Aviation Restructure Initiative: Tactical Implications for the Heavy Division Combat Aviation Brigade

A Monograph
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Finally, it concludes that ARI is not the optimum force structure. It is, however, a significant improvement over the austere structure of today, although it falls short in resourcing for sustained combat operations. Historically, the Army has adapted to change in its environment by altering its force structure. ARI is the Army Aviation force structure for the 21st Century. It is foremost an answer to resource constraints, and then a solution of compromise which balances warfighting and technology.

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CHAPTER 1

BACKGROUND

> "A new world order is not a fact; it is an aspiration– and an opportunity. We have within our grasp an extraordinary possibility that few generations have enjoyed– to build a new international system in accordance with our own values and ideals, as old patterns and certainties crumble around us".[1]

President Bush's words, used in the preface to the August 1991 National Security Strategy, echo a new era of tremendous global change that is profoundly reshaping military roles, missions, and force structure.

The enduring national interests and objectives of the United States remain unchanged: the survival of the United States as a free and independent nation, with its fundamental values intact and its institutions and people secure; a healthy and growing economy to ensure opportunity for individual prosperity and resources for national endeavors at home and abroad; healthy, cooperative and politically vigorous relations with allies and friendly nations; and a stable and secure world, where political and economic freedom, human rights, and democratic institutions flourish.[2] However, it is the significant uncertainties present in the post Cold War world, the rising sense of international community, the growing acceptance of the democratic ideal, a changing international security environment, and a shrinking world through technology which is redefining our national security strategy. This uncertainty is also the essence of the defense challenge for the years ahead.[3] It provides the basis for a new defense strategy which implements national security strategy, recognizes competing fiscal demands, and ensures continued military strength in the midst of one of the most profound defense reductions in American history.[4]

The 1992 National Military Strategy, signed by General Colin Powell, Chairman of the Joint Chiefs of Staff, contains a number of departures from principles that have shaped the American defense posture since the Second World War. Most significant is the shift from containing the spread of communism and deterring Soviet aggression to a more diverse,

flexible strategy which is regionally oriented and capable of responding decisively to the challenges of this decade.[5] This new strategy rests on four basic requirements: an effective strategic deterrence of nuclear weapons; a forward military presence; U.S. based contingency forces that respond rapidly to crises; and a reconstitution capability to meet emerging global threats. It provides the guideposts by which we will safely restructure and reduce our military forces.

The only certainty in this period of turmoil and transition is that the military forces of the United States will be called upon to mediate economic and social strife, to deter regional aggression, and to serve in peacekeeping activities.[6] To accomplish this will require global deployability, real–time command and control, leveraged technological advantage, aggressive leadership, and the capacity to employ overwhelming combat power.

The certainty of future military operations and the requirements for success are being weighed within the context of a smaller Army structure that seems to apply a "just–in–time" production mentality. There is, however; a keen awareness of the implications in restructuring as Secretary of Defense, Dick Cheney noted;

> "If we choose wisely today, we can do well something America has always done badly before– we can draw down our military force wisely".[7]

Our future military will be smaller. The changes we have seen in the overall international environment have made this smaller force possible, and the increasing demands on our resources to preserve the other elements of our national strength have made it necessary.[8] The question is, are we making across the board reductions in our military services for social economies of scale, or are we conducting a thorough rethinking of our defense needs for a new world order? Regardless, the objectives and missions of the armed forces are perhaps the only constants in this period of rapid change.

The fundamental objective of America's armed forces will remain constant– to deter aggression and, should deterrence fail, to defend the nation's vital interests against any

potential adversary.[9] A set of strategic principles is employed which allows us to capitalize on our strengths while exploiting the weaknesses of those who might challenge United States interests. Among these principles are readiness, never allowing a "hollow" force to develop; collective security, the expectation of coalition warfare; strategic agility, rapid assembly and movement of the required force to achieve the stated objective; power projection, both from the United States and from forward deployed locations; technological superiority, the key element in deterrence and a tremendous combat multiplier in war; and decisive force, the concept of applying overwhelming force to defeat potential adversaries and thereby terminate conflicts swiftly with minimum loss of life.[10]

The recently completed Bottom–Up Review, released 3 Sep 93, is the primary means used to redefine U.S. Defense strategy, force structure, and modernization programs. It outlines the military force structure which balances downsizing, changes in the threat, and the fiscal realities of a new strategic world order.[11]

Based on a strategy of unilateral capacity and protection of specific U.S. interests, a "building block" approach of force design was adopted. It emphasizes a capacity to carry out key military missions, such as fighting and winning major regional conflicts, maintaining an overseas presence, participation in humanitarian assistance, and peacekeeping/ peace enforcement operations (this is the first time these operations have been consciously defined and protected in the Bottom–Up Review).[12] These "building blocks" are then combined to produce options for overall force structure composition during contingency force deployments.

The single largest driver of force structure requirements in the Bottom–Up Review is the capability to fight and win two "nearly" simultaneous major regional conflicts on the scale of Desert Storm.[13] Each contingency envisions "an armor–heavy combined arms offensive against the outnumbered forces of a neighboring state". As Elliot Cohen, a professor of strategic studies at the Paul H. Nitze School of Advanced International Studies points out,

that during the Gulf War the Air Force sent two–thirds of its precision guided munitions, well over fifty percent of its airlift and aerial refueling capacity, and over ninety percent of its specialized equipment (fuel pumps, water purification etc) to the Gulf War. He also goes on to note that the Bottom–Up Review asserts that after a victory in one part of the world, the military can rapidly reposition to fight a similar conflict somewhere else in the world. He states, "This reflects lamentable ignorance about what combat does to military organizations".[14]

The relevance for military force design, regardless of the validity one ascribes to the Bottom–Up Review, is that a robust, deployable, lethal, and highly versatile force structure is more than rhetoric, it is fundamental to future battlefield success.

Today, the reality shaping our force structure is the defense budget. As General Maxwell Taylor's comment following World War II indicates, it is the political process of establishing the defense budget which remains a constant in force structure determination:

> "The determination of U.S. strategy has become a more or less incidental by–product of the administrative process of the defense budget". General Maxwell Taylor

Though much smaller than the Army of the 1980's, the Army of the 1990's and the 21st Century will capitalize on the potential of technology to improve capabilities in critical areas such as, information management, lethality, battlefield mobility, protection for the individual soldier, and smaller overall force structure.[15]

As the Army reduces its force structure to comply with the ten division guidance contained in the Bottom–Up Review it has adopted a position best capsulized in the Army Modernization Plan:

> "To reduce our casualties, we must have overmatching technology which provides the means to apply overwhelming and decisive combat power while minimizing risks to our soldiers; this means that we must attrit the enemy through large exchange ratios. Of paramount importance is the size of the Army; the smaller it becomes, the more modern and technologically overmatching it must be."[16]

The essence of whether overmatching technology can compensate for reduced size is contentious at best. The high price of sophisticated technology means that peacetime buys of such equipment will not meet wartime requirements as the shortage of specialized munitions (such as scatterable mines) in the Gulf War demonstrated. High tech also means specialization. The technology that can detect, track, and kill moving armor is much less effective in operations short of war.[17]

General Sullivan points out in America's Army: Into the 21st Century; "Americans have a proclivity to seek the "silver bullet"–technological solutions that serve to make war clean and precise. Recent events in Bosnia, the Persian Gulf, the Horn of Africa, and Central America, however, suggest that conflict in the 21st century will be anything but clean and precise. Furthermore, when the nation has needed to sort out troubles such as those in South Florida and Los Angeles, technology has not offered a solution".[18]

The Army has established five modernization objectives to ensure the capacity to establish Land Force Dominance through overmatching technology. The specific objectives are to project and sustain the force, protect the force, win the battlefield information war, conduct precision strikes, and dominate the maneuver battle.[19]

In short, the Army (although considerably smaller) must possess the capability to apply decisive combat power, to win with minimum casualties, and then rapidly redeploy to another theater of operations. This mission is accomplished through high payoff technologies, a quality force, aggressive leadership, and a doctrine which recognizes that the Cold War has ended and the nature of the threat, hence, the strategy of the United States as well, has changed. As General Sullivan states; "The Army is changing in fundamental ways. We are already moving forward to the next century. We are not simply becoming a smaller Army with our vision still focused on the demands of the Cold War. We are building a new Army".[20] Army aviation is a critical part of this "new" and smaller Army.

ARMY AVIATION

> "One of the most important and contentious elements of combined arms force modernization has been defining the appropriate role of Army Aviation, particularly its armed helicopters".[21]
> General Dennis J. Reimer

Army Aviation, like other branches in the Army, is facing the realities of a shrinking force structure, and ever tighter fiscal constraints. As the Army grapples with budget decisions which directly affect the force structure, training, and modernization, the expensive component pieces (of which, Aviation is the greatest) receive increasing scrutiny. The decision becomes one of prioritization between peacetime economy and warfighting return on investment.

The Army in 1996 will be nearly one third smaller than the Army of 1991, with the Defense investment at a 50 year low in terms of Gross National Product (in 1962 our country was spending 8% of the GNP on Defense– in 1995 forecasted defense spending constitutes only 3.4% of GNP).[22] The challenge of confronting this precipitous resource drop while retaining a robust, mission first capability will increase in the future. As Major General Robinson, commanding general of the Aviation Center, stated, "The essentials in downsizing are to maintain our quality edge, to adequately equip the objective force, and to take bold measures to reduce operating costs".[23] Just as the high technology systems used in Desert Shield/Storm reflect concepts and commitments of 15, 20, and 25 years ago, so the decisions made today will directly affect our aviation warfighting capability in the 21st century.

Capable leadership, like major weapons system development and production, takes a long time to grow and mature. It is the essential dynamic of superior combat power that provides purpose, direction and motivation in combat.[24] Leadership, like high technological systems are a part of the same whole– mission accomplishment with minimum casualties. Both require time to develop and are directly affected by force structure.

The proposed answer, in Army Aviation, to retaining warfighting capacity; meeting the doctrinal mission requirements of a new National Military Strategy– deployable, lethal, versatile; remaining within resource constraints; and retaining a viable modernization program is the Aviation Restructure Initiative (ARI). Historical aviation force structure decisions provide keen insight into the projected ARI design; they are (should be) the experience base for the critical decisions that will shape structure, training, and doctrine.

CHAPTER 2

HISTORY OF AVIATION FORCE STRUCTURE

The future role of Army Aviation in combined arms warfare is being forged in the force structure decisions of today. To effectively build a force structure for tomorrow it is critical that the evolution which produced today's structure be examined closely.

The insights from previous force design changes, which faced the same dilemmas of today– personnel/equipment constraints, evolving doctrine, an uncertain future, and modernization objectives– provide a point of departure for analysis and comprehension.

Aviation Restructure Initiative (ARI) is the tailorable force structure for the nonlinear offensive battlefield AirLand Operations doctrine requires. It has embryonic roots grounded in the War Department approval of organic aviation for field artillery, 6 June 1942. Since that time aviation missions, roles, and organizational design have continued to expand and evolve.

The organizational lineage of ARI is significant. Army Aviation has evolved from an infancy based on combat service support (logistical, medical) to aerial fire support, and finally, to a position as a full member of the combined arms team. As doctrine, division structures, budgets, and command personalities changed, a corresponding change occurred in Army aviation. ARI is simply a "step" toward the 21st century given the budgetary constraints, and evolving military strategy of today.

KOREA

The Korean War was the first war involving the widespread use of helicopters. The difficult terrain and numerical superiority of the enemy combined to provide the communists with an advantage that was not easily overcome by superior firepower. The proven agility of the helicopter for front line logistics resupply, observation, medical evacuation, and initial air assault development (primarily in the Marine Corps) was validating helicopter utility and firing the vision of possibility in industry and the military.[25]

The mid–fifties were the gestation years for new tactics and techniques. Major General James M. Gavin's, Army DCSOPS, article in Harpers Magazine, April 1954; "Cavalry, and I Don't Mean Horse", recognized the potential of helicopters to revolutionize Cavalry operations.[26] His article was indicative of the vision and growth potential senior leadership recognized in the mobility differential offered by the helicopter. The Army also began to support research and development in aeronautical programs to realize this expanding new dimension of warfare– a third dimension.

Following the Korean War, the Pentomic Division (1956–1961) focusing on the nuclear battlefield, defense in depth, and decentralized offensive operations of small combined arms forces, was adopted. This structure was the Army's doctrinal answer in a period of "massive retaliation", or as Russell F. Weigley describes, "a strategy of deterrence".[27]

The Army struggled with reduced force structure eventually bottoming out at 14 divisions, by 1961, and a budget only half of what it had been just two years prior.[28] Doctrine was also evolving; from a nuclear orientation to one of conventional and nuclear. This resulted in a return to the highly mobile triangular division format of World War II and Korea. It was amid this transition and attempt to define divisional structure and mission– conventional, nuclear, or both, that aviation began to grow and mature into a full member of the combined arms team.

