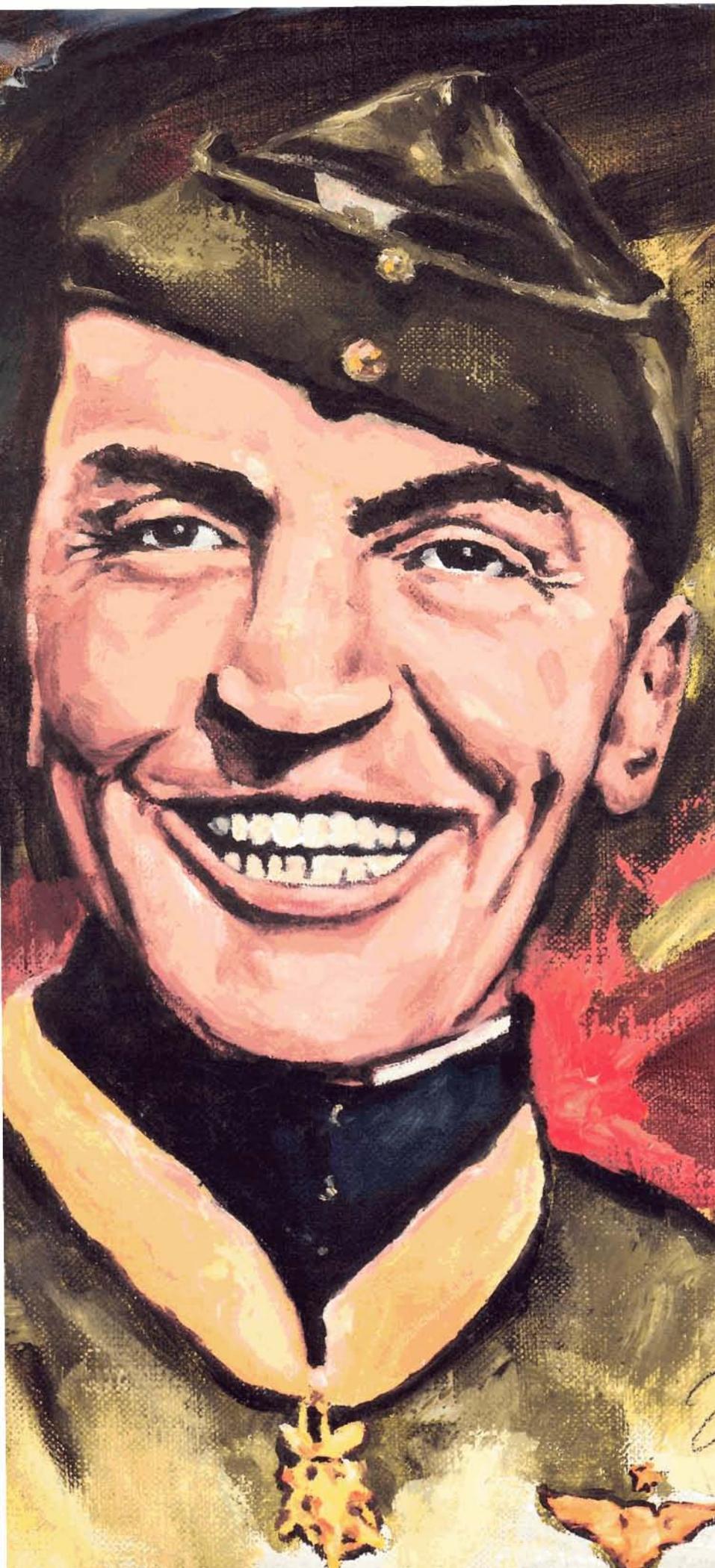


Air Defense Artillery



Yearbook 1990



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American Aviator
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DEFENSE

This past year has not only been marked by success for a branch, but also for your association. Our life membership is up over 4,088 with an additional 15 corporate members. Much of this growth can be attributed to the hard work of the chapters. We now have four association chapters — two in Germany, one at Fort Lewis and one at Huntsville. Several others will be formed shortly.

Our new awards program is off and running, with our "best soldier" awards and our new "best battery"

award. We continue to support the ADA Museum and the newly redone Fort Bliss Museum.

Our gift shop operation has expanded to Germany thanks to the good work of our members at HQ, 32nd AADCOM. We also have a new shop in the Fort Bliss Museum. Sales are at an all-time high, a development that tells us that we have become a place where air defenders worldwide can buy those branch and unit pride items that are so important to us all.

We have added to this great year-

book by publishing a commercial version of the *ADA Magazine*. This project has been slow getting off the ground and for awhile we thought the main rocket motor was not going to kick in. But we are starting to see some fire.

The Order of Saint Barbara has been very successful. In fact, we have had a problem managing all this success. We have changed a few things around and we believe it is all under control now.

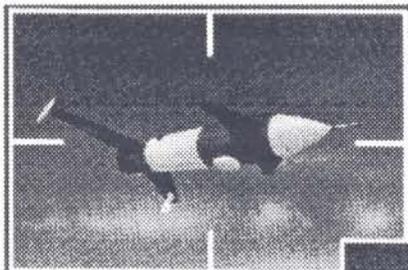
As we move ahead, we are laying plans for two new projects. One is the establishment of a Memorial Grove at Fort Bliss to honor those great ADA units of the past that served the nation so well in combat. The second is a big project indeed. That is to build a new ADA Museum at Fort Bliss. This is a project long overdue. We all love old building 5000, but each day it becomes less deservable as a place to preserve and display our proud past.

So you can see, we have come a long way. We still have a long way to go.

Many people contributed to the success of the *1990 Air Defense Artillery Yearbook*. Maj. Gen. Donald M. Lionetti, chief of Air Defense Artillery, lent his personal support to the project. Subject-matter experts at the U.S. Army Air Defense Artillery School helped with manuscripts. Writers and editors under the guidance of Mr. James Mullett at the Office, Chief of Air Defense Artillery, wrote articles, edited manuscripts and designed the yearbook. All of our ADA units contributed to the popular "1990 Directory," a section guaranteed to be a success through the professional efforts of Ruben Serna at the Fort Bliss Print Plant. Training Support Division artists directed by Graphics Branch Chief Paul Mayfield prepared some of the illustrations. To all of you, my personal thanks.

First to Fire!

V. J. Tedesco Jr.
COL, ADA
President, ADA Association



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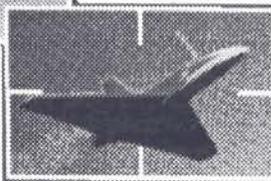
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President, ADA Association

1990 Air Defense Artillery Yearbook

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Membership tops 4,000 as the ADA Association beefs up services for members of the "First to Fire" branch.

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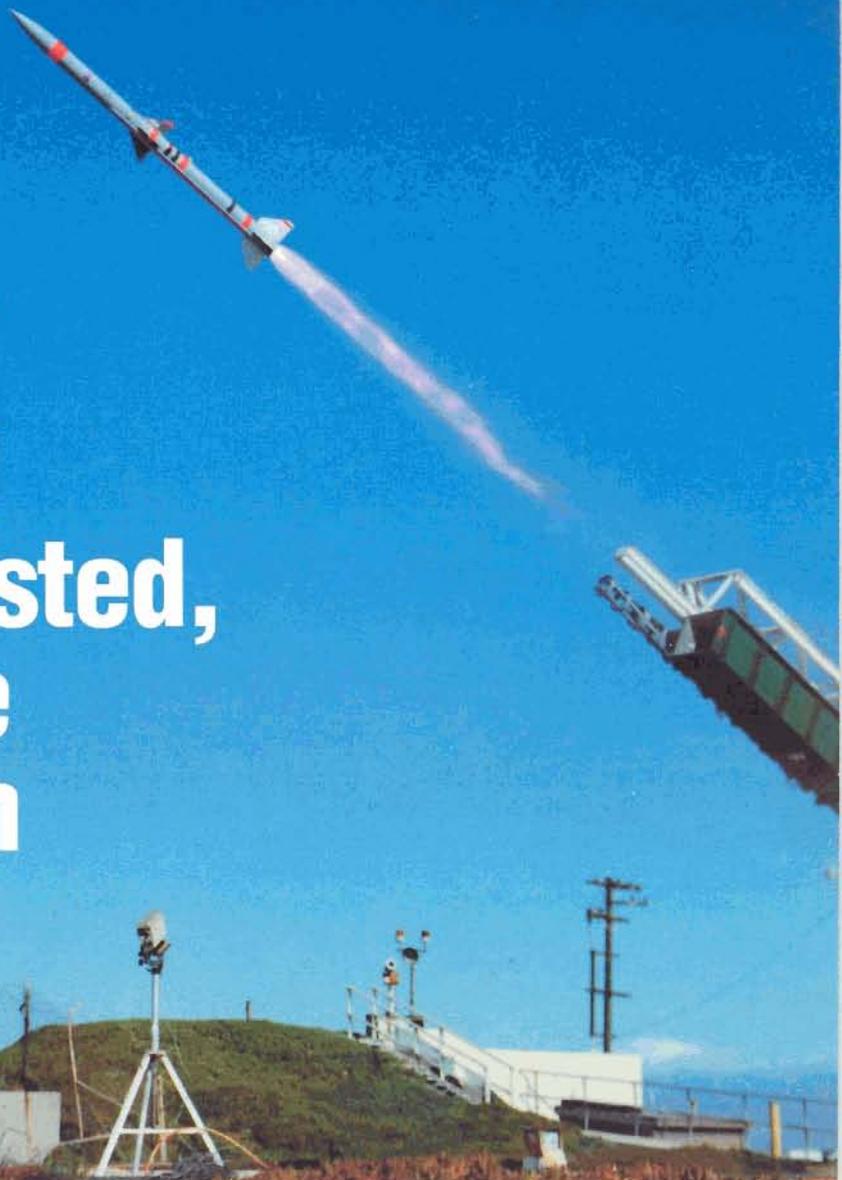
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Sponsored by the Air Defense Artillery Association and published by Capital Military Publications, Austin, Texas, ADA is a professional journal devoted to the advancement of the art and science of Air Defense Artillery and of the U.S. Army. The 1990 Air Defense Artillery Yearbook supersedes the May-June Issue of ADA and serves as the showplace publication published in conjunction with the ADA Commanders Conference. Articles appearing in the 1990 Air Defense Artillery Yearbook do not necessarily reflect the opinions of the officers or members of the Air Defense Artillery Association, and should not be interpreted as reflecting the official opinion of the Department of Defense. **RATES:** Memberships and subscriptions payable in advance. Lifetime, \$30; lifetime and one-year subscription to ADA (six issues), \$40. **POSTMASTER:** Send address changes to Capital Military Publications, P.O. Box 399, Cedar Park, Texas 78613.

Fort Bliss Texas artist Gary Boggs' airbrush rendering of the "First to Fire" statue, which stands guard at the Pershing Gate entrance to Fort Bliss, was inspired by a photograph taken by Mr. Brad Rose, Public Affairs Office, Fort Bliss, Texas. The statue, unveiled in December 1989, is "dedicated to air defenders past, present and future."

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Trooping the Line

by Maj. Gen. Donald M. Lionetti

I will not pretend that, if I had to choose between Communism and Naziism, I would choose Communism," said Winston Churchill in the dark autumn before the outbreak of World War II. "I

hope I will not be called upon to survive in a world under a government of either of these dispensations. I feel unbounded sorrow and sympathy for their victims."

Suddenly, following a half-century of oppression, the downtrodden nations of central and eastern Europe are unshackled. The communist bloc is disintegrating. The Iron Curtain rusts and crumbles. We see a long-subjugated people rising in unison, clamoring for representative government. Their hunger for democracy has changed forever the dreary landscape of the Cold War, and it will soon change the way the U.S. Army does business.

The Cold War is at an apparent end. The toppling of the communist dominoes has created a new political reality in which freedom, at least temporarily, is no longer as imperiled. But Europe is still a very volatile place. We must remember that nations found reasons to wage war be-

fore Adam Smith penned *The Wealth of Nations* or Karl Marx wrote *Das Kapital*. Perhaps *Newsweek* writer George Wills was correct when he recently editorialized that "European politics is much blander



Maj. Gen. Donald M. Lionetti



CSM Robert W. Harman

and better than it was because the public mind is more mature. The lions have gone, the eagles have flown away, the banners have been furled." But who can predict with certainty what conflicts may or may not arise as a reunited Germany emerges as a superpower and the once fervently nationalistic states of Europe conduct their fragile experiments in democracy.

When Albert Einstein was asked why scientists able to concoct a formula for nuclear explosions were incapable of perfecting a formula for world peace, he is said to have answered, "Politics is more complex than nuclear physics." We live in an increasingly complex, volatile and unpredictable world. While the collapse of the Warsaw Pact may permit us a significant reduction in force and the withdrawal of some of our forces from Europe, we are entering

an era of what U.S. Navy Adm. Carlisle Trost, the nation's top sailor, has called an "era of violent peace."

- The Soviet Union remains a potent force and Soviet or Soviet-supported action in Europe and Asia is still a very real threat.

- Central and South America, despite the recent electoral defeat of the Sandinistas, are in constant turbulence due to fragile economies, pervasive debt and political and military insurgency.

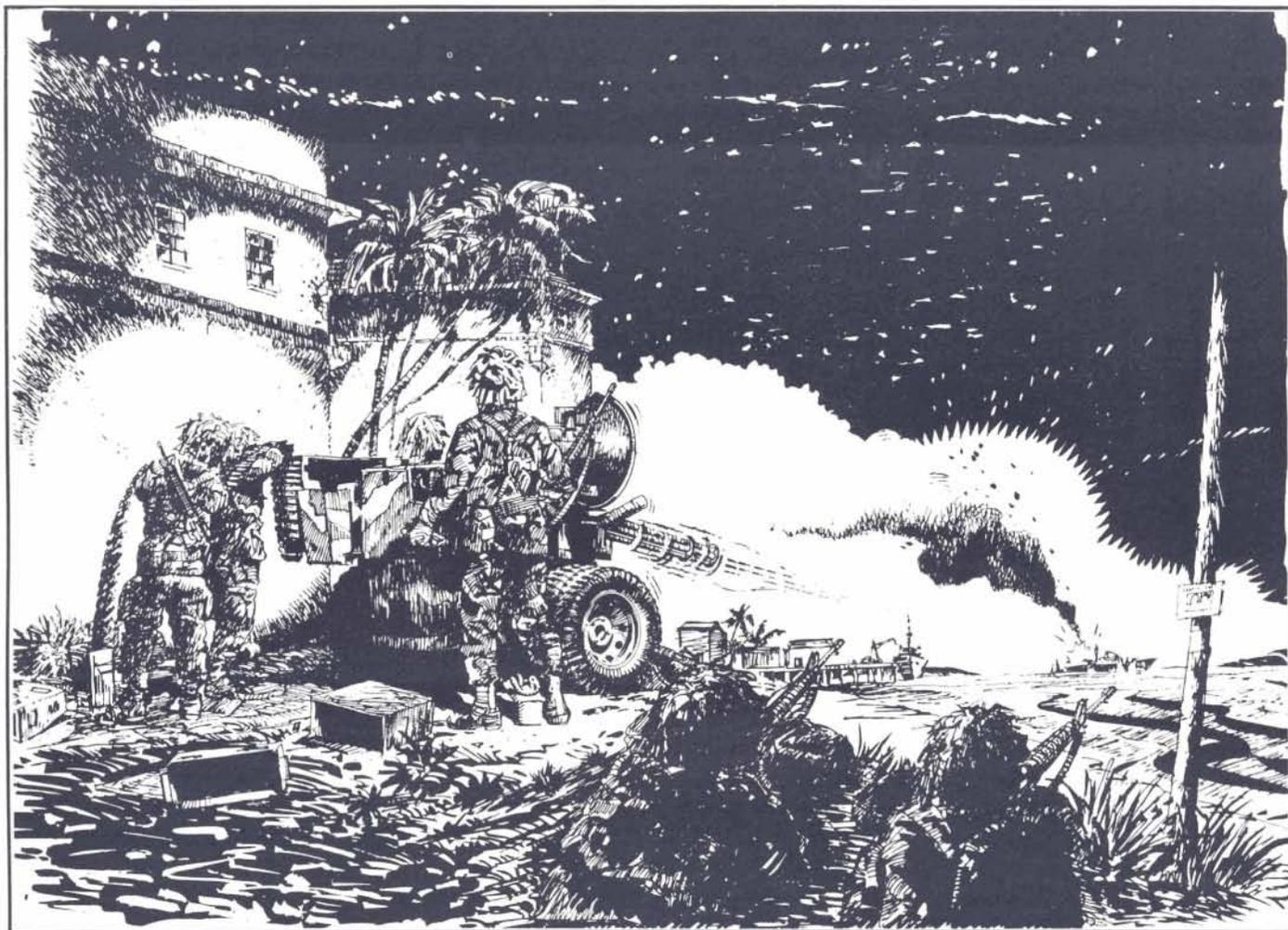
- The world's dependence on petroleum from contested regions such as the Persian Gulf, Indian Ocean and Southwest Asia — where 13 regional conflicts, including the Iran-Iraq stalemate, are underway — continues to grow.

- Anti-democratic forces remain strong in China and the Philippines. North Korea still threatens South Korea.

Plato's assertion that "Only the dead have seen the end of war" is still not easily challenged.

It is, in short, not yet time to beat all our swords into plowshares. The probability remains high that U.S. combat forces will be called upon to defend American interests in a lethal environment. The time and place are simply more difficult to predict than before.

Certainly the air defenders of the 82nd Airborne Division's 3rd Battalion, 4th Air Defense Artillery, and the 7th Light Infantry Division's 2nd Battalion, 62nd Air Defense Artillery, need no one to point this out to them. At the height of last year's Christmas season, while most Americans cheered the crumbling of the Berlin Wall, these air defenders sat silently aboard transports as they lifted off runways adjacent to Fort Bragg and Fort Ord and droned



Vulcan gunners of the 2nd Battalion, 62nd Air Defense Artillery, engage a PDF gunboat in the Panama Canal.

southward toward the Canal Zone. The timing of Operation Just Cause — the expulsion of Panamanian strongman Gen. Manuel Noriega from power — was exquisite. It served as a reminder that, while the likelihood of the long-anticipated clash between NATO and Warsaw Pact forces has diminished, other challenges await us around the globe.

The Army has revised its strategic missions to fit the altered geopolitical landscape.

We must continue to provide forward-deployed ground forces for deterrence, sustained land combat and conflict termination in areas of vital interest. We will have to accomplish this with a smaller Army still capable of fighting a big war.

As Operation Urgent Fury, the invasion of Grenada, and Operation Just Cause have recently demonstrated, we must maintain highly mobile, combat-ready heavy, light and special forces in CONUS for immediate contingencies worldwide. Since many emerging or developing nations, as the Iran-Iraq War illus-

trates, are increasingly able to field and sustain large forces, we must maintain forces in CONUS able to reinforce our forward-deployed contingency forces worldwide.

The diminished threat in Europe will allow the Army to increase its participation in disaster relief, emergency assistance and the interdiction of illicit drug traffic, a legitimate threat to national security and world stability. We must also continue to provide support to allied and friendly nations through peacekeeping activities, security assistance and army-to-army initiatives.

Budget cuts and the looming force reduction challenge Air Defense Artillery's ability to play its assigned roles in the Army's new strategic missions. It's a challenge we're well prepared to accept. The 1980s were years of triumph and transformation. During the decade's climactic years, we deployed Patriot battalions to Europe, successfully demonstrated Hawk-Patriot interoperability, developed an anti-tactical ballistic missile capability, totally restructured divi-

sional air defense based on the forward area air defense (FAAD) concept, watched FAAD weapon systems mature from prototypes to production models, and began the formation of corps air defense artillery. We enter the new decade as a fully matured combat arm whose combat capabilities and battlefield essentiality — backed by empirical data — are no longer a subject of debate.

I am committed to the fullest realization of Air Defense Artillery's combat potential and to its synchronization with the combat capabilities of the combined arms team.

We must continue to build on the successes of the past decade. Synchronization is the theme of this year's ADA Commanders Conference. The fielding of Patriot, the revitalization of Hawk and the fielding of FAAD weaponry has given us previously unimagined air defense firepower. However, our increased

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potential will profit us little unless we succeed in synchronizing our firepower and capabilities with other combined arms.

Army Chief of Staff Gen. Carl E. Vuono recently listed six fundamental imperatives to which he is committed — quality force, leader development, realistic training, adequate force structure, continued modernization and warfighting doctrine — vital to the building of a strategic force for the 1990s and beyond. We must attract and retain **quality** soldiers and civilians. We must maintain a forward-looking warfighting **doctrine**. To build an adequate **force structure**, we must maintain the force size and mix of heavy, light and special operations units required by national strategy. To field a force that can fight, win and survive on a variety of battlefields, we must conduct tough, realistic **training**. We must continuously **modernize** to ensure our forces have the needed warfighting capabilities, and we must conduct imaginative and effective **leader development** programs that will produce leaders who can put these warfighting capabilities into action. These imperatives, as they apply to Air Defense Artillery, are the keys to ADA synchronization and the branch's continuing evolution as a dominant battlefield force.

Quality Personnel

Air Defense Artillery is blessed with quality soldiers and quality federal civilian workers. We must continue to attract and retain the best. The anticipated force reduction, which lessens the number of entry-level soldiers we must recruit from a shrinking manpower pool, should ensure that we will continue to attract top quality young men and women for our Army. Concurrently, we must place great emphasis on retaining in our force the highest quality soldiers in all grades.

Force reductions are nothing new. The Army reduced its ranks by millions following World War I and World War II, and by hundreds of thousands following Korea and Vietnam. But these were largely draftees

who, having served valorously in a time of crisis were, for the most part, eager to return to civilian life. Things are different this time around. The ranks of today's volunteer Army are filled with highly motivated, highly dedicated career professionals who have chosen to make the Army their life. These are the soldiers to whom the nation owes its gratitude for its Cold War victory. These soldiers are the Army's future.

While some officers and NCOs who otherwise would have gone on to successful careers may be forced out by a reduction in force brought about by diminishing resources, we will not dismiss quality soldiers lightly. Army leaders, for example, are working to justify a higher-than-normal officer and NCO-to-enlisted soldier post-force reduction ratio to keep our best soldiers in the Army.

As your Air Defense Artillery proponent, I will explore all available alternatives, take any action necessary, effect any compromise possible and exhaust all avenues to safeguard the careers of those quality ADA soldiers who have demonstrated through past performance their value to Air Defense Artillery and to the Army.

We are also at work to resolve personnel problems that have long plagued the branch. Clearly, the present and future focus of the Army is to reduce the number of military occupational skills (MOSs). Air Defense Artillery continues to review and reduce or combine MOSs where appropriate. Our goal is to reduce the plethora of ADA MOSs that has too often marooned ADA soldiers in overstrength MOSs (see "MOS Re-



"We will continue to attract top quality young men and women for our Army."

structuring Reconsidered," page 41). However, we're not going to make changes that degrade our effectiveness as a fighting force. I want soldiers to understand that no changes to the MOS structure will occur unless they meet the needs of the soldier, Air Defense Artillery and the Army.

The evolution of the Army Acquisition Corps ("Acquisition Alternatives," page 34) promises to revolutionize ADA careers. The two-track option simply acknowledges that people are different. Some, by preference or by aptitude, excel in unit leadership or soldier-trainer positions while others thrive in managerial or technical positions. The current promotion selection process clearly favors those who excel at unit leadership and fails to adequately recognize those whose skills have placed them in management rather than leadership positions. The two-track career option, however, makes managerial or technical talents an asset rather than a liability and will offer a success path that did not exist before.

Air Defense Artillery has a pressing need for both types of officers. We need highly competent ADA brigade, battalion, battery and platoon leaders who can fight and win on any future battlefield, and we need highly competent ADA officers who can persevere in the acquisition and procurement arena. The two-track option offers us the best of both worlds.

The Army recognizes and appreciates the contributions of its federal civilian employees — a statement I realize few federal civilian employees will take at face value. During the 1980s, federal employees watched their salaries eroded by cost of living increases that failed to keep pace with those granted private sector employees. Statistics show that mid-level federal employees make 25 to 30 percent less than their counterparts in the private sector. The disparity at higher levels is so great that statistical comparisons are no longer of any utility. As I write, an Army-wide freeze on civilian promotions and hiring is in effect. The size of the workforce continues to decrease

while the workload continues to increase. These problems have already adversely affected morale and will doubtless soon begin to affect work accomplishment.

Encouraging trends, however, are beginning to emerge as the push for pay reforms intensifies. Proposals include an "automatic trigger" that will de-politicize cost of living increases, locality pay for high-cost living areas and a national scale for employees in professional categories. These are Office of Personnel Management rather than Army initiatives, but the Army has not stood idle.

One of the key elements in the Army's efforts to modernize management of the civilian work force, "Managing the Civilian Work Force to Budget," has recently been put in service. This program opens the door for certain supervisors to establish the workforce size and composition within an approved budget for their civilian workforce, unconstrained by employment-level controls, high- and average-grade ceilings, overtime controls and other administrative

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controls on civilian pay. Making supervisors accountable for civilian pay costs builds great local flexibility and delegated authority. It empowers supervisors to reward select groups of employees — willing to do more work with fewer people — with higher salaries or cash awards.

Current budget shortfalls have delayed the full implementation of the management program at some installations, but it does promise to make federal civilian service in the Army more exciting and more rewarding.

Leader Development

Quality personnel, sound doctrine, adequate force structure, superb training and intensive modernization without a strong, continuing commitment to leader development would be impossible. Leadership, and therefore leader development, is the keystone initiative that will bind the Chief of Staff's six imperatives into a coherent, effective, visionary roadmap to the future.

Our goal at the Air Defense Artillery School is to produce competent and confident ADA officer and NCO warriors who are combined arms oriented, threat informed, contingency

prepared and in tune with the needs of the field. Today, the school's Combined Arms and Tactics Department is doing a superb job of developing officers and NCOs instilled with that essential combat multiplier we call leadership.

