction to an airborne assault in the vicinity of a tank army or equivalent armored force?" The answer was never definite or clear cut. Although the Soviets have their own airborne doctrine, they apparently do not have or have not publicly addressed an anti-airborne doctrine. In addition, probably because the U. S. Army does not have an approved airborne antiarmor doctrine, the Soviets have not published any counter to the 82d Airborne Division's AAAD. There are, however, some fairly solid tactical doctrines that are adhered to by Soviet tacticans, and we can expect these to influence any reaction to an airborne assault until they publish something different.

The Soviets currently expect our strong point type defense in Europe and will concentrate on anti-tank positions within our defense. Even with our "active defense" and "foward defense," the Soviets are not expected to make any large revisions in their tactics.[5] Since the AAAD is a strong point type defense, they will most likely follow the same policy. What, then, is that doctrine?

Against a heavy concentration of anti-tank weapons, as would be found in the AAAD, the Soviets will mount a deliberate attack with dismounted infantry, if they are available.[6] This makes sense, because the only other doctrinal attack is the hasty attack, and it is employed from the line of march against a force that is moving or not dug-in.[7] In addition the 82d Airborne currently advocates 24 to 48 hours preparation time to conduct the AAAD, precluding a hasty attack by all but an unsuspecting enemy who might stumble into the defense.

The Deliberate Attack

The deliberate attack is a carefully planned operation with objectives of enemy occupied prominent terrain features, but not oriented on capturing terrain. They attempt to penetrate forward defenses, looking for weak spots in order to by-pass the stronger defenses and push to the enemy rear. They will normally leave a small holding force to contain the enemy and fix them in position while the penetration takes place.[8] With their careful planning desired force ratios, widths of fronts, and depths to objectives are all scrutinized and kept very close to doctrine. We can expect the following guidelines to be followed by armies employing Soviet doctrine:[9]

Desired Force Ratios in the Deliberate Attack:

Armor	3 to 5 : 1
Artillery	6 to 8 : 1
Infantry	4 to 5 : 1

Typical Depths to Objectives:

Unit	Immediate	Subsequent
Division	20-30 km	50-70 km
Regiment	8-15 km	20-30 km
Battalion	2-4 km	8-15 km

A typical division front would range from 4-16 kilometers, which in a "worst case" would pit an OPFOR tank division against an AAAD battalion sector of 5-7 kilometers. See figure 3-1.

Other characteristics of the deliberate attack include a detailed reconnaissance prior to the attack, heavy artillery preparations to soften the strong points of resistance, more infantry deployed with the tanks, and a normal night execution.[10] Let us discuss each of these in turn.

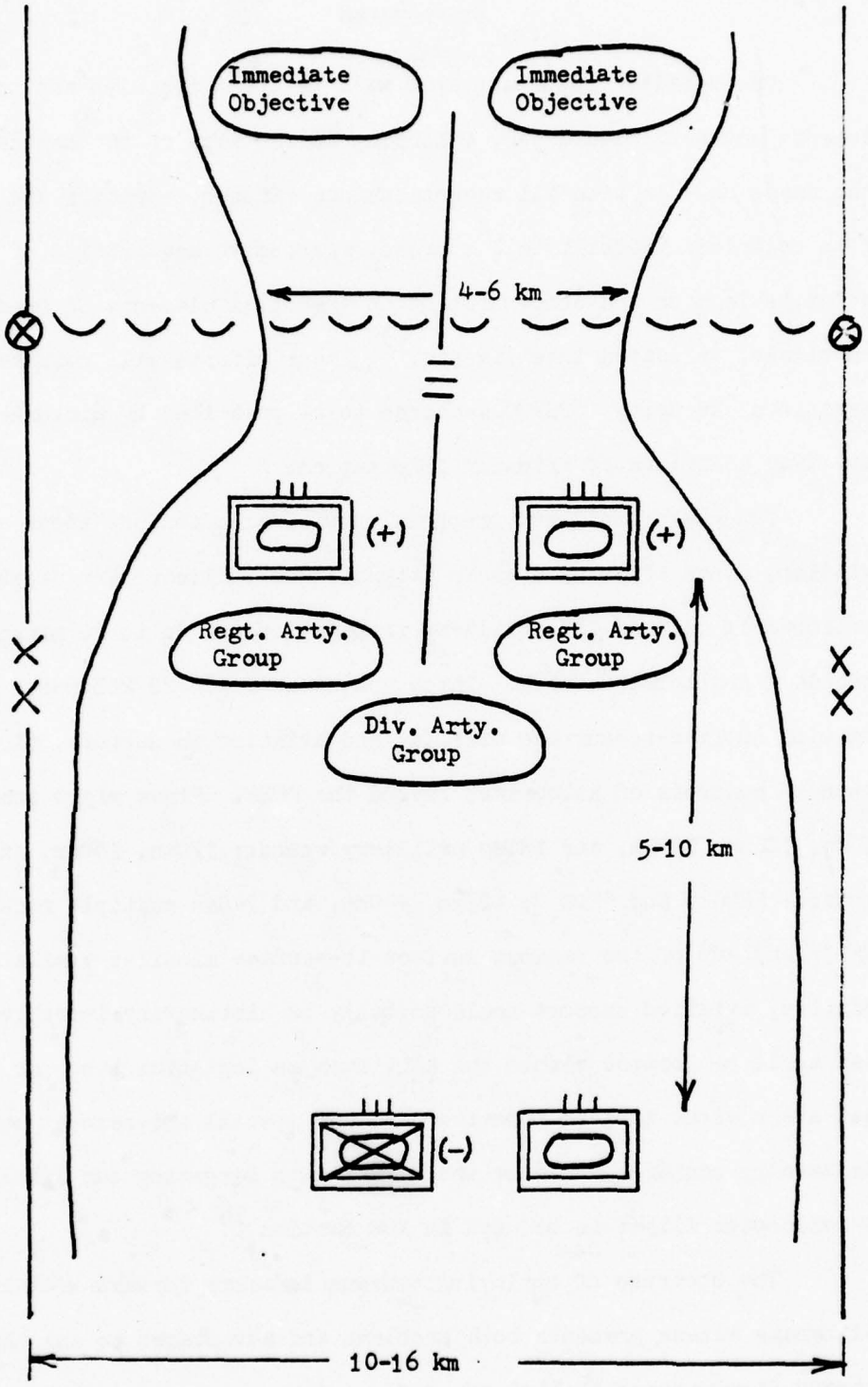
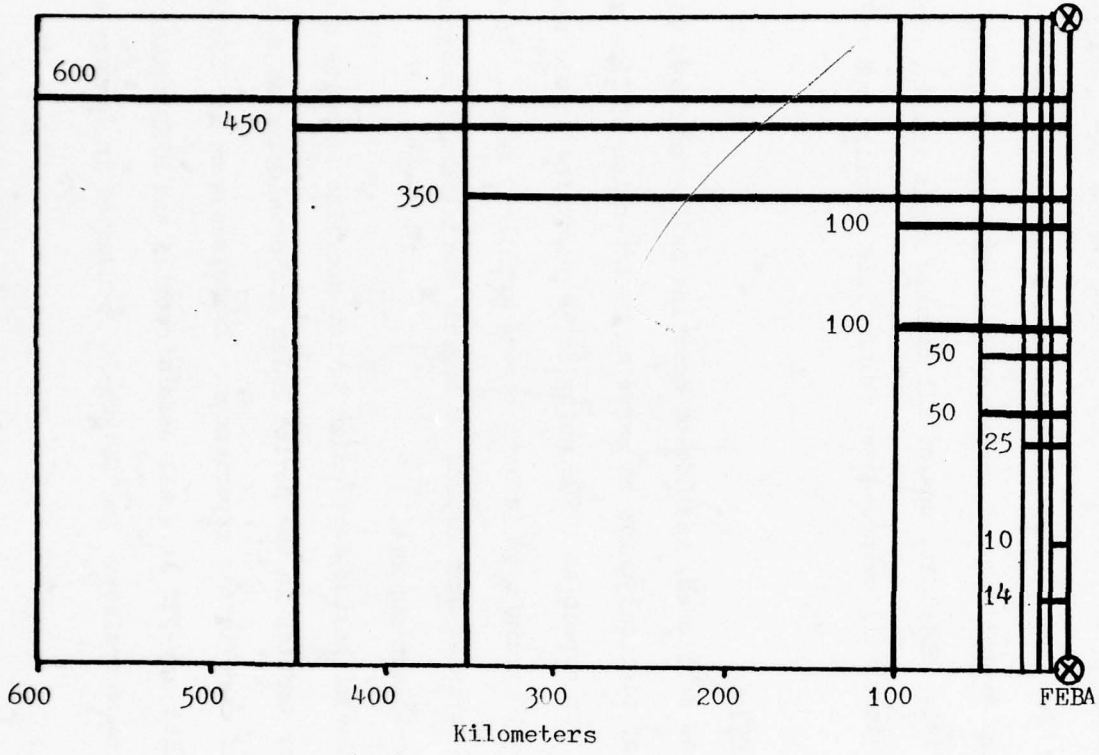