On 15 January 1960, the Army Chief of Staff established the Army Aircraft Requirements

Board chaired by Lieutenant General Gordon B. Rodgers, to consider the Army Aircraft Development Plan and to review industry design proposals. On 1 February 1960, forty–five companies submitted 119 design concepts as solutions to the problems posed by the Requirements Board.[29]

The Rogers Board made recommendations regarding three types of aircraft, observation, surveillance, and transport. The Board also recommended the policy of replacing each model at least every ten years or sooner if warranted by operational requirements or technological advancements. Given the current fleets average age of (20+) this recommendation was obviously disregarded. It further recommended the Department of the Army prepare an in–depth study to determine the concept of "air fighting units". On 19 March 1960, the Army COS approved the recommendations. This provided essential aviation guidance for development, procurement, and personnel planning.[30]

VIETNAM

> "Many operations in Vietnam would be structured around the limitation of available helicopters rather than the more basic considerations of the enemy threat. Indeed, the management of aviation assets would soon become a major preoccupation of every senior commander.[31]

In 1962, based on a recommendation by General Maxwell Taylor, President John F. Kennedy approved increased support to South Vietnam. The 57th, 8th, and 93rd Transportation Company's (Light Helicopter) were soon flying from the deck of the USNS Card to Da Nang Air Base.[32]

While the first Army Aviation units were deploying to Vietnam events in Washington, D.C. were occurring which would have a profound influence on the future of Army Aviation and force structure development. These events included the reorganization of Army divisions, an increase in the number of divisions, the Berlin build–up, and increasing insurgency operations throughout the world. There was a greater demand for helicopter

support that quickly outpaced procurement and available resources.[33]

In April 1962, Robert S. McNamara, Secretary of Defense, after reviewing Army aviation plans and procurement, requested a complete study of all aviation requirements. The report was completed in November. After a thorough review of the report, McNamara sent a memorandum to the Secretary of the Army stating that the Army's program was dangerously conservative. Specific comments were:

1. The Army had not fully explored the opportunities offered by technology to break their traditional ties to surface mobility
2. Air vehicles offered a quantum increase in effectiveness
3. Air transportation was less costly than rail or ship.

Secretary McNamara directed a reexamination of tactical mobility requirements, divorced from traditional viewpoints and past policies, and free from veto or dilution by conservative staff review. He wanted the procurement process accelerated with new concepts developed to capitalize on the inherent flexibility offered by the helicopter.[34]

The basic tenets outlined by Secretary McNamara remain consistent in today's struggle to shape force structure within resource limits. There is a focus on modernization through technology infusion, a vision and progressive attitude to structure aviation for the future, and the senior leadership support to carry concepts into reality.

On 25 April 1962, General Hamilton H. Howze, commanding general of the XVIIIth Airborne Corps was appointed president of the United States Army Tactical Mobility Requirements Board. The Board was formed to examine the role of Army aviation and overall aircraft requirements in response to Secretary McNamara's directed examination. The "Howze Board", over the course of the next three months, conducted over forty tests ranging from elaborate live fire exercises to auxiliary tests of new equipment.[35]

The final report of the "Howze Board" was submitted 20 August 1962. It recommended the formation of an air mobile division. This tactical innovation would consist of 459 aircraft

with a corresponding reduction in ground vehicles. Despite the reduction in vehicles, it was still 1.5 times the cost of an infantry division. It consisted of 3 brigades to which fighting battalions and support elements were assigned based on the mission and terrain. The Board also recommended the organization of an Air Cavalry Combat Brigade (ACCB) consisting of three airmobile infantry battalions, two air cavalry combat squadrons, one air assault battalion, one aerial artillery battalion and other supporting elements– a total of 316 aircraft, 144 of which would be attack aircraft.[36]

General Howze's preface letter to the final report stated, "The time made available, . . . was quite sufficient to chart a course of action which will serve to increase markedly the combat and logistical efficiency of the Army". The major conclusion reached by the board was emphatic:

> "Adoption by the Army of the airmobile concept– however imperfectly it may be described and justified in this report– is necessary and desirable. In some respects the transition is inevitable, just as was that from animal mobility to motor".[37]

The initial plan for meeting the "Howze Board" recommendations was issued on 7 January 1963. It outlined the organization, training, and evaluation criteria for the test division which was activated on 15 February 1963, as the 11th Air Assault Division. It consisted of 3023 personnel and 154 aircraft (125 helicopters, 29 fixed wing). Major General Harry O. Kinnard was selected to command the Division.[38] In March 1965, the 11th Air Assault Division (Test) was integrated into the force structure and assigned the colors of the 1st Cavalry Division, (see Appendix A, figure 1).

On 1 July 1965, the 1st Cavalry Division (Airmobile) was officially activated and on 25 August the advance party arrived at An Khe in the Republic of Vietnam.[39] The 101st (Airborne) Division soon followed the 1st Cavalry Division and was converted to an Airmobile Division in 1968. The 1st Cavalry Division (Airmobile) organization remained

essentially the same, except for decentralizing its maintenance, until August 1970 when two provisional air cavalry troops were formed using the Assault Weapons Company's of the Assault Helicopter Battalion's and attaching necessary aircraft and personnel from other Division units. This enlarged the Air Cavalry Squadron to five troops and greatly increased the Division's capability to cover its extended operational area.[40]

It was also during this time that the Army initiated the Aviation Requirements for the Combat Structure of the Army (ARCSA I) study, 6 June 1965. ARCSA I was chartered to determine aircraft and personnel requirements for the FY 1967–71 time frame. The study focused on a Soviet/Chinese threat using echeloned offensive tactics. It concluded that airmobility was sound, aerial fire support for airmobile operations was required, and that the Army needed to purchase over 4500 aircraft to satisfy doctrinal mission requirements.[41]

Shortly after ARCSA I was completed ARCSA II was initiated as a follow–on study to determine aviation force structure for FY 1968–72. It was subsequently completed on 31 March 1967. The study remained tied to a general or limited war in Europe, but also recognized an insurgency threat similar in scope to Vietnam. The tactics and doctrine evaluated in ARCSA II grew from Vietnam and varying levels of conflict in Europe. ARCSA II recommended that the ACCB organization be modified because it was not suitable for a western European scenario. However, the Air Cavalry Squadrons organized with three antitank troops and one aerial weapons troop did possess a significant capability for western Europe.[42] Attack helicopters, however, were still primarily employed as airmobile escort.

FORCE STRUCTURE DEVELOPMENT

Following Vietnam, the Heavy Divisional Aviation Brigade went through an extensive period of development beginning with the triple capability (TRICAP) study. A conventional combined arms fighting force of armor, airmobile infantry, and air cavalry were tested under

the MASSTER (Modern Army Selected Systems Test Evaluation and Review) program. The 1st Cavalry Division was activated on 5 May 1971 as the base unit for the test, (see Appendix A, figure 2).[43] Although the TRICAP experiment did not survive, the basic idea of combining ground and helicopter forces in a divisional structure did. Maneuver forces consisted of two armor brigades, and one ACCB.

The base element of the aviation structure during the test was a platoon of four scouts and seven attack aircraft. Each Attack Helicopter Company (AHC) or troop consisted of three platoons and each Attack Helicopter Battalion (AHB) had three AHC's. The ACCB consisted of 3 AHB's, however, only two were approved. The inability to provide a balanced day/night, adverse weather capability, and a relatively non–mobile logistical support structure severely restricted ACCB maneuverability.[44]

The Army continued to study methods of streamlining command and control, achieving mass for decisive combat operations, and of fully integrating aviation into the combined arms team. The Division Restructuring Study (DRS), May–Dec 1976, was tasked to develop a new heavy division structure which would integrate and optimize the employment of new weapons predicted to enter the Army inventory in the 1980's. The Advanced Attack Helicopter (AAH) was one of these new weapons. A Division Restructuring Evaluation (DRE) was initiated in Feb 1977 to evaluate the DRS and to make a recommendation to the Army COS, by Oct 1979, on the operational concept and the organizational structure for this new Army heavy division.[45]

Concurrently, with the DRS evaluation, the COS requested an ARCSA III study. It was initiated Jan 1976, to evaluate current and future aviation organizations for the period FY 1977–86. The study was chartered to use real world personnel and equipment constraints, to incorporate the army's modernization plan, and to remain oriented on western Europe. The results were: consolidate the 850 aviation TOE's in the Army structure; configure attack helicopters into an optimum mix of 21 attack, 12 observation, and 3 utility for command,

control, and maintenance reasons; and the forward deployment of these assets to destroy attacking enemy armor which would create favorable force ratios for ground commanders in Europe.[46]

The thought that, "what can be seen, can be hit, and what can be hit can be killed," grew from lessons learned following the 1973 Arab–Israeli war and was a consideration in concentrating on the armor killing power of the attack helicopter. An attack helicopter mission statement to "locate, disrupt, and destroy enemy armored and mechanized forces by aerial mounted combat using fire and maneuver" was soon developed. [47] This became the precursor to attack helicopter maneuver doctrine which would eventually include deep operations. ARCSA III also recommended homogenous units, attack, scout, and lift, to meet resource constraints and mission requirements.

DIVISION 86

In September 1978, General Donn A. Starry, TRADOC commander, redirected the effort of the DRS study, to focus on defeating massed armor formations in a European NATO scenario. This requirement and the publication of Airland Battle doctrine in 1982 fundamentally changed attack helicopter employment.[48] A significant weakness of the Active Defense was its inability to handle the uncommitted second echelon. As a result, the new doctrine focused on deep operations in terms of depth, time, and means of attack. Attack helicopters, deep maneuver, became part of the solution to the means of attack.[49]

A refinement was directed by the TRADOC commander in April 1978, to examine centralizing all aviation assets under one commander. The result was the removal of the Divisional Cavalry Squadron from Division Troops, and putting it under the Division Combat Aviation Brigade commander. The new cavalry squadron design reflected a change in doctrine which eliminated the requirement for the divisional cavalry squadron to conduct either a delay or economy of force mission; it also increased aircraft maintenance efficiency.

The Air Cavalry Attack Brigade (ACAB) that resulted was now established as the fourth maneuver brigade. It stressed the tank killing power of the attack helicopter, removing it from the realm of fire support, and its ability to maneuver to support the ground commanders scheme of maneuver. This final organization had a strength of 2022 personnel (147 aircraft) and consisted of the divisional cavalry squadron, a combat aviation support company, a general support aviation company, and two attack helicopter battalions.[50]

As the Army began the transition to the heavy division structure approved by the Chief of Staff, senior leadership determined that serious problems would be encountered in attempting to man the force. Manning constraints meant that the heavy division could not be fully manned, and that the division was too large and cumbersome to effectively move about the battlefield. This resulted in a "hollow" army. Available resources could not meet the personnel and equipment requirements established by the force design.[51]

ARMY OF EXCELLENCE (AOE)

The original Div 86 design was based on three fundamental assumptions: the heavy division would be structured at approximately 18,000, separate maneuver brigades would be eliminated, and the 6th CBAC would be eliminated to provide the airframes and personnel to field the division aviation organizations. None of the assumed actions occurred. This resulted in manpower and resource shortfalls.[52] To correct the shortfalls the CSA directed a review of the design to propose a solution for incorporation in the April 1982, Program Objective Memorandum. This review was known as Task Force 86 and had the specific objective of providing a revised design not to exceed 18,250. TF 86 completed its review in April 1982. Proposed recommendations were approved and documented in the J-series TOE.[53]

The Army's emerging Airland Battle doctrine required the corps commander to

orchestrate the battle through a corps operational plan. A review of corps assets revealed that most of the corps was dedicated to supporting the division, and that the division possessed combat support assets equal to or in excess of those at the corps. The corps commander had insufficient resources, at the corps level, to influence the battle in the manner that doctrine dictated. During the July 1983 Commanders Conference the CSA asked TRADOC to undertake a study to suggest design initiatives, force restructuring, and modernization while decreasing the Army's "hollowness" and improving the corps commanders ability to execute Airland Battle doctrine.[54] An Army of Excellence (AOE) study group was established at Fort Leavenworth. AOE goals were to design a new light infantry division of approximately 10,000 personnel, reduce divisional end strength while retaining doctrinal fighting capability, and enhance the corps combat capability.[55]

Two approaches to decrement the design were to apply a reduction to each unit by a percentage or to remove force structure. The decision was to preserve combat force structure by decreasing the logistical support base. There was a design emphasis on "minimum" rather than adequate or optimum; AOE was to become the Army of Emptiness.[56] ARCSA IV was initiated, 27 May 1983, to structure a total aviation force within AOE constraints which could still execute AirLand Battle Doctrine, from 1986 through 1990.[57]

The impact on the division combat aviation brigade was significant. The second AHB was moved to corps to provide the corps commander a flexible, responsive asset to execute ALB doctrine. Additionally, all door gunners were deleted, instead, mechanics were dual trained to offset the reduction; the maintenance company was moved to DISCOM; the Division Aviation Company was converted to a Combat Aviation Company; pilots were resourced at a rate of one per operational aircraft, (not one per seat) which meant that the battalion staff was required to fill seats as primary pilots during the course of the battle; logistical support, aviation and automotive, personnel were reduced and shortfalls by as much as 40% below the Minimum Mission Essential Wartime Requirement (MMEWR) were

common; and the AH–1 Attack Battalions were converted to AH–64 Battalions. Also, ARCSA IV formally created the Division Aviation Brigade and resourced it with an 06 brigade commander and requisite staff, (see Appendix A, figure 3).[58]

AOE represented an alternative heavy division design that capitalized upon the fundamentally sound Div 86 organization while accommodating the current state of fiscal reality. In AOE, the pendulum had swung towards austerity.[59] Reductions in personnel were not accompanied by a corresponding reduction in the scope of mission requirements. Critical staff planning functions, 24 hour operations, and multiple tactical operations centers were not possible.

