

**AIR DEFENSE  
ARTILLERY  
YEARBOOK**

*Twentieth Anniversary Edition*



**1987-1988**



*Securing America's Future with Advanced Technology.*



**Ford Aerospace  
& Communications Corporation**



## His best defense is a good offense.

Today's most effective air defense weapons reach out to engage the enemy well away from the target.

And Boeing is helping to make that possible.

First, with PMS/Avenger, a shoot-on-the-move weapons system that can be fitted with Stinger missiles, the Hydra-70 rocket pod, a 50-caliber machine gun, complementary beam rider missiles or hypervelocity rockets.

Second, with Fiber Optic Guided

Missiles (FOG-M), the non-line-of-sight element of the Forward Area Air Defense System. Boeing and team member Hughes Aircraft are working closely with the U.S. Army on FOG-M. They are proposing a system based on expendable missiles, a man-in-the-loop ground control station and a fiber optic link that transmits video from the missile seeker to the gunner and guidance commands from the gunner to the missile.

Third, with a family of simple, low-

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Boeing. We're committed to air defense with training devices, lethal air defense weapons, and advanced systems for the future.

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Avenger scores in night test.



## ***STRIVING FOR EXCELLENCE***

*El Paso Electric salutes the Air Defense Artillery on its 20th Anniversary as an independent combined arms branch providing professional training to the young men and women of our United States Army.*

*As The Electric Company strives to generate safe and efficient power for all areas of our lives, the Air Defense Artillery continues to move forward in its unending efforts to maintain air superiority and combat effectiveness for the protection of all.*

*Reaching beyond the expected is what makes winners. Congratulations to the Air Defense Artillery Association shining stars on a very special team.*



El Paso Electric



## **ADATS—The First Line of Forward Air Defense.**

Battlefield commanders will now have a highly mobile, around-the-clock, adverse weather and night defense against low-flying attack helicopters and fixed-wing aircraft. ADATS.

ADATS—chosen by the Army after extensive Air Defense Artillery exercises at the U.S. Army White Sands Missile Range in New Mexico—has qualified as the principal line-of-sight

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Combining advanced electro-optics with laser beam-riding missiles, ADATS can track and destroy multiple targets while resisting clutter and enemy countermeasures.

ADATS—the first line of Forward Air Defense, and a powerful deterrent to enemy attack, whether at night or in adverse weather.

Masterminding tomorrow's technologies

**MARTIN MARIETTA**



DEPARTMENT OF THE ARMY  
HEADQUARTERS UNITED STATES ARMY TRAINING AND DOCTRINE COMMAND  
FORT MONROE, VIRGINIA 23681

**T**his edition of the Air Defense Artillery Yearbook is published by the ADA Association as a service to air defense artillerymen everywhere in celebration of the branch's 20th anniversary as an independent combined arms branch. We hope to make the yearbook an annual publication.

Many people contributed to the success of the anniversary edition.

Major General Donald R. Infante, chief of Air Defense Artillery, lent his personal support and the prestige of the Air Defense Artillery branch to the project.

Brigadier General Donald M. Lionetti, assistant commandant of the U.S. Army Air Defense Artillery School, provided subject-matter experts to help with the preparation of manuscripts.

Colonel Joel H. Ward, then head of the school's Directorate of Training and Doctrine, and the men and women of DOTD nursed the yearbook project through its formative and contractual stages.

Capital Publishing Company of Austin, Texas, sold the advertisements, paid the printing bill and bore the financial risks. They were not only willing to gamble on this first-of-its-kind publication, but generously allotted us a greater number of editorial pages in ratio to advertising pages than the industry norm.

We are further indebted to the authors who contributed manuscripts, to the ADA unit commanders who reported on the status of their commands and, most of all, to our allies in the defense industry who proved willing to support Air Defense Artillery with their advertising dollars as well as the finest air defense weaponry in the world.

To all of you, my personal thanks. First to Fire!

V.J. Tedesco Jr.  
Colonel, ADA  
President  
Air Defense Artillery Association

The members of the Training and Doctrine Command join me in congratulating you on the 20th Anniversary of the Air Defense Artillery.

You have been an integral part of the Combined Arms Team and will continue to be as we move into the 21st Century.

I challenge all the members of the Regiment, Active and Reserve, to continue the proud and unselfish service to our Army and Nation that has been the hallmark of your first 20 years.

Again, congratulations to the defenders of the sky!

M. R. THURMAN  
General, United States Army  
Commanding

## Contents

ADA as a Branch .....	5
1987: The Year of Miracles .....	8
ADA at Twenty: A Retrospective .....	20
ADA Future Vision .....	24
U.S. Army Air Defense Artillery School .....	28
CONUS Air Defense Artillery Components .....	51
OCONUS Air Defense Artillery Components .....	60
Army National Guard Air Defense Artillery Components .....	70
Air Defense Artillery Association .....	77

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# ADA As A Branch Where from? – Where to?

by Maj. Gen. Donald R. Infante

**P**erception is reality. Much to the credit of many hard working folks, the senior leadership throughout the Army and the Office of the Secretary of Defense perceive ADA as healthy and improving. Much progress in many areas. Much remains to be done. Where to go? What are the fundamentals to which we, as a branch, must adhere? What are our objectives and our goals?

After two-and-a-half years as the ADA branch chief, I am certain we must make five essential fundamentals, along with their concomitant objectives and goals, our guide: nurture branch pride, build a strong doctrinal foundation, emphasize the combined arms focus, institutionalize Air Defense Artillery School excellence and field quality equipment and quality soldiers.

## Branch Pride

***Pride is the soul of an organization. Without pride, true professionalism is unachievable.***

ADA branch pride is built in many ways. Some of the ways every air defender can help are listed below:

- Understanding AirLand Battle doctrine and the role of ADA. While we cannot win the war alone, the Army cannot win it without us.



Maj. Gen. Donald R. Infante  
Chief of Air Defense Artillery

When you realize the importance of Air Defense Artillery's contribution to AirLand battle, you cannot help but be proud to be an air defender.

- Supporting the ADA Association both passively and actively. Passive support is joining — a must for all ADA professionals. Active support is displaying a visual reminder of your branch pride. An ADA T-shirt and belt buckle are good starters!

- Holding events that build cohesion and esprit de corps such as St. Barbara's Day Dining-ins and Dining-outs, ADA Balls and mixers at the various schools. Camaraderie, like anything else in life, must

be nurtured and cultivated if it's to reach its potential.

- Displaying the branch "First to Fire" motto in correspondence, on bumper stickers, in offices and everywhere ADA folks gather. At retreats, change of command ceremonies, et cetera, play the "ADA March." Grows on you!

- Reading and contributing to *Air Defense Artillery*, your branch's professional development publication about your business — being a professional air defender.

As a branch, we must continue to actively build pride. Some progress. Still some way to go. The younger set is doing better as a group. Everyone must contribute.

## Doctrinal Foundation

***Our business is warfighting. To preserve the peace, we must be ready to fight, win and return. That's the essence of warfighting. Warfighting has as its foundation the doctrine that tells us how we must fight.***

Doctrine is important business for warfighters. Air defenders must understand AirLand Battle doctrine and, from it, derive ADA doctrine. The focus is on ADA as a member of the combined arms team.

This leads me to the general mission of ADA. Notice that our inferred mission is to kill aircraft. We kill aircraft at the right time and



AIR DEFENSE ARTILLERY

FIRST ★ TO ★ FIRE

place in support of the AirLand Battle commander's objectives. Primary among our basic mission is ensuring we retain the freedom to maneuver — the thread of logic that is interwoven in every aspect of our AirLand Battle doctrine. As the war will most likely last longer than one day, combat power — from beans and bullets to airfields and tactical operations centers — must be sustained. Without the ability to see the battlefield, our combat power will be wasted; therefore, command, control and intelligence (C<sup>2</sup>I)



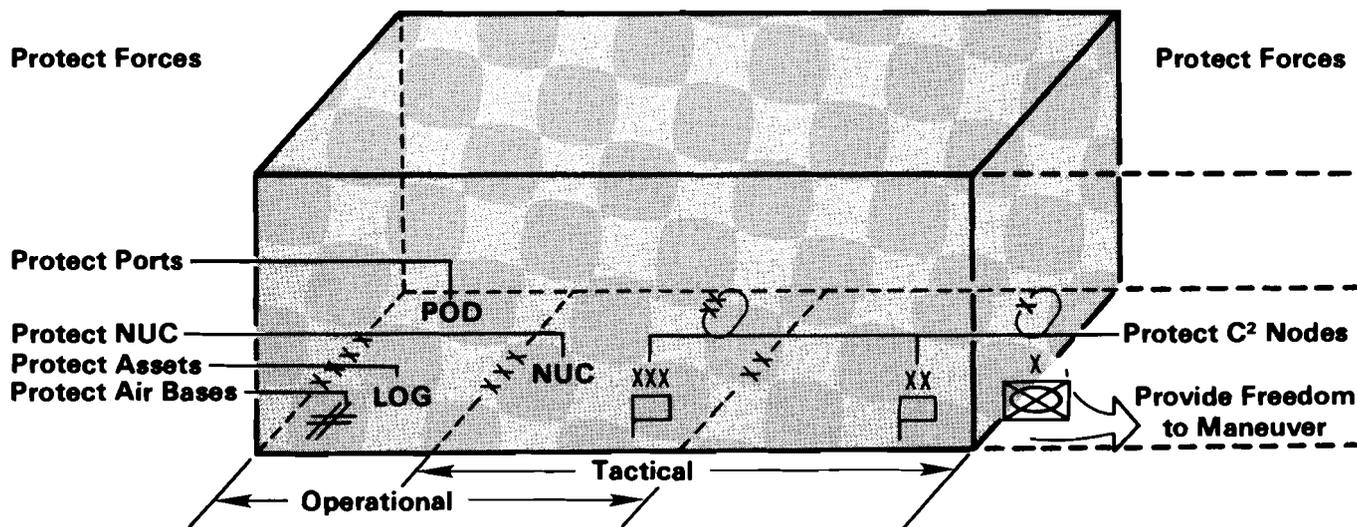
Figure 1

centers must survive.

While Figure 1 charts our basic mission, the emphasis on each component of the mission varies as a function of where we fight on the battlefield. Air Defense Artillery is one of the few branches that fight from the forward line of own troops (FLOT) to the echelon above corps (EAC). Figure 2 gives some insights to the focuses of the ADA mission as a function of battlefield location. An important figure. Study it well. This figure provides the doctrinal foundation for future force struc-

### FOCUSES OF ADA MISSIONS

"The Airspace of a Theater is as Important . . . as the Terrain Itself."  
(FM 100-5)



**EAC (Operational)**

- Control Air Environment
- Protect the Force
- Nuclear Options
- Air Bases
- Reinforcing Assets
- Sustaining Assets
- C<sup>3</sup> Nodes

**Corps (Operational/Tactical)**

- Control Air Environment/  
Freedom to Maneuver
- Protect Key Assets (TOC, C<sup>3</sup>, ASP  
SASP, etc)
- Protect Reserve
- Reinforce Division Assets as  
Required

**Division (Tactical)**

- Protect Forward Units &  
Key Assets
- Provide Freedom to Maneuver

Figure 2

tures; for example, corps ADA brigades. Additionally, specific weapon mixes evolve from visualizations such as this picture. If you can't visualize it, you don't understand it.

Figure 2 and many more will be found in the soon to be published FM 44-100, *U.S. Army Air Defense Operations*. This will be our new capstone manual. We've done the work of building a strong combined arms doctrinal foundation. Now comes the hard part — institution- alization and education.

Some tasks every air defender can help with. Each air defender can help make Air Defense Artillery a branch of excellence by emphasizing the combined arms focus, serving as a salesman for the branch, setting standards of excellence and caring for our ADA soldiers.

**Combined Arms Focus**

*Internally air defenders must retain their combined arms focus. Every aircraft killed*

*must contribute to the objectives of the AirLand battle commander from battalion task force to theater.*

This means knowing the doctrine. As a branch, Air Defense Artillery must retain its combined arms focus from the FLOT to the theater rear boundary.

Eventually, every air defender must be a salesman. Many of our combined arms brethren will not understand our role, nor our valuable contribution to AirLand Battle

*continued on page 82*

**OVERVIEW OF OAC**

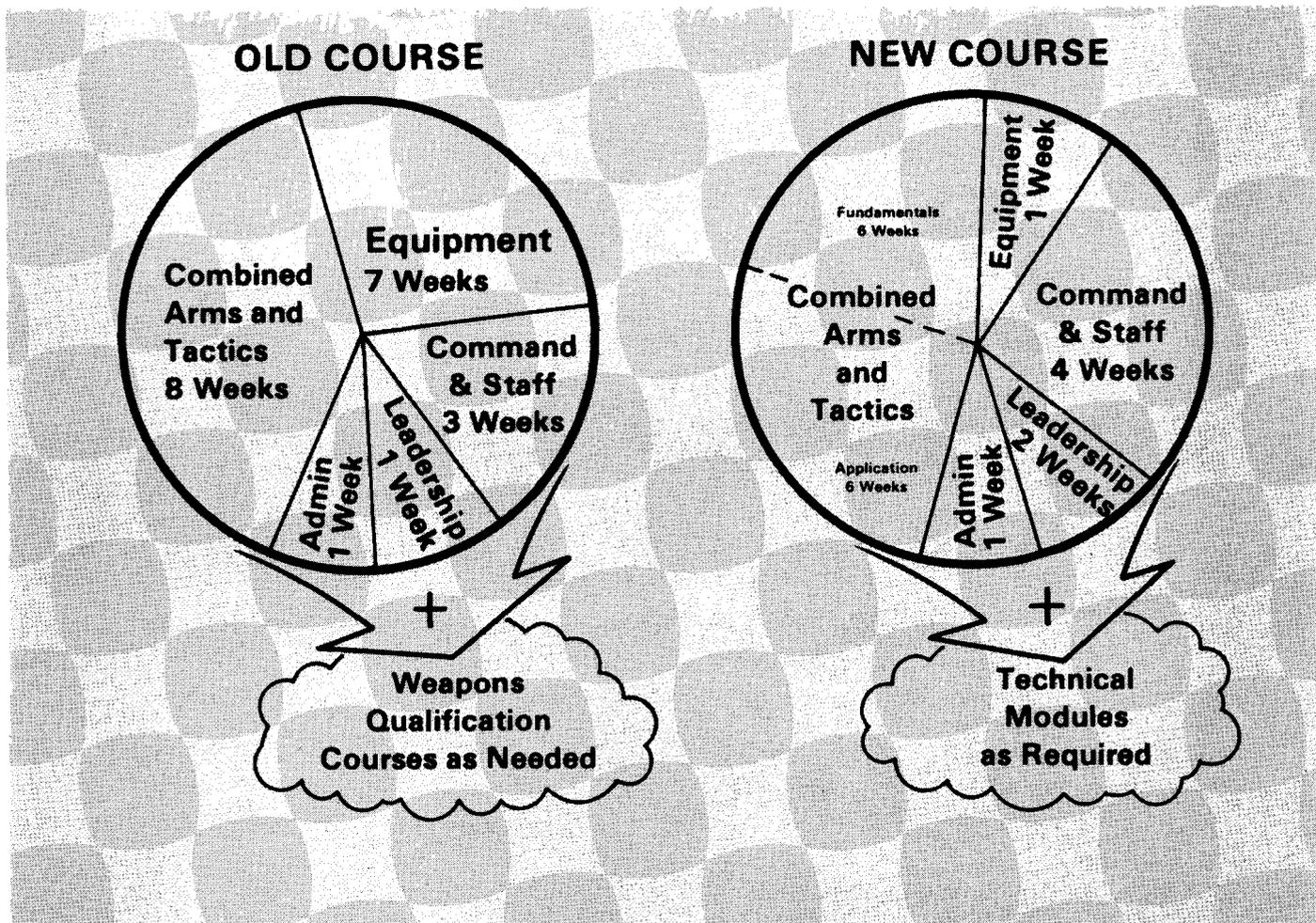


Figure 3

# 1987: The Year of Miracles

**F**orward area air defense (FAAD) shoot-offs dominated ADA headlines throughout 1987, a year also brightened by the continued deployment of Patriot battalions to Europe and Stinger's resoundingly successful debut in Afghanistan.

Air Defense Artillery, meanwhile, pressed forward in other areas. Product improvements restored the combat effectiveness of older ADA systems. The Army National Guard received a massive transfusion of air defense firepower. Sophisticated simulators

and computer-driven training aids continued to revolutionize Air Defense Artillery training.

The FAAD system met many of its toughest milestones during 1987. The performance of system managers, test officers, range personnel, contractors and the soldiers who crewed the FAAD prototypes were often described as miraculous.

The FAAD system arose from the ashes of the Sergeant York Gun. The cancellation of the divisional air defense gun on August 26, 1985, sparked a total reassessment of the branch's ability to accomplish its

AirLand Battle mission. Could Air Defense Artillery provide effective air defense for maneuver units near the forward area of the battlefield?

The answer was no. The solution was an entirely new approach to air defense in the forward area.

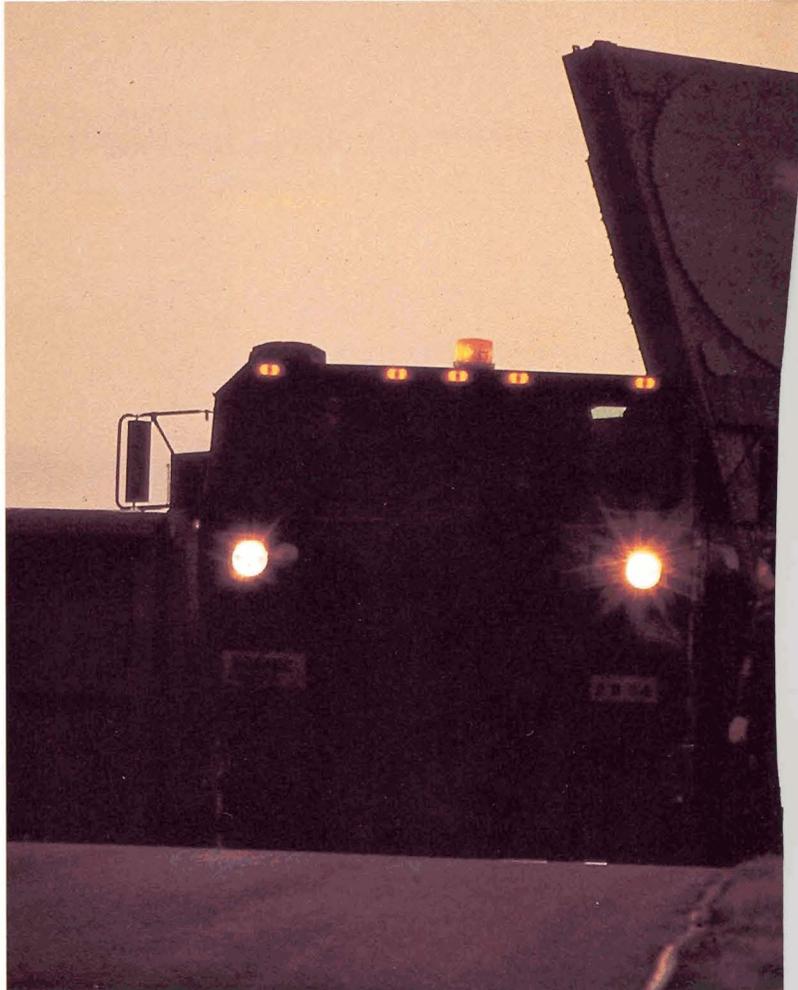
Air defense and combined arms planners, in 1986, envisioned a FAAD system that was to consist of five integrated components:

- Line-of-Sight Rear (LOS-R): A pedestal-mounted Stinger system to provide mobile air defense in the brigade and corps areas as well as in echelon above corps missions.



- **Non-Line-of-Sight (NLOS):** A totally new type of air defense weapon using the Army-developed fiber-optic guided missile (FOG-M) technology to destroy enemy helicopters operating from behind mask in the close combat zone.
- **Line-of-Sight Forward (Heavy) (LOS-F-H):** A gun-missile system designed to kill or suppress enemy fixed-wing aircraft and exposed helicopters in the close combat zone of the heavy division.
- **Combined Arms Initiative (CAI):** Enhance Army Aviation's counterair potential by accelerating the





delivery of air-to-air Stinger. Examine and strengthen organic counterair capabilities of other combined arms branches.

- **FAAD C<sup>2</sup>I:** A sophisticated command, control and intelligence system to fuse intelligence and targeting information and link the FAAD components together.

The years wasted on Sergeant York, while the air threat grew in numbers and sophistication, created a sense of urgency that made the \$11.5 billion FAAD system a top priority item. The Army announced a goal of equipping four full divisions in Europe with the LOS-F-H by the end of 1992. The testing and procurement timetables set for other FAAD components were equally ambitious.

Since the FAAD system was to be fielded with unprecedented speed, manufacturers competing for FAAD weapon system contracts were told to rely, when possible, on non-developmental items. This restriction saved the Army not only time, but millions of research and development dollars.

Despite skeptics who thought the FAAD timetables unrealistic, the FAAD program proceeded on

schedule, and 1987 became the year FAAD concepts began turning into FAAD hardware.

### **FAAD System Candidates**

Boeing's Avenger, one of three FAAD line-of-sight rear candidates, came out on top in a three-way shoot-off that ended in June 1987, less than two years after the cancellation of the Sergeant York Gun. The Avenger, a pedestal-mounted Stinger system, became the first FAAD weapon system selected for follow-on operational and evaluation testing. The initial contract award to Boeing was for a first option buy of 20 systems with appropriate follow-on guarantees for full fielding. Avenger prototypes will undergo operational and evaluation tests this summer.

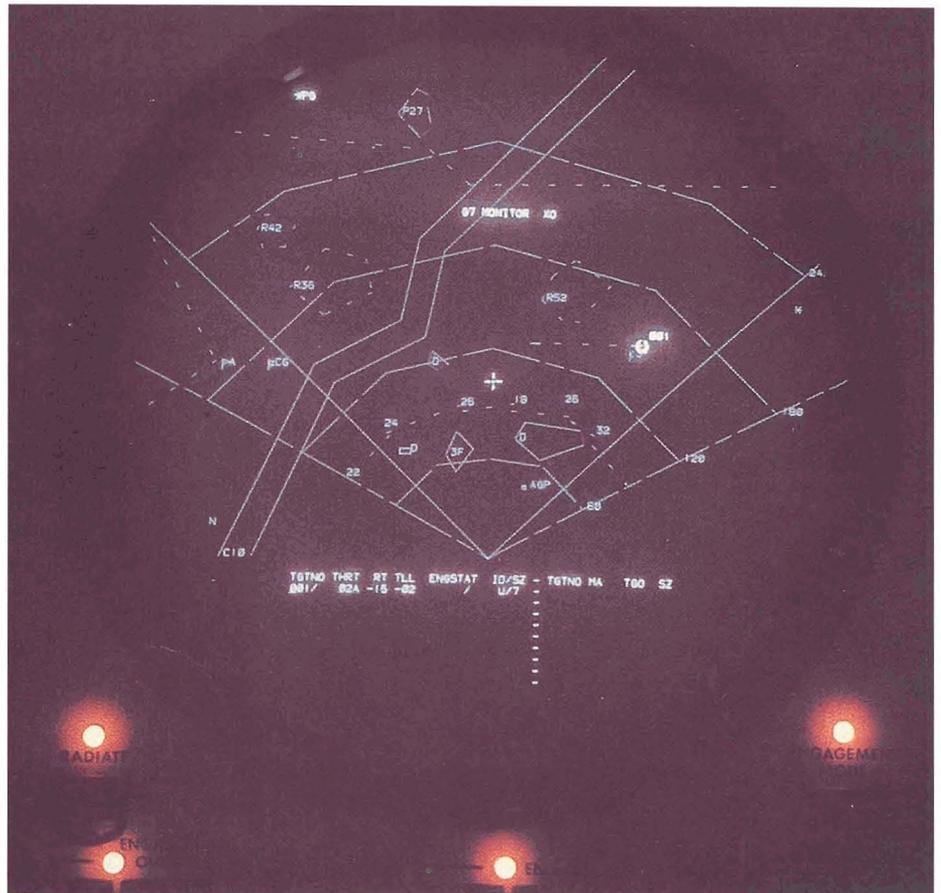
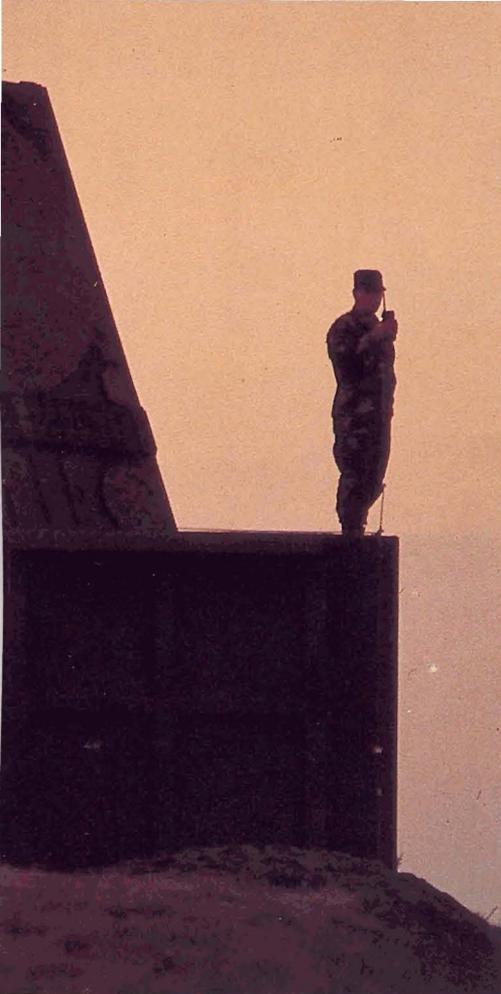
The Army hopes to eventually purchase 1,207 Avenger fire units. If things go as planned, production models of Avenger will begin rolling off Boeing assembly lines in November.

The FAAD command, control and intelligence (C<sup>2</sup>I) architecture began taking shape. In October 1987, the Army awarded TRW a contract to develop software for the

FAAD C<sup>2</sup>I system. Hughes Aircraft and C4 Corporation are developing new sensor and identification technologies for a "sense-off" this summer. Major portions of the C<sup>2</sup>I system are projected for FY 92 fielding with completion in FY 94.

During November 1987, the Army called for industry bids on the revolutionary FOG-M, the selected candidate for the FAAD non-line-of-sight component. Industry was asked to take the FOG-M technology developed by the Army, refine it and produce system prototypes capable of destroying helicopters lurking behind terrain masking. Industry proposals are due during the third quarter of FY 88.

The answer to Air Defense Artillery's burning question — What system will replace the Sergeant York Gun? — came just in time for Christmas 1987. Martin Marietta and Oerlikon-Buhrle's air defense anti-tank system (ADATS) won the LOS-F-H shoot-off over three competitors. Scheduled for fielding in 1992, ADATS will undergo operational tests this summer and fielding in 1992. The Army plans to purchase 562 fire units.



Work continued through the year on FAAD force configuration and tactics. As presently envisioned, a typical FAAD battalion in support of a heavy division will have 18 NLOS, 36 ADATS and 36 Avengers. The battalion's C<sup>2</sup>I system will have six ground sensors and supporting aerial sensors.

Thanks to the combined arms initiative, the FAAD battalion won't have to counter threat attack-helicopters and fixed-wing aircraft alone. Army Aviation has signed contracts with General Dynamics and Bell Helicopter to equip its attack helicopters with air-to-air Stinger (ATAS) equipment. The funding is authorized and approved for 56 sets of air-to-air Stinger pods and requests for additional funding are in the works. The OH-58 C/D Kiowa is the first helicopter to be equipped with ATAS, with the AH-64 Apache and AH-1 Cobra soon to follow. Eventually UH-60 Black Hawks and MH-47Es, the special mission/special operation Chinooks, will be equipped with ATAS.

The Armor School at Fort Knox, Ky., has delineated the requirements for new smart tank rounds



that will meet the future threat. The 105mm and 120mm tank rounds will kill enemy helicopters as well as tanks.

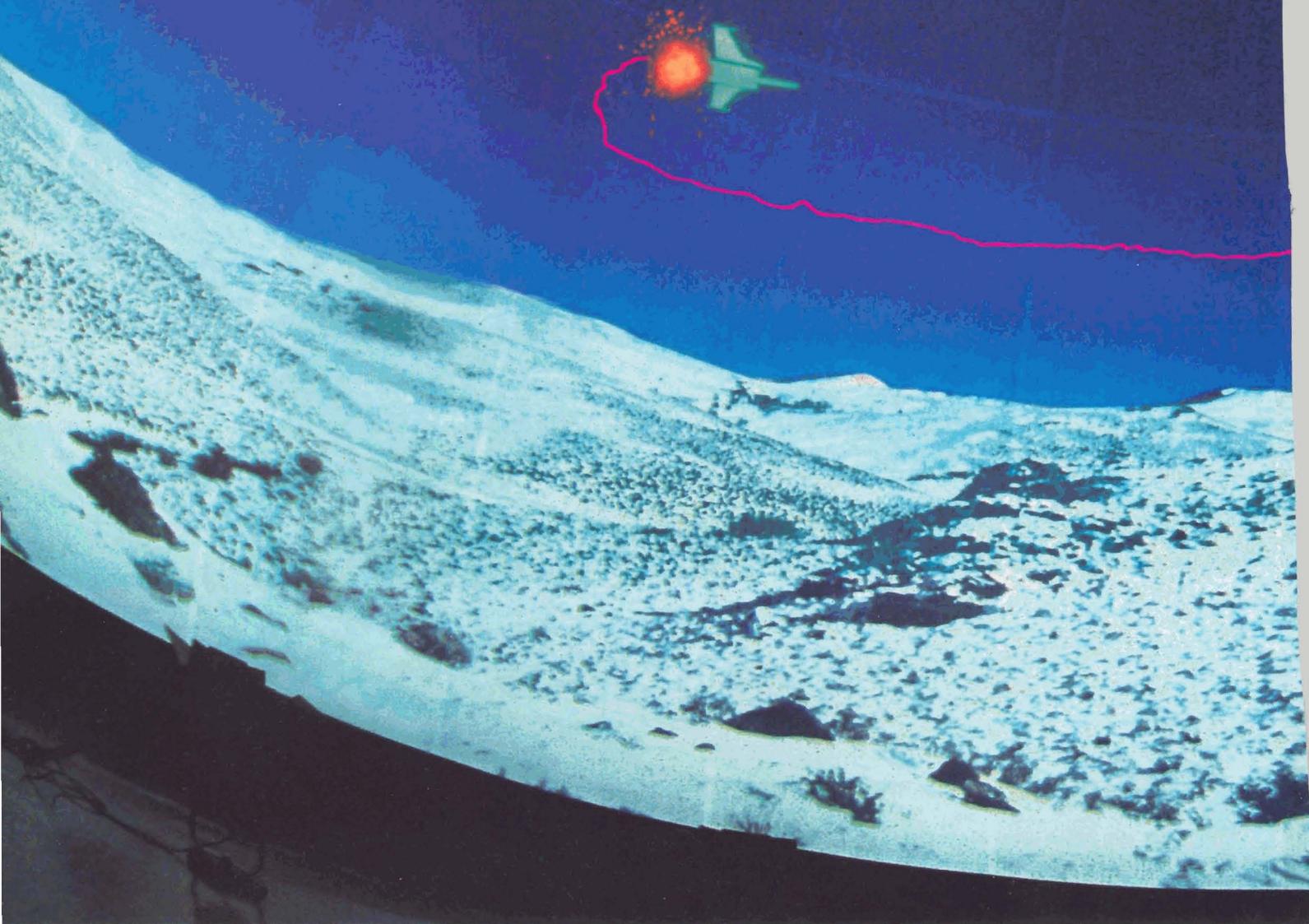
The Infantry School at Fort Benning, Ga., is studying ways to improve the Bradley Fighting Vehicle to meet the projected air threat as well as the ground threat. Improved munitions, "full solution" fire controls and improvements to the 25mm gun and tube-launched, optically tracked, wire-guided (TOW) missile are under consideration. The Bradley will also be fitted with a new sight reticle to help gunners shoot down helicopters. The improved Bradley will make a tremendous contribution to the combined arms air defense against enemy helicopters.

### **Patriot/Hawk**

While FAAD system shoot-offs were capturing most of the headlines, Air Defense Artillery added important new chapters to what is often referred to as the branch's "biggest success story" — the fielding of Patriot.

The sixth Patriot battalion was deployed to Europe early this year.

