AIR DEFENSE ARTILLERY

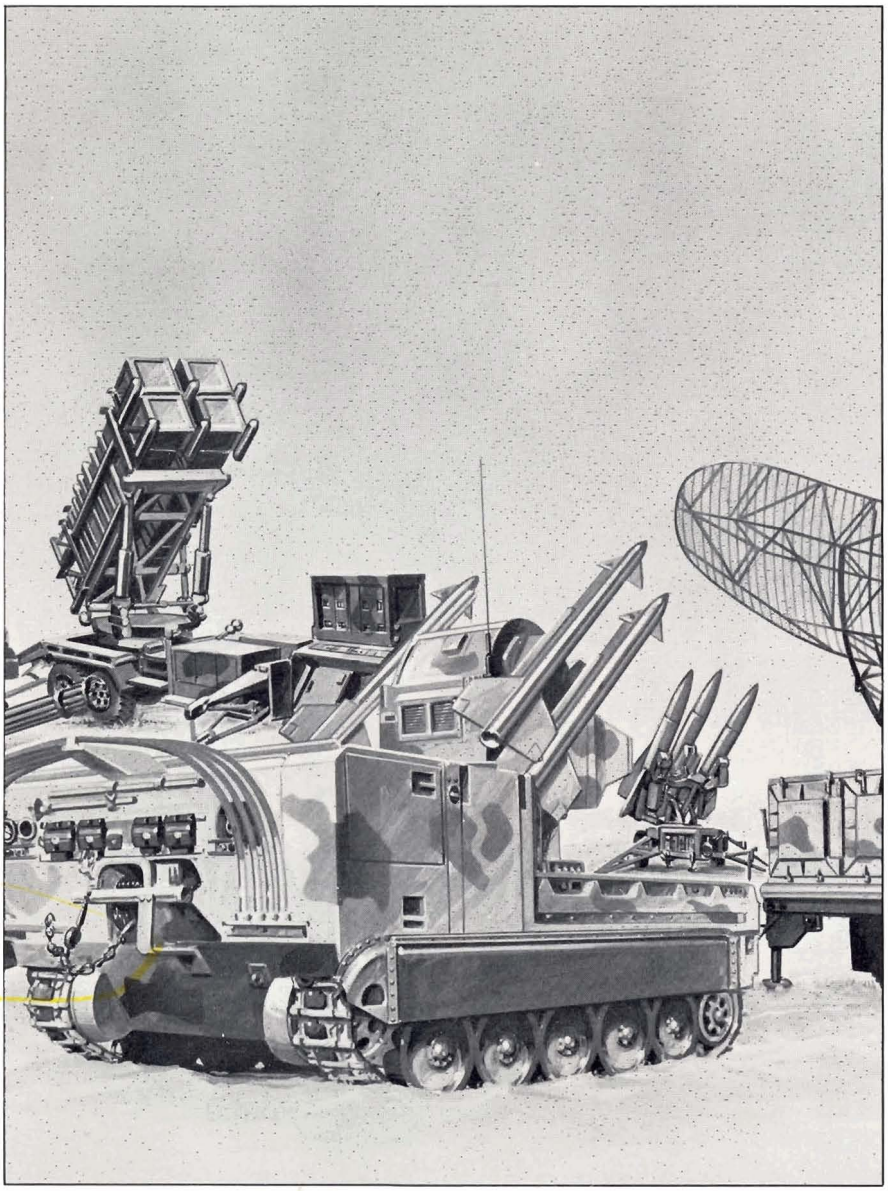
SPRING 1986

The Branch Lives!

The outlook for Air Defense Artillery, like that for "Casey" and the "Mudville Nine," wasn't brillant. The branch was trailing in the bottom of the ninth with two outs, and the count stood 0 and 2. But, unlike Casey at the bat, Air Defense Artillery didn't strike out.