ARCSA V

The Aviation Systems Program Review, 12 July 1990, generated a task to develop an aviation design consistent with Airland Operations doctrine, evolving world realities, and the proposed reduction of Army forces. An ARCSA V study group was established by the U.S. Army Combined Arms Command from 29 October 1990, through 1 June 1992.[60]

This eighteen month study was chartered to develop an aviation force structure for the 1995 through 2004 time frame capable of conducting Airland Battle Operations, resolving inconsistencies between TOE mission statements and operational capabilities, and ensuring the warfighting capacity at corps and below against a 2004 threat.

The study designed "building block" units at company and battalion level to support an Army composed of four corps and twenty divisions (including two cadre divisions). The ARCSA V study terminated prior to the completion of all study objectives because the final design of the aviation force was dependent upon our base doctrine which was under revision, and concern from Fort Rucker on who should have responsibility for the study.[61]

The ARCSA V study developed three aviation force structures– an unconstrained low risk aviation force structure for the year 2004, and two constrained interim structures (1995

and 2004). Constraints were in the form of manpower ceilings established by TAA 99 (61,600) and Army Acquisition Objectives (AAO) specified by the 1991 Army Aviation Modernization Plan (AAMP). These parallel closely the constraints from which ARI was developed– manpower ceiling of 52,653 established by TAA 01, and the same AAO specified in the 1991 AAMP.[62]

The ARCSA V study made several recommendations, based on its research and simulations, that should form a conceptual foundation for further force design. Although not inclusive, some to consider are:

1. The proposed force structure can accomplish all Airland Operations battlefield roles, missions, and functions envisioned through 2004.

2. AOE deficiencies must be fixed. The most critical are the formation of the aviation support battalion and the command aviation battalion headquarters.

3. The RAH 66 "Comanche" is 25% more deployable (25% less C5 or C17 airlift is required) and provides greater mission versatility, and lethality.

4. Crew to Seat ratios under AOE are 1:1. The Army Aviation Personnel Requirements for Sustained Operations (AAPRSO) study recommended an AH–64 ratio of 1:1.25. ARCSA V found a ratio of 1:1.4 was required, but because of the scenarios short duration a recommendation of 1:1.25 was selected. Regardless, it is clear that sustained combat operations require a greater than 1:1 pilot to seat ratio.

5. ARCSA V also recommended the assignment of door gunners not only to each utility helicopter in the assault helicopter battalion but to each utility helicopter in the aviation brigade, the regimental aviation squadron, and the light cavalry regiment.[63]

ARCSA V examined the implications for Army Aviation as a result of Airland Battle operations and then applied it to force structure design. It was devised as a smaller, homogenous force capable of projecting power, versatile in response to rapid change, and able to fight in joint and combined environments. To achieve this, units were standardized

into building blocks and designed around one type of aircraft whenever possible. The ARCSA V constrained force structure remained within stipulated endstrengths.[64] It is interesting to note that the proposed interim force recommended by the ARCSA V study group resulted in a manpower strength of 50,456 which is below the ARI constraint of 52,653.[65]

Army Aviation employment requires robust personnel manning– maintenance, staff, pilots, and doorgunners, to satisfy doctrinal requirements for a sustained twenty–four combat capability. The much publicized, September 28th, 1990 General Accounting Office Report to Congress, highlighted this requirement when it evaluated apparent critical shortcomings of AH–64 maintenance. It stated;

> "Apache availability rates fall well short of the goal (70%) . . . given that the Apache has not been able to attain availability goals in peacetime despite favorable conditions, it is questionable whether it can meet the far more strenuous demands of high–intensity combat".[66]

It went on to say, "below the surface of the low availability rates are serious logistical support problems such as undersized maintenance organizations, weaknesses in repair capabilities, and frequent component failures". The GAO report concluded with the recommendation that the 132 Apaches not yet under contract at the time not be produced so that more resources could be applied to address logistical support shortfalls.[67] Congress did not act on this recommendation, and in fact, the Army contracted for 66 more Apaches, eventually purchasing a total of 807.

During the recent Gulf War the Apache performed well, maintaining an operational readiness rate above 90% (227 were in the theater), which seems to contrast sharply with the GAO report. However, as MG Robinson notes, "During Operation Desert Shield, contractors performed aircraft maintenance while soldiers performed details".[68]

Guidance to the ARCSA V special study group was to resource adequately to correct this problem. Further guidance oriented on fixing units with no reliable night aviation capability (Division Air Cav, Armored Cavalry, and Light Division Aviation) which are currently bound to night vision goggles; staying within affordable numbers of aircraft and personnel; accepting, but minimizing short term risk for a long term fix; and retiring obsolete, inadequate airframes. The proposed ARCSA V heavy division structure is at Appendix A, figure 4.[69]

The Aviation Restructure Initiative represents the solution to current problems of force structure design within constrained resources similar to those of the past. It must balance modernization, AirLand Battle doctrine (across the entire spectrum of war), personnel, and equipment against the demands of deployability, versatility, force protection, digitization, precision strike, domination of maneuver battle, 24 hour operations (day, night, adverse weather), adaptability, and an overall smaller force structure.

History clearly illustrates this is the same "battle" of prioritization that has been fought since the inception of Army aviation. It also highlights some key points: 1) force structure at the expense of the support base leads to a hollow organization without the necessary OPTEMPO required of a modern battlefield; 2) modernization must be resourced to maintain a technological advantage; 3) homogenous units provide the building blocks of design; and 4) leadership development must be considered since it is directly affected by force design.

The recently released, February 1993, Chairman of the Joint Chiefs of Staff Report on the Roles, Missions, and Functions of the Armed Services of the United States– February 1993, stated; "The rapid evolution of the attack helicopter as an integral element of the forces engaged in ground maneuver warfare was underscored during the Persian Gulf War. The omnipresent attack helicopter, advancing just above coalition ground forces, was one of the classic images of Desert Storm. The successful integration of the attack helicopter

into modern ground operations can be attributed to two factors. First, tremendous technological advances have been made in modern helicopter weapons systems. Second, the introduction of these advanced weapons into our aircraft inventories was accompanied by a revolution in battlefield tactics. The ground battlefield has become a three–dimensional battlespace where the attack helicopter's advanced features give the ground commander unprecedented battlefield vision, mobility, and striking power."[70]

ARI must ensure that Army aviation possesses the structure, equipment, and trained personnel to fight the next Desert Storm, as well as, operations across the entire spectrum of war.

CHAPTER 3

AVIATION RESTRUCTURE INITIATIVE- ARI

> "The rate at which changes are incorporated into the force is a prime leadership consideration. The Army leadership avoids jeopardizing unit cohesion and capabilities by pursuing a suitable pace of change that maintains the health of the institution. Two detrimental effects result from change conducted at too rapid a pace. First, change conducted too rapidly can result in a less capable force. . . The second effect of too rapid change is a waste of precious resources." [71]
>
> General Gordon R. Sullivan

General Sullivan's comments echo the current period of uncertainty that our new military strategy is designed to confront, and to which our doctrine provides a foundational basis, see Appendix C. The Aviation Restructure Initiative, approved on 3 February 1993, by the Chief of Staff of the Army, during the Winter 93 Force Design Update,[72] is the engine of change for Army Aviation over the next decade, and although it would be easy to debate endlessly the merits (pro and con) of implementing ARI, it would be of little utility.

The central question at the Division Combat Aviation Brigade level, which is the orientation of this study, and more specifically, a heavy division; is whether or not ARI can

accomplish design goals, and what the tactical implications are for employing this force structure. The criteria for making assessments are based on the Battlefield Operating Systems (BOS), on–going Tradoc Analysis Center (TRAC) studies, and investigation into previous studies (Scout/Attack, ARCSA V, etc).

Questions of too rapid change; unit turmoil (equipment transfer and personnel retraining/ separations); new tactical concepts; four aircraft models in three unit designs; unit inactivations/reactivations; reorganization ahead of doctrine; acquisition strategies which do not align with modernization objectives; increases in the reserve component when our strategy is rapid reaction, force projection; and no formal study, such as Div 86 or ARCSA to objectively analyze design proposals, are of minimal value. The task now becomes one of assessment and implementation.

Recognizable within ARI is the acceptance of near term readiness risk. A central question to ARI, and for that matter the Army as a whole, is: Are we allocating shortages as opposed to defining requirements? The process is one of shortage apportionment, based on OPTEMPO dollars and mandated resource constraints. As Army budgets continue to decline in real terms, the intellectual environment moves to the information age, the strategic environment is uncertain and unstable, and modernized equipment leads us to revolutionize the way we think about, prepare for, and ultimately engage in war; Army Aviation is required to anticipate, and, given its resource box– stay trained and ready while ensuring change does not lead to a less capable force or a waste of precious resources, as General Sullivan warns.

Force structure decisions to allocate resources to support the new design were made in the Total Army Analysis 01 (TAA 01) process. The objective of ARI is to design Aviation force structure within Total Army Analysis (TAA 01) personnel constraints of 52,653 (Compo 1–27,696; Compo 2–19,975; and Compo 3–4,982); to fix AOE deficiencies (see Appendix B for specific AOE deficiencies); ensure modernization; reduce logistics costs; retire old

aircraft; compliment AirLand Operations doctrine; and to provide a fightable, sustainable and lethal force.[73]

A concern resulting from ARI pertains to fielding the attack helicopter battalions. Currently, only the 24th and 1st Cav divisions are resourced a second attack battalion (one from the National Guard and one from the USAR respectively). All other heavy divisions receive only one, the other is unresourced– Compo 4. There are, however, nine in the reserves (7 in the NG, and 2 in the USAR). This means that of a total TAA allocation of 25 AHB's, over one–third are in the reserve.

The situation is even worse at the corps level with XVIIIth ABN Corps receiving two, I Corps receiving two (both of which are forward deployed to Korea), and III Corps receiving only one. The 101st Air Assault receives two. First–to–fight units in a rapid deployment, "come–as–you–are", force projection Army should receive priority. This translates into an active component completely filled force structure.[74]

The Aviation Restructure Initiative, although separate, will incorporate Longbow Apache (AH–64 C/D) modifications and eventually the RAH–66 Comanche. All AH–64's will eventually be modified at the McDonnell Douglas Helicopter Company beginning in Nov 1996; the program has an estimated completion date in FY 2008. Aircraft modifications include the millimeter wave fire control radar (FCR–227 of them), improved weapons processors, MANPRINT (Manpower and Personnel Integration) cockpit, improved data modem (IDM), improved navigation with imbedded GPS, improved cooling, a radio frequency interferometer (RFI), and the reduction of electrical wiring. AH–64C's (580 of them) will be the same aircraft as the "D" model except that they will not have the 701C engines, the FCR, or the RFI.[75]

The capabilities, limitations, and tactical impacts of the Longbow Apache and Comanche are beyond the scope of this paper. However, Aviation Brigade commanders will confront challenges resulting from the fielding of Longbow while reorganizing to the ARI

structure. Additionally, there is a potential fielding overlap from 2003 to 2008 when both the Longbow and Comanche are fielding aircraft, if the current schedule remains accurate. The Apache A+ interim update is also ongoing. It consists of system enhancements such as GPS, high frequency radios (only one per every other aircraft, although all are modified), single channel ground and air radio system (SINCGARS), 30mm gun improvements, and IFF performance improvements (this list is not all inclusive). Apache A+ modifications are conducted at home station or OLR sites.[76]

Under ARI aviation brigade commanders will be required to balance considerations such as: 2715 readiness reporting; unknown transfer cost and criteria; determination of flying hour adequacy and reallocation; requirements for intermediate storage of aircraft and equipment; TDY costs; readjustment of PLL/ASL to support different aircraft models; unit certification and training to ARTEP standards; equipment transfers (there are over 3000 equipment moves in each battalion); cost under stock funding depot level reparable (SFDLR); the possibility of initially fielding pure "D" model attack battalions to gain production efficiency, then balancing the radars across the force structure; logistical and personnel impacts; and within the midst of this transition– taking care of soldiers and their families.