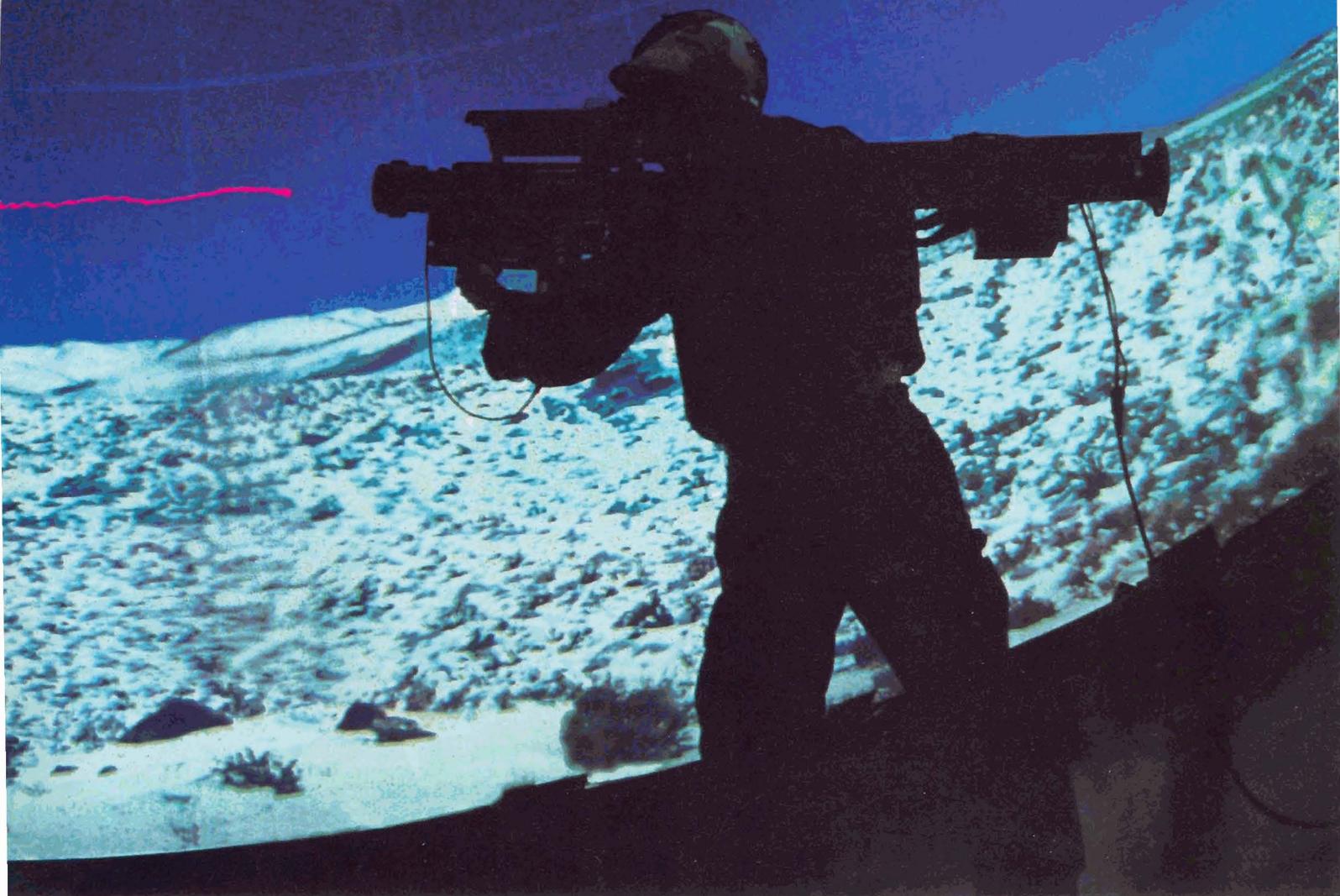
# SUPER



 Under the skies of AAI's new MTS II Moving Target Simulator, defending gunners see, hear, and feel a real battle. As many as three enemy aircraft overhead. Each with its own IR signature and countermeasures. Selectable background scenery. Changing weather conditions. Visible and infrared cloud images. As well as a variety of light conditions, flight paths and high-fidelity audio and visual effects.

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Two versions of the training system are available. A 40-foot diameter and a 64-foot diameter dome. And gunners can be trained on many weapon systems including Stinger, Vulcan, Javelin and Chaparral.

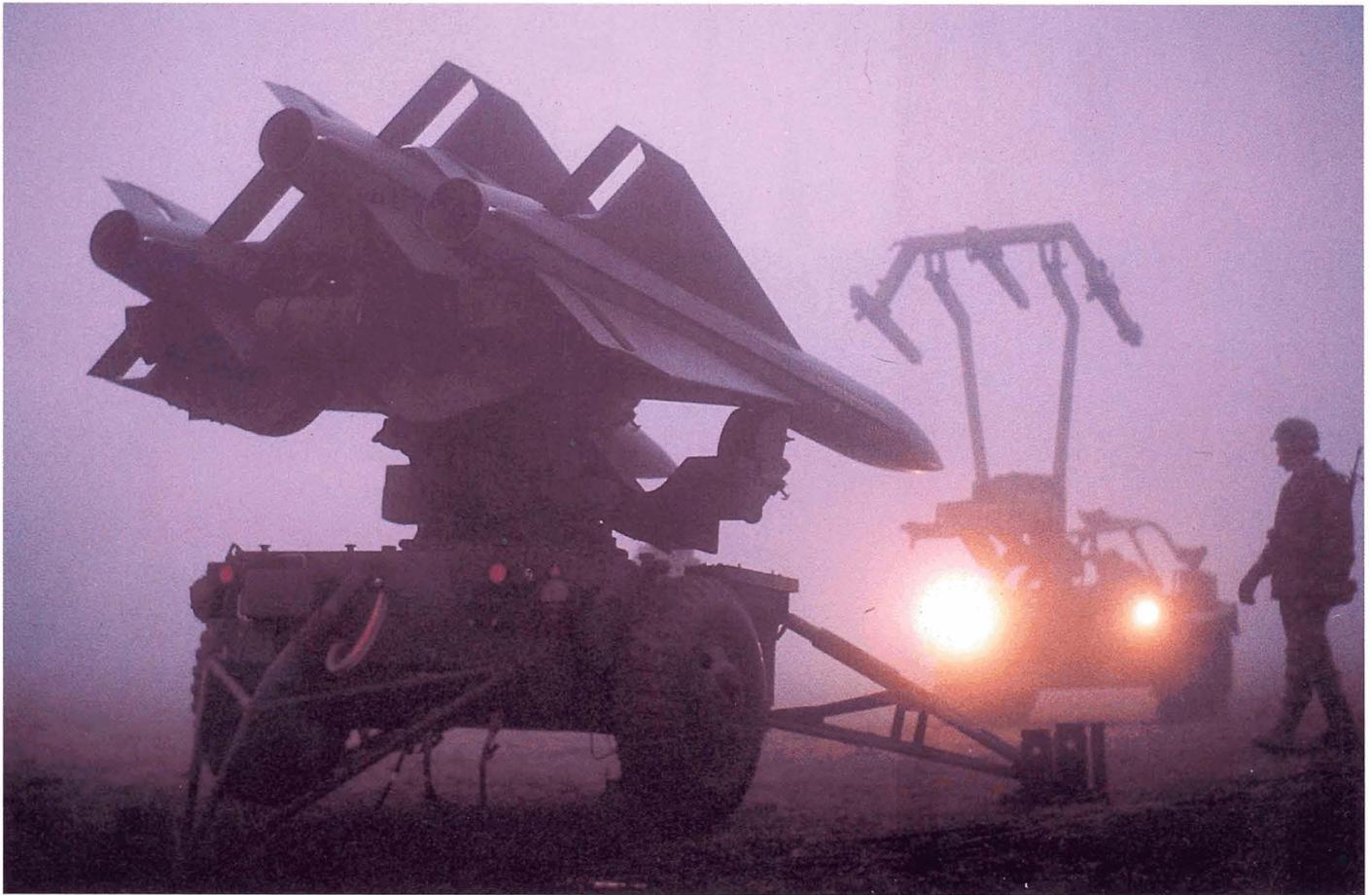
The MTS II is AAI's successor to its own M87 Moving Target Simulator, of which 25 are in use all over the world. Which also makes the MTS II one more sensible solution the world has come to expect of AAI.

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# AAI

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## THE SENSIBLE SOLUTION



Each battalion was ahead of schedule and each established exceptionally high readiness rates. "Exceeded expectations" became the standard term applied to both the Patriot weapon systems and the soldiers who man them, and the expectations were exceedingly high from the beginning.

The performances of Patriot battalions were inevitably interwoven with those of Hawk battalions.

The 32nd Army Air Defense Command (AADCOM) now has four composite brigades, each consisting of both Patriot and Hawk battalions. Patriot and Hawk interoperability was tested in early 1987 when 32nd AADCOM Hawk and Patriot battalions were airlifted from West Germany to England to take part in Operation Hammer. The ADA battalions shared data and coordinated their firepower to

effectively counter approximately 340 attacking aircraft in NATO's largest air force exercise.

The integrated performance of the Hawk and Patriot battalions was all the more impressive considering Operation Hammer was a learning exercise that took place while air defense strategists and tacticians were still at work defining doctrine and refining tactics for Patriot and Hawk interoperability.

During 1987, the U.S. Army Training and Doctrine Command formed the TRADOC System Management Office for High- to Medium-Altitude Air Defense (HIMAD) and charged it with integrating Patriot, Hawk and the AN/TSQ-73 Missile Minder into a single family of interoperating systems.

In an associated action, the U.S. Army Air Defense Artillery School

subordinated its Patriot and Hawk training departments to the newly created HIMAD Directorate. The new directorate husbands scarce training resources by capitalizing on similarities in Patriot and Hawk hardware and software while facilitating an interface between Hawk and Patriot training.

A vigorous preplanned product improvement program will keep Patriot current with the threat projected through the year 2000. During 1987, a \$3.55 billion contract — the largest multi-year contract in Army history — was signed for production of Patriot through 1992. Last year, Raytheon, the system's prime contractor, and Martin-Marietta, the major subcontractor for the launchers and missile assembly, produced a record 21 Patriot fire units. Patriot Software Post-Deployment Build 2 (PDB-2),



**FAAD C<sup>2</sup>I...**  
A new capability  
for Air Defense

**TRW**



scheduled for this year, and PDB-3, scheduled for 1989, with their associated hardware modifications, will make the Patriot-Hawk mix even more lethal.

West Germany and the Netherlands also use Patriot. Italy is negotiating for purchase of the system and Japan is co-producing Patriot.

Patriot's near-term anti-tactical missile (ATM) programs made impressive progress last year. The Patriot ATM programs consist of Patriot Capability 1 (PAC-1) and Patriot ATM Capability (PAC-2). PAC-1 involves software modifications while PAC-2 involves both software and hardware modifications. Patriot dramatically demonstrated its ATM capability during 1987 by successfully intercepting and destroying tactical ballistic missiles and cruise missiles over White Sands Missile Range, N.M.

### **Stinger**

While the FAAD, Patriot and Hawk systems proved themselves in shoot-offs and exercises, Stinger validated its performance claims where it counts the most — in combat.

Press reports of Stinger's impact on Soviet air operation in Afghanistan began appearing in news journals and television clips in early 1987. Soviet pilots, robbed of the virtual immunity that had once allowed them to roam Afghan skies at will, were said to have reacted to Stinger by adapting less effective but safer tactics.

"We are not afraid of the Russian jets anymore," a *Mujahdeen* Stinger gunner told *Time* magazine. "If they fly high enough to escape the Stingers, they are too high to hit us with their bombs anyway." *Time* also reported that by the end of the year the once dreaded Mi-24 Hind helicopter gunships had been reduced to flying only a few sorties under cover of night. "For nine

years the dragon ruled the skies over Afghanistan. Now the dragon is dead," said a rebel leader.

*Defense News* reported that the Soviet press referred to Stinger as the "predator of the Afghan sky." The influential trade journal credited Stinger with downing 1.3 to 1.4 aircraft a day and said the system was "responsible for most rebel victories against the Soviet army during the past 18 months of fighting."

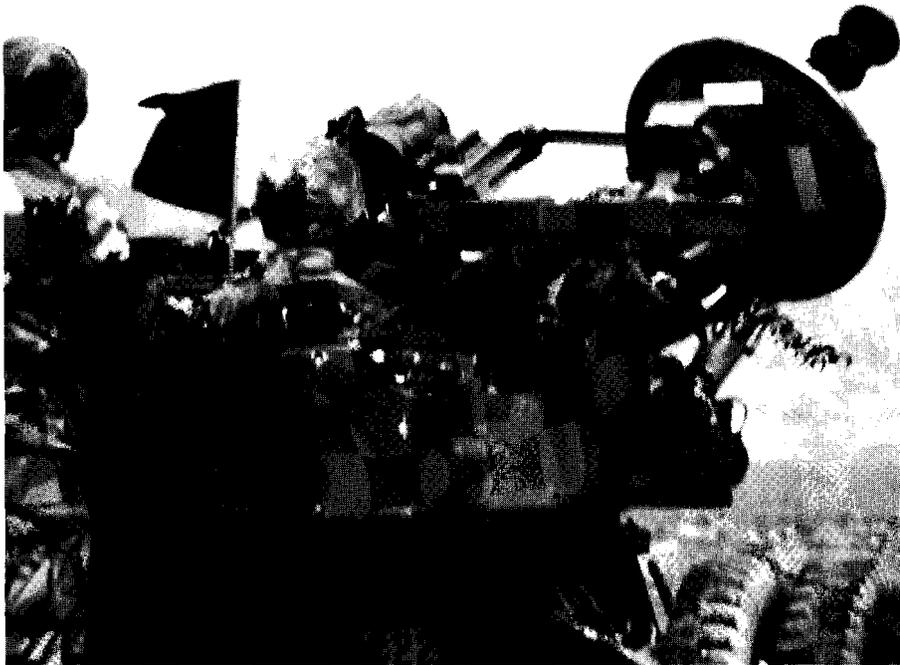
Press reports said recent Stinger improvements, a new passive optical scanner and a reprogrammable microprocessor (RMP) which features a replaceable software module, enhanced Stinger's performance in infrared countermeasure

environments and enabled it to overcome most countermeasures.

The fielding of the Avenger pedestal-mounted Stinger will reduce the number of Stinger teams within a division from 60 to 36. Avenger, however, carries not only more missiles but more punch than a man-portable Stinger team. Avenger's shoot-on-the-move capability, its sophisticated target acquisition system, and its ability to engage multiple targets simultaneously will greatly increase Stinger firepower.

The Army, meanwhile, has developed an interim strategy to move air defense missiles forward until ADATS is fielded. Self-propelled





Vulcans, with modified racks for the air defense missile, will carry Stinger crew members into battle until Avenger arrives. The fourth member of the Vulcan crew, an observer, will become a Stinger gunner.

### **Vulcan**

Air Defense Artillery, following a one-year setback caused by funding delays, began fielding the product-improved Vulcan air defense system (PIVADS) kit early this year.

The kit modifies the gunner sight, target-tracking computer, turret drive gears and fire control system. It also incorporates a built-in test capability that automatically identifies and isolates system failures.

The PIVADS kit, being installed in both the self-propelled and towed version of the gun system, improves Vulcan's probability of hit by accurately predicting target lead angles. However, 315 additional kits are required to complete the modernization of Vulcan.

The 2nd Battalion, 62nd Air Defense Artillery, assigned to the 7th

Infantry Division (Light) at Fort Ord, Calif., experimented with new deployment techniques for towed Vulcan. During Operation Celtic Cross, the "Aim High" battalion demonstrated that Vulcan, with or without the PIVADS kit, is still a lethal air defense weapon when deployed with imagination and foresight. The battalion's expert deployment of towed Vulcan and man-portable Stinger during divisional exercises quashed plans to reduce Air Defense Artillery's presence within the light division to a single Stinger battery and led to the 7th Infantry Division's recent decision to retain the light ADA battalion.

### **Chaparral**

In November 1987, the Army issued a draft request for proposals for production of a sophisticated seeker designed to maintain Chaparral's accuracy at greater ranges under severe countermeasure conditions.

Similar in many ways to the reprogrammable microprocessor

developed for Stinger, the rosette scan seeker (RSS) is based on software that can be reprogrammed quickly and cheaply to deal with new countermeasures such as varying aircraft heat signature, flares and other infrared countermeasures.

The RSS can be electronically reprogrammed using an external wire. There's no need to remove and replace modules. A small detector scans in a rosette pattern and makes the RSS guidance unit more effective at longer ranges. The unusual scanning pattern enables the detector to cover a wide field of view and enhances target acquisition.

### **National Guard ADA**

During 1987, the Army National Guard (ARNG), which now represents about 32 percent of total Army strength and 45 percent of Army combat units, made increasing its air defense artillery firepower a top priority. Guard commanders reported soaring morale as the battalions continued to receive Hawk, Chaparral and Stinger weapon systems.

The New Mexico ARNG ADA battalions, long a major air defense force, flexed their new ADA muscle last summer during *El Paseo al Sur*, the "Journey South." For the first time in 20 years, five New Mexico ADA battalions simultaneously underwent a complete mobilization exercise that culminated with two weeks of annual training at Fort Bliss, Texas.

The 164th Air Defense Artillery Brigade, and a new Hawk battalion, the 2nd Battalion, 265th Air Defense Artillery, are forming in Florida. The brigade's three battalions (one Hawk and two Chaparral) will be reorganized as a heavy corps ADA brigade. New ARNG battalions will soon be activated in North Dakota and Illinois, while both Ohio and South Carolina are programmed to receive new Hawk bat-

talions.

Air Defense Artillery, meanwhile, is working on an initiative to replace Active Component Chaparral fire units with Avenger, thus speeding the modernization of the ARNG corps battalions.

By the mid-1990s, the Army National Guard air defense forces will consist of 10 divisional ADA battalions, eight Chaparral and four Hawk battalions.

### **A Decade of Opportunity**

Not all the progress came in technology and hardware.

A new personnel strategy, scheduled for unveiling this spring, promises to reduce the number of ADA MOSs, increase assignment opportunities and streamline the promotion process.

The Air Defense Artillery School

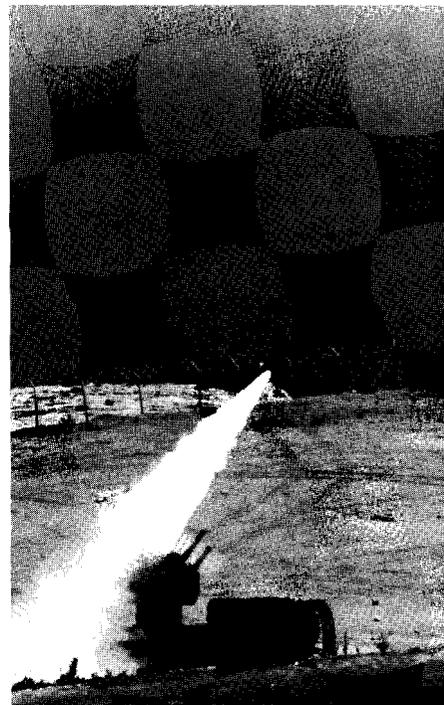
continued its transition from traditional to small group instruction as it entered the "Army Year of Training."

A membership drive produced a 100-percent growth rate for the Air Defense Artillery Association, which grew from 200 members to more than 2,000. The 100-percent growth rate was the result of an aggressive membership drive.

Amidst the change and high tech innovations, some ancient trappings were dusted off and returned to duty. The Army Regimental System enabled ADA soldiers to affiliate with any one of 12 ADA regiments.

Air Defense Artillery at last got an official branch song. For some, the "ADA March" seemed to symbolize a resurgence of branch pride.

Air Defense Artillery, having



weathered two decades of adversity and uncertainty, is poised on the threshold of a decade of opportunity — a decade in which emerging technologies promise to further multiply the branch's combat capabilities and increase the variety of its missions.

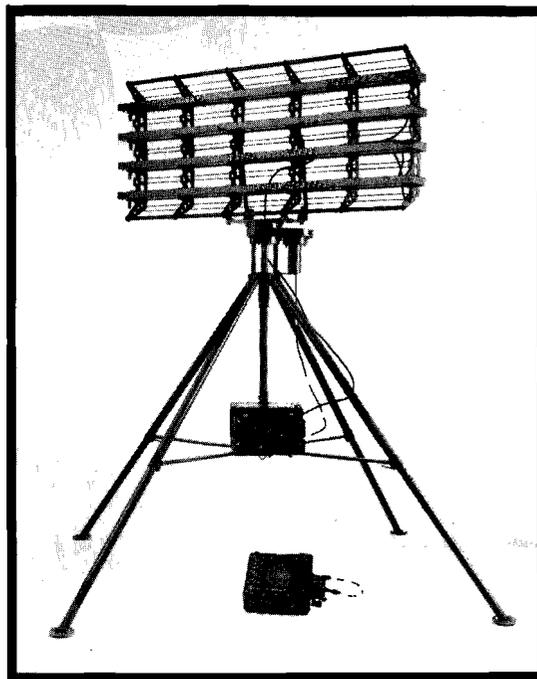
# **AN/UPS-3 RADAR**

## ***Air Defense for the Light Divisions***

*The present alerting equipment for the Stinger gunner is the MK.II Eyeball—not the best device in bad weather and battlefield smoke and dust! Now there is a lightweight radar for forward area air defense in the Light Divisions.*

*The AN/UPS-3 Tactical Defense Alert Radar, acquired by the U.S. Navy, provides alerting and cueing for Stinger teams in all weather.*

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# ADA at Twenty: A Retrospective

by Dr. Jesse H. Stiller

Even in tranquil times it would hardly have been headline-making news. On May 28, 1968, Secretary of the Army Stanley R. Resor, himself a former Redleg, ordered a reorganization of the Artillery branch of service. The Field Artillery and Air Defense Artillery, which had been one since 1957, were now to live separate existences.

Except for the artillerymen themselves, few Americans noticed the change. Those who did notice didn't think much of it. Nothing the Army did seemed to please the legion of critics carping at their country and its institutions in 1968. A decade buoyantly begun was closing on a sour note of cynicism and self-doubt. In Vietnam the light at the end of the tunnel flickered out as January's Tet offensive shook the nation's confidence in both its political and military leaders. With antiwar protests wracking the nation's campuses, President Lyndon Johnson announced his decision not to seek a second term of office.

Meanwhile, the Army, always a convenient scapegoat, labored throughout the 1960s and early '70s to engage an elusive enemy in the jungles and rice paddies of Southeast Asia and, increasingly, an insidious enemy within its own ranks. Desertion, drug use, racial tensions, indiscipline — these were not the Army's finest hours. Fallen in the public's esteem, the Army continued to suffer in the war's aftermath. RIFs and ridicule took their toll upon morale as surely as had the enemy in combat.

Air defenders had known all the frustrations of American soldiers in Vietnam, plus one singularly their own. It was the same frustration they had felt in Korea: the sense that the war was passing them by, at least as it concerned air defense employment and tactics. In neither of those two wars did the enemy

mount an appreciable air threat. In Vietnam the Vulcans, Dusters and Quad-50s proved effective in ground support, and the air defenders who manned them displayed valor and fortitude, but Hawk missile batteries lay silent throughout, in anticipation of air base attacks that never materialized.

While the fighting went on in Asia, first in Korea and later in Vietnam, most air defense missilemen remained at their Nike missile sites in Germany and CONUS. By the time Secretary Resor announced the divorce of theartil-

leries, the handwriting was on the wall for ARADCOM, the Army's Air Defense Command, headquartered at Ent Air Force Base, Colorado Springs. It had led an uneasy existence since its creation in 1950, then and always under the operational control of the Air Force. ARADCOM's organizational pride was high during the '50s, when Americans in the streets nervously scanned the skies for Soviet bombers, dug air raid shelters, and contemplated with relief the Nike defenses of the country's major cities. But the climate of Soviet-American



COMMANDING GENERAL, U.S. ARMY FIELD ARTILLERY CENTER  
COMMANDANT, U.S. ARMY FIELD ARTILLERY SCHOOL

January 13, 1988

Dear Soldiers of the Air Defense Artillery,

On behalf of the Field Artillerymen throughout the world, I want to extend our congratulations on your 20th anniversary.

You are a key member of the Army team which has served our nation well for more than 200 years. Your dedication, professionalism and teamwork have been instrumental in the past and are key to our future success. We are proud of your achievements and the artillery heritage you have upheld.

From one branch of artillery professionals to another, we wish you continued success in 1988.

Sincerely,

Raphael J. Hallada  
Major General, USA

Major General Donald R. Infante  
Commander  
U.S. Army Air Defense Artillery School  
Fort Bliss, Texas 79916

relations was altogether different in 1970, and the threat still more so. The deterrence behind detente and the menace to the American heartland was now primarily in the form of intercontinental ballistic missiles, against which Nikes were no match. In 1974 ARADCOM was dissolved, leaving but one Nike site in all of CONUS.

Some artillerymen apparently anticipated this. When the branches were separated, they besieged the Military Personnel Center (MILPERCEN) with petitions opting for the Field Artillery. The air defense branch chief, Lieutenant General George V. Underwood, went so far as to write a personal letter to all commissioned officers in ADA assignments, prophesizing a bright ADA future, pleading with them to stay where they were. This had some effect. But in the end, the manpower people had to categorically reject bids to go FA from officers with appreciable ADA experience. Otherwise, there would not be sufficient talent available to man the new branch.

Who was right? What did General Underwood know that his officers trying to abandon ship did not? A lot of his optimism rested on the Safeguard anti-ballistic missile (ABM) system. Introduced in 1967 and called Sentinel, then renamed Safeguard, with its Sprint and Spartan missiles in underground silos, the system was supposed to protect the nation's land-based strategic forces of Minuteman missiles and long-range bombers against enemy attack. As such, it represented a major shift in the air defense mission away from the defense of population centers. Those Nike launchers silhouetted against big-city skylines had been superficially reassuring to the citizen on the street, but they also served to perpetuate the old Cold War anxieties. President Richard Nixon, who

took office in 1969, was determined to improve relations with the Soviet Union as a means of bringing pressure for a settlement upon its client, North Vietnam. Thus, Safeguard was itself a concession to the relaxation of US-Soviet tensions and, although General Underwood may not have recognized it at the time, a bargaining chip in US-Soviet arms limitations negotiations, which got underway in Helsinki, Finland, in November 1969.

Underwood was correct in at least one respect. There would be opportunities aplenty for air defenders provided Safeguard went full speed ahead. Unfortunately that project was in deep trouble from day one. The objections raised against it were strikingly similar to

those we hear against the Strategic Defense Initiative (SDI) today.

Safeguard, the critics charged, was too expensive (projected program costs of \$5 billion); the technology was untested and undependable; it would set off a new arms race, with the Russians hastening to field an advanced anti-ballistic missile of their own. Already the 12 planned Safeguard sites had been reduced to two. These two remaining sites were endangered in August 1969 by a U.S. Senate amendment restricting program spending to research (thus barring site acquisition and deployment). This amendment, however, was defeated by a vote of 51 to 50, with Vice President Spiro Agnew casting the deciding ballot.



HEADQUARTERS U.S. ARMY ARMOR CENTER AND FORT KNOX  
Fort Knox, Kentucky 40121-5000

February 8, 1988

Dear General Infante:

Congratulations on the 20th Anniversary of the United States Air Defense Artillery. As our Army moves toward the 21st Century, the role of the combined arms team becomes increasingly important to the defense of our nation. I, and all the members of the Armor Force, look forward to continued success and service with those who are "First to Fire."

Best wishes.

Sincerely,

Thomas H. Tait  
Major General, U.S. Army  
Commanding

Major General Donald R. Infante  
Commander  
United States Army Air Defense Artillery Center  
Fort Bliss, Texas 79916



**HEADQUARTERS**  
U.S. ARMY AVIATION CENTER AND FORT RUCKER  
OFFICE OF THE COMMANDING GENERAL

January 11, 1988

TO: Soldiers of the Air Defense Artillery  
Branch

It is my privilege to represent all members of the Aviation Branch in congratulating you on the 20th anniversary of the Air Defense Artillery Branch. As Army aviators, we especially appreciate your protecting the skies above us so we can do our job better and safer. Thanks, and congratulations.

Sincerely,

*E. D. Parker*  
Ellis D. Parker  
Major General, U.S. Army  
Commanding Officer

Major General Donald R. Infante  
Commander  
U.S. Army Air Defense Artillery School  
Fort Bliss, Texas 79916

Construction began in 1970 on the first site, at Grand Forks Air Force Base, North Dakota, and moved briskly ahead. But all was for naught. The Helsinki talks had produced a Strategic Arms Limitation (SALT) agreement, which placed further bans on ABM development and deployment. The Army's overall budget grew tighter and tighter, so that Safeguard looked more and more expendable. The North Dakota site became operational in October 1975 and was closed down exactly one month later. By that time, of course, ARADCOM was already dead and buried.

What was left for air defenders? Rumors flew that the branch was to be abolished altogether. Although

most company and lower field grade officers quickly found new branch assignments to replace those they had lost in ARADCOM, at least eight colonel and six general officer slots were gone forever. The opportunity General Underwood had promised in 1968 now looked like a frail hope.

In retrospect, however, the peril the branch faced between 1968 and 1975 was much exaggerated. Air defenders may have played a supporting role in Vietnam, but the air war in Southeast Asia, which saw a lightly-armed enemy shoot down surprising numbers of U.S. aircraft, vindicated the ADA mission.

Then, in October 1973, war broke out in the Middle East. The Arab armies, firing an array of Soviet-

made surface-to-air missiles (SAMs) and anti-aircraft guns, downed as many as 40 Israeli air force planes on the first day of fighting alone. The world was stunned. The Israelis regained control of the skies through direct combined arms attacks upon the SAM sites, putting them out of action. Then, in a dramatic reversal, it brought its own air defense arsenal, including U.S.-supplied Hawk missiles, to bear on the action. In the end, the Arab air forces suffered losses amounting to almost 450 warplanes.

In his January 1974 remarks designed to quiet concerns over the demise of ARADCOM, Colonel Archie S. Cannon, Jr., then the ADA chief at MILPERCEN, assured an audience of officers that "there is a keener awareness of the role of Air Defense Artillery, both within the Army staff and in the Department of Defense, as a result of the recent Middle East war and the big part played by air defense weapons." Indeed, the 1973 war had demonstrated startling changes in the whole nature of conventional combat — precisely the kind of combat that the Army, through NATO, considered its primary mission in the aftermath of Vietnam.

The stunning lethality of modern weaponry — anti-tank as well as air defense — displayed in the Middle East gave U.S. military planners a glimpse of what they could expect in combat against the Warsaw Pact. They could expect the first battle to be decisive and, given the tight U.S. defense budgets of the 1970s and the unprecedented Soviet buildup in Eastern Europe, they could count on fighting that battle at a disadvantage in manpower and equipment. Traditional Army doctrine called for holding the enemy at bay until the full weight of U.S. human and material power

could be mobilized and brought to bear. That would no longer do. The Army would have to fight with what it had on hand, and would have to win.

From this set of realities came a new doctrine. It first appeared in July 1976, in the form of the new Army Field Manual 100-5, *Operations*. FM 100-5 set forth the principles that came to be known as Active Defense, the precursor to our current AirLand Battle doctrine.

AirLand battle was a godsend for air defenders. It provided a mission and a purpose to a branch in search

of both. The critical first hours of combat it posited would see a decisive contest for control of the skies; air defense assets could be deployed far more economically and in far greater numbers than advanced aircraft. Then, once U.S. and NATO forces regained the initiative, air defenders would play a central role in protecting ground commanders' freedom to maneuver their way on to final victory.

Moreover, the AirLand Battle mission for air defense generated new weapons requirements and, over time, the resources to procure

them. Even as Congress and the Helsinki negotiators were doing away with Safeguard, other development and product improvement projects in air defense were quietly going forward. In the latter category there was I-Hawk and, for Chaparral, improved night sights and missiles. In the realm of new weapons was SAM-D, later to be called Patriot, which was designed to replace Nike-Hercules as a centerpiece of theater air defense. Launched in 1967, the project continued, albeit at reduced funding levels, throughout the '70s. Another was Stinger, which was just entering the engineering and development test phase in 1974. Both systems, nurtured through tight times, were ready for deployment by the 1980s when the United States began to rebuild its defensive capability.