. . . page 10

AIR DEFENSE ARTILLERY



The Branch Lives...10

The cover story is an introduction to articles about recent developments which brighten Air Defense Artillery's future. "Forward Area Air Defense," for example, describes how restructured and re-equipped ADA units will fight near the forward edge of the battlefield. Soldiers briefed on the new battlefield concept during the March ADA Commanders Conference at Fort Bliss, Texas, helped select a new branch motto: "First to Fire." The motto (see back cover) symbolizes not only Air Defense Artilllery's expanding mission but a resurgence of optimism.

JOHN O. MARSH JR.
SECRETARY OF THE ARMY
MAJ. GEN. DONALD R. INFANTE
COMMANDANT, USAADASCH
BRIG. GEN. WILLIAM H. RILEY JR.
ASSISTANT COMMANDANT
COL. WILLIAM H. MILLER
DEPUTY ASSISTANT COMMANDANT
R. KEITH RICHARDSON
DESIGN DIRECTOR / VISUAL EDITOR
BLAIR CASE
EDITOR
CLAIRE B. STARNES
ASSISTANT EDITOR
BARBARA J. SORENSEN
ASSISTANT EDITOR
LOURDES ORTIZ
EDITORIAL ASSISTANT

AIR DEFENSE ARTILLERY (ISSN: 0740-803X): Published quarterly by the U.S. Army Air Defense Artillery School, Fort Bliss, Texas. Articles appearing in this publication do not necessarily reflect the position of the U.S. Army Air Defense Artillery School or the Department of the Army. Material submitted for publication is subject to edit. Footnotes and bibliographies may be deleted due to space limitations. Use of the masculine pronoun is intended to include both genders where appropriate. Copyrighted or syndicated material may not be reprinted. Unless otherwise noted, photographs are U.S. Army photos. If material is reprinted, please credit the author, photographer and the magazine. Use of funds for printing of this publication has been approved by the Secretary of the Army on Feb. 19, 1985, in accordance with the provisions of AR 310-1.

SUBSCRIPTIONS: May be obtained through the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. A check or money order payable to Superintendent of Documents must accompany all subscription requests. Subscription rates are $8.50 for domestic (including APO and FPO) addresses and $10.65 for foreign addresses. Individual copies are $4.25 for domestic and $5.35 for foreign addresses.

CORRESPONDENCE: Address articles and letters to: The Editor, Air Defense Artillery magazine, USAADASCH, ATTN: ATSA-DTP-SP, Fort Bliss, TX., 79916-7090, Telephone: (915) 568-5603 (AV 978-5603).

POSTMASTER: Second-class postage paid at El Paso, TX, 79916-7090, Department of the Army (DoD 314) Air Defense Artillery magazine (USPS 307-010) and at additional mailing office. Send address changes to Superintendent of Documents, Mail List Branch (SSOM) Washington, DC 20402.

FEATURES

The Branch Lives . . . 10

Forward Area Air Defense . . . 12

Army Retains Patriot . . . 17

ADA People Puzzle . . . 20

New FAAD Mission Training Concept . . . 22

The Westervelt Anti-aircraft Gun Deliberations . . . 24

32nd AADCOM Paper Pushers Prep for Combat . . . 28

Steel on Target . . . 32

Soviet Ground Air Defense Weapons Employment . . . 36

Evolution of the Corps ADA Brigade . . . 39

First Corps ADA Organic Combat Unit Going Strong . . . 39

35th ADA Brigade Has Proud Lineage . . . 41

One of a Kind . . . 42

Stinger Trainers 'Get No Respect' . . . 43

Army Values — Why Make Them Yours? . . . 44

Working With Moral Courage . . . 46

Managing Your ADA Enlisted Career . . . 48

DEPARTMENTS

Intercept Point . . . 2

The Open Door . . . 4

Vapor Trails . . . 5

Scanning . . . 50

Intelligence . . . 52

Branch News . . . 55

Letters . . . 60

Paper Pushers . . . 28

Army Values . . . 44

INTERCEPT POINT

Maj. Gen. Donald R. Infante

Air Defense Artillery has reached an important milestone in its proud history. In my lifetime, two past milestones stand out — the transition to missiles in the late 1950s; and the deployment of division air defense in the mid-1960s. A third is now added — the forward area air defense (FAAD) concept and system.