Figure 3-1: Typical Movement to Contact in a Deliberate Attack for a Soviet Tank Division[11]

The detailed reconnaissance will be conducted with any or all of the elements shown in figure 3-2, according to the size of the armored threat that faces us. As with all reconnaissance efforts, emphasis will be placed on an organized effort by all sources, aggressive acquisition of needed information, selection and concentration on essential elements of needed information, and timely, validated intelligence.[12] These efforts will require maximum operational security (OPSEC) measures to be practiced by airborne forces to give away a minimum of friendly information.

The heavy artillery preparation will also include their available aviation, since it is used as an extension of indirect fire capabilities. As mentioned in chapter II, artillery preparations of up to 30 minutes might precede a deliberate attack. These tubes can reach 20 kilometers past the FEBA, and with surface-to-surface missiles and aviation in support, fires can be extended hundreds of kilometers beyond the FEBA. Fires might include 85mm, 100mm, 122mm, 152mm, and 180mm artillery rounds; 120mm, 160mm, and 240mm mortars; FROG 3 and FROG 7; 122mm, 140mm, and 240mm multiple rocket launchers (MRL); and any of the various surface-to-surface missiles available.[13] In addition, aviation support would probably be hitting any lucrative targets that could be located within the AAO, such as logistics bases or command posts that are obvious targets from the air. Of special interest to our airborne air cavalry squadron would be the emphasis on targeting our likely avenues of helicopter flight to be used in NOE tactics.[14]

The doctrine of employing maximum infantry forward with the tanks in a deliberate attack presents both problems and advantages to the AAAD. The primary disadvantage is that the defense is not organized against large numbers of foot mobile infantry soldiers and risks the threat of a carefully planned



AIR RECONNAISSANCE
- a. Lt. Bomber Reconnaissance
- b. Fighter Reconnaissance

LONG RANGE RECONNAISSANCE
- a. From Army Recon Company
- b. From Division Recon Company

TACTICAL GROUND RECONNAISSANCE
- a. Divisional Recon Battalion
  - 1) Nuclear Operations
  - 2) Conventional Operations
- b. Regimental Recon Company
  - 1) Nuclear Operations
  - 2) Conventional Operations

ARTILLERY TARGET ACQUISITION AND RECONNAISSANCE
- a. Surveillance and Weapon Locating Radars
- b. Sound Ranging
- c. Flash Spotting (Visual Limits)

Figure 3-2: Range of Soviet Reconnaissance Means in Kilometers from the FEBA [15]

defeat in detail. This has been considered, however, and included in the ground commanders' defensive plan. The large advantage is that the following echelons of tanks in column, waiting their chance to exploit a penetration, are stripped of their infantry observers and are much more vulnerable to our air attacks.

Finally, the emphasis on night attacks is to take advantage of surprise and poor vision by ATGM gunners. This is a very valid point that requires several counters on our part for a successful defense. First, OPSEC must again be reemphasized to prevent enemy reconnaissance from locating our strong points prior to the attack. Second, with good security on our part, an OPFOR attack has a high probability of wandering into kill zones, giving us the advantage of surprise. And last, use of all organic night vision, sensing (REMS), and radar devices will be necessary to preclude surprise and effectively fire our weapons.

Air Support

As mentioned, the Soviet doctrine calls for fixed wing aircraft in support of tactical units to serve as an extension of fire support means. Thus, we can expect an OPFOR using Soviet doctrine to use most of their close air support aircraft on targets beyond artillery range. To counter this the airborne division must depend on organic antiaircraft weapons and the Air Force air-to-air support.

Use of helicopters under Soviet doctrine is quite a different story. Helicopter tactics in the Soviet Union are developing at a rapid pace since the end of our Vietnam experiences. Exercises such as "Kavkaz-76," "Sever-76," and Karpaty-77" have all used airmobile and HIND attack assets in infantry and armored exercises. In "Kavkaz-76" conducted in January and February 1976,

dismounted infantry was supported by Mi-24 HIND helicopters against prepared defenses. In July 1977 "Karpaty-77" used the HIND attack helicopter in an anti-tank role similar to the U. S. method of employment.[16] As time passes, we can expect to have helicopters employed against the AAAD in airmobile assaults, attack helicopter operations, or a combination of both as part of the deliberate attack. The helicopters currently remain at Tactical Air Army level, so that the AAAD conducted against smaller than Army level forces might not be faced with the threat.[17] As mentioned in chapter II, the air-to-air threat (helicopter-to-helicopter) cannot be forgotten against any force with an attack helicopter capability.

SUMMARY

This brief look at Soviet tactics leads to several conclusions which pertain to the air cavalry's employment in the AAAD.

1. Dense vehicle formations of the deliberate attack will provide lucrative reconnaissance, security, and attack missions for a squadron.

2. Threat small arms and artillery fires used against our helicopters will require alert crews and careful flight planning to avoid presenting easy targets.

3. Our abilities to counter their reconnaissance efforts with cavalry assets will be limited over the long line of contact (LC) associated with the airborne area of operation. However, cavalry supported OPSEC and deception measures should be effective when concentrated in limited sectors.

4. Countering the threat air assets in an air-to-air role becomes increasingly likely with the Soviets' increased use of airmobile and attack helicopters in offensive maneuvers. Our air-to-air tactics and weapons systems will have to be developed to meet the challenge.

Although Soviet tactical doctrine currently appears predictable and is used to train their allies, we cannot depend on a subject as dynamic as tactics to remain stagnant. While the deliberate attack, echeloned forces, artillery preparations, penetrations to deep objectives, and stay-behind forces can be planned for in our tactics, they cannot be allowed to lull us into a mind-set about what will happen in any given situation. The example of the rapidly changing Soviet helicopter doctrine emphasizes their ability and willingness to adapt to technology and the changing U. S. and allied doctrine. With all of this in mind, I hope this chapter provides a stepping-off point for future study into probable Soviet reactions to the airborne antiarmor defense.