Then there was DIVAD, the division air defense gun later christened the Sergeant York. The full story of its rise and fall will fill volumes. Yet, as we look back with DIVAD behind us, what stands out is not this one failure, if it was that. What emerges clearly are 20 years of hard challenges faced and conquered. It is a measure of the importance of the air defense mission in AirLand battle today that the Army's commitment to a new forward-area air defense weapon slackened not at all with DIVAD's departure. Today ADA stands on the threshold of new challenges and opportunities — challenges that, if history is any guide, air defenders will meet with the courage and fortitude that has always been their hallmark. □

Dr. Jesse H. Stiller is the ADA branch historian.



COMMANDING GENERAL, U.S. ARMY INFANTRY CENTER  
COMMANDANT, U.S. ARMY INFANTRY SCHOOL

13 January 1988

Dear Don:

It takes a team effort to win on the modern battlefield and we in the Infantry certainly recognize the need for someone to keep unfriendly aircraft off our necks. Thus it's a great pleasure to salute such a key member of our combined arms team on your 20th anniversary.

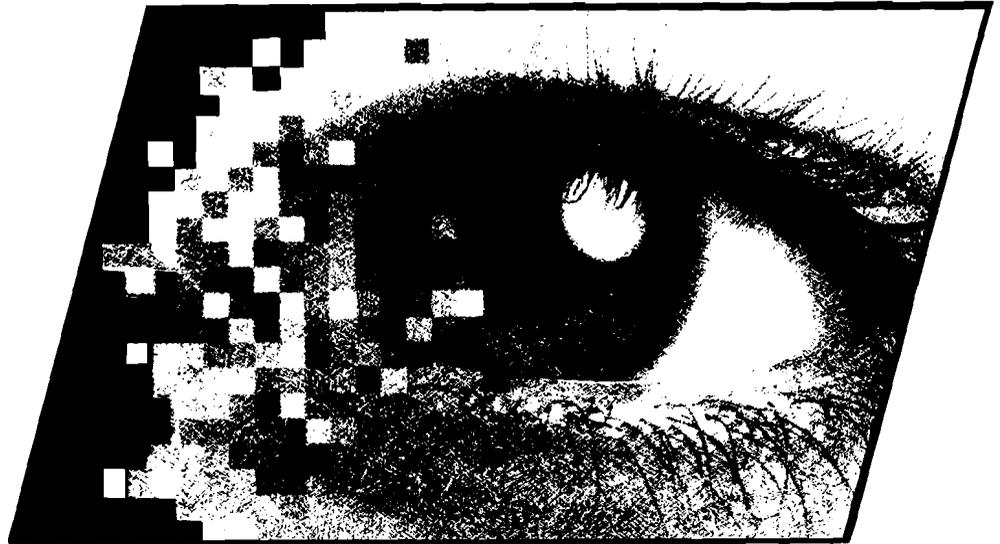
Sincerely,

  
K. C. Leuer  
Major General, U.S. Army

Major General Donald R. Infante  
Commanding General  
U.S. Army Air Defense Artillery Center  
Port Bliss, Texas 79916

## **Changes in technology, doctrine and missions are creating an exciting future for Air Defense Artillery**

# **ADA Future Vision**



by John A. Hafen

**A**ir Defense Artillery has an exciting future. Recent advances in technology and potential changes in doctrine and missions will create a climate of innovation and evolution for the branch in the months and years to come.

The current air defense mission is to protect the combined arms force; shield valuable command, control and intelligence nodes; sustain the battle; and kill the enemy the first time. This is to be accomplished by nullifying or reducing the effectiveness of attack or surveillance by hostile aircraft or missiles after they are airborne. The ADA mission supports the primary Army function of conducting land warfare operations. However, recent reassessments of the strategic and tactical threat require an expansion of roles and new interpretations of the basic mission for air defense.

### **Operational Concepts**

There are many ongoing revisions to existing doctrine as evidenced by changes and additions to ADA operational concepts. A new special working group within the Directorate of Combat Developments is developing an operational

concept for Air Defense Artillery. This concept will be integrated into the operational concept for U.S. Army Combined Arms Combat Developments Activity (CACDA) published by the integrating center at Fort Leavenworth. Eventually the concept will appear as a TRADOC 525-series pamphlet. Linkages between Air Defense Artillery and the combined arms as well as integration of theater air defenses and joint and allied forces are some of the areas covered in the concept.

The ADA Operational Concept establishes a framework for future material and technology efforts, new doctrine, training and force development. This concept describes the required capabilities for generic air defense system types or families to meet the challenges posed by air threat trends and Air-Land Battle operations, both in mature and non-mature theaters. The concept establishes a framework for corps ADA organizations and provides a basis for new ADA doctrine.

### **Directed Energy Technologies**

New and emerging technologies with the promise of fulfilling capa-

bilities required by the new operational concepts create exciting possibilities for Air Defense Artillery to expand missions and capabilities. One important new technology is directed energy (DE). DE warfare will make use of electromagnetic waves or a stream of subatomic particles to accomplish a variety of military tasks in combat. These tasks typically include target detection, illumination, ranging, identification, electro-optical jamming, disruption, damage and destruction. The most common DE forms currently under investigation include lasers, radio frequencies (microwave, millimeter wave and non-nuclear electromagnetic pulse) and particle beams.

DE technology has applications for all Army mission areas and has profound implications for Army doctrine, training, force structure and fighting systems. DE technology exhibits great potential for application within Air Defense Artillery, and could change the entire concept of ground-to-air warfare.

The Army is responding to the great potential of DE technology. The combined arms integrating center, Fort Leavenworth, has developed a DE master plan, and

the U.S. Army Air Defense Artillery School is developing an operational concept for the employment of DE in the air defense mission. Many contractors and Army laboratories are investigating the use of DE in the air defense mission. Using the master plan as a roadmap, the Army will publish policy and doctrine, establish a management architecture to coordinate and direct development of DE warfare across all proponents, and pursue development of DE weapons.

The near term application of DE to ADA weapons has several obvious advantages. It generally converts electrical power into a destructive force, which yields a very deep magazine indeed! It has zero time of flight, no visible signature and a line-of-sight trajectory. It can, therefore, be used to service multiple target types. However, the near term application of DE to air defense weapons might not provide a hard kill indication, which makes kill assessment difficult.

The Army currently uses DE in the form of lasers as rangefinders and illuminators. However, Air Defense Artillery may use high power microwaves, higher energy lasers, free electron lasers and other forms of laser energy in the future.

Even now, new forms of power generation equipment are making high power microwaves a near term reality for use as an air defense weapon. High power microwaves can damage sensitive RF seekers, maybe to the point of burning them out. A high-power microwave system used as an adjunct to current air defense assets could be used to protect air defense sites and provide long-range jamming. Such a system could engage, destroy or disrupt aircraft and aircraft ordnance.

Aircraft have many systems which are vulnerable to high power RF radiation, navigation and targeting radars, night observation devices, electronic flight controls, electronic countermeasures and electronic surveillance devices. In-flight missiles are similarly vulnerable, having fuzing mecha-

nisms, explosive release devices, and guidance and tracking radars and sensors. The effects of high-power microwaves include temporary failure or upset, actual burnout or permanent degradation, or actual premature detonation of electrical explosive devices. High-power microwave effects may provide a counter to anti-radiation missiles, unguided munitions, artillery shells and rockets, and cruise missiles. Such effects are currently limited to close-in threats (10 kilometers or less), but as conventional power generation techniques improve, this range will also improve. High-power microwaves could also conceivably be used against humans, such as pilots. However, biological effects have not yet been quantified.

Other emerging DE technologies include battlefield optical munitions, which are close to reality. These are artillery-like shells which explode and give off a brilliant burst of light. This burst would blind or dazzle optical instruments, including the eye. Battlefield optical munitions technologies may also be used to produce high-power microwaves and other RF frequencies.

### **Ramjet Technology**

The integration of rockets with ramjet technology promises to greatly extend the range and speed of missiles. Ramjets use oxygen from the atmosphere for burning the fuel rather than mixing oxidizer with the rocket fuel. This results in a much smaller and lighter missile.

The integration of rocket motors with ramjet technology provides an optimization of the energy package. This integrated rocket ramjet technology combines a solid propellant rocket booster with a solid fuel ramjet sustainer. The rocket booster provides a short duration pulse to get the missile up to speed, and then the ramjet portion of the missile provides a sustained long duration burn to target intercept. Since rocket propellant is 70 to 80 percent

oxidizer, and ramjet propellant has no oxidizer, an air breathing sustainer is much more efficient.

The integrated rocket ramjet has a much higher velocity and sustained burn, and provides two to three times more range than a comparable rocket motor. The new technology can also provide missiles with powered maneuvering, resulting in much more agile missiles. Integrated rocket ramjet technology can be added to existing ADA missiles such as Patriot, Hawk and Chaparral to improve their intercept characteristics.

### **Cooled Nose Cone Development**

A recently reported technological development is cooled nose cones for missiles. Transpiration-cooled nose cones could be used in conjunction with the integrated rocket-ramjet technology to design extremely small and fast missiles. Transpiration-cooled nose cones can currently be used for seekers in radar bandwidths. Radar energy is transmitted through the waveguide apertures. These holes are sized for a specific radar frequency, and rapid strides are being made to widen the applicable bandwidths.

Coolant passages around each of the waveguide holes permit coolant to circulate through and out of the nose cone. This is accomplished when cooling fluid is forced out of holes along the metal structure. This form of nose cone could provide protection from heat to RF seekers in the front end of missiles up to several times the speed of



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sound. Such a cooled nose cone structure will enable dramatic increases in missile velocity, lower intercept altitudes and allow multiple shots at incoming targets.

### **Chemical Advances**

There are dramatic new developments in the chemistry arena as well. New oxidizers are being investigated by the U.S. Army Training and Doctrine Command Chemical School. These oxidizers could be used in very small quantities in warheads to oxidize almost all substances on contact. When delivered with sufficient kinetic energy, these oxidizers may provide the capability to destroy all forms of threat vehicles, including nuclear or chemical warheads. When combined with the hit-to-kill technologies, heavy, prone-to-malfunction warheads and fuzes may be eliminated.

Laser radars are also part of the ongoing experimentation in the DE field. These have the capability to detect the vortices above hidden, hovering helicopters. A capability to perform helicopter detection, identification and ranging out to 10 kilometers using this technology

already exists. This technology, which detects the turbulent column of air above a hovering helicopter, is based on currently available systems being used to investigate wind shear conditions at airports.

### **Test Programs**

Several test programs at the White Sands Missile Range, N.M., hold great hope for air defense weaponry. These programs are a test bed for new technology to investigate innovations in guidance and control.

The recently completed Flexible Lightweight Agile Guided Missile Experiment, for example, combined several new technologies. It used millimeter wave radar sensors for accurate homing, solid rocket thrusters for very rapid attitude control, a new high-rate data processor, new software for accurate inertial homing and guidance and a new ring laser gyro for inertial guidance. This resulted in a small, highly agile missile with a fast response time.

The precision thrusters, mounted on the forward portion of the missile, allowed head and attitude con-

trol to permit homing maneuvers at a high "g" rate. The new millimeter wave seeker demonstrated a high line-of-sight accuracy. This design was tested for its hit-to-kill intercept capability for defense against ballistic missiles. This design was so successful against a variety of targets that the test program was terminated early and a follow-on program was initiated. The Extended Range Interceptor program, funded by the Strategic Defense Command, will be the follow-up program. It will have a lethality enhancer, new radar fuzing, improved attitude control thrusters and a larger rocket motor. Actual flight testing of the extended range interceptor missiles will begin in 1989.

### **Strategic Trends**

New roles might include operations as a strategic defender against intercontinental ballistic and cruise missiles. Air Defense Artillery would accomplish this new mission in conjunction with the new Army Space Agency. Currently located at Colorado Springs, Colo., the Army Space Agency is a vital part of the U.S. Space Command, a unified command currently charged with the strategic defense of the United States. Air Defense Artillery may play a major part in this defense, although exact roles are not yet defined. The branch's participation may include operations and control of ground-based interceptors (such as the Exo-Atmospheric Re-Entry Vehicle Interceptor System and the High Endo-Atmospheric Defense Interceptor) of a multi-layered ballistic missile defense. In addition, Air Defense Artillery may assist in the operation of directed energy weapons fired from the ground. Air Defense Artillery has, in the past, jointly participated in earlier strategic defenses such as Nike-X which evolved to Sentinel and was deployed as Safeguard.

The Strategic Defense Command has recently stated that the Strategic Defense System is in Phase 1 (SDS Phase 1) of the material acquisition process. Such a system will need soldiers to operate it, and these may be air defense soldiers. The Army Space Agency is already performing operational planning for the concepts of operation and organization for system validation

and demonstration. The U.S. Army Air Defense Artillery School may play a vital part in providing the necessary combat development activities to fulfill the Army portions of the U.S. Commander-in-Chief — Space taskings.

Recent studies performed by a special working group in the school's Directorate of Combat Developments include an assessment of the tactical missile threat to central Europe. This study was performed in conjunction with a special task force established at Huntsville, Ala., by the Department of the Army. The special working group's input to the special task force report indicated that current technology would allow intercept of the three more prevalent tactical ballistic missile threats (SS-21s, SS-23s and SS-12 MOD 2s) by upgrading current ADA assets such as Patriot and Hawk. The spe-

cial working group recommended continuation and expansion of Patriot Anti-Tactical Missile (ATM) Capability I and II modifications to Patriot, and new air defense systems are a possibility. While ATM is not exactly a new mission, it does indicate the rapid evolution of the basic air defense mission. More information on this subject can be found in the articles on tactical ballistic missiles by Maj. Pete Goodyear in the November-December 1987 issue of the *Air Defense Artillery* magazine.

These are exciting times for Fort Bliss and for all air defenders. Rapidly evolving technologies offer great hope for new types of weapons and for the evolution of existing air defense weapons. Basic changes in missions and roles have the potential to completely change the direction for Air Defense Artillery. □



**John A. Hafen** is an engineer who writes for the Concepts and Future Systems Branch of the Concepts and Studies Division, Directorate of Combat Developments, U.S. Army Air Defense Artillery School, Fort Bliss, Texas.

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# U.S. Army Air Defense Artillery School

## "The Five 'Rs' of ADA Revitalization"

by Brig. Gen. Donald M. Lionetti

I am happy to contribute this short capstone article for the U.S. Army Air Defense Artillery School (USAADASCH) section of our 20th anniversary yearbook. Devoting a section to USAADASCH seems especially appropriate in 1988 which we celebrate thematically as the Army Year of Training.

Still, the school is a guest upon these pages. The ADA Yearbook is not a "school" publication. It is the product of ADA soldiers. The unit section, compiled by commanders of ADA units around the world, follows the USAADASCH section and is the heart of the yearbook. Whether or not future yearbook editions will devote extensive space for a USAADASCH section will depend on advertising revenues, but there will always be room for ADA units around the world to publish their achievements.

This is also appropriate, for USAADASCH exists for one purpose — to serve ADA units worldwide (CONUS and OCONUS) of both the Active and Reserve Components who, in turn, exist to deter war by their combat readiness, and who, should war come, will fight, win and return safely. Therefore, our focus at Fort Bliss is to facilitate and enable the combat success of all ADA organizations, on any future AirLand Battlefield, as a valued and essential member of the combined arms team.

We've come a long way these last



Brig. Gen. Donald M. Lionetti

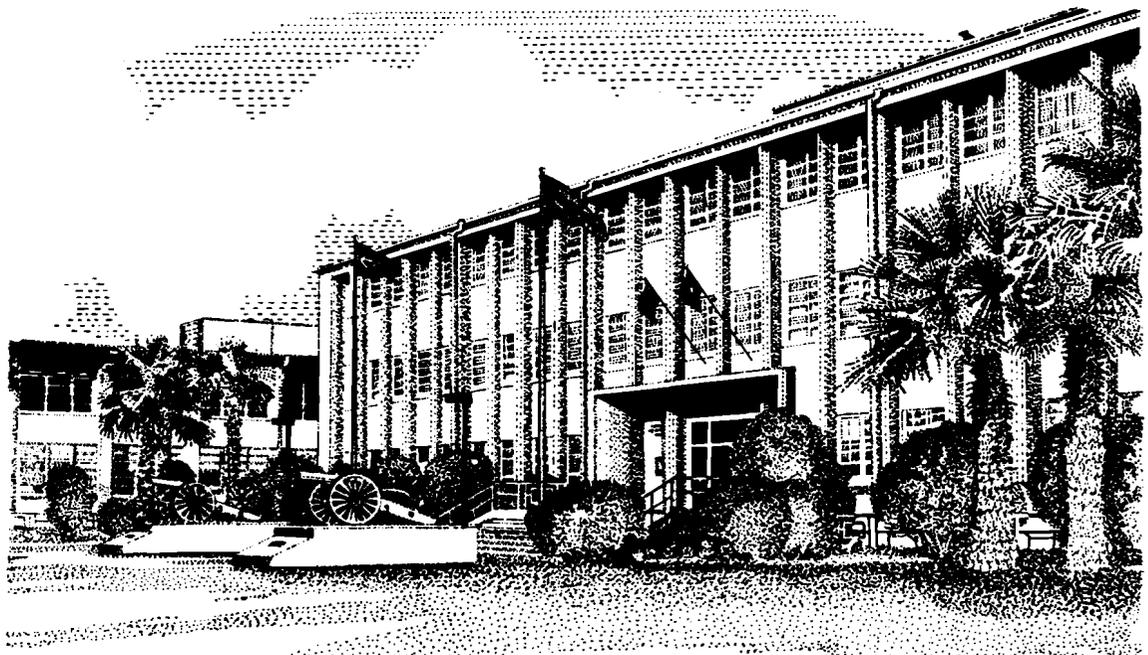
20 years in fulfilling these responsibilities. Dr. Jesse Stiller's excellent retrospective published in these pages chronicles the maturation of the branch by documenting remarkable achievements — and failures — in our brief history. But, in my judgment, no event over the last 20 years has had more impact toward accelerated maturation of our branch than the termination in August 1985 of the Sergeant York division air defense gun project. It was elemental trauma for ADA . . . a 30-round burst to the gut . . . a terrible day . . . our centerpiece short-range air defense (SHORAD) modernization project died. The decision reverberated around the Army. "Air Defense Artillery is dead," some cried — and many believed.

Two days following the Sergeant York termination announcement — with our ability to accomplish our forward area air defense mission in doubt . . . when it seemed Patriot,

along with our high- to medium-altitude air defense mission, might be transferred to the Air Force . . . with branch self-esteem at the bottom of a deep abyss — Maj. Gen. Donald R. Infante assumed command of Fort Bliss, became the ninth chief of Air Defense Artillery and walked "point" for us on the long and arduous march out of despair.

There's no better example, in my military experience, of a turnaround — of spirit, of style and of substance — as complete as the one Air Defense Artillery has enjoyed over the last two-and-a-half years. Let me briefly tick off some significant achievements of your Air Defense Artillery Branch. I call these the five R's of ADA revitalization.

We've regained the modernization initiative. The forward area air defense (FAAD) system sits on a granite foundation of support by the Army leadership, even in these times of resource constraint. There's a commitment like none other I've ever seen for an ADA system because we've been able to articulate effectively the FAAD system within the context of AirLand Battle doctrine in language our combined arms brethren (who, after all, run the Army) can understand. Similarly, the Patriot success story continues to gain momentum throughout the Army. We've organized and trained Patriot battalions. Six in USAREUR are now superbly performing their NATO mission. They exceed our highest expectations again and again — operationally and by every reliability and maintainability measure. Phase III product improvement for Hawk is ready for deployment . . . ready to guarantee the viability of this vet-



Hinman Hall,  
Fort Bliss, Texas

Illustration by Rick Couture

eran system past the year 2000. Command and control initiatives already on the books will make the adequately demonstrated lethality of the Hawk-Patriot mix even more deadly.

Fort Bliss has been *revitalized*. It looks good, it smells good, it feels good — it is good. Your branch home is a great place to live and work. While the branch leadership has directed most of its time and energy to the force modernization effort, the home of Air Defense Artillery has not been neglected. From daily PT at reveille to the concern for the quality of life of all soldiers and their family members, Fort Bliss has become a post of excellence. A great place to be. Try it, you'll like it.

The Air Defense Artillery schoolhouse has been *revolutionized*. Virtually all courses now use the small group instruction (SGI) mode. Focus of our approach is on how to think, not what to think. No longer are students bombarded with multiple-choice tests which required them to regurgitate memorized information (often aided by a foot stomping instructor) which could be forgotten immediately after the test. Today our leadership course students are evaluated multi-dimensionally through papers, staff estimates, oral presentations, leadership FTX, peer and small group leader evaluations, et cetera. Moreover, our emphasis in the schoolhouse is on ADA's role in

support of Army AirLand Battle doctrine — a warfighting emphasis designed to provide our graduates the tools necessary to lead soldiers effectively in ADA organizations worldwide. We are revising doctrinal publications as well as tactics, techniques and procedures manuals to align them with this enlightened approach to Air Defense Artillery instruction and the joint counterair role assigned us on the AirLand Battlefield.

The revolution inside the schoolhouse has contributed to the *restoration* of branch pride. Many NCOs and officers who pass through our courses find themselves caught up by the contagious enthusiasm of USAADASCH. They emerge from basic and advanced courses with renewed vigor and a renewed commitment for the professional integration of the ADA mission area into the Army's AirLand Battle doctrine. Our Office of the Chief of Air Defense Artillery (OCADA) has developed innovative methods of communicating important developing issues to the worldwide leadership. The OCADA initiatives, together with the broad coverage we get from *Air Defense Artillery* magazine, go a long way toward keeping the branch informed. We will continue to advertise our excellence. In so doing, we enhance the cohesion, spirit and self-esteem of Air Defense Artillery.

Finally, I assert, we are a *respected* and valued member of the com-

binated arms team and of the Army. Never before have we had an Army leadership so attuned, so knowledgeable, so sophisticated in their understanding of the third dimension of the AirLand Battlefield. It came because York's termination was traumatic, not only for ADA, but also for the Army as a whole, and because senior leaders devoted so much time and energy in the process of responding to the secretary of defense's requirement to define the York replacement. Because of our involvement in the process and our almost daily contact with HQDA and OSD senior leaders in the construction of ADA programmatic initiatives, the other branches have a heightened respect for our role as a combined arms team contributor.

I am proud to have been a part of this last two years of revolutionary change in ADA. Is it over? Are we there? Hell No! We've just begun. The initiatives we are so proud of — the ones you have read about in these pages — are today's excitement. Tomorrow's challenges will require new skills, techniques and a different crew of air defenders. It will be their mission to pick up where these programs leave off and to launch new initiatives that will guarantee the vitality and relevance of Air Defense Artillery into the future. □

**Brig. Gen. Donald M. Lionetti** is the assistant commandant of the U.S. Army Air Defense Artillery School.

# Office, Chief of Air Defense Artillery

## "Serving as ADA's link to the field and to its future"

by Col. Russell I. Moore

The Office, Chief of Air Defense Artillery (OCADA) initiates programs for the benefit of ADA and serves as the branch's link to the field and to its future.

We work for the Commandant, Maj. Gen. Donald R. Infante, under the daily supervision of the Assistant Commandant, Brig. Gen. Donald M. Lionetti. OCADA acts as the principal staff element of the U.S. Army Air Defense Artillery School and —

- executes the Chief of Air Defense Artillery responsibilities contained in AR 600-3;
- serves as the single point of contact for subordinate and higher headquarters for the review, update and coordination of all ADA standard requirement code (SRC) based functional area assessment actions, OSCSPER functional reviews and TRADOC organization assessments;
- improves communications within the ADA community on issues of importance to the total branch (Active Component [AC] and Reserve Components [RC]); and
- develops initiatives, policies, and programs to improve branch cohesion and better manage and project the image of Air Defense Artillery.

### Historical Background

Since OCADA is a relatively new organization, some historical perspective is in order.

OCADA was originally chartered by Maj. Gen. John B. Oblinger Jr., then the commandant, as the force Modernization Coordination Office (FMCO) under the leadership of Col. J. D. Petty, and was located in the post headquarters, Building 2. From June 1981 to February 1985 the office was a center staff directorate focused on the force modernization of the training and doctrine activities and Forces Command units at Fort Bliss.

The mission of the FMCO was to ensure that all force modernization actions necessary to support the



Col. Russell I. Moore

fielding of the more than 40 new systems (ranging from the M-1 tank to the Patriot missile system) were identified, coordinated and accomplished prior to fielding start dates. As a minimum, the FMCO addressed the functional areas of manpower, equipment (system peculiar and ancillary), facilities, training (both individual and unit), logistical support, doctrine and tactics. This included all the necessary plans and actions associated with the activation, training and fielding of the Patriot, Stinger, Roland and Sergeant York weapon systems.

Colonel W. H. Miller succeeded Petty as the director in July 1983, and in March 1985, the office was reorganized as an ADA School directorate. The size and functions of the office were expanded to include the Specialty Proponency Office, and the title evolved as the Force Integration Specialty Proponency Office (FISPO). The focus shifted from Fort Bliss to the modernization of Air Defense Artillery worldwide and to the personnel proponent responsibilities associated with the life-cycle management of the more than 24,000 ADA officer, warrant officer and enlisted personnel in the Active Component and nearly 6,000 soldiers in the Army Reserve and National Guard. (Currently totaling nearly 30,000 soldiers, this force structure is projected to grow to more than 38,000 by fiscal year 1993, 11,000 of which

will be in the Reserve Components.)

I succeeded Col. Miller during the summer of 1985. With the arrival of Maj. Gen. Infante in 1985, the scope of the office's responsibilities was expanded to include the development of initiatives, policies and programs to improve branch cohesion, better manage and project the image of Air Defense Artillery and improve communications within the ADA community on issues of importance to the total branch. To more accurately reflect the diversified mission of the directorate, the office was redesignated as the Office, Chief of Air Defense Artillery in December 1986.

### Recent Achievements

During the past year, OCADA recorded two major milestone events.

The functional area assessment (FAA) was prepared and presented to the Army vice chief of staff. The FAA is an intensive management forum that permits the Army senior leadership to identify and resolve issues which may preclude or inhibit the execution of short-term force modernization plans and programs.

The second event, and subset of the FAA, was the preparation and presentation of the personnel functional review to the Office of the Army Deputy Chief of Staff for Personnel. Using an organizational approach (e.g., heavy division battalion), this review determines the status of personnel, equipment, training and documentation necessary to support organizational changes or equipment fieldings during the current fiscal year and the next two fiscal years.

Modernization of the Army National Guard Air Defense Artillery is another major program in which this office is actively involved.

As previously mentioned, the Army National Guard force is expected to more than double in size with the formation of units ranging from brigade headquarters to Hawk, Chaparral and new divisional battalions.

This requires the development of innovative training strategies for individuals and units as well as an extensive documentation and training literature effort.

Other significant initiatives being handled by the office are briefly outlined below.

#### **Warrant Officer Study**

The goal of this initiative is to improve the quality of the force. To achieve this, a new definition has been developed based upon the approved total warrant officer definition. The accession base has been expanded to include all serving personnel at the rank of sergeant.

Warrant officer development will be system-specific at the warrant officer level and will focus on high-to medium-altitude air defense and forward area air defense areas of concentration at the senior and master level. A new warrant officer training strategy and increased civilian education opportunities are being developed.

#### **MOS Consolidation**

This initiative's goal is to reduce the number of enlisted operator and maintainer military occupational specialties. OCADA is currently looking at a number of options focusing on equipment similarities and commonality of tasks. The office will provide more information as it evolves.

#### **ADA Advantage Projects**

Currently, OCADA is working on three projects to improve the ADA image and assist in the branch's effort to attract quality officers. The first is a short video presentation, "The ADA Advantage," that will focus on duty as an ADA lieutenant and is intended as an ROTC recruiting aid. Also, an ADA plaque with the new branch motto and an assortment of posters are being produced that will be available for use by Recruiting Command, ROTC programs and other activities to get the word out about Air Defense Artillery.

#### **ROTC and USMA Support**

A standardized support package is being developed that will provide expanded ADA equipment support, standardized briefing packages, personnel, equipment display posters, visits by senior air defense artillery officers both to summer camps and campuses, video and 35mm visual displays and other training support materials.

#### **Quarterly Updates**

Shortly after Maj. Gen. Infante's arrival, he instituted a quarterly message to all ADA general officers and a letter to ADA commanders that serve as an update on the latest changes and information of interest to these key members of the branch. The mailing list for the letter has been extended to include all ADA officers serving in assignments that are out of the mainstream, such as those serving in teaching assignments, as recruiters and students.

#### **Army Regimental System**

This Armywide program will organize Air Defense Artillery into 12 regiments, five of which have already activated. Every ADA soldier has been, or will be, given the opportunity to affiliate with the regiment of his or her choice, normally based upon a current or past assignment.

The Office, Chief of Air Defense Artillery, will continue to initiate programs for the benefit of Air Defense Artillery and will continue to serve as the branch's link to the field and to its future. □

## **Directorate of Combat Developments**

**"Providing the finest air defense weapons in the world to the soldiers in the field"**

*by Col. James C. Starkey*

The Directorate of Combat Developments (DCD) is devoted to the modernization of Army ADA weapons and command and control systems. Our directorate consists of one office and seven divisions, each making a unique contribution to the ADA combat development effort.

#### **ADATS Division**

The Army Development and Acquisition of Threat Simulators (ADATS) Division provides a realistic threat force for Army testing and training. The ADATS Division currently consists of actual and replica Soviet air defense systems, actual and replica electronic warfare systems, remote control target armor vehicles and Soviet helicopter systems. The threat systems carry a full complement of onboard instrumentation and are capable of real-time interface at testing and training ranges. Because of the division's mobility and its location at Fort Bliss, Texas, it provides a realistic threat force to test and training areas across the United States, Europe and the Far East.

#### **Concepts and Studies Division**

We recently reorganized the C&S Division into four separate branches: the Concepts and Future Systems Branch, Cost Analysis



Col. James C. Starkey

Branch, Studies and Analysis Branch and Scenario and War-games Branch.

Last year, C&S Division personnel completed and forwarded to TRADOC an organizational and operational (O&O) plan for the combined arms multipurpose missile system (CAMMS). The CAMMS will provide both Aviation and Air Defense Artillery a new, more effective air defense and anti-tank capability as a follow-on to the current Stinger missile program.

Other C&S Division accomplishments during 1987 include —

- assisted with and provided manpower for the Forward Area Air Defense (FAAD) System Special Study Group and the Active Tactical Missile Defense (ATMD) Special Working Group Study,
- completed the Point Air Defense Study,

- completed the Combat Identification System Study and
- developed the Aerospace Defense Operational Concept.

Some of our ongoing projects include developing a comprehensive ADA Operational Concept, preparing medium surface-to-air missile (MSAM) and anti-tactical missile (ATM) analyses, and identifying common sensors and command, control and intelligence systems for future air defense programs.

We are conducting further Army Combat Identification System (ACIS) analyses and the concept development for ADA's contribution to the joint counterair mission and aerospace defense. We are presently developing an ADA few-on-few model, conducting a HIMAD command post automation study and managing and improving COMO, the main large scale air defense analysis tool.

### **Evaluation Division**

The Evaluation Division provides independent evaluation of ADA force development test and experimentation and other operational tests when designated as the independent evaluator. The division formulates issues and criteria; develops independent evaluation plans; develops, schedules, coordinates, monitors, and reviews all user testing; and monitors developmental testing.

The division is heavily involved in forward area air defense (FAAD) system component tests which, so far, have resulted in the selection of the Avenger, a pedestal-mounted Stinger (PMS) system, as the line-of-sight rear component and the air defense anti-tank system (ADATS) as the line-of-sight forward (heavy) component.

Of almost equal intensity, testing continues in the Patriot P<sup>3</sup>I, RAM growth and maintenance programs; Hawk mobility; and anti-tactical missile program. Future weapon and materiel systems, such as Chaparral RSS, Stinger RMP, Stinger Follow-on Missile, Medium Surface-to-Air Missile, and command post automation are all in the forefront of developmental and operational testing.

### **Organization and Personnel Systems Division**

The OPS Division consists of the Force Development Branch (formerly Army 90) and the Organization Branch. Division personnel have made significant progress toward realization of the Army of Excellence (AOE) in the following areas:

- Use of AirLand Battle 2000 Doctrine.
- Allocation of resources by theater of operations.
- Maintenance of a 60 percent Active Component and 40 percent Reserve Components mix.
- Maintenance of congressional strength constraints.
- Maintenance of DA imposed personnel levels for the division ceiling.

Many of our initiatives are transforming into Army level decisions. Currently, ADA is addressing an additional Avenger battery for heavy division ADA battalions. The chief of staff of the Army approved this initiative in December 1987. An initiative for development of a three-firing-battery design for the light infantry division ADA battalion is in its initial stage. The TOE for air base defense battalions in Europe is now being reviewed by TRADOC to establish a Chaparral/Vulcan mix. ADA is also addressing our initiative to replace Active Component Chaparral units with Avenger, thus speeding the modernization of the ARNG corps ADA battalions.