The FAAD concept and its supporting system is the centerpiece of this issue of *Air Defense Artillery* magazine. "Forward Area Air Defense" (Page 12), by Col. John Little and Maj. Mike Vane, is required reading for every air defender from general to private. It should be mandatory reading for all combined-arms brethren. As this is unlikely, we air defenders must help in the educational process because the success of our Army in any future air-land battle depends on our successful implementation of the FAAD concept and system.

So, now that we're all on the same sheet of music, let's review some basics about the mission of the Air Defense Artillery.

Two aspects to burn in your memory:

Ensure the freedom to maneuver. The thread of logic woven throughout our air-land battle doctrine is the freedom to maneuver. Without freedom to maneuver, our chances for success against an enemy that outnumbers us are slim to none. This freedom can be taken from us by enemy ground forces, or hostile air power, or a combination of both. ADA is charged with the important mission of ensuring it's not lost as the result of attack by enemy aircraft.

Sustain the battle. We can't let the bastards grind us down. Whether it's beans or bullets, or air power, or protecting our C^2I centers to allow us to exert combat power at the right place at the right time, ADA is charged with ensuring we can sustain the battle. Fighting against an enemy who has almost more airplanes than we have bullets and missiles means we must kill him the first time. He cannot come back tomorrow. If he comes today, he dies today.

Folks will argue for years about the whys and wherefores of the Sergeant York Gun's demise. The fact is that it was canceled. In August '85, we had no concept for accomplishing the forward battle aspects of our mission. Much to the credit of our Army and the insight of Gen. Max Thurman, Army vice chief of staff, immediate action was taken to regroup our forces. Two parallel and complementary efforts were undertaken:

Formation of the Forward Area Air Defense Working Group (FAAD-WG) at Fort Leavenworth, Kan. Headed by Brig. Gen. Dave Maddox, a cavalryman who has an appreciation of combined arms rarely found in our Army, this selfless grouping of professionals — which included many air defenders — realized the air defense problem is bigger than ADA. They recognized it as a joint and combined-arms problem. The result is a counterair concept that involves our Air Force and all the combined arms of our Army. We air defenders owe Brig. Gen. Maddox an immeasurable "thank you." He was recently inducted into the Order of Saint Barbara reserved for those special "artillerymen" who make an outstanding contribution to our branch. Brig. Gen. Maddox has my personal thanks and professional admiration.

Formation of the ADA Laydown Group at Fort Bliss. Our branch's best and brightest could be found late at night and on weekends in the basement of the Air Defense Artillery School's headquarters building. They were working on how best to implement the ADA portion of the counterair concept. This dedicated group of professionals, working in conjunction with the FAAD-WG, helped formulate the FAAD concept and system. We as air defenders owe every team member a sincere thanks for service beyond the call of duty and for having the courage, at a time when branch morale was at its lowest, to fight back and believe in our mission — at great personal sacrifice. They also have my personal thanks and professional admiration.

These combined efforts resulted in the following achievements:

★ The secretary of defense, on Jan. 8, approved the FAAD concept and system in principle.

★ The funds required to begin making the FAAD system

a reality were included in President Reagan's FY 1987-1991 budget and submitted to Congress.

★ Army Chief of Staff Gen. John A. Wickham Jr. briefed Congress on the FAAD concept and system. In his closing comments, Gen. Wickham singled out three programs he wants Congress to give highest priority. FAAD ranked second only to the Bradley.

During the brief period of August '85 to January '86, the professionals who worked on the FAAD concept and system team formulated and won approval of the Army's plan to fight the forward area battle. No small feat. Goes to show when the going gets tough, the tough get going. Another example of how — when our Army is unified on a cause — there is nothing we cannot accomplish as a team.

Read the "Forward Area Air Defense" article for details, but note the following highlights about the FAAD concept and system:

★ The FAAD system is analogous to an aircraft carrier in that, while there are separate components, they all fit together in a complementary fashion. The result is only undesirable attack options for the enemy.

