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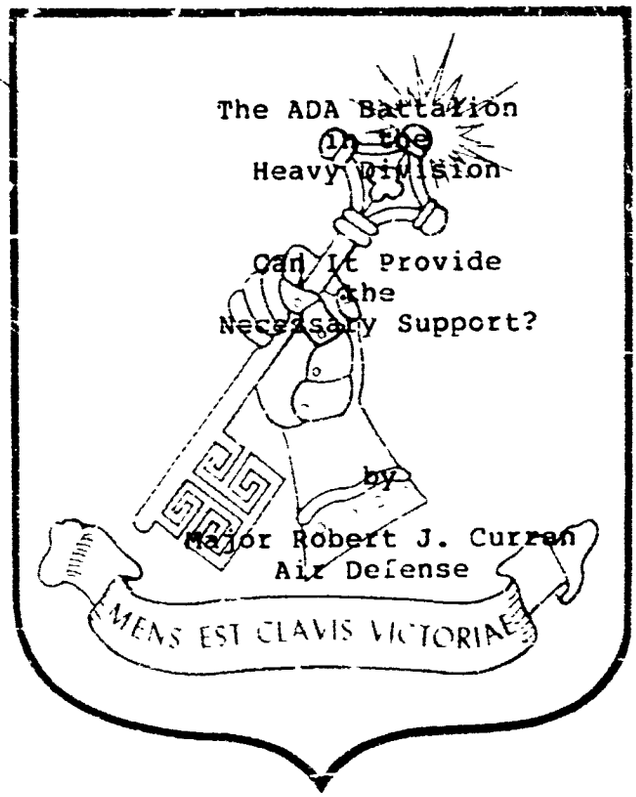
The ADA Battalion In the Heavy Division

Can It Provide the Necessary Support?



by

Major Robert J. Curran
Air Defense

School of Advanced Military Studies
U.S. Army Command and General Staff College
Fort Leavenworth, Kansas

5 January 1985

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School of Advanced Military Studies

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Name of Student: Robert J. Curran, Major, Air Defense

Title of Monograph: The ADA Battalion in the Heavy Division: Can It Provide the Necessary Support?

Approved by:

John S. Fulton, Seminar Leader
LTC John S. Fulton, M.A.

Richard Hart Sinnreich, Director, School of Advanced Military Studies
COL Richard Hart Sinnreich, M.A.

Philip J. Brookes, Director, Graduate Degree Programs
Philip J. Brookes, Ph.D.

Accepted this 31st day of December 1985.

ABSTRACT

The ADA Battalion in the Heavy Division: Can it Provide the Necessary Support? by Major Robert J. Curran, USA, 38 pages.

This study investigates whether the Air Defense Artillery Battalion, organic to the Army of Excellence Heavy Division (Armored or Mechanized), furnishes viable support in the context of FM 100-5, Operations and FM 44-1 Air Defense Artillery, and satisfies the basic tenets of AirLand Battle. To obtain conclusions for this issue, historical examples of ADA support in World War Two, Arab-Israeli Wars, and most recently, the Bekaa Valley raid of 1982 are cited for possible lessons learned. A comparison of FM 100-5 and FM 44-1 is made in order to present similarities or disparities between the two documents, and then followed by an analysis of the ADA battalion command structure, selected functional areas, and organic equipment.

The study concludes that the heavy division's ability to function on the modern battlefield is severely constrained when employed in a theater of operations with less than air parity or superiority. Command and control, Army airspace management, employment doctrine, and basic ADA tenets are either violated or incapable of being performed adequately due to manual control procedures and out of date equipment.

The study concludes that the solution to the problem is a need for combined arms cooperation in developing means by which the divisions can defend themselves and carry out operations. Additionally, state of the art equipment needs to be fielded quickly in order to stave off this weakness in our ability to defend the divisions, but specific weapon sysrems are not recommended.

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I. INTRODUCTION

General.

> "The mission of Air Defense is to nullify or reduce the effectiveness of attack or surveillance by hostile aircraft or missile after they are airborne, thereby supporting the primary Army function of conducting prompt and sustained land warfare operations."[1]

> "...but the proper measure of air defense is not always the number of enemy airplanes it knocks down. The ultimate purpose is not to win duels with penetrators but rather to prevent the enemy's success in attacking targets to advance his war aims."[2]

Air Defense of the ground forces has become more important in recent years after witnessing the events that occurred in the Arab-Israeli conflicts, the Falklands War and most recently, Israel's emasculation of Syrian air defense artillery forces in the Bekaa Valley of Lebanon in 1982.

The term Air Defense (AD) encompasses the total spectrum of radar systems, ground to air missiles, small arms fired at aerial targets, anti-aircraft gun systems, and airborne attack aircraft in both offensive and defensive roles. In the context of this paper, the aspect of AD which will be covered is Air Defense Artillery (ADA). This area consists of the anti-aircraft artillery (AAA) and surface to air missile (SAM) systems currently fielded in the US Army's Heavy Divisions (armored and mechanized infantry). Light Divisions, though possessing the same equipment in different quantities, will not be covered in this paper because their doctrinal use is still evolving.

Since World War Two, the US Army's ground forces have not been subjected to a serious enemy air threat that would have crippled their ability to operate. Air superiority has been the mainstay of US air defense and has succeeded in lulling US forces

into a false sense of security. However, most recent analyses and intelligence reports tend to state future conflicts in a mid to high intensity arena will possibly see US forces subjected to periods where the enemy will possess air parity or even air superiority over selected portions of the battlefield. In a theater such as Europe a high number of operations will not have an AD umbrella because of initial losses inflicted upon NATO theater air defense forces. This will cause corps and division commanders to rely totally on organic ADA. ADA's role on the battlefield will be to allow the ground force commander freedom of movement and action in performing assigned missions and tasks.

On the modern battlefield, air defense's aim is to reduce or nullify the enemy's ability to deliver ordnance while also destroying enemy airborne platforms so that the enemy is unable to prosecute a return engagement. The modern battlefield is expected to be a broad non-linear expanse of territory that will see concentration of forces at selected positions to meet the enemy onslaught. Linear regularity as in World War One with its trenches stretching from the Atlantic to Switzerland will be an anomaly and might only occur if a state of equilibrium is attained. Commanders must know the air operational concept as well as the ground operational concept in order to field forces in a most economical manner. The ADA commander, with the limited assets to be discussed later, must provide a cohesive and mobile umbrella so that the maneuver forces can operate with a freedom of action, otherwise the battle is lost.[3] General (Retired) Lew Allen stated that,

"... both our analyses and our operational tests have shown that as our margin of technological superiority erodes it is no

longer sensible to try to overcome increased sophistication. This means that in meeting any expansion of the Pact threat or in negotiating mutual limits to constrain this threat--we must pay more attention to the numbers as well as the quality of forces in the balance."[4]

Problem Background.