The efforts described above were the result of compliance with AOE guidance mandating a requirement to redesign all existing ADA organizations. Design change proposals will require major revision of heavy and light infantry division ADA battalions. AOE TOEs will also cause a major change to old document procedures. Eventually, a living TOE (LTOE) will result, consisting of a base TOE and a series of incremental change packages (ICPs). The ICPs apply modernization items as they occur and provide a commander with a current representation of new equipment additions, old equipment deletions and any personnel changes.

The "fast moving train" has not overlooked field concerns. Communications problems at newly

formed corps brigades, and air battle management at both the division and corps, are being revisited to ensure "smart ideas" from the field are included in future TOEs.

### **Tactical Software Division**

The Tactical Software Division is comprised of five distinct branches with multiple functions ranging from analysis to field evaluation of new software.

Patriot system operations were enhanced with the fielding of Post Deployment Build 1 in March 1987. This software build included the capabilities for fire unit to fire unit coordination, passive surveillance, a restructured alert system and improved ECCM. Post Deployment Build 2 is under development and scheduled for fielding in July 1988. Build 2 will provide a greatly improved capability for automatic processing of weapons control and identification volumes, the ability for the Patriot battalion to control Hawk fire units, and processing of intelligence data. Our German and Dutch allies joined us in the development of requirements for Patriot software. Build 2 and follow-on builds will be used in German, Dutch and U.S. systems.

Software for the AN/TSQ-73 continues to be co-developed by the U.S. and NATO. Version 33 was fielded beginning last July. This build is the largest AN/TSQ-73 software change thus far, and provides significant improvements in volume processing, data link zones, and automatic processing of IFF codes. Version 34 is in development and scheduled for fielding in 1989. Planned changes for Version 34 include the capability for multiple TADIL-B links, processing for Phase III Hawk and threat evaluation improvements. Phase III Hawk software is in testing at White Sands Missile Range prior to fielding.

The FAAD C<sup>2</sup>I rapid prototype system was put to good use at Fort Bliss from July through December 1987. The prototype system used computer-generated graphics to portray the proposed design of the fire units, battery and air battle management operations center (ABMOC) displays. Soldiers and subject-matter experts who participated in the prototyping sessions

offered approximately 3,000 comments. Their input will shape the final design of the C<sup>2</sup>I systems.

### **Threat Division**

In April 1987, HQ TRADOC approved a reorganization of the Threat Division, realigning personnel into two branches. This enabled us to provide more timely and efficient responses to an increasing variety and number of taskings and to better accommodate CG TRADOC's increased emphasis on training support and the mission area threat (MAT).

Successful completion of several FAAD related projects (FAAD threat document, air operation threat summary, close air support air raid 96, test threat support package, support of LOS-F-H testing) resulted in the Threat Division being designated the Armywide proponent for enemy air threat, fixed- and rotary-wing modeling and scenario development.

The Threat Division published and distributed the Air Threat Handbook worldwide. This benchmark document serves as an authoritative reference for use in operational and planning activities, instruction, and training exercises.

In response to additional tasking, the Threat Division is placing increased emphasis on support to all aspects of training. Division personnel devised, established and implemented a threat training program in support of testing which will have a major impact on current and future ADA programs and equipment.

The division participated in numerous conferences and working groups to include hosting the second TRADOC air threat conference. This conference is now institutionalized as the vehicle for informal coordination and information exchange within the DOD threat arena. Previously, there was no working level exchange at the analyst level.

Beginning in January 1988, the Threat Division will publish a quarterly threat intelligence summary (INTSUM).

### **Materiel and Logistics Systems Division**

The efforts, products and results of other DCD divisions bear fruit in

the MLS Division. This division manages currently deployed materiel systems and determines future air defense materiel requirements. Additionally, they formulate and evaluate logistics and maintenance support concepts for existing and future systems. Two actions nearing their milestones are the development of a standardized command post for use with Hawk, Patriot, FAAD and any follow-on systems, and the development of a limited anti-tactical missile capability for Patriot.

The FAAD system, a five-component system designed to counter the growing threat in the forward division area, continues to dominate the efforts of MLS Division personnel. Since the Sergeant York cancellation in August 1985, we have made tremendous progress in fielding the FAAD system to replace our aging SHORAD capability. During the past year the FAAD system required operational capability (ROC) document emerged as

a formally approved set of requirements for the LOS-R, LOS-F-H, NLOS, and portions of the C<sup>2</sup>I components. The developing logistics support concept will provide more effectively supported systems. The steady, continued emergence of a system view of air defense will provide future weapons command, control and communications systems with redundant capabilities, friendly operator interface, ease of maintenance and reduced training requirements. ADA's implementation of MANPRINT will guide developments as it did the first Army system of systems: FAAD.

Although FAAD system requirements continue to be the primary focus of DCD's efforts, other projects, like the emerging Air Defense Operational Concept, remain at a high priority. DCD will continue to accomplish its mission of providing the finest air defense weapons and command and control systems in the world to our ultimate customer, the soldier in the field. □

## **Combined Arms and Tactics Department**

**"Learning how to think rather than what to think"**

by Col. James L. Smith

The past year has been a dynamic period of innovation in the Combined Arms and Tactics Department. A revised officer education program now incorporates small group instruction with a combined arms focus. We have designed an innovative doctrinal literature program that will keep in step with the development and fielding of the forward area air defense system and will support field units.

The biggest changes have occurred in our Leader Development Division, which encompasses both the Officer Advanced Course (OAC) and Officer Basic Course. The revision of OAC began in 1986. Restructuring the course for small group instruction created a completely new learning environment in which students approach problems from a combined arms perspective



Col. James L. Smith

and learn "how to think" rather than "what to think." Our objective was to produce graduates prepared to command batteries and serve as principal staff officers on the Air-Land battlefield.

The dynamics of the small group process have considerably enriched the entire educational process. The

OAC is divided into the following blocks of instruction:

- Leadership.
- Weapon System Orientation.
- Preparation for War (Command and Staff).
- Combined Arms Fundamentals.
- Warfighting.

Built around combined arms scenarios, warfighting comprises more than half of the 20-week course. Students read six professional books and successfully complete a demanding leadership field exercise aimed at team building. They also participate in an enlightening staff ride to a Civil War battlefield (Valverde, New Mexico) where they analyze tactics employed in a desperate, but almost forgotten, battle on the ground where it was fought.

The key to the success of the widely acclaimed small group method of instruction has been the superb quality of the hand-picked team leaders who lead and instruct each small group. We aggressively seek out highly recommended battery commanders from the field who are willing to pursue the challenges

and rewards of leading and instructing a small group at the Air Defense Artillery School.

We are applying lessons learned from the revised OAC to improve OBC by incorporating more small group instruction and expanding the combined arms approach to problem solving. OBC students will usually be exposed to two different small group leaders. Their team leader is a CATD combined-arms officer, but they also have a "mentor" who is a recent OAC graduate. The mentor teaches ADA tactics and orients the new lieutenants for their next assignment.

Along with the new courses has come an ambitious classroom reorganization. Large lecture halls have been divided into self-contained small group rooms replete with audiovisual equipment, reference libraries and map boards. Future plans include outfitting the rooms with IBM-compatible computers to replace the department's recently acquired Apple computers, and increasing the emphasis on computer literacy and simulations.

Our Leader Development Division has not been alone in generating dynamic changes. Our Doctrine Division has also been busy. Last year, they wrote two excellent field manuals, FM 44-16, *SHORAD Platoon Combat Operations — Chaparral, Vulcan and Stinger*, and FM 44-90, *Hawk Battalion Operations*. Revisions of FM 44-15 and (S)FM 44-1A(U) will follow shortly.

In addition, an ambitious new ADA doctrinal literature program was instituted. The program's keystone manual, FM 44-100, *US Army Air Defense Operations*, is being written. Long-range plans call for a series of echelon and functional manuals. There will be squad, platoon, battery, battalion and brigade books as well as books for operations at corps and echelons above corps. The new doctrinal literature will be tailored to specific types of units. For example, we will produce separate publications for forward area air defense (FAAD) platoons with heavy divisions and FAAD platoons with light divisions.

We are formulating concepts for future FAAD system weapon manuals through extensive work on U.S. Army Training and Doctrine Command (TRADOC) teaching scenario terrain boards and overlays. We include the results in test support packages for continuing FAAD system testing and evaluation. This program promises to change — for the better — the way ADA doctrine is developed.

Our department was also involved in other wide-ranging projects. We have furnished many observer-controllers and subject-matter experts to the National Training Center (NTC), Fort Irwin, Calif., and to the Joint Readiness Training Center (JRTC) at Fort Chaffee, Ark. We have recently developed and implemented a formal training course to produce fully qualified NTC and JRTC observer-controllers.

We are also intimately involved in the preparation of the ADA Threat Handbook. A spinoff of this project is a new teaching process titled the "Intelligence Preparation of the Battlefield in the Third Dimension." This process is taught in all CATD courses and to visiting unit staffs. It also has been exported to the field at various times.

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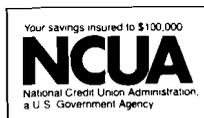
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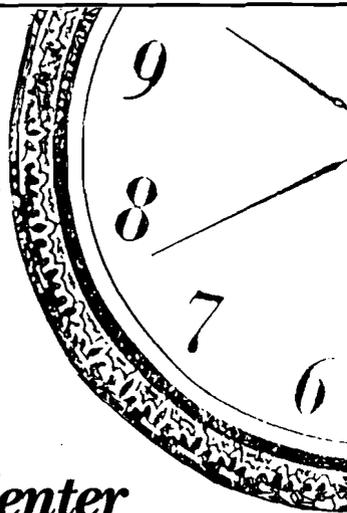


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Our department continued to support TRADOC and the Combined Arms Center at Fort Leavenworth, Kan., throughout the past year by participating in numerous special projects and study groups. We participated in the Air-Land Battle Futures study and in the preparation of FM 100-15, *Corps Operations*. We also sent subject-matter experts to large field training exercises such as Team Spirit and Reforger. We continue to sup-

ply ADA instructors to other service schools and to conduct instructor update conferences.

The pace of work within the Combined Arms and Tactics Department continues to accelerate. Through the students we graduate and the doctrine we publish, we aim to make the maximum possible positive impact on Air Defense Artillery while providing continued support to the combined arms team. □

val skills. This makes training in the Air Defense Artillery School the combat imperative.

DOTD is only a part of the team. We support the instructional departments in coordinating resident instruction and also look to them for subject matter expertise in developing exportable training packages. The training directorates (HIMAD, SHORAD and CATD) are where the rubber meets the road. They never receive enough credit for being both instructors and writers.

## **Directorate of Training and Doctrine**

### **"Training is the Combat Imperative!"**

by Col. William H. Miller

A soldier can survive on the battlefield without many things. He can survive, for short periods, without food, water, medical care or resupply. The one thing he can't survive without is training. Training is the combat imperative!

Training is the Army Theme for 1988. Our mission as trainers is to prepare the Army for war. Our goal is to develop a corporate strategy for training in the total Army that enhances our warfighting capability. The Army has set the following objectives:

- Embed appropriate standards of technical, tactical and leader skill competence.
- Standardize training strategies for field units.
- Implement standardized training strategies to help soldiers in TDA organizations maintain their basic warfighting skills.
- Provide field commanders with objective standards to assess and report training readiness.
- Recognize excellence in training throughout the total Army.
- Implement standardized training strategies for civilians who work for the Army.
- Enhance opportunities for individual training development through training, education and mentoring.

To reach our objectives, we must emphasize the joint, combined and total Army perspective in training, and reinforce the non-commissioned officer's key role as the first line trainer. We must focus



Col. William H. Miller

the total Army — Active Component, Reserve Components and civilian work force — on training as our top priority and the cornerstone of readiness. We must accomplish this in a training environment that puts safety first.

The Directorate of Training and Doctrine is charged with ensuring Air Defense Artillery answers the challenges put forth by the Army Year of Training objectives. The directorate's mission is to see that ADA commanders get well-trained soldiers and the training support products they need to carry out effective training at the unit level.

We manage the development and production of doctrinal and training products for the Air Defense Artillery School. We are mandated to teach ADA soldiers 80 percent of critical tasks within the Air Defense Artillery School or the U.S. Army Training Center at Fort Bliss, Texas. We are also charged to ensure that the 80 percent of critical tasks contain 100 percent of survi-

### **Program and Doctrine Management Office**

Our Program and Doctrine Management Office (PDMO) is the resource manager for training developments, not only for DOTD, but for the entire school. Based upon current staffing standards, our PDMO allots manpower and funding to each of the school's training departments. This office also manages the Armywide Doctrinal and Training Literature Program, the AETIS data base and the training development workload of the installation contract.

The office is responsible for automating DOTD operations. This year, a computer-based, electronic publishing system will automate the doctrinal and training literature process. This will speed the production of doctrinal and training publications and reduce the time lag in getting training products and information to field units.

### **New Systems Training Office**

The reorganization of TRADOC schools recognized the need for a program manager for the training development of systems and training devices for all new and product-improved ADA systems. The New Systems Training Office (NSTO) fulfills this need. NSTO ensures that training and training devices issues are addressed during the development stage of ADA systems. This enables us to provide training support concurrently with the system's fielding.

NSTO prepares the System Training Plan (STRAP) which directs institutional/unit training throughout the life cycle of an ADA system. NSTO's Studies Branch

manages supporting studies and Costs of Training Effectiveness Analyses (CTEAs). A CTEA for Patriot supported the present training strategy and current CTEAs for the FAAD system will enhance that training effort.

Sophisticated training simulators, such as the Patriot Conduct of Fire Trainer currently used in the training departments, have their genesis at NSTO. Long before the FAAD system's prototypes began competing for production contracts, the NSTO's FAADS Branch began developing requirements and milestones for training devices, soldier support documents and other training products. NSTO has also developed other training devices including the Patriot Organizational Maintenance Trainer (POMT), Student Interactive Training Systems (SITS), Roland Conduct of Fire Trainer (RCOFT) and the Hawk Tracking Adjunct System Trainer (TAST).

### **Course Development Division**

The Course Development Division (CDD) is the program manager for the development and production of interactive videodisc lessons, training extension courses, ADA correspondence course programs, audiovisual products, and training scenarios for the school and units. CDD also distributes ADA information packets to the Reserve Components and ROTC units.

The past year was a busy one for CDD. The division generated several new scenarios for the Patriot Conduct of Fire Trainer, more than a dozen audiovisual segments and programs, and 27 Army correspondence course program (ACCP) sub-courses in support of different ADA MOSs. The division also reviewed seven programs of instruction, including training support packages for the Reserve Components, 28 new training extension course (TEC) MOS lessons and 344 TEC lessons previously fielded to ensure their currency.

In cooperation with the Office, Chief of Air Defense Artillery, CDD continued to supply ROTC campuses with information about Air Defense Artillery. The division assembled and distributed more than 12,000 training material packages

to ROTC summer camps, and mailed 400 packages of ADA literature to ROTC cadets scheduled to attend the Air Defense Artillery Officer Basic Course. We are scheduled to distribute a revision of *Aim High*, the branch recruiting brochure, to this year's ROTC summer camps.

### **Unit Training Division**

The Unit Training Division (UTD) is the program manager for the development of ADA Army training and evaluation program (ARTEP) documents. These include mission training plans and battle drills. UTD serves as the interface between the school and ADA units worldwide for all unit training, training strategies and training concepts.

The division manages the ADA Standards in Training Commission (STRAC) program and provides data for the Battalion Level Training Model. UTD also serves as the DOTD point of contact for the school on the following training concerns:

- Branch training.
- Briefing team inquiries.
- Combined arms live-fire exercises.
- TOE, MTOE and TDA requirements.

UTD also develops the ADA Combat Readiness Deployability Certification Criteria and identifies elements which make up the ADA Mission Essential Task List.

### **Individual Training Division**

Our Individual Training Division (ITD) is the program manager for the development of ADA individual training concepts and strategies. ITD ensures that the Systems Approach to Training (SAT) is applied to the production, quality, administration and interpretation of skill qualification tests (SQTs) and soldier training publications (STPs). The purpose of SQTs is to measure soldier performance. These annual tests, producing results based upon different soldier populations and changing equipment and battle concepts, require vigilant overseeing of the SAT process.

ITD has approval authority for the analysis, design and develop-

ment phases of SQTs. The division's education and training specialists —

- convene and chair boards of experts to select SQT test items, develop training strategies for 41 short-range air defense SQTs and 16 Hawk/Patriot SQTs and determine where and how tasks are taught and evaluated;
- monitor the editing, design and layout of SQT booklets;
- manage the validation of SQTs in the field and, based upon results, set minimum passing scores; and
- monitor test results through the analysis of field inquiries and computer-generated item analysis.

The division rigidly observes milestones and, when possible, advances milestone dates to field STPs to the soldiers who need current training on equipment and devices to prepare for their SQTs.

Plans for new system SQTs, including the Product-Improved Vulcan Air Defense System, Avenger and Hawk Product Improvement Phase III, are underway.

ITD also writes and coordinates individual training management documents, ITPs and CADs. The division manages the development of all ADA programs of instruction, the Army Occupational Survey Program, Physical Demand Analyses and physical strength tests for the school.

### **Training Management Division**

DOTD's Training Management Division (TMD) serves as the G-3 for the school. This division manages the execution and resourcing for all resident school activities, including foreign military training and mobilization.

TMD attends the Structure/Manning Decision Review and the Branch Officer Basic Course Conferences to validate ADA training requirements and capacities. TMD works closely with school agencies, the U.S. Army Training and Doctrine Command and the Department of the Army to develop capacity data, resolve training constraints, process unprogrammed training requirements and plan and program all resident training activities.

TMD schedules class start and stop dates for resident courses, manages necessary changes and

evaluates requests for waiver of resident course class size prerequisites. TMD also computes and programs student class loads and prepares class schedules for distribution and entry into ATRRS.

The division manages all aspects of school mobilization, including TDA documentation to reflect mobilization training and training support requirements, development of the school mobilization plan, mobilization training input to the installation mobilization plan, programs of instruction for mobilization and mobilization exercises.

TMD assists in the preparation of individual training plans and programs of instruction, and reviews Army regulations pertaining to training and training management. TMD is the proponent for numerous U.S. Army Air Defense Artillery School regulations which govern class schedules, instructional procedures, classroom management, academic deficiencies, lesson plans, student examinations and other academic activities. TMD manages all training under the foreign military sales program, including special requests for training, and acts as the coordinating link between foreign offices and school agencies.

TMD manages special actions such as memorandums of understanding between installation agencies, interservice training review organization studies, the school's portion of the Installation of Excellence Program, space utilization and the review of training publications for outside agencies.

The division manages evaluation feedback from the Directorate of Evaluation and Standardization classroom inspections which yields data on excessive failure rates, instructor comments, evaluator recommendations and training and administration to ensure appropriate actions are completed. TMD also manages the ADA Pre-command Course and participates in the management of the school's resources by recommending equipment allocations for school agencies.

### **Publications Division**

Publications Division word processors, phototypesetters, visual information specialists and technical editors turn draft manuscripts writ-

ten by subject-matter experts from the school's training departments into publications. They edit, process manuscripts, typeset, design and construct camera-ready mechanicals for all doctrinal and training literature for the school. The draft of the eagerly awaited field manual, FM 44-100, *U.S. Army Air Defense Operations*, is now circulating. The final versions should reach field units later this year.

The division's Special Publications Branch produces the *Air Defense Artillery* magazine and special ADA publications such as the recently published *Air Defense Artillery Regimental Handbook*.

### **Staff & Faculty Development Division**

Our Staff and Faculty Development Division (S&FDD) teaches instructors how to instruct, trainers how to train and developers how to create training products. The division serves as the proponent for all professional development of the school's staff and faculty.

S&FDD develops, schedules and conducts the Instructor Training Course, Small Group Instructor Training, Army Writing Program, Systems Approach to Training Course, Contracting Officer's Representatives Course, Performance Work Statement Workshops, Computer Literacy Programs and the SQT Workshop. The division also develops courses for current and future training development and instructional requirements and provides feedback to the training departments on new or revised training techniques.

### **Communicative Skills Office**

The Communicative Skills Office (CSO) manages the Army Communicative Skills Program for the school and Fort Bliss. The program's goal is to improve the ability of soldiers and civilians at all levels to communicate the commander's intent clearly and concisely. The CSO plans to accomplish this by teaching soldiers and civilians to write, speak, listen and think clearly and concisely.

During 1987, the CSO conducted workshops for Army units at Fort Bliss, Fort Hood and Fort Ord; National Guard and Reserve units in

Texas and New Mexico; medical personnel at William Beaumont Army Medical Center, El Paso, Texas; and ROTC cadets and cadre at the University of Texas at El Paso.

Since budget cuts will severely limit travel during FY 1988, the CSO will put together a package of training materials and a communicative skills handbook for distribution to field units.

### **The Year of Training**

During 1988, the "Army Year of Training," the directorate has been given the lead in formulating initiatives to refine and improve Air Defense Artillery training. While some of the actions mandated by the "Fort Bliss Army Theme Action Plan" will affect only soldiers stationed at Fort Bliss, many will affect ADA units around the world.

Our goal is to develop and implement corporate strategies that will make every year the 'year of training' for Air Defense Artillery.

Some of the initiatives expected to emerge include the following:

- Establish a certification process that will enable air defenders to earn a "Master Air Defender Badge."
- Redesign basic electronics instruction to reduce the failure rate and shorten the training cycle.
- Develop training materials to support the introduction of Hawk to Army National Guard units.
- Implement a "Top Gun" program for Vulcan.

The directorate is dedicated to meeting the Army Year of Training objectives every year. To accomplish this despite shrinking manpower and budget resources, we are conducting a self appraisal which is likely to result in a restructuring of the directorate this year.

Training will remain our number one priority. Our motto, "Training: the Combat Imperative," is a constant reminder to all DOTD soldiers, both military and civilian, that Air Defense Artillery's success in combat depends on how we do our job. The units in the field write our report card everyday. That is the way it should be. □



ADA soldiers train on the Patriot conduct of fire trainer.

## **Directorate of High- to Medium-Altitude Air Defense**

*“Providing the Hawk and Patriot interface”*

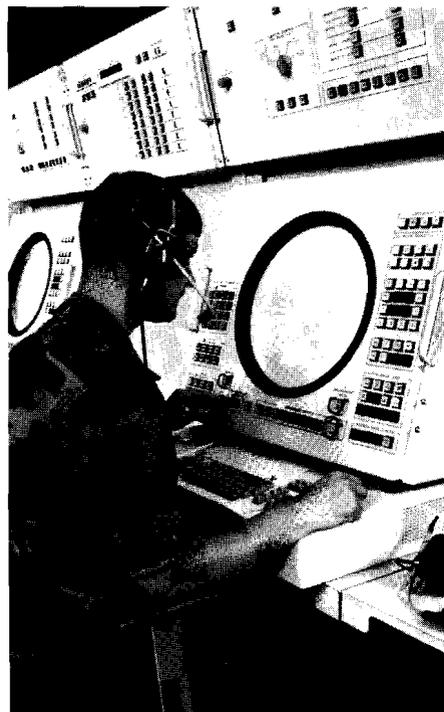
*by Col. Vance Turner*

A recent and major change in the U.S. Army Air Defense Artillery School was the creation of the HIMAD Directorate. Brigadier General Donald M. Lionetti, the school assistant commandant, directed this change to take advantage of the many similarities between Hawk Phase III and Patriot hardware and software and to realize economies in scarce resources. I have assumed directorship of HIMAD while Lt. Col. Robert Walker and Lt. Col. John McKinney, respectively, head up the Hawk and Patriot departments. HIMAD now facilitates an interface between Hawk and Patriot,



Col. Vance Turner

keeping instruction techniques compatible and moving toward combined ADA MOSs and systems interoperability techniques. □



# Hawk Department

## "Working smarter, not harder"

by Lt. Col. Robert M. Walker

Like all branches, Air Defense Artillery takes full advantage of growing technology in an effort to keep manpower requirements to a minimum. The Gramm-Rudman-Hollings Bill has forced additional reductions in both military and civilian personnel positions in our department. The constantly evolving sophistication of both the Hawk weapon system and available instruction techniques means the Hawk Department must work smarter, not harder. There have been a myriad of recent developments toward this goal.

We have been using computer-aided instruction (CAI) for several years now. Our recent improvements include the development and use of student interactive training systems (SITS). We have developed (or are in the final stages of developing) SITS lessons for most of the critical programs of instruction (POIs) we teach. Our department also helped develop SITS lessons for the 16D and 16E POIs taught by the U.S. Army Training Center (USATC). In addition to the SITS trainers, Hawk Systems Branch has just fielded the tracking adjunct system (TAS) trainers. These trainers are inexpensive computer devices which simulate the video picture, functions and controls of the TAS. Tactical radar operators, as well as future tactical control officers, can now gain experience with TAS without requiring the use of a complete firing section. This reduces the equipment requirements for these POIs.

The Hawk Systems Branch has built additional classrooms to teach both operator and maintenance instructors and key personnel Phase III courses. Several operator and maintenance classes have been conducted, and many military and civilian personnel who will be involved with the Phase III system have been trained. Graduates of the contractor-taught courses are already beginning to develop the Phase III collective training tasks. Other recent graduates are currently working on the Phase III lesson plans which we will use to teach



Lt. Col. Robert M. Walker

Phase III resident courses. We will be fully prepared to support the proposed Phase III fielding with both qualified instructors and comprehensive unit training objectives.

Another new piece of equipment which will greatly improve instruction is the acquisition of "Video Show." This combined hardware and software system package produces high quality computer screen-generated transparencies. The operator develops the graphic on a screen and produces either a 35mm slide or an overhead transparency within minutes. This will reduce the time required to produce quality slides for classroom use.

A newly created 14D POI went into effect in January. This new POI gives future tactical control officers more "hands on" equipment time. It is structured to increase the student's retention of instruction and to train a more equipment-oriented tactical control officer. This POI places emphasis on performing system integrations and daily checks. Along with the new POI, there will be an increased use of interactive videodisk (IVD)/CAI. Mr. Frias, the IVD/CAI project officer, states the increased use of computer instruction serves two primary purposes. First, students receive more individual instruction. The immediate correction and learning reinforcement provided by CAI significantly increases student retention of the presented instruction. The second advantage is that classes can be split — a portion of the students can be on a "live" system and the remainder on compu-

ters. The instructors, therefore, can spend more time with the students and provide significantly improved individual instruction. In addition to the new 14D POI, all other Phase II POIs are being redesigned to increase both student "hands on" time and retention of instruction. These improvements will also greatly enhance the instruction provided through the Foreign Military Sales program.

Computer-aided instruction will undergo a quantum leap with the development and conversion to electronic information display system (EIDS) lessons. EIDS has the following advantages over its predecessor SITS:

- Uses a DOS-compatible computer.
- Has stations available for after-hours instruction.
- Provides individualized interactive instruction.
- Tests the student's performance.
- Eliminates or reduces equipment abuses (artificial troubles do not have to be injected into an operational Hawk system).

Although CAI greatly enhances instruction, it will never completely replace conventional instruction techniques because it does have some disadvantages. For example, it cannot be used to practice and test motor skills.

We have numerous goals. One current proposal is to consolidate the Hawk MOSs, resulting in a 24R (system mechanic) and 16D (operator). A major goal is to consolidate all Hawk Department training areas into one central location. The large ponding area on the west side of Fort Bliss (adjacent to the North South Freeway) has been considered. Hawk Phase III resident instruction should begin in early FY 90 with the initial systems fielded about the same time. Long-range goals (FY 90 plus) include designing and developing 24R10/20/30/40 POIs.

As technological advances are made, either in available instruction techniques or in Hawk system hardware or software, we will continue evolving to keep pace. We will continue to "work smarter, not harder," and we will strive to provide the best possible instruction to air defenders to produce trained soldiers who can fully use the sophisticated air defense weapons of the future. □

# Patriot Department

## "Writing new chapters to the Patriot success story"

by Lt. Col. John B. McKinney

Patriot is a remarkable success story. Seldom has the introduction of a new weapon system been accompanied by such widespread accolades. The technological excellence of this new air defense system and the sterling performance of our first Patriot battalions have given Air Defense Artillery not only tremendous new firepower but a new standing in the brotherhood of combat arms. The growth of the Patriot Department has kept pace with the development and fielding of our namesake system.

Five years ago, Patriot officer and enlisted courses were taught by the prime contractor, Raytheon. Today, the Army has taken charge. Our mission, functions and capabilities have expanded in all areas of individual training from student density to the acquisition and availability of system-peculiar training devices — a fancy name for computerized simulators and training aids that have totally revolutionized the way we train soldiers. There has also been a significant growth in the equipment density of Patriot major end items. We are producing more training support products for use within the school and for export to the field.

We currently teach the following Patriot programs of instruction (POIs):

- Patriot Air Defense Officer.
- Patriot Missile System Technician.
- Patriot Communications Crew Member.
- Patriot Operator and System Mechanic (basic and transition).
- Patriot Operator and System Mechanic (crewman).
- Systems Annexes of the Officer Basic and Advanced Courses, Warrant Officer Advanced Course and Basic NCO Course.

These POIs have undergone major revisions since their initial development and we constantly review them for improvement.

The department provides Patriot individual training not only to U.S.



Lt. Col. John B. McKinney

soldiers and civilians, but also to West German, Dutch and Japanese military personnel. Beginning this year, the department will share the Patriot training of German personnel with the German Air Force Air Defense School located at Fort Bliss. The number of allied students enrolled in Patriot POIs attests to the growing acceptance of Patriot as a vital, multinational air defense combat power.

We use state-of-the-art training devices in all POIs. While two of these, the Patriot conduct of fire trainer (PCOFT) and the Patriot organizational maintenance trainer (POMT), have been in use for several years, others have recently been introduced. All have enhanced the learning environment and have proven an invaluable part of our teaching methodology.

### Training Devices

Sophisticated simulators now provide much of the "hands-on" training soldiers used to get on tactical equipment. The new methodology is better than the old methodology. Today, students spend more time on simulated equipment than soldiers in the past spent on tactical equipment, which was always in short supply. Computerized threat scenarios provide today's students with a more realistic portrayal of the third dimension of battle. The results are better soldiers. The skill and expertise displayed by soldiers assigned to

Patriot battalions recently deployed to the 32nd Army Air Defense Command and the 11th Air Defense Artillery Brigade prove the new POIs work.

The PCOFT and POMT are two of the most sophisticated training devices. We use them to train soldiers on Patriot operational capabilities, tactical employment and maintenance procedures.

The PCOFT is a software-driven, proficiency trainer embedded within the engagement control station of every Patriot fire unit. It teaches switch actions, controls, indicators, initialization procedures and responses to air battle scenarios. It allows Patriot soldiers to train in surface-to-air engagements against interactive threats through scenarios in a classroom environment. The PCOFT not only reduces the total training time for students, it is an equally valuable tool for experienced operators to test their skills in more intense air battle situations. The PCOFT maintains proficiency while it encourages tactical innovation.

The POMT provides organizational maintenance personnel hands-on training experience in locating, troubleshooting and repairing faults. The POMT consists of the radar set simulator, an engagement control station simulator and a part task trainer. It provides simultaneous training on all sub-assemblies in the radar set and the engagement control station. A total of 128 maintenance procedures can be trained on the POMT. Our Patriot Training Division has updated its POMT and will receive a second POMT this year.

The Patriot Department has obtained an interactive planner for the Patriot Officer Course. The planner is a computer-generated, graphics system designed to help the battalion executive officer and his staff in the decision-making process. The planner teaches Patriot soldiers how to —

- select unit deployment sites,
- calculate radar coverage,
- pick the best antenna locations,
- determine antenna heights and pointing azimuth, and
- set up line-of-sight communications links.

An intelligent conduct of fire trainer (INCOFT) is being evaluated to introduce artificial intelligence to Patriot operator training.

Managed by the Army Research Institute, the INCOFT program presently calls for six training systems. The trainer is designed for use within the 14E Patriot officer course for ECS and air battle operations training. It will assist in teaching officers how to make target identification and threat priority decisions. Available multiple instruction modes include demonstration, practice, review and evaluation. The trainer can also generate scenarios. The INCOFT is designed to reduce training time, improve air battle decision-making skills and enhance instructor and PCOFT effectiveness.