★ Our combined-arms brethren share with us the responsibility for countering the forward area direct-fire helicopter threat. While we contribute to the close-in helicopter battle, our focus is on the helicopter threat beyond the range of the other combined arms. The same helicopter tactics that limited the effectiveness of the Sergeant York will limit the effectiveness of any direct-fire replacement that cannot be deployed in substantial numbers. A combined-arms approach is required.

★ There exists a need for an indirect, non-line-of-sight weapon to destroy enemy helicopters masked by terrain deep in enemy territory. Our leading candidate is a system, developed inhouse by the Army's Missile Command labs, termed the fiber-optics guided missile (FOG-M). When not killing helicopters, FOG-M kills tanks. Exciting times and a new mission for air defenders!

★ In our zeal to counter the helicopter, we have not forgotten the fixed-wing threat. Countering the fixed-wing threat across the the entire battlefield remains an ADA mission. In the rearward areas beyond enemy direct-fire range, we will deploy pedestal-mounted Stingers. Eight Stingers on a high-mobility, multipurpose vehicle integrated with improved acquisition and identification devices will result in our realizing Stinger's full potential.

★ Increased emphasis on C^2I and the need for both ground and airborne sensors. Additionally, there's an increased emphasis on the use of passive, non-imaging techniques for both acquisition and identification. The C^2I component is the foundation for integrating the combined arms effort in the forward area air battle.

★ A change in concept. Our older conventional concept, which was reactive in nature and clustered our weapons, said "You all come!" Our new combined-arms concept, which is proactive in nature and distributes our weapons while retaining the ability to weight the main effort, states "You come; you die!"

A new milestone for Air Defense Artillery — the FAAD concept and system. Make it your business as a professional to read the article. Ask your questions. Give us your comments. Air Defense Artillery, as a branch, remains a valuable member of the combined-arms team. We cannot do it alone. But, they can't do it without us. Air Defense Artillery remains the "First to Fire."

First to Fire

The Open Door

CSM George W. Lay Port
U.S. Army Air Defense Artillery School

The top NCO of the U.S. Army Air Defense Artillery Center and Fort Bliss, Command Sergeant Major Raymond H. Godfrin, has agreed to let me share *Air Defense Artillery* magazine's NCO column with him on a rotating basis. Like any senior NCOs with nearly three decades of service, CSM Godfrin and I may disagree on some small things, but we agree on most important things.

We agree, for example, that the Army NCO Corps is in great shape. And, with the input of bright, young soldiers who have been recruited in the past five years, we agree it has great potential to get even better. But this isn't just our opinion. It's the consensus of officers and NCOs who made up the NCO Professional Development (NCOPD) Study Group.

The study group's report to the NCO Corps was published in February in a special issue of *Sergeants' Business*. If you haven't seen the report, borrow a copy of *Sergeants' Business* or write HQDA, (DACS-NCOPDS) WASH DC 20310-0200, for a copy. It makes enlightening reading.

The completed NCOPD study was the third in a series of studies that addressed the needs of specific groups: commissioned officers, warrant officers and now non-commissioned officers. The NCOPD was codirected by a general officer and a command sergeant major. More than half the study group members were senior NCOs attached to the group in a TDY status. They came from combat arms, combat support and combat service support units of the Active and Reserve components. These NCOs were primarily responsible for the results of the study. It was a study by soldiers for soldiers.

The study group concluded that we have a good Army, a strong NCO Corps and a basically sound professional development system. The group used various methods to gather data. Group members visited 85 separate units and conducted individual and group interviews with more than 3,800 officers and NCOs. An NCO professional questionnaire was filled out by 2,769 NCOs from units around the world. The questionnaire provided encouraging results.

Ninety-eight percent who responded expressed confidence in the ability of today's NCO to train soldiers;
89 percent felt NCOs strive for technical competence;
87 percent rated NCOs as committed to unit missions;
79 percent perceived NCOs as concerned about soldiers;
and 82 percent thought NCOs show a high degree of professionalism.