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CHAPTER IV

CURRENT AIR CAVALRY SQUADRON EMPLOYMENT

INTRODUCTION

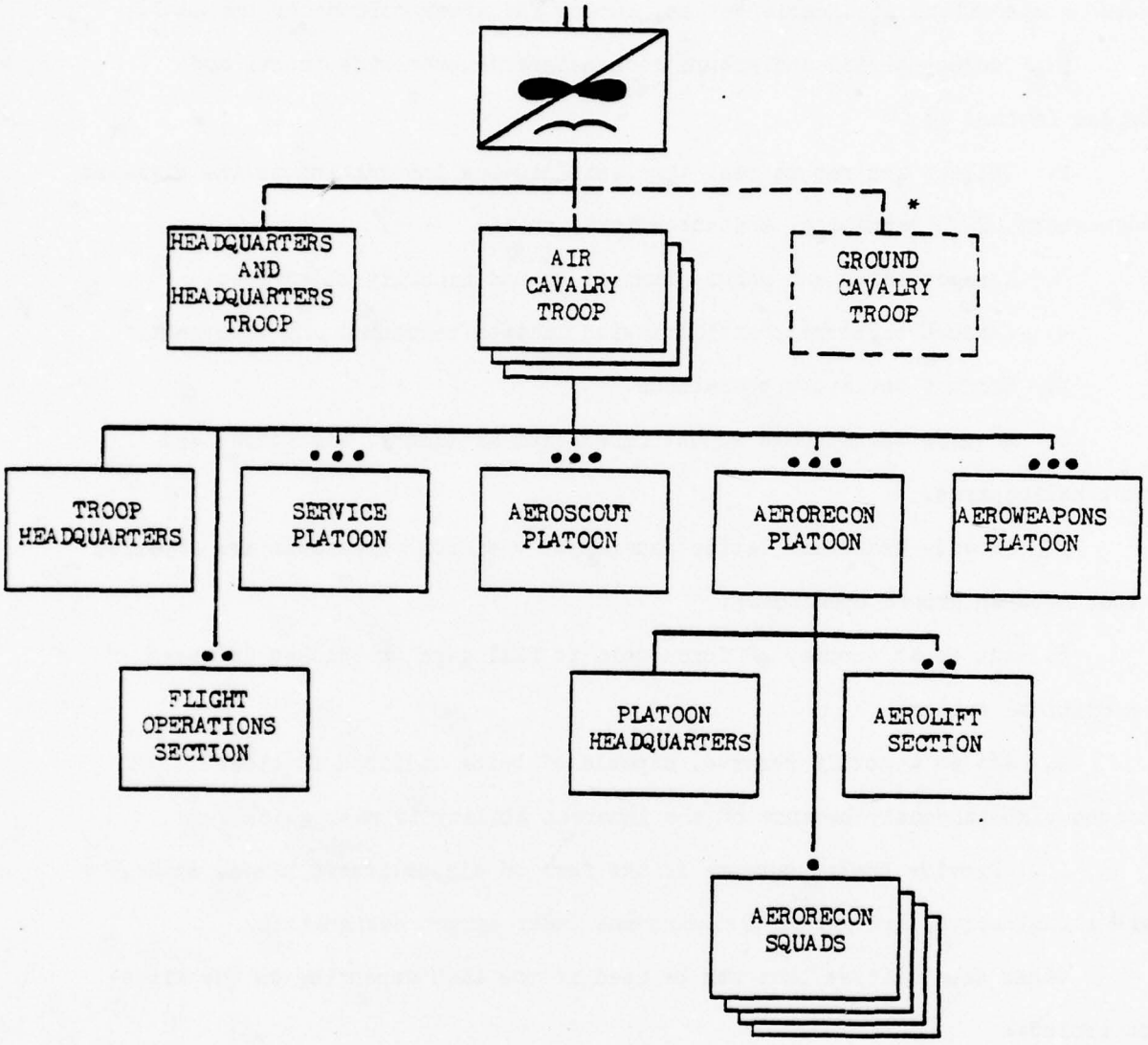
To understand the current employment doctrine for the air cavalry squadron (airborne) (ACS) in the airborne antiarmor defense (AAAD), the reader must understand the assigned missions and capabilities, organization, and weapons available to the squadron. A scenario of the ACS actions before, during, and after the conduct of the AAAD will complete the picture of current employment doctrine as presented in the air cavalry support appendix (Appendix F) of the 82d Airborne Division's "Blue Book."

Since I authored appendix F, the thesis text pertaining to the ACS role in the AAAD as stated in that appendix will not be further noted.[1] Some of the technical and organizational data in the Blue Book have changed since the 1977 publication because of reorganizations; however, current data will be used in this paper.

MISSION, ORGANIZATION, AND CAPABILITIES

The mission of the ACS in an airborne division is to extend by aerial means the reconnaissance and security capabilities of the division or unit to which assigned or attached and to engage in offensive, defensive, delaying, and economy of force operations as required.[2] Also, with the addition of AH-1S TOW-firing Cobras, the squadron has assumed the mission to "kill tanks" when required.

The squadron is organized as shown in figure 4-1. The addition of the ground cavalry troop at a later date is very possible and would enhance the squadron's all weather capabilities. For this paper, however, the ground cavalry troop will not be considered.



* The ground cavalry troop was removed by MTOE in December 1977 to allow for organization of ground TOW platoons within the 82d Airborne Division.

Figure 4-1: Organization of an Air Cavalry Squadron (Airborne) and Air Cavalry Troop (Airborne).

There are many diverse capabilities inherent in an ACS by the very missions and organization of the unit. The tactical capabilities listed below are those operations applicable before, during and after conduct of the AAAD.

1. Conduct aerial and ground reconnaissance over wide fronts and extended depths.

2. Collect and report real time intelligence information to the division headquarters, CEWI battalion, and subordinate units.

3. Conduct raids and secure limited ground security objectives.

4. Conduct airborne operations with limited personnel and equipment.[3]

5. Conduct antiarmor operations.

6. Acquire targets and adjust fires from artillery, Air Force, and attack helicopters.

7. Provide temporary battle management when communications are impaired or lost between ground commanders.[4]

8. Act as an economy of force unit to fill gaps or thicken defenses in a critical sector.

9. Act as a mobile reserve, capable of being utilized in other missions simultaneously because of the inherent ability to mass quickly.[5]

10. Provide combat support in the form of air delivered mines, smoke, flare illumination, and ground and airborne laser target designation.

Other capabilities that can be used in the AAAD depending on the situation include:

1. Provide security between divisional units, between the division and adjacent units, or for divisional rear elements.

2. Conduct NBC ground and air survey and monitoring.

3. Provide escort and security along main supply routes.

4. Assist in offensive and defensive military operations in urban terrain (MOUT) by guarding roof tops and upper windows, clearing buildings with roof top assaults, blowing holes in walls, and adjusting and controlling all forms of fire support.[6]

5. Perform rapel and tethered extraction operations as required.

6. Provide limited emergency resupply and lift capability to the division.

The weapons available in the squadron are divided primarily among the three air cavalry troops. They include:

1. 27 TOW-firing AH-1S Cobra helicopters armed with up to 8 TOW missiles, 38 2.75" folding fin aerial rockets (FFAR), and a chin turret with a 7.62 minigun and 40mm grenade launcher.

2. The 30 scout aircraft, OH-58A, are unarmed, but carry an observer armed with a M-60 machinegun and M203 grenade launcher. Additional grenades and pyrotechnics can be carried.

3. The 28 UH-1H lift helicopters are armed with two 7.62 door guns each, and each troop has a helicopter smoke system, M52. The M56 aerial delivered mine subsystem may also be mounted on the UH-1H.[7]

4. Each troop's aerorecon platoon is armed with 4 M-60 machineguns, one 66mm rocket launcher, 2 Dragon missile trackers SU-36, M-16 rifles, and M203 grenade launchers.

5. The squadron has 21 ground or truck mounted 50 calibre machineguns primarily for defensive use.

EMPLOYMENT SCENARIO

With the airborne division alerted for a contingency mission against enemy armored units, the assets of their air cavalry squadron are deployed to

an initial staging base (ISB) about 150 miles from the future airborne area of operation (AAO). Here, helicopters are reassembled and armed, crews are given area orientations and acclimatization, reconnaissance platoons are briefed on their missions, and final logistical support details are worked out.

As D-day, H-hour arrives, air cavalry deployment to the AAO is timed to allow airborne assault forces to secure key areas for logistical support as air cavalry assets provide reconnaissance and security for the division's air assets, self-deploying into the AAO by multiple air routes.

On arrival in the AAO elements of the three air cavalry troops are given the mission of reconnaissance in force from 4 to 50 kilometers forward of the edge of the AAO. This distance is primarily limited by the location of forward rearm and refuel points (FARP).[8] The troop commanders would probably commit aeroweapons/scout teams on this mission with the aircraft mix dependent on available fuel, ammunition, and maintenance; controllability; and factors of METT (mission, enemy, terrain and weather, and troops available). The ACS elements provide the ground commanders with over an hour and a half of early warning against advancing enemy armored columns without any attempts to delay or attrite the enemy. However, with delaying tactics employed the division will have even more time to improve their defensive positions. This use of air cavalry elements:

1. Exploits the range of the helicopters,

2. Allows the TOW-firing Cobras to use the 3750 meter standoff range of the TOW missile against enemy armor for the maximum period of time, and

3. Provides continuous pressure against enemy elements to force them to reveal their intentions and allow ground elements to more smoothly pick up

the battle as it transitions from the division reconnaissance and security area through the brigade security areas into the MBA.