We no longer attempt to produce an officer or NCO who knows all the answers — always an impossibility — but one who can quickly devise and carry out a good plan for almost any situation confronted, whether in garrison, on the training range or in a combat zone. We want to develop aggressive warriors who remain effective under the multiple stresses of personal discomfort, uncertainty, physical danger, shortage of manpower, lack of expertise, shortage of time, equipment malfunctions, inadequate facilities, short supplies and an unending stream of obstacles and distractions to mission accomplishment. We want NCOs who function in the absence of their officers and combat crews trained to carry on successfully even when there's no one left to give them orders.

We continue to emphasize the plan-prepare-execute cycle in our leadership development training, but we have begun to concentrate more

on preparation and execution than in the past. The best plan can be ruined by poor preparation or execution. Specifically, we want our leaders to understand how to budget preparation time, how to conduct an intelligence preparation of the battlefield and how to improve ADA synchronization by using execution matrices and by conducting rehearsals.

You have my personal guarantee that we will continue to train superior ADA officers and NCOs.

A variety of data supports this guarantee, including laudatory comments from observer/controllers and task force commanders on the performance of junior ADA officers and NCOs at the National Training Center. These ADA warrior leaders will have a far greater impact on the fighting capability of Air Defense Artillery than any new weapons systems we can field.

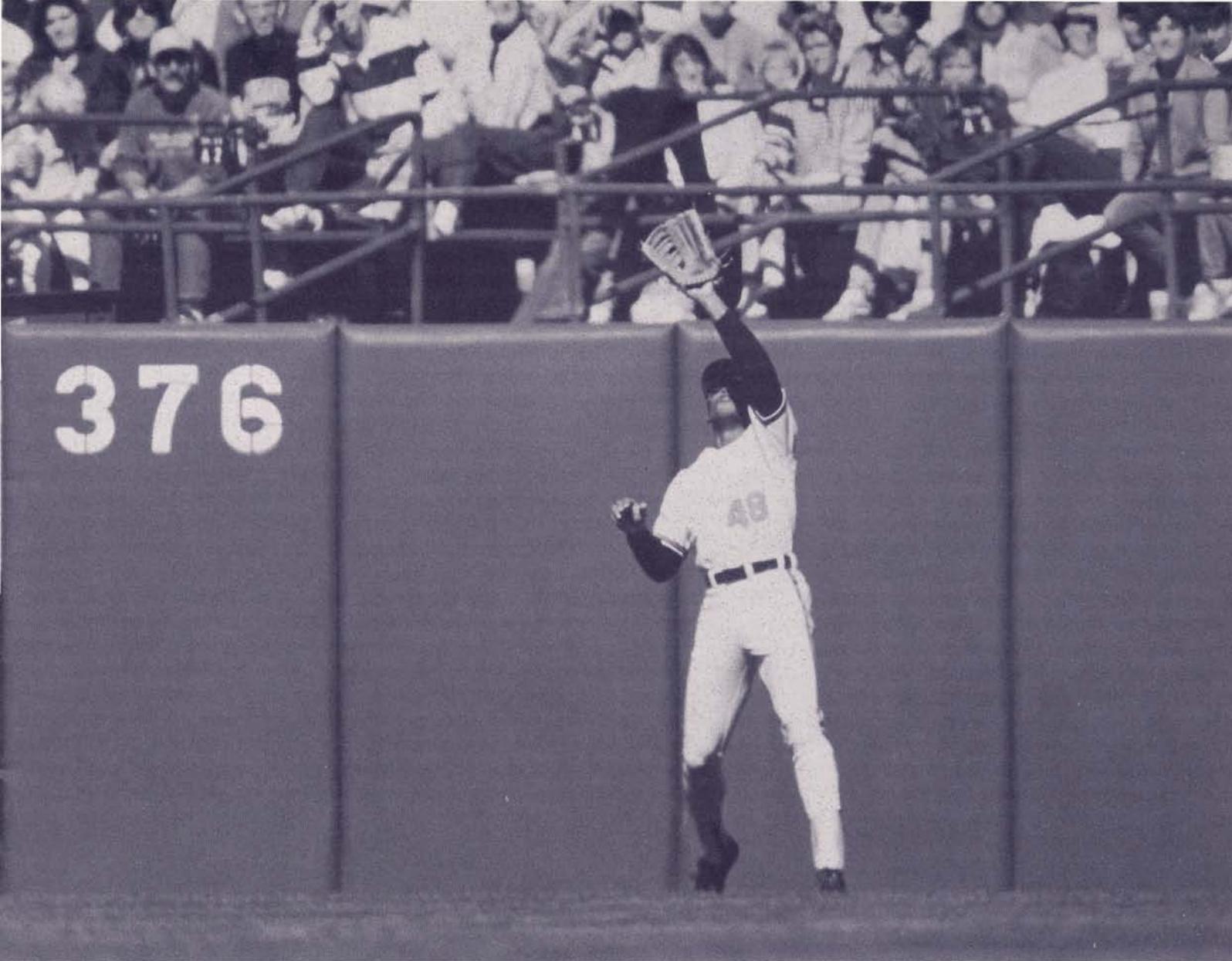
Training

Napolean said "God is on the side of the strongest battalion." The truth is that God seems to be on the side of the better-trained battalion. Since the days of the Grecian phalanx and the Roman legion, superbly trained soldiers have written military history in the blood of their enemies. The post-war memoirs of the most successful combat leaders echo the same refrain: if they had it to do over again, they would place even more emphasis on individual and small-unit training. Today, new technology offers us the opportunity to provide training of previously unimagined realism. Our new ADA weapon systems can be decisive on the AirLand battlefield as long as they are manned by properly trained crews. Training, not sophisticated weaponry, remains the greatest combat multiplier.

For 50 years we have had the prospect of Armageddon on the European plains to infuse our training with a sense of urgency and purpose. In the future, we must work harder to keep the warrior spirit kindled during training.



An 82nd Airborne air defender briefs future leaders at summer camp.



America is finally getting an outfield.

With the successful first KITE (Kinetic Energy Integrated Technology Experiment) test flight of the High Endoatmospheric Defense Interceptor (HEDI) in late January this year, the promise of a true anti-missile missile is becoming a reality. Non-nuclear and cost-effective, HEDI is the best defense America can have



against ground and sea-launched warheads. Recognizing this important step in its development, the McDonnell Douglas/Hughes/Aerojet team also looks forward to the next milestone in creating a fully capable system. Because with HEDI fielding for us, we just might keep the opposition from ever going to bat.

MCDONNELL DOUGLAS
A company of leaders.

To maintain excellence in training, I am committed to institutionalizing the principles of FM 25-100 and FM 25-101 in the schoolhouse. ADA commanders must use the same principles throughout Air Defense Artillery.

To support this process, we are preparing mission training plans (MTPs) with vertically aligned officer, NCO and soldier tasks. We must improve training execution using, whenever possible, training devices, simulators and simulations (DSS) in conjunction with distributive training products to augment the current field training exercise plan. Here's a synopsis of some recent training developments initiated by the Air Defense Artillery School.

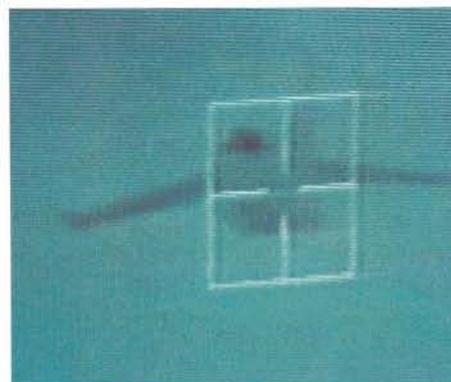
Our combined arms training strategy links near- and long-term, light and heavy forces across the spectrum of the battlefield operating system to establish strategy to train the combined arms force now through the year 2005. The task requires development of cost-effective training DSS. We should have U.S. Army

Training and Doctrine Command (TRADOC) approval of our near- (1990-1991), mid- (1992-1996) and future-funding profiles by the time this article is published. The TRADOC approval will be used to establish budget requirements. Our notional strategy is to move from tactical equipment-based training to DSS-training using embedded or strap-on state-of-the-art technology for ADA-peculiar tasks and the new simulation network (SIMNET), or like items, for combined arms training.

Examples of recent DSS initiatives include the SIMNET and the Hawk training system (HTS). Thus far, SIMNET has effectively replicated Air Defense Artillery in support of the combined arms maneuver battalion task force in a free play, force-on-force simulation that has enormous training potential as well as outstanding value as a combat development tool. SIMNET forms the base to develop an air defense combined arms tactical trainer (ADCATT) as a component of the Army's combined arms tactical train-

er (CATT). ADCATT will interact compatibly with Armor's and Infantry's close combat tactical trainer, Aviation's combined arms tactical trainer and other CATT components as they evolve. SIMNET has already begun paying dividends for Air Defense Artillery. The performance of ADA elements during recent SIMNET wargaming at Fort Knox has sold combined arms leaders on the FAAD concept (see "Fighting the Future," *ADA Magazine*, March-April 1990). In addition, line-of-sight forward (heavy) (LOS-F-H) SIMNET simulators were used to prepare air defense/anti-tank system (ADATS) crews for the ADATS initial operational test and evaluation (IOT&E).

The HTS is a set of three-dimensional simulators based on the Hawk Phase III product improvement program. The simulators include a tactical display and engagement control console for operator training, a platoon command post, a high-powered illuminator radar and a continuous-wave acquisition radar for unit- or intermediate-level main-



SIMNET replicates Air Defense Artillery in support of the combined arms maneuver battalion task force.

tenance training. We will conduct a user test with three leased simulators during the third and fourth quarters of FY 90 to test the simulator. The Hawk program manager is redirecting FY 90 funds to purchase 12 simulators. An option would allow us to redirect FY 91 and FY 92 funds to purchase 35 additional simulators if the test proves successful.

Force Structure

Just as the total Army is in a state of tremendous flux, so is Air Defense Artillery's force structure. With the fielding of FAAD systems and improvements to existing weapons systems come extensive changes to ADA's organizations — from platoons to echelons above corps. Divisional ADA battalions and ADA batteries supporting separate brigades and armored cavalry regiments will see continued change as each FAAD system joins the field.

Our most neglected mission is providing robust and effective air defense for the key executor of Army AirLand Battle doctrine — the corps commander. The continued activa-

tion of units comprising the corps ADA brigades is a top priority.

I am committed to completing the activation of ADA brigades for each corps within the next two years and to growing them to the robust fighting organizations they must be.

A corps ADA element for V and VII Corps will form next year followed by the assignment of a Chaparral and Hawk battalion for at least one of those corps scheduled by FY 92. We are also relooking our contingency corps' ability to deploy quickly with packaged air defense to provide a lead ship, first-lift capability against the Third World's growing air-breathing and tactical ballistic missile threat. We expect to complete that study and begin a packaged approach this year.

As the new FAAD systems come on line, our goal will be to field robust and interoperable ADA organizations with the firepower and equipment necessary to ensure synchronization and victory.

Modernization

Modernization remains essential to the maintenance of an effective fighting force. Without it, you get the modern-day equivalent of Polish Cavalry charging Nazi Panzers. The Soviet Union, despite an economic crisis that has made them eager for force reduction, continues to upgrade and modernize its weaponry. We cannot afford to neglect the modernization of our own weapons systems.

ADA's modernization program is divided into two parts — the modernization taking place at the moment and the ADA Modernization Plan that provides for the branch's more distant future. "Modernizing the Force," page 18, describes our long-range modernization strategy. Now let's look at near-term modernization.

FAAD. The top branch modernization priority continues to be the fielding of the FAAD systems to our light and heavy divisions. It enjoys solid backing from the Secretary of Defense on down through the Army leadership. Last year saw the regi-



Fielding FAAD systems to our light and heavy divisions continues to be the top branch modernization priority.

mental Stinger platoon, 3rd Armored Cavalry Regiment, become the first unit equipped with Avenger, the line-of-sight rear component. Our goal is to complete fielding of Avenger to European and high-priority contingency divisions by the end of FY 92.

The linchpin of FAAD is ADATS, the LOS-F-H component. It is progressing superbly. ADATS has successfully completed the missile-firing phase of its IOT&E and is nearing the end of the force-on-force portion. ADATS has met every challenge with high marks and is quickly silencing its critics with outstanding performances on the range and in the field. Its only "wart" at this writing is low reliability and maintainability (RAM) numbers collected against the four pre-production fire units we are testing. This must be fixed before we field the system to our units. We are scheduled to begin fielding ADATS in CONUS during the third quarter of FY 93, and will be well on our way toward overcoming our most serious weapon deficiency, our inability to adequately protect maneu-

ver forces at the FLOT from the emerging air threat.

The ongoing FAAD non-line-of-sight (NLOS) component extended user employment (EUE) test has included successful testing of NLOS' multiple launch, multiple target and dogleg engagement capabilities. Although budget cuts have limited the scope of NLOS EUEs and affected production funds, a limited-scope Phase III EUE with refined tactics, techniques and procedures continues. The NLOS project manager is developing a revised acquisition plan that includes force development tests in FY 91 and will present a well-tested weapon system to the Army by FY 94. Under the revised plan, we hope to equip the first ADA unit with NLOS in 1996.

The FAAD command, control, communications and intelligence (C³I) network will optimize FAAD weapon effectiveness. The FAAD C³I engagement operations concept, in turn, depends on the availability of a ground-based sensor. The Army has re-released a request to industry for proposals for September through

December of this year. Meanwhile, we are working to provide an automated interface with the battlefield functional area via the force level control system. The goal is to automate the link with the maneuver control system device currently scheduled for the battalion tactical operations center.

Patriot. The completion of Patriot backfill units is progressing superbly, with backfill for the remaining Patriot battalions scheduled for completion during my watch. Patriot Anti-tactical Missile Capability-2 software and missile modifications — which will improve Patriot's self-defense anti-tactical ballistic missile capability to limited asset defense — are nearing completion for fielding next year. Our near-term goal is to complete these improvements along with sweepdowns (equipment refurbishes) that will keep all Patriot units viable against the early mid-term threat. The declining Army budget has forced us to make some tough decisions on future Patriot modernization. We will have to delay some
(Continued on page 60)



Near-term improvements will keep Patriot units viable against the evolving threat.



A CLEAR PATH IN AIR DEFENSE

In striving to modernize air defense capabilities, during this time of decreasing defense budgets, a clear path exists.

High-performance, cost-effective defense systems are a specialty at Hughes Aircraft Company. For the Royal Norwegian Air Force, Hughes has worked with Norsk Forsvarsteknologi A/S (NFT) of Norway to produce the Norwegian Adapted Hawk (NOAH) surface-to-air missile system.

Today, 24 Acquisition Radar and Control Systems, using new-generation Hughes TPQ-36A three-dimensional radars and NFT fire distribution centers, protect Norwegian air bases with HAWK missile launcher elements and short-range anti-aircraft artillery. These advanced systems have provided highly reliable service with significant improvements in firepower and life-cycle costs over the older systems they replaced.

For the future, an even newer generation surface-to-air missile system is being developed with a low-cost, low-risk approach. Expanding on their NOAH success, Hughes, NFT and the Royal Norwegian Air Force are building an even stronger system... again using the Hughes TPQ-36A radar and the NFT fire distribution center, but adding the Hughes Advanced Medium Range Air-to-Air Missile (AMRAAM) in a ground-launched mode.



Ground-launched AMRAAM, above, and TPQ-36A/NOAH, below.

Called the Norwegian Advanced Surface-to-Air Missile System (NASAMS), it will take advantage of the advanced, proven capabilities of all three systems, including the fire-and-forget capabilities of AMRAAM. NASAMS will provide Norway with dramatically higher firepower, greater coverage and lower life-cycle costs.

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Modernizing the Force

by Col. James C. Starkey

Why modernize? Modernizing or replacing aging weapon systems, doctrine and tactics is expensive, but the price of failing to modernize is catastrophic. Anthropologists say the cause of Neanderthal Man's sudden disappearance and the equally sudden and virtually simultaneous emergence of Cro-Magnon Man is a riddle whose answer is lost in the mists of time. Combat developers theorize the reason behind Neanderthal's early exit from the stage of history is that he stood stubbornly by his trusty stone axe while Cro-Magnon embarked on a prehistoric modernization plan — the development of the spearpoint and arrowhead. The portrayal of Neanderthal as an early loser in the arms race may be speculation, but it has parallels throughout the history of military conflict.

The modernization of Army mission areas is a continuous and never-ending process to build, enhance and sustain the Army's required warfighting abilities as the threat, missions, doctrinal requirements, technological opportunities and resources evolve. During this period of changing world strategic situations and limited resources for the nation's com-

peting needs, it is especially important to maintain a clear vision of where we are going and what affects the way ahead.

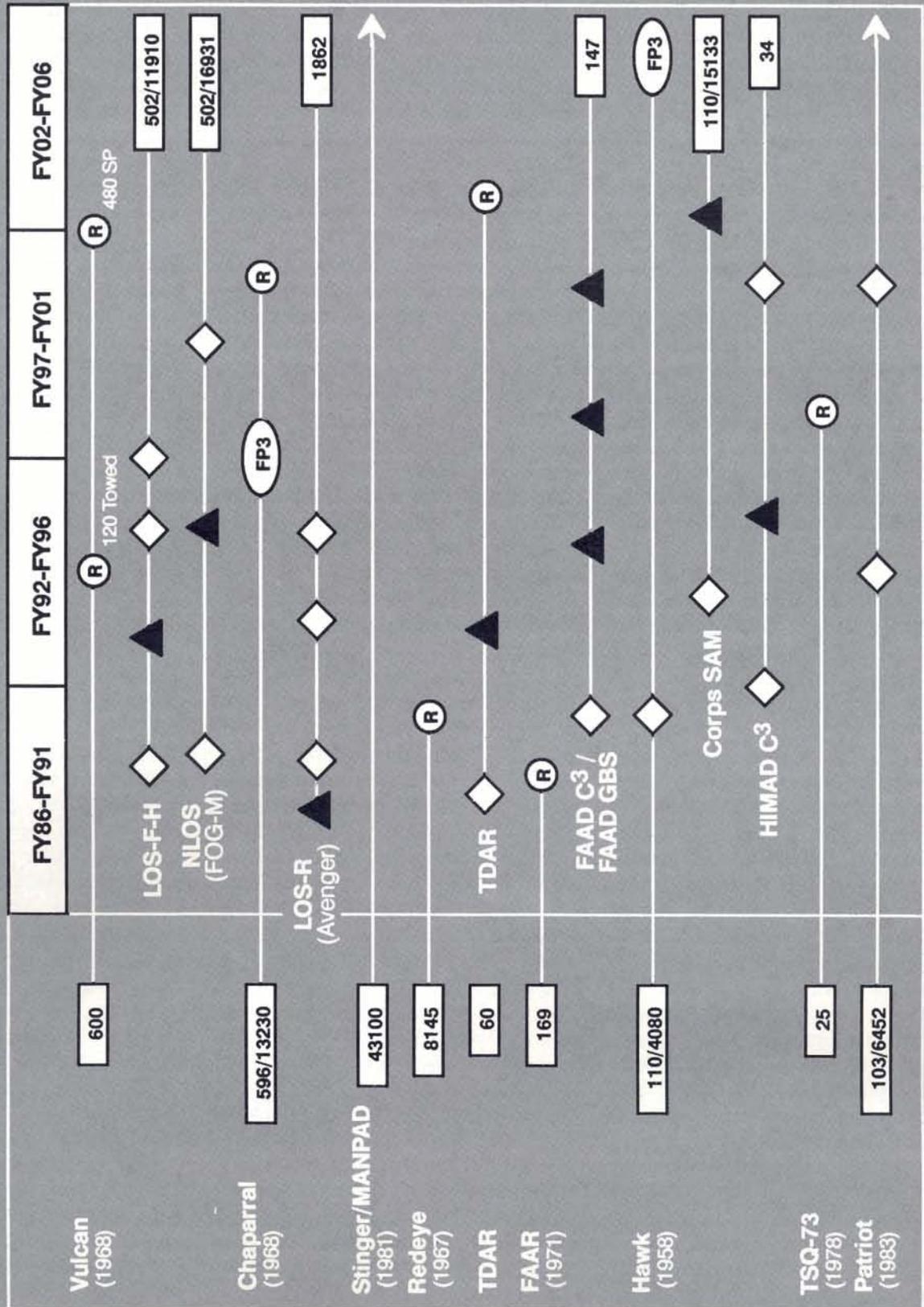
The Air Defense Modernization Plan (AD Mod Plan) is one of a series of Army modernization plans designed to accomplish an orderly, disciplined evolution of our Army. Other modernization plans include Armor/Anti-Armor, Aviation, Command and Control, Intelligence and Electronic Warfare, Fire Support, Tactical Wheeled Vehicle and Heavy Force. This family of modernization plans provides guidance for combat and materiel developers and reflects the Army's decisions and commitments to field a force trained and equipped to accomplish its mission while providing the stability required to most efficiently use available resources.

Air Defense Artillery protects the force by engaging and killing airborne threats. The AD Mod Plan is the Army's proposed strategy for modernization of its entire air defense force at the operational and tactical levels of warfare to accomplish this function. The AD Mod Plan is a result of a focus on the evolving threat, the nature and char-

acter of future requirements, a recognition of the need to significantly reduce the time required to develop and field advanced technology, and constrained resources. The plan provides for the orderly, disciplined evolution of the Army's air defense to maximize resources over the next 20 years.

Since the publication of the last Army Air Defense Program Plan in 1985, threat evolution, material fielding decisions, technology advancements, funding constraints and the development of a new air defense concept in support of AirLand Battle doctrine have all impacted on our planning. The cancellation of Roland and Sergeant York left our divisions without survivable, effective air defense weapons. These calamitous events, however, were followed by the Secretary of Defense's approval of the forward area air defense (FAAD) system and the highly successful fielding of Patriot. The FAAD system continues to enjoy strong DoD commitment and, despite some funding delays, remains a major DoD effort. Patriot has been a fielding success story and remains our most modern fielded ADA weapon. Moreover, the strategic defense

Air Defense Modernization Plan



initiative has placed a renewed emphasis on the role of strategic air defense, not only for the defense of the CONUS, but for the NATO theater as well. AirLand Battle doctrine focuses on the corps, but the corps commander has no (or inadequate) ADA forces to protect resources and weight the battle — a deficiency that the ongoing formation of ADA corps brigades is beginning to correct. Our challenge now is to prepare Air Defense Artillery to support the requirements of AirLand Battle Future, a perception of how the Army will fight well into the next century. We must ask ourselves the question, “Where do we go from here?”

The French spent the intervening years between the two world wars asking themselves the same question. They modernized their weapons systems (French tanks were superior in design to German *panzers* employed at the start of World War II) but failed to modernize their doctrine and tactics. Refusing to listen to iconoclastic officers like Maj. Charles de Gaulle, who argued that the “gasoline engine has discredited all our military doctrines, just as it will demolish our fortifications,” the French generals, rather than preparing to fight the war to come, prepared to fight the last war over again. The centerpiece of their “modernization plan” was the Maginot Line, an elaborate chain of fortresses and earthworks that anticipated another static war of attrition and ignored technological and operational advances that were to make the coming conflict a war of maneuver. When asked how France would respond to a German mobilization, the frustrated de Gaulle declared, “According to circumstances, we shall have a limited call-up or full mobilization. Then, peering through the battlements of our fortifications, we shall watch the enslavement of Europe.”

Hindsight makes the French mistake seem obvious, but before we shake our heads in bemusement, we should remember that only recently have American combined arms strategists and tacticians grudgingly acknowledged the severity of the air

threat. Like French Gen. Maurice Gamelin who insisted, “There is no such thing as the aerial battle. There is only the battle on the ground,” we long preferred to pretend that, during the next war, the air threat would evaporate quickly and U.S. maneuver forces would continue to enjoy almost total air superiority, just as they had during World War II. From an air defense point of view, we were, in a sense, preparing to fight the last war over again.

Formulating a modernization plan is tricky business. The AD Mod Plan attempts to weave a multitude of factors, including geopolitical turmoil and economic realities, into a realistic and accomplishable modernization plan that anticipates the future with a clear vision — a plan that may be described as “pro-active” in the military sense of the word (to anticipate future problems and correct them before they occur) and not by the civilian dictionary definition of “pro-active” (the tendency of past experiences to inhibit learning from new experiences).

The AD Mod Plan is a living plan that uses the following methodology. The threat is projected to 2006 and beyond. Army doctrine — AirLand Battle Future — describes how our Army will fight. From the threat and AirLand Battle Future we develop an air defense operational concept. We make assessments using the air defense concept and the projected air threat, adding joint and allied considerations, to establish requirements at the near (1992-1996), mid (1997-2001) and far (2002-2006) terms. We prioritize requirements, consider and focus technology and then superimpose the overall Army modernization strategy. We develop equipment programs, equipment distribution and displacement, organizational design and training requirements to describe the ADA force of the future. Funds reflect FY 92-97 Program Objective Memorandum (POM) guidance and the force structure is capped at the approved Total Army Analysis-1996 levels, as modified by projected reductions.

Recent events in central and east-

ern Europe have made the long-anticipated clash between NATO and Warsaw Pact forces less likely. While we can expect the future European threat force to be quantitatively smaller and constrained by treaties and unilateral troop reductions, we must also assume the threat will continue to seek a qualitative edge. To present a credible deterrent, we must field a smaller, qualitatively superior forward-deployed force. While the Soviet threat in Europe is the most intense in terms of numbers and technology, it is not necessarily the most likely “next war.” Threats faced may include Soviet, third world or regional powers. In contingency operations, most threats will use air power against similar types of targets and goals as a Soviet theater operation. Although quantities will be somewhat lower, sophistication in both missiles and aircraft is growing rapidly. Every U.S. force employed worldwide must, therefore, be prepared to face an air threat. We must field a lethal, balanced contingency force that we can effectively deploy and reinforce.