Some specific training issues are, the current lack of a Longbow Apache simulator, although a device similar to the Cockpit Weapons Emergency Procedures Trainer (CWEPT) is under development; limited live missile firings (approximately $235,000 cost per missile); unfunded MILES/AGES interface through the Tactical Engagement Simulation System (TESS) into Longbow; lack of a maintenance trainer; changes to employment concepts, tactics, and doctrine; and the challenges of training to standard in a period of diminished resources.

HEAVY DIVISION STRUCTURE

The Heavy Divisional Combat Aviation Brigade structure under ARI consists of a headquarters and headquarters company, two attack helicopter battalions (one active duty, Compo 1, and one compo 4 (unresourced), except for the 24th ID(M) who receives a NG battalion; and the 1 CD who receives a reserve battalion), a general support aviation battalion, and the divisional cavalry squadron. Standard configurations for the AHB, GSAB, and Div Cav Squadron provide a base for the redesign development.[77] A divisional aviation support battalion (DASB) from the DISCOM provides consolidated air and ground logistical support, (see Appendix A, figure 5).

The previous Attack Helicopter Battalion organization of 18 AH–64, 13 OH–58, and 3 UH–60's is changed to a pure 24 AH–64 aircraft battalion consisting of three companies of eight aircraft each. Each company is organized with a scout platoon of three aircraft and an attack platoon of five aircraft. It includes an interim configuration of 9 AH–64's designated as scouts to perform reconnaissance, security, and air combat missions. The remaining 15 are designated as attack aircraft. The objective configuration is 9 RAH 66's and 15 AH–64C/D's, (see Appendix A, figure 6).[78]

The AH–64 "scout" configuration consists of 1 Aux fuel tank, 4 ATAS missiles, 4 Hellfire missiles, 19 2.75" rockets, and 1200 rounds of 30mm [79] (ATAS is currently not being installed; to mount the aux tank requires purchasing the tank: Tank, Fuel, A/C, survivable, external: 1560–01–237–3714, $10,809; and the requisite plumbing: Installation kit, wing tank plumbing, $14,397 which is for all four points and can be used for two aircraft).[80]

The General Support Aviation Battalion (GSAB) consists of an HHC, Command Aviation Company (CAC) with 8 UH–60's, 6 OH–58's, and 3 EH–60's; two general support companies with 8 UH–60's each; and an AVUM company, (see Appendix A, figure 7).[81]

The Divisional Cavalry Squadron consists of an HHT, three armored cav troops, two air cav troops, and an AVUM troop. It is also undergoing an organizational change with the

reintroduction of tanks. Each of the three ground troops is modified to consist of two recon platoons of six CFV's each, and two tank platoons of four tanks each. The previous air cav troop organization consisted of six OH–58's and four AH–1's. The ARI interim reorganization results in three pure troops of eight OH–58D's or AH–1's; however, only two troops (16) are resourced. The objective reorganization consists of 24 RAH 66's, except National Guard units which retain AH–1's, (Appendix A, figure 8).[82]

CHAPTER 4

GENERAL ANALYSIS

ARI table of organizations (TOE's) are filled to one hundred percent of MARC (Manpower Requirements Criteria), using the new (15 May 1992) AAMPM (annual available MOS productive man–hours) data. MARC figures are based on aircraft density, DA flying hours, equipment reliability, maintainability, and mechanic availability. The new Department of the Army MARC figures had the effect of decreasing the number of personnel required by increasing the productive manhours: previous annual manhour factors were AVUM– 2700, AVIM– 2436; current factors are AVUM– 3176, AVIM– 3230 (soldier availability also increased from 4.6 – 9.4 to 8.6 – 12.0 hours per day depending on the type of unit); a substantial increase in productive manhours.[83] Basically, the change resulted in a paper savings which lowered shortages. If previous MARC computations were applied a total of 321 personnel would be required; old maintenance MARC figures are approximately 25% greater.[84] The total ratio of maintainers per AH–64A; however, did increase from 5.7 to 7.1 under ARI.

The brigade headquarters increased from 81 to 93 personnel. Included in this change are: an HHC XO, an Air Defense officer, a military personnel technician, an SIP in the S3 section, a tactical operations officer, two NCO's, and five soldiers. The brigade liaison capability improves from two to three, and overall the brigade goes from approximately 1670

personnel and 118 aircraft, to 1743 personnel and 97 aircraft.

The ARI structure does not provide a robust 24 hour planning capability in the attack battalions (an AOE deficiency). Commissioned officer increases are: a 25C signal officer, a 56A chaplain, a 61N flight surgeon, a 15A HHC XO, and a 15C35 tactical intelligence officer. The S3 section remains unchanged with planning, current operations, and coordination conducted by the S3 and assistant S3. Unit manpower does not match the 24 hour capability of the sophisticated systems. The primary advantage is that staff officers are no longer required to fill aircraft seats. There remains only one assigned liaison officer (no vehicle) which limits C3I capability. Attack battalions go from 295 personnel and 34 aircraft to 302 personnel and 24 aircraft.[85]

Attack helicopter battalion flight companies (27 total personnel) are resourced one pilot per seat and can now crew all aircraft. This contradicts the AAPRSO study and ARCSA V recommendation, and given continuous, sustained combat will seriously degrade operational capability. If staff pilots are counted the ratio is 1: 1.15. As Major General Frix stated; "The current policy of resourcing pilots at a rate of one per seat does not meet the requirements of full combat operations. Limited pilot availability equates to a limitation of combat capability and flexibility for the ground commander."[86]

Warrant officer changes include: an increase of three maintenance officers (152FG), one for each additional platoon, which translates to more test pilots per aircraft; one additional standardization instructor pilot; three additional armament maintenance officers (152FE); and the redistribution of all OH–58 and UH–60 pilots. Of the eighteen (152FO) AH–64 pilots: three will have the additional skill identifier of H3 (Aircraft Survivability Equipment), and six will have an H2 (Aviation Life Support Equipment) identifier, both areas required the additional emphasis.

The ARI design also does not appear to completely support the bottom–up review for "building block" unit designs. As previously noted, there is no staff robustness for 24 hour

operations, a limited liaison capacity in the attack battalion and general support aviation battalion, no school trained intelligence officer (currently an aviation officer not an intelligence officer), no field artillery officer; and no A2C2 or Air Traffic Services capability at the division level. ARI does, however, consist of homogenous units which are, in themselves, deployable building blocks, but they lack the robustness required for sustained independent operations. They are not stand alone organizational structures.

ARI requires the brigade to task organize internally to conduct rapid deployment force projection. In effect the brigade becomes the smallest deployable force package, and the brigade commander becomes a key resourcer of operations, even more than in the past. Habitual training relationships must be established and enforced, this includes, force tailoring, common standard operating procedures, and command emphasis to ensure standardization.

Another rapid deployment consideration includes the Division Aviation Support Battalion (DASB) slice required to sustain operations. The current DASB is not configured in a modular design, contains little depth in critical low density Military Occupation Specialties, and must be tailored to deploy.

MANEUVER

Movement relative to the enemy to put him at a disadvantage. Maneuver refers to the employment of forces through offensive or defensive operations to achieve relative positional advantage over an enemy force to achieve tactical, operational, or strategic objectives.[87]

MG Robinson defined aviation maneuver, "to place the enemy in a position of disadvantage through the flexible application of combat power in the third dimension."[88] The August 1993, Aviation Warfighting Treatise states; "Combat aviation is primarily employed against deep targets and on flanks, secondarily in support of ground maneuver elements in the close fight".[89]

Impacts on maneuver are significant, especially considering the doctrinal shift to deep operations, and secondarily in support of the ground maneuver element in the close fight.[89] Division commanders have an improved capability with 24 as opposed to 18 AH–64's, but their focus remains on the close fight, with deep being a relative term which roughly translates to approximately 35km forward of the FLOT. This contradiction of prioritizing deep operations over the close fight, while concentrating aviation force structure at the division level, whose focus is the close fight, is in opposition to AirLand Operations doctrine, which emphasizes the corps commander shaping the close fight through aggressive deep operations. The integration of deep fires, EW, aviation deep maneuver, JSEAD, A2C2, intelligence, and the many moving pieces of deep operations are more easily synchronized at the corps level.

Additionally, it is easier to OPCON a corps attack battalion to a division aviation brigade to execute close operations, than it is for a division attack battalion to execute corps deep operations. As previously noted, this was one of the primary reasons behind the development of ARCSA IV and the Div 86 force structures (it was also a design criteria of ARCSA V); the corps commander needs a robust aviation maneuver element to conduct AirLand Operations. General Crosbie E. Saint notes:

> "Corps sized forces are the future decision–achievers. Corps are the largest self–contained US combat force generating the required combat power simultaneously to fight deep, close, and rear operations on the future extended battlefield. Also, no other force can accept, control, and if need be, sustain the multinational forces. . . The Aviation Brigade is the Corps commander's force to maintain the initiative, to shape developing operations and to influence the battle outcomes of the islands of violent conflict that will drive the division's battles."[90]

Training and Doctrine Command publication of the Army Operational Concept for Aviation recommends that doctrine be modified; "to reflect the predominant role of aviation at division level".[91] This translates to a change of focus for the Division Aviation Brigade commander which may contrast with the Division commander's concept.

Under the recently released Chairman's update on the Roles, Missions, and Functions of the US Armed Services, Army Aviation was recommended to assume responsibility (with the USAF) for providing Close Air Support (CAS) to Army ground forces. The impacts, and how it might be executed are pending issues for Army aviation doctrine.

The objective ARI divisional cavalry design provides a night operational capability, flight performance necessary for global operations, and ensures survivability and effective reconnaissance through state–of–the–art sensors. The OH58D (or AH–1) interim configuration is replaced by Comanche which is optimized for the night, adverse weather, reconnaissance and security mission. It provides real time combat information, the interface capacity into tomorrow's digitized battlefield, in addition to an armed reconnaissance capability that is currently deficient in Army aviation. The cavalry squadron will now have the capability of fighting the critical recon/counterrecon fight to deny information to the enemy and develop the situation to the front and flanks of the division. The Comanche also provides the divisional cavalry commander with an attack capability, if required.

The interim design of 16 OH–58D is limited to night vision devices for flight, but does offer enhanced night reconnaissance over the current force design. Perhaps the single greatest deficiency, which is not necessarily a function of the force structure, and is common throughout Army aviation, is the lack of an air combat capability. Currently, there is no fiscal resourcing for ATAS, however, there are alternatives under consideration and system developmental testing at this time. Longbow Apache contains the required wiring and pylon interface when a system is eventually fielded.

Attack Helicopter Battalion commanders are required to request UH–60 support from the Brigade commander for command and control, logistical support, air movement, combat search and rescue, and the many other functions performed by the UH–60. Questions such as: Where does the battalion commander fly for command and control, is he in the front

seat of an Apache as a primary crew member, or in a UH–60? Where does the S3 fly? Do you take an Apache to conduct liaison coordination? What are the training implications of the AH–64 as an armed reconnaissance platform? These are some of the issues the AHB commander will need to resolve given the new homogenous structure. The armed reconnaissance mission contains an inherent opportunity cost in the interim design. MG Robinson noted "we simply don't want to risk the Apache in high–risk reconnaissance operations".[92]

Until Comanche is fielded, the AH–64, by default, assumes the risk of armed reconnaissance. It retains the capability to dominate the maneuver battle with decisive firepower, agility, survivability, and inherent flexibility in close, deep, and rear operations.

Although scouting is a mission and not an aircraft, and the AH–64 can perform the mission better than the OH–58C, it is not optimized for the role. The training, crew tracking, and employment concepts are issues yet to be resolved. In the interim configuration nine AH–64's are designated as scouts, in fact, they are assigned to the scout platoons within each company.

Advances in technology will shape the employment concepts, tactics, and doctrine on how aviation is employed in the future. Many employment options will only be realized once the system is fielded, and has an opportunity to mature. Expectations for improved IFF from increases in situational awareness, common graphics, and standardized mission planning; greater enemy exchange ratios through improved target management; faster, more accurate engagements using advanced radar detection that automatically detects, classifies, prioritizes, and precisely targets enemy forces with fire–and–forget missile systems; advanced night capabilities utilizing second generation FLIR overlaid with terrain following radar; and low observable characteristics are only a small fraction of the expectations resulting from the tremendous strides made in technology.[93]

Air Assault operations can now be planned and executed under one commander with the requisite staff support. Training, maintenance, and operational effectiveness are enhanced by consolidating the UH–60's in the GSAB.