One of the strongest trends emerging from the study was a strong show of faith in the Non-commissioned Officer Education System (NCOES). "NCOES is the most cost-effective program in the Army, bar none," a corps sergeant major said. "There should never be an excuse for not sending soldiers to PLDC, BNCOC, ANCOC, etc." The command sergeant major was backed up by a division commander who said, "It is essential that units send the right soldiers to the right courses at the right times." The division commander was seconded by a MACOM commander who said, "It costs us, but we need it. Any reduction of unit readiness is totally offset by the long-term gain to the unit."

Today, more than ever, NCOES plays a large role in the development of leadership potentials and abilities of our young NCOs. The Army believes in NCOES. Three-quarters of the soldiers canvassed said that NCOs should not be promoted without appropriate NCOES courses. A junior NCO who doesn't attend the right NCOES course at the right time has a tough time being selected for promotion now; in the future it's going to be impossible.

This makes it even more crucial that the soldiers we sel to attend NCOES courses are the right soldiers, because t soldiers we send to the Primary Leadership Development Course or the Basic Non-commissioned Officer Course are going to become the NCOs of tomorrow.

How do you pick the best soldier? Try the following checklist:

Job Proficiency. Is the soldier good at his or her current assignment? Soldiers who don't care enough to become expert at their current assignment probably won't care enough to become expert NCOs.

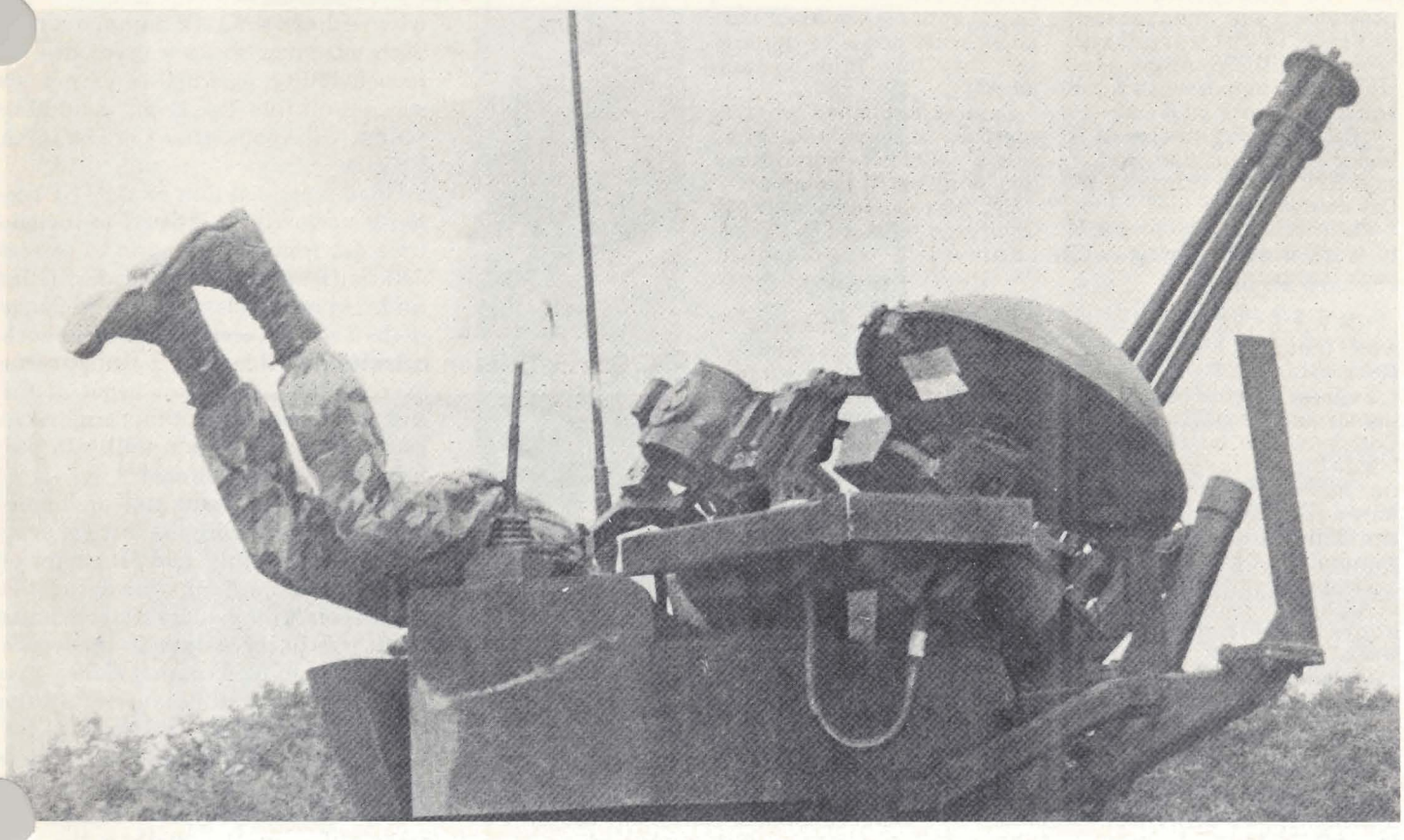
MOS Competency. Soldiers must be competent in the skills required by their MOS or they're not going to cut it as NCOs.