Recent initiatives by the Department of the Army under the direction of the Chief of Staff have caused a paring down of the size of armored and mechanized infantry divisions. The Army of Excellence (AOE) program has seen the elimination or removal of forces from these two structures and their realignment at corps. The air defense portion of the restructuring has resulted in the movement of all Chaparral SAMs to corps and the creation of the term "non-dedicated Stinger" which will be elaborated on later. The size of the ADA battalion has been reduced mainly in the support functions and in the number of Forward Area Alerting Radars (FAAR).

Knowing there was a deficiency in the forward area air defense with the interim fielding of Vulcan, the Army still initiated six separate studies of the subject from 1972 to 1976, and all reinforced the basic assumption that a new gun was required. This "study to death syndrome" cost ADA and the Army over four precious years in attempting to acquire the optimal system for the division.[5]

In 1974, the Institute for Defense Analysis prepared for DOD a paper called Operational Test and Evaluation of US Army Forward Area Air Defenses. This paper was developed to show how a combined test of several forward area air defense systems should be conducted. Earlier, each system had been tested separately, but never as a whole integrated system. The synergistic effect

of this combination was not known and a true picture could not be envisioned. The paper recommended ways to perform this test and developed measures of effectiveness (MOEs) of ADA fire units. These seven MOEs, when combined, would present the ultimate MOE, the amount of protection afforded US assets located in the division area and the capability to destroy or deter attacking aircraft. The seven MOEs are:

"1. Availability and readiness of fire units (including weapon resupply), radar, and communications systems.

2. Capability of early warning and alerting systems to provide timely and adequate information to fire units on enemy and friendly air activity in the forward area.

3. Capability of fire unit crews to detect aircraft.

4. Capability of fire unit crews to identify detected aircraft.

5. Capability of fire unit crews to engage detected and identified aircraft.

6. Capability to engage the target aircraft within the potential kill envelope.

7. Probabilities of hit and kill, given engagement within the potential kill envelope."[6]

Considering this forward area study, the "study to death syndrome", and now the recent scuttling of the Sergeant York/ Division Air Defense (DIVAD) Gun program (August 1985), a void has been created in the force modernization program for Short Range Air Defense (SHORAD). This paper will not investigate the reasons for DIVAD's failure, but its demise has created numerous problems for the divisional ADA battalion commander. The question is not only how to provide support for the division but also whether the ADA battalion is able to support the division. The cancellation of the DIVAD program has not been fully realized by the other combat arms; however, a Forward Area Air Defense Work

Group (FAADWG) was immediately formed, including representation from all the combat arms, and was tasked with defining a common threat by which systems could be evaluated. The study will also investigate what the market has to offer in the area of off-the-shelf equipment that could counter the Soviet threat until an objective system can be fielded, and will recommend an operational concept that will make protection from enemy air a combined arms responsibility.

Initial results will be presented to the Vice Chief of Staff of the Army in mid-December 1985. One possible solution being considered is to make the air defense of forward maneuver units more of a maneuver commander's responsibility. This might mean use of the Infantry Fighting Vehicle (IFV) 25mm chain gun and the tank main gun against hovering helicopters and close air support aircraft in addition to their usual ground fighting responsibilities.

Concurrently, a joint study group has been meeting at Fort Bliss for the past few years with the objective of solving the Forward Area Air Defense issues of insuring positive aircraft identification, integration of external acquisition sources into the forward area air defense system (i.e. Airborne Warning and Control System (AWACs)), positive aircraft and airspace management, and improving the weapon systems capability by allowing the user to realize the entire weapon systems' engagement envelope. The ability to engage aircraft is currently restricted to visual acquisition rules of engagement for SHORAD systems.[7]

Assumptions.

Important in any study is the realization that external factors can influence findings and conclusions. Experts in the field can present various scenarios with variables only slightly changed that will give totally different results and completely invalidate any earlier findings. One problem that this author has discovered with materiel developers in air defense is their approach to remedying shortcomings in our current SHORAD systems. Their approach is that future systems will solve the problem. This was the approach used in 1980 with DIVAD. Therefore one of the assumptions in this paper is that if war broke out tomorrow, US forces would have to fight the first battle, and maybe the last, with what is fielded now, not with proposed organizations or equipment.

> "The battle will have to be fougnt with the means available and will not allow for the full industrial capacity of the combatants to be harnessed. Therefore, each aircraft downed or ADA system destroyed represents a loss that can not be replaced."[8]

This paper will investigate divisional ADA viability today, and assumes that the ADA battalion's present equipment is what it will go to war with.

Another assumption is that the army will continue its force modernization equipment fielding process of such systems as the M-1 Abrams tank, M-2 Bradley Fighting Vehicle, and Multiple Launch Rocket System with their new doctrine. Finally, though realizing that divisional ADA does not operate in a void and has USAF close air support (CAS), possible corps ADA brigade supplementation and neighboring High to Medium Air Defense (HIMAD) protection, the division can not expect these assets to

be available 24 hours a day for support. The division will have to place its trust in organic ADA to protect its most vital assets. Realizing the aforementioned as constraints, we can now look at how the air defense battalion proposes to furnish an aerial umbrella and allow the division freedom of action required on the AirLand battlefield.

Hypothesis.

Because of the growing number of priority assets the division possesses, the responsibility for conducting Deep, Close and Rear battles, and the envisioned enemy air threat, the ADA battalion cannot adequately provide air defense coverage necessary for the heavy divisions to perform operations with the requisite freedom of movement to insure the mission success that doctrinal manuals expect.

Methodology.

Prior to performing an analysis of this problem and the conclusions it will hopefully generate, the necessary background information will be presented to substantiate any findings:1) An initial overview of the ADA history from prior to World War II through the most recent conflicts to include both US and foreign experiences and possible lessons learned in order to establish a baseline for success in previous conflicts, 2) an unclassified explanation of the threat, covering Soviet philosophy, objectives and a description of several high threat airframes, 3) a short discourse on AirLand Battle (ALB) as explained in FM 100-5 ,4) the ADA perspective of ALB and the doctrine specifically for the SHORAD battalion, and finally, 5) a synopsis of the organic ADA's equipment capabilities, shortcomings, organization, and how ADA

is supposed to function. With this background information, an analysis of the the ADA battalion's viability with respect to the hypothesis of this paper will be made.

II. BACKGROUND

History.