The GSAB will augment corps ambulance capability resources for the movement of sick and wounded; provide command and control aircraft to division, the brigade, and the attack battalion; provide logistical support across the division; provide combat search and rescue; and a host of other critical functions. The GSAB will only be resourced 1.5 crewchiefs per aircraft, and not the required two that previous studies recommended and Desert Storm validated. A crewchief can not safely perform as a crewmember, (doorgunner, NVG flight) and also perform daily operational maintenance–to–standard, over sustained combat periods.[94]

FIRE SUPPORT

Fire support is the collective and coordinated employment of the fires of armed aircraft, land, and seabased indirect fire systems, and electronic warfare systems against ground targets to support land combat operations at both the operational and tactical levels.[95]

ARI replacement of older airframes with newer aircraft, upgrades in technology, and system optimization results in improved target acquisition and engagement. Artillery integration through TACFIRE and AFATDS is no longer only an OH–58D ATHS capability. It can now be accomplished through the Improved Data Modem (IDM) on the Longbow Apache and eventually the Comanche.

The AHB is still not resourced with an artillery officer, which was a noted operational shortcoming following Desert Storm. This limits field artillery mission planning, requiring the brigade fire support officer to assume the responsibility. JSEAD coordination and in–flight deep fires adjustment, are greatly enhanced through extended range, digitized communications. Coordination and integration with the USAF in close/deep operations is

also improved through improved communications capabilities, and common protocols for information exchange.

Communications capabilities now match doctrinal mission requirements.

Air Defense

Air Defense operations are key when generating combat power. They provide the force with protection from enemy air attack, preventing the enemy from separating friendly forces while freeing the commander to fully synchronize maneuver and firepower.[96]

There is no Air Traffic Services (ATS) capability assigned to the division. This means that without augmentation from the corps ATS battalion, there is no means of running an airfield, providing terminal and enroute flight facilities, Army Airspace (A2) planning and Command and Control (C2), weather surveillance and precision approach radar, positive control inside assigned airspace, navaids, or flight operations bases.

As noted previously, there is no Air–to–Air capability organic to the Aviation Brigade, other than individual aircraft weapons. This limitation is partially offset by the improved targeting capability of the Longbow radar which can detect fixed and rotary wing aircraft, and the radio frequency interferometer (RFI) which will locate active radar positions. This information is matched to a target location in the FCR which identifys, and prioritizes the target.

Individual aircraft still retain a compliment of aircraft survivability equipment– IR and radar jamming, chaff, laser jamming– to decrease the effects of enemy air defense.

Intelligence

Intelligence operations are the organized efforts of a commander to gather and analyze information on the environment of operations and the enemy.[97]

To achieve land force dominance requires enhanced synchronization, real time intelligence, greater situational awareness, and force protection. Joint service common protocols enhance the exchange of information, providing a more diverse information database from which to plan and make decisions. Improved communications and

navigation systems– high frequency radio's, SINCGARS radio's, global positioning systems– increase reliability and timeliness of information. The storage and subsequent post mission download of information permits detailed analysis, further contributing to an enhanced intelligence capability.

Armed reconnaissance provides security, gathers intelligence, reports target locations, and shapes the battlefield for the ground commander. It provides the missing elements of information a commander needs, and it can deny critical information to enemy commanders. Again, it is technology infusion which is providing Army Aviation with expanding potential. Until the Longbow Apache and Comanche are fielded, their employment capabilities, system limitations, and affects on the AirLand Battlefield of tomorrow will only be speculation.

The brigade continues to maintain a capability to conduct tactical signals intelligence and electronic warfare with the assigned EH–60 aircraft.

Cross–flot operations reporting (intelligence) is greatly enhance with the improved communication capability on the Longbow Apache and the future Comanche. Provides for rapid, near real time information exchange.

Mobility and Survivability

Mobility operations preserve the freedom of maneuver of friendly forces. Survivability operations protect friendly forces from the effects of enemy weapon systems and from natural occurrences.[98]

Aircraft survivability is increased through aircraft design, survivability equipment, increased engagement standoff, target detection and acquisition, enhanced situational awareness, and standardized graphics and control measures.

The M139 Mine system provides the division commander an offensive and defensive rapidly inserted countermobility asset, three per division are in the process of fielding at this time.[99]

Logistics

Logistics provides the physical means with which forces operate, from the production base and replacement centers in the US, to soldiers in contact with the enemy.[100]

Aircraft readiness should improve if aircraft systems, to include support, perform as expected. Utilization of automated tech manuals, BIT detection to 98%, postflight information downloaded to removable cartridges, and increased maintenance officer to aircraft ratio in the AHB (4 for 18 to 7 for 24) are some of the proposed changes which will directly affect aircraft readiness.

The ARI structure significantly improves the logistical sustainability of the brigade. The incorporation of a Division Aviation Support Battalion (DASB) provides a single logistics point of contact for the brigade. It includes aviation intermediate maintenance, aircraft recovery, wheeled vehicle and ground support equipment maintenance, and brigade supply of class I,II,III,IV,V,VII,IX (air and ground) supplies. Elimination of passback maintenance improves aviation maintenance flexibility by severing the previous corps support base requirement.[101]

Wargaming, using the Janus and Eagle simulation models, results show a 20% increase in fuel requirements for six additional AH–64's. However, taking into account the retirement of the OH–58's, and the realignment of the UH–60's into the GSAB, which shifts the burden of their support, there is no net change in the AHB requirement for fuel.[102] The additional nine UH–60 aircraft in the GSAB increases fuel requirements by approximately 35%.

Using estimates of 30% of Hellfires, 40% of rockets, and 50% of 30mm for AH–64's as attack aircraft, and applying this to AH–64's as scouts, there was only a minimal increase in Class V support requirements. Other battalion sustainment rates remain essentially the same.[103]

The CL III/V AOE deficiencies are marginally corrected under ARI by increasing the number of petroleum supply specialists (77F) from 20 to 22; however, ammo specialists are

decreased by 1 (from 13 to 12). Although there are ten less aircraft to refuel, as noted above, you are still pumping, essentially, the same volume of fuel.[104] Additionally, part of the AOE deficiency involved having sufficient personnel to run two FARP's, sustaining their resupply, and maintaining a 24 hour capability.

Wheeled vehicle maintenance in the AHB, also a noted AOE deficiency, improves with the addition of three mechanics (63B20, and 2 63B10's). The previous MARC figures would have required a total of six additional mechanics; whether three is sufficient or not, is yet to be evaluated.

Aircraft maintenance capacity is increased under ARI with the addition of critical low density 68 series MOS personnel (68B, 68G, 68H, and 9 68X's). The overall ratio of maintenance personnel to aircraft increases from 5.6 to 7.1. Other factors include: a decrease in TMDE requirements; an increase in ground support equipment; a simplification of PLL/ASL, at least in the interim design; and the future requirement to retrain 67R's on the AH–64C/D.

The crewchief to aircraft ratio, in the flight companies, also remains 1:1, although the overall number of 67R's is increased by 22. Of the twenty–two; three are platoon sergeants, one is an Aviation Life Support Technician (ALSE), one is the AVUM commanders driver, six are crewchiefs, and the remainder are in the AVUM company. This results in an aircraft repairers (67R) ratio of 1.54; the previous ratio was 1.16, which equates to a 25% increase.[105] Aircraft for logistics resupply, from parts to fuel, must now be coordinated with brigade, the impact of this additional level of coordination is uncertain.

A concern which ARI seems to address is making sure the Army does not get a technologically enhanced aircraft that is not supportable. With the cost of each AH–64 Apache hour at approximately $1803, up from $484 dollars in 1987[106], and rising; and with the impact of SFDLR, it is critical that efficiencies be achieved in every aspect of maintainability. This complex equipment also requires experienced technicians to diagnose

and repair, which mandates retaining the quality soldiers who have developed the critical experience, and even more importantly who can share their experience with others. We may not have the contractor support that we enjoyed in Desert Storm.

Maintainers to aircraft ratio, and maintenance officer to aircraft ratio, in the GSAB, both increase under ARI. Maintenance availability will improve as a result of efficiencies gained from homogenous units. Caution is in order, however, when making assumptions concerning expected maintenance requirements on new aircraft systems, as the GAO report cited previously warns, the Army has historically underestimated logistical requirements for new aircraft systems.

The impact, both parts and dollars, of bringing aircraft to 10/20 standards, is an unknown factor in the ARI equation. The required maintenance time for transfer, acceptance, flight testing, and travel all detract from daily operations. This is in addition to property book actions, technical inspections, and other necessary maintenance actions. Will units be permitted to "stand down" from other actions to devote the requisite time and attention required to ensure successful completion? This is an issue for the chain–of–command to resolve.

Battle Command

Visualizing the current and future battlefield. The art of motivating and directing soldiers and their leaders into action to accomplish missions. Two components- decision making and leadership. Command occurs from the location of the commander. Control is inherent in battle command. It monitors the status of organizational effectiveness and identifies deviations from set standards and corrects them.[107]

Technology infusion and modernization objectives are the means to achieving decisive victory in winning the information war, a key component of establishing land force dominance. Command, Control, and Intelligence (C2I), aggressive reconnaissance, digitization, and enhance situational awareness are component pieces of overmatching technology which are a critical aspect of Battle Command. Modernized systems provide

information and intelligence (perhaps information overload) which decreases uncertainty–the fog of war.

The AN/ASC 15B Airborne Command and Control Console provides a highly mobile C2 system (6 per division– 31 Jan 90 is the system date) which expands the commander's battle in space and time by extending the ranges at which effective C2 can integrate fires, reconnaissance, and maneuver.[108]

The capability to rapidly, accurately, and efficiently exchange information with joint service components is essential in the execution of a force projection army which is inherently joint. The "common" picture created by the exchange of real time information is critical to simultaneity of operations throughout the deep, close, and rear battle space.

Although the value of battle space may vary in width, depth, and height over time according to the commander's positioning of assets the critical factor remains the commander and his ability to "see" the current and future battlefield, to react preemptively, and to have the means of control to bring his plan to fruition. This is the essence of technology and aviation modernization.

CHAPTER 5

CONCLUSIONS

Alvin and Heidi Toffler describe an evolutionary knowledge–based information age in their book, "War and Anti–War", characterized by accelerating change, global economies fueled by rapid digitized communications, and strategic environments which spawn regionalized wars almost overnight. They note, "Unfortunately for all concerned, friends and enemies alike, American elite, both political and military, are deeply disoriented, not only by the Cold War, but by the split up of the western alliance. . . The result is a dangerous lack of clarity about America's long term interests". They go on to say that, "with congressional budget–butchers, moreover, chopping away at Pentagon funds. . . the United States lead

(militarily) could, in fact, quickly dissipate".[109]

This post Cold War period of uncertainty, rising regional interests, exponential growth in technology, and a shrinking international environment have resulted in a shift of our National Military Strategy from containing the spread of communism and deterring Soviet aggression, to a flexible strategy of responding decisively to regional threats. A set of strategic principles, which recognizes a smaller force structure, forms the foundation of this changing defense strategy. They specify readiness, strategic agility, collective security, power projection, technological superiority, and decisive force as fundamental objectives. To satisfy these principles with a smaller force structure requires an emphasis on high payoff technologies, packaged deployability of "building block" units tailored to mission requirements, aggressive leadership, cost savings, and modernization. Army Aviation is an essential element of this power projection strategy.

Aviation Restructure Initiative is the force design solution which satisfies resource constraints, meets the doctrinal requirements for executing AirLand Operations, remains focused on modernization, and corrects previous organizational deficiencies. It is not the optimum solution, such a solution (unconstrained) is unfeasible. It is, however, a compromise between budgetary constraint and warfighting capability. ARI is also a "given", (unless something completely unexpected occurs) restructuring begins in Europe next year.

The task of implementing ARI, fielding modernized aircraft, maintaining readiness, and ensuring unit cohesion is a formidable one. It is, however, clearly an improvement over current organizational structure. Shortcomings, such as allocation rules in opposition to AirLand Operations; personnel manning levels which meet current MARC levels, yet potentially fall short; tremendous turmoil– personnel, training, and logistical; and a lack of real robustness pilot, crewchief, and operational staff manning levels; are outweighed by the advantages which are accrued.

ARI must be viewed from the context of its inception. It is foremost an answer to

TAA01 resource constraints. It is a solution of compromise, which balances warfighting and technology against available resources. ARI is a workable solution for the future whose capabilities and limitations must be understood by the aviation community as a whole.