Other elements of the cavalry squadron, aeroscout teams, are ranging the AAO, landing and making eye-to-eye coordination with ground commanders down to and including company commanders or armor kill zone (AKZ) commanders. The scouts select possible firing positions, optimizing TOW standoff ranges while best supporting divisional units, and select the best routes into and out of these positions. This information is relayed to each troop command post where overlays are made and forwarded for consolidation at squadron. The consolidated AAO reconnaissance overlay is coordinated with the fire support officer (FSO) and Air Force Liaison Officer (ALO) attached to the squadron, and then the overlay is taken to the division G-3 for final integration into the division antiarmor defense plan.

With the addition of an attack helicopter company to the airborne division's aviation battalion, the ACS commander could receive this unit OPCON or attached to provide centralized control of all of the AH-1S assets and the ability to mass all 48 Cobras against selected targets.

The aerorecon platoon, armed with Dragons and LAW and transported by their organic helicopter lift assets, are used to man observation posts in the division reconnaissance and security area. Their airmobility allows them to return to the troop command posts and FARP locations to provide security for these sensitive areas during the conduct of the antiarmor defense.

As enemy armored forces enter the MBA, air cavalry troops are relieved of their reconnaissance and security mission and placed on alert for antiarmor employment. The 1/3 rule is used in the MBA, where 1/3 of the Cobras are in the FARP, 1/3 are enroute to or from the attack area and 1/3 are on station engaging targets. This provides continuous support to the ground elements.

When critical areas become threatened or very lucrative targets appear, the division commander can call on the squadron to mass antiarmor fires on specific target areas. Infantry ground commanders will attempt to control the Cobra fires in their sectors when communications allow. Otherwise, aeroscouts provide the control of these fires.

Additional missions assigned to the ACS during the AAAD are as follows:

1. Aeroweapons/scout teams provide antiarmor coverage for ground units in defensive positions that are not mutually supporting.

2. Teams assist ground units in evacuating positions by providing supporting fires to cover their withdrawal.

3. ACS units can provide support as designated by the division commander.

In light of the discussions on threat, environment, and helicopter survivability in the previous chapters and appendix A (classified and published separately), the above employment concept for the ACS has several shortfalls and limitations. Although only actual combat operations will bring out all of the difficulties, obvious problems that improved air cavalry employment can overcome are listed below:

1. The assets of the attack helicopter company of 21 AH-1S and 12 OH-58 are not utilized at all during the preparation period of the AAAD.

2. Use of the aerorecon platoons is not spelled out completely and, thus, a valuable defensive asset is degraded.

3. Cavalry aviation assets are committed within the zone shown in chapter II, figure 2-7, as a matter of habit. ACS assets are least survivable when employed in this area.

4. The 16 ACS capabilities described earlier in this chapter are not used to the fullest.

5. Control of aviation fires by ground commanders in the midst of the AAAD battle eliminates the division's ability to mass aviation assets as a mobile strike force.

6. By assigning helicopters piecemeal to the ground commanders, continuous support cannot be provided using the 1/3 rule, and the risk of defeat in detail increases.

7. The division is vulnerable to multiple incursions into the MBA without cavalry reconnaissance to detect enemy presence.

8. The division commander and his G-3 are blind to the actual situation in the AAAD as normal radio communications, wire lines, and ground liaison are reduced by EW and combat.

9. There is no highly mobile ground force immediately available to the division.

10. 2d echelon enemy forces are left uninhibited and are not monitored by division assets except for the helicopter mounted radar (SOTAS) of the CEWI battalion.

11. Since weather below a 200 foot ceiling and ½ mile visibility restricts ACS capabilities and hinders flying in unfamiliar terrain, flight in the smoke-filled sectors of the MBA will severly limit target engagement and reconnaissance.[9]

12. The CEWI battalion is without a key real time source of intelligence.[10]

13. Use of the ACS assets in conjunction with the Air Force A-10 in joint Army-Air Force tactics (JAAT) is not considered.

14. Night fighting ability is not addressed.

15. Logistic support to assets assigned piecemeal will be difficult. This is especially true in Class III and V, where rough estimates have the ACS

consumming 75,000 gallons of JP-4 and 450 tons of ammunition every three days.

SUMMARY

The air cavalry squadron of an airborne division has many and varied capabilities. Optimum utilization of these capabilities can provide a combat multiplier that must be dealt with by any opposing force. However, the current employment doctrine for the ACS in the AAAD has shortcomings that could cost the division highly in terms of men and weapons systems, if not corrected. Using a similar scenario, chapter V will look at ways to overcome or improve on these shortcomings.

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CHAPTER V

IMPROVED EMPLOYMENT TECHNIQUES

INTRODUCTION

The light divisions, airborne, air assault and infantry, provide the United States with a strategically mobile force with which to exert military power as an extension of national power and to force an enemy to make plans, make preparations, and commit units toward a possible attack by these forces.[1] This is true before, during and after any crisis or conflict until such forces are committed to battle. Thus, it is important to maximize the capabilities of the airborne division, opening the widest spectrum of employment options and causing the enemy to contend with this threat in every contingency plan.

Employed in the AAAD, the airborne division's capabilities become restricted to the position defense in depth. There are few additional possibilities except the chance that the enemy will not attack or that a timely relief in place occurs prior to decisive engagement. The air cavalry becomes an all important asset during the AAAD. With the primary task of providing human, real time intelligence to the commander, the squadron also remains an economy of force unit capable of being task organized to fit a specific mission rapidly and with less problems than any other unit in the airborne division.[2] It is imperative that the employment missions of the ACS remain varied, practical, and lethal in order to help insure the division's success.

In a scenario similar to that in chapter IV, I will examine the options open to the ACS during AAAD employment. The resulting improvements in defense effectiveness will depend on how these techniques:

1. Enhance the intelligence gathering capabilities of the squadron,
2. Increase the number of enemy vehicles and personnel serviced during

the operation,

3. Allow aviation assets to survive to fight again, and

4. Impact on the ability of the squadron and division to sustain ACS operations logistically.

The following scenario covers these techniques in a multi-faceted style in order to explain the options available to improve cavalry employment in the AAAD.

IMPROVED EMPLOYMENT SCENARIO

The airborne division has been alerted for employment as a stablizing force between two countries with large, tank-heavy armies. One country is considered to be hostile the the United States. Because there is not a convenient staging base, a brigade sized element has been designated for an airborne assault into the AAO to secure local airfields and key terrain and to prepare for an airland follow-on of the remainder of the division. An armored attack is not predicted until at least 48 hours after the majority of the division has been dropped or landed in the AAO, so that sufficient time is available for the ACS to be airlanded on the early flights.

Deployment Phase

Since the majority of the combat assets of the ACS are not air droppable, the options during deployment are limited in this scenario. However, the division has decided to parachute the three aerorecon platoons directly into the division reconnaissance and security area overlooking the most likely avenues of approach into the AAO. They will act as eyes and ears for the division, prepared to remain as "stay behind" forces, if organic aviation assets have not arrived in time for a practical extraction. This also frees brigade soldiers to begin preparation of their defensive positions.

The recon platoon missions in this area will be to:

1. Perform 24 hour a day reconnaissance, relaying information back to the division commander and CEWI battalion through elements of the forward brigade units.

2. Bring fires upon lucrative targets from all fire support means available, during all phases of the battle, using laser designators and radio adjustment.

3. Be prepared to be extracted by helicopter lift or tethered extraction, or to infiltrate back to friendly positions on order.

It is expected that the "stay behind" mission in the reconnaissance and security area will be assumed by other division or augmentation troops and that the recon platoons will be extracted prior to being by-passed by enemy forces.

For the remainder of the squadron, deployment preparations proceed as if the unit were at a staging base, realizing that the helicopters are not immediately employable upon landing in the AAO. If the squadron's aircraft are transported by C-141, the division can expect operational helicopters within 6 hours of touch down of the Air Force carrier aircraft. Because minimum disassembly is necessary when helicopters are transported by C-5A, a much quicker availability can be accomplished. Planning and logistical details are completed while still in the United States, but troop acclimatization must wait until arrival.