Our antagonists maintain a steady pace of technological and operational improvements. Failing to meet the challenges of today through 2006 can only result in victory for the threat before the battle begins.

This AD Mod Plan reviews requirements placed upon Air Defense Artillery over the entire spectrum of potential future conflicts. Unlike many other modernization functional areas, the branch has requirements to defeat a variety of threats at all levels of warfare (tactical, operational and strategic) at all levels of conflict (low, medium and high) for all types of Army combat units (heavy, light and special). Air Defense Artillery must also meet NATO requirements and interface with our other services and our Allies.

The Army’s modernization plans are not total, stand-alone documents; each plan contributes to others and places requirements on other plans to varying degrees. The chart on the facing page shows the principles that govern the AD Mod Plan.

The AirLand Battle and the emerging AirLand Battle Future concepts hinge on the ability of our forces to conduct operations in depth throughout the battlefield. Air Defense Artillery provides the prerequisites to victory. They include freedom of action which enables initiative, freedom to maneuver which allows agility, and protection of the force to promote endurance.

The ADA Mod Plan considers two types of operational theaters: the mature and non-mature. The mature theater concept assumes ADA forces (with corps assets ready for immediate employment) are in place to defend a large number of high-value assets. U.S. Air Force fighters will lavishly complement ADA forces in their efforts to counter a highly sophisticated, numerically strong air threat that will come in waves. The obvious example of a mature theater is NATO. The anticipated reduction of troops in Europe places an even greater premium on re-entry and our ability to reinforce the forward deployed force that remains. Mature theater air defense objectives are —

- to selectively disrupt and destroy (deep operations);
- to protect the maneuver force, sustain freedom to maneuver and deny sanctuary (division);
- to reinforce division ADA, protect critical assets and reserves, and attrit the enemy (corps); and
- to protect theater critical assets (echelons above corps).

Operations in the contingency theater will likely begin with little or no ADA assets in place and a limited number of aircraft to defend a small number of high-value fixed assets against a reduced, though conceivably robust, threat capability. Operation Just Cause, the recent Panamanian adventure, is a textbook example of a contingency operation in which Air Defense Artillery played a largely precautionary role, the Panamanian air force having been captured intact on the ground. Contingency operations in many parts of the world, however, could quickly escalate into major confrontations featuring a relatively strong, sophisticated

air threat with tactical ballistic missile capabilities. We *must* be able to reinforce deployed contingency forces. The air defense objectives in non-mature theaters are —

- to deploy rapidly (deployment);
- to maximize firepower, mobility and survivability (lodgement);
- to support expansion and thickened defense, selectively disrupt and destroy, and deny sanctuary (expansion); and
- to provide protection and maneuver freedom, selectively disrupt and destroy, and protect theater critical assets (termination).

The Army will use the resulting array of threats, missions and requirements to assess the force over time to establish priorities for program development.

The development of the air defense program plan — the acquisition and fielding of new systems and the improvement of existing systems — was driven by priorities for near-, mid- and long-term capability requirements. Near-term priorities are to successfully conduct forward line of own troops (FLOT) operations, defend against tactical missiles and kill the stand-off threat. In the mid-term, priorities include completing

the fielding of FAAD systems and product improvements to existing systems, constructing asset defense against tactical missiles, and integrating command, control, communications and intelligence from division to corps to echelons above corps. Long-term priorities include technological advances in directed energy, propulsion, guidance and target identification and tracking.

The Army based the air defense program plan on the funding levels in the Army POM 92-97. The development of priorities for each time period, based upon the corresponding warfighting assessment, provided the basis for rank ordering within and between the individual programs. This rank ordering enables articulation of the impact of funding decrements from the POM baseline. The impact can be expressed in doctrinal or AirLand Battle Future execution contexts as well as in program executions. The AD Mod Plan charts the transition of ADA materiel over time. This transition, coupled with advances in combined arms self-defense capabilities, will provide the freedom of maneuver and force protection from air attack needed to execute AirLand Battle.

Air Defense Modernization Principles

- Focus on evolving threat in a CFE environment
- Support ALB doctrine in mature and contingency theaters
- Replace systems within their useful age (25 years)
 - Block improve modern systems
 - Retire less modern systems before obsolescence
- Give priority to first to fight
- Modernize by force package
- Minimize training and readiness turbulence
- Leverage leap-ahead technology — focus on the future
 - Technology base
 - SDI and ADI Initiatives
 - Joint and allied programs
- Constraints
 - FY 90-91 to President Bush's budget
 - FY 92-06 to HQDA LRRDAP guidance
 - Force structure is TAA 96 — reduced by CFE

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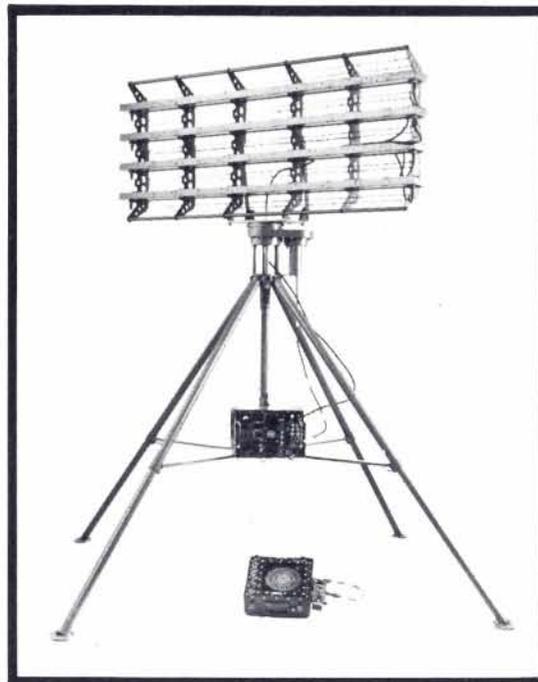
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The division area ADA forces progress from a visual only, non-survivable, non-lethal, nodal weapon and fratricide-risky force to one of a beyond-visual range capable, survivable, highly lethal system of systems capable of simultaneously protecting friendly air and defeating threat air. Division commanders are thus provided the ability and flexibility to maneuver, mass and endure on the AirLand battlefield.

The formation of corps ADA brigades with a mix of low- and medium-altitude weapon systems is key to providing the commander the ability to influence the main effort by reinforcing success and simultaneously conducting deep operations to influ-

ence the tempo of the close battle. The corps evolution progresses from having essentially no organic air defense capability to a force that is distributed, lethal, high in firepower, more strategically and tactically mobile and integrated with the air battle to the corps front and rear.

At the echelons above corps level, medium- to high-altitude systems stay current with and gradually outpace threat evolutions through enhancements in acquisition, identification, guidance and kill mechanisms. At both echelon above corps and corps levels, two new ADA capabilities are attained and matured — asset defense against the tactical ballistic missile threat and the selective disruption or destruction of enemy air operations on his side of the forward edge of the battlefield. Both capabilities tend to de-synchronize the threat, negating preferred attack options and denying the use of the third dimension for reconnaissance, targeting, jamming of our forces and disrupting our operations.

Maximizing returns on the investment of limited ADA mission area resources is a primary focus throughout the plan. Procuring new systems only to provide leap-ahead capabilities and placing reliance on non-developmental items and limited pre-planned product improvement pro-

grams will conserve resources while allowing for the fastest possible acquisition and fielding schedule. Priorities for funding in the near-term go to FAAD for forward deployed forces, Patriot anti-tactical missile capabilities and Hawk product improvement plan Phase III. In the mid-term, priority goes to corps ADA and command, control, communications and intelligence integration. In the far term, priorities shift to asset TBM defense and technology-based solutions to a range of air defense requirements.

Asking "To modernize or not to modernize?" is much the same as posing Hamlet's famous question, "To be, or not to be?" Throughout history, nations that have failed to modernize have generally ceased to exist. Fortunately, our nation's civilian and military leaders, despite troop reductions, budget cuts and the clamor for a peace dividend — the understandable consequences of the crumbling of the Warsaw Pact — remain firmly committed to force modernization. Nowhere is their commitment stronger than in the air defense functional mission area.

Col. James C. Starkey is the director, Directorate of Combat Developments, U.S. Army Air Defense Artillery School, Fort Bliss, Texas.



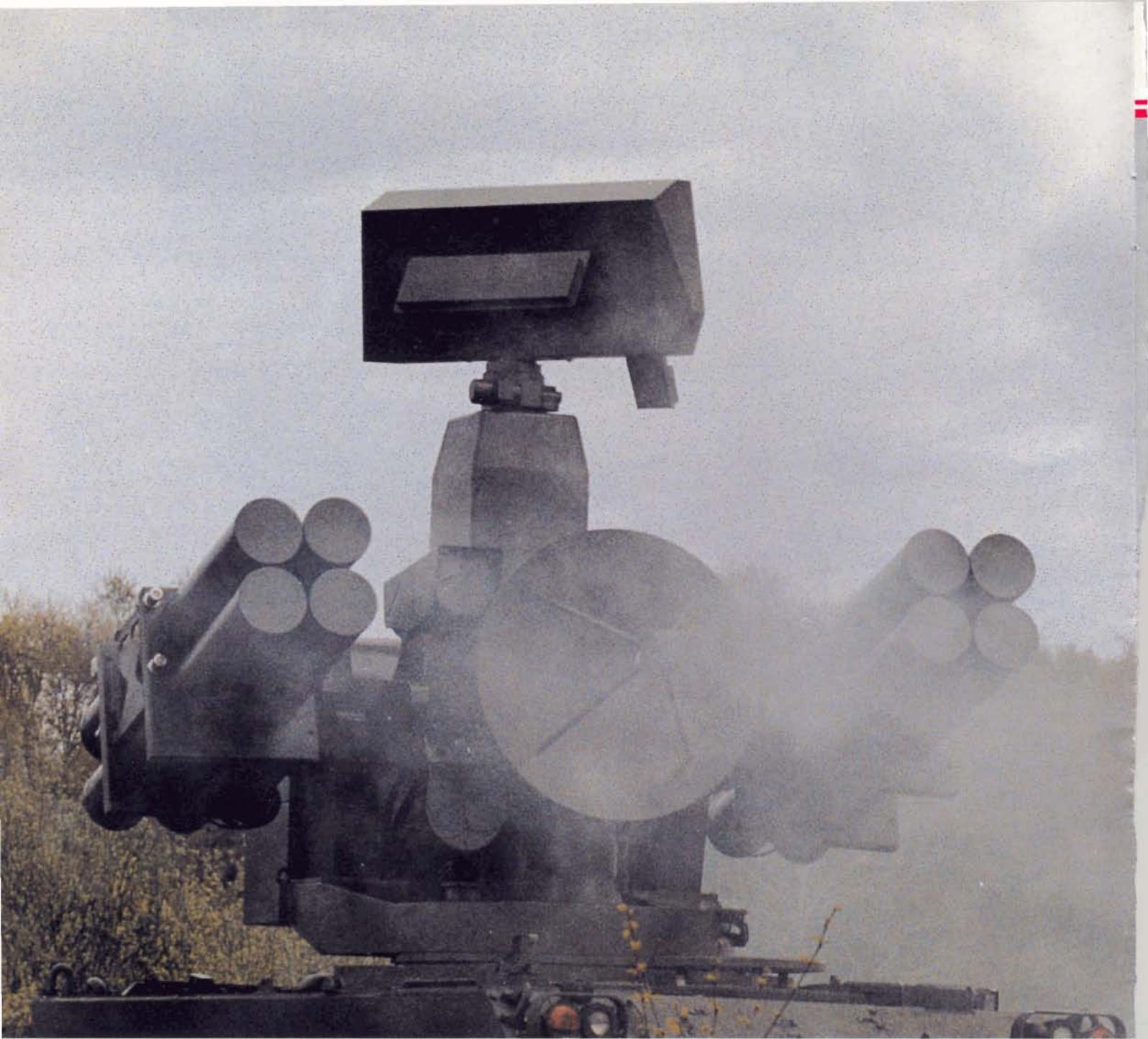
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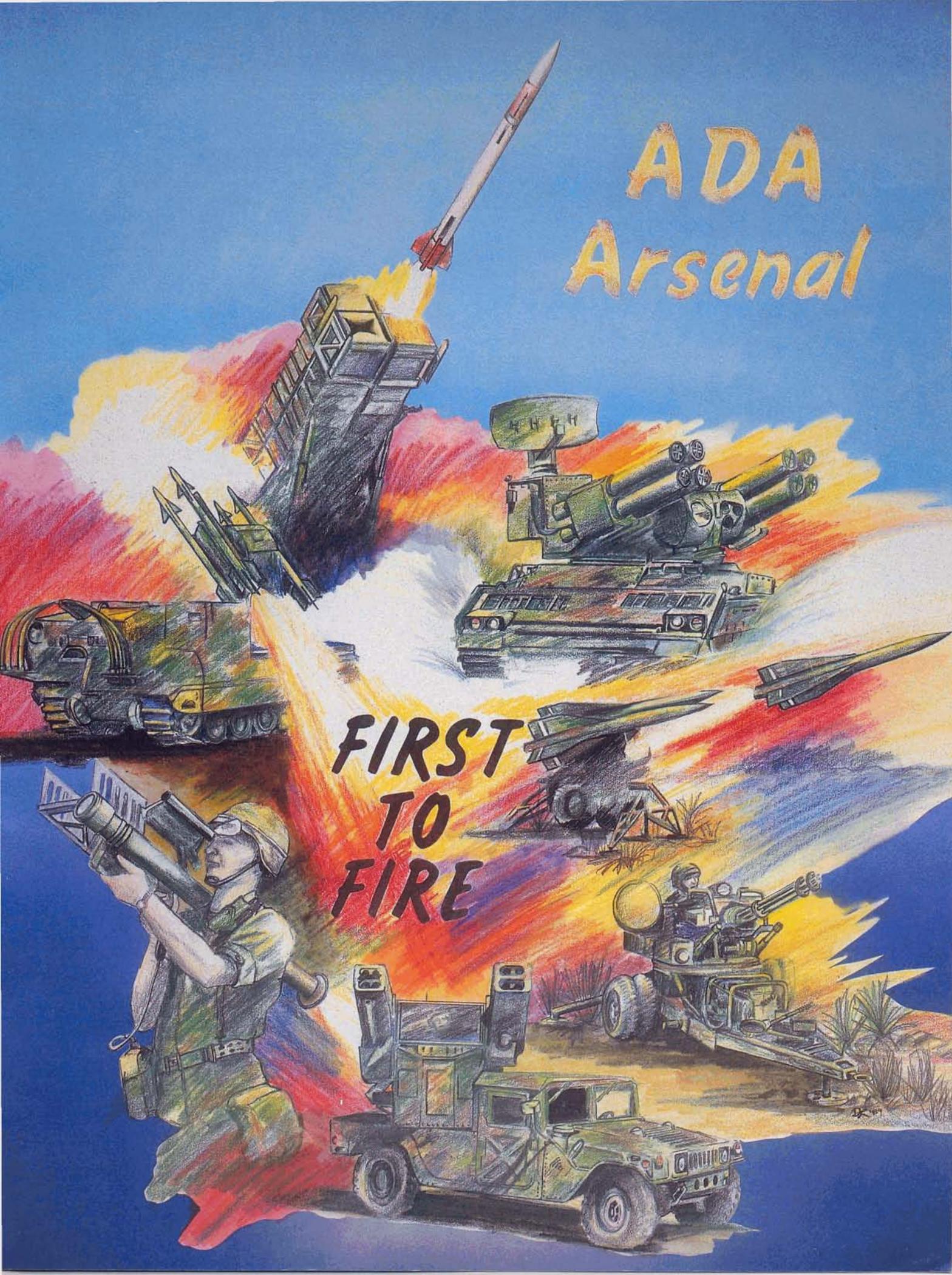
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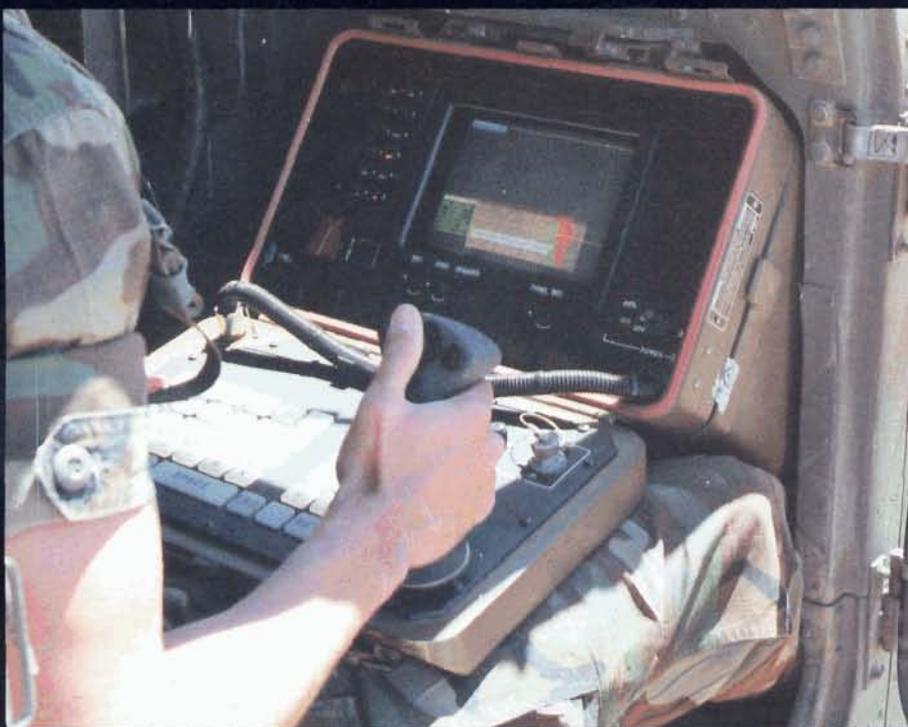
The non-line-of-sight (NLOS) component of the forward area air defense (FAAD) system is Boeing's and Hughes' combat adaptation of U.S. Army Missile Command's fiber-optic guided missile technology. NLOS, hidden in defilade, can engage fixed- or rotary-wing aircraft or even tanks masked by or hiding behind ridges or treelines at ranges greater than 10 kilometers.

The NLOS ongoing extended user employment (EUE) tests include successful testing of NLOS' multiple launch, multiple target and dogleg engagement capabilities. Although budget cuts have limited the scope of NLOS EUEs and affected production funds, a limited scope Phase III EUE with refined tactics, techniques and procedures is ongoing.

The NLOS project manager is developing a revised acquisition plan that includes force development tests in FY 91 and will present a well-tested weapon system to Army officials by FY 94. Under the revised plan, the Army hopes to equip the first ADA unit with NLOS in 1996.

Mounted on a high-mobility multi-purpose wheeled vehicle, the NLOS consists of six missiles, an on-board target acquisition device, a ground control gunner's station and fiber-optic cables that link each missile to the gunner's station.

After launch, the NLOS missile levels out for flight. Video images, virtually immune to jamming, are transmitted to the gunner's station via a hair-thin fiber-optic cable paid out behind the missile. This allows the NLOS gunner, in comparative safety, to remotely view the battlefield on a TV monitor. The gunner assesses the scenario, selects a target and enters commands that send the missile on its way to intercept.



ADATS

The United States has long been the only major power lacking a mobile air defense system that can fight and survive alongside main battle tanks at or near the forward edge of the battlefield. ADATS, the FAAD line-of-sight forward (heavy) component, corrects this glaring deficiency.

ADATS can detect, acquire and kill attack helicopters operating at stand-off ranges or "popping up" from behind terrain mask in the brief seconds they require to release their munitions. And it can kill highly sophisticated close-combat support aircraft operating at treetop levels.

ADATS has completed the live-fire portion of its initial operational test and evaluation (IOT&E) and is scheduled to complete the force-on-force phase of IOT&E this summer.

In technical testing conducted at Camp Grayling, Mich., and White Sands Missile Range, N.M., ADATS demonstrated its ability to operate in adverse weather conditions including cold, fog and freezing rain (conditions that closely resemble European environments) and proved its ability to operate in electronic countermeasure environments.

Mounted on a Bradley fighting vehicle, ADATS is operated by a three-man crew: a driver, a fire unit commander and a gunner. It carries eight laser-beam-riding missiles that travel at more than three times the speed of sound at ranges in excess of six kilometers. A volume-search radar and two passive sensors (a TV sensor and a forward-looking infrared system) handle target acquisition and tracking.

Four ADATS production units have been engaged in aggressive testing and evaluation since Martin Marietta made on-schedule delivery during the first half of 1989.



Avenger



The testing and evaluation of Boeing Aerospace's Avenger, the FAAD line-of-sight rear component, is now complete, and this April the Army approved a full-scale production contract.

Boeing won a candidate evaluation test in July 1987 and delivered the first production model Avenger in November 1988 — just 34 months after the Secretary of Defense approved the FAAD concept. In 1989, the regimental Stinger platoon, 3rd Armored Cavalry Regiment, Fort Bliss, Texas, became the first unit equipped with Avenger. Boeing delivered nine Avenger fire units early this year, bringing the total delivered to 40. The Army plans to purchase 1,207 Avenger fire units, making Avenger the most proliferated ADA weapon system.

The Avenger is the Free World's first shoot-on-the-move air defense weapon system. Its primary role is to defend against fixed-wing aircraft attacking our command, control and communications centers or other critical assets. It will normally be deployed no farther forward than the battalion rear boundary.

Mounted on a high-mobility multi-purpose wheeled vehicle, the Avenger packs eight ready-to-fire missiles. Avenger features a 360-degree rotatable turret and two missile pods. An M-3P .50-caliber machine gun covers the Stinger missile's dead zone and provides close-in self-defense.

Avenger yields optimum savings in manpower while maximizing the Stinger missile's potential. It's two-man crew can fire Stinger missiles from a gunner's station inside the vehicle or from a remote fire control unit. They can also remove the missiles from their launch pods and fire them in a man-portable mode.

Stinger

Stinger is now deployed in every ADA battalion except corps Chaparral battalions, and is attached to numerous Army divisions.

Although Stinger has never gone to war for the United States, it traveled to the hills of Afghanistan to earn its battle scars in the hands of *Muhajideen* freedom fighters. The *Muhajideen*, unable to counter Soviet Hind-Ds and Frogfoots, had failed to mount effective campaigns until the arrival of Stinger. The Stinger forced the Soviet and Afghan air forces to adopt ineffectual tactics. The *Muhajideen* quickly became expert at air ambushes.

Designed to counter high-speed, low-level ground attack aircraft, Stinger entered the Army in 1981. Stinger is a manportable, shoulder-fired, infrared-guided missile system. This fire-and-forget short-range air defense system has a range of more than two miles.

A typical Stinger team includes a gunner and a team chief. The gunner aims the weapon and visually tracks a target using a sight assembly. The Stinger's separable gripstock assembly contains all the necessary circuits and assemblies that allow the gunner to interrogate aircraft and prepare and launch missiles. Once the missile is launched, the gunner removes the gripstock assembly and reuses it on another launch tube.

There have been three versions of the Stinger. The current version is the Stinger RMP, which stands for reprogrammable microprocessor. The RMP configuration is more computerized than previous models. It makes provisions for external programming, allowing the missile to be updated for new countermeasure developments or guidance enhancement without modifying the missile.



Vulcan



U.S. Vulcan gunners have served valorously in combat, but never against the threat aircraft the Vulcan was designed to counter. Instead, Vulcan has been employed in a variety of ground-support roles.

Vulcan received its baptism of fire during the Chinese Year of the Monkey. The 1st Vulcan Combat Team consisted of five self-propelled Vulcans and hand-picked crews dispatched to Vietnam to evaluate the new system's combat effectiveness. The team arrived just in time to help fight off attacking infantry during the Tet Offensive of 1968. Scheduled to leave Southeast Asia in March 1969, the Vulcan Combat Team stayed in Vietnam an extra 45 days to finish mopping up. Vulcan passed its combat evaluation with flying colors.

Two decades later, during Operation Just Cause, Vulcan gunners of the 7th Light Infantry Division's 2nd Battalion, 62nd Air Defense Artillery, set their towed Vulcans on direct-fire mode and crippled a Panama Defense Force patrol boat.

The Army recently completed the installation of Product Improved Vulcan Air Defense System (PI-VADS) kits on both the towed and self-propelled Vulcans. The PI-VADS kit modifies the gunner's sight, target-tracking computer, turret drive gears and fire control systems. It improves the Vulcan's hit probability by accurately predicting target lead angles.

As the FAAD system is fielded, Vulcan will be eliminated from the Active Army inventory. The towed Vulcan may be out of the arsenal as early as 1994 and the self-propelled version as early as 2000.

Soldiers who crew Vulcan today will become the forward area air defense soldiers of tomorrow.



Chaparral

The Chaparral, a self-propelled, surface-to-air guided missile system, joined the U.S. Army in the early 1960s. It is effective against aircraft and helicopters at ranges to about five miles. The Chaparral consists of a launching station, tactical missiles and a carrier.