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APPENDIX A

ORGANIZATIONAL CHARTS

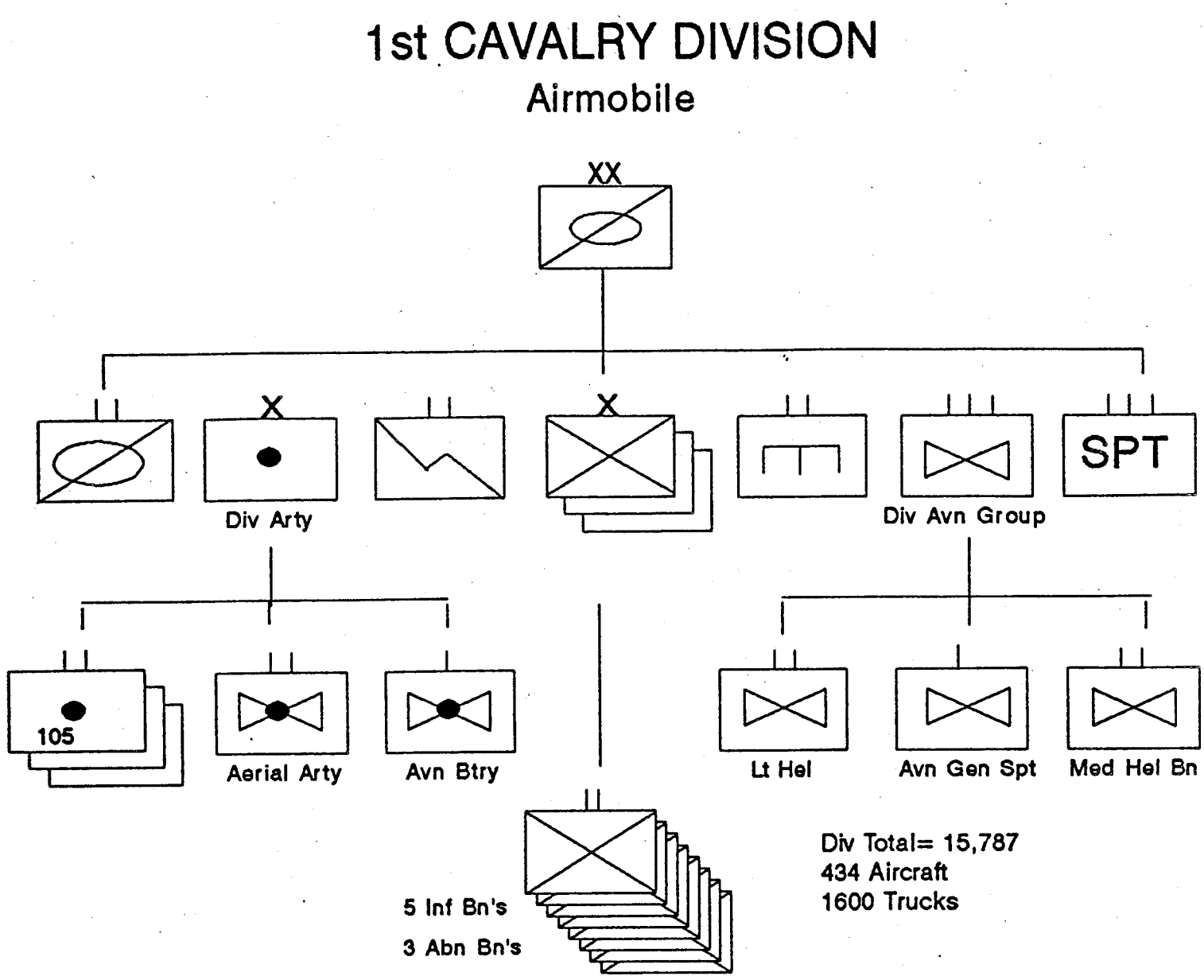

Figure 1

TRICAP STRUCTURE

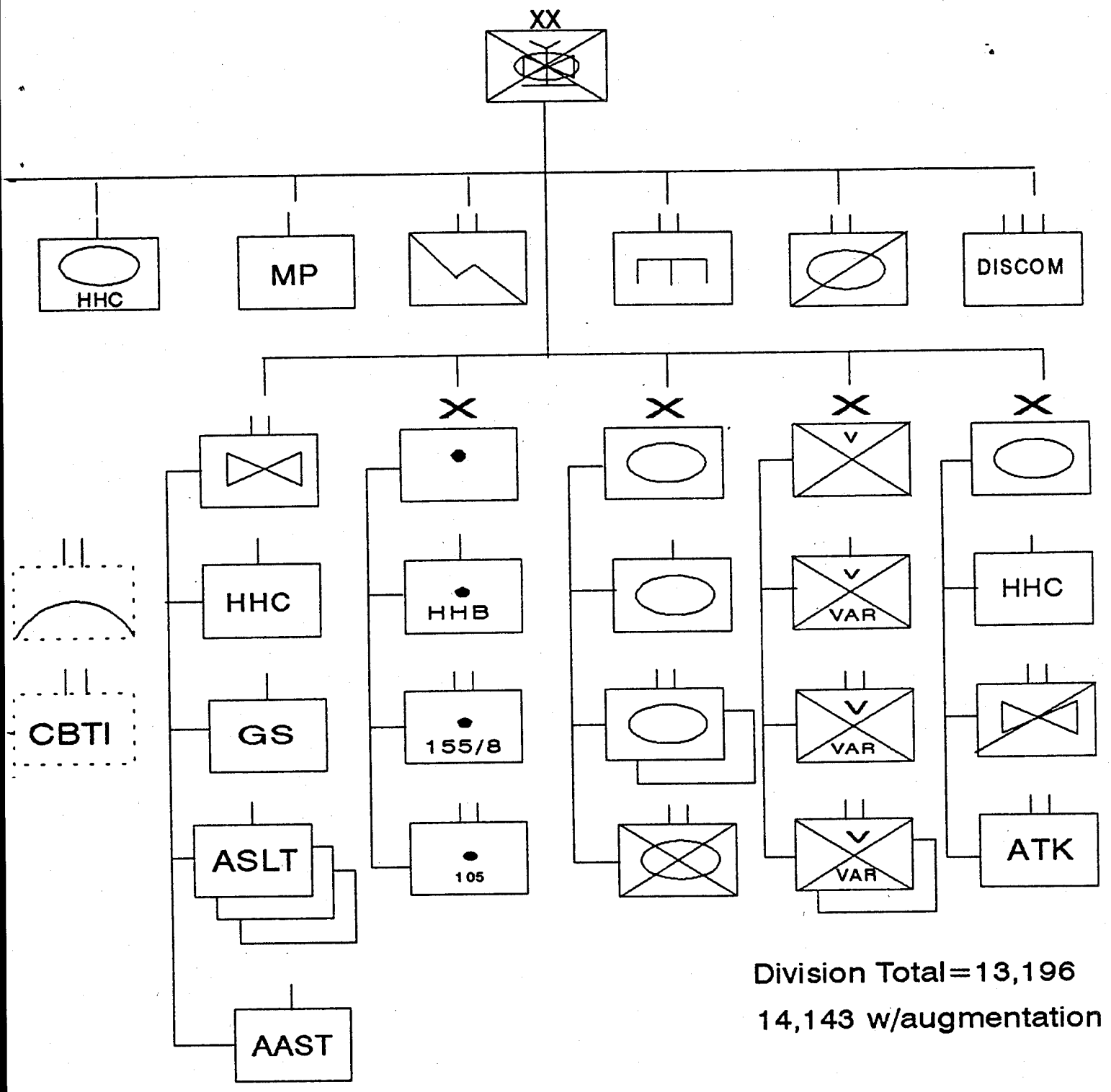

Figure 2

ARMY of EXCELLENCE

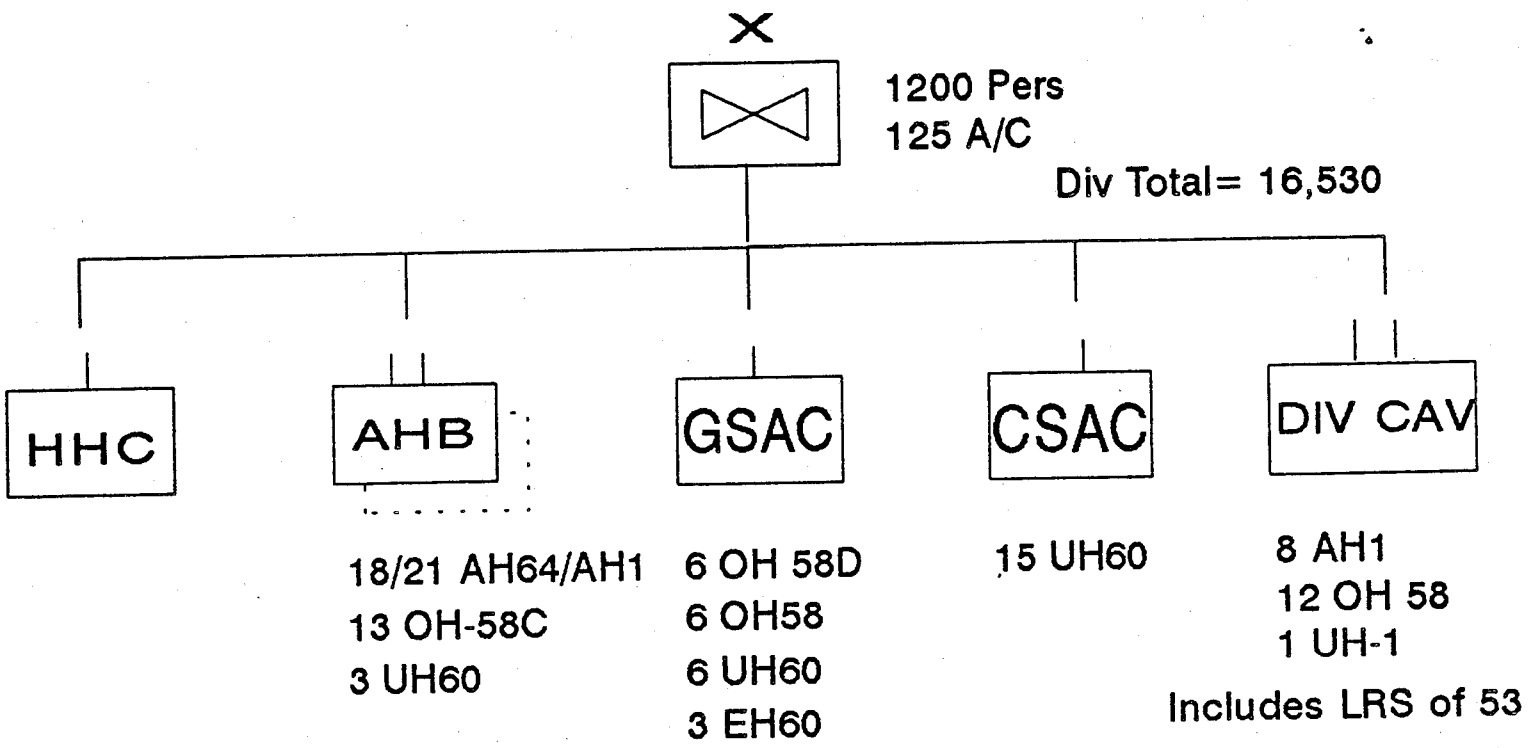

Figure 3

ARCSA V

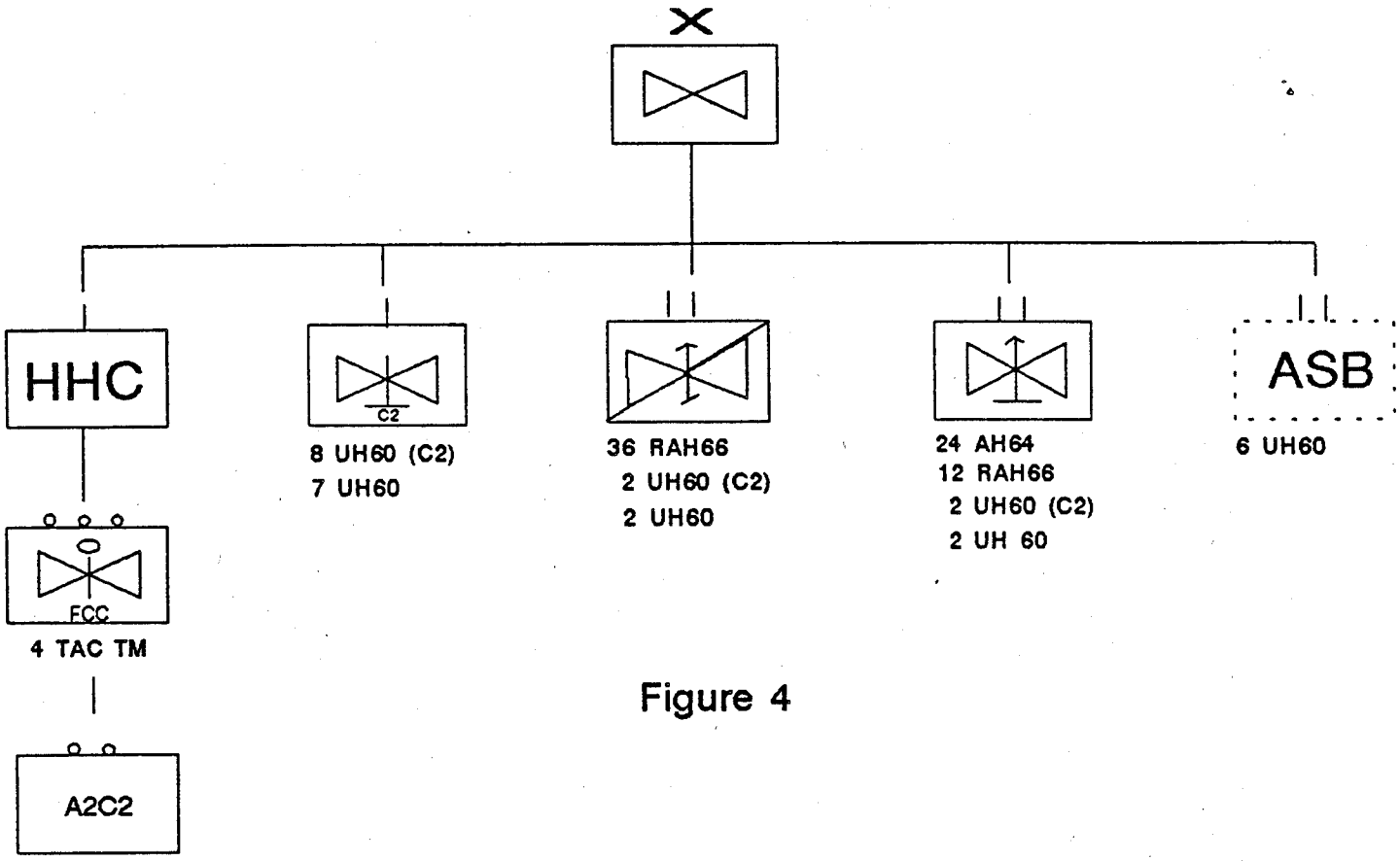

Figure 4

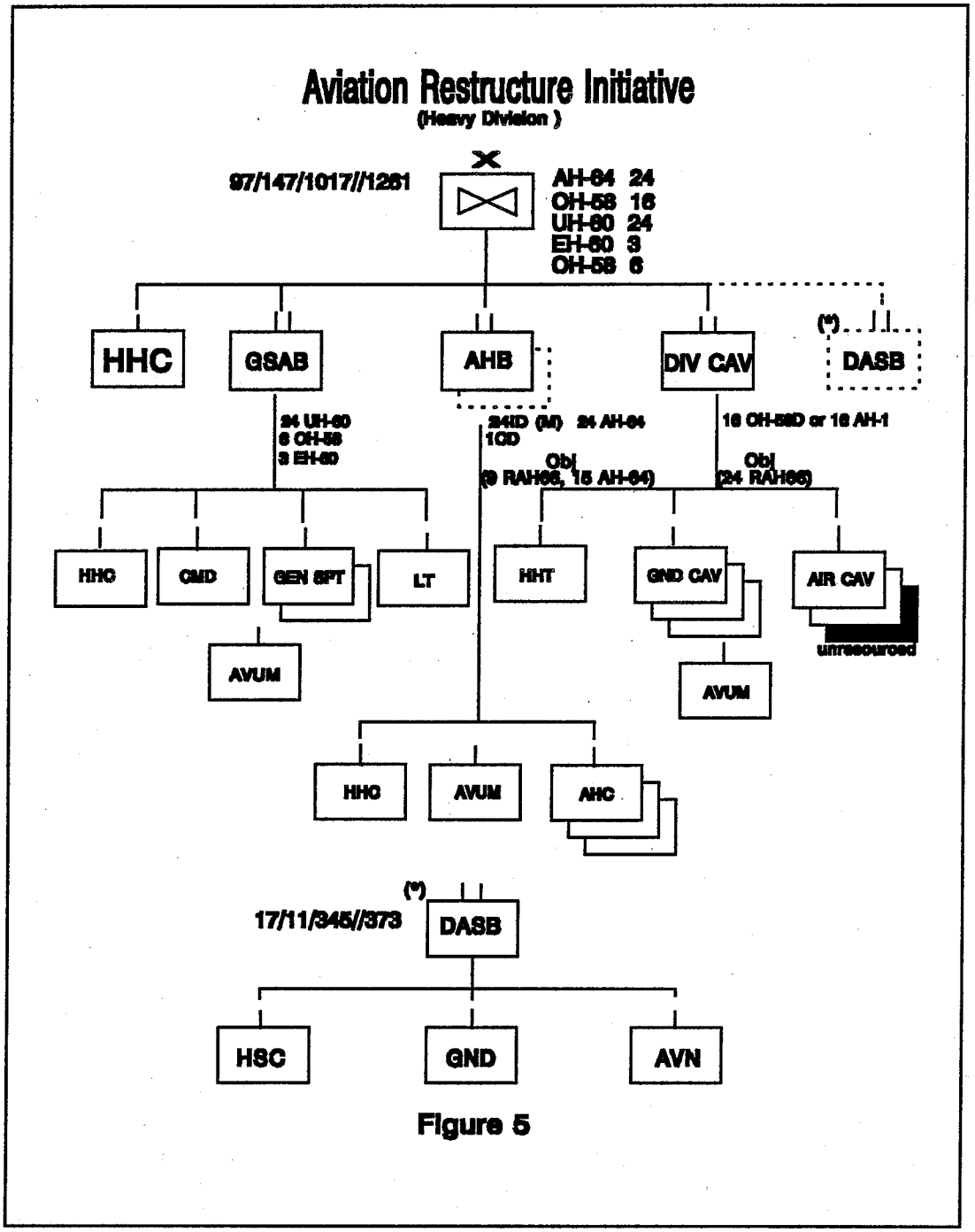
Aviation Restructure Initiative
(Heavy Division)
97/147/1017//1261
AH-64 24
OH-58 16
UH-60 24
EH-60 3
OH-58 6
HHC
GSAB
AHB
DIV CAV
(*)
DASB
24 UH-60
6 OH-58
3 EH-60
24ID (M) 24 AH-64
1QD
Obj
(9 RAH66, 15 AH-64)
16 OH-58D or 16 AH-1
Obj
(24 RAH66)
HHC
CMD
GEN SPT
LT
HHT
GND CAV
AIR CAV
unresourced
AVUM
AVUM
HHC
AVUM
AHC
(*)
17/11/345/373
DASB
HSC
GND
AVN

Figure 5