### **Computer-Aided Instruction**

Computer-aided instruction (CAI) and interactive videodiscs (IVDs), meanwhile, are revolutionizing classroom training in much the same way simulators have revolutionized equipment training. Today's classroom environment consists of computer terminals, software and videodisc players which allow students to track through lessons at their own pace, repeat parts they fail to master the first time around and take charge of their own learning experience.

Our Patriot Training Division has been using CAI since September 1986 and the Officer Training Division will receive CAI equipment this year. Classes designed for CAI will be modified and exported to the field for soldiers' individual use.

### **ARTEP Revision**

There's a quieter revolution going on inside the Army training and evaluation program (ARTEP). ARTEPs had their genesis in an era when there were few Armywide training literature publications which prescribed standardized training methods and training standards. The evolution of ARTEPs began more than 10 years ago when writers and training developers, using U.S. Army Training and Doctrine Command regulations and guidelines, began producing training literature that defined missions and collective tasks and established performance-oriented training techniques. For the first time, soldiers were able to achieve specific standards of training for wartime.

Although the ARTEP proved to be a valuable tool, the Combined Arms Center, Fort Leavenworth, Kan., wanted training to be even more thorough and precise. A new type of training publication, the Mission Training Plan (MTP), was developed. Individual training documents used in MTPs enhance the quality of training by directing training to specific areas and by combining and integrating training in graduated stages. This is done until each individual and, eventually, the entire unit can perform as a team regardless of echelon of command.

Eventually, there will be a separate Patriot MTP for each battery and battalion. We will also publish Patriot battle drills for each type of Patriot squad and platoon with a combat mission.

### **Nike Hercules**

We changed our name from the Nike Hercules/Patriot Department to the Patriot Department in 1985 when the last U.S. Nike Hercules was put into mothballs. Nike Hercules is gone but not forgotten.

We continue to train soldiers to meet NATO requirements for custodial mechanic duties. We have made major revisions to the critical tasks performed by MOS 24U (Nike Hercules Custodial Mechanic) and 14C (Nike Hercules Custodial Officer) soldiers to prepare them for their custodial roles. This, in turn, has caused major revisions to their respective POIs. There are no current assignments for MOS 14 (Nike Hercules) soldiers within the Continental United States. The only remaining 24U and 14C assignments are in Germany, Italy and Greece.

### **Future Challenges**

During last year's ADA Commanders Conference, Maj. Gen. Donald R. Infante, chief of Air Defense Artillery, set five branch objectives. One of them was to "build on Patriot's success." Patriot provides a strong building foundation. The final chapters of the Patriot success story are still being written. At the Patriot Department, we intend to carry on Patriot's tradition of excellence. □

## **Short-Range Air Defense Department**

### **"Providing air defense for the maneuvering forces"**

*by Col. Michael Rosebeary*

Formed in 1983, the SHORAD Department's primary mission was training soldiers to provide low-altitude air defense at the forward edge of the battle area.

One of our major functions within this mission was to analyze, design and develop both resident and non-resident training for a family of SHORAD weapons, including Chaparral, Vulcan, Roland, man-portable air defense (MANPAD) and Duster, and the forward area alerting radar (FAAR). Our training development program included officer, warrant officer, non-commissioned officer, enlisted maintenance and enlisted crew member duties.

Our second major function was to conduct resident training of all officer, warrant officer and enlisted



**Col. Michael Rosebeary**

maintenance personnel on the Chaparral and Vulcan weapons and the FAAR.

We have accomplished our mission. Since our formation, we have graduated approximately 1,200 officers from the Officer Basic

Course, Officer Advanced Course and the Pre-Command Course; 50 warrant officers from the Chaparral/Vulcan technician course; and 800 organizational mechanics for the Chaparral and Vulcan weapons and the FAAR. All received training on more than 80 percent of their individual combat-critical tasks.

We have supplied the U.S. Army Training Center with the necessary training materials to successfully graduate more than 10,000 Chaparral, Vulcan, MANPAD and FAAR crew members.

We began training on the improved Chaparral with forward-looking infrared (FLIR) in 1985. We modified about half of the SHORAD training base to initiate this program. Since that time all Chaparral officers, warrant officers and enlisted personnel attending resident training have been certified on the FLIR subsystem. We anticipate having our entire training base upgraded this year to the latest configuration with a nuclear, biological and chemical (NBC) protective system.

In 1986 we implemented the highly successful Basic Non-commissioned Officer Course for the Chaparral and Vulcan organizational mechanics. Through this training we provide the field units with system maintenance supervisors who have a strong background in SHORAD logistics and maintenance management.

We have continued to supply the SHORAD forces with the necessary materials to evaluate and sustain the individual and collective training readiness of their soldiers. These include mission training plans, battle drills, soldier's manuals, trainer's guides, job books, skill qualification tests and extension training materials to support the training extension course and Army correspondence course programs.

Our mission is changing. The forward area air defense (FAAD) system is a new family of weapons that will be deployed from the battalion through the corps areas of operation. Air Defense Artillery has become a full member of the combined arms team. Our SHORAD weapons are being displaced to the Army National Guard.

Today we are faced with two major challenges in training.

We must actively participate in providing the National Guard with quality training and training products to achieve modernization.

We must also accurately plan, project, develop and implement training of the Active Army units on the FAAD system family of weapons which includes the Avenger, the fiber-optic guided missile (FOG-M), the air defense anti-tank system (ADATS) and their associated command and control equipment.

We have already implemented a program to convert National Guard Duster units to Chaparral. The program is working well and, with minor tune-ups, will be fully successful. Initial planning is underway to provide equivalent conversion training to Vulcan. Our development of individual and collective training products to support this mission is progressing smoothly.

We are on the threshold of implementing training on the product-improved Vulcan air defense system (PIVADS). All programs of instruction and supporting materials are on hand. Conversion of Vulcan to PIVADS should occur this year; our training will commence immediately following this conversion.

Much of the front-end analysis has been completed on the FAAD system weapons and development of individual and collective training is moving forward. Training of our developer and instructor personnel is well ahead of materiel fielding.

Our belief in providing high quality training to prepare our soldiers for their maneuver forces air defense mission is strong. We have accepted our challenges, are prepared to meet them forthright, and are organizing the directorate for the 1990s. □

## **Directorate of Evaluation and Standardization**

### **"Preparing soldiers to meet the challenges of equipment, doctrine, and the AirLand Battlefield"**

*by James G. Klaes*

The introduction of new weapon systems and other new battlefield technologies puts an increased demand on training institutions to provide quality control and quality assurance. These new systems require innovative training concepts to prepare the soldier to meet the challenges posed by the equipment, doctrine and the AirLand battlefield. The Directorate of Evaluation and Standardization (DOES) evaluates training and training products and ensures standardization of training within the air defense community. To accomplish our mission, DOES is functionally organized into five divisions: Evaluation, Standardization and Analysis, Training Effectiveness Analysis, Lessons Learned Integration and Technical Service Support.



James G. Klaes

### **Evaluation Division**

The Evaluation Division is divided into two branches: Internal Evaluation and External Evaluation.

The Internal Evaluation Branch evaluates the U.S. Army Air Defense Artillery School

(USAADASCH), U.S. Army Training Center (USATC) and Noncommissioned Officer Academy (NCOA) courses to determine the effectiveness of school training. We evaluate both high- to medium-altitude air defense (HIMAD) and short-range air defense (SHORAD) training for air defense operator, maintenance, officer and warrant officer courses. During FY 87, Internal Evaluation Branch personnel performed 779 evaluations covering 7,712 hours of instruction. In the future, our evaluation techniques will focus on ensuring training programs keep pace with the needs of units in the field. We will develop new feedback mechanisms to produce quality graduates and achieve excellence in training and training support materials.

The External Evaluation Branch has two sections: the Branch Training/Briefing Team (BT/BT) and the U.S. Army Reserve Force (USARF) School Affiliation Section. The BT/BT establishes effective feedback circuitry between USAADASCH and ADA units worldwide using a visitation program. In FY 87, the BT/BT visited 13 SHORAD units: eight CONUS and five OCONUS. The team presented current and projected ADA activities to the units and provided answers on air defense issues. All of the issues brought back to USAADASCH by the BT/BT were presented to the proponent agency for review and feedback to the units. Each BT/BT included a commandant's representative (CR). CRs are USAADASCH department directors who present the commandant's point of view on ADA matters of interest.

The USARF School Affiliation Section establishes a program that assures U.S. Army Training and Doctrine Command (TRADOC) and United States Army Forces Command (FORSCOM) that USARF school instruction is of excellent quality and is conducted by competent instructors. The methodology of assessment is flexible; it encourages the use of locally devised surveys, checklists or other assessment tools. The USARF School Affiliation Section conducted 13 USARF school visits during FY 87. In the next 10 years, we envision USARF schools will require automation and automation networks

using advanced technology and methodology. These networks will provide standardized training directly to the USARF schools and feedback to USAADASCH.

### **Standardization and Analysis Division**

The Standardization and Analysis Division is divided into two branches: the Analysis Branch and the New Systems and Standardization Branch (NSSB).

The Analysis Branch establishes policies and methodology for collection, analysis, and interpretation of data within USAADASCH. During FY 87, the branch reviewed 178 training documents and performed 40 analyses of examinations with excessive failure rates. The branch also prepared annual reports used as the basis for accreditation by the Southern Association of Colleges and Schools.

The Analysis Branch is the point of contact for the American Council of Education (ACE). It provides ACE with information on about 24 MOSSs, which results in the recommendation for award of college credits.

Assessing the impact of new training devices and strategies (e.g., interactive videodisc, computer-aided instruction, and electronic information delivery systems) entering into the training arena is a new challenge for the Analysis Branch.

The USAADASCH Standardization Program is managed by the NSSB. The branch represents the directorate on MANPRINT issues and is a participant in the staffing of training products. It also monitors the development and acquisition of new air defense weapon systems as required by TRADOC's concept-based requirements system. During FY 87, branch personnel visited 13 air defense units worldwide to solicit standardization initiatives. NSSBs goals include —

- developing an evaluation program for forward area air defense (FAAD) system training products,
- standardizing USAADASCH terminology to ensure uniformity in the application and use of terms and definitions, and
- standardizing USAADASCH test result recording procedures.

### **Training Effectiveness Analysis Division**

The Training Effectiveness Analysis (TEA) Division conducts all ADA Post Fielding Training Effectiveness Analyses (PFTEAs). The PFTEA is a major category of the TEA system which assesses individual and crew proficiency to determine the effectiveness of unit training which, in turn, provides insight into unit readiness. The PFTEA provides feedback to the participating units, TRADOC and the Army about institutional and unit training strengths and weaknesses. Our division conducts these studies after the product is provided to field units.

Our division has participated in 14 different studies. These studies were either performed by in-house personnel, contracted or conducted in partnership with the U.S. Army TRADOC Analysis Command (USATRAC), White Sands Missile Range, N.M. These studies covered a wide range of training programs, systems and devices. The results of the studies contributed to decisions concerning many aspects of the training subsystem. They also identified and recommended solutions for deficiencies in Army training.

The latest studies conducted either in-house or in partnership with USATRAC are IFF Follow-Up TEA, Patriot PFTEA, Hawk PIP II PFTEA and Stinger/Redeye PFTEA. The Patriot final report has been briefed and distributed to the field. The other study reports will be distributed in the near future.

The TEA Division's goals include both a joint study with the Aviation School to assess the use and training of IFF at the organizational level in both aviation and ADA units, and a Chaparral forward-looking infrared radar PFTEA.

### **Lessons Learned Integration Division**

In January 1985, the Army chief of staff directed the TRADOC commanding general to develop a Center for Army Lessons Learned (CALL). The CALL Cell, a subordinate directorate of the Combined Arms Center, was officially established in June 1985.

The Combined Arms Center directed TRADOC schools and inte-

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grating centers to establish a proponent lessons learned element within their Directorates of Evaluation and Standardization. In September 1985, the USAADASCH assistant commandant officially authorized the formation of the DOES Lessons Learned action element which became the Lessons Learned Integration Division (LLID). LLID is the USAADASCH direct point of contact and CALL resolves all ADA lessons learned issues.

LLID was tasked to develop and produce the "FAAD Platoon Leaders Guide" in March 1986 and completed worldwide distribution to ADA units by July of the same year. This guide provided FAAD platoon leaders with the necessary ready-reference type of information that would enable them to succeed at the National Training Center, Fort Irwin, Calif.

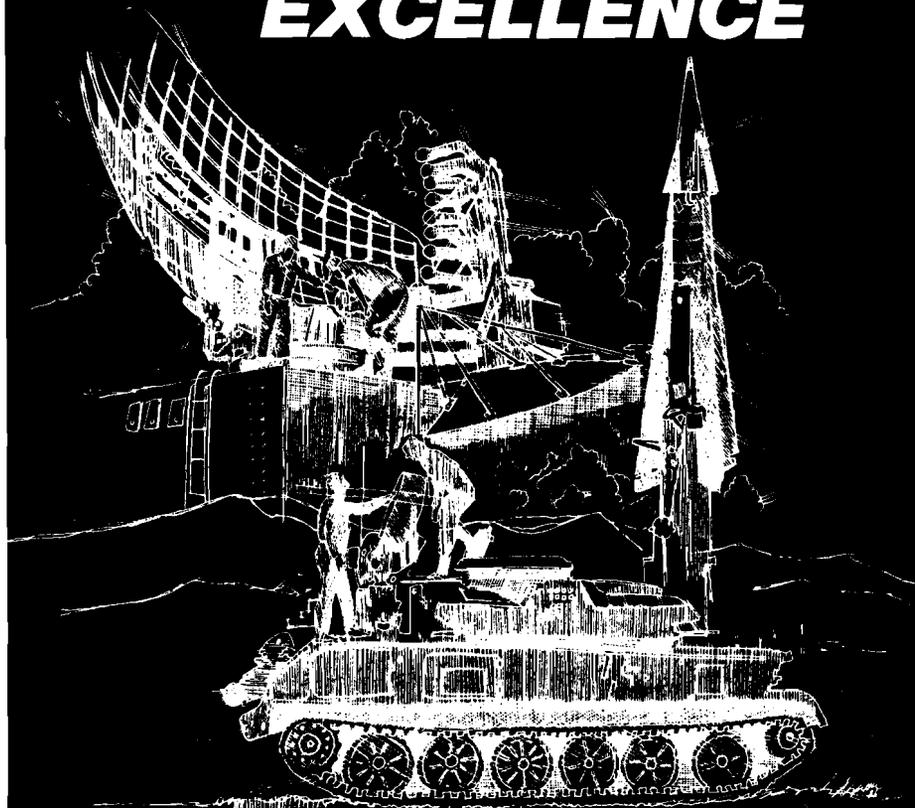
With many FAAD systems being developed from FY 88 to FY 97, we must incorporate lessons learned

into these systems and training products. LLID will develop matrices and computerize lessons learned data sets, major ADA issues and audit trails for automatic data processing storage. We also will design a program that enables fast data retrieval and has the ability to cross-reference each data set and audit trail with the completed, pending or required action. Computerization will make the lessons learned information readily available to all agencies involved in new equipment development. With this information, hardware and training developers will be better prepared to develop FAAD systems and training products.

**Technical Services Support Division**

The Technical Services Support Division (TSSD) provides secretarial and administrative support for the directorate and manages and operates an automated statistical evaluation system. This system provides data reduction and statistical analyses for directorate evaluations and lessons learned integration projects. The system exchanges data and information with other automatic data processing installations to take advantage of data base management systems and statistical software packages at those locations. TSSD currently collects, reduces and analyzes data collected from other government agencies using existing communication equipment and software. As technology increases, our ability to exchange data becomes critical. A requirement for a TRADOC-wide DOES network will be established in the early 1990s. This network will facilitate a rapid, reliable, and responsive exchange of statistical data between all service schools and integrating centers. □

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# The 6th Air Defense Artillery Brigade

## "Fulfilling both TRADOC and FORSCOM missions"

by Col. Ralph L. Allen

On June 23, 1987, a redesignation ceremony at Fort Bliss, Texas, redesignated the School Brigade and its four TDA (Training and Doctrine Command [TRADOC]) battalions as the 6th Air Defense Artillery Brigade. The 6th ADA Brigade was not aligned with the 6th ADA Regiment, but its four battalions were: the Student Battalion, School Support Battalion, Staff and Faculty Battalion and Allied Student Battalion. These battalions became the 1st, 2nd, 3rd and 4th battalions, respectively. The redesignation of the 6th ADA Brigade and its four battalions caused no mission changes.

The 6th ADA Brigade and its more than 4,300 soldiers — four TDA battalions (at this writing) and three TOE battalions — is truly a unique brigade in that it has both TRADOC and Forces Command (FORSCOM) missions. Our TRADOC missions include planning and conducting new air defense weapon systems training, providing support to the U.S. Army Air Defense Artillery School (USAADASCH) and the U.S. Army Air Defense Center, and supporting mobilization operations by acting as the host unit for the 4150th U.S. Army Reserve School. Our primary FORSCOM mission entails activating, training and deploying Patriot missile battalions.



Col. Ralph L. Allen

We had many major accomplishments during 1987. After training and certification, the 6th Battalion (Patriot), 3rd Air Defense Artillery, deployed to Kaiserslautern, Germany, in December 1986. We repeated this collective training process with four other Patriot battalions: 1/43rd ADA, 8/43rd ADA, 6/43rd ADA, and 3/43rd ADA. While both the 1/43rd ADA and 3/43rd ADA remained in CONUS with the 6th ADA Brigade and 11th ADA Brigade respectively, 8/43rd ADA deployed to Giebelstadt and 6/43rd ADA deployed to Ansbach to take their places in the NATO defense. The 2/7th ADA (Patriot) activated at McGregor Range, N.M., in November 1987 and is currently preparing to undergo collective training.

Through the 2/6th ADA, we provided trained soldiers to operate candidate weapon systems competing for the forward area air defense (FAAD) system. Through the outstanding support efforts of the 2/6th ADA soldiers, the Army has now selected a pedestal-mounted Stinger (PMS) candidate, the "Avenger" built by Boeing, and a line-of-sight forward (heavy) candidate, the air defense anti-tank system (ADATS) built by Oerlikon-Buhrle of Canada and its U.S. teammate Martin-Marietta. The command, control and intelligence (C<sup>2</sup>I) ground sensor component tests are underway at this time. Planning is also underway for candidate testing of the non-line-of-sight (NLOS) component of FAAD which will incorporate the use of the fiber-optic guided missile (FOG-M).

We stayed busy throughout 1987 by holding a \$15,400 fund raiser for the Armed Services YMCA. The funds were used to purchase a 16-passenger van for the Fort Bliss Junior Enlisted Family Center. We raised \$165,000 during our 1987 Combined Federal Campaign — 135% of our assigned post goal. We closed out 1987 with the successful completion of center certification and a live Patriot missile firing by 3/43rd ADA and with the brigade's 13th Annual Foster Children's Christmas Party in which some 50 foster families with 225 foster and natural children received individual gifts from our soldiers. All in all, 1987 was a good year for the 6th Air Defense Artillery Brigade. We look forward to an even greater 1988. □

## 1st Battalion, 6th Air Defense Artillery



Fort Bliss,  
Texas

Lt. Col.  
Terry L. Scott

The 1st Battalion, 6th Air Defense Artillery, provides administrative and logistical support for U.S. officer and enlisted students assigned to USAADASCH. Additionally, our battalion provides soldierization and reinforcement training for those soldiers enrolled in professional development courses within USAADASCH, and soldierization training for initial entry ADA officers. We also provide professional development training for all battalion permanent party personnel.

In conjunction with the Combined Arms and Tactics Department, USAADASCH, our battalion implemented small group

instruction for both Officer Basic and Advanced Courses. We developed and sponsored an Officer Advanced Course Professional Growth Seminar, which we designed for the spouses of Advanced Course students.

Our goals for 1988 include the merger of the Combined Arms and Tactics Department and the Non-commissioned Officers Academy under the 1/6th ADA. This merger will mark the beginning of an ADA student regimental system which will better serve ADA students and the ADA Branch.

— Lt. Col. Terry L. Scott

## **2nd Battalion, 6th Air Defense Artillery**



**Fort Bliss,  
Texas**

*Lt. Col.  
Robert J. Bell*

The 2nd Battalion, 6th Air Defense Artillery, provides support to the U.S. Army Air Defense Artillery School and Center. We support instruction for the Air Defense Artillery School, and we serve as a test unit for the evaluation and selection of the FAAD system components.

Our support of instruction includes all active U.S. Army air defense weapon systems and presently involves Chaparral, Vulcan and Stinger systems. We will soon add Hawk, Patriot and, upon fielding, the FAAD systems. As the FAAD system test unit, we provided the soldiers and organizational structure necessary for effective

completion of the tests and selection of the FAAD system components. The Air Defense Artillery School supports training of air defense personnel worldwide in all these systems and we are prepared to handle this mission as well.

Our battalion is at the forefront of the Army's newest technology and supports air defense training for most of the Free World. Our personnel are among the best available and are successfully tackling their diverse and challenging mission.

— Lt. Col. Robert J. Bell

## **3rd Battalion, 6th Air Defense Artillery**



**Fort Bliss,  
Texas**

*Lt. Col.  
Donald H. Watt*

The 3rd Battalion, 6th Air Defense Artillery's unique mission is to provide administrative support and non-academic training to more than 1,200 soldiers assigned to USAADASCH's nine directorates and teaching departments.

1987 served as a milestone year in the history of our unit. In June 1987, our designation was changed from the Staff and Faculty Battalion to the 3/6th ADA.

Unit pride, individual training and soldier care have become our trademarks. Our individual training was highlighted

when our soldiers completed the annual common task test with a 99 percent pass rate. Our soldier care was best exhibited in July when we sponsored a series of baseball nights that raised over \$15,000 for the Armed Services YMCA.

This year we look forward to meeting the challenge of providing the best air defense artillerymen in the world.

— Lt. Col. Donald H. Watt

## **4th Battalion, 6th Air Defense Artillery**



**Fort Bliss,  
Texas**

*Lt. Col.  
Alexander M. Kassim*

In May 1987, the Allied Student Battalion was redesignated the 4th Battalion, 6th Air Defense Artillery, under the 6th ADA Brigade. Our mission is to provide administrative and limited logistical support for Allied students and their families training at the U.S. Army Air Defense Artillery School. Additionally, we are tasked with orienting Allied soldiers to develop a better understanding of the U.S. Government, the judicial system, the political system and the American press. We emphasize the diversity of life in the United

States and explore the American agricultural, economic and educational systems. We explain labor management relations and America's concern for public and social welfare and human rights.

Our proud colors stand out in the 6th ADA Brigade as a symbol of our unit's dedication to its support mission. We recognize that "the Allied soldier is our most important business," and "the American soldier is our most important asset."

— Lt. Col. Alexander M. Kassim

## **2nd Battalion, 7th Air Defense Artillery**



**Fort Bliss,  
Texas**

*Lt. Col.  
Roy C. Gortney*

The 2nd Battalion (Patriot), 7th Air Defense Artillery, began organizing at Fort Bliss, Texas, several months prior to activation and moved to its current home at McGregor Range, N.M. Upon our activation in November 1987, we became the ninth Patriot battalion and the third CONUS-based Patriot battalion.

Our soldiers had to modify and renovate the buildings at McGregor Range before we could occupy our new facilities. The resulting transformation remains a great source of unit pride.

Immediately following activation, our battalion and the 507th Combat Support

Company, which activated alongside us, began receiving and processing new equipment. We handed off a complete set of battalion and combat support company equipment in record time and the process of sub-receipting, deprocessing and storing the equipment is on schedule.

We look forward to the start of our 16-week collective training cycle. Our training will conclude with a certification Army training and evaluation program and a live missile firing. Once certified, we will transfer to Forces Command and receive a wartime mission.

— Lt. Col. Roy C. Gortney

## **1st Battalion, 43rd Air Defense Artillery**



**Fort Bliss,  
Texas**

*Lt. Col.  
Jeffery E. Furbank*

The 1st Battalion, 43rd Air Defense Artillery, supports collective training for deploying Patriot battalions.

During 1987 we had three Patriot missiles score "kills" at McGregor Range, N.M. We supported Patriot collective training for the German Air Force Air Defense School. This "partnership" venture culminated with the integration of three U.S. and two German Patriot batteries during a joint field training exercise.

In addition to our continued support of collective training battalions, we will participate in three major training events this

year. We will be the test bed for Patriot post-deployment build 2, receiving new equipment training and then undergoing a user system evaluation during a subsequent FTX. "Green Flag," a joint Air Force-Army exercise in Nevada, will highlight our training efforts this spring. An equipment upgrade this summer will allow our battalion enough breathing time to prepare for its next major task of training all Patriot "backfill" batteries this fall.

— Lt. Col. Jeffery E. Furbank

# United States Army Training Center

**"Producing more and better-trained soldiers"**

by Col. John H. Little

The U.S. Army Training Center (USATC) conducts advanced individual training (AIT) for trainees in ADA operator military occupational specialties (MOSs) and conducts branch immaterial basic combat training (BCT) for initial entry trainees. We support the soldierization of trainees in ADA maintenance MOSs undergoing training at the U.S. Army Air Defense Artillery School (USAADASCH) by providing billets, administration, supervision and reinforcement training. We also provide mobile training teams (MTTs) in support of the ADA modernization program.

Last year we sent MTTs to Ford Ord, Calif., and Fort Polk, La., to provide MOS on-station transition



Col. John H. Little

training of 16P to 16S. This effort produced 34 new 16Ss.

We graduated 7,232 BCT soldiers and 2,425 ADA operator AIT soldiers. We continue to produce more, and better-trained, soldiers even

with a diminishing amount of personnel resources.

Our Reception Station was redesignated the 67th Adjutant General Battalion (Reception) last June. Additionally, the 1st, 2nd and 3rd Training Battalions and the 1st Instructor Battalion became part of the U.S. Army Regimental System and became the 1/56th ADA, 2/56th ADA, 3/56th ADA and 4/56th ADA, respectively.

We began using the new U.S. Army Training and Doctrine Command (TRADOC) initial entry training strategy by instituting platoon level BCT last September. We also conducted Operation Santa Claus again last year. Operation Santa Claus, in its 30th year, provided more than 20,000 toys to the El Paso community and needy military families.

This year we look forward to vertical displacements with both the 1st Brigade and Headquarters and Headquarters Battery, 85th Division. We will also conduct initial training for pedestal-mounted Stinger (PMS) key personnel. □

## 1st Battalion, 56th Air Defense Artillery



Fort Bliss,  
Texas

Lt. Col.  
James S. Kay

The 1st Battalion, 56th Air Defense Artillery, provides the Active Army, Army Reserve and National Guard with well-disciplined, physically fit and highly motivated soldiers. We train these soldiers in basic soldier skills and seven separate ADA mechanic MOSs.

Last year we graduated more than 2,100 basic trainees and more than 150 career management field (CMF) 23 soldiers. We initiated a basic training field training exercise (FTX) at McGregor Range, N.M., and we incorporated small group instruction (the platoon concept) into our basic

training. We won the commanding general's Best Mess Award for the October-December 1987 time period.

This year we plan to establish a battalion hand-to-hand combat range and three platoon classrooms. — Lt. Col. James S. Kay

## 2nd Battalion, 56th Air Defense Artillery



Fort Bliss,  
Texas

Lt. Col.  
Daniel Ruiz Jr.

The 2nd Battalion, 56th Air Defense Artillery, produces motivated, disciplined soldiers who are well-trained in basic soldier skills. We condition these soldiers, both physically and mentally, for further training.

Our change of command last year gave us a new training philosophy that will emphasize cohesiveness. We will continue to produce professional, motivated soldiers who are serious about their future in Air Defense Artillery.

— Lt. Col. Daniel Ruiz Jr.

## **3rd Battalion, 56th Air Defense Artillery**



**Fort Bliss,  
Texas**

*Lt. Col.  
Bruce R. Gale*

The 3rd Battalion, 56th Air Defense Artillery, provides administrative, logistical, billeting and food service support for assigned cadre and trainees. We provide reinforcement combat survivability, basic soldiering, and MOS skills training. We qualify initial entry soldiers in basic training and ADA operator MOSs through AIT.

Last year we graduated more than 3,000 technically proficient, physically fit soldiers. We had the highest basic skills tests results within the brigade, and coupled that achievement with no fatalities and no disabling injuries.

This year we will continue graduating proficient, professional soldiers and maintain an accident-free environment.

— Lt. Col. Bruce R. Gale

## **4th Battalion, 56th Air Defense Artillery**



**Fort Bliss,  
Texas**

*Lt. Col.  
Allen P. Hasbrouck*

The 4th Battalion, 56th Air Defense Artillery, trains initial entry soldiers in basic soldier skills and AIT for ADA operator MOSs. We also train soldiers transiting into ADA operator MOSs, and allied students on selected air defense weapon systems. We provide maintenance support to USATC and USAADASCH.

Last year we trained more than 7,400 soldiers in basic training skills and more than 2,500 air defenders in AIT. We made extensive improvements in our qualification and familiarization ranges through a self-help program. We also expanded the

scope and content of FTXs for new air defenders in AIT.

This year we expect our training load to increase to 7,500 soldiers in basic training and 3,400 in AIT. Air defense modernization will play a key role as we train soldiers to operate the new weapon systems being developed.

— Lt. Col. Allen P. Hasbrouck

## **Congratulations To The U.S. Army Air Defense Artillery**



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# US Army ADA Components Continental United States (CONUS)



Stinger gunners of the 82nd Airborne Division's 3rd Battalion, 4th Air Defense Artillery, pass in review.

## 11th Air Defense Artillery Brigade



Fort Bliss,  
Texas

Col.  
John B. Rogers

The 11th Air Defense Artillery Brigade provides air defense in support of the Third United States Army (TUSA) and U.S. Army Europe. Our brigade consists of five battalions: two Hawk, one Chaparral/Vulcan, one Patriot, and one Roland from the New Mexico National Guard.

We have a secondary peacetime mission

of supporting ADA-specific individual and unit training conducted by the U.S. Army Air Defense Artillery School (USAADASCH) and supporting a wide range of test and evaluation programs involving virtually all of the new ADA weapon systems.

As senior air defense adviser to the generals of U.S. Army Forces Command (FORSCOM) and TUSA, I frequently provide advice and assistance to allied nations. I recently sent assistance teams to various locations worldwide, including the Middle East.

Last year we conducted numerous major annual exercises, including First Fire I, Bright Star, Shadow Hawk, Blue Flag, Dos Amigos, Gallant Eagle, Gallant Knight and National Training Center (NTC) rotations.

During 1987, we successfully deployed to Egypt and Honduras. Our units introduced Hawk air defense operations to the NTC, Fort Irwin, Calif., and have partici-

pated in every subsequent NTC rotation. We also took part in U.S. Army Air Defense Artillery Board tests and evaluations of Hawk, Patriot, and the line-of-sight forward (heavy) component of the forward area air defense (FAAD) system. We ended 1987 on the same note of success — one of our soldiers was named Fort Bliss Soldier of the Year.

We acquired our fifth battalion, the 3/43rd ADA, in January. The integration of this battalion's Patriot system with the existing Hawk, Chaparral/Vulcan, Roland and Stinger systems makes our brigade truly representative of the U.S. Army's air defense arsenal.

This year we will develop doctrine and procedures to interface Patriot and Hawk into the total air defense system. We plan to take part in joint exercises with JTIDS and ASIT. We look forward to continued success at this year's First Fire II exercise, NTC rotations and annual service practices (ASPs). — Col. John B. Rogers

## 2nd Battalion, 1st Air Defense Artillery



Fort Bliss,  
Texas

Lt. Col.  
Eugene G. Hagedood

The 2nd Battalion, 1st Air Defense Artillery, is a Hawk battalion with a U.S. Central Command contingency mission to Southwest Asia. We also provide mission support to the U.S. Army Air Defense Artillery Center and School.

We took part in numerous training exercises last year, including Bright Star, Shadow Hawk, First Fire I and First Fire IA. We also completed a live-fire exercise and a rotation at the NTC, Fort Irwin, Calif.

During 1987, we had the highest scores of 11th ADA Brigade units in the Fort Bliss Maintenance and Supply Inspec-

tion. We recorded 100 percent participation in the Army Emergency Relief fund drive, and 82 percent of our Combined Federal Campaign contributions were returned to Fort Bliss agencies. We also were the Fort Bliss representative for the Connally Best Dining Facility (field facility).

This year we plan to conduct a Hawk/Patriot interoperability test and another NTC rotation. We will take part in the First Fire II and Gallant Eagle training exercises. And this year we plan to win the Connally Award for the Best Field Dining Facility! — Lt. Col. Eugene G. Hagedood

### **3rd Battalion, 1st Air Defense Artillery**



**Fort Bliss,  
Texas**

*Lt. Col.  
Carl G. Roe*

The 3rd Battalion (Hawk), 1st Air Defense Artillery, supports combined arms and joint service operations for a variety of worldwide contingency missions.