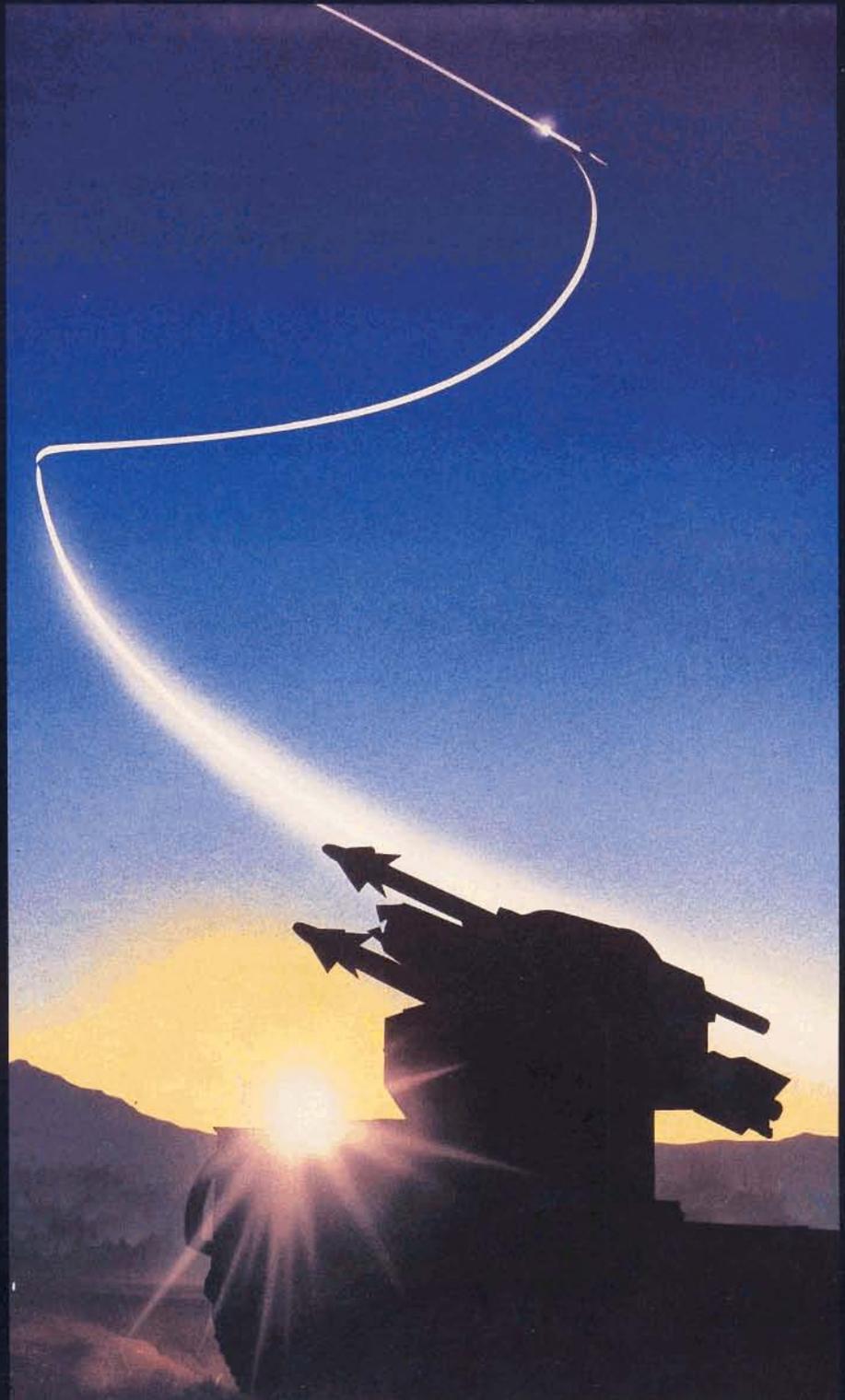
The Chaparral launching station is an independent weapon system that can launch missiles when mated to or separated from the tracked carrier vehicle. Twelve missiles make up the Chaparral's basic load. These light-weight, supersonic, passive homing missiles use infrared radiation from the target for tracking.

Chaparral is one of the air defense systems being replaced in the Active Component by the new FAAD systems. In 1984, the U.S. Army Air Defense Artillery School presented a plan to the Department of the Army to give Chaparral to the Army National Guard, thus creating the Army's first corps Chaparral battalion. New Mexico took the lead. The 1-200th ADA converted from a division Duster battalion to a corps Chaparral battalion late in 1984.

Florida, which had only a Duster Army National Guard battalion three years ago, now has a corps ADA brigade headquarters and two Chaparral battalions.

Chaparral joined the state of Arkansas when the 1-233rd ADA activated as a corps Chaparral battalion in 1989.

Chaparral remains in the Active Component, although it has moved out of heavy divisions into corps Chaparral battalions. The Active Component now has three corps Chaparral battalions: Fort Lewis, Wash.; Fort Hood, Texas; and Fort Stewart, Ga.



Patriot



The deployment of Patriot battalions has, virtually overnight, transformed an aging but capable high- to medium-altitude air defense force into a force of previously unimagined potency.

The 5th Battalion, 7th Air Defense Artillery, deployed from Fort Bliss, Texas, to Bitburg, Federal Republic of Germany, in August 1989 to complete the European deployment of Patriot. Seven Patriot battalions are currently deployed in Germany while three, the 2nd Battalion, 7th Air Defense Artillery, and the 1st and 3rd Battalions, 43rd Air Defense Artillery, remain at Fort Bliss.

A full-strength Patriot battalion consists of six firing batteries, each with eight launchers. However, to rush Patriot to potential battlefields, the Army initially fielded Patriot battalions with only three batteries. CONUS backfill for the 3-43 ADA and 2-7th ADA is complete. The first OCONUS backfill (three batteries for the 1st Battalion, 7th Air Defense Artillery, Kaiserslautern, Germany) began collective training in January 1990. The Army hopes to bring all European Patriot battalions to full strength by the mid-1990s.

Patriot anti-tactical missile capability-2 software and missile modifications, which will improve Patriot's anti-tactical ballistic missile capability, are nearing completion and fielding is scheduled late this year.

The Army's near-term goal is to complete these improvements along with sweepdowns (equipment refurbishments) that will keep all Patriot units viable against the early 1990s threat. Budget cuts may delay some Patriot radar enhancements, launcher upgrades and new multimode seekers into the late 1990s.



Hawk

The veteran Hawk air defense missile system, its potential multiplied by its interface with Patriot, turns 30 this year. First fielded in 1960, it continues to be the West's only combat-proven medium-range, land-based surface-to-air missile. Since the first major Hawk modernization (Improved Hawk) was fielded in 1972, the system has been continually updated with state-of-the-art technology. Today, more than 400 Hawk batteries are deployed by 21 allied or friendly nations.

Phase III fielding is now in full swing. Following several budget setbacks in the past two years, the Army has accelerated the purchase of crucial improvements for Hawk to FY 92. This will ensure all Hawk battalions, including Army National Guard, are fully modernized by the mid-1990s. The Army is working on Hawk mobility improvements to improve Hawk's usefulness in corps and contingency force operations.

The Army has embarked on the definition of requirements for a high firepower, strategically deployable, highly survivable replacement for Hawk. U.S. Army Air Defense Artillery School combat developers have initiated early funding requests to start developmental work leading to a full-scale development effort in the mid-1990s and to field Corps SAM, as the corps surface-to-air missile is currently known.

The Army hopes to field Hawk's successor, Corps SAM, to the active force beginning in the early 2000s. Meanwhile, the Army remains dedicated to keeping the amazingly versatile and reliable Hawk viable against the near-term threat through the continued fielding of mobility improvements.



Acquisition Alternatives

by Maj. Richard Garza

This summer many ADA officers will stand at a career crossroad — the choice between career progression as an ADA “warrior” or as an ADA “acquisition specialist.”

The new Army Acquisition Corps brings to Air Defense Artillery immediate and long-term ramifications. Our branch will benefit from a highly skilled, efficiently run procurement system. Air Defense Artillery’s focus on warfighters will become clearer while the AAC will focus on acquisition with an air defense flavor.

The new AAC will provide warfighting ADA officers with more battalion and brigade command opportunities — the AAC officers removed from Air Defense Artillery will no longer be competing for command slots. The branch also looks to benefit by having a high-quality officer pool procuring ADA systems — the AAC provides a 30-year leader development career pattern.

On the other side of the coin, Air Defense Artillery will suffer a loss of force structure and fewer civil schooling opportunities. Air Defense Artillery presently plans to provide 332 officers (captain-colonel) from FA 51 to the AAC. In addition, all of the AAC officers must complete advanced civil schooling in scientific, technical and managerial disciplines, in effect reducing the civil schooling slots available for warfighters.

Why did the Army create the AAC? The old Army Materiel Acquisition Management Program proved ineffective in developing and

managing a satisfactory pool of highly qualified materiel acquisition managers. A U.S. Army Personnel Command (then Total Army Personnel Agency) study, published in April 1988, highlighted problems with the old MAM skill management procedures and recognized the Army’s need to look at a possible new CMF for MAM officers to ensure proper professional management.

President George Bush, during a joint session of Congress in 1989, directed DoD to develop a plan to accomplish full implementation of the recommendations of the Packard Commission and to realize substantial improvements in defense management overall. Bush directed DoD to identify actions in four broad areas — personnel and organization, defense planning, government-industry accountability and acquisition practices and procedures.

The President’s Blue Ribbon Commission on Defense Management — known as the Packard Commission after its chairman, former Deputy Secretary of Defense David Packard — studied the defense acquisition system and issued several reports to Congress that noted areas in which improvement could be achieved.

In July 1989, Headquarters, Department of the Army released a message to the news media highlighting the President’s direction based on the findings of the Packard Commission and emphasizing the President’s desire to clean up and tighten the DoD procurement process. According to the release, Secretary of

Defense Richard B. Cheney will chair an executive committee that will serve as the key policy-making body for DoD, and the Deputy Secretary of Defense will oversee the system for planning, programming and budgeting.

To improve the acquisition system at the Pentagon, the message revealed, the Undersecretary of Defense for Acquisition will exercise full authority for streamlining service acquisition program managers, thereby reducing costs by \$7.5 billion by FY 93. He will “manage a more disciplined process for reviewing major weapons programs, and establish a dedicated corps of military officers in each military department who will be career acquisition specialists.”

Cheney added that “DoD would embark immediately on implementing the actions stated above.”

In January 1989, Col. John R. Bramblett, chief of the Project Management Office at the U.S. Army Materiel Command (AMC), staffed a sweeping plan to change the Army MAM Program. Secretary Cheney approved the plan in August 1989, and Army Chief of Staff Gen. Carl E. Vuono announced the actual establishment of the AAC in January 1990.

The first director of the AAC, Brig. Gen. Malcolm R. O’Neill, wants to ensure that soldiers train with the best equipment available.

According to O’Neill, the goal of the AAC will be to provide the Army with a highly competent group of professionals “who are efficient in

developing and buying dependable hardware for soldiers to carry into combat.

"It's essential that (the AAC) be representative of all the branches because our hardware in the Army is used by all the branches," O'Neill added. "Let me emphasize the fact that the officer would continue to wear his branch colors and insignia — the Acquisition Corps will be a specialty.

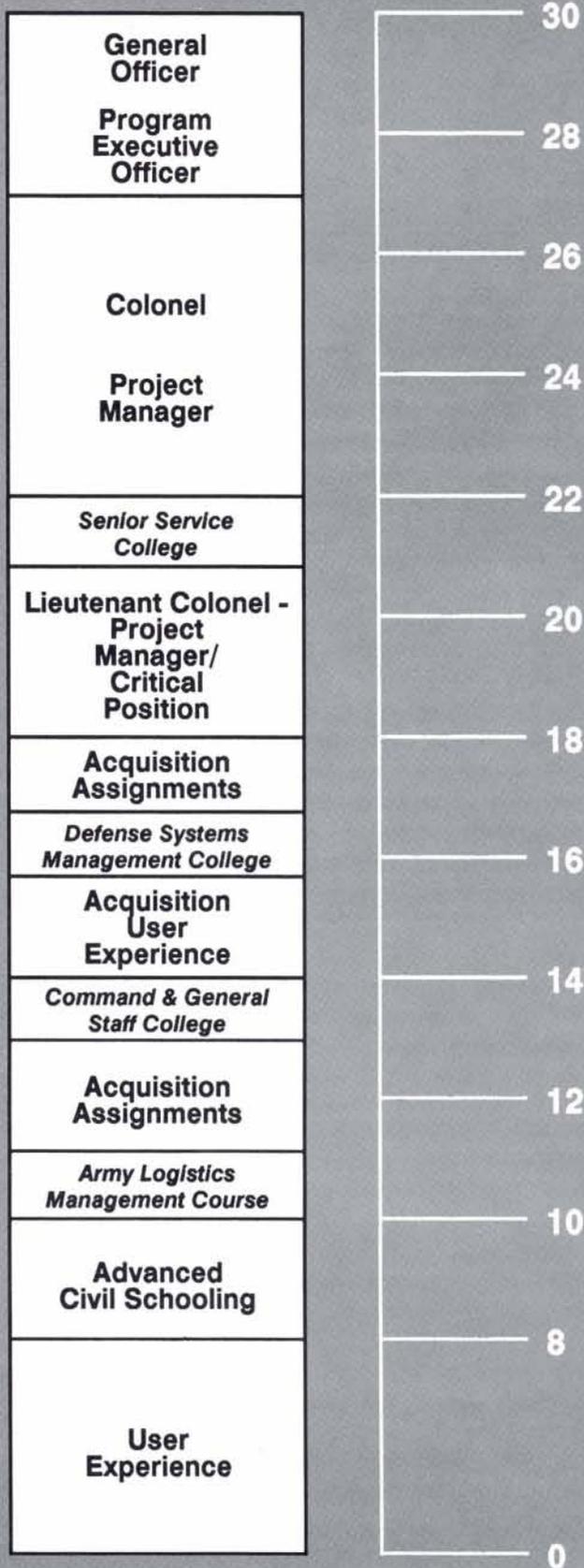
"In this time of evolution of the Army, we are looking at an Army that needs to very wisely expend its resources, both in terms of personnel and hardware," O'Neill said. "The Acquisition Corps is going to be an insurance policy."

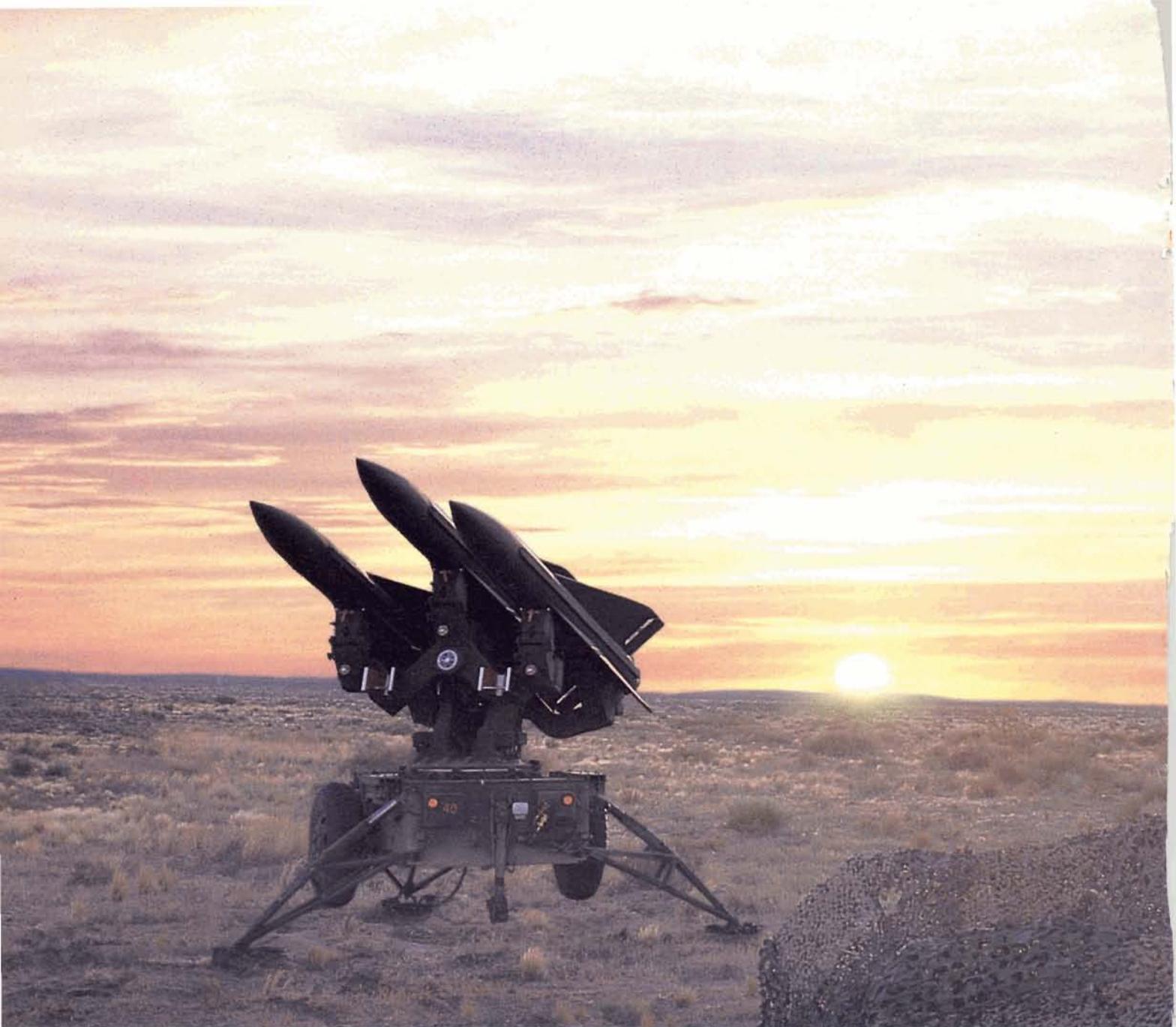
How does this "insurance policy" work? The new AAC focuses on the development of officers to fill program manager (PM), program executive officer (PEO), general officer (GO) and other designated critical materiel acquisition management positions at the grades of 05 and above. Manpower requirements will drop from 3,000+ skill 6T positions (captain-colonel) to about 250-400 skill code 4Z (lieutenant colonel-GO) positions. A steady-state inventory (approximately 3,000 certified and non-certified acquisition specialists) will maintain a quality eligible pool of qualified acquisition specialists to fill these positions. The size of the inventory, based on the number of validated positions, accounts for attrition and promotion over time.

Skill code 4Z, Certified Materiel Acquisition Management Officer, is the new code for certified AAC officers and critical AAC positions. Skill code 4M, Materiel Acquisition Management Candidate Officer, is the new code for AAC candidate officers.

Functional area (FA) 51 (research, development and acquisition) and FA 97 (contracting and industrial management) now form the AAC development base for people and positions. This acquisition career development base will provide qualifying experience, training and education for the award of skills 4M

AAC Career Development Model





The Hawk that knows how to survive.

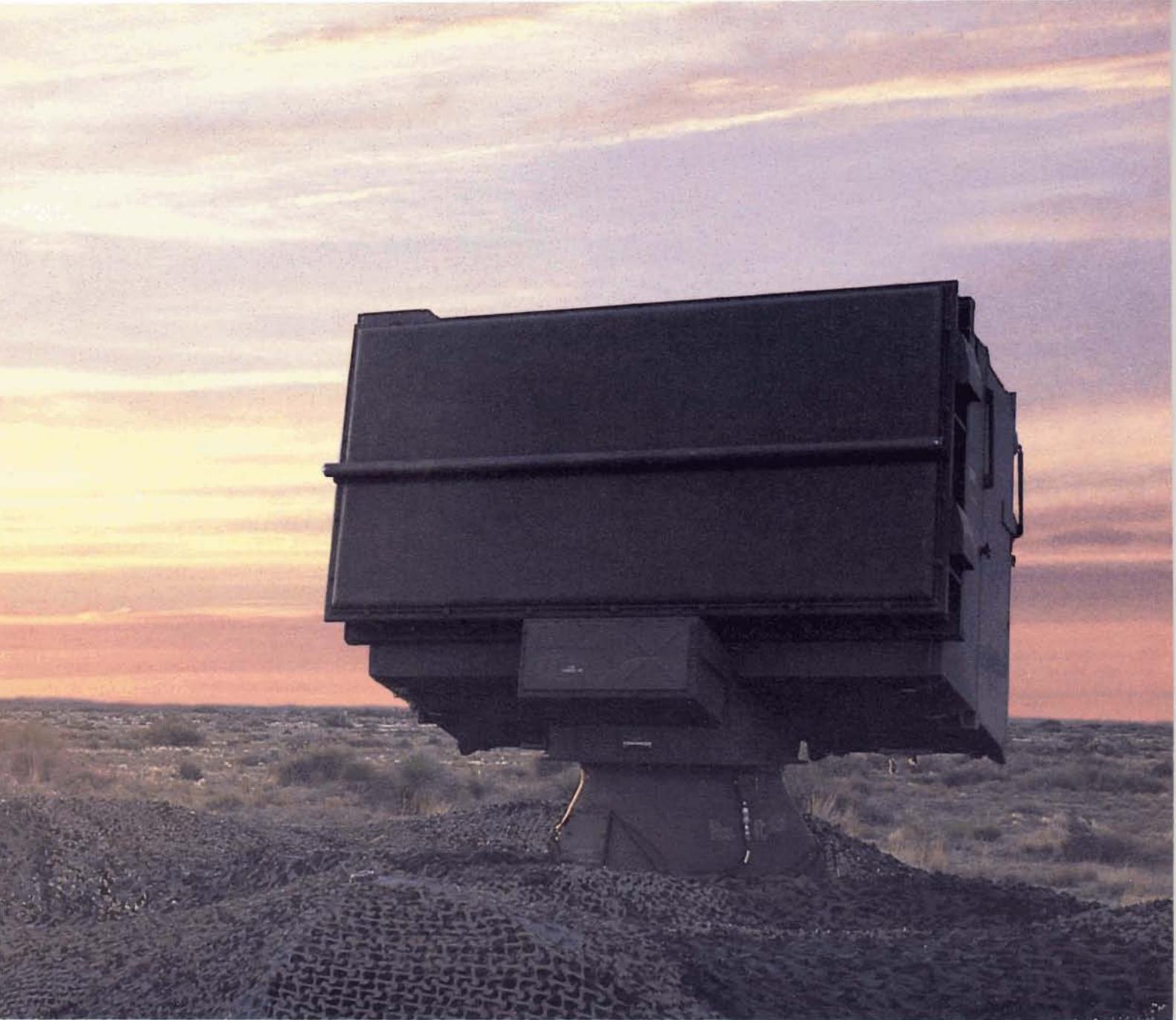
The Raytheon-developed Hawk air defense system will soon have a more advanced capability.

In the event of an air attack, this widely deployed system could take on anything sent against it... and survive. And that includes anti-radiation missiles (ARMs).

One of the keys to the Hawk system's enhanced survivability will be the incorporation of a radar such as the Multi-Role Survivable Radar (MRSR), being designed and developed by Raytheon under U.S. Army Missile Command sponsorship.

The MRSR will significantly improve the Hawk's performance, because it is virtually immune to electronic countermeasures. Even in a dense ECM and clutter environment, the MRSR will continue to acquire and accurately track targets.

The MRSR will do something no radar has done before: remain on the air, providing the full air picture, despite antiradiation missiles. The radar incorporates unique design features that provide for "low probability of intercept" by antiradiation missiles. Tests have shown that even



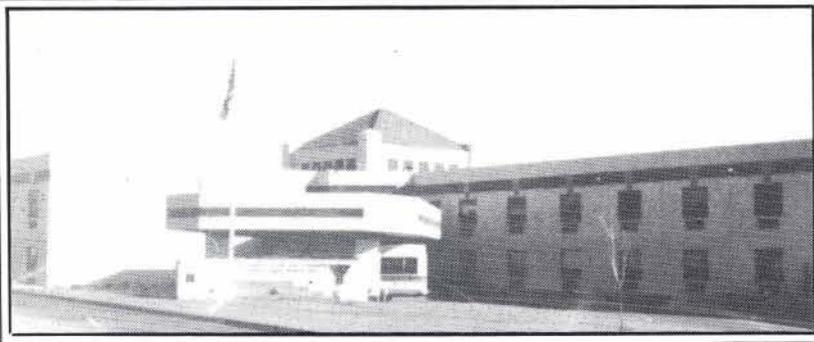
advanced ARMs fail to home in on a sensor with these features.

Raytheon's contribution to the development of the U.S. Army Missile Command's Multi-Role Survivable Radar is an excellent example of how Raytheon's thorough understanding of advanced radar technology and air defense fundamentals provides the ability to counter advanced threats as they arise.

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and 4Z. FAs 51 and 97, together with skills 4M and 4Z, define a restructured AAC career field. Air Defense Artillery currently only programs new 4M accessions in FA 51 (branch has no FA 97 requirements in materiel acquisition management).

FA utilization provides complete personnel life cycle management capability. Establishing an Army materiel acquisition management career field that incorporates FA 51 and FA 97 with skills 4M and 4Z, provides the capability to fully implement personnel life cycle functions — a capability that did not exist under the skill-based MAM program (skill 6T). Skill codes 4M and 4Z provide a further capability to identify and intensively manage a designated population of officers within FA 51 and FA 97.

Officers will begin their acquisition careers in their eighth year of service, after gaining operational experience in their branches. Although they will serve in acquisition-related assignments, their selection for Com-

mand and Staff College, Defense Systems Management College and Senior Service College will remain unchanged.

One new feature of the AAC will

be the use of mandatory assignment utilization tours following attendance at the MAM Course and Program Management Course (PMC). PERS-COM will initiate inhibit-coding procedures to ensure utilization. The training provided by the Army Logistics Management College (the MAM Course) and the Defense Systems Management College (the PMC) will not change.

Not all critical acquisition positions can be identified through the use of FAs 51 and 97. A need exists for a small number of uniquely qualified PMs and PEOs in Branch 15C35 (aviation/intelligence), FA 52 (nuclear weapons research, AOC 52B), and FA 53 (system automation officer). On an exception basis, with the approval of the Program Proponent Office, officers outside FAs 51 and 97 will be identified for entry and certification in the AAC.

By now you're probably asking yourself one of two questions: "What happens to me now?" or "How do I get involved in this program?"