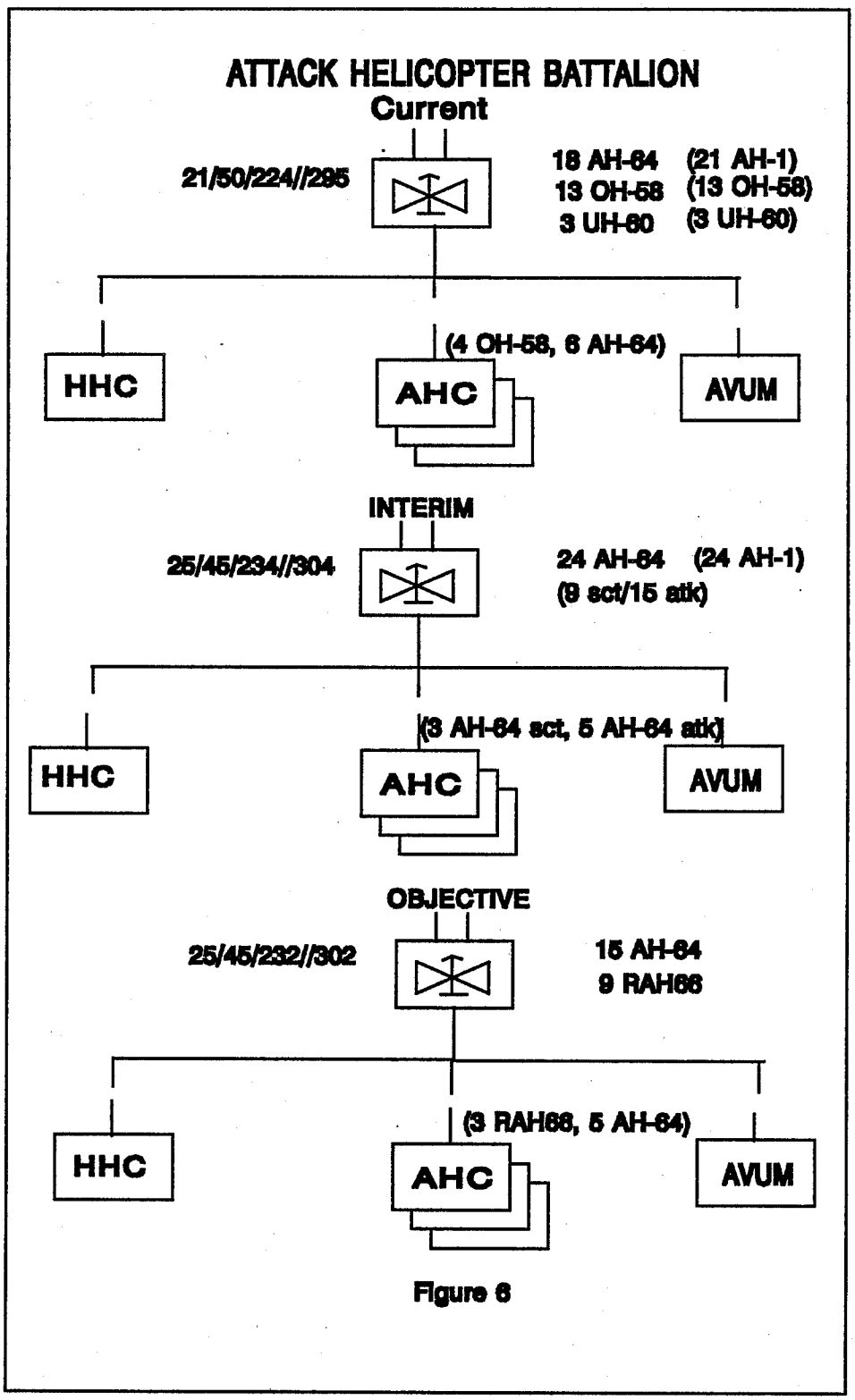
ATTACK HELICOPTER BATTALION
Current
21/50/224//295
18 AH-64 (21 AH-1)
13 OH-58 (13 OH-58)
3 UH-60 (3 UH-60)
HHC
(4 OH-58, 6 AH-64)
AHC
AVUM
INTERIM
25/45/234//304
24 AH-64 (24 AH-1)
(9 sct/15 atk)
HHC
(3 AH-64 sct, 5 AH-64 atk)
AHC
AVUM
OBJECTIVE
25/45/232//302
15 AH-64
9 RAH66
HHC
(3 RAH66, 5 AH-64)
AHC
AVUM

Figure 6

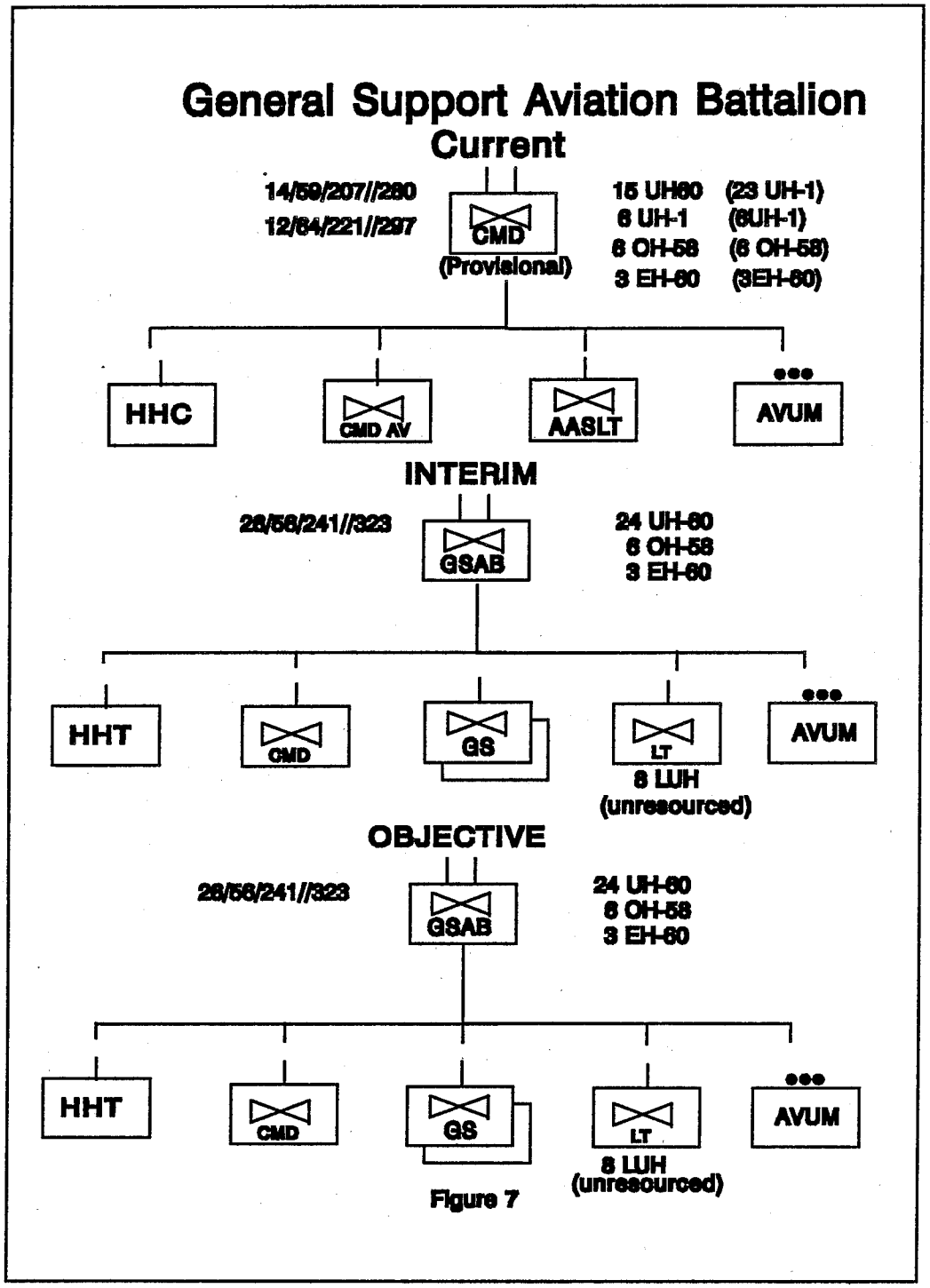
General Support Aviation Battalion
Current
14/59/207//280
12/64/221//297
CMD
(Provisional)
15 UH60 (23 UH-1)
6 UH-1 (6UH-1)
6 OH-58 (6 OH-58)
3 EH-60 (3EH-60)
HHC
CMD AV
AASLT
AVUM
INTERIM
28/58/241//323
GSAB
24 UH-60
6 OH-58
3 EH-60
HHT
CMD
GS
LT
AVUM
8 LUH
(unresourced)
OBJECTIVE
28/58/241//323
GSAB
24 UH-60
6 OH-58
3 EH-60
HHT
CMD
GS
LT
AVUM
8 LUH
(unresourced)