Physical Fitness and Military Bearing. NCOs, as leaders, must exude confidence. They must be fit to train and fit to fight.

Basic Educational Skills. Don't send a soldier who can't read, write, speak effectively or perform basic mathematical functions. An NCO has to be able to learn, and the ability to learn is based on these skills.

Another way of selecting the right soldiers is to make a list. Put the soldiers you could just as well do without at the top of the list. Next, add those with the disciplinary and the attitude problems. Then, insert the names of soldiers whose PCS papers you plan to process with a smile. Keep going. Write in the names of soldiers who try hard, but never seem to get it right. Then add the soldiers who have lots of potential but seem to lack commitment. Next add the names of soldiers w do a good job most of the time. Last comes the names soldiers you rely on the most to get the job done — the ones you feel you can't do without. Send the soldiers whose names are at the very bottom of the list to NCOES.

You'll miss them, but you'll be able to get along without them for awhile. **The Army won't.**



Upside Down

Sometimes reaching that extra inch for that tool or piece of equipment can give a soldier a different perspective on things — in this case, one that's upside down. That was the view for a 1st Battalion, 68th Air Defense Artillery, Fort Hood, Texas, soldier during a recent Vulcan gunnery. (Photo by Jack E. Gordon)

To ensure a Chaparral missile is secure, SSgt. Martin Fricke and a training center soldier check it together. (Photo by Sp4 Greg Norton)

ADA Instructor Has Winning Philosophy

You won't find a coffee cup or an inscribed nameplate on his desk. In fact, you'd have a hard time finding the desk itself, because the U.S. Army Training Center's Instructor of the Year doesn't have one.

"We're in there most of the time," explained SSgt. Martin Fricke, pointing to the Chaparral equipment arranged neatly in his dust-free shop at Fort Bliss, Texas.

"The instructors here are the best. Their standards are high. Being a good NCO and being a good instructor go hand in hand. Your primary mission is the student. Most people say the mission comes first, but I think if you take care of the soldiers, they'll take care of the mission," he said.

The philosophy must work. Since Fricke became an instructor last year, none of his students have failed to graduate. He feels if a student does fail, people blame the instructor first. So, he'd like to keep batting a thousand.

Still, he and the other 16P instructors won't let anyone "slide."

"If he's out, he's out," Fricke explained. "But we have a lot of good soldiers. They're all well motivated."

Fricke said he asked to be an instructor. Having been assigned to a line unit, he felt the job of instructor could be a good new experience. He hasn't changed his mind.

"You get to see a different side of yourself. Here you're a teacher, basically. I think everyone should try it, not for career progression, but because as an NCO you should be able to give classes.

"Sometimes it's frustrating," he pointed out. "You teach them, you try to drill the facts into their heads and then they flunk a test on something like a commonsense question.