Air Defense history goes back to several conflicts prior to the advent of the airplane. In the American Civil War aerial balloons were fired at by ground forces and in the Franco-Prussian War in 1870, the Germans used a 37mm cannon specifically designed for shooting at aerial targets. They downed a French observation/communications balloon on 12 November during the siege of Paris.[9] This led to more ground systems being developed and used in World War I due to increased aerial attacks on both sides. During the interwar period, technology pushed the development of aircraft much faster than anti-aircraft artillery (AAA) due to a commercial and strategic interest in air travel. At the opening of World War II, aircraft were sophisticated and highly lethal while AAA was still in the developmental stage.

Major combat episodes of note showing the need for a strong AAA system (the invention of the SAM still being several years away) occurred in the Philippines and the Allied defense of the Remagen bridgehead.

During World War II, AAA in the form of automatic weapons battalions were reintroduced into the division organization by being permanently attached. If additional assets were required, elements from corps could be requested.[10] Though the attack at

Pearl Harbor saw the US's initial use of AAA, the use of AAA was totally inadequate. It was in the Philippines between 8 December 1941 and 6 May 1942 where the US witnessed what AAA could do against an air threat. In "Echoes of a Distant Battle", Major Kirkpatrick showed how the 60th Coast Artillery Regiment decreased the Japanese air force's effectiveness against Corregidor and gathered valuable lessons still applicable today. The 60th CA (AAA) Regiment was credited with downing 54 aircraft and causing the enemy to abort its bombing missions against US forces because of its accurate, timely, and concentrated fires. Because of the suddenness of the attack, the 60th AAA had to fight with only the forces available and had to anticipate the unexpected. Proper training did insure tactically and technically proficient personnel, integration of ADA fires, and a decreased dependency on sophisticated (for that time) command and control and early warning systems in place.[11] Each one of these lessons learned were then used throughout both theaters for the remainder of the war and proved to be most beneficial when preparing air defenses for major operations. One last point that the 60th AAA learned was that you do not have to shoot down all attacking aircraft to accomplish your mission of defending ground forces or assets.[12] This last point would play a large role in the Remagen bridgehead defense to be covered next.

On 7 March 1945, the bridge at Remagen was seized by the advanced elements of the 9th Armored Division. Realizing the bridge's importance to the allies who were trying to gain a foothold on the east bank of the Rhine, American AAA assets were rushed to the bridge site and an integrated defense in depth was

prepared to counter the expected enemy counterattacks to shut down the crossing site. Radars, searchlights, and barrage balloons were brought to the area. Special air defense control measures prohibiting friendly aircraft from entering the Remagen zone were initiated. By 14 March 1945, over 600 weapons systems, ranging from .50 caliber machine guns through 90 mm AAA systems, were set up around the bridge. The Germans threw over 442 sorties at the bridge site in 13 days, including the new ME-262 jet, and suffered 142 aircraft kills and 59 probable kills due to the dense integrated fires.[13] The bridge ultimately collapsed but not due to enemy aircraft attacks. This "solid wall of lead" caused many pilots to drop ordnance early or not at all.

The doctrine which reached fruition towards the end of the war utilizing the lessons learned from previous enemy encounters and not totally restricted to ADA was the Field Service Regulation(FSR) 100-5, Operations dated 15 June 1944. It was the major tactics document by which all branches planned their operations. In just over 250 pages this manual laid the foundation by which all other services' tactical documents were written. It served as what we would call the capstone manual by which every commander could plan and perform his portion of the combined arms operation. Like today's FM 100-5, it addressed all offensive and defensive tactical operations which units would be expected to encounter or have to carry out in any theater. Its specificity and detail, in the case of AAA, covered every operation from actions taken when supporting amphibious operations to how AAA should set up in the defense of bridgeheads and crossings. The ground work it laid was then

carried even further by the respective services and resulted in a series of manuals called "Tactics" with a degree of specificity which would answer questions on how to employ forces while still allowing improvisation if the need arose. The FSR, in the AAA area on page 15, paragraph 58 stated that AAA had both an air and ground responsibility. It explained priority of fires when in the defensive; who received primary fires when conducting delaying actions; and what to do when performing retrogrades, retirements, and withdrawals. This little "how-to" booklet captured the essence of the combined arms effort and delineated the specific roles and missions each branch had to fulfill in order to live and fight on the battlefield.

The FSR remained applicable to AAA in the division after World War II, but soon became obsolete as aircraft became more capable of avoiding AAA fires by flying higher and to greater depths into the strategic rear. This new problem brought about the emergence of surface to air missiles (SAM) and caused AAA to be removed from the division and formed into separate brigades. In the years between World War II and Vietnam, AAA was used primarily in a ground support role. Places like Pork Chop Hill and Heartbreak Ridge saw AAA supporting convoy movements and maneuver elements by providing overwatching direct fires.

The same was basically true in Vietnam when the M42 Duster and the Quad .50 (Whispering Death) AAA units were used to defend firebases and convoys. However, over North Vietnam, US aircraft were on the receiving end and saw massive ADA coverages emerge around Hanoi and Haiphong composed of both SAMs and AAA. One outgrowth of the lessons learned by the US Air Force was that

US divisions again needed an organic air defense unit. As an interim measure until an objective system could be fielded, the Army developed the Chaparral SAM system and the Vulcan 20mm gun. These were then introduced as a battalion size element in the division in the early 1970's.

The Arab-Israeli war of 1967 drove home the point that units needed air coverage in support of maneuver. With a surprise attack on both airfields and SAM sites, the Israeli Air Force insured not only air superiority but air supremacy over Arab ground forces thus causing the Egyptians to sue for peace. Realizing the mistakes made, and with a massive influx of Soviet technological assistance and equipment, the Egyptians prepared for the next conflict. Even though they expelled their Soviet advisors, they had learned their lesson well and launched a surprise attack across the Suez Canal in 1973. From the onset, their SAM and divisional gun ADA coverages presented an inpenetrable wall to Israeli pilots. With their HIMAD SAMs forcing the Israeli pilots low, the guns and more mobile SAMs then inflicted totally unacceptable losses upon the small Israeli air force. Not until the daring armored attack into the Egyptian rear with the resultant destruction of SAM sites, did the Israelis gain air superiority over the Egyptian ground forces. An important lesson here for the ground maneuver arms was that air forces are not necessarily needed to counter the enemy ADA threat. In some respects, the use of the air force to knock out ADA sites is analogous to " a flock of wild geese taking on a group of hunters armed with shotguns".[14] To show how lethal Egyptian ADA was, Israel lost over 250 aircraft with only four

being attributed to Arab air-to-air systems.