During 1987 we participated in First Fire I at Fort Bliss, Texas, and Holloman AFB, N.M. We also took part in an NTC rotation at Fort Irwin, Calif.

We supported the 197th Infantry Brigade (Sep) and the 1st Brigade, 5th Infantry Division (M) during force-on-force operations at the NTC. Using a terrain table of the NTC, we shared the AirLand Battle lessons learned with other ADA units and

the Officer Advanced Course classes at Fort Bliss.

This year we will relocate to Fort Hood as part of the 31st ADA Brigade in support of III Corps.

— Lt. Col. Carl G. Roe

### **3rd Battalion, 43rd Air Defense Artillery**



**Fort Bliss,  
Texas**

*Lt. Col.  
MacArthur DeShazer*

The 3rd Battalion, 43rd Air Defense Artillery, is a Patriot battalion providing very low- to very high-altitude air defense of ground forces and high value assets. We kill enemy aircraft the first time, allowing the combined arms team freedom to maneuver and to sustain the battle, while we simultaneously protect critical command, control, communications and intelligence nodes.

Last year we conducted 16 continuous weeks of collective training, resulting in combat certification by the Air Defense Artillery Center.

Last July we were activated as the eighth Patriot ADA battalion and we became the first CONUS-deployed Patriot battalion with an exclusive FORSCOM mission. Originally activated under the 6th ADA Brigade, we were reassigned in January to the 11th ADA Brigade to assume our FORSCOM mission.

— Lt. Col. MacArthur DeShazer

### **5th Battalion, 62nd Air Defense Artillery**



**Fort Bliss,  
Texas**

*Lt. Col.  
Oscar W. Simmons III*

The 5th Battalion, 62nd Air Defense Artillery, trains and sustains an air defense fighting force prepared to deploy and fight anywhere in the world as an integral part of FORSCOM. In addition, we provide assistance and support to the U.S. Army Air Defense Artillery School and Center for SHORAD-peculiar training requirements and air defense systems tests.

During 1987 we completed NTC rotations with the 197th Infantry Brigade, the 194th Armored Brigade and the Third Armored Cavalry Regiment. We also completed a multitude of field training exer-

cises and a battalion Army training and evaluation program (ARTEP).

Our three NTC rotations were only part of our major achievements for 1987. We also deployed to the Republic of Honduras to support and train with the only Honduran air defense battalion.

Our goal for this year is to maintain the high level of training and readiness that we achieved throughout 1987.

— Lt. Col. Oscar W. Simmons III

### **5th Battalion, 200th Air Defense Artillery**



**McGregor Range,  
New Mexico**

*Lt. Col.  
George Mendoza Jr.*

The 5th Battalion (Roland), 200th Air Defense Artillery, provides all-weather, day and night short-range air defense with a worldwide mission.

We participated in numerous training exercises last year, including Caber Dragon, Blue Flag 87-1, Proud Scout, Coronet Sentry, First Fire I and Northern Scrimmage I.

Our achievements include the successful completion of a rapid deployment state contingency mission and our biannual Command Maintenance Evaluation Test. Our battalion won the White Sands Mis-

sile Range Commander's Cup for pistol and rifle team competition and the New Mexico Governor's Cup for pistol, rifle and crew-served weapons competition.

We will spend this year preparing for a rotation at the NTC, Fort Irwin, Calif., and a joint readiness exercise deployment.

— Lt. Col. George Mendoza Jr.

## 31st Air Defense Artillery Brigade



Fort Hood,  
Texas

Col.  
Richard G. Kurtz

The 31st Air Defense Artillery Brigade will activate this year. We will provide low-to medium-altitude air defense for the Third Mobile Armored Corps.

To activate our brigade, we will restructure the III Corps' division Chaparral/Vulcan battalion into a pure Chaparral battalion and redesignate it 2/2nd ADA. We will also move the 3/1st ADA (Hawk) from Fort Bliss, Texas, to Fort Hood.

— Col. Richard G. Kurtz

## 2nd Battalion, 2nd Air Defense Artillery



Fort Hood,  
Texas

Lt. Col.  
Howard J. Withycombe

The 2nd Battalion, 2nd Air Defense Artillery, will activate this June as a heavy corps Chaparral battalion. We will receive our three, 12-system Chaparral batteries from the reorganizing Chaparral/Vulcan battalions in the 1st Cavalry Division and the 2nd Armored Division. We will then form a Headquarters and Headquarters Battery and the 93rd Ordnance Detachment (a small, direct support maintenance unit).

The challenges presented to any activating unit are substantial, and those facing 2/2nd ADA are no exception — particular-

ly our role in developing corps air defense doctrine.

We will emphasize individual, crew, and platoon proficiency as we move toward battalion and battery Army training and evaluation programs (ARTEPs) this September. We look forward to establishing viable CORTRAIN relationships with the 1/200th ADA and the 3/200th ADA (Chaparral) of the New Mexico National Guard. We are proud to rejoin the air defense community as a part of the 31st ADA Brigade.

— Lt. Col. Howard J. Withycombe

## 35th Air Defense Artillery Brigade



Fort Lewis,  
Washington

Col.  
Zigmund J. Roebuck

The 35th Air Defense Artillery Brigade is the first corps ADA brigade, consisting of one Hawk and one Chaparral battalion.

During 1987 we participated in numerous training exercises, including Team Spirit, Korea; Pacific Defender II, Yakima, Wash.; Yama Sakura, Japan; Cascade Peak, Fort Lewis; and Fortress Gale in the Aleutian Islands.

During Team Spirit '87, we deployed organic Hawk equipment, fired three missiles and recorded three kills. In Pacific Defender II, we used the test bed forward area air defense (FAAD) command, control and intelligence (C<sup>2</sup>I) early detection concept to demonstrate successful interac-

tion of all ADA elements. During other exercises we airlifted a Hawk assault fire unit and a Chaparral battery to locations inaccessible by their prime movers, and proved information data links from ground-based ADA, AWACS and naval vessels work.

Our goals include restationing the 7/7th ADA from Fort Ord, Calif., to Fort Lewis, Wash.; accepting D Battery, 1/67th ADA, into our brigade as C Battery, 7/7th ADA (towed Chaparral); and revising our TOE to include a communications section capable of sustaining the new mission of a corps ADA brigade. — Col. Zigmund J. Roebuck

## 7th Battalion, 7th Air Defense Artillery



Fort Ord,  
California

Lt. Col.  
Clyde R. Simmons

The 7th Battalion, 7th Air Defense Artillery, provides low-altitude air defense for I Corps units and assets. We reinforce the fires of the ADA elements of committed divisions.

1987 saw us send two and one-half batteries to Team Spirit '87 (Korea) for the second time. Our battalion swam the Chaparral during Panther Strike II (Fort Hunter Liggett, Calif.) and completed its first AGI with outstanding results. We also took part in a live-fire exercise at Yakima Firing Center, Wash.

This year we will receive a towed-Chaparral battery. We also hope to relocate to Fort Lewis, Wash.

— Lt. Col. Clyde R. Simmons

## **1st Battalion, 52nd Air Defense Artillery**



**Fort Lewis,  
Washington**

*Lt. Col.  
Vernon W. Hatley*

This April the 1st Battalion (Hawk), 4th Air Defense Artillery, was deactivated and redesignated as the 1/52nd ADA. Thus, in its 202nd year, the legacy of the Air Defense Artillery's oldest active duty battalion came to an end.

We had many outstanding achievements during 1987. We became the first U.S. air defense battalion to integrate its command, control and communications system into the Republic of Korea's tactical command and control system. We also were the first CONUS Hawk air defense battalion to conduct a Hawk live-fire exercise outside the continental United States, and we became the first Hawk air defense

unit to emplace on the Aleutian island of Adak. In July, our color guard helped commemorate the 200th birthday of the U.S. Constitution in a ceremony at Valley Forge, Pa.

This year we will again participate in the Team Spirit, Owyhee Roundup and Pacific Defender exercises. We will have another Hawk live fire in Korea — and this time we will conduct an EMCON silent firing using only the AN/TSQ-73's PAR for acquisition. — *Lt. Col. Vernon W. Hatley*

## **DIVISIONAL AIR DEFENSE ARTILLERY**

### **3rd Battalion, 4th Air Defense Artillery**

### **82nd Airborne Division**



**Fort Bragg,  
North Carolina**

*Lt. Col.  
Richard F. Alley Jr.*

The 3rd Battalion (Airborne) Vulcan/Stinger, 4th Air Defense Artillery, supports the 82nd Airborne Division and Rapid Deployment Force. Our light division's unique mission is to deploy anywhere in the world, within 18 hours, and win.

During 1987, we deployed worldwide in support of brigade task force operations including the National Training Center (NTC), Fort Irwin, Calif.; the JRTC at Fort Chaffee, Ark.; JOTC in Panama and as members of the peacekeeping force in the Sinai. Our elements also took part in numerous no-notice deployments across the United States in support of emergency readiness exercises conducted by the 82nd Airborne Division and XVIII Airborne Corps.

Some of our major achievements during 1987 include overall winner of the 82nd

Airborne Division "All American" Week battalion competition; successful deployments to Fort Bliss, Texas, and Camp Lejeune, N.C.; and successful firings of four Stinger and eight Redeye missiles in conjunction with the annual Fort Bragg power demonstration. We also began converting to the Army of Excellence modified table of organization and equipment (MTOE).

Our major goals for 1988 include successful completion of the battalion transition under the Army of Excellence MTOE and completion of the battalion force modernization with the deployment of the high-mobility multipurpose wheeled vehicle (HMMWV) and product-improved Vulcan air defense system (PIVADS).

— *Lt. Col. Richard F. Alley Jr.*

### **2nd Battalion, 5th Air Defense Artillery**

### **2nd Armored Division**



**Fort Hood,  
Texas**

*Lt. Col.  
Barry E. Cardwell*

The 2nd Battalion, 5th Air Defense Artillery, provides short-range air defense for the 2nd Armored Division as determined by the commanding general's mission priorities. We maintain highly trained, combat-ready leaders, soldiers and equipment capable of worldwide deployment.

Last year we took part in Reforger '87 and the Roadrunner command post exercise (CPX). We had quite a few quarterly exercises, including brigade-level field training exercises (FTXs), a divisional CPX, battalion command inspections, a Best Crew Competition and a Top Gun Competition.

We recorded the highest number of cumulative aircraft kills at successive NTC rotations, and we had the largest successful HMMWV fielding in the 2nd Armored Division. Our battalion came out on top in

the III Corps' unannounced Combat Readiness Special Inspection, and we attained the highest score in the 2nd Armored Division on the unannounced emergency deployment readiness exercise (EDRE).

This year we will change from the Chaparral/Vulcan battalion MTOE to the Gun/Stinger battalion MTOE, and we will develop new tactics and procedures for combat operations accordingly. We plan to field Stinger missile equipment and Mobile Subscriber equipment. Our battalion will participate in multiple integrated laser engagement system/air-to-ground engagement system (MILES/AGES) and CANE IIB testing. We will adjust division war plans and develop doctrine for fighting with the new 31st ADA Brigade, and we will continue to integrate Air Defense Artillery into all combined arms operations. — *Lt. Col. Barry E. Cardwell*

## **4th Battalion, 5th Air Defense Artillery**

### **1st Cavalry Division**



**Fort Hood,  
Texas**

*Lt. Col.  
Dennis D. Cavin*

The 1st Battalion, 68th Air Defense Artillery, was redesignated the 4/5th ADA in March. We reorganized from a Chaparral/Vulcan battalion to a three-battery Vulcan battalion.

We had two NTC rotations last year. We spent 68 days at the Reforger '87 exercise, where we provided outstanding air defense support of the 1st Cavalry Division. We conducted Vulcan gunnery with Streaker support and fired two Stingers. We also conducted two firings of Chaparral and Redeye.

We will take part in another NTC rotation this year, and our battalion's change of command is expected this July.

— *Lt. Col. Dennis D. Cavin*

## **1st Battalion, 44th Air Defense Artillery**

### **9th Infantry Division**



**Fort Lewis,  
Washington**

*Lt. Col.  
Hugh R. Leonard Jr.*

The 1st Battalion, 67th Air Defense Artillery, was redesignated the 1/44th ADA in March. We deploy by air and sea and provide air defense artillery support to the 9th Infantry Division (Motorized). We ensure combined arms freedom of maneuver, protect command and control at the right place and time, kill the enemy the first time, and sustain the battle during conduct of motorized combat operations as part of a U.S. or Allied Corps. We rapidly deploy a battery by air in support of a brigade combat team to defend key installations.

Our units deployed for combined arms training for more than 32 weeks last year. This training took place at the Fort Lewis Firing Center; the NTC at Fort Irwin, Calif.; and during CONUS and OCONUS exercises such as "Team Spirit" in Korea

and "Yama Sakura" in Japan. We participated in numerous division and corps CPXs, and conducted quarterly air defense gunnery using both 20mm Vulcan and 7.62mm "Mini-VADS" ranges. We held our annual Stinger/Chaparral live fire at Yakima Firing Center.

Last year, our B Battery received the Division Quarterly Maintenance Award with a 99 percent score, and we achieved the highest score ever recorded on the Division Command Inspection.

This year we will conduct an evaluation of 2/61st ADA in Korea and we will participate in the 3rd Brigade's NTC rotation. This July our battalion will reorganize as its Chaparral battery transfers to 7/7th ADA, 35th ADA Brigade.

— *Lt. Col. Hugh R. Leonard Jr.*

## **2nd Battalion 44th Air Defense Artillery**

### **101st Airborne (Air Assault)**



**Fort Campbell,  
Kentucky**

*Lt. Col.  
Dana F. Kwist*

The 1st Battalion, 3rd Air Defense Artillery, was redesignated the 2/44th ADA in March. We provide low-altitude air defense for the 101st Airborne Division (Air Assault).

In 1987, we took part in the Golden Eagle division FTX; an annual service practice and the Desert Strike III Army training and evaluation program (ARTEP) at Fort Bliss, Texas; and the TCCAT at Fort Knox, Ky. We also participated in an anti-aircraft warfare exercise with the U.S. Marine Corps at Beaufort, S.C.

Last year we completed conversion to the Army of Excellence MTOE. We achieved 90 percent in our air assault qualification — one of the highest scores in the division. And we took the Commander's Cup sports trophy in both 1986 and 1987.

We have another ARTEP scheduled for 1988, and we will conduct annual service practices at Fort Campbell, Ky. and Fort Bliss, Texas.

— *Lt. Col. Dana F. Kwist*

## **5th Battalion (Attack), 52nd Air Defense Artillery**

### **24th Infantry Division**



**Fort Stewart,  
Georgia**

*Lt. Col.  
Milton A. Whitley Jr.*

The 5th Battalion (Attack), 52nd Air Defense Artillery, attacks and kills enemy aircraft while providing air defense of maneuver forces, march columns, and critical assets within the Victory Division.

We are at the leading edge of innovative air defense tactics at every 24th Infantry Division rotation, such as the NTC, Fort Irwin, Calif. Using advanced battle skills such as forward deployment of Chaparral, Stinger under armor, and heavily massed gunfire, our battalion has consistently cleared the skies over Fort Irwin and contributed greatly to the superb reputation our division has earned at the NTC.

Last year we conducted a highly successful demonstration of air attack artillery tactics for the Chief of Staff of the Army during a Vulcan gunnery exercise, providing the Army's highest levels with a

first-hand view of the effectiveness of our innovative air attack warfighting skills.

We continually exercise our U.S. Central Command Rapid Deployment mission on regular overseas deployments to Southwest Asia and Europe. Ours is the first mechanized ADA battalion to regularly execute combined Chaparral/Vulcan/Stinger gunnery exercises in completely tactical scenarios. We measure our battalion's engagement times from emplacement to firing in *seconds*. Constant field exercises, command post exercises and totally tactical Chaparral/Vulcan/Stinger gunnery exercises ensure our soldiers are always ready to execute their mission of being the "First to Fire."

— Lt. Col. Milton A. Whitley Jr.

## **1st Battalion, 55th Air Defense Artillery**

### **5th Infantry Division**



**Fort Polk,  
Louisiana**

*Lt. Col.  
Stephen B. Webber*

The 1st Battalion, 55th Air Defense Artillery, provides short-range air defense according to the priorities of the 5th Infantry Division (Mechanized) commanding general.

Last year we conducted Chaparral, Redeye and Vulcan live fire exercises. We had two NTC rotations, and we participated in Tiger Thrust and the III Corps Redeye Competition. We also had a battalion external evaluation, an emergency deployment readiness exercise, a quarterly division CPX and battalion FTXs.

1987 saw our battalion become the winner of the III Corps Redeye Team Competition. We participated in the first Army National Guard brigade NTC rotation and in the first ever Chaparral live fire at Fort Polk, La.

This year we will again conduct Chap-

arral, Redeye and Stinger live-fire exercises. We also plan to reorganize the battalion to the L-Series MTOE and deactivate our D Battery.

— Lt. Col. Stephen B. Webber

## **4th Battalion, 61st Air Defense Artillery**

### **4th Infantry Division**



**Fort Carson,  
Colorado**

*Lt. Col.  
Orin A. Nagel*

The 4th Battalion, 61st Air Defense Artillery, provides low-altitude air defense for the 4th Infantry Division (Mechanized) to allow its combat elements the freedom to maneuver throughout the battlefield.

Last year we conducted Chaparral, Redeye and Vulcan Streaker annual service practices. We held our first Stinger live fire last September and scored three direct hits. Our battalion participated in both the Reforger and COLDEX exercises. We also had two NTC rotations and two Pinon Canyon Maneuver Site rotations.

Our battalion took first place in III Corps during the Forces Command Annual Redeye Competition, 1987. We also took the Commander's Trophy for Divisional/Post Athletic Prowess.

This year we will transit from a compo-

site four-battery Chaparral, Vulcan and Redeye battalion to a three-battery Vulcan and Stinger battalion. We also plan to field HMMWVs with the displacement of 1/4-ton trucks.

— Lt. Col. Orin A. Nagel

## **2nd Battalion, 62nd Air Defense Artillery**

### **7th Infantry Division**



**Fort Ord,  
California**

*Lt. Col.  
Peter C. Franklin*

The 2nd Battalion, 62nd Air Defense Artillery, ensures the 7th Infantry Division (Light) retains the freedom to maneuver and command and control by killing aircraft and helicopters the first time. We provide adequate early warning for 7th Infantry Division elements.

Last year we participated in numerous training exercises, including Team Spirit, Ahaus Tara, Celtic Cross V, and Red Flag. We had a Stinger live-fire exercise at Fort Hunter Liggett, Calif., and our annual Vulcan gunnery at Camp Roberts, Calif.

During our 1987 live-fire exercise, we scored nine out of 10 kills with Redeye and three for three with Stinger. We took part in more than 10 no-notice EDREs to Fort Lewis, Fort Chaffee, Camp Pendleton, Fort Hunter Liggett, Alaska, Panama and Honduras. We had 30 personnel attend

Jungle School, Air Assault School and Ranger School, and all 30 graduated.

This year we will have no-notice EDREs for each battery. We will have an annual Stinger live-fire and quarterly Vulcan gunneries. We look forward to 100-percent Vulcan gunner qualification.

— Lt. Col. Peter C. Franklin

## **2nd Battalion, 67th Air Defense Artillery**

### **1st Infantry Division**



**Fort Riley,  
Kansas**

*Lt. Col.  
William G. Tomlinson*

The 2nd Battalion, 67th Air Defense Artillery, is a Vulcan/Redeye battalion in support of the 1st Infantry Division (Mechanized).

During 1987 we participated in the Reforger training exercise. We also conducted NTC rotations at Fort Irwin, Calif.

Our most outstanding achievement last year was the establishment of a new Vulcan range. This range provides wider range fans for gunnery and increased tactical realism with concurrent evaluated battle drills and logistical operations.

Our goals include a Stinger transition, another Reforger exercise and reorganization under the new MTOE. We will also prepare for our C Battery's deployment to the Federal Republic of Germany.

— Lt. Col. William G. Tomlinson

## **3rd Battalion, 68th Air Defense Artillery**

### **XVIII Airborne Corps**



**Fort Bragg,  
North Carolina**

*Lt. Col.  
Johnnie D. Shaw*

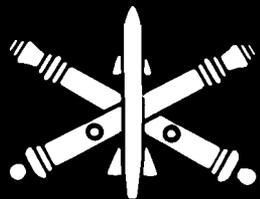
The 3rd Battalion, 68th Air Defense Artillery, provides low- to medium-altitude air defense in general support of units of the XVIII Airborne Corps.

Last year we participated in several exercises, including Quick Thrust, Fort Stewart, Ga.; FIREX, Camp Lejeune, N.C.; First Fire I, Fort Bliss, Texas; Coronet Sentry, Mena, Ark.; and Sea Lion, Shaw Air Force Base, S.C.

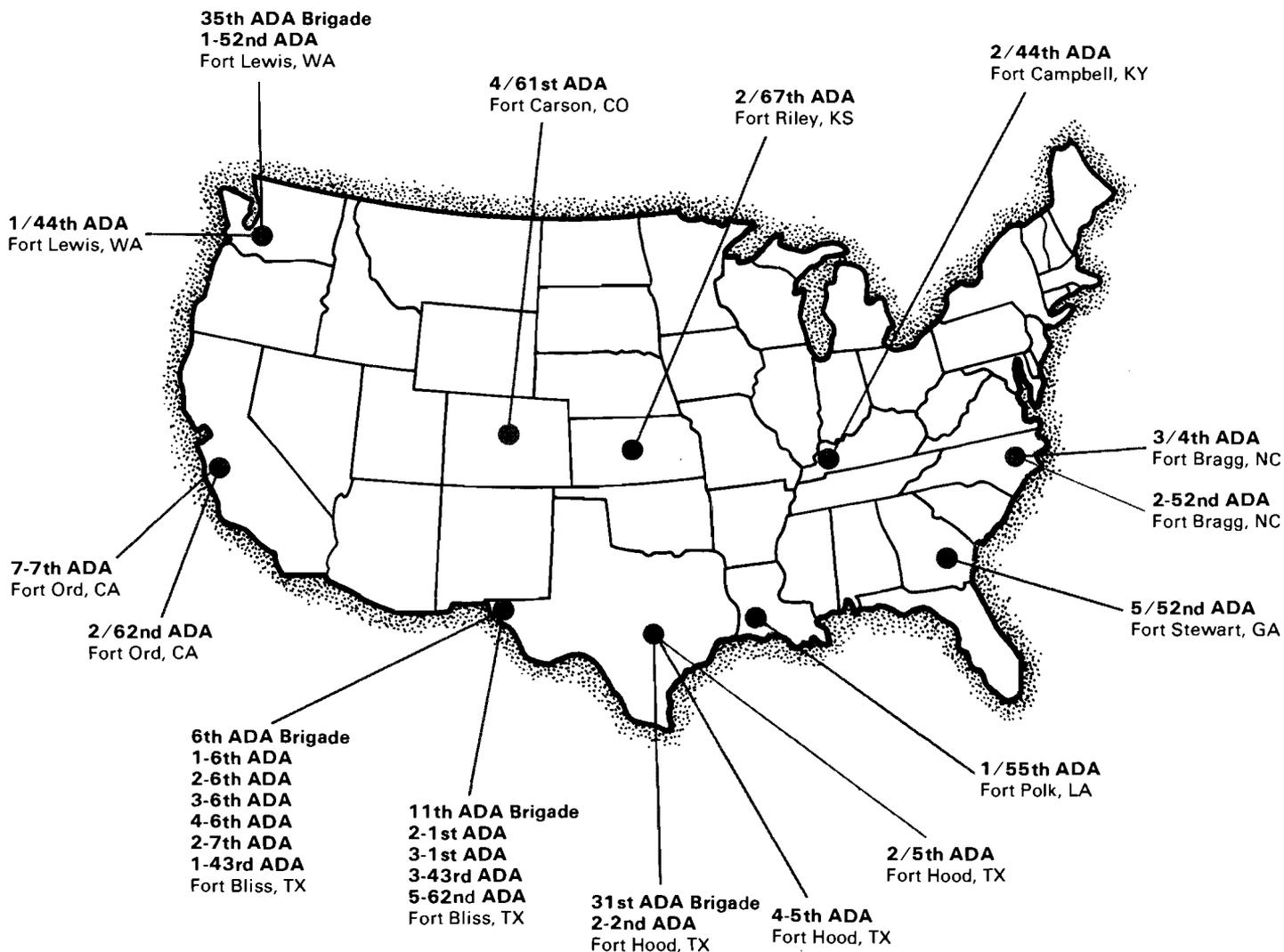
Through these major exercises and an XVIII Airborne Corps EDRE to Mena, Ark., our unit has proven itself ready to go, ready to fight and ready to win.

This year we look forward to successful platoon ARTEPs, an annual FIREX and other major training exercises to maintain our "go-to-war" capability. This April we will be redesignated as the 2nd Battalion (Hawk), 52nd Air Defense Artillery.

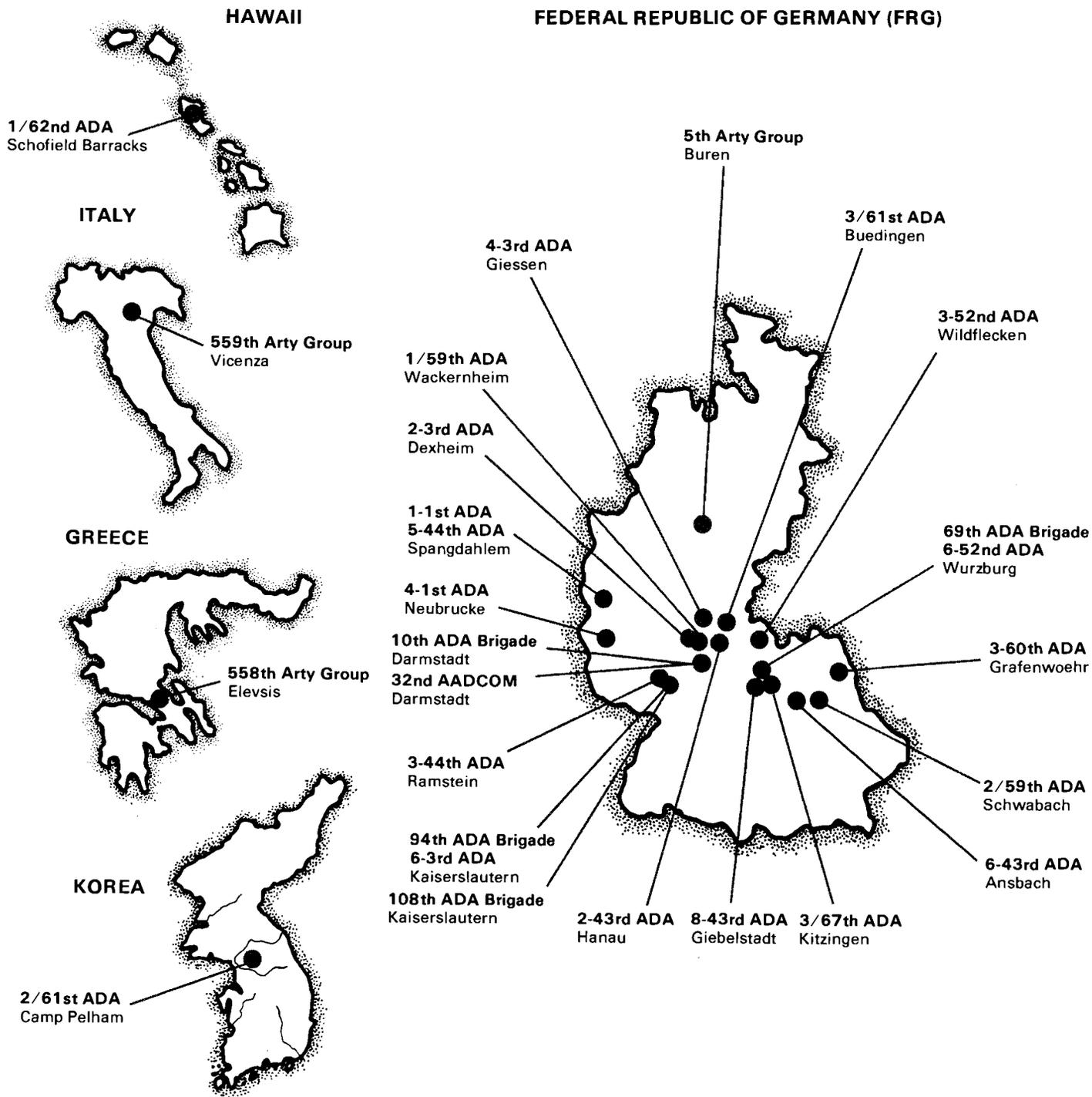
— Lt. Col. Johnnie D. Shaw



# US Army ADA Components Continental United States (CONUS)



# US Army ADA Components Outside Continental United States (OCONUS)



# Outside Continental United States (OCONUS)

## 32nd Army Air Defense Command

**"The best air defense network in the world"**

by Maj. Gen. James C. Cercy

This is an especially exciting time to be a part of the 32nd Army Air Defense Command (AADCOM). It is a constant source of pride and inspiration to me to command such a great organization during this period of unparalleled growth and modernization.

From my perspective as a previous battalion and brigade commander in 32nd AADCOM, I see the strides which have been made in equipping, training and caring for the force. That progress now forms the solid foundation upon which we continue to build to improve our warfighting, training and living standards.

32nd AADCOM soldiers are strong, tough, smart and fully capable of meeting the challenges of an increasingly sophisticated and demanding mission. And they man the best air defense network in the world.

The arrival of the new Patriot battalions has given us tremendously increased firepower. Five battalions are already deployed and are being integrated with our Hawk battalions, and a sixth Patriot battalion has just arrived. Patriot readiness rates far exceed expectations.

Hawk and Patriot interoperability was put to the test last spring during Operation Hammer when Hawk and Patriot fire units from the command's 10th ADA Brigade were airlifted from West Germany to England. During the 30-day operation, our air defenders faced more than 300 "enemy" aircraft which attacked air bases and air defense sites in coordinated continuous waves — a mass raid environment that even the most sophisticated combat simulation trainers



Maj. Gen. James C. Cercy

cannot duplicate. We were extremely pleased with the results of Operation Hammer: not only did Patriot perform admirably working in conjunction with Hawk, but the exercise also produced valuable insights and lessons learned on fighting integrated systems.

In 32nd AADCOM, the Patriot and Hawk battalions are now deployed in a mixed defense in both the forward and rear areas. Fire-

power in the rear area is enhanced with the Chaparral and Vulcan units assigned to our two rear brigades to provide a strong defense of critical assets in the rear combat zone. And Stinger is complementing the firepower of all these systems throughout the command, adding their battle-tested lethality to the weapons' mix.

Veteran air defenders returning to 32nd AADCOM will also notice significant changes in quality of life standards. The facilities built to accommodate the new Patriot battalions feature modern dormitories, comfortable dining rooms and efficient motor pools. The initial ready positions match the excellence of the new weapon system. You would, of course, expect the new Patriot facilities to be top-notch. You will be surprised, however, to discover the extent of improvements made to older facilities.

Gone are the motor parks with vehicles wallowing in the mud. Hawk TAC sites have been drastically improved. There are few TAC sites remaining in 32nd AADCOM without hardstand motor pools, prefabricated support buildings, modern dining facilities and training and recreation facilities. The same is true of our short-range air defense (SHORAD) facilities.



Bravo Battery's, 4th Battalion, 3rd Air Defense Artillery, initial readiness position near Hohenarte, West Germany.



The 4th Battalion, 3rd Air Defense Artillery, motor maintenance facility near Giessen, West Germany.

Training in 32nd AADCOM is still tough and rigorous. It's going to stay that way. But quality of life has improved significantly. The military communities have played a big part in making life better for soldiers assigned to 32nd AADCOM. An aggressive, positive campaign is being waged throughout U.S. Army Europe to upgrade community facilities and housing areas. New shopping centers and

commissaries are going up. New gymnasiums, theaters and arts and crafts centers are being built and older ones are being remodeled.

This translates into a better cared for and better motivated soldier. It adds up to a force that can concentrate on training and thus reach the peak of its warfighting capability. As 32nd AADCOM commander, I get to see a great many soldiers doing a great many jobs, and doing

them extremely well. I am unabashedly proud of today's young air defense soldier, regardless of his or her MOS or grade. The air defense soldier of today is a professional — well educated, eager and motivated. He or she can perform the most demanding task the Army has to offer. More often than not, our 32nd AADCOM soldiers exceed the standards.