Figure 7

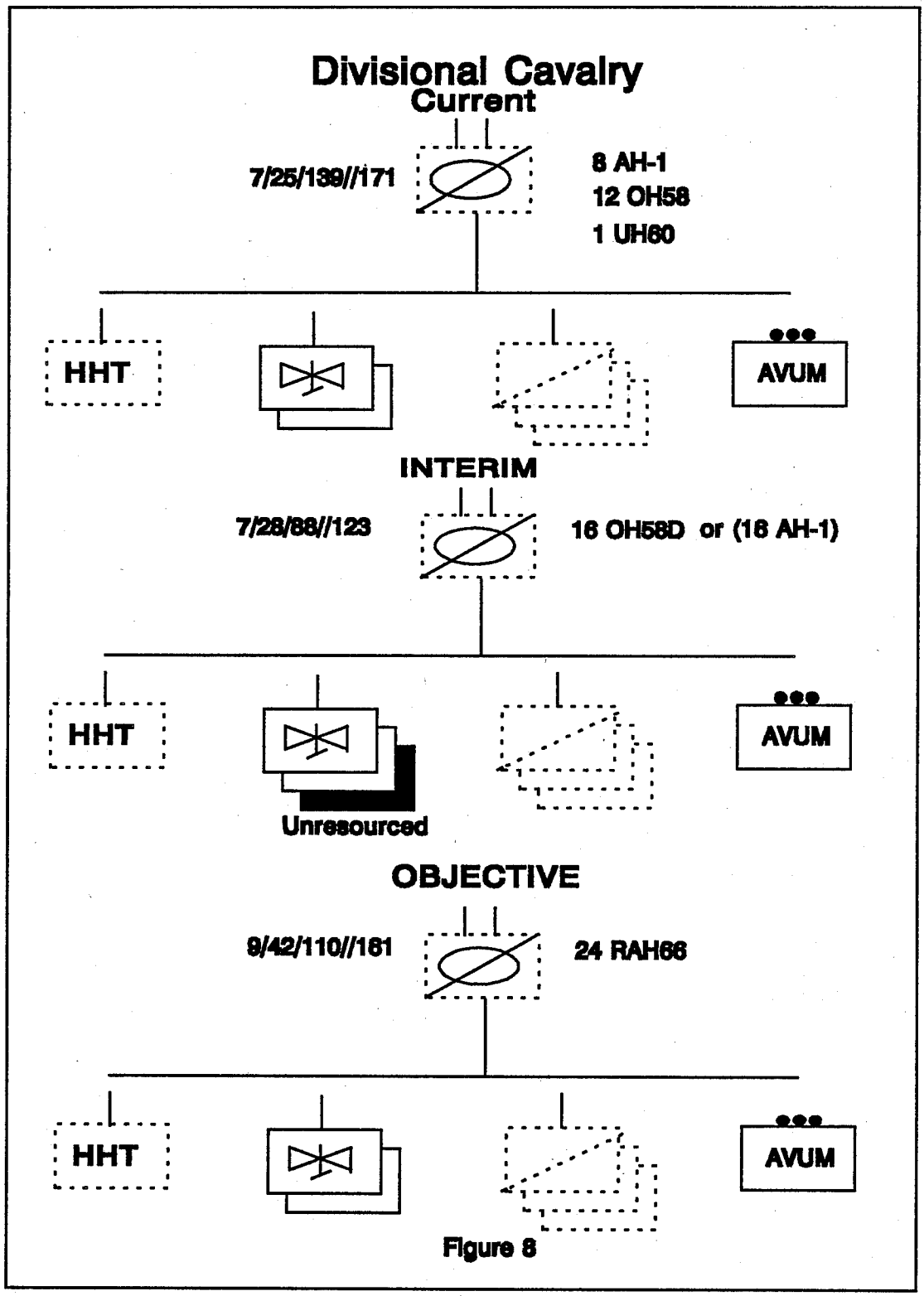
Divisional Cavalry
Current
7/25/139//171
8 AH-1
12 OH58
1 UH60
HHT
AVUM
INTERIM
7/28/88//123
16 OH58D or (16 AH-1)
HHT
AVUM
Unresourced
OBJECTIVE
9/42/110//161
24 RAH66
HHT
AVUM

Figure 8

APPENDIX B

ARMY of EXCELLENCE DEFICIENCIES

The evolution of the AOE force structure is covered in Chapter 2. The correction of these deficiencies was fundamental to the design of ARI. The following are the major AOE organizational problems which ARI focused on:

Overall:

There was an 8,366 shortage of personnel. 1,340 on the warfighting side and 7,026 on the logistical side. There were also insufficient numbers of quality aircraft to accomplish the armed reconnaissance mission, antiquated and improperly focused Air Traffic Services, and a need for ESSS, FLIR, and command consoles.

Warfighting:

1. Austere staff which precluded a "true" 24 hour capability. This meant our command, control, and planning did not maximize aircraft capabilities. Liaison capability– personnel and equipment was totally insufficient, no available C2 pilots which meant primary staff officers filling this void, and no A2C2 cell.
2. OH58, and OH58D were manned as single pilot aircraft.
3. No Aviation Life Support Equipment personnel.
4. Lack of a General Support Aviation Battalion.
5. Crewchiefs required to be door gunners; also effects NVG operations, and unit maintenance.
6. Only a 1:1 pilot to seat ratio. Manpower does not match the system.
7. No night capability in the Div Cav Squadron.

Logistical:

1. Insufficient Class III/V personnel, which meant longer tactical turn around times at the FARP.
2. Shortage of wheeled vehicle maintenance personnel.
3. Shortage of AVUM and AVIM maintenance personnel– no phase team capability, numerous low density MOS's, and a lack of senior noncommissioned officer positions.
4. No consolidated maintenance effort– no Aviation Support Battalion. There must be a capacity for the DASB to provide multifunctional (aviation unit and intermediate level maintenance, ground maintenance, medical, supply and transportation) direct support to the brigade.
5. Logistics deficiencies resulted from austere personnel authorizations throughout. This meant that the operational tempo could not be maintained.

In general, the design capabilities of AOE did not match actual unit capabilities or retain a capacity to execute the high optempo AirLand Battle scenario.

APPENDIX C

DOCTRINAL CONSIDERATIONS

FM 100-5 Operations:

The firepower, agility, and speed of Army aviation permit ground commanders to close with and defeat a wide range of enemy forces. Attack helicopters are ideally suited for rapid reaction in close, deep, or rear operations. They are also used where the terrain restricts or prohibits ground force occupation. Attack helicopters can favorably influence the battle when ground forces are decisively engaged. . . . On–board radars and digital communications are key to winning the information war at the tactical and operational levels.

Page 2–23.

FM 100-1 Army Aviation in Combat Operations:

The mission of Army Aviation is, "To find, to fix, and to destroy any enemy through fire and maneuver, and to provide combat support and combat service support in coordinated operations as an integrated member of the combined arms team".

Page 2–1.

FM 1-111 Aviation Brigades:

The division aviation brigade finds,fixes, and destroys enemy forces; it uses fire and maneuver to concentrate and sustain combat power at the critical time and place. The division aviation brigade can accomplish this mission as a pure aviation brigade or as a task organized force.

Page 1–6

FM 71-100 Division Operations:

The aviation brigade provides the division commander a command and control headquarters with organic lift, attack, observation, and general support aircraft which can be tailored to support the division commander's concept. The speed and mobility of the aviation brigade allows it to conduct deep, close, and rear operations. The aviation brigades mission is to find, fix, and destroy enemy forces using fire and maneuver, and to provide CS and CSS in coordinated operations as an integrated member of the combined arms team. Planning at division level must allow for integration of the aviation brigade into the combined arms scheme of maneuver.

Page 2–3

AVIATION WARFIGHTING TREATISE- AUG 1993

Operational Principles

– Aviation operates in the ground regime, not in the aerospace environment.
– Aviation expands the battlefield in space, time and echelon.
– Aviation performs combat and combat support battlefield functions.
– The role of combat aviation is to locate and destroy enemy ground forces and support elements.
– Combat aviation is concentrated at division level.
– Combat aviation is primarily employed against deep targets and on flanks, secondarily in support of ground maneuver elements in the close fight.
– Combat aviation will be supported by all of the battlefield operating systems.
– Combat support aviation is primarily concentrated at corps and employed at both corps and division levels.
– Aviation units are integrated into the combined arms down to the level at which they will be employed.
– Planning times for aviation and ground maneuver elements will be the same.

It is interesting to note the doctrinal change in aviation since May 1993, only three months prior to the new treatise. The Aviation Restructure Initiative (blue briefing book), under attack battalion summary, states; "Scout/Attack helicopters in the division, fight the close fight. They provide a flexible and lethal force for the ground commander to defeat the enemy at the decisive point and time. The deep fight is a Corps special mission that can employ scout/attack helicopters against enemy targets beyond the ground commander's area of operation". If this is the case, and as stated above– combat aviation is primarily employed against deep targets and on the flanks, secondarily in support of ground maneuver elements in the close fight– why are we resourcing the divisions at the expense of corps?

Combat Missions:

Aviation combat missions are conducted by maneuver forces engaged in destroying enemy forces by direct fire and standoff precision weapons in combined arms operations.

Combat Support Missions:

Aviation combat support is the operational support and sustainment provided to combat forces by aviation units.

Airlift Considerations:

24 AH–64 aircraft require four C5 or eight C17 aircraft to deploy. The same unit equipped with 24 RAH 66's requires three C5's or six C17's. The RAH 66 is also transported in a fly–away configuration, requiring minimal preparation before departure. The AH–64 requires extensive preparation. Longbow Apache increases the required prep time.

Given three C5 sorties or six C17 sorties, either 24 RAH66 or 18 AH–64 can be

Given three C5 sorties or six C17 sorties, either 24 RAH66 or 18 AH–64 can be deployed:

The 24 RAH66 can fly 173 km with a kill potential equating to 64% of a Soviet style tank regiment, or 58% of a motorized rifle regiment, and return,

The 18 AH–64's can fly 176 km with a kill potential of 133 vehicles equating to 57%of a Soviet style TR or 52% of an MRR, and return.

Close Air Support

The recently released Roles, Missions, and Functions of the Armed Forces of the United States– February 1993– recommended that Attack Helicopters assume responsibility for Army Close Air Support, with a collateral mission to provide rotary wing CAS to naval campaigns and amphibious operations. The doctrinal implications of this change are unresolved.

Operations Other Than War

Although the Army's primary focus is to fight and win the nation's wars, it can also be expected to assume missions for operations other than war, which may precede and/or follow war or occur simultaneously with war in the same theater. These include: noncombatant evacuation, arms control, support to domestic civil authorities, humanitarian assistance or disaster relief, security assistance, nation assistance, support to counterdrug operations, combatting terrorism, peacekeeping operations, peace enforcement, show of force, and support for insurgencies and counterinsurgencies.

FM 100–5 P. 13–0 to 13–8