Another problem area that emerged from this war was the identification of aircraft. Even in the clear skies of the Middle East, Syrian gunners shot down 20 of their own aircraft in one day and it is believed that 10% of Israel's losses were due to their own fires. The effectiveness of the missile systems, though high when measured by the number of planes downed, showed that probability of kills (Pk) in the sterile environment of the laboratory or on a firing range against an unmanned, nonmaneuvering airframe was somewhat inflated. Crews that were tired, hungry and scared, using in some cases worn out equipment against maneuvering sophisticated aircraft, did not attain the probability of kill or hit claimed by the weapons developer.[15]

The quantity of missiles and ammunition expended by the Arabs also showed that future conflicts will require stockage above present levels and a resupply system that is viable and responsive. A lesson of this war was that "despite the superiority of an air force both quantitatively and qualitatively, it has an inability to achieve air supremacy when opposed by a strong air defense system".[16]

Two other recent conflicts bear lessons to be learned and possibly implemented in the ADA units of the US Army. In the Falklands both the ground based defense, in this case Rapier and Blowpipe SAMs, and carrier based Harrier jets provided defense of the beachhead and follow-on operations for the British ground forces. Visual recognition as the final determining factor for engaging aircraft was not a problem because any aircraft flying

was either a British Harrier or Argentinian. However, confusing Identify Friend or Foe(IFF) responses from approaching aircraft (not yet visually identified) caused engagements of a target to be made at the last possible moment and did not optimize weapon systems capabilities. Without this problem, more Argentinians would have been engaged sooner. All three systems (Blowpipe, Rapier, and Harrier) were credited with kills, and because this was the only conflict at that moment for Great Britain, no shortage of missiles was experienced. One lesson learned was the importance of an active early warning system radar that could send information down to the fire unit.[17] Because one was not available, many hostile aircraft were engaged too late or not at all, thus allowing them to enter the combat zone, deliver ordnance (though frequently ineffectively), and leave unscathed.[18]

The last example of air defense concerns the Israeli destruction of Syrian SAM systems in the Beqaa Valley of Lebanon in 1982. Not a shining day in the history of ADA, this attack leaves us with many urgent lessons. The Syrians had 19 SAM batteries located in the Beqaa Valley, and for a year prior to the attack Israeli drones surveyed the area and charted the locations of these units. Fortunately for the Israelis, the Syrians rarely displaced their systems thus giving Israel important real-time information necessary for launching a preemptive strike. On 9 June 1982, Israel launched a four stage attack consisting of electronic warfare, deception, attack of the sites and counter air.[19] In stage one, after using airborne systems that identified Syrian missile sites, Israeli aircraft jammed radars and disrupted communications nets. In stage two

swarms of drones were sent into the battle area to simulate an attack. This caused sites to launch valuable missiles and perform other acts such as turning on radar emitters. In the third stage, 19 sites were attacked by the Israeli air force and 17 destroyed and two damaged. Meanwhile stage four was taking place as Israel intercepted Syrian jets as they scrambled to protect the SAM sites.[20] Israel claimed minimal damage to their aircraft. An important lesson learned here was that no Syrian countersuppression measures were taken such as unit movement, camouflage, or radar emission controls.[21]

Another important point is that the US needs a drone like the Israelis and supposedly like the Soviets. At the same time, because of enemy drone or remotely piloted vehicle (RPV) capabilities, passive measures will have to attain a higher level of sophistication. RPVs can now carry infra-red cameras and can discover a unit's position even in the dead of night. With real time information being passed to control vehicles, enemy aircraft with all-weather, day-night capabilities (which the Soviets possess in great quantities) can now strike targets at any time and in weather that was previously thought to provide immunity. This now allows the enemy commander to engage units in combat to the full extent of the battlefield and creates a need for a 24 hour air defense protective net. This poses additional problems for the divisional ADA commander because he has little or no means of acquiring this small RPV target due to its small size when compared with other aircraft and ADA system night limitations.

The past several pages have tried to show with selected

historical examples how ADA has been used in several conflicts. Though nowhere near exhaustive, this background should provide some insights as to lessons we should have learned and need to implement in the field today: 1) current defense analysts believe that no force can expect air superiority at all times and ground troops will often have to depend on their organic ADA for protection; 2) the 60th AAA in World War II snowed that ADA units will have to fight with what they have; 3) Egypt's "air defense umbrella" showed that some ADA must be organic to the division; 4) the Remagen bridge defense showed that ADA does not have to shoot down all aircraft, just pose a credible threat; 5) again at Remagen, ADA's basic employment guidelines of mix, mass, mobility and integration were borne out under fire; 6) Korea and Vietnam proved ADA can also serve in a ground role and must be prepared to protect itself from both air and ground threats; 7) the Arab-Israeli conflicts reinforced the fact that aircraft identification will be difficult and an automated early warning system down to gunner level is required to cut down on fratricide; and finally, 8) Syria's losses in Lebanon showed that ADA needs to be knowledgeable of and practice AD countermeasures in order to survive the lethal threat it faces.

The next area to be covered will be the threat that the US ADA forces can expect to encounter, their basic philosophy, and some of their more important capabilities.

Threat.

> "Whatever the assumptions concerning the course of air aggression, it can not be denied that an enemy who is resolved to enforce a quick decision in the form of a huge gain of territory within the shortest possible time, will

achieve this goal if he is willing to accept the heaviest losses".[22]

Following this train of thought and using history as a means to forecast the future, the Soviet Union's past dictates that this will be true in the next conflict. "Soviet tactical and strategic doctrine calls for large scale offensive operations."[23] Additionally, through operations research,the Soviets have come to realize that in order for ground operations to be successful, air supremacy must be attained and held at all costs. Until recently, Western analysts felt that most Soviet aircraft would fill a defensive air role; they have now discovered that the Soviets possess a very potent offensive air capability in both fixed wing and rotary aircraft. As General Lew Allen stated earlier, we have relied on technology to counter Soviet capabilities. We are now reaching a point where we must look at our quantity, otherwise we will run into the same problem as the hunter who gets overrun by the rabbits while his attention is on the big game. Doing everything on a grand scale is a trait of the Soviet system and what the US can expect to see at the outbreak of hostilities should come as no great surprise.

Initially, the US can expect a two phase attack. While conducting air interdiction and offensive air operations, Soviet fighter-bombers will strike into the rear at ammunition supply depots, key command and control facilities, airfields, and forces attempting to move to their wartime positions. Concurrently, spetznaz groups will be activated to create havoc in the rear areas. Possible airborne, air assault, or h. iborne operations will be initiated to the operational depth of the rear once air corridors have been cleared through the allied ADA belt. Radio

Electronic Combat (REC) from airborne platforms will jam or disrupt command and control facilities, communications networks, and ADA missile sites. Finally, attacks against the theater level HIMAD forces will occur in order to destroy or nullify HIMAD's effectiveness and create the air corridors so desperately needed. Once this occurs the fight for air superiority and air supremacy will soon follow.