D-day, H-hour arrives, initial ground objectives including airfields are secured within 6 hours, and the airlanding of essential elements of the ACS along with the much needed men, equipment, and supplies of the two follow-on brigades begins. Since C-5A transports are utilized to bring in most of the ACS helicopters, approximately one troop's equivalent of helicopters are flyable and mission ready prior to H+12. Although initial fuel and ammunition

supplies are located at the arrival fields, logistical planners have low altitude extractions of fuel and ammunition scheduled for carefully preselected FARP locations, starting about 5000 meters behind the most forward reconnaissance sectors of the air cavalry.[3]

Preparation Period for the AAAD

With the ACS rapidly becoming available to the division commander, he has several options open. While his infantry and support forces are preparing their battle positions, time and security are the two factors critical to success. All cavalry options must work to maximize both.

1. The squadron can divide the AAO into pie-shaped thirds and each troop assume responsibility for reconnaissance and security for its sector.

2. All likely avenues of approach can be given to the squadron to divide among the troops.

3. Most likely avenues of approach can be assigned to the squadron with the requirement that a thin screen line be formed across the remaining approaches.

Whichever option is choosen, it must be remembered that the outer ring of the cavalry screen line around an AAO may be a closed loop over 500 kilometers in circumference. This distance is impossible for an ACS to cover 100% under all but ideal terrain and weather conditions.

Since flight hours are valuable and the enemy attack is not imminent, the squadron has sent scout helicopters out approximately 50 kilometers forward of the edge of the AAO. Terrain in some areas has allowed the aeroscouts to land and perform visual reconnaissance out to 15 kilometers forward and to the sides of their positions. Other scout aircraft must continue to fly their assigned sectors and relieve on station to maintain surveillance. Attack

helicopters are poised on strip alert in the vicinity of FARPs in sector to react to scouts' call for fire.

Missions for this reconnaissance and security force include, but are not limited to:

1. Discovering and reporting the size, disposition, and direction of an attack,

2. Stripping away the enemy reconnaissance screen to blind and confuse the advancing tank columns,

3. Stripping away enemy air defense to allow SOTAS and Air Force aircraft to work well forward,

4. Taking advantage early in the battle of the 3750 meter TOW stand-off range to slow the enemy and gain time for the defense preparations,

5. Covering and assisting Special Forces, Ranger, or engineer units in their efforts forward of the brigade security areas, and

6. Assisting in extraction of the non-stay behind ground forces in the division reconnaissance and security area to include organic aerorecon platoons.

During the preparation phase of the AAAD, the attack helicopter company that is assigned to the division's aviation battalion has been placed under operational control (OPCON) of the ACS. This allows a tactical battalion size headquarters directly under the division commander and deployed early into the AAO to control all of the division's air attack assets. The missions assigned to this unit during preparation include:

1. Serve as a ready reserve to assist ground units in securing defended areas and pockets of resistance remaining in the AAO with their 21 AH-1S and an appropriate number of OH-58 scouts.

2. Make a complete aerial reconnaissance of the AAO with the remaining

scouts of the attack company, dropping into defensive positions and coordinating routes into and out of the various sectors of the AAAD. This information is flown back to the ACS command post (CP), coordinated with the FSO and TACP at squadron, consolidated into the squadron plan, and forwarded to the division G-3.

The Enemy Approaches

At this point many things begin to happen very fast. Enemy reconnaissance units have been spotted approaching from three directions in the sectors of two of the air troops. The third air troop has had no sightings except for civilian refugees. The CEWI battalion has confirmed through all-source intelligence that major enemy columns of tanks and logistic trains are moving toward the AAO in these same sectors. Forty-six hours have passed since D-day, H-hour and ground forces are completing essential defensive preparations. Engineer teams mounted in cavalry UH-1H helicopters have been returned to their units after emplacing hasty obstacles along key avenues of approach, and cavalry helicopters have placed air scattered mine fields around these obstacles and in depth.

Reconnaissance squads have prepared to move to their UH-1H transportation, now stationed about 500 meters behind them in covered and concealed loiter positions. Enemy air activity has increased and Air Force fighters are holding on to a tenuous air parity. Because of the air war above terrain flight altitudes, enemy fixed wing aircraft have had little or no effect on air operations at treetop level. Air Force resupply has been restricted, however, and fuel and ammunition for the cavalry could become critical with heavy engagement.

Approaching enemy reconnaissance units are severly weakened by cavalry fires, and forward air defense weapons have been selectively destroyed. The

division has requested A-10 support to attrite the armored columns. Concurrently, cavalry scouts pick up Air Force forward air controllers (FAC) in the vicinity of the division assault CP and join scout/ attack cavalry teams already on station. As the columns approach the division reconnaissance and security area, the A-10's are called in while cavalry teams and artillery keep the enemy columns buttoned up. With helicopters in the trees and the A-10's just above them, the shock of attacks with the A-10's 30mm cannon is felt by the enemy. TOW Cobras also find it much easier to engage the tank formations, since the enemy must now contend with simultaneous attacks of artillery, A-10, and Cobra fires.

The momentum of the enemy attack is blunted as continuous pressure is maintained by cavalry scout/attack teams rotating on station using the 1/3 rule. The awesome firepower of the forward defenders has gained the needed time for the airborne forces, and the cavalry receives new orders. "Hand the battle off to the ground units after passing the brigade security areas. Aeroscouts brief brigade commanders in sector of the oncoming threat, and cavalry elements in the threatened sectors return to troop assembly areas."

Since the troop and squadron jump CPs have been airborne during the majority of the enemy approach, communications have been kept open between the cavalry, battalions, brigades, and division, even with intensified enemy EW efforts. The secure FM radio capabilities of every helicopter and the ability to land for verbal communication has kept everyone informed and poised as the battle progresses.

Defense in the MBA

The battle described in chapter III has hit the AAO from three routes reported hours ago by cavalry scouts. The enemy strength has been hurt, and

without most of their reconnaissance elements, they are punching blindly into the kill zones.

The division commander has several key concerns at this point. Foremost in his mind is the poor communications he has with engaged units. The division is still vulnerable to enemy attack from several directions, a mobile reserve is needed for contingency operations, and there must be an effective means to bring heavy fires on massed enemy targets.

In turning to the ACS commander the following order goes out to the troops: "SCRAMBLE!" Within thirty minutes all available TOW Cobras and one platoon of aeroscouts assemble at the "C" Troop CP as a provisional attack troop. Three platoons of airmobile ground scouts assemble at "B" Troop CP as a provisional airmobile infantry troop. Finally, "A" Troop receives one scout platoon to form a provisional scout troop.[4] The division now has the equivalent of two attack helicopter companies, an airmobile infantry company, and a light reconnaissance aircraft unit, each commanded by a major, under tactical command of a lieutenant colonel squadron commander, and immediately available to the division commander.

Troop missions follow the SCRAMBLE by messenger to the troop CPs. The aeroscout troop is told to recon forward of the uncommitted AAAD sector and to be prepared to provide MBA reconnaissance and battle management on order. The airmobile troop is told to remain on strip alert and be prepared to conduct an airmobile raid to capture an enemy electronic warfare site located by the CEWI battalion. They must also be prepared to assist in defense of critical areas in the AAO.

The attack helicopter troop and attack helicopter company are told to conduct a massed attack under cover of darkness on enemy 2d echelon tank

columns initially located by SOTAS and approaching from two directions. Passage of lines at multiple points must be coordinated by the units, and the commanders go to the squadron CP to coordinate air defense, artillery, and Air Force fires. A FAC will accompany each unit in a scout aircraft, since A-10 support is available. Because the attack troop has six more Cobras than the attack company, the troop is told to retain two sections of Cobras on strip alert for contingencies during the attack mission. The scouts of the attack troop and company run a reconnaissance of ingress and egress routes for the night attack, coordinating friendly air defenses and passage points.