The most exciting challenge 32nd AADCOM faces is integrating our soldiers, our air defense weapon systems and our command and control systems into a truly flexible and coordinated defense. We must put all of these factors, the tangible and the conceptual, together in the optimum combination to maintain and further develop the decisive edge in the warfighting capability we now enjoy. With the assets 32nd AADCOM has at its disposal — especially highly motivated soldiers — this challenge will be met. □

## 10th Air Defense Artillery Brigade



Darmstadt, Germany

Col.  
Donald E. Nowland

The 10th Air Defense Artillery Brigade, a composite Patriot and Hawk brigade, provides area air defense coverage in the Central Region of the Federal Republic of Germany with forces from other NATO countries. We provide forward air defense coverage to units located in the V U.S. Corps' area of operations.

During 1987 we participated in the Able Archer, WINTEX, and Operation Hammer training exercises. Operation Hammer marked the first-time integration of Hawk and Patriot battalions.

This year we look forward to taking part

in Reforger 1988 and to the post-deployment build (PDB) enhancement of Patriot.

— Col. Donald E. Nowland

## 4th Battalion, 3rd Air Defense Artillery



Giessen, Germany

Lt. Col.  
David A. Ross

The 4th Battalion (Patriot), 3rd Air Defense Artillery, provides low- to high-altitude air defense coverage in the forward missile deployment zone in the Federal Republic of Germany.

Last year we took part in Able Archer, Crested Eagle, and Central Enterprise. We underwent an Allied Air Forces Central Europe (AAFCE) tactical evaluation and our battalion Army training and evaluation program (ARTEP).

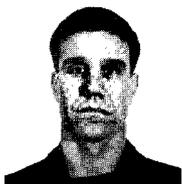
We conducted the first strategic airlift of Patriot equipment to England, and we recorded the highest AAFCE tactical eval-

uation scores for a Patriot unit during FY 87. Our battalion won the Missile Command (MICOM) Toftoy Award for maintenance excellence.

We look forward to the successful completion of this year's battalion ARTEP and AAFCE tactical evaluation. We also will use the newly acquired 32nd AADCOM Patriot conduct of fire trainer (PCOFT) and integrate it into our battalion training plan.

— Lt. Col. David A. Ross

## **2nd Battalion, 43rd Air Defense Artillery**



**Hanau,  
Germany**

*Lt. Col.  
Dennis R. Hutchinson*

The 2nd Battalion (Patriot), 43rd Air Defense Artillery, provides low- to high-altitude air defense in the V U.S. Corps' area of operation.

This past year we became the first Patriot battalion to pass a NATO tactical evaluation. We took part in an ARTEP and we deployed to East Anglica, England, for Operation Hammer, a joint exercise with the U.S. Air Force to test interoperability of Patriot and Hawk systems.

Our dining facility was selected as the "Best Large" dining facility in 32nd

AADCOM, and our battalion S-4 and battery supply won the "Best Supply Operations Award." Our battalion also had the only student, out of 18, to achieve a perfect score on the Stinger missile system.

A majority of the soldiers who deployed with our battalion in June of 1985 will rotate to CONUS this June. We will have a tremendous time-sensitive learning curve for the new soldiers and leaders who must come on board in July and face a NATO tactical evaluation within 90 days.

— *Lt. Col. Dennis R. Hutchinson*

## **3rd Battalion, 52nd Air Defense Artillery**



**Wildflecken,  
Germany**

*Lt. Col.(P)  
Ronald E. Curry*

The 3rd Battalion, 52nd Air Defense Artillery, is a BIAD Hawk battalion deployed along a 100-kilometer front near the Fulda Gap. We perform a 24-hour peacetime defense mission under the operational control of NATO.

During 1987, we participated in several major NATO command post exercises, an ARTEP, and our annual service practice (ASP) in Crete. We also took part in the Reforger exercise and completed an AAFCE evaluation.

One of our most outstanding achievements last year was deploying to England

to take part in Operation Hammer. During this exercise, we demonstrated Patriot and Hawk interoperability against a mass air raid.

Our goals for 1988 include Block 7 Hawk modifications and a Phase II AAFCE tactical evaluation. — *Lt. Col.(P) Ronald E. Curry*

## **69th Air Defense Artillery Brigade**



**Wurzburg,  
Germany**

*Col.  
Robert S. Hardy Jr.*

The 69th Air Defense Artillery Brigade is responsible for low- to high-altitude air defense coverage in VII U.S. Corps and part of the 2nd German Corps.

During 1987, we participated in numerous training exercises including Reforger, WINTEX, Able Archer and Crested Eagle. We also participated in AAFCE tactical evaluations and the Hawk ASP.

Last year we had eight Hawk batteries successfully complete ASPs, and we deployed the 8th Battalion (Patriot), 43rd ADA.

We will deploy the 6/43rd ADA (Patriot) this year. We will also participate in five AAFCE tactical evaluations, seven Hawk ASPs and Reforger 1988.

— *Col. Robert S. Hardy Jr.*

## **6th Battalion, 43rd Air Defense Artillery**



**Ansbach,  
Germany**

*Lt. Col.  
Gregory A. Rountree*

The 6th Battalion, 43rd Air Defense Artillery, provides very low- to very high-altitude air defense in support of NATO forces and assets in the Central European Theater.

We became the seventh Patriot battalion upon our activation in April 1987. Our battalion then completed a demanding Army training and evaluation program and a live-missile firing prior to becoming U.S. Army Air Defense Center certified.

More than 500 soldiers united to produce the success story that began with a spectacular spring activation ceremony, grew

through three major evaluations, and continued when the battalion deployed to Ansbach in the Federal Republic of Germany. Our 91st Maintenance Company was the very first to undergo the collective training program with its supported Patriot battalion. — *Lt. Col. Gregory A. Rountree*



Organizational Day. Soldiers of the 1st Battalion, 1st Air Defense Artillery, take a break in training.

### **8th Battalion, 43rd Air Defense Artillery**

The 8th Battalion (Patriot), 43rd Air Defense Artillery, deployed to Germany last July following center certification.

We will undergo an AAFCE tactical evaluation this year. — *Lt. Col. Joseph Romito*



**Giebelstadt,  
Germany**

*Lt. Col.  
Joseph Romito*

### **6th Battalion, 52nd Air Defense Artillery**

The 6th Battalion, 52nd Air Defense Artillery, is a forward deployed Hawk battalion.

Last year we conducted an ARTEP and an ASP on Crete. We also underwent an AAFCE tactical evaluation.

Ours is the only Hawk battalion in 32nd AADCOM whose every firing battery received "GOs" in all areas during our 1987 ASP.

We are expecting a new mission with 8th Battalion (Patriot), 43rd ADA, and we will undergo a change of command this June.

— *Lt. Col. Charles G. Ronald*



**Wurzburg,  
Germany**

*Lt. Col.  
Charles G. Ronald*

### **3rd Battalion, 60th Air Defense Artillery**

The 3rd Battalion (Hawk), 60th Air Defense Artillery, provides continuous low-to medium-altitude air defense in the NATO forward missile deployment zone within the VII U.S. Corps and 2nd German Corps areas of responsibility.

During 1987, we conducted our battalion ARTEP for record. We also went to Crete for our Hawk and Stinger ASP. We rated an overall "Trained" following our ARTEP for record, and four firing batteries earned a "GO" at the ASP.

Our goals for 1988 include inactivating one firing battery and completing transi-

tion to BIAD Hawk operations. We also plan to successfully undergo an AAFCE Phase II tactical evaluation.

— *Lt. Col. Lawrence E. Wood*



**Grafenwoehr,  
Germany**

*Lt. Col.  
Lawrence E. Wood*

## 94th Air Defense Artillery Brigade



**Kaiserslautern,  
Germany**

*Col.  
Vernon L. Conner*

The 94th Air Defense Artillery Brigade, a composite of Patriot/Hawk and Chaparral/Vulcan battalions plus dedicated and non-dedicated Stinger teams, supports NATO's vital air defense mission in the Federal Republic of Germany.

Our three battalions and the brigade headquarters participated in an ARTEP and tactical evaluations last year. Hawk assault fire units, Chaparral fire units and Stinger teams conducted ASPs on Crete while our Vulcan gunners took ASP at Todendorf Firing Range on the Baltic Sea.

The deployment and integration of our

new Patriot battalion, the 6/3rd ADA, was the highlight of 1987. To round out the year, the 6/3rd passed its NATO tactical evaluation with flying colors. Its scores were the highest, to date, of any European Patriot battalion.

Organizing and training to fight as a fully integrated ADA combat force will be the challenge facing 94th ADA Brigade soldiers throughout 1988.

— *Col. Vernon L. Conner*

## 4th Battalion, 1st Air Defense Artillery



**Neubrucke,  
Germany**

*Lt. Col.  
Jeffrey W. Gault*

The 4th Battalion (Hawk), 1st Air Defense Artillery, provides low- to medium-altitude air defense against high performance threat aircraft in the rear combat zone.

Last year we had Phase I and Phase II AAFCE tactical evaluations. We also conducted a national ARTEP and our ASP at the NATO Missile Firing Installation in Crete.

We had some outstanding achievements during 1987. Our fire control crews received excellent results during a 32nd AADCOM electronic counter-countermeasures (ECCM) evaluation. All

four of our firing batteries conducted ASPs, and we completed a rigorous series of national and NATO exercises and evaluations.

Our goals for this year include successfully completing an AAFCE Phase II tactical evaluation in June and our ASP from July to November. — *Lt. Col. Jeffrey W. Gault*

## 6th Battalion, 3rd Air Defense Artillery



**Kaiserslautern,  
Germany**

*Lt. Col.  
James E. Gustine*

The 6th Battalion, 3rd Air Defense Artillery, is a newly deployed Patriot missile battalion. We provide air defense in the rear combat zone.

Our training goal is to sustain the current level of soldier and unit proficiency with emphasis on developing interoperability procedures to support operations within a mixed air defense brigade including Patriot, Hawk and Chaparral/Vulcan.

In 1987, we deployed 600 soldiers and their families from Fort Bliss, Texas, to Kaiserslautern, Germany. We accepted a

complete set of tactical equipment and peacetime garrison facilities. We trained our battalion to NATO standards and capped off our training with a very successful AAFCE Phase II tactical evaluation last November.

This year we will train for sustained operations within the NATO Air Defense Force with special emphasis on developing tactics and procedures for mixed brigade and battalion operations with Hawk and Chaparral/Vulcan units.

— *Lt. Col. James E. Gustine*

## 2nd Battalion, 60th Air Defense Artillery



**Ramstein,  
Germany**

*Lt. Col.  
Robert W. Tomblin*

The 2nd Battalion, 60th Air Defense Artillery, is a composite Chaparral, Vulcan and Stinger battalion which supports three NATO air bases in the rear combat zone.

During 1987, we participated in an ARTEP and three AAFCE tactical evaluations. We also took part in the Biannual Vulcan Gunnery and ASP at Todendorf, Federal Republic of Germany, our biannual 10-day field training exercise and our Chaparral/Stinger ASP on Crete.

Two of our major achievements last year were the integration of the air battle man-

agement operations center and identification, friend or foe (IFF) live-fly exercises with the Air Force.

This year, our major goal is to integrate Stinger into the battalion's general defense plan.

— *Lt. Col. Robert W. Tomblin*

## 108th Air Defense Artillery Brigade



**Kaiserslautern,  
Germany**

*Col.  
Larry R. Butterworth*

The 108th Air Defense Artillery Brigade provides integrated surface-to-air missile air defense and SHORAD to destroy hostile aircraft attempting to penetrate the Eifel region of West Germany. We provide air surveillance support to 4ATAF main operational bases and divisional Chaparral/Vulcan units as directed.

Last year we participated in major NATO field training exercises and AAFCE tactical evaluations. We also conducted Hawk, Patriot, and SHORAD ARTEPs and Hawk, Chaparral/Vulcan and Stinger ASPs.

In 1987, we became the first fully operational composite ADA brigade in NATO (Patriot, Hawk, Chaparral/Vulcan and Stinger). Our goal for 1988 is to successfully orchestrate a fully composite brigade ARTEP.

— *Col. Larry R. Butterworth*

## 1st Battalion, 1st Air Defense Artillery



**Spangdahlem,  
Germany**

*Lt. Col.  
Ian T. Patterson*

The 1st Battalion (Hawk), 1st Air Defense Artillery, provides 24-hour low- to medium-altitude air defense coverage for the rear combat zone.

During 1987, we participated in Central Enterprise, Able Archer and WINTEX. We also conducted our ASP and ARTEP. We completed AAFCE tactical evaluations Phases I and II.

Last year our battalion had the highest ECCM composite score in 32nd AADCOR's history — 356.2. Our CFC pledged contributions for 1988 were over \$19,000.

In 1988, we will participate in AAFCE tactical evaluation Phase II. We will continue to fulfill our motto: "1 over 1 in 1/1."

— *Lt. Col. Ian T. Patterson*

## 2nd Battalion, 3rd Air Defense Artillery



**Dexheim,  
Germany**

*Lt. Col.  
David C. Hawkins*

The 2nd Battalion, 3rd Air Defense Artillery, is a European deployed Patriot air defense battalion which supports NATO air defense missions.

Last year we conducted an ARTEP and participated in AAFCE tactical evaluations.

After our initial deployment last August, we completed site certification in December. Our ground plan certification officially posted 2/3rd ADA as a participating air defense battalion to the NATO defenses. To culminate 1987, we received a successful AAFCE tactical evaluation.

Our goals for 1988 include expanding our air defense knowledge in the NATO environment and conducting field training exercises using the Patriot and Hawk cluster concept.

— *Lt. Col. David C. Hawkins*

## 5th Battalion, 44th Air Defense Artillery



**Spangdahlem,  
Germany**

*Lt. Col.  
William P. Fackner Jr.*

The 5th Battalion, 44th Air Defense Artillery, was redesignated the 5/44th ADA in March. We provide short-range air defense for three U.S. Air Force tactical fighter bases (Spangdahlem, Bitburg and Hahn) in the northern defense zone of the rear combat zone in Central Europe.

We had several outstanding achievements last year. 1987 marked the third straight year a platoon participated in the annual Nijmegen March. Ours was the best M-60 machine gun team in 32nd AADCOR. We held the first joint Chaparral/Rapier exercise during Cen-

tral Enterprise '86. We had the first air defense platoon to attend the French Commando School — and the only platoon in the school's history to graduate every soldier that started the course.

This year we will send platoons to the Nijmegen March, the French Commando School, the Platoon Confidence Training Course and the British Joint Warfare School. We will also join in Operation Hammer with the British and in Reforger 1988.

— *Lt. Col. William P. Fackner Jr.*



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## **DIVISIONAL AIR DEFENSE ARTILLERY**

### **1st Battalion, 59th Air Defense Artillery**



**Wackernheim,  
Germany**

*Lt. Col.  
Kenneth E. Fess*

### **8th Infantry Division**

The 1st Battalion, 59th Air Defense Artillery, deters aggression; failing deterrence, we destroy hostile aircraft operating in the 8th Infantry Division (Mechanized) area of operations.

Last year we conducted a Vulcan gunnery and a Chaparral/MANPAD ASP, and we underwent combined arms training at Hohenfels. We also began using the Stinger under armor (STUNAR) concept. We won the Toftoy Award for August 1986 to 1987 (a worldwide award for the best Chaparral/FAAR unit).

This year we look forward to taking part in the Reforger '88 training exercise.

*— Lt. Col. Kenneth E. Fess*

### **2nd Battalion, 59th Air Defense Artillery**



**Schwabach,  
Germany**

*Lt. Col.  
William L. Carr*

### **1st Armored Division**

The 2nd Battalion, 59th Air Defense Artillery, provides short-range air defense for the elements of the 1st Armored Division.

Last year we held an annual live-fire in Crete, and we became the first unit to conduct aerial gunnery in Grafenwoehr instead of Todendorf. We also conducted ground gunnery with squad and platoon evaluations at Grafenwoehr. We participated in the Ironstar exercises (for which

the 1st Armored Division is so well known) at Hohenfels, successfully completing our ARTEP during Iron Forge I.

Our battalion makes community service one of its top priorities. Our efforts of the year were rewarded when we won the Streamer Award for community services in Schwabach, awarded by the defense minister of Bavaria.

This year we look forward to taking part in more Ironstar training exercises. We will continue to conduct the combat realistic training that enables our battalion to train more realistically than most other ADA units.

*— Lt. Col. William L. Carr*

## **2nd Battalion, 61st Air Defense Artillery**



**Camp Pelham,  
Korea**

*Lt. Col.  
William L. Bond*

## **3rd Battalion, 61st Air Defense Artillery**



**Buedingen,  
Germany**

*Lt. Col.  
George H. Selden Jr.*

## **1st Battalion, 62nd Air Defense Artillery**



**Schofield  
Barracks,  
Hawaii**

*Lt. Col.  
Frank L. Powell III*

## **3rd Battalion, 67th Air Defense Artillery**



**Kitzingen,  
Germany**

*Lt. Col.  
Robert B. Clarke*

## **2nd Infantry Division**

The 2nd Battalion, 61st Air Defense Artillery, provides low-altitude air defense for the 2nd Infantry Division's maneuver units and critical assets.

Last year we participated in the Autumn Haze, Brisk Spirit, Dragonslayer and Team Spirit training exercises. We began our reorganization to the Army of Excellence, thus creating the largest U.S. air defense battalion consisting of three self-propelled Vulcan/Stinger batteries and two Chaparral batteries.

1987 saw our battalion put Stinger on

## **3rd Armored Division**

The 3rd Battalion, 61st Air Defense Artillery, is a forward deployed SHORAD battalion defending the assets of the 3rd Armored Division.

Last year we went to Crete for an ASP and to Todendorf, Germany, for our Vulcan ASP. We went to Grafenwoehr, Germany, for a ground-fire exercise. We also participated in two major 3rd Armored Division FTXs at Hohenfels, Germany.

Last year we recorded the highest scores in USAEUR gunnery firings. We held the

## **25th Infantry Division**

The 1st Battalion, 62nd Air Defense Artillery, provides limited air defense in general support of the light infantry division against low-altitude hostile aircraft in a low-, mid- or high-intensity conflict. Ours is the home station of the 62nd Regiment, the first ADA regiment ever activated.

Our battalion is one of the most often deployed battalions in the world. Last year we took part in numerous exercises,

## **3rd Infantry Division**

The 3rd Battalion, 67th Air Defense Artillery, is a Chaparral/Vulcan/Stinger battalion in support of the 3rd Infantry Division (Mechanized).

Last November and December we held our battery FTXs at the Hohenfels Training Area. Our battalion ARTEP took place in January and our ammunition upload was held in February. One hundred percent of our Vulcan and Chaparral squads and Stinger teams qualified to STRAC standards.

the demilitarized zone, restructure the Class V unit basic load, develop new war plans and accomplish habitual association of batteries to major subordinate commands.

This November we will redesignate to the 5/5th ADA. We look forward to providing support for the 1988 Olympics in Seoul.

— Lt. Col. William L. Bond

largest single German/American partnership unit ceremony, and we received the USAEUR battalion partnership award with the 5th German Flak Regiment, 5th Panzer Division.

This year we look forward to taking part in our battalion ARTEP during Reforger '88 this September.

— Lt. Col. George H. Selden Jr.

including Team Spirit, Korea; Barking Sands, Kauai; Cope Thunder, Phillipines; Pitch Black, Australia; Cobra Gold, Thailand; and Orient Shield in Japan.

We won the 1987 Toftoy Award for Top FAAR Maintenance, and our battalion became the first to train and fire on the advanced Stinger POST subsystem.

This year we look forward to participating in not only the same exercises as last year, but new exercises as well. Aim High!

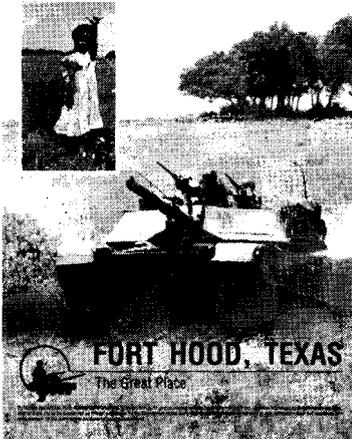
— Lt. Col. Frank L. Powell III

This year we look forward to both our Chaparral/Stinger annual gunnery on Crete and our Vulcan ground and aerial gunnery next August. We will conduct our battalion FTX as part of Reforger '88.

— Lt. Col. Robert B. Clarke

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## 5th United States Army Artillery Group



**Buren,  
Germany**

*Lt. Col.  
Albert W. Beaton III*

## 59th Ordnance Brigade

The 5th U.S. Army Artillery Group provides custodial support and maintenance for Nike/Hercules weapon systems in NATO. We are the most geographically dispersed group in Germany, at one time having 11 detachments spread from Frankfurt to the North Sea. We now have five detachments spread throughout Germany.

1987 saw us successfully pass seven Nuclear Weapons Technical Inspections (NWTIs). We took part in both the Able Archer and Crested Eagle exercises. Our combination U.S. and Dutch team took first place in the interoperability phase of the 59th Ordnance Brigade Tactical Operations Tournament.

We are scheduled to deactivate this year. Some of our detachments will close this spring and some this summer. Our headquarters will deactivate this fall. With our deactivation, the era of Nike/Hercules in Germany will come to an end.

— Lt. Col. Albert W. Beaton III

## 558th United States Army Artillery Group



**Elevisis,  
Greece**

*Col.  
Frank L. Miller Jr.*

The 558th U.S. Army Artillery Group is an artillery support group with assigned ADA personnel. The command alternates between Field Artillery and Air Defense Artillery officers. The 558th U.S. Army Artillery Group is presently under the command of Col. Frank L. Miller Jr., a Field Artillery officer.

## 559th United States Army Artillery Group



**Vicenza,  
Italy**

*Col.  
Tommy J. Smith*

The 559th U.S. Army Artillery Group is an artillery support group assigned to USASETAF and committed to NATO. We support Italian army and air force units.

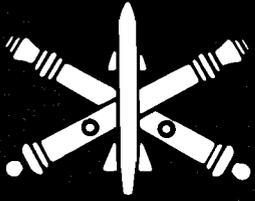
Last year we took part in the Dense Crop and Able Archer training exercises. We also underwent NATO tactical evaluations and operational readiness tests, unit ARTEPs and U.S. Army Europe (USAEUR) surety inspections. We received "combat ready" ratings on all of our NATO and USAEUR evaluations.

During 1987, we had two Morales Club inductees and we won both the SETAF

Reenlistment award and the USAEUR Best Small Mess award. We conducted a St. Barbara's Day Artillery Review with Maj. Gen. Donald W. Jones, the TAPA commander, as reviewing officer and guest speaker.

Our 1988 goals include developing a five-year master plan to upgrade our facilities, improving our unit training and ARTEP programs, relocating a Field Artillery detachment and improving our "People Support" programs at remote sites.

— Col. Tommy J. Smith



# US Army National Guard Components Continental United States



# US Army National Guard Air Defense Artillery



A B Battery, 3rd Battalion, 200th Air Defense Artillery, M-42 fire unit crosses the Black River at Fort Drum, N.Y. Personnel from the 50th Armored Division's boat crossing company provide assistance.

## 111th Air Defense Artillery Brigade



Albuquerque,  
New Mexico

Brig. Gen.  
George W. Treadwell

The 111th Air Defense Artillery Brigade, a New Mexico National Guard unit, provides air defense to the corps asset units.

During 1987 our A Battery, 1st ADA, became the first all-Chaparral reserve unit validated as operational with their recently assigned missile system. We also took part in the El Paseo Al Sur training exercise. This marked the first time in 20 years that five ADA battalions simultaneously underwent a complete mobilization exercise. We coupled this with a rail loading exercise that allowed New Mexico guardsmen to load their M-42 Dusters onto flat

cars for shipment.

This year we look forward to receiving more Chaparral weapon system equipment and developing and administering Army training and evaluation programs (ARTEPs) for our pure Chaparral batteries. Brigade personnel will conduct sorties (based on the ARTEPs) down to battery level. These sorties will provide units with dynamic training and create a sense of competition. — Brig. Gen. George W. Treadwell

## 1st Battalion, 200th Air Defense Artillery



Roswell,  
New Mexico

Lt. Col.  
Max Johnson

## 49th Armored Division

The 1st Battalion (Chaparral) (SP), 200th Air Defense Artillery, reinforces the ADA elements of committed divisions and provides air defense for forward combat elements, areas or installations against low-to medium-altitude hostile aircraft.

Last year we fired six Chaparral missiles and scored six hits. We took part in the El Paseo Al Sur exercise and our A Battery passed their external ARTEP.

This year we plan to pass the ORS at

Fort Bliss, Texas, and obtain 100-percent MOS qualification. — Lt. Col. Max Johnson

## **2nd Battalion, 200th Air Defense Artillery**



**Las Cruces,  
New Mexico**

*Lt. Col.  
Jack R. Fox*

## **3rd Battalion, 200th Air Defense Artillery**



**Belen,  
New Mexico**

*Lt. Col.  
Wilbur J. Boegli*

## **4th Battalion, 200th Air Defense Artillery**



**Clovis,  
New Mexico**

*Lt. Col.  
Rodney N. Bouffard*

## **6th Battalion, 200th Air Defense Artillery**



**Springer,  
New Mexico**

*Lt. Col.  
Gene Sisneros*

## **47th Infantry Division**

The 2nd Battalion (AW) (SP), 200th Air Defense Artillery, is a National Guard unit that provides air defense for forward combat elements against low-altitude hostile aircraft. We destroy hostile targets on land or water as required.

Last year we participated in the El Paseo Al Sur mobilization exercise, Proud Scout and Cascade Peak.

Our battalion attained 85 percent mobilization readiness during the El Paseo Al

Sur mobilization exercise. We also satisfactorily completed the 5th Army Command Readiness Inspection.

Our goal for 1988 is to transition to a Chaparral battalion.

*— Lt. Col. Jack R. Fox*

## **50th Armored Division**

The 3rd Battalion, 200th Air Defense Artillery, provides low-altitude air defense for U.S. Army Corps.

Last year we took part in the El Paseo Al Sur and Proud Scout mobilization exercises. We also participated in Base Apache, a brigade-level automated simulation exercise.

Our battalion's combat rifle team won the Adjutant General's state 1986-1987 combat rifle championship and went on to

place second in the Winston P. Wilson national matches. We have had eight soldiers win the Governor's Twenty Award and two win the Department of the Army Excellence in Competition Award.

This year we will undergo new equipment training on the Chaparral missile system, which we hope to receive by November.

*— Lt. Col. Wilbur J. Boegli*

## **40th Infantry Division**

The 4th Battalion, 200th Air Defense Artillery, is a National Guard unit that provides low-altitude air defense for the 40th Infantry Division (Mechanized).

Our battalion was reorganized in 1986. Since then, our MOS qualification rate has increased from 10 to 80 percent.

During 1987, we conducted a very successful Chaparral annual service practice. We also came to the aid of our citizens when our B Battery was called out during

severe weather conditions to help stranded motorists. As usual, B Battery personnel performed in an outstanding manner.

This year C Battery is scheduled to complete operational readiness status. Next year our battalion will participate in the Yama Sakura XIII and Team Spirit exercises.

*— Lt. Col. Rodney N. Bouffard*

## **XVIII Airborne Corps**

The 6th Battalion, 200th Air Defense Artillery, provides low- to medium-altitude air defense to corps level assets and reinforces the air defense elements of committed divisions.

Ours is the youngest New Mexico Army National Guard battalion. During 1987, we established and implemented our 16P transition training, and we successfully completed MOS qualification of several personnel. We also set up and used several

military and civilian education programs to upgrade GT scores and civilian education levels.

This year we plan to complete MOS qualification of our 16P personnel and complete our warrant officer candidate nominations. We will nominate at least eight Officer Candidate School participants. We also plan to emphasize our Recruiting and Retention programs and to establish another organizational maintenance site.

*— Lt. Col. Gene Sisneros*

## 7th Battalion, 200th Air Defense Artillery



Rio Rancho,  
New Mexico

Lt. Col.  
Daniel F. Cortez

## TUSA

The 7th Battalion (Hawk), 200th Air Defense Artillery, was officially activated November 15, 1986.

As the Army National Guard's first Hawk battalion, our unit recently completed its equipment fielding under the Total Package Unit Material Fielding (TPUMF) Program. The 7/200th ADA has grown to 75 percent of its authorized strength and has 210 active Guard Reserve full-time soldiers.

MOS qualification and Hawk maintenance training continue to be our primary training objectives as we work toward initial operational capability and an assignment as a corps air defense asset.

— Lt. Col. Daniel F. Cortez

## 164th Air Defense Artillery Brigade



Orlando,  
Florida

Col.  
Richard G. Capps

The 164th Air Defense Artillery Brigade is both a tactical and an administrative organization providing command operational control and administrative support for its subordinate ADA battalions. Through our ADA operations center, I can control air battle tactical operations in a corps area. This control, once established, provides the corps tactical units freedom of movement in the tactical zone.

Last year we became organized and had our first weekend training. Our headquarters increased from 11 to 76 personnel by January.

In February we reorganized as a heavy corps ADA brigade with an increase in authorized strength of the headquarters from 114 to 125.

Our goal is to reach 100 percent of our authorized strength by June, and to continue developing individual soldier skills and MOS qualification.

— Col. Richard G. Capps

## 1st Battalion, 265th Air Defense Artillery



West Palm  
Beach,  
Florida

Lt. Col.  
H. Dan Randall

## 42nd Infantry Division

The 1st Battalion, 265th Air Defense Artillery, 164th ADA Brigade, serves with the 42nd Infantry Division. Our corps Chaparral battalion provides air defense for corps combat elements or installations against attack from high-speed, low-altitude hostile aircraft.

1987 saw us conduct our final division-level M-42 Duster training and our last firing as a Duster battalion.

Our goal for this year is to make a mass

MOS-level qualification transition from 16F (Duster) to 16P (Chaparral). We also plan to reorganize and relocate our headquarters to Daytona Beach, Fla.

— Lt. Col. H. Dan Randall

## 2nd Battalion, 265th Air Defense Artillery



Orlando,  
Florida

Lt. Col.  
John C. Spencer

## TUSA

The 2nd Battalion, 265th Air Defense Artillery, 164th ADA Brigade, supports the Third U.S. Army (TUSA). We provide air defense for forward combat elements, areas or installations against low- to medium-altitude hostile aircraft and reinforce the air defense elements of committed divisions.

Last year we activated the battalion under carrier unit identification code, which authorized it to recruit and train. By

the end of the year we had four commissioned officers in school, 12 MOS-qualified enlisted personnel on board and 94 people on a waiting list for full-time manning.

This year we will work with the U.S. Army Missile Command to refine the Materiel Fielding Plan. We will acquire our required full-time manning and focus our energy on recruiting logistics and maintenance personnel.

— Lt. Col. John C. Spencer

## **3rd Battalion, 265th Air Defense Artillery**



**West Palm  
Beach,  
Florida**

*Maj.  
Douglas S. Evaul*

The 3rd Battalion, 265th Air Defense Artillery, 164th ADA Brigade, is a corps Chaparral battalion providing air defense for corps combat elements or installations against attack by high-speed, low-altitude hostile aircraft.

1987 saw us conduct our final division-level M-42 Duster training and our last firing as a Duster battalion.

This year we will make a mass MOS-level qualification transition from 16F (Duster) to 16P (Chaparral). Our battalion is unique in that it is a reverse round-out: this year we will assume command and

control of two Active Component ADA batteries in Korea. — *Maj. Douglas S. Evaul*

## **3rd Battalion, 111th Air Defense Artillery**



**Portsmouth,  
Virginia**

*Maj.(P)  
Jerry A. Pettersson*

## **28th Infantry Division**

The 3rd Battalion, 111th Air Defense Artillery, is a Duster/Stinger battalion that supports the 28th Infantry Division and is under the administrative control of the 29th Infantry Division (Light).

Last year we began our transition to a gun/Stinger battalion. We also scored 100 percent on our crew qualification aerial gunner ARTEP.

This year we will complete our transition to a gun/Stinger battalion and we

look forward to a complete external ARTEP. — *Maj.(P) Jerry A. Pettersson*

## **2nd Battalion, 174th Air Defense Artillery**



**Athens,  
Ohio**

*Lt. Col.  
David T. Hartley*

## **38th Infantry Division**

The 2nd Battalion, 174th Air Defense Artillery, is an M-42 "Duster" battalion in support of the 38th Infantry Division in Indianapolis, Indiana (Indiana National Guard).

Last year we participated in our first National Guard division-level CFX. We conducted a complete crew-served weapons qualification to include M-42 surface (ground-direct) fire during IDT MUTA-5 weekend, and participated in division

FTXs in conjunction with our own organic IDT.