The second phase would entail attack helicopters and close air support aircraft striking at targets that would impede the operations of Soviet maneuver forces. These would be directed at deploying forces, nuclear-capable artillery, command and control nodes, logistic facilities, and ADA units.

With this short discourse on Soviet philosophy and a possible scenario for their initial attack, a brief description of Soviet aircraft which our SHORAD forces can expect to engage will follow.

Mi-24 (NATO code name-HIND)

The Hind is the premier armed helicopter in the world today. Since its introduction to a very surprised Western audience in the early 1970's, this system has caused considerable consternation to military strategists. Being a veritable airborne tank, it started as Variant A with a 12.7mm machine gun, 32 shot 57mm rocket pods, and four each AT-2 Swatter anti-tank guided missiles (ATGM) while also carrying up to eight combat loaded troops. It now has a variant E with a larger caliber machine gun and Spiral ATGM's in place of the Swatters. Its communications system allows it to be controlled even in deep strike operations. Its primary mission is reported to be anti-

armour; however, it has a multi-role capability, unlike our single role Cobra, providing CAS, security, escort of heliborne operations, and air to air. Most recent intelligence reports state that the Hind will begin mounting an air to ground missile with a stand-off range in excess of six kilometers which exceeds our current engagement ranges. Finally, though several have been downed in Afghanistan, Hinds have been reported to be almost impervious to small arms fire. The HIND, though, is not the most heavily armed; that distinction belongs to the Mi-8.

Mi-8 (NATO code name-HIP)

Since its introduction in the early 1960's, numerous variants have been fielded and improvements made. Today the system is exported throughout the world and can fulfill numerous roles. The Hip can airlift vehicles, carry almost three Soviet rifle squads, provide close air support, and serve as an electronic jamming platform. It too has a 12.7 mm MG, six each 32 round 57mm rocket pods, and four ATGMs. Both the Hip and the Hind are now found in squadrons down to the division level and can be expected to fly in support of division operations under the strict Soviet airspace control procedures.

Mi-28 (NATO code name-HAVOC)

Though not much is known about this system, it will be fielded soon and has similarities to the US AAH-64 APACHE. One other system that will give the Soviets a rotary wing air superiority capability is the HOKUM.[24] Analysts surmise that this system will give the Soviets a possible mobile ADA

capability against helicopters and sub-sonic close air support aircraft like the A-10.

Though possessing numerous fixed wing aircraft that are capable of a multitude of missions, tne Soviets have three primarily dedicated to close air support that would attack targets both in US division rear and forward areas.

MIG-27 (NATO code name FLOGGER)

This ground attack aircraft carries a multitude of armaments and is becoming the primary ground attack aircraft of the Soviet Air Forces. With great range and a six-barrel 23mm gatling gun, bomb racks, and air to ground missiles, this plane looks for soft rear area targets. An updated version has pylon mounted gun pods with depressible barrels. This model can be found throughout the Warsaw Pact.[25]

Su-24 (NATO code name-Fencer)

Similar in capabilities to the FB-111, this terrain following, all-weather attack aircraft can deliver over 16000 pounds of ordnance, both conventional and nuclear. By virtue of its forward deployment in Eastern Europe and its long range capabilities, the SU-24 is a threat to all of NATO.[26]

Su-25 (NATO code name-Frogfoot)

The Soviet equivalent of the USAF A-10, it has seen service in Afghanistan and can carry over 8000 pounds of ordnance. As with other Soviet systems, it copies a western design. The Frogfoot has performed Joint Air Attack Tactics (JAAT) missions

with the Mi-24 in Afghanistan and has provided an increase in protection to Soviet ground troops.[27]

Alluded to earlier, Soviet airborne, air assault, and heliborne troops can and will be deployed throughout the NATO theater. Mainly used to gain control of operational level objectives, these forces are self-sufficient and present a considerable threat to our soft, highly vulnerable and very important rear targets. Inserted by either fixed wing or rotary aircraft, these forces will force diversion of our attention from the main attacking forces to our rear area. To prevent this, we require greatly increased forces for rear area protection, especially in the ADA role. The AirLand Battle's role with respect to ADA will now be discussed.

III. DISCUSSION

AirLand Battle (ALB).

ALB is the doctrine by which US forces will fight in the next conflict whether it be low, medium, or high intensity. It is not the purpose of this paper to assess ALB, but rather to highlight several facets of the doctrine that make it important to the air defender. The basic tenets of this doctrine can be summed up in four words : agility, depth, initiative and synchronization.

Agility demands a responsiveness to act faster than the enemy to new situations as they present themselves. Mission-type orders, standardization, well rehearsed procedures, rapid sharing

of intelligence, and highly trained and knowledgeable soldiers will permit this capability. Depth means the commander must not only be concerned with what is facing him, but he must consider the entire length and breadth of the battlefield. The commander must plan for future operations and affect enemy follow-on forces in order to win the close in battle. Initiative means taking the offensive. It dictates that whenever US forces are in contact with the enemy, all thoughts are directed towards breaking the enemy's will to fight and the creation of an atmosphere and conditions for the offensive. Synchronization is the bringing together of all the various arms in time and space so as to maximize the unity of effort in combating the enemy force. The commander looks for enemy vulnerabilities and then judiciously applies the most economical force against that point in order to facilitate his operation.

The battlefield can be divided into the close, rear and deep battle areas. The close battle operations area is the current battle area where the division is engaged. The deep battle consist of activities that shape future close operations.[28] Deep battle can be conducted through deception, OPSEC, C3CM, interdicting by aerial and ground launched systems, ground or aerial maneuver elements, or special operations forces. The rear operations area is where combat, combat support, and combat service support activities are located that serve combat in the main battle area and allow them the freedom of action. Here are the command and control, reserves, long range fire support, and combat service support.[29]

As stated earlier in the historical background concerning

FSR 100-5, FM 100-5 likewise designates general areas of responsibility to ADA. It warns that not all operations will be conducted under safe skies. Rather than being prescriptive, the new doctrine states general responsibilities for ADA and then relies on the commander to provide guidance to his assigned ADA officer as to what he wants defended. FM 100-5 does state that continuous operations will be the norm and that coverage must be provided.[30] This tends to contradict the earlier notion that passive measures must be considered because there will never be enough ADA to go around. FM 100-5 does state that the conduct of ADA operations can be found in applicable publications. With this short discourse on the basics of ALB, how ADA has developed its doctrine for the air defense battalion employed in the defense of the armored or mechanized infantry division will now be examined.

Air Defense Artillery and FM 44-1.