The scouts and attack helicopters of both units arrive at their attack positions without discovery or losses. At the prescribed attack time three Cobras in each unit armed with 2.75" multipurpose warhead rockets engage the tank columns that are opened up and moving down roads bumper-to-bumper from a distance of over 5000 meters. See figure 5-1 for a type attack by the attack troop. Because the rocket submunitions can burn through several inches of armor, many of the thin skinned vehicles, such as antiaircraft tracks and personnel carriers, are destroyed or disabled. A few tanks are stopped as the submunitions burn through their rear decks.[5] Another Cobra designated as the illumination aircraft for each unit begins firing flare rockets just seconds after the salvo of multipurpose rockets subsides. Immediately, TOW Cobras begin attacks on the flanks and rear of the now buttoned up and stalled enemy columns. They attack with 4 to 5 aircraft at a time from 2500 to 3500 meters and then shift positions while another 4 to 5 Cobras attack.

From a clear axis A-10s are vectored onto the columns by the FAC mounted in scout aircraft. Within 20 minutes most of the ordnance has been expended, and the Air Force and Army aircraft break station to egress to

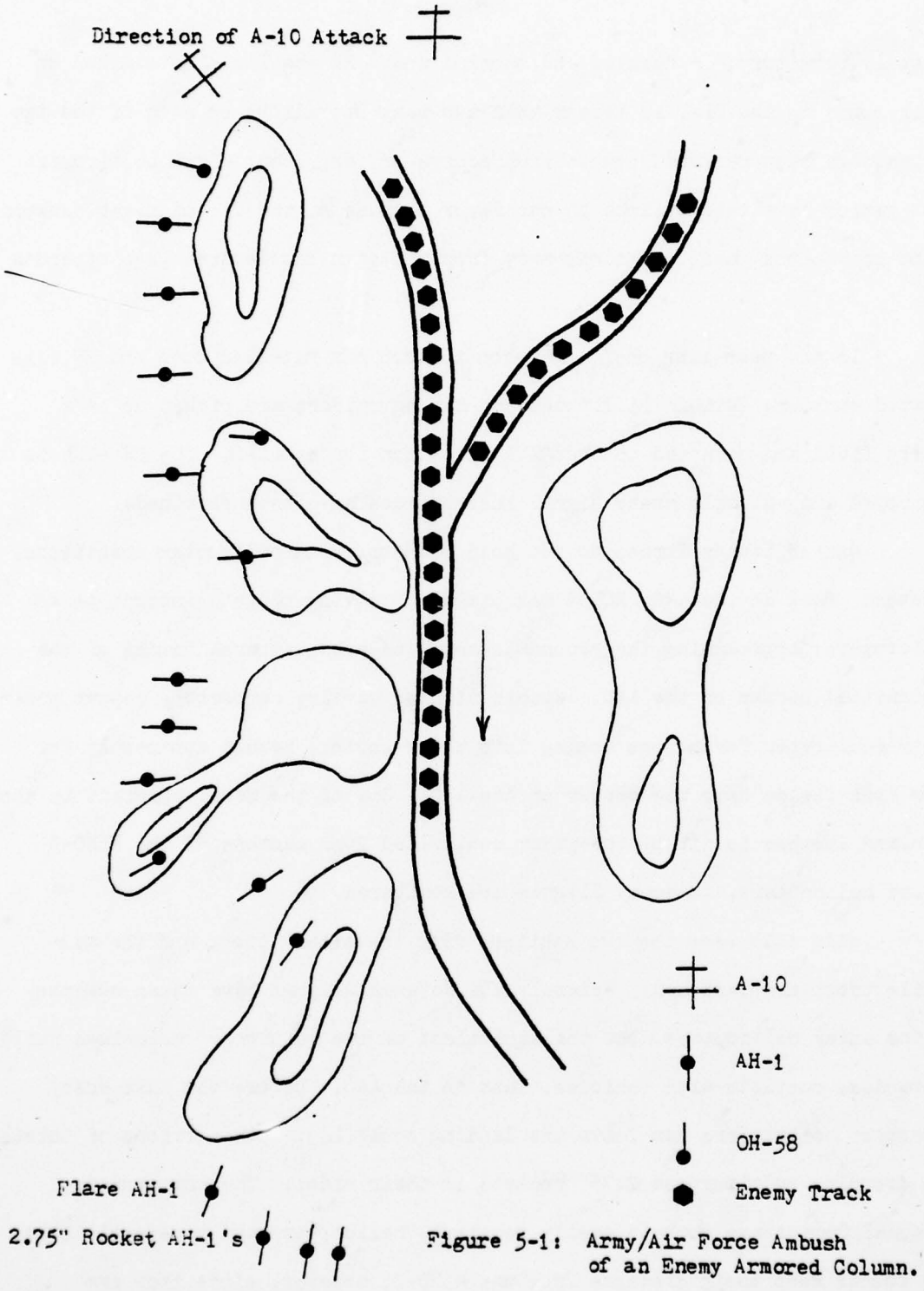

Figure 5-1: Army/Air Force Ambush of an Enemy Armored Column.

friendly territory. A dazzled and shocked enemy 2d echelon sits stalled on their route to the MBA, as better than two tank battalions on each of the two routes have been rendered combat ineffective or destroyed. Tank to aircraft loss ratios have been optimum in our favor because of the use of night, surprise, joint operations, and operations away from the main battle area (see appendix A).

In the mean time one aerorecon platoon has rapelled onto the EW site located earlier. Within 15 minutes the daring raiders are picked up in a nearby field and returned to the CEWI battalion for debrief. The EW site is destroyed and valuable enemy signal instructions have been obtained.

United States forces do not hold a monoploy on helicopter operations, however. Back in the AAO, SOTAS has picked up moving targets thought to be helicopters, approaching the reconnaissance and security area forward of the uncommitted sector of the AAO. Within minutes cavalry aeroscouts report massed enemy helicopter formations coming into their sector, headed apparently for some open fields near the center of the AAO. One of the scout aircraft is shot down and another is hit by the radar controlled 20mm cannons of the HIND-D escort helicopters, as enemy flights are monitored.

With this news the two sections from the attack troop and the air-mobile troop are launched. Friendly air defense weapons have taken out many of the enemy helicopters, but the equivalent of two reinforced motorized rifle companies, complete with vehicles, land in the AAO. Before the last enemy transport helicopters can leave the landing zone (LZ), both sections of Cobras are dropping multipurpose 2.75" rockets in their midst. The antipersonnel shrapnel from these rockets easily penetrate helicopters and personnel alike. The Cobras keep their distance from the HIND-D, however, since they are

relatively defenseless against the 20mm antiaircraft cannon. Remaining enemy helicopters exit the AAO, again sustaining heavy losses to friendly antiaircraft fires.

Because the division assault headquarters and a FARP are within two kilometers of the enemy air assault force, the airmobile troop is landed to thicken their defenses. However, in an attempt to find a rear area to disrupt, the enemy forces spend the remainder of the night fumbling into one kill zone after another. The cavalry ground force is engaged several times, primarily by dismounted infantry attacks, but they hold their ground.

By morning most of the enemy attacks have pulled back, badly hurt by the AAAD, and left without an effective 2d echelon to continue the battle. The cavalry returns to their regular troop organization, and the squadron commander employs the attack company to maintain pressure on the retreating enemy. A defensive victory is ours.

Recovery and Mop-Up Operations

To conserve the now precious fuel and aviation blade hours, the aero-recon platoons are put on team sized observation posts in the reconstituted brigade security areas. Helicopter mounted smoke generator systems and/or smoke rockets are employed to conceal the exact location of the inserted OPs from enemy observation. Aeroscout/aeroweapons teams from each of the troops assist the ground units in sector by locating and eliminating pockets of remaining enemy forces, locating friendly forces, reestablishing communications, and assessing battle damages for the division. Lift helicopters accompany each team to assist in emergency medical evacuation of ground personnel in sector because medivac helicopters are not available. Maximum maintenance and resupply continue as the division awaits the next mission.

RESULTING IMPROVEMENTS IN EFFECTIVENESS

Employment in accordance with the preceding scenario will improve the effectiveness of the air cavalry and, thus, the division in the AAAD in the following ways:

1. The squadron is continuously utilized in the areas where they can gain the best intelligence and inflict the most severe casualties on the enemy.

2. Aviation assets are employed in sectors where they are most likely to survive, while attaining the most favorable loss-to-kill ratio.

3. Except for the massed assault behind enemy lines, air assets are employed to allow the 1/3 rule for rearm and refuel operations.