All officers in the current MAM Program who have achieved certification will be grandfathered — skill code 4Z awarded in place of skill code 6T. Remaining 6T officers will be reviewed for retention and poss-

Skill Code 4M Certification Requirements

Possess FA 51 or FA 97 or be a member of approved excepted CMF (FA 52, FA 53, Branch 15C35)

Be serving in or recently completed duty in an FA 51 or FA 97 position or a position approved for candidate development in an excepted CMF

Have at least four years of AFCS remaining

Possess appropriate MEL

Possess baccalaureate degree or higher in technical, scientific or managerial field

Demonstrated outstanding performance and potential

Have approval from control branch or functional area (single track officers)

Note: Major(P)/lieutenant colonel/colonel must meet AAC certification standards for award of skill code 4Z

ible reclassification into FA 51 or FA 97. Officers reclassified in FA 51 or FA 97 will be awarded skill code 4M. The goal of the reclassification effort is to retain an adequate pool of experienced officers for future selection and assignment in critical acquisition positions.

If you are interested in becoming a part of the AAC, you must first meet the qualifying criteria for skill code 4M.

A standing PERSCOM Selection Board selects AAC candidate officers (either by designation or application), and the PERSCOM commander awards skill code 4M when the officer enters the AAC.

Skill code 4M applies to "candidate" AAC officers — those desiring to work toward qualification for PM selection and assignment. Skill code 4M is not used to code positions! Positions for AAC candidates to gain experience are designated by FA 51 or FA 97: the need for 4M is dictated by the overall size of the FA 51 and FA97 population. Because of the limited need (caused primarily by the small number of PM and other designated critical positions require-

ments), a smaller career development population from within FA 51 and FA 97 can adequately support the AAC (4Z) position structure.

Upon promotion to rank of lieutenant colonel (or major promotable), officers who have successfully participated in the AAC become eligible for skill code 4Z. Skill code 4Z, which replaces skill code 4M, identifies designated lieutenant colonel and above FA 51 and FA 97 critical AAC positions where the incumbent is responsible for and requires comprehensive knowledge and expertise in the acquisition of Army materiel systems. It applies to key materiel acquisition staff and program management activities responsible for the full range of functions in the materiel acquisition life cycle.

AAC positions usually involve two categories of expertise: functional acquisition experience and branch or user experience. The primary functions of all 4Z positions are acquisition related and, in most instances, branch or user experience is required. As an example, in a position coded 51A144Z, the 51A AOC (research and development) indicates

the acquisition duties and the 14 branch code indicates the air defense artillery branch expertise required to complement the acquisition duties.

An HQDA Certification Board awards skill code 4Z to those officers who meet the certification requirements. Officers who clearly meet all qualifying standards may apply for early certification. The certification is a two-level process (lieutenant colonel and colonel), with up to three consecutive annual reviews or opportunities for certification at each level.

Officers failing to achieve certification after three successive annual reviews will be administratively removed from the program without prejudice. Officers removed from the program will continue to receive assignments in FA 51 or FA 97, but will no longer be eligible to fill skill code 4Z positions.

Only certified officers will fill critical AAC positions, and only critical positions will be identified by skill code 4Z. Unlike 4M, 4Z will identify both officers and positions.

The AAC GO certification standards provide skill code 4Z for identifying officers eligible for assignment to GO positions. Affected GO positions will also be identified with skill code 4Z. The GO assignments provide at least three benefits:

- A virtual career development track from captain to GO will be identified. This should help to attract and retain quality officers.
- A pool of officers will be identified and intensively managed to ensure compliance with the law.
- Use of skill code 4Z with each GO position in AMC will identify that position as one requiring compliance or Secretary of the Army waiver.

The genesis of the new AAC promises mammoth benefits for Air Defense Artillery. To join the AAC and become a part of the acquisition process that will shape Air Defense Artillery's future, call your PERSCOM assignments officer.

Maj. Richard Garza is the deputy, Leader Development/Personnel Proponent Division, OCADA, Fort Bliss, Texas.

Skill Code 4Z Certification Requirements

Lieutenant Colonel

Three years experience in the acquisition, maintenance and support of weapon systems

One year in a procurement command (AMC/SDC/INSCOM) (counts toward three years of experience)

DSMC graduate

Graduate/undergraduate degree in business or technical field

Demonstrated high level of performance

MEL 4

Note: Up to 18 months of education counts toward three years of experience

Colonel

Eight years experience in the acquisition, maintenance and support of weapon systems

Two years in a procurement command (AMC/SDC/INSCOM) (counts toward eight years of experience)

DSMC graduate

Graduate degree in business or technical field

Demonstrated high level of performance

MEL 4

Note: Up to 40 months of education counts toward eight years of experience

Hovering helicopters were popping up out of clutter at extended ranges, and fixed-wing aircraft were making high-speed attack runs, each cloaking themselves in a variety of countermeasures. Although widely considered among the air defender's toughest challenges, such targets proved no match for ADATS and the soldiers of the 2nd Battalion of the 6th Air Defense Brigade, as 11 of 13 aircraft were destroyed.

The firings, the first ever by U.S. soldiers, included the critical operational missile tests for ADATS, the cornerstone LOS-F-H component of the Army's Forward Area Air Defense. The combination of well-trained soldiers and advanced technology proved highly effective.

Martin Marietta is proud to be working with Ft. Bliss and the soldiers of the 6th Brigade, who have distinguished themselves through one of the toughest test programs ever conducted on a weapon system.

ADA & ADATS: WHAT A HIT!



ADA and ADATS: The first to fire, and the first to hit!

MARTIN MARIETTA

MOS

Restructuring Reconsidered

by Capt. Chris J. Porras

The MOS consolidation effort began as a 1986 study of how to realign the ADA MOS structure to prepare it to meet the needs of the future. The MOS consolidation movement has since intensified — enlarged to include efforts to improve grade structure and to establish the necessary MOSs precipitated by the ongoing fielding of the new forward area air defense (FAAD) systems. The MOS consolidation effort has become an MOS revolution.

Air Defense Artillery entered the 1990s with a goal of reducing the branch's 25 MOSs to a mere eight by 1995 — and to four MOSs by 2005. This goal, established by former chief of ADA Maj. Gen. Donald R. Infante, proposed one HIMAD and one FAAD operator and one HIMAD and one FAAD maintainer.

Maj. Gen. Donald M. Lionetti, present chief of Air Defense Artillery, revised the original consolidation effort to a goal of eight MOSs by 2005. Under Lionetti's leadership, Air Defense Artillery will have

four FAAD operator MOSs, one Hawk operator and one Hawk maintainer MOS, and one Patriot operator and one Patriot maintainer MOS.

"I am personally skeptical of having one HIMAD operator MOS for both Hawk and Patriot," said Lionetti. "This is a great goal, but I don't think we're in a position just yet to make that goal a reality." On the subject of one FAAD operator MOS, Lionetti stated, "I think that one FAAD operator MOS is a wonderful goal, but frankly I don't see how we can hope to achieve it at this time. Until we know what each FAAD system looks like, until we see the duties under each FAAD MOS mature, it's hard to say that any one FAAD soldier could operate all FAAD systems.

"I'm not excluding the possibility of consolidating FAAD operator MOSs," Lionetti added, "but until we find out how easy (or difficult) it is to operate a FAAD system, it's very difficult to say that one soldier will be capable of operating two or three of them."

Air Defense Artillery is well on its way to achieving Lionetti's goal — the branch will consolidate the 25 MOSs of last year to 13 MOSs as early as 1996.

The MOS restructuring has kept the soldiers' needs in mind. The new structure will provide soldiers with ultimate promotion opportunities while challenging them in their MOS-specific duties. The consolidation has enabled Air Defense Artillery to emplace a personnel system that correctly assigns soldiers against ADA force requirements. The realigning of career management field (CMF) 16 to CMF 14 (October 1990) will help Air Defense Artillery keep ADA CMFs on track with the creation of FAAD MOSs and MOS consolidation. Now the branch can, within the limits of manpower constraints and force modernization changes, establish a viable force for the future.

Most ADA soldiers, though aware that new MOSs would be created, first faced the MOS consolidation effort with news that MOS 16H would

be converted in three phases. Phase I of the conversion, effective December 1987, appeared in the April 1988 update of AR 611-201. Phase I transferred 16H functions and authorizations associated with Patriot operations and intelligence to MOS 16T. Personnel Service Centers reclassified affected soldiers in October 1989.

Phase II of the 16H conversion, effective June 1988, transferred 16H functions and authorizations associated with Hawk and radar operations and intelligence duties and positions to MOSs 16D, 16E and 25L. The October 1988 update of AR 611-201 reflected the resulting changes. Personnel Service Centers reclassified affected personnel during September 1989.

Phase III, effective June 1989, converted 16H radar, missile and automatic short-range air defense (SHORAD) gun operations and intelligence duties, tasks and authorizations to MOSs 16F, 16J, 16P, 16R and 16S. The changes appeared in the October 1989 update of AR 611-

201. Resident training for MOS 16H ended in the fourth quarter of FY 89. Personnel Service Centers will reclassify affected soldiers during September 1990. MOSs 16F, 16J, 16P, 16R and 16S will be substitutable for MOS 16H until December 1992.

Although MOS 16H is gone, all should recognize that wherever a 16H existed in a TOE, be it Hawk, Patriot or SHORAD, that 16H authorization converted to additional authorizations for the predominant MOS in that TOE. The 16H conversion caused no loss in bodies — although units no longer have 16Hs, they do have the same amount of people.

Although the conversion of MOS 16H received most of the attention, other MOSs joined MOS 16H as relics of the past. The Nike-Hercules, Roland and Jesse radar, removed from the Army's inventory, no longer required maintenance personnel. March 1989 saw the deletion of MOSs 24S and 26H, followed in April by the demise of MOS 24U. MOS 16G joined the ranks of the un-

necessary in June 1989.

Personnel Service Centers will reclassify affected personnel in MOSs 24S, 26H and 24U during September 1990. The State National Guard Adjutant Generals and Army Personnel Centers will reclassify Reserve Component soldiers holding MOS 16G.

Hawk and Patriot

All of the Hawk MOSs were revised this past year, in conjunction with the advent of Hawk Product Improvement Program (PIP) Phase III, to comply with the MOS consolidation effort.

In keeping with the consolidation effort, Hawk PIP Phase III is now served by only two MOSs — 23R and 14D. MOS 23R, established in May 1989, identifies positions and soldiers associated with maintenance of the Hawk PIP Phase III weapon system. New equipment training for the MOS began in the second quarter of FY 89, and new resident training started the first quarter of FY 90.

All positions coded in MOSs 24C,

Air Defense Artillery MOSs

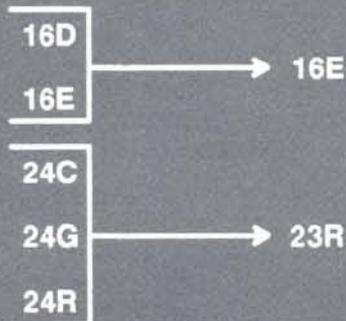
1989

16D, Hawk Missile Crewmember
 16E, Hawk Fire Control Crewmember
 16F, Light ADA Crewmember (RC)
 16G, Roland System Crewmember (RC)
 16H, ADA Operations and Intelligence Assistant
 16J, Defense Acquisition Radar Operator
 16P, Chaparral Crewmember
 16R, Vulcan Crewmember
 16S, Manportable Air Defense System/Pedestal Mounted Stinger (PMS) Crewmember
 16T, Patriot Missile Crewmember
 16Z, ADA Senior Sergeant
 24C, Hawk Firing Section Mechanic
 24G, Hawk ICC Mechanic
 24M, Vulcan System Mechanic
 24N, Chaparral System Mechanic
 24R, Hawk Master Mechanic
 24S, Roland System Mechanic (RC)
 24T, Patriot Operator and System Mechanic
 24U, Nike-Hercules Custodial Mechanic
 25L, AN/TSQ-73 ADA C² System Operator/Repairer
 26H, Air Defense Radar Repairer (RC)

1996

14D, Hawk Missile System Crewmember
 14J, FAAD C³I Operator
 14N, NLOS Operator
 14R, LOS-F-H Operator
 14S, Avenger Operator
 14T, Patriot Operator
 14Z, ADA Senior Sergeant
 16F, Light ADA Crewmember
 16P, Chaparral Crewmember (RC)
 16S, MANPAD Crewmember (RC)
 23L, AN/TSQ-73 ADA C² System Operator/Repairer
 23R, Hawk Missile System Mechanic
 23T, Patriot System Mechanic

Hawk MOS Changes



24G and 24R that are associated with Hawk PIP Phase III will be recoded to MOS 23R, retitled and regraded per the MOS 23R standards of grade authorization. Upon successful completion of MOS 23R training, soldiers in these MOSs will reclassify to MOS 23R.

Although MOSs 24C, 24G and 24R will be deleted upon completion of Hawk Phase III fielding, they will all be revised in the near future. MOSs 24C and 24G will be revised to allow for an E-6 in the system maintenance team, ADA Battery Hawk PIP II, 3x2 corps and 4x2TA. MOS 24R revisions will allow for two E-7s in the system maintenance section.

MOS 14D, established in November 1989, identifies positions and soldiers associated with the operation of the Hawk PIP Phase III weapon system. MOS 16D and 16E soldiers who successfully completed new equipment training for Hawk PIP Phase III were awarded MOS 14D; however, soldiers in MOS 16E also had to complete an exportable training package (probably during new equipment training) on the launcher control duties. Personnel Service Centers reclassified affected soldiers during March 1990. The major duties under the new MOS (shown on the following page) will appear in the October 1990 update of AR 611-201.

The Patriot MOSs, 16T and 24T, will be redesignated in the near future as 14T and 23T respectively for consistency with the new force struc-

MOS 14D Duties

MOSC 14D10: Serves as crew member in preparing launching area equipment, assembles, operates and maintains Hawk missiles and associated launching and storage area, Hawk fire, and firing control equipment and engagement simulators. Performs ADA operations and intelligence duties as required.

MOSC 14D20: Serves as crew member in a Hawk firing section and teller in an ADA tactical operations center, operates Hawk fire control equipment, leads missile resupply team. Performs ADA operations and intelligence duties as required.

MOSC 14D30: Supervises Hawk firing fire control, command and acquisition, missile resupply and radar section, operates engagement simulators. Performs ADA operations and intelligence duties as required.

MOSC 14D40: Supervises Hawk firing platoon operations, command and acquisition section, fire control operators, and performs and or assists in supervising ADA operations and intelligence functions.

ture. Studies are currently ongoing to determine what type of restructure will accompany this MOS transition.

FAAD

The Ordnance Missile Munitions Center and School is the proponent for maintenance of all FAAD systems. Upon fielding of the FAAD systems, all CMF 23 authorizations associated with the system being replaced will roll to CMF 27. Soldiers possessing the affected CMF 23 MOSs will be afforded the opportunity to reclassify into another MOS.

Air Defense Artillery is the proponent for operation of all FAAD operator MOSs. Throughout 1990 and the first few months of 1991, Air Defense Artillery plans to establish four FAAD operator MOSs in keeping

with Lionetti's consolidation plan.

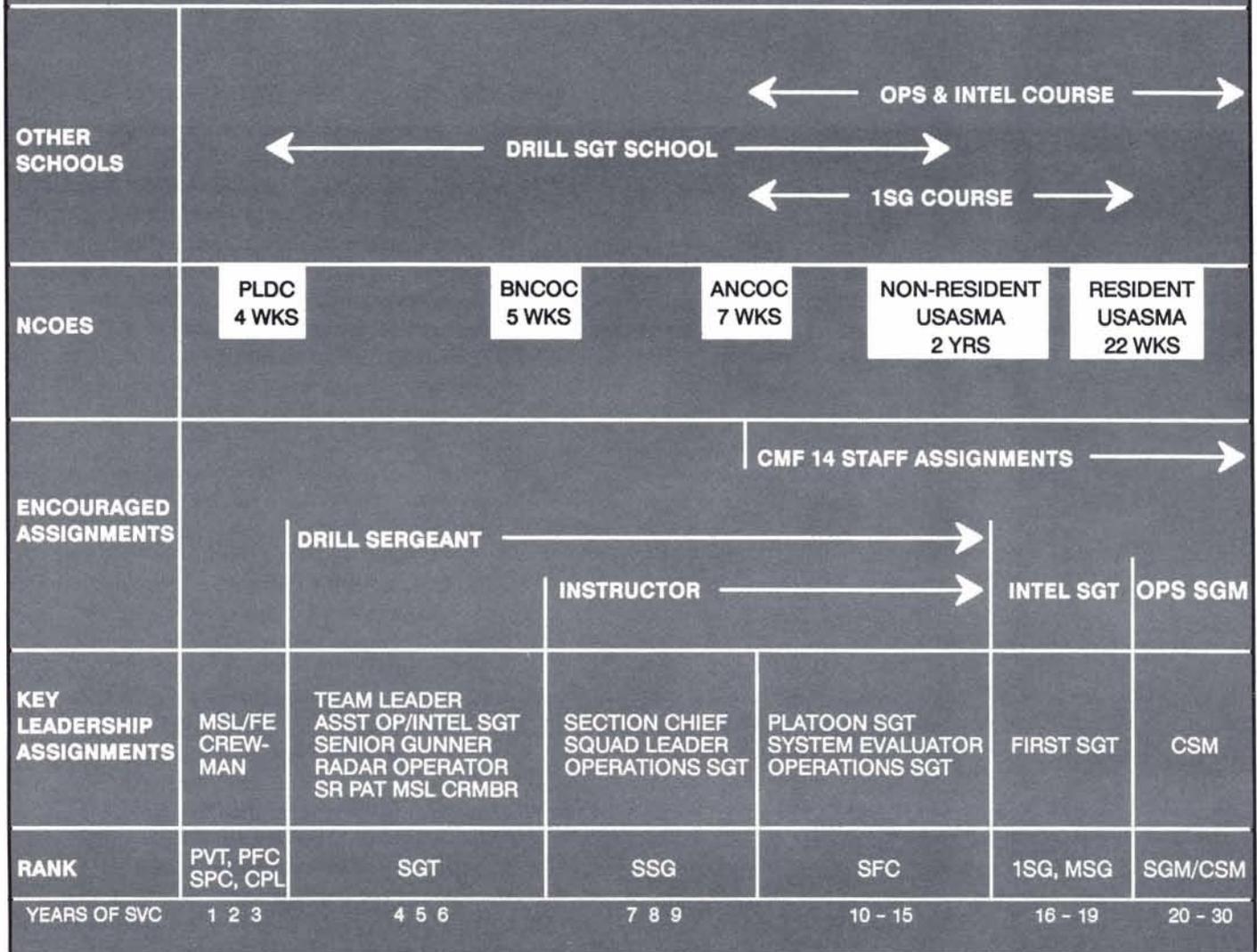
"I think as far as FAAD MOSs are concerned," said Lionetti, "we've stepped out as far as we can given what we know. We can't consolidate the FAAD MOSs any further until we learn more about the systems."

The proposal to establish MOS 14R, the LOS-F-H operator MOS, was submitted last December. The primary feeder MOS is 16R. MOS 14J is projected as the operator for the FAAD C³I systems. The primary feeder MOS will be 16J. MOS 14N is the projected NLOS operator MOS (primary feeder MOS 16S). The establishment of MOS 14S, the Avenger operator, will cause revisions to MOSs 16P and 16S. MOSs 16S and 16P are the primary feeder MOSs for 14S. Once all of the

FAAD Maintenance MOSs

The fielding of	rolls	authorizations to
LOS-F-H	24M	27R
LOS-R	24N	27T
NLOS	24N	27U
C ³ I GBS	24MX7	27W

CMF 14 CAREER PROFESSIONAL DEVELOPMENT PROGRESSION



FAAD weapon systems are fielded, all of the 16-series feeder MOSs will be deleted or roll to the Reserve Component.

SHORAD

According to current plans (some changes to the present plan are expected), the Chaparral MOSs (16P and 16R) will roll to the Reserve Component by 1996, and will remain thus until the Chaparral's deletion from the Army inventory in 2007.

In CONUS, Avenger will replace Chaparral in the heavy divisions by 1996. While the Army issues Avenger to USAREUR heavy divisions, it

will also issue Chaparrals to the corps as pure Chaparral battalions. As early as 1994, the USAREUR heavy divisions will be free of the Chaparral. The Army will then remove Chaparral from the corps and replace them with pure Avenger battalions. Chaparrals will be issued to the Reserve Component to form pure Chaparral battalions from now until 1996.

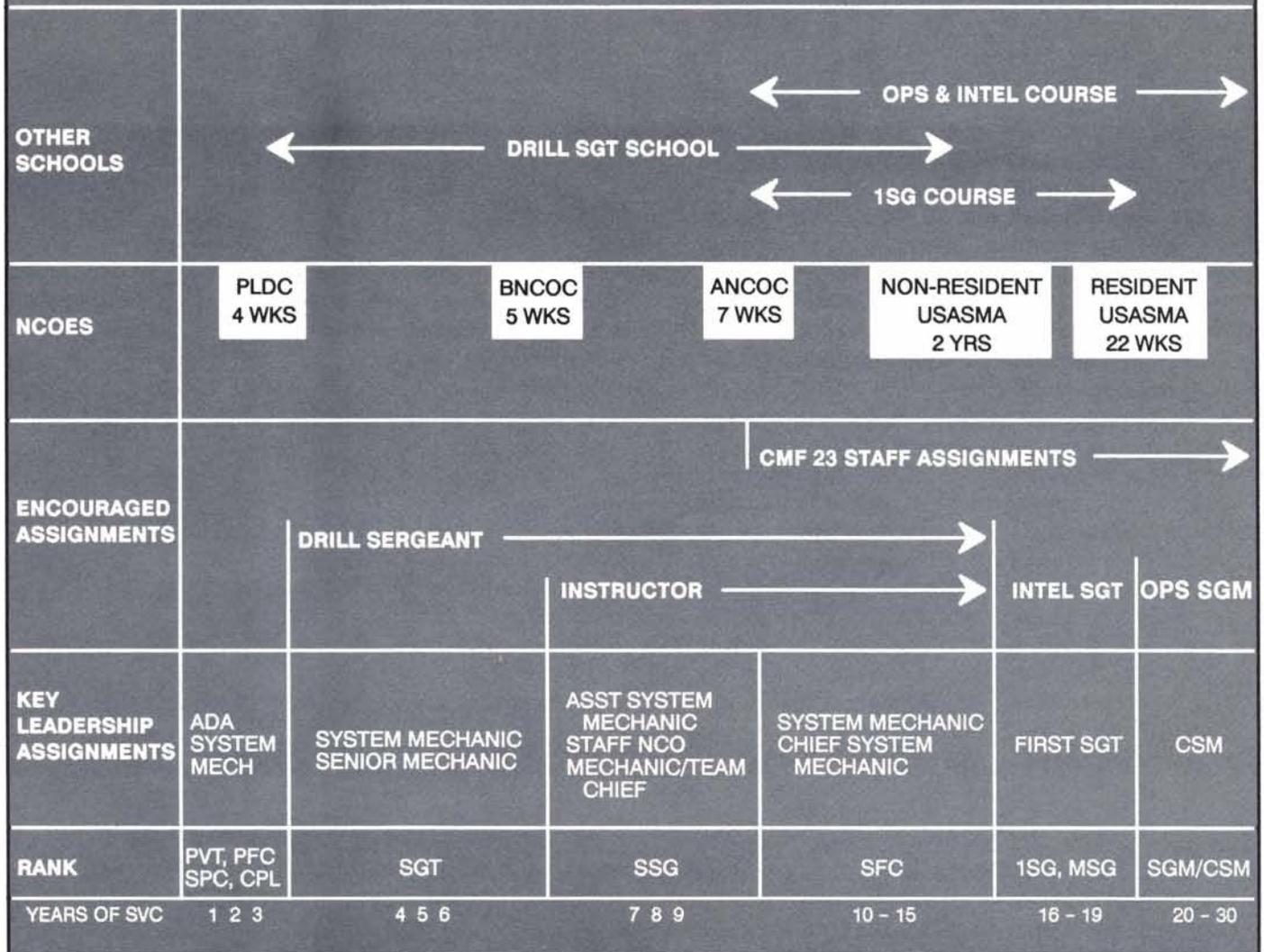
The Vulcan MOSs (24M and 24N) will face their deletion by 2000 — Vulcan will not be issued to the Reserve Component. (Although the 1-188th ADA, North Dakota ARNG, presently has the towed Vulcan, current plans may convert the

1-188th ADA to a pure MANPAD battalion.) As the ADATS joins USAREUR heavy divisions, the Vulcan will be removed; the Army expects to remove the last USAREUR Vulcan by 1994. CONUS and WESTCOM divisions will continue to maintain the Vulcan until 2000. Reserve Component units will receive Stingers in lieu of Vulcans.

Warrant Officers

Warrant officers, who lost MOS 140C in April 1989 because the Nike-Hercules is no longer in the Army's inventory, are also looking at a restructuring of their MOSs.

CMF 23 CAREER PROFESSIONAL DEVELOPMENT PROGRESSION



Ordnance will create 916- and 917-series MOSs and thereby handle their own direct support mission, eliminating the need for the SQI "V" presently existing in ADA warrant officer MOSs. ADA warrant officers will no longer be able to cross to Ordnance upon selection to WO 3.

Future Changes

Air Defense Artillery's revised goal of eight MOSs by 2005 has grown from conjecture to reality this past year. But more changes may be over the horizon. Lionetti has voiced a need for a new, modified approach to MOS consolidation. "Reducing

MOSs is a good philosophy," Lionetti said, "but how we're doing it may not be right. We *do* want to reduce our MOSs to as few as possible to ensure adequate training and courseware and to grow our force structure; however, I believe we need to explore new strategies. We need to concentrate on the most strategic way to restructure our branch, as far as our enlisted force, and then worry about the cost.

"I don't want to jump at the lowest-cost approach," Lionetti continued. "I want to see the smartest way to restructure. I think a broad-range strategy, currently under study

at the schoolhouse, may prove to be a very low-cost option. This new strategy deserves a comprehensive look and represents a new way to reduce ADA MOSs, realign the branch's force structure and establish a truly viable force for the future."