In ALB, ADA must maintain a flexibility comparable with other combined arms and integrate its efforts in order to insure success.[31] To achieve this success, ADA realizes that it must satisfy the four basic tenets of ALB. ADA defines the four tenets in FM 44-1 in very generic terms. Initiative for ADA means subordinates displaying an independence of action, an aggressiveness and ability to improvise permitting decentralized methods of operation. Depth considers time, distance, and resources. With increased distances between concentration of forces, the ADA commander must evaluate his own disposition of forces for current operations and how he will facilitate future

actions. Agility relates to turning inside the enemy's ability to react and movement of ADA forces from one point to another rapidly. Task organizing of ADA assets to counter enemy air threat formations and capabilities further enhances ADA agility. Finally, the capability to transition from one phase of the battle to the next should be a trait of ADA. Synchronization finally pulls all of the forces affecting the battle into one total effort. ADA must be capable of providing the maximum combat power at the critical time and place to facilitate the successful outcome of the engagement. ADA also needs to know its place and relationship with other combat forces in the battle in order to achieve the unity of effort synchronization demands.[33] This synopsis of ALB tenets represents how ADA doctrine as stated in FM 44-1 will support the force in the next conflict. Because of FM 44-1's brevity and lack of examples, this portion of the field manual only covers two pages and leaves much for interpretation to the ADA commander. How ADA and FM 44-1 consider other elements of ALB will now be examined.

When considering the ALB structure of the deep, close, and rear battles, ADA sees its primary mission as being the protection of assets performing their respective functions to bring about a positive outcome in each battle area. However, the Deep Battle to ADA is not the sending of forces across the FLOT with the maneuver elements, if that mission is envisioned, but the defense of those assets on our side of the FLOT so that they can prepare for deep operations under the relative security of ADA protection. ADA breaks the close battle into two distinct sectors, the forward and the rear. In the forward sector are the

maneuver elements prosecuting the close battle, while in the rear sector are the high priority targets such as C^2, logistics, reserves, nuclear deliverable artillery, and aviation assets.

Since ADA sees a hotly contested forward sector, Army Airspace Command and Control (A^2C^2) will take on a significant role. ADA states that insufficient forces will exist so the commander must reassess priorities constantly and not parcel out forces (i.e. two Vulcans here and one platoon here and three Stingers there). This would then cause insufficient numbers to be allocated and produce a weaker defense more easily defeated in detail. The commander must weigh the need to use passive measures of cover and concealment, camouflage, and communications security in order to husband his resources.

Finally, ADA is a critical element of the commander's operations planning and must be considered before initiating any operations. The probable risk to the success of the operation resulting from little or no ADA coverage must be weighed. If maneuver units recognize such a shortfall, their manner of conducting the operation must change. In the worst case, such a shortfall could cause cancellation of the operation or reduction of its scope.

One other notion that ADA is trying to dispel is that of habitual association. In a peacetime environment it serves a purpose of familiarizing the ground commander with ADA, but it creates an impression that this force will always be part of his "slice." The first time the ground commander does not receive ADA could be in the first battle of the next war. Then these maneuver forces will not be trained to act independent

of ADA protection.

Rear battle to ADA in the division is considered as part of the close battle. ADA has developed its own subset which occasionally crosses the boundary and is called Rear Area Protection (RAP). RAP is more oriented towards theater and corps rear areas and comes under the protection of HIMAD forces. Division rear areas may receive some complementary coverage from this HIMAD force, but primarily must depend on its organic ADA.

The next area of concern for the ADA commander is how to carry out assigned missions. Like other support arms, ADA has its standard tactical missions of general support (GS), general support-reinforcing (GS-R), reinforcing (R) and direct support(DS). Each implies specific responsibilities and command relationships between supporting and supported unit. If selected conditions apply, the ADA commander can modify the standard mission or assign a specific tactical mission, e.g. attrition of enemy aircraft.

When dealing with ADA, there are traditional classes and types of protection. Classes are passive and active while types are area or point. Passive measures have been mentioned earlier. Active measures are the direct actions taken to reduce or destroy enemy air operational effectiveness.[33] Area defense covers a broad area with no assets receiving priority of defense, while point defense is more limited, and is designed to protect a specific organization or installation be it mobile or static.

The most difficult task the ADA commander will have in the battle is how to organize for combat. Whether in offense, defense, or retrograde operations, the ADA commander must

consider his maneuver commander's priorities and assign his forces accordingly. In offensive operations the priority of forces must go to the main effort. This might mean that supporting attacks or reserves will see little or no ADA. While supporting the main effort, ADA must also look at support for the deep and rear battle forces. Because of the fluidity of the offense, ADA must think ahead to how it can support possible exploitation and pursuit operations. Common guidance given is for a battery sized element of a gun-missile mix to be provided to a brigade size element. In the defense, the commander must plan for protecting the covering force, main battle area assets, rear area and reserves while again looking at future operations once the division goes onto the offensive. Finally in retrograde, the type of protection will decide different support relationships.

The principle by which ADA develops these defenses are mass, mix, mobility and integration. As shown in the historical examples, they are proven in combat. Mass is obtained when sufficient ADA systems are assigned to defend an asset and preclude the enemy from gaining an insurmountable air to ground force ratio. Mix is the providing of complementary ADA systems (gun and missile) to defend an asset. The different ADA systems with their different technical characteristics create a problem for enemy aircraft, which cannot dedicate specific countermeasures to only one system. This then forces a trade-off on the enemy. Either the enemy decreases ordnance payload to carry more countermeasure devices or dedicates selected airframes to suppression of enemy air

defense (SEAD), thus lessening the number of aircraft configured to attack the selected target. Additionally, a mix of weapon systems allow each system to provide complementary coverage and offset individual weapons dead zones.[34]

Mobility can be of two-fold importance. First, the ADA system must have the capability of staying with the supported asset, and second, the ADA system must be able to displace rapidly after firing, otherwise its position becomes untenable for follow-on attacks. Integration must be considered in two ways also. Integration, as interpreted in FM 44-1, means synchronization into the combat force in order to deliver timely and effective fires. Also, integration must be a part of the overall ADA plan to include corps and theater objectives. Instrumental in these employment principles are six ADA guidelines which must be considered : balanced fires, weighted coverage, mutual support, overlapping fires, early engagement, and defense in depth.