4. Employment of the attack helicopter company is delegated to a qualified tactical commander.

5. Fire adjustment and communications assistance are utilized throughout the defense.

6. The division has continuous real time, human reconnaissance from cavalry assets in all sectors except possibly the MBA during the attack.

7. The aerorecon platoons become an immediately available mobile ground force for the division commander.

8. All cavalry operations are effective down to the lowest reasonable ceilings and visibilities.

9. The squadron commander directly under the division commander has continuous unified control of all attack assets.

10. Squadron missions remain flexible based upon the available logistical support.

SUMMARY

This scenario was presented to convey tactical employment concepts

rather than a stereotyped sequence of events. Not only is the effectiveness of the air cavalry in the AAAD improved, but the general problems of the entire airborne antiarmor defense as stated in chapter I are lessened. These appear to be the most viable employment techniques and tactics available to the air cavalry in the AAAD. Obviously, technological improvements will continue to improve the contributions cavalry can make to this defense, and will probably require the formulation of new tactics to maximize the technology gains. Chapter VI will look into some of the improvements we can expect in weapons and systems for the air cavalry and how these might change this scenario.

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CHAPTER VI

RESEARCH AND DEVELOPMENT IMPACTS IN THE NEAR FUTURE

INTRODUCTION

So often a small technological improvement has a tremendous impact on tactics and survival on the battlefield. Hence, a chapter on research and development (R & D) efforts and their potential impact on the AAAD is mandatory. Whether the impact is as profound as the introduction of the balloon in the Civil War or the machinegun and tank during World War I is questionable for any current R & D projects. Many, however, are germane to the employment of the air cavalry in the AAAD.

I will cover developments as they pertain to weapons systems and munitions, aircraft, electronic warfare (EW) equipment, navigational/target acquisition systems, and communications equipment. In each area I will try to portray the impact on ACS employment in the AAAD.

WEAPONS SYSTEMS AND MUNITIONS

For maximum effectiveness, aircraft in the ACS need weapons systems that are light, versatile, and adaptable to the varied missions that might be assigned. Characteristics of a reasonable stand-off range, accuracy, and lethality are also very important. Systems to be considered are the Stinger missile, Hellfire missile, Sidearm missile, improved family of 70mm rockets, and the turret cannon of the attack helicopter.

As was noted in the scenario of chapter V, cavalry aircraft are very vulnerable to the radar guided 20mm cannon of the HIND-D. Considering the unpredictable appearance of the HIND versus the likely order of battle positions of the ZSU-23-4, the HIND could possibly be the worst threat to air cavalry on the battlefield. To counter this threat the Stinger or an equiva-

lent missile is needed. The Stinger is capable of automatically guiding to an infrared emitting target, identifing friendly aircraft, and hitting helicopters at low level or jets at high altitude. With built in resistance to countermeasures and effective range and maneuverability, a scout with six mounted Stingers would possess a deadly deterrent to the advancing enemy airmobile assault.[1]

The current version of the TOW ATGM allows target engagement with illumination (daylight or artificial) out to 3750 meters. Because of the requirement to acquire and maintain visual contact with the target, attack helicopters remain exposed to enemy fire for excessive periods of time and are limited by the human ability to see the enemy from the cockpit. With the new "Hellfire" multiple types of seekers can be placed on a fire-and-forget missile. Employment options include laser designation of targets from the ground laser locator designator (GLLD), from the firing attack helicopter, from a designator on the scout aircraft, or from another attack helicopter. Modes of fire allow direct, indirect, ripple, and rapid fire to meet the varied employment tactics used by the cavalry. Exposure time is short, if at all, and the accuracy is deadly.[2] With eight to sixteen missiles on an attack helicopter, the ambush time of 20 minutes estimated in the chapter V scenario will be cut sharply with at least equivalent destruction on the enemy. Survivability will also be much higher since all Hellfire missiles can be launched in a matter of seconds. There is no requirement for illumination to fire the Hellfire, possibly eliminating the need for an attack helicopter to be dedicated to firing flare rockets.[3]

From chapter II we saw that the helicopter was vulnerable at all altitudes to gunfire. This is especially true of any radar guided gun, such as

the ZSU-23-4. The Sidearm missile and other future radar seeking missiles will greatly enhance survivability of ACS helicopters operating near the MBA and behind enemy lines.[4]

The continued improvement in 70mm (2.75") folding fin aerial rockets (FFAR) has added a new dimension to the battlefield. In addition to multi-purpose submunition warheads, illumination warheads, and smoke warheads mentioned in chapter V, the addition of chaff warheads allows helicopters to have another means of defeating radar. These join improved versions of the 10, 12, and 17 pound high explosive warheads and flechett warheads. Also, the MK66 rocket motor provides for stable flight to ranges beyond 6000 meters, while the "egg-on-the-wall" concept provides very accurate range delivery of these munitions.[5] Thus, helicopters carrying 70mm rockets can be positioned out of danger from threatening enemy weapons and still deliver a variety of munitions into the MBA. This fills the void demonstrated in chapter II where aircraft survival was extremely poor around and in the actual location of the ground battle.

The XM230 30mm chain gun is being adapted for use in the turret of attack helicopters. With 800 to 1200 rounds of ammunition, the attack helicopter has an excellent off-axis engagement ability for targets out to 3000 meters.[6] In the scenario from chapter V this capability would enhance engagemnets of enemy reconnaissance and air defense systems early in the threat advance. Accurate, effective fire could be brought on both point and area targets within the AAO minimizing risk to friendly positions.

The weapons discussed above represent the unclassified background on the very promising future of helicopter mounted weapons. Only imagination and the research, development, and acquisition cycle will limit their employment.

AIRCRAFT

The three catagories of aircraft to be discussed are the lift, attack, and scout helicopters. This is not to imply that the ACS is limited to these types of helicopters with their inherent missions or that these three types are always needed for mission accomplishment. However, significant improvements are being made in all three catagories that will impact on the ACS employment in the AAAD.

The UH-60A Blackhawk is hopefully to replace the UH-1H in the air cavalry. This helicopter can withstand 23mm hits in all critical areas including the cockpit area. With the increased payload of 8000 pounds external lift, the cavalry increases its ability to haul fuel, ammunition, and supplies to its scattered assets across the AAO and to move FARPs quickly by air.[7] In addition, the UH-60A has been designed with transportability in mind. The aircraft can be prepared and loaded upon a C130, C141, or C5A in two hours and be unloaded and prepared for flight in two and one half hours.[8] This puts the cavalry aerolift assets in a mission ready status in less than half the time planned in the chapter V scenario. Survivability equipment inherent to the UH-60A, as well as, other "black boxes" being developed will be discussed later.

The AH-64 advanced attack helicopter adds a plus to the transportability acquired in the UH-60A. The AH-64 has the ferry range of over 800 nautical miles, making it self-deployable to Europe and beyond from a continential United States base.[9] It also can withstand 23mm hits in its critical areas and can carry the necessary black boxes without degrading mission capabilities. The ability to carry 16 Hellfire missiles as opposed to 8 TOW on the AH-1S, makes the AH-64 an even more lethal antiarmor weapon for the airborne division.

The development of an advanced scout helicopter (ASH) has been the center of discussion among aviators for years, but little positive headway has

been made. Current observation aircraft cannot keep up with any of the new helicopters discussed above. In addition, the current OH-58 does not have the target acquistion capabilities needed to manage and direct either the AH-1S or the AH-64 attack helicopters. The Hughes 500M-D light combat helicopter has been considered as an off-the-shelf ASH. This aircraft can cruise at about 150 miles per hour, mount a sighting unit, and mount various armament combinations to include TOW missiles.[10]

Although the Hughes 500M-D is an improvement over the current scout helicopter, an even more revolutionary helicopter has been designed by Rotor Wing Engineering and Manufacturing Company. This four seat observation type aircraft has no transmission, no tail rotor, and little if any radar signature due to its plastic/armored body construction. The principle that makes it function is compressed air forced up through the mast and hollow blades, out to the blade tips. The jets of air turn the main rotor without the torque normally transmitted to the airframe by a transmission driven system. Directional control is maintained with a rudder. Power is simply controlled by the amount of compressed air allowed to the main rotor.[11] This aircraft represents a quantum leap in helicopter design and will provide the easy transportability necessary in an airborne division. It also has the payload and maneuverability needed to manage and direct cavalry operations in the AAO. This includes the mounting of a target acquisition system and air-to-air missiles.