Air Defense Artillery, having dipped its foot into the chilly waters of MOS consolidation, has decided to look a little longer before it leaps.

Capt. Chris J. Porras is the CMF 23 Team Chief, Leader Development/Personnel Proponent Division, OCADA, Fort Bliss, Texas.

THE BOEING FAADS TEAM



AVENGER



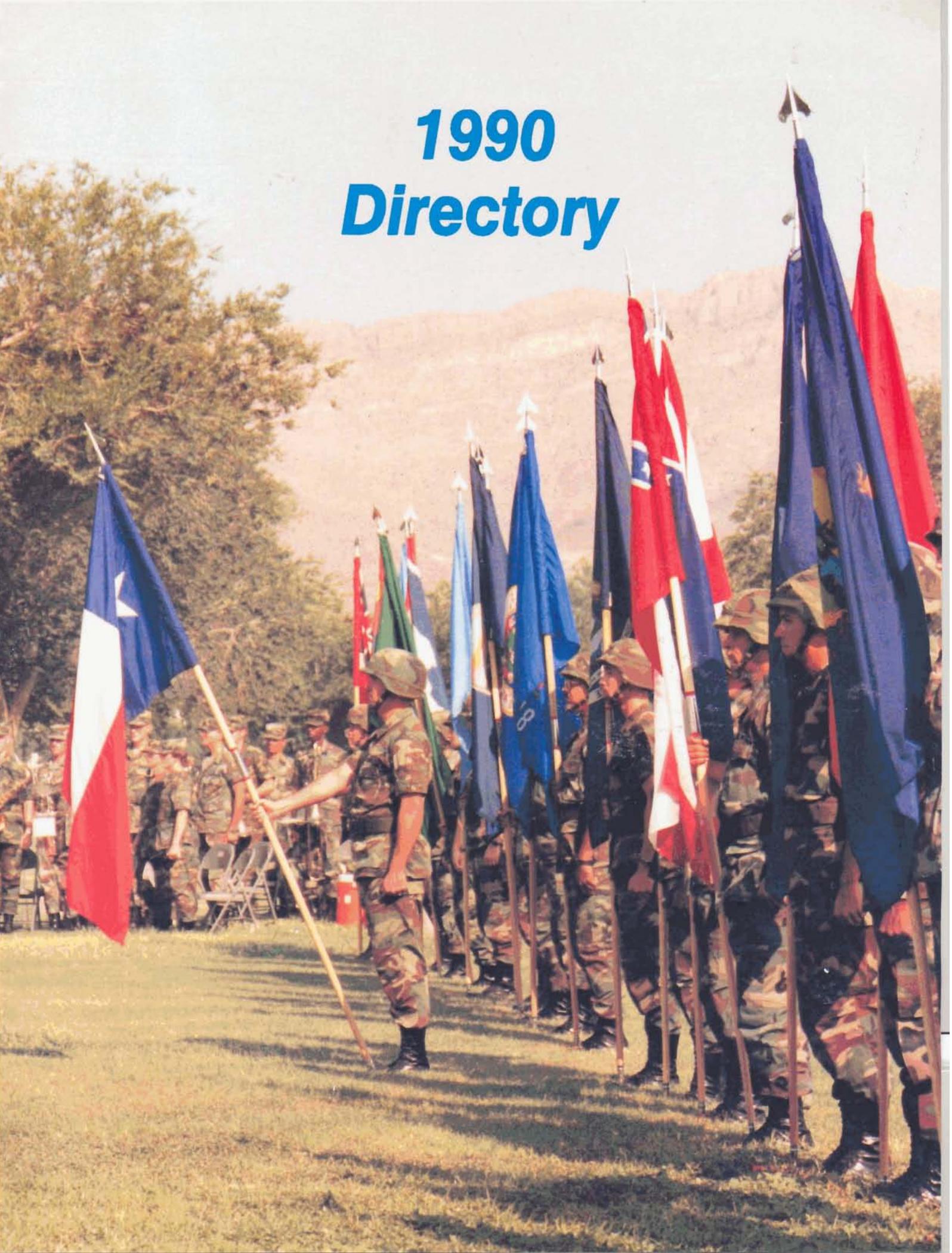
**NON-LINE OF SIGHT
(FIBER OPTIC GUIDED MISSILE)**

SALUTES
THE AIR DEFENSE ARTILLERY
"FIRST TO FIRE"

BOEING

WE'RE WITH YOU

1990 *Directory*



General Officers



MG
R. C. Alexander

Position: **TAG, Ohio (ARNG)**
Location: **Columbus, Ohio**



MG
T. N. Dyer

Position: **Director of Personnel,
J-1, Forces Command**
Location: **Fort McPherson, Georgia**



BG
R. G. Capps

Position: **Deputy AG, Florida (ARNG)**
Location: **St. Augustine, Florida**



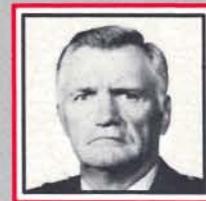
MG
W. C. Arnold

Position: **Commanding General,
USA ROTC Cadet Command**
Location: **Fort Monroe, Virginia**



MG
D. M. Lionetti

Position: **Commandant/CG,
USAADASCH and Fort Bliss**
Location: **Fort Bliss, Texas**



BG
L. L. Custer

Position: **Deputy TAG, New Mexico
(ARNG)**
Location: **Santa Fe, New Mexico**



MG
E. D. Baca

Position: **TAG, New Mexico (ARNG)**
Location: **Santa Fe, New Mexico**



MG
G. H. Putman

Position: **Commanding General,
32nd AADCOM**
Location: **Darmstadt, FRG**



BG
R. A. Drolet

Position: **ADA Program Executive
Officer**
Location: **Redstone Arsenal, Alabama**



MG
J. C. Cercy

Position: **Deputy Director for System
Management**
Location: **Washington, D.C.**



MG
W. H. Riley Jr.

Position: **Deputy Commanding General,
Third Army**
Location: **Fort McPherson, Georgia**



BG
J. M. Garner

Position: **Assistant Commandant,
USAADASCH**
Location: **Fort Bliss, Texas**

General Officers



BG
J. M. Jellett

Position: **ASAT Program Manager**
Location: **Huntsville, Alabama**



BG
A. W. Schulz

Position: **Deputy Director, Strategic
Defense Initiative Organization**
Location: **Washington, D.C.**



COL(P)
V. L. Conner

Position: **Deputy Commanding General,**
32nd AADCOM
Location: **Darmstadt, FRG**



BG
J. H. Little

Position: **ADC SCD Combat Dev,**
TRADOC
Location: **Fort Monroe, Virginia**



BG
E. S. Solymosy

Position: **Chief, Defense Cooperation,**
Athens
Location: **Athens, Greece**



COL(P)
R. S. Hardy

Position: **Chief, Combat Arms**
Training Division,
7th Army Command
Location: **Grafenwoehr, FRG**



BG
C. W. McClain

Position: **Chief, Public Affairs**
Location: **Washington, D.C.**



BG
V. R. Stevens

Position: **Commander,**
111th ADA Brigade
Location: **Albuquerque, New Mexico**



BG
D. P. Rocco Jr.

Position: **Command Director,**
NORAD Command Center
Location: **Peterson AFB, Colorado**



COL(P)
J. F. Campbell Jr.

Position: **Commander,**
164th ADA Brigade
Location: **Orlando, Florida**

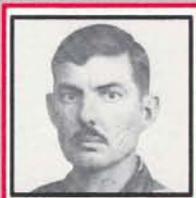
Notes

32nd AADCOM

32nd Army Air Defense Command



Putman



Walthes

Location: Darmstadt, FRG
 Unit Type: Theater
 Commander: MG G. Putman
 Deputy Commander: COL(P) V. Conner
 Sergeant Major: CSM J. E. Walthes
 Phone: 348-7330/8304

10th ADA Brigade



Heebner



Brooks

Location: Darmstadt, FRG
 Unit Type: Brigade Headquarters
 Commander: COL D. K. Heebner
 Sergeant Major: CSM L. R. Brooks
 Phone: 348-6129/7452

2nd Battalion, 43rd ADA



Campbell



Kimbrell

Location: Hanau, FRG
 Unit Type: Patriot
 Commander: LTC K. T. Campbell
 Sergeant Major: CSM R. D. Kimbrell
 HHB Cdr: CPT J. L. Nace
 A Btry Cdr: CPT F. Pulliam III
 B Btry Cdr: CPT H. C. Russell
 C Btry Cdr: CPT B. H. Russell

4th Battalion, 43rd ADA



Krimkowitz



Sheppard

Location: Giessen, FRG
 Unit Type: Patriot
 Commander: LTC H. A. Krimkowitz
 Sergeant Major: CSM S. L. Sheppard
 HHB Cdr: CPT W. C. Martin Jr.
 A Btry Cdr: CPT T. A. Freelon
 B Btry Cdr: CPT J. T. Wood Jr.
 C Btry Cdr: CPT R. T. Burns

3rd Battalion, 52nd ADA



Lusey



Czarnecki

Location: Wildflecken, FRG
 Unit Type: Hawk 4x2
 Commander: LTC R. S. Lusey
 Sergeant Major: CSM D. G. Czarnecki
 HHB Cdr: CPT K. H. Stearns
 A Btry Cdr: CPT G. A. Guyant
 B Btry Cdr: CPT T. J. Keppler
 C Btry Cdr: CPT N. S. Liberatore
 D Btry Cdr: CPT J. L. Eberhardt

69th ADA Brigade



Dellisanti



Burton

Location: Wurzburg, FRG
 Unit Type: Brigade Headquarters
 Commander: COL N. Dellisanti
 Sergeant Major: CSM R. C. Burton
 Phone: 350-5766/5811

6th Battalion, 43rd ADA



Jackson



Folmar

Location: Ansbach, FRG
 Unit Type: Patriot
 Commander: LTC M. H. Jackson
 Sergeant Major: CSM R. M. Folmar
 HHB Cdr: CPT B. R. Hendricks
 A Btry Cdr: CPT M. H. Baird
 B Btry Cdr: CPT P. A. Bakers
 C Btry Cdr: CPT F. R. Demith

8th Battalion, 43rd ADA



Dodgen



Young

Location: Glebeistadt, FRG
 Unit Type: Patriot
 Commander: LTC L. J. Dodgen
 Sergeant Major: CSM R. P. Young
 HHB Cdr: CPT W. Anderson
 A Btry Cdr: CPT R. Buhidar
 B Btry Cdr: CPT G. Parker
 C Btry Cdr: CPT F. Roitz

6th Battalion, 52nd ADA



Paige



Lowie

Location: Wurzburg, FRG
 Unit Type: Hawk 4x2
 Commander: LTC J. E. Paige
 Sergeant Major: CSM W. H. Lowie
 HHB Cdr: Not available

32nd AACOM

A Btry Cdr: Not available
 B Btry Cdr: Not available
 C Btry Cdr: Not available
 D Btry Cdr: Not available

94th ADA Brigade



Rose



Robinson

Location: **Kaiserslautern, FRG**
 Unit Type: **Brigade Headquarters**
 Commander: **COL J. P. Rose**
 Sergeant Major: **CSM R. Robinson**
 Phone: **483-7477/7509**

4th Battalion, 1st ADA



Bergman



Davis

Location: **Neubrucke, FRG**
 Unit Type: **Hawk 4x2**
 Commander: **LTC M. R. Bergman**
 Sergeant Major: **CSM R. A. Davis**
 HHB Cdr: **CPT M. R. Davis**
 A Btry Cdr: **CPT K. Bright**
 B Btry Cdr: **CPT D. Frear**
 C Btry Cdr: **CPT A. M. McCombs**
 D Btry Cdr: **CPT H. B. Matthews**

1st Battalion, 7th ADA



Stuart



Carrington

Location: **Kaiserslautern, FRG**
 Unit Type: **Patriot**
 Commander: **LTC R. F. Stuart**
 Sergeant Major: **CSM T. Carrington**
 HHB Cdr: **CPT T. D. Cornileus**
 A Btry Cdr: **CPT S. A. Walker**
 B Btry Cdr: **CPT J. G. Collins**
 C Btry Cdr: **CPT L. A. B. Wallace**

D Btry Cdr: **CPT A. D. Nichols**
 E Btry Cdr: **CPT J. C. Evans**
 F Btry Cdr: **CPT T. A. Fraysler**

3rd Battalion, 44th ADA



Morreale



Graham

Location: **Ramstein, FRG**
 Unit Type: **Nondivisional CVS**
 Commander: **LTC D. L. Morreale**
 Sergeant Major: **CSM M. T. Graham Jr.**
 HHB Cdr: **CPT F. R. White Jr.**
 A Btry Cdr: **CPT D. M. Hildreth**
 B Btry Cdr: **CPT M. J. Finamore**
 C Btry Cdr: **CPT A. B. Hodges**

108th ADA Brigade



Cravens



Kemp

Location: **Kaiserslautern, FRG**
 Unit Type: **Brigade Headquarters**
 Commander: **COL J. J. Cravens Jr.**
 Sergeant Major: **CSM G. T. Kemp**
 Phone: **483-8642/7734**

1st Battalion, 1st ADA



Spiceland



Bradshaw

Location: **Spangdahlem, FRG**
 Unit Type: **Hawk 4x2**
 Commander: **LTC E. C. Spiceland**
 Sergeant Major: **CSM J. W. Bradshaw**
 HHB Cdr: **CPT W. M. Childs**
 A Btry Cdr: **CPT R. S. Murray**
 B Btry Cdr: **CPT W. E. Johnson**
 C Btry Cdr: **CPT D. M. Hanson**
 D Btry Cdr: **CPT A. Hull III**

4th Battalion, 7th ADA



Knox



Hughes

Location: **Dexhelm, FRG**
 Unit Type: **Patriot**
 Commander: **LTC W. D. Knox**
 Sergeant Major: **CSM J. H. Hughes**
 HHB Cdr: **CPT H. E. Pecotte**
 A Btry Cdr: **CPT J. A. North**
 B Btry Cdr: **CPT R. S. Girven**
 C Btry Cdr: **CPT S. J. Letson II**
 D Btry Cdr: **CPT M. M. Dunn**
 E Btry Cdr: **CPT J. T. Bailey**
 F Btry Cdr: **CPT J. B. Dallas**

5th Battalion, 7th ADA



Kreutz



Gleason

Location: **Bitburg, FRG**
 Unit Type: **Patriot**
 Commander: **LTC A. R. Kreutz Jr.**
 Sergeant Major: **CSM G. T. Gleason**
 HHB Cdr: **CPT R. S. Campbell**
 A Btry Cdr: **CPT M. T. Krones**
 B Btry Cdr: **CPT M. E. Eichemier**
 C Btry Cdr: **CPT N. A. Sharpless**

5th Battalion, 44th ADA



Ferguson



Harmon

Location: **Spangdahlem, FRG**
 Unit Type: **Nondivisional CV**
 Commander: **LTC V. L. Ferguson**
 Sergeant Major: **CSM C. W. Harmon**
 HHB Cdr: **CPT C. M. Rasmussen**
 A Btry Cdr: **CPT A. Greenlee II**
 B Btry Cdr: **CPT T. K. Hasse**
 C Btry Cdr: **CPT E. G. Crone Jr.**

Corps

11th ADA Brigade



Smith



Doctor

Location: Fort Bliss, Texas
 Unit Type: Brigade Headquarters
 Commander: COL J. L. Smith
 Deputy Commander: LTC T. L. Scott
 Sergeant Major: CSM W. Doctor
 Phone: AV 978-6304/4206

2nd Battalion, 7th ADA



Photo
Not
Available

Neel



Mays

Location: Fort Bliss, Texas
 Unit Type: Patriot
 Commander: LTC L. K. Neel
 Sergeant Major: CSM W. F. Mays
 HHB Cdr: CPT S. P. Perry
 A Btry Cdr: CPT M. C. Emrich
 B Btry Cdr: CPT J. P. Deatona
 C Btry Cdr: CPT W. L. Herbert Jr.
 D Btry Cdr: CPT L. P. Humphrey
 E Btry Cdr: CPT P. S. Vlahos
 F Btry Cdr: CPT E. Robles

5th Battalion, 62nd ADA



Carter



Calhoun

Location: Fort Bliss, Texas
 Unit Type: Corps Vulcan/Stinger
 Commander: LTC J. W. Carter Jr.
 Sergeant Major: CSM E. Calhoun
 HHB Cdr: CPT R. K. Carl
 A Btry Cdr: CPT B. J. Jordan
 B Btry Cdr: CPT M. C. Smith
 C Btry Cdr: CPT J. D. Hall

2nd Battalion, 1st ADA



Kilgore



Lucas

Location: Fort Bliss, Texas
 Unit Type: Hawk 3x2
 Commander: LTC W. F. Kilgore
 Sergeant Major: CSM D. J. Lucas
 HHB Cdr: CPT B. L. Marshall
 A Btry Cdr: CPT R. A. Wilson
 B Btry Cdr: CPT C. F. Fletcher
 C Btry Cdr: CPT R. Tate

3rd Battalion, 43rd ADA



Smith



White

Location: Fort Bliss, Texas
 Unit Type: Patriot
 Commander: LTC T. E. Smith
 Sergeant Major: CSM F. L. White
 HHB Cdr: CPT P. Young
 A Btry Cdr: CPT O. Nunnley
 B Btry Cdr: CPT D. Kolvek
 C Btry Cdr: CPT K. Groome
 D Btry Cdr: CPT E. Brenham
 E Btry Cdr: CPT D. Bickham
 F Btry Cdr: CPT P. Loebs

31st ADA Brigade



Kurtz



Speight

Location: Fort Hood, Texas
 Unit Type: Brigade Headquarters
 Commander: COL R. G. Kurtz
 Sergeant Major: CSM M. Speight Jr.
 Phone: AV 738-3461

1st Battalion, 2nd ADA



Maggio



Frowner

Location: Fort Stewart, Ga.
 Unit Type: Corps Chaparral
 Commander: LTC R. M. Maggio
 Sergeant Major: CSM L. Frowner
 HHB Cdr: CPT M. W. Wooley
 A Btry Cdr: CPT M. W. Thornton
 B Btry Cdr: CPT J. L. Kendrick
 C Btry Cdr: CPT M. J. Fallon

2nd Battalion, 52nd ADA



Petrucci



Stevens

Location: Fort Bragg, N.C.
 Unit Type: Hawk 3x2, Stinger
 Commander: LTC M. J. Petrucci
 Sergeant Major: CSM V. D. Stevens
 HHB Cdr: CPT G. V. Marinich
 A Btry Cdr: CPT R. D. Manning
 B Btry Cdr: CPT F. J. Johns Jr.
 C Btry Cdr: CPT D. M. Battaglia

3rd Battalion, 1st ADA



Kuffner



Golwitzer

Location: Fort Hood, Texas
 Unit Type: Hawk 3x2
 Commander: LTC S. J. Kuffner
 Sergeant Major: CSM E. Golwitzer
 HHB Cdr: CPT M. D. Martin
 A Btry Cdr: CPT J. G. Rossi
 B Btry Cdr: CPT M. E. Williamson
 C Btry Cdr: CPT H. Salcedo

Corps

2nd Battalion, 2nd ADA



Withycombe



Waters

Location: Fort Hood, Texas
 Unit Type: Corps Chaparral
 Commander: LTC H. J. Withycombe Jr.
 Sergeant Major: CSM C. L. Waters
 HHB Cdr: CPT M. J. Romanych
 A Btry Cdr: CPT R. O. Cuhna
 B Btry Cdr: CPT L. P. Green
 C Btry Cdr: CPT B. G. Whittemore

1st Battalion, 52nd ADA



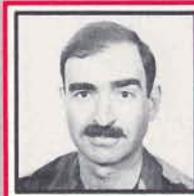
Green



Felker

Location: Fort Lewis, Wash.
 Unit Type: Hawk 3x2
 Commander: LTC S. E. Green
 Sergeant Major: CSM P. E. Felker
 HHB Cdr: CPT T. Joseph
 A Btry Cdr: CPT D. M. Pendergast
 B Btry Cdr: CPT M. L. Boller
 C Btry Cdr: CPT J. A. Gibbon

2nd Battalion, 200th ADA



Trottler



Hernandez

Location: Las Cruces, N. M.
 Unit Type: Corps Chaparral, ARNG
 Parent Unit: VII Corps
 Commander: LTC A. J. Trottler
 Sergeant Major: CSM A. Hernandez
 HHB Cdr: CPT C. Bales
 A Btry Cdr: CPT R. Clark
 B Btry Cdr: CPT N. Archuleta
 C Btry Cdr: 1LT F. Garcia

35th ADA Brigade



Costello



Gunnels

Location: Fort Lewis, Wash.
 Unit Type: Brigade Headquarters
 Commander: COL J. Costello
 Sergeant Major: CSM L. J. Gunnels
 Phone: AV 357-7251

111th ADA Brigade



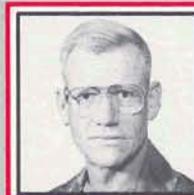
Stevens



Kirkland

Location: Albuquerque, N.M.
 Unit Type: Brigade Headquarters, ARNG
 Parent Unit: V Corps
 Commander: BG V. R. Stevens
 Sergeant Major: CSM J. K. Kirkland
 Phone: (505) 294-8994

3rd Battalion, 200th ADA



Johnston



Lucero

Location: Belen, N. M.
 Unit Type: Chaparral, ARNG
 Parent Unit: V Corps
 Commander: LTC S. W. Johnston Jr.
 Sergeant Major: CSM G. S. Lucero
 HHB Cdr: CPT E. J. Gabaldon
 A Btry Cdr: CPT J. M. Weeks
 B Btry Cdr: CPT B. D. Martinez
 C Btry Cdr: CPT S. V. Martinez

3rd Battalion, 2nd ADA



Deperro



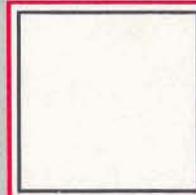
Arnold

Location: Fort Lewis, Wash.
 Unit Type: Corps Chaparral
 Commander: LTC P. J. Deperro
 Sergeant Major: CSM E. R. Arnold
 HHB Cdr: CPT L. P. Whiting
 A Btry Cdr: CPT M. J. Keris
 B Btry Cdr: CPT J. E. Spurrier
 C Btry Cdr: CPT L. H. Pruitt

1st Battalion, 200th ADA



Van Winkle



Vacant

Location: Roswell, N. M.
 Unit Type: Chaparral, ARNG
 Parent Unit: PACOM-S
 Commander: LTC R. R. Van Winkle
 Sergeant Major: Vacant
 HHB Cdr: CPT S. A. Hayes
 A Btry Cdr: CPT E. L. Rutledge
 B Btry Cdr: 1LT R. N. Leigers
 C Btry Cdr: CPT D. P. Neel

4th Battalion, 200th ADA



Bouffard



Lawrence

Location: Clovis, N. M.
 Unit Type: Chaparral, ARNG
 Parent Unit: I Corps
 Commander: LTC R. N. Bouffard
 Sergeant Major: CSM G. S. Lawrence
 HHB Cdr: 1LT G. A. Romero
 A Btry Cdr: CPT J. M. Carrasco
 B Btry Cdr: CPT M. I. Bannister Sr.
 C Btry Cdr: CPT G. L. Szalay

Corps

6th Battalion, 200th ADA



Sisneros



Arellano

Location: **Springer, N. M.**
 Unit Type: **Chaparral/Stinger, ARNG**
 Parent Unit: **XVIII Airborne Corps**
 Commander: **LTC G. Sisneros**
 Sergeant Major: **CSM F. Arellano**
 HHB Cdr: **CPT G. Jeantote**
 A Btry Cdr: **CPT D. Johnson**
 B Btry Cdr: **CPT S. Archuleta**
 C Btry Cdr: **CPT R. Chavez**

1st Battalion, 265th ADA



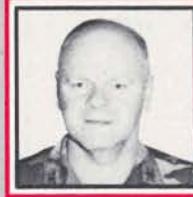
Rintz



Rich

Location: **Daytona Beach, Fla.**
 Unit Type: **Chaparral, ARNG**
 Parent Unit: **PACOM-N**
 Commander: **LTC R. T. Rintz**
 Sergeant Major: **CSM D. M. Rich**
 HHB Cdr: **CPT J. P. Reddick III**
 A Btry Cdr: **CPT M. A. Singer**
 B Btry Cdr: **CPT L. J. Breehl Jr.**
 C Btry Cdr: **CPT K. E. Terry**

263rd ADA Brigade



Thompson



Williamson

Location: **Anderson, S. C.**
 Unit Type: **Brigade Headquarters, ARNG**
 Commander: **COL H. E. Thompson**
 Sergeant Major: **SGM W. C. Williamson**
 Phone: **(803) 224-3096/0193**

7th Battalion, 200th ADA



Burnam



Gonzales

Location: **Rio Rancho, N. M.**
 Unit Type: **Hawk, ARNG**
 Parent Unit: **PACOM-S**
 Commander: **LTC M. K. Burnam**
 Sergeant Major: **CSM R. Gonzales**
 HHB Cdr: **CPT E. Cheatham**
 A Btry Cdr: **CPT L. Montano**
 B Btry Cdr: **CPT M. Patterson**
 C Btry Cdr: **CPT F. Arenibas**

2nd Battalion, 265th ADA



Spencer



Russell

Location: **Longwood, Fla.**
 Unit Type: **Hawk, ARNG**
 Parent Unit: **Third U.S. Army**
 Commander: **LTC J. C. Spencer**
 Sergeant Major: **CSM W. E. Russell**
 HHB Cdr: **CPT P. M. Mangone**
 A Btry Cdr: **CPT E. H. Wilson Jr.**
 B Btry Cdr: **CPT J. D. Tyre**
 C Btry Cdr: **CPT J. M. Pomar**