Command and control is an area that ranks as one of ADA's most important concerns today. Being one of the main pillars upon which the division develops its operations, C^2 in the ADA organization warrants close attention. Because of ADA's dispersal on the battlefield, the management of ADA is centralized at battalion level, but actual execution takes place at the respective fire unit, thus making that portion decentralized. Because of this concept and the lessons learned about what the forward air battle will look like, the Joint Forward Area Air Defense study group was formed as earlier mentioned. The A^2C^2 subset of ADA C^2 poses significant problems

as long as ADA remains heavily dependent upon manual FM voice passage of air defense conditions and warnings. Because of these problems, specific rules of engagement have been developed and are assigned by the Area AD Commander (normally an AF general). The right to self defense is never denied, but to insure proper and timely fires, weapons control statuses which dictate when ADA can fire have been developed. They are "weapons free," "weapons tight," and "weapons hold." These are intended to reduce to a minimum the mistaken engagement of friendly aircraft. "Weapons free" allows the gunner to fire at any target not "positively identified" as friendly. "Weapons tight" allows firing only at any aircraft that is positively identified as hostile. "Weapons hold" only allows the gunner to fire in self defense or when the aircraft is committing a hostile act such as emitting chaff or dropping airborne troops.

Heavy Division ADA Battalion.

The heavy division's ADA battalion currently has a total of 36 M163 self-propelled Vulcan Air Defense Systems (VADS), 60 Stinger Manportable Air Defense Systems(MANPADS) teams and six Forward Area Alerting Radar (FAAR) systems. Originally it had 24 Chaparral SAMs with the highly effective Sidewinder and 24 VADs and eight FAARs. The battalion is broken down into an Headquarters and Headquarters Battery (HHB) with a 15 team Stinger platoon and three each Gun/Stinger batteries of 12 VADS and 15 Stinger teams. The FAARs can either be controlled at battalion or assigned in pairs to the batteries depending on the mission and terrain.

The HHB is generally organized in the standard fashion found throughout the Army. The battalion commander, staff, headquarters battery and support elements are located there. Unique to ADA, and also found in the headquarters, are the Division A^2C^2 element (formerly known as the division airspace management element)(DAME), the AD Coordination Office (ADCO), and the Air Battle Management Operations section (ABMO).

The A^2C^2 element from the battalion serves as the liaison from battalion to division and assists in preparing the integration of ADA fires with other elements into the division fire plan. It also serves as a conduit for any information from the battalion to division and vice versa. It has no ADA weapon systems but will most likely be called upon to assist in positioning the non-dedicated Stinger systems programmed for division headquarters.

The ADCO goes directly to the nearest HIMAD unit in the division's AO and passes, via AM radio, any intelligence on enemy aircraft and the air battle as seen on this unit's radar scopes. It is a totally manual system and is reliant upon the host unit's radars being able to see into the division AO in order to get an accurate picture of what to expect. This information is then passed to the ABMO section.

The ABMO is a newly developed concept. It will ultimately become a subset of the automated SHORAD C^2 system. Currently the ABMO takes information from the FAARs, the ADCO, and any other external sources it can tap into and manually develops a picture of the air battle in as near real time as is currently possible. This information is then manually passed via FM radio to the ADA

fire units and the maneuver brigade LNOs. If any other units want to receive this air picture, they must dedicate a radio and trained personnel to keep track of this traffic or attempt to have a MANPADS section headquarters co-locate with them. Until the automated system is developed and fielded in the late 1980's, all information will be passed verbally over AM/FM radio nets, plotted manually on large plexi-glass covered mapboards, and then retransmitted throughout the division area.

The HHB has 15 Stinger teams and will be assigned missions as the S3 and Commander see the air battle picture developing and according to the division commander's priorities. Finally, three coordination teams were created and their mission is to liaison with the maneuver brigades and assist in the ADA mission.

The Gun/Stinger battery (3 each) has three platoons of four each VADS and one platoon of 15 Stinger MANPADS teams. The Vulcan is a 6 barrel 20mm cannon with a rate of fire up to 3000 rounds per minute. When compared with other nations' ADA gun systems, it is ranked near the bottom in anti-aircraft effectiveness. The system has an 1100 round drum for ammunition and capacity to carry another 1000 rounds. Reload time is approximately five minutes. As mentioned earlier, the Vulcan was developed as an interim system with off-the-shelf parts and deployed until an objective system is deployed. The effective range of the system is 1200 meters, and the system is usually never deployed in less than a platoon, though a pair can be tasked out in specific instances. The mutual supporting distance between systems is 1000 meters. VADS has limited ability to fire on the move, and is best employed when stationary and the

stabilization system enabled. It has no acquisition radar but mounts a Range-Only-Radar for calculating firing lead angle and elevation compensations for attacking aircraft. The system is mounted on the M113 Armored Personnel Carrier. It lacks the mobility to stay with the M1 and M2 as shown in documented tests. The gunner has minimal protection from small arms and is exposed to any overhead artillery bursts.

The Stinger teams consist of two men, one serving as an observer and the other as a gunner. The Stinger is a shoulder fired, ground-to-air, infra-red heat seeking, fire and forget missile system. It is equipped with an Identification Friend or Foe (IFF) system and has an effective range of approximately five kilometers. It replaces the Redeye MANPADS and has an improved head-on capability. The Stinger teams main transportation is the M151 1/4 ton jeep which is being phased out for the HMMWV. Even with the HMMWV, the teams' cross country ability to remain with the M1 and M2 is marginal at best. Again lack of armament makes the team highly vulnerable to small arms and artillery fire. The gunner when firing must stand in the open, be clear of obstacles behind him and go through a set of procedures required before firing the missile thus necessitating a need for advanced notice of approaching aircraft. If in a convoy or when moving, the Gunner must dismount from the vehicle to set up before firing. Each team carries a basic load of six missiles.

Though found in the HHB, the FAARs will normally be supporting the G/S batteries. The FAAR works in pairs so as to have overlapping coverage. It passes early warning to a Target Acquisition Data Display Set (TADDS) box with the fire unit. The

TADDs can serve as a radio receiver and tends to be used that way due the unreliability of the data display. This information is of such unrefined quality that it only alerts the gunner and does not necessarily cue him to an acceptable azimuth of attack or elevation. It only alerts the gunner as to a four kilometer square and that approaching aircraft is either friendly or unknown due to IFF replies. The FAAR is mounted on the M561 Gamma Goat which is being phased out. It is not highly mobile and is susceptible to tipping over when transiting uneven terrain. It is highly susceptible to small arms and artillery fire. The radar's area of coverage is a 40 by 40 kilometer square with the FAAR at the center. Setup and disassemble time preclude it from being used in support of highly mobile operations.

With this short description of ADA doctrine, operations, organizations, and equipment, an analysis of whether this battalion can support the heavy division will be presented.

IV. CONCLUSION

ADA Support of the Heavy Division.