ELECTRONIC WARFARE EQUIPMENT

Although many EW devices are available for aircraft and many more are being designed, the Army has serious trade-offs to make for any such devices. The weight of a "black box" must significantly improve the possibility of survival and mission accomplishment to be worth reducing armament and fuel loads

or degrading aircraft performance with the extra weight. Typical of items being considered, and in some cases already adopted, are radar warning devices such as the AN/APR 38, electronic radar jammers, infrared (IR) suppressors, chaff dispensers, flares and missile detectors. Passive measures such as reduction of radar cross section of the helicopter and IR suppressors are design necessities. If the threat is considered for the mission of each type of aircraft, only the necessary black boxes should appear as standard equipment. With the correct EW systems and proper flight techniques, the cavalry will be able to move within and outside of the AAO with relative impunity to enemy guided antiaircraft systems.

NAVIGATIONAL SYSTEMS

In the case of navigational systems, the trade off of weight versus operational capabilities has to be made, depending on the missions to be performed by each type of aircraft. Types under development are forward looking infrared (FLIR), pilot's night vision system (PNVS)[12] and the target acquisition designation system (TADS). These systems use infrared radiation, image intensification and thermal radiation, respectively, to see and acquire targets and navigate at night and in poor visibility conditions.[13] With the addition of navigational systems such as Dopler that give actual locations on the ground, navigation, fire control, reconnaissance, and battle management will be greatly enhanced in the air cavalry. Darkness will no longer degrade the aviator's capabilities, but will enhance them.

COMMUNICATIONS

The need for improved communications that resist jamming and span greater distances is a must for all air cavalry aircraft and headquarters.

Radios should be capable of reaching at least 50 kilometers with some form of secure transmission under varied terrain and weather conditions. One possible improvement to the current system is the digital system being tested by the Air Force. Each aircraft is equipped with a small terminal that attaches to the standard radios. Information to include clear text, diagrams, maps and code are put into the terminal and displayed on a small cathode ray tube (CRT). When the message is ready for transmission, a button is pushed which sends the information in digital form in a short burst, taking fractions of a second. The receiving station has a similar unit on which the message is reconstituted. This system allows for practically jam proof communications, the ability to send messages in pictures and words, and the versatility of using any radio available to the unit. ACS elements could keep all major headquarters in the airborne division completely updated on the enemy situation throughout the battle, as digital information was transmitted across a dedicated "current intelligence" net.

SUMMARY

Continued improvement in weapons systems and munitions, aircraft, EW equipment and navigational/target acquistion systems will improve the lethality, survivability, and mobility of the ACS aircraft in the AAAD. In addition the improved transportability characteristics being incorporated into the new helicopters will make deployment easier and the ACS combat ready quicker upon arrival in the AAO. Care must be taken when considering what black box systems will go with each type of aircraft in order to maximize payloads without degrading the capabilities of the helicopter and crew. Improved communications abilities will enhance reconnaissance, security, antiarmor, and battle management missions for the ACS and thus, the entire airborne division.

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CHAPTER VII

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

SUMMARY OF FINDINGS

AAAD Developments

Although the airborne antiarmor defense has never been combat tested on the modern mid-intensity battlefield, all of the aspects of a position defense in depth including resupply to assembly areas have been proven under fire from WW II to the present. There are major weaknesses in command and control, logistical support, and piecemeal defense inherent to the AAAD. However, these are realized and are constantly being improved.

ACS Survival

The physical environment provides the ACS with multi-faceted problems, according to the area in which they are employed. However, for the three most likely areas of AAAD employment, central Europe, the Middle East, and Korea, helicopters can function and accomplish their assigned missions.

The combat environment presents a threat to all aviation assets operating in the AAO and beyond. However, with proper tactics and NOE flight techniques, enemy air defense systems that will affect air cavalry operations are limited to antiaircraft guns, such as the ZSU-23-4 or nose mounted 20mm cannon of the HIND-D, and small arms fire from enemy ground units.

Enemy EW efforts can seriously curtail ACS operational effectiveness, if used continuously. However, good radio proceedures and EW countermeasures should reduce their effect. In addition, helicopters can always fly back to the headquarters concerned with an eye-to-eye report.

The effect of flying within the actual battle area of the AAAD is to reduce the observation, security, communications, and attack capabilities of the

ACS to the point where it is counter productive. This is especially true when compared to the positive impact of the alternate employment techniques and tactics. Survival of cavalry assets jumps dramatically when they are employed outside of the zone bounded by friendly and enemy artillery fires.

Enemy air will have an impact on ACS operations in the AAAD when a minimum of air parity cannot be maintained. The greatest air-to-air threat rests with the HIND-D helicopter for ACS units. We are only now developing systems to counter this threat with helicopter mounted missiles, and we remain vulnerable until these systems are fielded.

OPFOR Tactics

Using Soviet tactics against the AAAD, we can expect a deliberate attack with dense formations of enemy vehicles. They will use ADA, small arms, cannon/rocket artillery and missiles to counter our helicopter combat power and reconnaissance efforts. OPSEC and deception measures will be a must to counter the threat reconnaissance efforts prior to their attack. And, finally, air assaults can be expected whenever the enemy has the helicopters available.

Current ACS Employment

The missions and capabilities of the ACS are many and varied. However, they are not currently fully utilized in the AAAD doctrine as published in the Blue Book. By employing techniques such as the "SCRAMBLE", consolidating attack assets with the ACS, and fully utilizing the potential of the aero-recon platoons, the ACS role is significantly improved. Intelligence gathering is continuous, maximum ACS firepower is brought to bear on the enemy, command and control of combat aviation assets is centralized directly under the division commander, and maximum survivability is achieved for cavalry helicopters.

Research and Development Efforts

Research and development efforts in the areas of weapons systems and munitions, aircraft, EW equipment, navigational/target acquisition systems and communications add up to a highly improved ACS capability in the AAAD. Improved transportability of all systems complement the airborne division's air-land and ISB deployment options for the helicopters of the ACS. Quantum improvements, such as the Rotor Wing Engineering and Manufacturing Company light observation helicopter, are still in embryo stages of the research, development, and acquisition cycle. However, they provide a bright outlook for the future.

CONCLUSIONS

The ACS is a vital asset to the airborne division in the conduct of the AAAD. Tactics and techniques as described in chapter V appear to maximize the performance abilities of the air cavalry, and current R & D efforts complement this employment even further. Careful consideration must be made by airborne division planners to insure that tailored ACS assets are introduced into the AAO early enough in the scenario of an AAAD contingency mission to participate fully in the defense.

RECOMMENDATIONS

Nuclear, biological, and chemical (NBC) warfare is beyond the scope of this thesis because of its association with a high intensity battlefield. However, the USSR and their allies routinely practice offensive and defensive NBC warfare in their maneuvers. The political decision has already been made by the Soviets to use chemicals in warfare, and their nuclear and biological arsenal would indicate a great probability of their use also.[1] U. S. Army aviation is currently deficient in all but the very rudimentary NBC capabilities

and skills.[2] Even these capabilities and skills vary from unit to unit. To survive we must improve our abilities to identify the agents, contain them, and decontaminate our helicopters and personnel with sufficient proficiency to remain combat effective.[3] Hopefully, further study in this area will improve our NBC capabilities in the air cavalry.

Further study is also recommended in the employment and deployment of FARPs, in more flexible tailoring of air cavalry organization for a type mission, and in optimization of the balance between cost effectiveness, mission effectiveness, and payload trade-offs of the many black box systems being considered for installation in Army helicopters. Also a detailed analysis is needed to ascertain the tactical impact on the ACS and the airborne division in the loss of the ground cavalry troop to the air cavalry squadron organization.

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APPENDIX A

HELICOPTER SURVIVAL (SECRET)

Appendix A has been published under separate cover and is available to authorized readers at the Command and General Staff College Library, Classified Section, Fort Leavenworth, Kansas 66027 or on request from the Defense Documentation Center, Cameron Station, Alexandria, Virginia 22314.

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