1st Battalion, 263rd ADA



Garrett



Vacant

Location: **Greenville, S.C.**
 Unit Type: **Hawk, ARNG**
 Parent Unit: **Third U.S. Army**
 Commander: **LTC D. F. Garrett**
 Sergeant Major: **Vacant**
 HHB Cdr: **CPT D. L. Hammond**
 A Btry Cdr: **CPT R. C. Burrell**
 B Btry Cdr: **1LT Z. Y. Dickerson**
 C Btry Cdr: **1LT B. S. Riedel**

164th ADA Brigade



Campbell



Calkins

Location: **Orlando, Fla.**
 Unit Type: **Brigade Headquarters, ARNG**
 Commander: **COL(P) J. F. Campbell Jr.**
 Sergeant Major: **CSM J. L. Calkins**
 Phone: **(407) 423-6930**

3rd Battalion, 265th ADA



Evaul



Doss

Location: **West Palm Beach, Fla.**
 Unit Type: **Chaparral, ARNG**
 Parent Unit: **Third U.S. Army**
 Commander: **LTC D. S. Evaul**
 Sergeant Major: **CSM C. L. Doss Jr.**
 HHB Cdr: **1LT G. S. Gilbert**
 A Btry Cdr: **CPT J. E. Horne**
 B Btry Cdr: **AC In Korea**
 C Btry Cdr: **AC In Korea**

2nd Battalion, 263rd ADA



Butts



O'Dell

Location: **Anderson, S. C.**
 Unit Type: **Gun/Stinger, ARNG**
 Parent Unit: **26th Infantry Division**
 Commander: **LTC W. G. Butts Jr.**
 Sergeant Major: **CSM T. A. O'Dell**
 HHB Cdr: **CPT R. L. Beltran**
 A Btry Cdr: **CPT W. E. Cannon**
 B Btry Cdr: **CPT W. E. Martin**
 C Btry Cdr: **CPT L. L. Leopard**

Divisional

1st Battalion, 3rd ADA



Penhallegon



Davis

Location: Fort Carson, Colo.
 Unit Type: Vulcan/Stinger (Hvy Division)
 Parent Unit: 4th Infantry Division
 Commander: LTC W. M. Penhallegon
 Sergeant Major: CSM O. Davis
 HHB Cdr: CPT K. Busse
 A Btry Cdr: CPT D. Curtis
 B Btry Cdr: CPT M. McGee
 C Btry Cdr: CPT C. Bailey

4th Battalion, 3rd ADA



Ward



Keeton

Location: Kitzingen, FRG
 Unit Type: Chap/Vulcan/Stinger (Hvy Div)
 Parent Unit: 3rd Infantry Division (Mech)
 Commander: LTC J. R. Ward
 Sergeant Major: CSM W. F. Keeton
 HHB Cdr: CPT R. Conley III
 A Btry Cdr: CPT C. R. Mitchell
 B Btry Cdr: CPT J. K. Kirby
 C Btry Cdr: CPT K. B. Cameron
 D Btry Cdr: CPT G. R. Clark

C Btry Cdr: Not available
 D Btry Cdr: Not available

3rd Battalion, 4th ADA



Kirk



Miranda

Location: Fort Bragg, N. C.
 Unit Type: Airborne Vulcan/Stinger
 Parent Unit: 82nd Airborne Division
 Commander: LTC D. R. Kirk
 Sergeant Major: CSM S. B. Miranda
 HHB Cdr: CPT R. S. Gatlin
 A Btry Cdr: CPT B. Manning
 B Btry Cdr: CPT J. Chapa
 C Btry Cdr: CPT M. Crawford

2nd Battalion, 3rd ADA



Willis



Harper

Location: Fort Riley, Kan.
 Unit Type: Vulcan/Stinger (Hvy Division)
 Parent Unit: 1st Infantry Division (Mech)
 Commander: LTC C. G. Willis
 Sergeant Major: 1SG R. Harper (acting)
 HHB Cdr: CPT G. P. Wallace
 A Btry Cdr: CPT R. G. Kressin
 B Btry Cdr: CPT P. S. Phillips
 C Btry Cdr: CPT W. D. Teeman

5th Battalion, 3rd ADA



Smalls



Photo
 Not
 Available

Halligan

Location: Wackernhelm, FRG
 Unit Type: Chaparral/Vulcan (Hvy Div)
 Parent Unit: 8th Infantry Division
 Commander: LTC S. C. Smalls
 Sergeant Major: CSM J. P. Halligan
 HHB Cdr: CPT L. Mack
 A Btry Cdr: CPT P. Smith
 B Btry Cdr: CPT L. Logue
 C Btry Cdr: CPT E. Lyon
 D Btry Cdr: CPT P. Felliciano

1st Battalion, 5th ADA



Jeffrey



Huffin

Location: Fort Stewart, Ga.
 Unit Type: Vulcan/Stinger (Hvy Division)
 Parent Unit: 24th Infantry Division (Mech)
 Commander: LTC J. W. Jeffrey Jr.
 Sergeant Major: CSM W. R. Huffin
 HHB Cdr: CPT J. Magee
 A Btry Cdr: CPT M. K. Carlson
 B Btry Cdr: CPT D. K. Carter
 C Btry Cdr: CPT J. Williams

3rd Battalion, 3rd ADA



Workman



Harvey

Location: Fort Polk, La.
 Unit Type: Vulcan/Stinger (Hvy Division)
 Parent Unit: 5th Infantry Division
 Commander: LTC D. K. Workman
 Sergeant Major: CSM C. Harvey
 HHB Cdr: CPT R. L. Green
 A Btry Cdr: CPT K. A. Salter
 B Btry Cdr: CPT L. A. Forseth
 C Btry Cdr: CPT M. L. Thompson

6th Battalion, 3rd ADA



Photo
 Not
 Available

Murphy



Photo
 Not
 Available

Brown

Location: Schwabach, FRG
 Unit Type: Chaparral/Vulcan (Hvy Div)
 Parent Unit: 1st Armored Division
 Commander: LTC E. J. Murphy
 Sergeant Major: CSM J. L. Brown
 HHB Cdr: Not available
 A Btry Cdr: Not available
 B Btry Cdr: Not available

2nd Battalion, 5th ADA



Prouty



Kosanke

Location: Fort Hood, Texas
 Unit Type: Vulcan/Stinger (Hvy Division)
 Parent Unit: 2nd Armored Division
 Commander: LTC J. R. Prouty
 Sergeant Major: CSM A. Kosanke
 HHB Cdr: CPT B. L. Smith
 A Btry Cdr: CPT M. J. Sippel
 B Btry Cdr: CPT R. L. Rodgers
 C Btry Cdr: CPT R. E. Mateo

Divisional

3rd Battalion, 5th ADA



Graves



Bacion

Location: Buedingen, FRG
 Unit Type: Chap/Vulcan/Stinger (Hvy Div)
 Parent Unit: 3rd Armored Division
 Commander: LTC E. E. Graves
 Sergeant Major: CSM R. M. Bacion
 HHB Cdr: CPT T. W. Gies
 A Btry Cdr: CPT R. A. Leahardy
 B Btry Cdr: CPT M. D. Madden
 C Btry Cdr: CPT J. C. Breletic
 D Btry Cdr: CPT D. G. Vydra Sr.

4th Battalion, 5th ADA



Wells



Strebe

Location: Fort Hood, Texas
 Unit Type: Vulcan/Stinger (Hvy Division)
 Parent Unit: 1st Cavalry Division
 Commander: LTC K. B. Wells
 Sergeant Major: CSM V. C. Strebe
 HHB Cdr: CPT K. N. Jennings
 A Btry Cdr: CPT G. A. Winter
 B Btry Cdr: CPT R. M. Hooper
 C Btry Cdr: CPT R. J. Roberts

5th Battalion, 5th ADA



Greenawald



Bailey

Location: Camp Stanton, ROK
 Unit Type: Chaparral/Vulcan (Hvy Div)
 Parent Unit: 2nd Infantry Division
 Commander: LTC W. E. Greenawald
 Sergeant Major: CSM E. G. Bailey
 HHB Cdr: CPT K. K. Durr
 A Btry Cdr: CPT D. O. Hill
 B Btry Cdr: CPT D. Cook

C Btry Cdr: CPT M. Vergara
 F Btry Cdr: CPT A. Sanchez-Castellanos
 G Btry Cdr: CPT A. J. Waters

1st Battalion, 44th ADA



Ouellette



Thompson

Location: Fort Lewis, Wash.
 Unit Type: Vulcan/Stinger (Motorized)
 Parent Unit: 9th Infantry Division
 Commander: LTC R. E. Ouellette
 Sergeant Major: CSM D. Thompson
 HHB Cdr: CPT C. Lankford
 A Btry Cdr: CPT K. Hardin
 B Btry Cdr: CPT B. Lamb
 C Btry Cdr: CPT D. Peppers

2nd Battalion, 44th ADA



DeWitt



Amerson

Location: Fort Campbell, Ky.
 Unit Type: Air Assault Vulcan/Stinger
 Parent Unit: 101st Airborne Division
 Commander: LTC C. R. DeWitt
 Sergeant Major: CSM R. J. Amerson
 HHB Cdr: CPT T. A. Smith
 A Btry Cdr: CPT B. Perry III
 B Btry Cdr: CPT C. E. Johnson
 C Btry Cdr: CPT M. D. Lister

1st Battalion, 62nd ADA



Wright



Cabato

Location: Schofield Barracks, Hawaii
 Unit Type: Vulcan/Stinger (Light Division)
 Parent Unit: 25th Infantry Division

Commander: LTC R. A. Wright
 Sergeant Major: CSM G. B. Cabato
 HHB Cdr: CPT J. R. Dubois
 A Btry Cdr: CPT M. T. DeLaCruz
 B Btry Cdr: CPT D. Cook

2nd Battalion, 62nd ADA



Hurd



Haynes

Location: Fort Ord, Calif.
 Unit Type: Vulcan/Stinger (Light Division)
 Parent Unit: 7th Infantry Division
 Commander: LTC C. W. Hurd
 Sergeant Major: CSM E. M. Haynes
 HHB Cdr: CPT D. F. Burns
 A Btry Cdr: CPT M. R. Paull
 B Btry Cdr: CPT B. L. Woodworth

3rd Battalion, 62nd ADA



Van Brederode



Fishburne

Location: Fort Drum, N. Y.
 Unit Type: Vulcan/Stinger (Light Division)
 Parent Unit: 10th Mountain Division
 Commander: LTC H. L. Van Brederode
 Sergeant Major: CSM E. Fishburne
 HHB Cdr: CPT H. W. Wells
 A Btry Cdr: CPT S. M. Briggs
 B Btry Cdr: CPT K. J. Vallandigham

3rd Battalion, 111th ADA



Rose



Hoover

Location: Portsmouth, Va.
 Unit Type: Gun/Stinger, ARNG
 Parent Unit: 29th Infantry Division

Divisional

Commander: MAJ Daniel C. Rose
 Sergeant Major: CSM D. L. Hoover
 HHB Cdr: CPT J. T. Cahoon
 A Btry Cdr: CPT C. A. Slade
 B Btry Cdr: CPT J. C. Blythe
 C Btry Cdr: 1LT D. C. Gagnon

1st Battalion, 138th ADA



Huber



Bush

Location: Lafayette, Ind.
 Unit Type: MANPAD
 Parent Unit: 38th Infantry Division
 Commander: MAJ G. H. Huber Jr.
 Sergeant Major: CSM M. H. Bush
 HHB Cdr: CPT L. G. Goff
 A Btry Cdr: 1LT K. K. Harris
 B Btry Cdr: CPT J. K. Cottom
 C Btry Cdr: 1LT W. W. Wood

Parent Unit: 6th Infantry Division (Light)
 Commander: LTC A. W. Perleberg Jr.
 Sergeant Major: Vacant
 HHB Cdr: CPT S. C. Holmes
 A Btry Cdr: CPT L. D. Runck
 B Btry Cdr: CPT B. L. Kolle

1st Battalion, 202nd ADA



Fleming



Van Opdorp

Location: Kewanee, Ill.
 Unit Type: MANPAD
 Parent Unit: 47th Infantry Division
 Commander: LTC C. E. Fleming
 Sergeant Major: CSM R. E. Van Opdorp
 HHB Cdr: 1LT C. M. Baldwin
 A Btry Cdr: CPT B. E. Ackers
 B Btry Cdr: 1LT G. W. Miller
 C Btry Cdr: CPT M. P. Gibson

Parent Unit: III Corps
 Commander: LTC M. N. Burris Jr.
 Sergeant Major: CSM B. B. Cauthron
 HHB Cdr: CPT C. L. Larrison
 A Btry Cdr: CPT G. M. Harden
 B Btry Cdr: CPT D. E. Bridges
 C Btry Cdr: 1LT L. J. Carroll

Range Command



Simmons



Brown

Location: McGregor Range, N. M.
 Unit Type: Range Command
 Parent Unit: Air Defense Artillery Center
 Commander: LTC W. T. Simmons
 Sergeant Major: CSM G. Brown

2nd Battalion, 174th ADA



Wilder



Scott

Location: McConelsville, Ohio
 Unit Type: Hawk
 Parent Unit: PACOM-N
 Commander: LTC J. C. Wilder
 Sergeant Major: CSM D. E. Scott
 HHB Cdr: CPT J. Elliot
 A Btry Cdr: CPT G. Douglass
 B Btry Cdr: CPT N. Goad
 C Btry Cdr: CPT L. Ranney

1st Battalion, 213th ADA



Slotter



Fenstermaker

Location: Lehighton, Penn.
 Unit Type: MANPAD
 Parent Unit: 28th Infantry Division
 Commander: MAJ(P) W. A. Slotter
 Sergeant Major: CSM E. R. Fenstermaker
 HHB Cdr: CPT R. Kutzler
 A Btry Cdr: CPT P. Hinds
 B Btry Cdr: CPT W. Kinney
 D Btry Cdr: CPT R. Iram

Army Range Command



Harrison

Location: Kwajalein Atoll, RMI
 Unit Type: Range Command
 Parent Unit: U.S. Army Strategic Defense Command
 Commander: LTC S. E. Harrison

1st Battalion, 188th ADA



Perleberg



Vacant

Location: Grand Forks, N.D.
 Unit Type: Gun/Stinger

1st Battalion, 233rd ADA



Burris



Cauthron

Location: Booneville, Ark.
 Unit Type: Chaparral, ARNG

Corrections?

Call in corrections
 and changes of
 command to the
 ADA Yearbook Staff
 AV 978-4133/5603

TRADOC

6th ADA Brigade



Tedesco



Waters

Location: Fort Bliss, Texas
 Commander: COL V. J. Tedesco Jr.
 Sergeant Major: CSM T. C. Waters
 Phone: AV 978-2550

1st Battalion, 6th ADA



Casto



Hampton

Location: Fort Bliss, Texas
 Commander: LTC R. Casto Jr.
 Sergeant Major: CSM W. Hampton
 HHB Cdr: CPT A. Sterns
 A Btry Cdr: CPT W. Weiner
 B Btry Cdr: CPT E. Johnson
 C Btry Cdr: CPT P. Hayward

2nd Battalion, 6th ADA



Putnam



Garza

Location: Fort Bliss, Texas
 Commander: LTC M. B. Putnam
 Sergeant Major: SGM J. F. Garza
 HHB Cdr: CPT R. V. Shellman
 A Btry Cdr: CPT J. D. Thomason
 B Btry Cdr: CPT D. E. Kingery
 C Btry Cdr: CPT W. G. Jones

3rd Battalion, 6th ADA



Inge



Spencer

Location: Fort Bliss, Texas
 Commander: LTC D. A. Inge

Sergeant Major: CSM C. Spencer Jr.
 HHB Cdr: CPT F. St. Martin
 A Btry Cdr: CPT J. Crutchfield
 B Btry Cdr: CPT A. Hernandez
 C Btry Cdr: CPT B. Dion

4th Battalion, 6th ADA



Rusciollelli



Cotchery

Location: Fort Bliss, Texas
 Commander: LTC P. C. Rusciollelli
 Sergeant Major: CSM D. L. Cotchery

1st Battalion, 43rd ADA



Deibler



Morgan

Location: Fort Bliss, Texas
 Commander: LTC S. Deibler
 Sergeant Major: CSM W. O. Morgan
 HHB Cdr: CPT R. Childress
 A Btry Cdr: CPT S. Peters
 B Btry Cdr: CPT L. Foster
 C Btry Cdr: CPT M. Erdley

56th ADA Brigade



Tate



Green

Location: Fort Bliss, Texas
 Commander: COL R. W. Tate
 Sergeant Major: CSM H. Green
 Phone: AV 978-1790

1st Battalion, 56th ADA



Tice



Henard

Location: Fort Bliss, Texas
 Commander: LTC E. M. Tice
 Sergeant Major: 1SG W. Henard
 A Btry Cdr: CPT D. Sumner
 B Btry Cdr: CPT M. Copeland

3rd Battalion, 56th ADA



Yelsley



Ayala

Location: Fort Bliss, Texas
 Commander: LTC J. C. Yelsley
 Sergeant Major: CSM J. M. Ayala
 A Btry Cdr: CPT G. Jackson
 B Btry Cdr: CPT K. Galner
 C Btry Cdr: CPT S. Rodriguez

4th Battalion, 56th ADA



Mason



Collins

Location: Fort Bliss, Texas
 Commander: LTC R. E. Mason
 Sergeant Major: CSM H. Collins
 HHB Cdr: CPT M. B. Floresca
 A Btry Cdr: CPT D. J. Wiley
 B Btry Cdr: CPT L. O. Trontl
 C Btry Cdr: CPT J. E. Murray Jr.

1st Support Battalion



Rice



Kelley

Location: Fort Bliss, Texas
 Commander: LTC J. H. Rice III
 Sergeant Major: CSM D. W. Kelley
 HHB Cdr: CPT R. Mercado
 A Btry Cdr: CPT M. Shillingburg
 B Btry Cdr: CPT R. Dunlap

USAADASCH



BG
J. M. Garner

Position: **Assistant Commandant,
USAADASCH**



Mr.
J. C. Mullett

Position: **Director, Office, Chief of
Air Defense Artillery**



LTC
E. W. Williams

Position: **Director,
Patriot Department**



COL
D. C. Ingram

Position: **Deputy Asst Commandant,
USAADASCH**



COL
J. C. Starkey

Position: **Director, Directorate of
Combat Developments**



LTC
R. M. Walker

Position: **Director,
Hawk Department**



COL
G. A. McLeod

Position: **FAAD TRADOC System
Manager**



LTC
M. A. Whitley Jr.

Position: **Director, Directorate of
Training and Doctrine**



MAJ
J. A. Ivey

Position: **Director, Forward Area Air
Defense Department**



COL
J. L. Ellis

Position: **HIMAD TRADOC System
Manager**



COL
E. P. Semmens

Position: **Director, Combined Arms and
Tactics Department**

USAADASCH
organization
effective as of
1 April 1990

(Continued from page 16)

of the radar enhancements, launcher upgrades and new multimode seekers into the late 1990s.

We must sustain Patriot's strong capability to counter the evolving aircraft and missile threat well into the next century.

Hawk Phase III. Hawk Phase III fielding is now in full swing. Despite several budget setbacks in the past two years, we have now accelerated the purchase of the crucial improvements for Hawk to FY 92. This will ensure all Hawk battalions, including Army National Guard, are fully modernized by the mid-1990s.

Mobility improvements required to better support our corps commanders are under development, and we will continue to work hard to keep this program, which will provide significant dividends for both NATO and contingency forces, on track.

We have embarked on the definition of requirements for a high fire-power, strategically deployable, highly survivable replacement for Hawk.

Early funding requests have been initiated to start work leading to a full-scale development effort in the mid-1990s and to field Corps SAM, as the corps surface-to-air missile is currently known, to the active force beginning in the early 2000s.

I am dedicated to keeping the versatile and reliable Hawk system viable against the near- and mid-term threats through the fielding of Phase III and mobility improvements.

Interoperability. Interoperability is the key to making the Patriot/Hawk link effective. Our inability to provide near-term solutions for our high-to medium-altitude air defense (HIMAD) command, control and communications problems continues to be a concern. Although Post Deployment Build III (PDB-3) and information and coordination centrals for Hawk are an important first step, the areas of command post automation and interoperable communications will remain deficient for the near term. A common hardware and soft-

ware solution to force operation shortfalls will be our best approach.

We have built a strategy with the Procurement Executive Office (PEO)-Command and Control Systems to accelerate the common hardware and software solution for brigades and battalions. This should allow us to begin evolving a robust command post in FY 92. We are also developing a joint tactical information distribution system-based communications strategy with PEO-Communications to fix Hawk battalions internally and externally, beginning in FY 93. Funding constraints, however, will force us to delay providing this capability to Patriot until the late 1990s.

We will develop the most executable interoperability strategy possible to field a powerful HIMAD C³ network to support our corps and theater commanders in both NATO and contingency theaters.

Software. Software evolution is the near-term key to solving our HIMAD problems. Patriot and Hawk PDB-3,



Phase III improvements will sustain Hawk's viability against the near- and mid-term threats.

scheduled for fielding in December 1990, will improve Patriot/Hawk interoperability and provide self-defense against tactical ballistic missiles. Patriot PDB-4, due in FY 93, will complete this action and add noncooperative target recognition (NCTR), processing of intelligence messages and the use of joint engagement zones. Hawk Block 4, due in FY 91, will improve target detection and provide low-level velocity detection. FAAD C² software will be fielded and block improvements scheduled. These software improvements will help standardize software-driven component performance, provide a basis for evolution through post-deployment software support, and improve ADA system interoperability and compatibility.

Target Identification. Increased firepower and expanding engagement envelopes will do us little good if we still have to wait until "we see the whites of their eyes" before engaging. The ability to positively identify aircraft in time to maximize weapon systems capabilities remains

a key air defense mission area deficiency. Through continued participation in exercises such as Green Flag, we are beginning to formulate an executable strategy to bring cooperative and noncooperative technologies to the field.

Our immediate goal is to develop an analytically-based ADA identification strategy around a family of NCTR devices. The integration of NCTR capabilities on FAAD weapons in FY 93 will be the first step to fielding several maturing technologies. Our long-term goal is to integrate appropriate technologies on all ADA weapons and sensors, and then distribute the data they produce across the battlefield to eliminate the need for separate missile and fighter engagement zones for HIMAD weapons and "weapons hold" for FAAD weapons as control measures.

The necessary steps include fielding the hostile aircraft identification enhancement on Hawk and creating a NCTR library maintenance and distribution system for initial fielding with the new FAAD systems. These

efforts will lead to an integrated, cohesive ADA identification capability that will allow us to positively identify relevant airborne objects, minimizing fratricide while maximizing enemy kills.

ASAT. The development of a near-term anti-satellite (ASAT) capability is more than force modernization — it's an entirely new mission that has made Air Defense Artillery a major player in space control. We have the lead in a 72-month program leading to a deployed kinetic energy interceptor capable of destroying threat satellites. The U.S. Air Force has a separate major piece, the development of the battle management/C³ interface.

We have begun work on the required operational capability and expect to initiate worldwide staffing by January 1991. We are now in the site selection process to determine the best ASAT battery location.

A representative ASAT battalion designed and based on current Army tables of organization and equipment would have a headquarters and

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headquarters battery and two firing batteries. The ASAT firing battery will probably be developed along the same lines as the fixed Nike-Hercules sites deployed during the 1960s and early 1970s in the continental United States. Battery density is programmed at 40 to 75 personnel. Two ASAT sites were originally proposed, but budget austerity has since reduced initial planning to one launch site or battery.

ASAT should not have a major impact on force structure since only a single ASAT battalion should be able to counter the current satellite threat, but the ASAT mission could expand as rival nations compete for military mastery in space. Even though our part in the ASAT program involves relatively limited manpower, training and logistical support, the fiscal impact of developing and fielding the kinetic energy interceptor is a concern.

We will work to develop full support of joint ASAT strategic needs without degrading other ADA tactical modernization programs.

Tactical Ballistic Missile Defense. The projected future threat for both mature and contingency theaters includes tactical ballistic missiles (TBMs). The Army recognizes that the present family of Patriot and Hawk HIMAD systems cannot provide sufficient protection against the TBM threat in Third World or major-power confrontations.

As the proponent for Active Tactical Missile Defense (ATMD) we have been proactive in providing operational concepts and requirements to guide ongoing technology exploration activities by the DoD Strategic Defense Initiative Office, U.S. Army Strategic Defense Command, as well as other experiments directed by the Joint Tactical Missile Defense Management Office. We also support the infusion of TMD capabilities into current HIMAD systems, including the Patriot ATM Capability (PAC) and the evaluation of future advancements such as the Advanced Tactical Patriot (ATP) and Hawk ATM.

Approval of our Active Tactical Missile Defense Operational and Or-

ganizational Plan was expected prior to this article's publication. Upon approval, the materiel developer will conduct the technology search that will tell us whether to develop a new system or an augmentation to existing systems to counter the full spectrum of the tactical missile threat without degrading other air defense capabilities.

Strategic Missile Defense. The genesis of our ballistic missile defense (BMD) efforts is former President Ronald Reagan's Strategic Defense Initiative. The Army Space Institute, Fort Leavenworth, Kan., is orchestrating Army Strategic BMD activities. When the Strategic Defense Initiative passes the technology research stage, the U.S. Army Air Defense Artillery School is expected to act as the proponent for fielding the ground-based component of a strategic BMD system.

Emerging Technology. I expect emerging technologies to resolve many of our materiel deficiencies within the next two decades. These new technologies include new missile, guidance and seeker advances, space-based assets, sensor and fire control innovations and directed energy weapons that are already on the drawing boards.

Advances in inertia measurement technologies and digital data processing techniques and improved hardware will combine with advance seekers to greatly increase our interceptor capabilities. Miniaturization of these components and propulsion advances will expand our range capabilities. Advance seeker technologies will prove more jam resistant. Increased firepower and greater accuracy will give us "hit-to-kill" capabilities, reducing or perhaps even eliminating the need for a warhead.