Background information concerning ADA's history, the threat it will oppose, doctrine governing Army operations, and the ADA element that will attempt to carry out this mission of defending the division create a need to reflect on this element's viability. Though being just one part of a larger system, if ADA fails to meet the demands of the situation the division will falter. Parochialism aside, the division can still operate if

one infantry, armor or artillery battalion becomes ineffective. Looking at ADA's history, its operational concept, and the current ADA organization in the division, the question has been asked, "can this battalion function effectively?" Considering the operational test analyses' MOEs, the AirLand Battle tenets, and finally ADA's basic tactical concept of mix, mass, mobility, and integration, the answer is no. The next several paragraphs will succinctly demonstrate the areas where this battalion falls short but will refrain from suggesting any solutions. As stated earlier, the FAAD Work Group, JFAAD Study Group and Fort Bliss are urgently trying to find an answer to many of the same questions and shortcomings noted in this essay.

As the battlefield becomes more complex and highly automated, new priorities for ADA protection become important to the division commander. The further delineation of the battlefield into deep, rear, and close battle operations demands a total area perspective and a need to furnish a degree of protection from enemy air attack against a multitude of assets in order to carry out the mission. After looking at the background information, ADA with its present configuration and equipment leaves too many of the division commander's priority assets unguarded. This defenseless posture creates an element of chance that would inhibit the commander's freedom to act as envisioned in FM 100-5.

The increased number of automated command and control nodes, especially Intelligence/Electronic Warfare, Maneuver, Field Artillery, Logistics, and ADA itself, are just five different assets to be protected. When the commander begins to include

nuclear capable artillery, aviation assets (airfields and forward arming and refueling points), key logistics assets (ammunition supply points, fuel points, maintenance depots, etc.) lines of communications, and key terrain and structures, he should realize the immense task that the ADA battalion commander faces. And this excludes the most important element; the maneuver force itself with its reserves, covering forces, flank security, and other possible components. To state that the maneuver unit commander will just have to consider passive measures for unprotected assets is not an acceptable solution.

The weapon systems liabilities, when compared to Soviet aviation weapons systems capabilities, are too overpowering for ADA to achieve a credible defense. With threat systems capable of delivering ordnance from outside ADA weapon systems' engagement envelopes, even before positive visual acquisition can be achieved, division assets become vulnerable. With only two ADA systems to counter, enemy aircraft do not need to employ a great array of countermeasures when conducting operations. Enemy SEAD aircraft will be capable of easily defeating ADA in detail because of the lack of various mixes of ADA systems which doctrine calls for. Additionally, the possibility presents itself that under heavy air attack all missiles and bullets could be expended within the first day or two of the battle. Though not shown directly earlier, the division only contains approximately 500 Stinger missiles when including non-dedicated Stinger rounds and a basic load of 6000 rounds of 20mm per VADS. With the battalion spread across the battlefield, high

rates of expenditure and no rapid resupply will create openings for threat aircraft to pass through and destroy valuable rear assets.

The decrease in organic ADA assets of Chaparral and Stinger with a minor increase of 12 VADs places the division in greater peril than before. The definition of mix and mass in ADA doctrine are principles which were developed over time and proven in previous conflicts. To violate these basic beliefs in the interest of meeting manpower ceilings places the safety of our division in jeopardy. It is said that the corps ADA brigade will provide the additional coverage if requested. Those forces are for the corps commander to fight his battle and if this particular division does not place high up on the priority to be defended, the division will only have its organic assets to rely on.

A^2C^2 and early warning systems as currently fielded are too cumbersome and FM communications dependent to provide the real time information necessary at the fire unit. Utilizing strictly manual methods to develop an air battle picture require time and that is one element the threat will not allow our forces. Studies conducted which analyzed the Manual SHORAD Control Systems have shown that once a saturation level is reached, the early warning networks for the division collapse because of their manual dependency. Though this has created the need for an automated system, one is not programmed for several years because of a multitude of technical, [illegible]tical, and conceptual reasons. Without a proper early warning network the ADA gunner must make do. He must attempt to make adjustments for his systems'

shortcomings by applying ADA's tactical guidelines which will jeopardize his safety because of a paucity of systems available.

The mechanized infantry and armor divisions are transitioning into the most mobile and effective units that the US Army has ever fielded. One of the reasons ADA opted for DIVAD was its planned-for mobility commensurate with the M1 Abrams Main Battle Tank and the M2 Bradley Infantry Fighting Vehicle. It is known and proven that M113's and 1/4 ton vehicles are incapable of staying up with the new forces. However, this is all that ADA has to offer for the next few years. Some tactical innovations have taken place such as placing the Stinger teams on the infantry fighting vehicles, but shortage of space has prevented the gunner from carrying his entire basic load. This innovation further complicates the centralized control and decentralized execution of these limited forces.

When again considering this expansive, non-linear battlefield and then performing some basic templating of selected priority assets for ADA to defend, several problems arise. As stated earlier, ADA will fall far short of protecting even 50% of the commander's priorities. Secondly, the area defended by the systems, considering their engagement and kill envelopes, will leave wide areas of territory or air avenues of approach undefended. If we had air superiority the problem would be avoided. However, that will not be the case if our analysts are correct. Passive measures or directing the unit's attention toward an air threat and away from its mission will detract from its ability to perform its primary tasks. The latest idea of creating non-dedicated Stinger

teams for selected elements to complement the current ADA protection is only a placebo to cover some of the division's immediate airspace coverage inadequacies. With people already complaining about how complex and time consuming their responsibilities are, to train these soldiers properly to operate and engage an aircraft with Stinger can and will prove dangerous to our own fixed or rotary wing aircraft, even if Stinger is placed on a continuous weapons hold status.

Finally, ADA needs to publicize these inherent problems to all the other branches and make them more aware of the difficulties that exist. Doctrine manuals are being developed on the assumption that there will be an air umbrella or at least a minimal amount of protection. Recognition of the possibility that operations could be constrained by lack of adequate ADA will paint a different picture of how maneuver, maneuver support, and combat service support operations are conducted. Until a suitable replacement for VADS and the A^2C^2 system is fielded, the division's ability to perform its function on the AirLand Battle will need closer control, thus contradicting our basic tenets of agility, initiative, depth, and synchronization.

V. SUMMARY

What I have attempted to show in this short paper is the dilemma that faces our heavy divisions. Through use of past studies, wartime experiences, and highlights of ADA doctrine as it pertains to AirLand Battle doctrine and considering that historically we have never been ready for the first battle,lack

of adequate ADA has placed the heavy division in an untenable position. This division has the capability to conduct combat operations in two dimensions but once the third is introduced the probability of success greatly decreases and failure becomes an acute possibility. Mobility, mass, mix, and integration, basic principles of ADA, are continually violated within the present ADA battalion. Only through major changes in equipment, personnel, and combined arms operations and the perspective of those in positions of authority to make these changes, will we ever attain success in the next battle.

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