Our battalion ranked second out of 20 battalion-size elements in retention percent in the Ohio National Guard. We satisfactorily achieved all of our standards according to NGR 10-1.

This year we begin our transition to a Hawk battalion while maintaining our capstone mission — readiness to 38 ID.

— *Lt. Col. David T. Hartley*

## **1st Battalion, 188th Air Defense Artillery**



**Grand Forks,  
North Dakota**

*Lt. Col.  
Arthur W. Perleberg*

## **6th Infantry Division**

The 1st Battalion, 188th Air Defense Artillery, is the round-out battalion to the 6th Light Infantry Division at Fort Wainwright and Fort Richardson, Alaska.

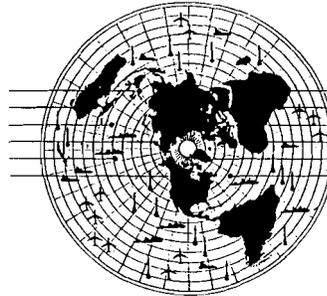
Our battalion will activate this October and pick up our equipment at the same time. Our immediate goals include individual MOS training and qualification and completing our conversion from an engineer to an ADA battalion.

— *Lt. Col. Arthur W. Perleberg*

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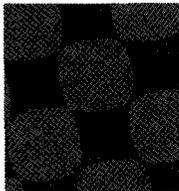
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**1st Battalion,  
202nd Air Defense  
Artillery**



**Springfield,  
Illinois**

*Lt. Col.  
Randolph R. Harrison*

**2nd Battalion,  
263rd Air Defense  
Artillery**



**Anderson,  
South Carolina**

*Lt. Col.  
William G. Butts Jr.*

**47th Infantry Division**

The 1st Battalion, 202nd Air Defense Artillery, will organize this September. We are presently scheduled to be a Stinger battalion.

The 1/202nd is the ADA battalion for the 47th Infantry Division, which has been working closely with the 7th Infantry Division (Light), Fort Ord, Calif., under the FORSCOM partnership program.

Our goal for the next two years is indi-

vidual training to bring our soldiers to MOS qualification.

— Lt. Col. Randolph R. Harrison

**26th Infantry Division**

The 2nd Battalion, AW (SP)/MANPAD, 263rd Air Defense Artillery, is a Duster/Stinger battalion in support of the 26th (Yankee) Infantry Division.

Last year one of our batteries participated in winter operations training at Camp Ripley, Minnesota. Our other batteries and elements trained at Fort Stewart, Ga.; Camp Blanding, Fla.; Fort Lewis, Wash.; Fort Drum, N.Y.; Fort Campbell, Ky.; and Fort Bragg, N.C.

We underwent a major reorganization from a pure Duster battalion to a gun/

Stinger battalion in 1987. Our battalion cadre qualified as Stinger instructors at Fort Bliss, Texas, and conducted MOS qualification training for battalion Stinger gunners at Fort Campbell, Fort Stewart and Fort Bragg.

This year we will take part in annual training exercises at Fort Stewart and Camp Blanding, and look forward to traveling to Gagetown, New Brunswick, Canada, for another. Our elements will participate in exercises at Fort Lewis, Fort Bragg, Fort Devens and the Federal Republic of Germany.

— Lt. Col. William G. Butts Jr.



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**SGM James W. Landingham**

# ADA Association Registers 100-Percent Growth Rate

**T**he Air Defense Artillery Association membership roster listed only 200 names at the beginning of 1987. We ended the year with more than 2,000 members. That's a 100-percent growth rate, and membership is steadily increasing.

Ever wonder why more people are joining the association? The reason is simple. Today, there's a lot more to gain by becoming an association member.

In September, we signed a contract with Capital Publishing Company of Austin, Texas, for the publication of the first Air Defense Artillery Yearbook. The yearbook contains full-color photography, something that's banned in official Army publications, and photographs of each ADA commander down to battalion level, something also forbidden by regulations that govern official Army publications.

Each association member received a free personal copy and we distributed thousands of free copies to ADA units around the world.

Last year, we also published the first ADA Association newsletters. The "First to Fire" newsletters, mailed free to association members, contain information and esprit de corps material which official Army publications are no longer allowed to print.

The association continued other popular programs. We recognized distinguished ADA graduates of the Basic and Advanced NCO courses and we awarded the ADA Association sabre to the United States Military Academy graduate who ranked highest among cadets selecting Air Defense Artillery as their branch of service. We will soon expand our program to recognize excellence in other areas of the ADA profession.

We also continued to perform our duties as the sole ADA manager for the Order of Saint Barbara. The association, through the Commanding General, U.S. Army Air Defense Artillery Center and Fort Bliss, is registered with the Field Artillery Association as the single approv-

ing authority for all ADA accessions to the Order of Saint Barbara. We have recently opened the order up to more air defenders.

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

Nominations for the Ancient Order may be submitted by anyone at any time; however, a nomination requires substantial supporting data, a review by a board of colonels and personal approval by the Chief of Air Defense Artillery. A nomination for the Honorable Order requires only the endorsement of an O5 or higher commander.

Every professional needs to belong to an organization that supports the professional development of its membership. The ADA Association is for everyone — enlisted and officers alike.

Our goals are to support the Air Defense Artillery Museum, promote the history and traditions of Air Defense Artillery, build a sense of pride in the branch and direct the activities of the Order of Saint Barbara.

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 \$15 gift pack that every new member receives is unique to our association; no one else offers such gratuities. We also offer corporate memberships.

The new \$10 associate membership fee allows the young soldier to join the Association for a two-year period, take part in our activities and taste a little of what it means to be a part of our group. Yet this form of membership does not provide for any gifts nor the direct mailing of our First to Fire newsletters.

You can help the association reach its full potential quickly by purchasing a lifetime membership, or, if you've already joined, by persuading others to purchase a membership.

The ADA Association needs you just as we think you need the association. There is strength and power in numbers. With members come the dollars needed to expand our programs and help each other.

## ADA Association Gift Shop

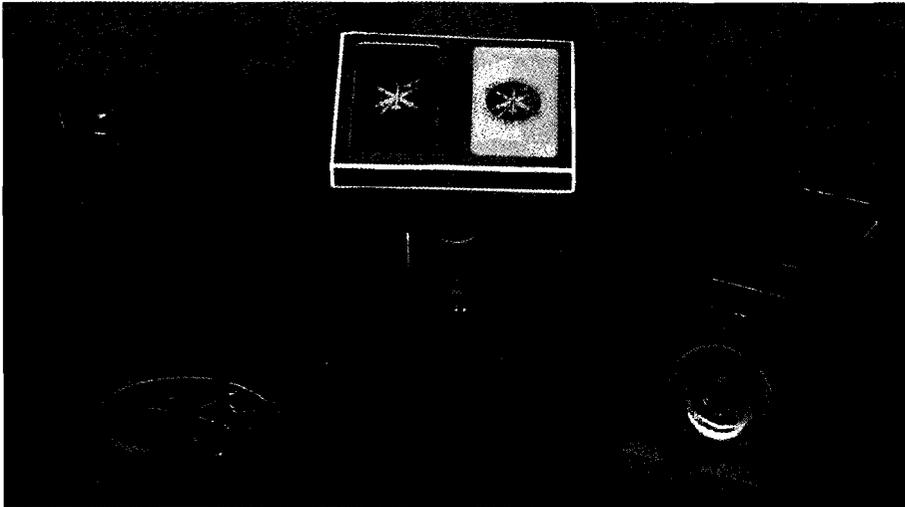
The association provides air defenders with their own company store — the Air Defense Artillery Association Gift Shop. The gift shop is loaded with specially designed logo items from the legendary cartoon pen of the late Col. Robert Matlick.

The inventory includes ADA T-shirts, baseball caps, bumper stickers, patches, aprons, coffee mugs and belt buckles. 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 is open weekdays, 10 a.m. to 4 p.m. For more information, call (915) 568-5412 or write to: ADA Association Gift Shop, Bldg. 5000, Pleasonton Road, Fort Bliss, Texas 79916.

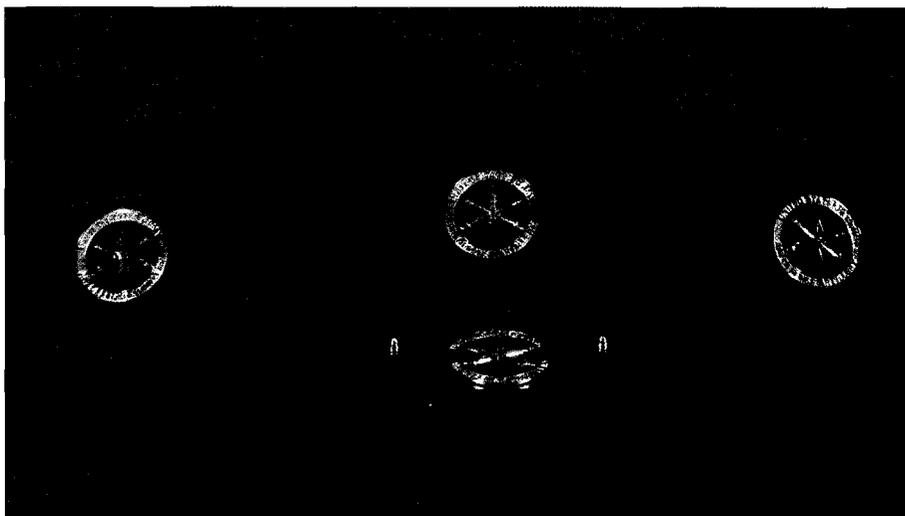


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### Yearbook Copies Still Available

Personal copies of the Air Defense Artillery 20th Anniversary Yearbook have been mailed to all ADA Association members. We also distributed thousands of free copies to ADA units around the world.

The ADA Association has a limited number of copies still available. You can order your personal copy by mailing a \$5.00 check or money order to the ADA Association Gift Shop, Bldg. 5000, Pleasonton Road, Fort Bliss, Texas 79916.

T-shirts: red background with "First to Fire" logo or yellow background with "If it flies . . . it dies!" logo

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U.S. Army's Fiber Optic Guided Missile (FOG-M) uses a new winding technology to deploy its plastic-coated glass fiber. This fiber permits a two-way jam-proof communication link for transmission of television-like pictures of enemy armor and helicopters to a gunner station located in a protected position. Using technologies learned from 20 years of producing Tube-launched, Optically tracked, Wire-guided (TOW) missiles, Hughes Aircraft Company engineers developed a method of precisely winding optical strands so that they can be dispensed at missile velocities without interruption of the data transmission. Because the optical fibers are not much larger than the thickness of a strand of human hair and are elastic and pliable, Hughes invented a device which precisely measures the elasticity of each fiber thus allowing it to be spool-wound with precision. Another Hughes technological advancement is a diagnostic instrument that detects defects in the fiber.

Long-range artillery, mortar, and rocket launcher positions can now be quickly located by U.S. Army troops from beyond the weapons' maximum ranges with the Hughes AN/TPQ-37 Firefinder. The highly mobile radar, currently in production for the Army and several friendly nations, operates so rapidly that it needs only to track a shell or rocket for a few seconds to determine its point of origin, even during barrages when it has to track many projectiles at the same time. It has the power and refined discriminants needed to reject clutter and to track objects with low radar cross sections. AN/TPQ-37 can also provide impact locations, thus allowing counterfire on the highest priority targets. Built-in test equipment prints out fault locations so that most repairs can be made in the field.

A Norwegian air defense system will carry the same thermal imaging system that lets U.S. Army M1 Abrams tank crews see through darkness, smoke, and haze. The infrared thermal imaging device, built by Hughes, will be incorporated into the Norwegian Adapted Hawk (NOAH) system. NOAH uses a Hughes surveillance and acquisition radar to detect incoming targets over great distances. The radar data is then relayed to a high-power illuminator radar and the Norwegian Tracking Adjunct System (NTAS). The NTAS contains a day/night thermal imaging system, autotrack processing capability, and a stabilized head mirror, and can track incoming targets while maintaining radar silence. Unlike radar, however, it cannot be jammed. The NTAS provides automatic tracking and recognition of targets at long ranges which reduces the Hawk's vulnerability to anti-radiation missile attacks.

Hovering helicopters and fast low-flying aircraft can be detected quickly and precisely by a mobile battlefield radar. The Low Altitude Surveillance Radar, TPQ-36A, is an advanced radar designed to help protect front-line troops and armor. It radiates pencil-thin beams from an electronic-scanning, rotating antenna to provide 360-degree coverage. The TPQ-36A detects threats the moment they pop up on the horizon, filtering out clutter caused by terrain or electronic countermeasures. Hughes is building TPQ-36A systems for use with Norwegian Hawk anti-aircraft missiles.

A network of "smart" digital battlefield radios provides accurate battlefield positions to U.S. Marines and their commanders, letting them know at all times where they and friendly forces are located. The Position Location Reporting System (PLRS), developed by Hughes for the U.S. Army and Marine Corps, consists of master stations, and specialized radios that can be hand carried by a Marine in the field, mounted in vehicles or aboard aircraft. PLRS weighs approximately 23 pounds, and includes a battery, antenna, and readout device. Master stations include a radio and computer suite, are self-contained except for prime power, and designed for rapid deployment by ground vehicles or aircraft.

For more information write to: P.O. Box 45068, Los Angeles, CA 90045-0068



success, until hostilities have commenced. That's too late. Everyone loses. Since World War II, our nation has enjoyed air supremacy in every hostility. The result is many two-dimensional combat arms brethren. Your mission — add to their decision process the third dimension.

We've made great progress with some branches and units. Long way to go with others. Accept reality — salesmanship for an air defender must be a way of life. Make it happen.

### ADA School

***If we are to continue to prosper and flourish as a branch, we must have a center for excellence. This center of excellence must be the Air Defense Artillery School at your home, Fort Bliss, Texas.***

Excellence through high standards is an acquired skill. Excellence in warfighting is our business. Teaching excellence in warfighting is the business of your ADA School.

Proud to report that, in most arenas, your schoolhouse is doing great things. A key reason is the shift to small-group instruction.

The Officer Advanced Course (OAC) and Advanced Non-commissioned Officer Course (ANCOC), with the exception of lectures by subject-matter experts, is 100 percent small-group instruction.

The Officer Basic Course (OBC) is about 60 percent small-group instruction with strong mentorship by experienced leaders throughout.

In all courses, the focus is on combined arms knowledge, leader development and technical excellence. The basic curricula has been changed to emphasize combined arms knowledge. Figure 3 illustrates a 50-percent increase in combined arms and tactics that is representative of this shift.

Technical excellence is ensured

by technical modules designed for the specific officer. For example, officers destined for assignment to Patriot units attend the entire 12-week Patriot module.

Leadership development is inherent in everything we do from the PT field to the classroom. Our Combined Arms and Tactics Department (CATD) is totally integrated with the organizational chain of command. CATD majors give PT to their OBC platoons and teach them by example. I personally selected the commanders of the OAC and OBC batteries. Capt. Mike Slotnick, C Battery (OAC), 1st Battalion, 6th Air Defense Artillery, and Capt. Harry McIntosh, A Battery, 1st Battalion, 6th Air Defense Artillery, are successful former battery commanders on their second command tour. They were picked for their present duty while serving as OAC small-group leaders. They are role models for everyone to emulate.



Capt. Mike Slotnick

Capt. Harry McIntosh

Much done. Much remains to be done in the schoolhouse, but we have made a good start. Your challenge in the field is to take the motivated officers or non-commissioned officers that leave your schoolhouse and *continue to challenge them to exceed or, as a minimum, maintain the standards they acquired in the schoolhouse.*

We are doing our best to sustain the soldier by fielding quality equipment and by maintaining quality equipment through product

improvement programs. We are also determined to restructure ADA career management fields (CMFs) to see that ADA soldiers get an even shot at promotion.

### Quality Equipment & Quality Soldiers

***Quality soldiers deserve quality equipment. Quality equipment won't win the next war for us unless we field and care for quality soldiers.***

ADA must maintain the proper balance between fielding new systems and product-improving those already fielded. This continues as our basic approach for both the forward area air defense (FAAD) system and the high-value air defense (HIVAD) families of weapons.

FAAD is an arena of amazing progress. This progress is the result of many dedicated soldiers found on the Department of the Army staff, at Fort Bliss, and at the FAAD Program Executive Office, Huntsville, Ala., headed by Brig. Gen. Bill Fiorentino. Some of the highlights:

- Pedestal-mounted Stinger (PMS). Boeing's Avenger under contract. First PMS unit fielded April 1989, about three years from requirements definition — an Army record!
- Air Defense Anti-tank System (ADATS). Under contract. First unit fielded FY 90, about three-and-a-half years from requirements definition. Field name of "Linebacker." Troops will enjoy naming their systems.
- C<sup>2</sup>I. Software under contract and good progress made by quality firm. With luck, a radar "sense-off" within the next year. Emphasis continues on fielding a suite of active and passive sensors to solve the identification problem.
- Fiber-optic Guided Missile (FOGM). Some dollar reductions held up publishing the request for industry proposals. Plan is to have a request for proposals on the street soon and



## **IT'S HARD TO WIN WITHOUT A LAST LINE OF DEFENSE.**

Going without a last line of defense isn't very sound strategy — whether playing hockey or designing a strategic defense.

That's why the Army's High Endoatmospheric Defense Interceptor (HEDI) project could be an important contributor to the Strategic Defense Initiative. The HEDI project is validating technology for a ground-based non-nuclear missile that would carry its own homing seeker and guidance system. As envisioned, HEDI would track and destroy enemy ballistic missile warheads reaching the Earth's atmosphere — high enough to protect people.

HEDI. It could be the last line of strategic defense.

For more information, write: HEDI Marketing, Dept. D902, McDonnell Douglas Astronautics Co., 5301 Bolsa Ave., Huntington Beach, CA 92647.

**MCDONNELL DOUGLAS**

# STRATEGY EXECUTION

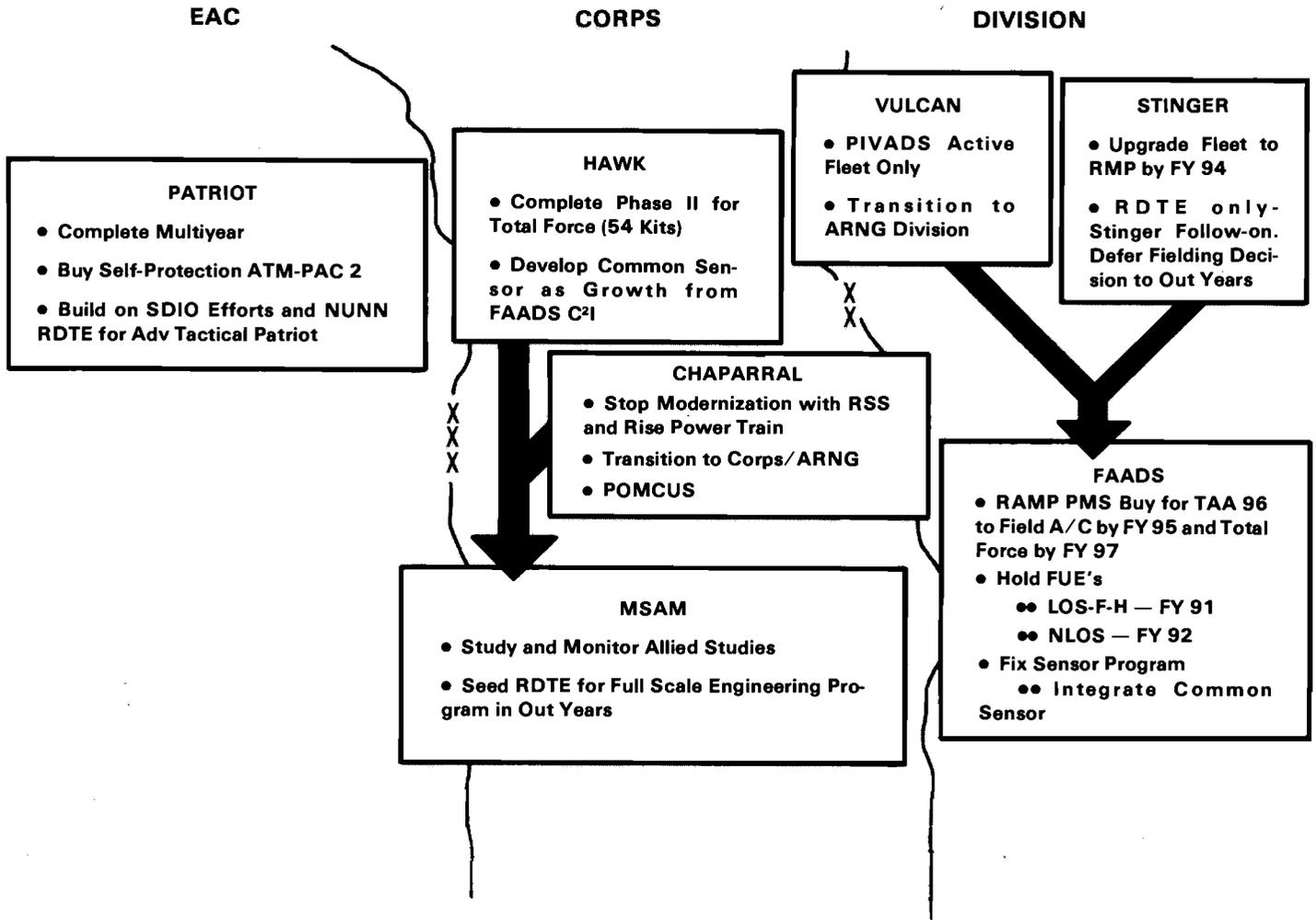


Figure 4

a prototype under contract by September 1988.

- Combined Arms Initiative. Bradley gun improvement cut into production line. Soon to be fielded — improved tank ammo for the anti-helicopter mission.

The HIVAD family, a new term for some, consists of Patriot and Hawk. Both must work together. Both complement each other.

Patriot fielding is on schedule. Six battalions in Europe and three in CONUS. Operational readiness rates exceeding expectations. A superb system that can easily grow to handle both the air-breathing and short-range ballistic missile threat. And that is our intention. The Army has a substantial investment in this great system and its growth potential is yet barely tapped.

Hawk Phase III fielding is sched-

uled for early 1989 with the first unit at Fort Bliss. A quantum leap forward, especially in the training arena. Each platoon has its own built-in trainer. Platoon leader and section sergeant training is soon to be a reality.

Plans for other systems are summarized in Figure 4.

Money is tight. We can expect that, while ADA modernization will progress, fielding time will be stretched out. Everyone should take an appetite suppressive pill! Our challenge will be to retain our quality soldiers, care for them and their families, ensure they are well trained — and then modernize the force. We will still have a great Army, but dreams of overnight fielding for our many new weapon systems are no more.

We must care for our air defend-

ers. As the branch chief, I truly care about what happens to our soldiers and their promotion and schooling. We must continue to work toward a goal of achieving ADA selection rates equal to or better than the rest of the Army. This will be tough in an environment that is extending time-in-grade and reducing total force strength. Throw in the turbulence associated with fielding our many new weapon systems and we have a real challenge. This is a problem *we can whip*, but one that must be carefully managed.

In the officer arena, we continue to do reasonably well. The ADA Officer Corps, like the entire Army, is trying to work its way through the new requirements for joint duty. Obvious to me that, sooner or later, we are going to have to ask our majors to choose a command or non-



“Military power...serves the cause of peace  
by holding up a shield behind which the patient,  
constructive work of peace can go on.”

*President Dwight D. Eisenhower  
Annual Address to the Congress—January 9, 1958*

Wise men and women have always known it. An adequate national defense is by far the most certain and least costly means of preserving peace and freedom.

The definition of an “adequate national defense” will always be in dispute. But prudent men and women agree it must include research and development of the most advanced defense systems. It also requires reasonable supplies of the equipment that would be necessary to meet any of the most likely threats to our national security. And, we must provide the consistent, dependable political support that is essential to the success of our armed forces.

Finally, we should appreciate and respect America’s dedicated men and women in uniform, for they are the ones who must serve as the ultimate deterrent to any aggressor.

 **Lockheed**

command track. Just too much expected and not enough time to accomplish. PCS fund shortages will increase time on station. Figure 5 summarizes selection rates for the most recent boards. I'm proud of our ADA Officer Corps.

Our Non-commissioned Officer Corps is the most professional I've seen in 28 years plus! Dedicated, technically and tactically proficient, and superb leaders. The benefits of the Non-commissioned Officer Education System are tremendous!

On the selection-for-promotion rates, we have serious problems at the E-7 level. A special "Intercept Point" column in the March-April 1988 issue of *Air Defense Artillery* details the problem and proposes solutions. Bottom line is we will fix the problem before next year's E-7 board. On selection for E-8 and E-9, we're holding our own in CMF 16. It's tough going in CMF 24. Figure 6 gives comparative statistics.

We must reduce the number of MOSs in Air Defense Artillery. Today there are 16 MOSs in CMFs 16 and 23. As we field our new systems, my goal is to reduce the total number of MOSs to, at most, seven. More responsibilities for each MOS but we have quality soldiers who are up to the challenge.

In summary, the future of ADA is bright and positive. The professionalism of our people is at an all-time high. We have a warfighting focus and a strong doctrinal foundation that will allow us to make our full contribution to the combined arms team on the AirLand battlefield. Many improvements to existing weapons and several new ones right around the corner. Pride in ourselves as a branch is strong and growing. Good times, still, to be a soldier and an air defender. A great branch which is a vital part of a great Army.

**"FIRST TO FIRE!"** □

### **Officer Promotion Selection Rate Comparison**

Selection Board	First Time Considered Selection Rate		
	ADA (%)	ARMY (%)	Δ%
Colonel	51.1	45	+06.1
Lieutenant Colonel	81.4	69.5	+11.9
Major	62.4	64.8	-02.4
Captain	88.2	84.2	+04.0

Figure 5

### **NCO Promotion Selection Rate Comparison**

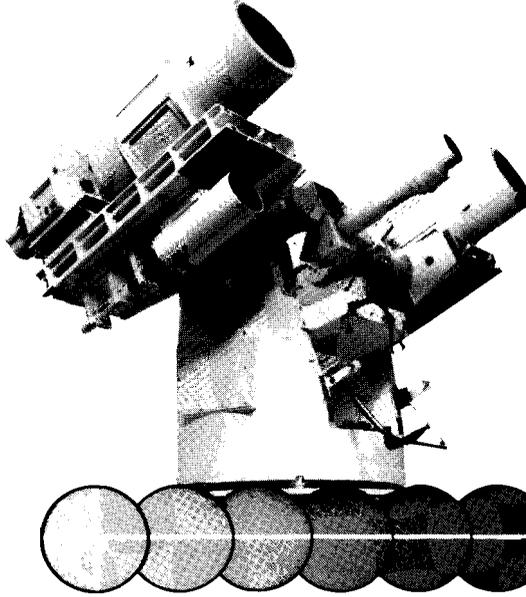
Selection Board	First Time Selection Rates		
	ADA (%)	Army Avg (%)	Δ(%)
E-7			
- 16 CMF	5.6	17.7	-12.1
- 23 CMF	11.8		-05.9
E-8			
- 16 CMF	22.1	15.6	+06.5
- 23 CMF	8.9		-06.7
E-9			
- 16 CMF	16.7	18.2	-01.3
- 23 CMF	12.5		-05.7

Figure 6

## Index of Advertisers

AAI Corporation	12-13
ADA Credit Union	34
Boeing	1
CAS, Inc.	75
COLSA, Inc.	87
Contraves Tracking Systems Group	87
El Paso Electric	2
Electronic Warfare Associates, Inc.	74
Fairchild Weston Systems, Inc.	27
Ford Aerospace and Communications Corporation	IFC
General Dynamics	IBC
Hughes Aircraft Company	81
Lear Astronics Corp.	19
Martin Marietta	3
MBank	26
McDonnell Douglas	83
Motorola, Inc.	79
Nichols Research Corp.	88
RAM, Inc.	46
Raytheon Missile Systems Division	44-45
SAIC	66
Short Brothers (USA), Inc.	OBC
Teledyne Brown Engineering	50
TRW	16

# Congratulations on your 20th anniversary



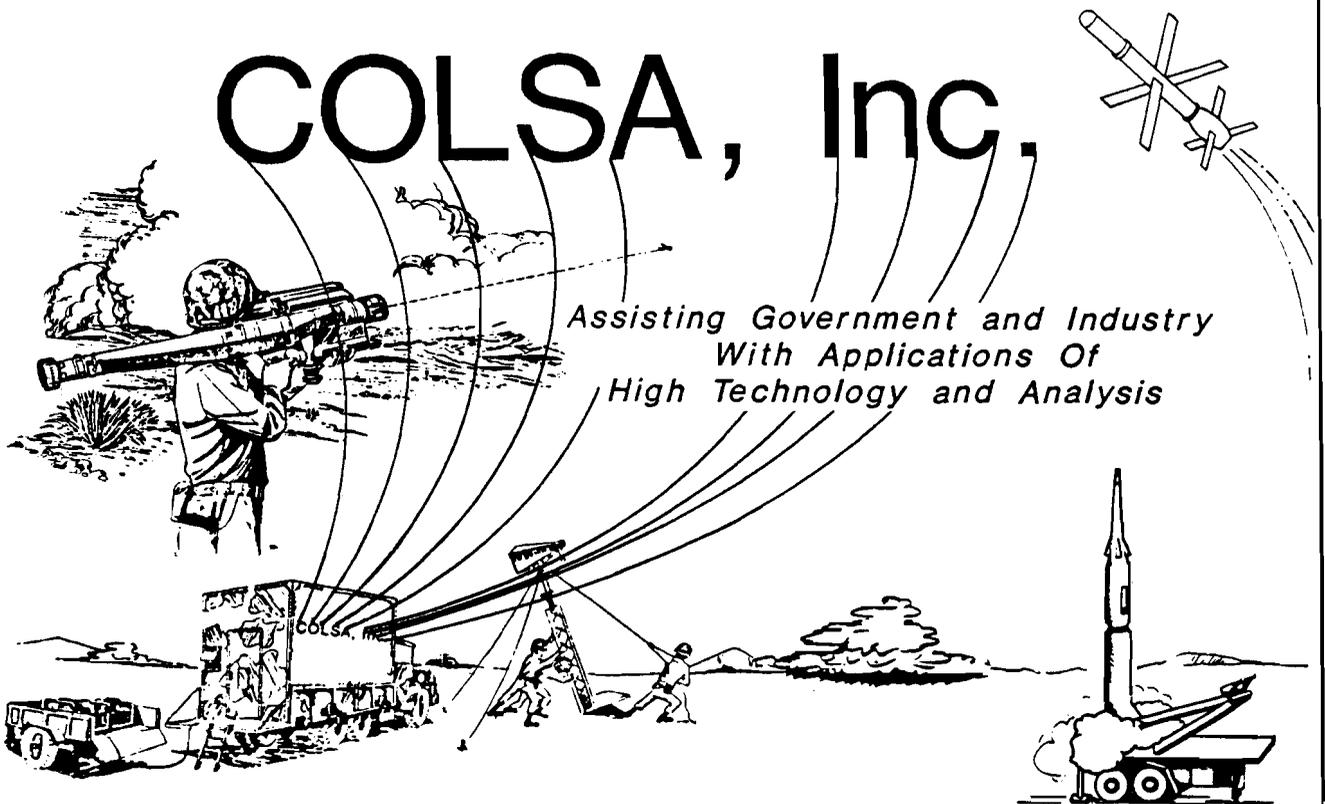
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General Dynamics Valley Systems Division is incorporating a Reprogrammable Microprocessor (RMP) into the U.S. Army's Stinger Weapon System that makes it possible to counter new threats without building a new weapon.

Fielded Stinger-RMP systems can be rapidly upgraded to defeat advanced countermeasures. Stinger-RMP's digital processing can also be used to improve guidance control and extend tactical range.

This innovative approach to evolving weapons systems counters both obsolescence and the high cost of defense.

**GENERAL DYNAMICS**  
*Valley Systems Division*

# AWESOME



## Shorts STARSTREAK. The most lethal payload one man can deliver.

From Shorts, the world's leading supplier of lightweight, man-portable missile systems, comes the forward air defense system of the future.

Leapfrogging state-of-the-art technology, **STARSTREAK** is designed to destroy all current and future helicopters and ground-attack fighter aircraft.

Three highly accurate, extremely maneuverable darts deliver an awesome payload, reaching more than twice the speed of a bullet in a fraction of a second.

Awarded a production contract by the British Army for their future battlefield Air Defense

requirements, **STARSTREAK** provides maximum lethality in a cost effective delivery system.

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