These advances raise the probability that our Corps SAM will, indeed, become the system of the future to support the Army in all contingency missions. It is conceivable that we can develop Corps SAM to accomplish the entire HIMAD mission in the highly-mobile, nonlinear mature and non-mature theaters. Ranges in excess of 50 kilometers against tar-



The new ASAT mission gives Air Defense Artillery an important role in space control.

gets ranging from low-flying cruise missiles, remotely piloted vehicles and manned aircraft to sophisticated tactical missiles are achievable within the next 10 to 15 years.

Overhead imaging will allow air defenders to conduct real-time reconnaissance and target acquisition. Improved C³ via satellite link becomes a realistic possibility. The global positioning system will allow real-time position determination for rapid movement and emplacement of forces.

Advances in sensor and fire control technology should solve the target identification problem by allowing air defenders to engage beyond visual range while decreasing the chance of fratricide. In addition, the separation of fire control radars from associated launchers will increase survivability and firepower.

Directed energy technologies are rapidly maturing and could provide a near-term adjunct to FAAD systems that would destroy or distract smart missiles, blind pilot sensors, damage avionics and disrupt enemy

communications. Emerging high-powered microwave technology can temporarily confuse sensors, burn out or disrupt circuitry, disable fuzes and inflict structural damage. It will provide us a mid-term capability to defeat incoming artillery, anti-radiation missiles, unmanned aerial vehicles and the electronics of fixed- and rotary-wing aircraft. This technology can be integrated with current weapon platforms as a single-shot explosive (radiator).

These new technologies are within our grasp, and grasp them we must. They offer us a chance to reduce the air threat to the field army — as it exists today — to tactical and strategic obsolescence.

Doctrine

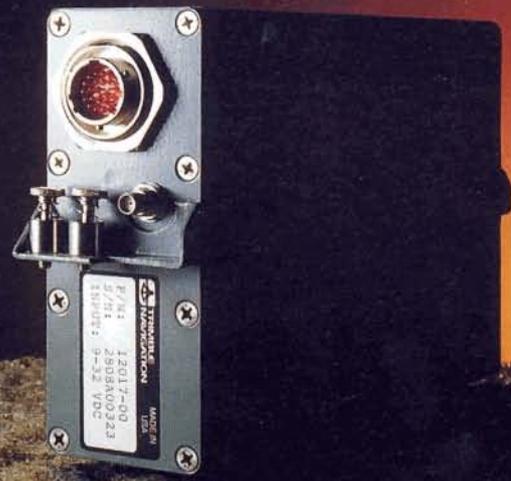
Doctrine is the foundation upon which success in battle rests. I do not subscribe to the theory that doctrine must be rewritten in blood on the battlefield at the beginning of every war.

The doctrine being written or rewritten at the Air Defense Artillery

School today focuses on the synchronization of ADA firepower with the combined arms team and the tasks necessary to achieve synchronization. While tactics, techniques and procedures embedded in the new doctrine come to grips with new technology, the driving force behind ADA doctrine continues to be Army missions, the evolving threat (particularly trends in rotary-wing capabilities), the likelihood of contingency operations, our changed force structure and, most importantly, the emerging Airland Battle-Future doctrine now being comprehensively developed under the personal leadership of Gen. John W. Foss, Commanding General, TRADOC, with the continuous participation of all of the service school commanders.

The organization of corps air defense, the restructuring of divisional air defense that has accompanied the advent of the new FAAD systems, and Air Defense Artillery's continuing ascendancy as a dominant battlefield force combine to underscore

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Army C3 systems undergo constant evaluation and improvement. Advances in doctrine and technology continue throughout the system's life cycle. A design perspective that takes this into account - a total life cycle perspective - can extend the system's useful life and reduce its life cycle cost.

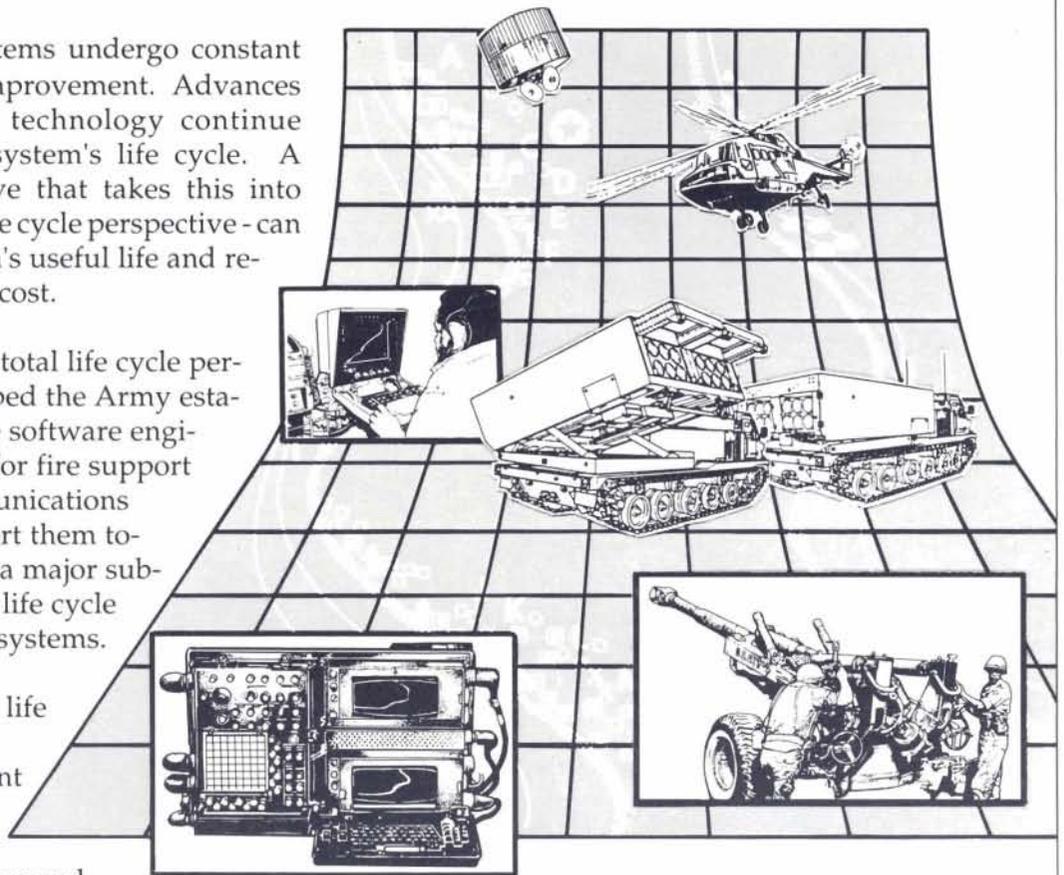
Telos has this total life cycle perspective. We helped the Army establish the life cycle software engineering facilities for fire support (1978) and communications (1983), and support them today. And we are a major subcontractor for the life cycle support of I/EW systems.

We apply this life cycle perspective to the development of software for new C3 systems, including the Advanced

Field Artillery Tactical Data System and the All Source Analysis System. We have completely redesigned the Multiple Launch Rocket System and Lance Missile Fire Direction Systems, combining them into one maintainable and efficient package.

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the necessity of producing sound ADA doctrine.

The publication of FM 44-100, *Air Defense Artillery Operations*, our capstone field manual, has given us a sound doctrinal base. Manuals being prepared for publication are synchronized with the combined arms team and in tune with the future. Completing the doctrinal literature chain for our rapidly evolving branch, however, is a monumental challenge. Manpower and budget constraints seriously degrade our ability to produce doctrine at the pace required.

To overcome these difficulties, I have redirected manpower and responsibilities within the Air Defense Artillery School to place the doctrinal literature program on a priority schedule. Our first priority will be the development of doctrine to support the modernization of the branch with the fielding of new ADA weapons and capabilities. The update of doctrine supporting currently fielded weapons and organization is priority number two.

We've got to break the doctrinal literature logjam and deliver to the field a timely and steady flow of high-quality publications.

It won't happen overnight, but we will continue to give priority to ensuring that ADA doctrine development and dissemination is brought into synchronization with the fielding of new ADA weapons, expanding capabilities and changing force structure.

Scanning the Future

A half-century has passed since the Wehrmacht and Red Army rumbled into Poland to begin the enslavement of Europe. America's commitment to democracy, though often challenged abroad and at home, and the sacrifice of its servicemen and women, though not always appreciated, have played no small role in relighting the candles of freedom that now flicker all across the continent and may soon illuminate the entire world. History thrusts upon those of us who continue to serve a responsibility to forge a fight-

ing force that can keep the candles brightly burning. Should our mission prove successful, few will applaud our accomplishment. The world expects America and Americans to walk point in the battle for freedom. But should we fail, history will long wonder at our ineptitude, at our squandering of vast potentials, at our betrayal of a sacred trust.

I feel certain that we are equal to the task. We are blessed with superior technology, superior weaponry and superior personnel — soldiers and civilians who represent the very best that a talented mix of racial, ethnic and cultural groups have to offer. In a world seemingly poised on the brink of peace, we must guard against complacency and the casual abandonment of a tactical, strategic and qualitative advantage that may prove all too ephemeral.

Maj. Gen. Donald M. Lionetti, chief of Air Defense Artillery, is commander, U.S. Army Air Defense Center and Fort Bliss, and commandant, U.S. Army Air Defense Artillery School.

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Air Defense Artillery Association

by Col. V. J. Tedesco Jr.

Soldiers need to belong to an organization that promotes their branch and champions their professional development. The Air Defense Artillery Association exists for every air defender — enlisted, officer or civilian.

Chartered in 1975, the original association struggled through its formative years with only 207 members. These members established the association's goals: support ADA soldiers, retirees and the ADA Museum, and promote the history and traditions of Air Defense Artillery.

The ADA Association's membership roster, which totaled only 207 at the onset of 1985, experienced dramatic growth, expanding to 1,870 by the end of 1986. The membership skyrocketed over the next few years, and the association now boasts more than 4,000 members. The ADA Association also has 30 corporate members and four business partners. The association has grown in other areas as well — the last year has seen three new chapters established.

The first ADA Association chapter — the Redstone Arsenal/Huntsville Chapter — formed at Huntsville in February 1989. Chapter president Col. Samuel N. Liberatore reported that the Redstone Arsenal/Huntsville Chapter's membership, originally almost 100 local members, now has more than 140 members. To join the Redstone chapter, contact Maj. Robert Barnes, USASDC, ATTN: MOSC-H-LNO, P.O. Box 1500, Huntsville, Ala. 35807.

The first OCONUS chapter formed in May 1989 at Kaiserslautern, Federal Republic of Germany. Founded by Col. (P) Vernon L. Conner (then Commander, 94th ADA Brigade) and Col. James J. Cravens Jr. (Commander, 108th ADA Brigade), the USAREUR Chapter became the second association chapter. Anyone interested in becoming a member of this chapter may contact Maj. Robert M. Reddick, HHB, 32nd AADCOM, APO N.Y. 09175.

The third ADA Association chapter, the Rainier Chapter, formed last

August at Fort Lewis, Wash. Founded by president Col. John Costello (Commander, 35th ADA Brigade) and vice-president Lt. Col. James V. Leahy (XO, 35th ADA Brigade), the Rainier Chapter now counts 71 members. For information on the Rainier Chapter, contact 1LT(P) Marc E. Gonick, 35th ADA Brigade, Fort Lewis, Wash. 98433-5830.

Why does membership continue to grow? The reason is simple: association members support Air Defense Artillery. The means of support are easily identified by looking at the association's goals.

Support ADA Soldiers and Retirees

The ADA Association excels in this area. As early as 1987, the association began publishing the "First to Fire" newsletters. Mailed free to association life members, the newsletters contain information and *esprit de corps* material no longer allowed in official Army publications.

The association recognizes distinguished BNCOC and ANCOG graduates, and awards the ADA Association plaque to the top-ranked USMA cadet among those who select Air Defense Artillery as their branch of service. In 1988, the association also began presenting plaques to the outstanding soldiers (E-1 through E-7) in each Active and Reserve Component battalion.

The association published the first *Air Defense Artillery Yearbook (1988)* as a service to air defense artillerymen everywhere in celebration of the branch's 20th anniversary as an independent combined arms branch. The yearbook contains full-color photography and photographs of each ADA commander and command sergeant major. The association distributes thousands of free copies to ADA units around the world.

In November 1989 the association added the *ADA Magazine* to its list of publications. The association negotiated with Capital Military Publications of Austin, Texas, to publish a commercial version of the branch professional journal for several reasons. Advertising revenues and subscription sales allow the ADA Association to produce a higher-quality product than the official version of the magazine, and allow the association to pay UPS to put copies in the hands of ADA soldiers quicker than ever before. During a time of resource constraints, the association saves the Army thousands of dollars that can be spent on force modernization and soldier care.

The success of this publishing venture depends on the willingness of ADA soldiers to subscribe. Reaching subscription goals will allow the association to upgrade the quality of the magazine and add more editorial pages — and ensure that Air Defense Artillery continues to have a professional journal.

Support the ADA Museum

Located at the juncture of Pleasanton and Sheridan roads on Fort Bliss, the 10,000-square-foot ADA Museum features a variety of slide

shows, exhibits and displays that proudly and fully convey the history and purpose of Air Defense Artillery. Admission — free admission — entitles one and all to a complete overview of the history of our proud branch.

The association, headquartered in the association's gift shop in the ADA Museum, supports the museum in a multitude of areas. The Air Defense Artillery Association Gift Shop, which averages annual sales approaching \$100,000 a year, contributes a percentage of its earnings to the upkeep and improvement of the museum. As early as 1988, the association sponsored a military art show in the museum as a service to local members.

The ADA Association is now actively involved in an effort to construct a new museum — one that will house both the ADA and Fort Bliss Museums. The association, a prime engineer in the fund-raising strategy, will receive contributed funds and then let contracts for development and construction.

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Promote ADA History and Traditions

The ADA Association does more than its share to promote ADA history and traditions — far more than support the history of Air Defense Artillery through the museum. Beginning by publishing historical accounts of Air Defense Artillery in battle in the *First to Fire* Newsletter, the association will soon sponsor studies in the history of Air Defense Artillery. The association will also sponsor a contest, awarding prizes for the best histories and stories about ADA units. Another upcoming association project is a television saga that will

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ADA Association Gift Shop



Happy Foote (left) and Edith Fanning of the ADA Association display items on sale at the ADA Association Gift Shop. (Umbrella, \$18.00; Saber, \$210.00)

The ADA Association provides air defenders with their own company store — the ADA Association Gift Shop. Unselfishly supported and excellently managed by Happy Foote and Edith Fanning, the gift shop is loaded with specially designed logo items from the legendary cartoon pen of the late Col. Robert Matlick.

The inventory includes T-shirts, baseball caps, bumper stickers, patches, aprons and coffee mugs. Smaller items perfect for party favors include spoons, bookmarks, paperweights and letter openers, all with the ADA logo.

Prestige items include solid walnut boxes, plaques and pen sets topped with stunning brass and red ADA insignia. Pewter beer mugs, playing cards, brass logos, brass door knockers and the popular ADA belt buckle are included in the shop's displays.

Units may have their own unit designation printed on T-shirts if the order is large enough and advance notice is given. Larger items may be ordered through the shop and sent directly to any address.

Located in the ADA Museum, Fort Bliss, Texas, the store stays open weekdays, 10 a.m. to 4 p.m. For more information, call (915) 564-4331 or write ADA Association Gift Shop, Building 5000, Pleasanton Road, Fort Bliss, Texas 79906.

In the summer of 1989, the Association also opened a "Sutler's Store" in the newly reopened Fort Bliss Museum. The inventory reflects early Army life on the frontier. The volunteer staff consists of wives of 3rd Armored Cavalry soldiers — direct descendants of the mounted riflemen stationed at Fort Bliss in the 1850s.

Teddy Bear	\$15.00
Playing Cards	
Single Deck	3.99
Double Deck	7.95

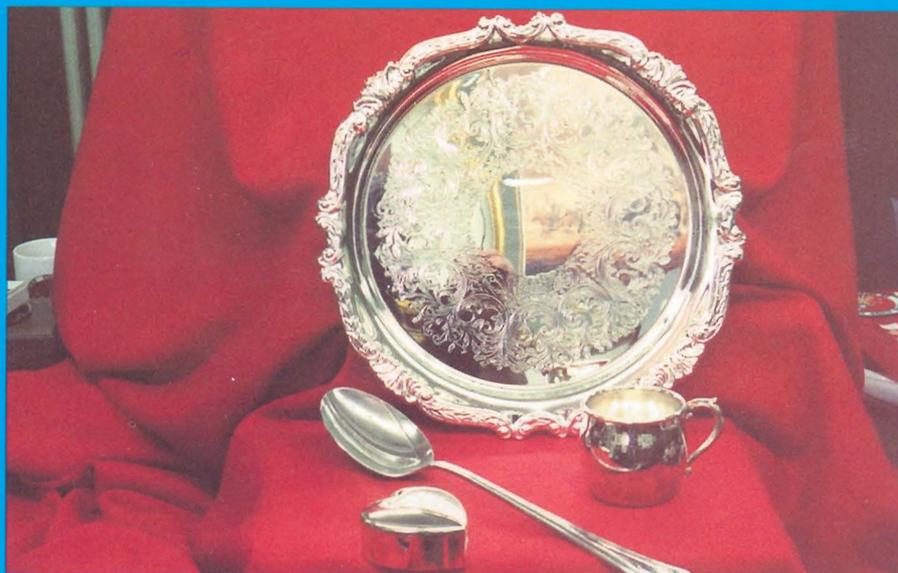




ADA Sweatshirts \$18.00

ADA T-Shirts

Adult S, M, L, XL, XXL 8.50
 Youth S, M, L, XL, XXL 7.50

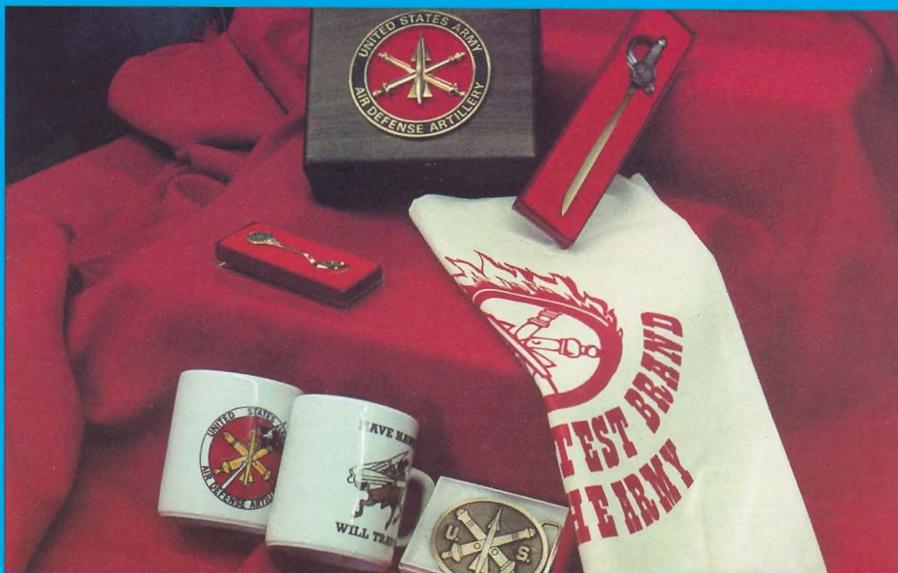


Silver Tray \$18.00

Silver Cup 15.00

Silver Spoon 12.00

Silver Heart Box 12.00



Walnut Box \$40.00

Letter Opener 6.50

Collector's Spoon 3.50

Coffee Cup 5.00

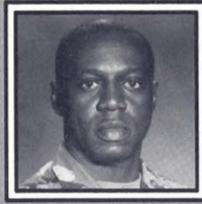
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Apron 12.00

ADA Association Council



COL
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CSM
W. Doctor



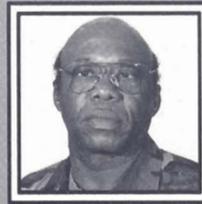
COL
J. Smith



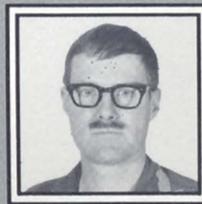
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SGM
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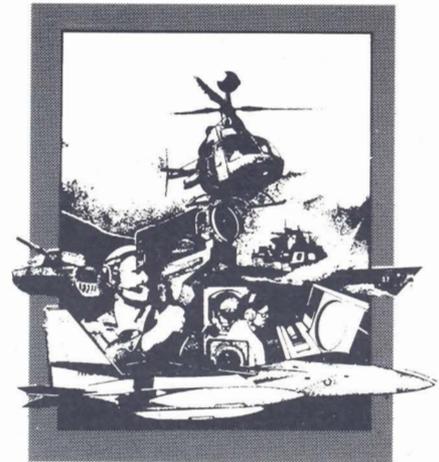


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tell the story of Air Defense Artillery from World War I to the present.

The ADA Association manages the Order of Saint Barbara, established to recognize artillerymen throughout the world. Through the Commanding General, U.S. Army Air Defense Artillery Center and Fort Bliss, the ADA Association is registered with the Field Artillery Association as the single approving authority for all ADA accessions to the Order of Saint Barbara.

Saint Barbara is the artilleryman's symbol of protection. According to legend, Barbara was the only daughter of Dioscorus, a wealthy heathen who was insanely jealous of his daughter's remarkable beauty. Fearing that Barbara would one day marry and leave him, Dioscorus locked her in a tower where no other man could lay eyes upon her.

Barbara, in her solitude, turned to study and meditation. She heard of a wise man named Origen, a famous Christian doctor and teacher who had publicly demonstrated the fruitlessness of idolatrous practices. Barbara secretly wrote to Origen who, in return, sent one of his disciples to Barbara disguised as a physician. Barbara soon completed her conversion to Christianity.

Shortly thereafter, Barbara had three windows constructed in her tower to symbolize the Holy Trinity. When Dioscorus demanded to know why she had ordered the alterations, she explained that through those windows her soul received the light of the Father, the Son and the Holy Spirit.

Dioscorus, violently opposed to Christianity, tried to force Barbara to renounce Christ, but she refused. Her father, in a fit of rage, cut off her head. As he fled down the mountainside, bloodied sword in hand, he was struck down by a lightning bolt and burned to ashes.

Early Christians invoked Saint Barbara as a protectress against lightning fires and sudden death. Artillerymen adopted her as their special patroness because they regarded the effect of their weapons as lightning from the sky (although common

ADA Association Plaque Recipients

1989 Cadet Michael Bindon

Cadet Michael Bindon, the highest-ranked ADA cadet from the 1989 West Point class, majored in Aerospace Engineering and Engineering Management. Cadet Bindon served as a company commander at West Point, has attended Alborne school and was a member of the karate team. Following OBC, he was assigned to a short-range air defense unit.

1990 Cadet Roger Wheeler

Cadet Roger Wheeler, the highest-ranked ADA cadet from the 1990 West Point class, majored in Engineering. Cadet Wheeler, who graduated in the top five percent of his class, served as a company first sergeant, regimental XO and brigade athletic officer at West Point. Following OBC, he was assigned to the 11th ADA Brigade as a Patriot lieutenant.

belief has it that artillerymen first called upon Saint Barbara to protect them from explosions of early artillery pieces).

The centuries-old Saint Barbara's Day celebration has lost much of its religious significance over the years. Now Saint Barbara's Day is mostly a social occasion, celebrated the evening of each December 4th with the Saint Barbara's Day Ball. The highlight of the evening is the induction into the Order of Saint Barbara.

Two levels of the Order of Saint Barbara are now open to ADA soldiers. The Ancient Order, the top level, is open only to those who have made significant contributions to the branch as a whole. The Honorable Order, the second level, recognizes the achievements of those outstanding soldiers who have greatly improved the ADA units in which they have served.

The ADA Association accepts nominations for the Ancient Order at any time; however, a nomination requires substantial supporting data, a review by a board and personal approval by the chief of Air Defense Artillery. A nomination for the Honorable Order requires only the endorsement of a colonel or higher ranking commander.

Will You Join?

There are numerous unit and individual incentives for joining. The \$30

lifetime membership fee is the absolute lowest of any organization associated with Army units and branches. The absolute lowest! The \$6 gift that every new member receives is unique to your association; no one else offers such gratuities. The association also offers corporatememberships.

The \$10 associate membership fee allows young soldiers to join the association for two years, take part in activities and taste a little of what it means to be a part of this elite group. Yet this form of membership does not provide for a gift nor the direct mailing of the *First to Fire* newsletters and the *Air Defense Artillery Yearbook*.

The ADA Association needs you just as you need the association. You can help the association reach its full potential quickly by becoming a member, or, if you've already joined, by persuading others to join. There is strength and power in numbers. With members come the dollars needed to expand programs that promote your professional development.

Support the ADA Association, and support Air Defense Artillery!

Col. V. J. Tedesco Jr. is the commander of the 6th ADA Brigade, Fort Bliss, Texas, and president of the Air Defense Artillery Association.

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completely redefined the state-of-the-art in close air defense. No other system provides such devastating speed and accuracy. The British Ministry of Defence has contracted for the early deployment of Starstreak in Western Europe.

Shorts is teamed with Boeing Aerospace to adapt Starstreak to the Avenger as an upgraded pedestal-mounted air defense system for the U.S. military. McDonnell Douglas Helicopter Company and Martin Marietta Electronics Systems are working together with Shorts to integrate Starstreak as an air-to-air missile on the Apache Helicopter.

Blowpipe, Javelin and Seacat are also produced by Shorts, so Starstreak is only the latest in a succession of proven and technically excellent weapons. But much faster and more lethal than anything that's gone before. Which is good to know. Providing it's not pointing in your direction.



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