"My daily goal is to accomplish something, no matter how little it seems, just as long as I can look back at the day and see it wasn't wasted. Some days it seems everything backfires, but if you can accomplish something every day, at the end of the year you'll have accomplished a great deal," he said.

by Sp4 Greg Norton

New Evaluation Tested by 69th ADA Brigade

The 69th Air Defense Artillery Brigade headquarters, 32nd Army Air Defense Command, recently received its first tactical evaluation as part of a NATO plan to assess U.S. air defense combat readiness in Europe.

In the past, only battalion-level air defense artillery units and lower were put through the three-day evaluation process. Adding the brigade to that program is one way to monitor its ability to conduct sustained wartime operations.

Since the U.S. air defense artillery brigades have been given the command and control function for integrating air defense artillery systems into the combat scenario, NATO wanted to see how the brigade functioned in that role, according to a 69th Brigade official.

The tactical evaluation is much the same thing as an Army Training and Evaluation Program (ARTEP) because the evaluation looks at a unit's ability to conduct sustained wartime operations. It is different from an ARTEP as little training is involved.

With a firm shove, SSgt. Martin Fricke locks a Chaparral missile onto its launch rail. (Photo by Sp4 Greg Norton)

A key to passing a tactical evaluation is communications, so the 69th's companion unit, B Company, 11th Air Defense Signal Battalion, set up its operations at the collocated training site in the Federal Republic of Germany.

"Being able to communicate with our battalions plays a major role in how well we do in this exercise, and that's why we have the 11th Signal out h with us. They share a great deal responsibility in whether or not we succeed on this Tac Eval," said Maj. Wilbur Giles, operations officer, 69th Brigade.

Giles explained that an ARTEP scenario normally is created to include time out from the scenario to correct deficiencies as they are identified. Giles said, "At no time is there any stoppage in the Tac Eval scenario" to make such corrections. "It is a full, open, wartime exercise with evaluator input at the end. Its purpose is not to train, but to evaluate the brigade's ability to perform its mission," he said.

While training was not an immediate concern during the tactical evaluation, it certainly had its share of attention before. Each week during the month before the evaluation, both units spent two to three days in the woods beefing up on field combat skills.

"We will do well because of all the CTT [Common Task Training] we got. There were a lot of things I never knew until I got CTT," observed Pvt. 2 Ga Vaughn, B Company, 11th Signal B talion. "I think this really is the be way to be evaluated; you can see how we work together. If we ever went to war, we'd have to work together like this; that would kind of be like the real evaluation."

by Sgt. M. Katherine Burke

Pvt. 2 Gary Vaughn, B Company, 11th Signal Battalion, challenges a German military vehicle that strayed into the unit maneuver area during the 69th Brigade's tactical evaluation. (Photo by Sgt. M. Katherine Burke)

1/51 ADA Clears Sky From 'Sunken' Seat

On the Camp Roberts range, a towed Vulcan gunner from 1st Battalion, 51st Air Defense Artillery, Fort Ord, Calif., slides into the "tub," the sunken seat of the Vulcan.

The quarters are compact and he must shift to make the necessary adjustments on the panel in front of him. He grips his aircraft-style steering wheel to traverse the gun barrels, as he peers through the sight, in search of the target.

Placing the target within the smallest red circle on his sight, he squeezes the trigger. The Vulcan comes alive, spewing 20mm rounds into the air. The gun's powerful force jars his body. From behind him someone yells, "He blew it out of the air!" He goes on to score six more aerial hits in a row.

Pvt. 1 John Carlson just calls it luck and instinct. The gunnery practice was the last link of training necessary for soldiers to become air defense artillery light fighters in 1/51 ADA. The leaders had already completed the Light Leader Course. The whole battalion had completed the Rites of Passage training before moving to Fort Hunter Liggett, Calif., for the Light Fighter Course, which ended with the live-fire gunnery at Camp Roberts.

The Light Fighter Course consists of two weeks of basic skills and MOS-related training. This includes rappelling in the Palisades, a night movement and a helicopter insertion.

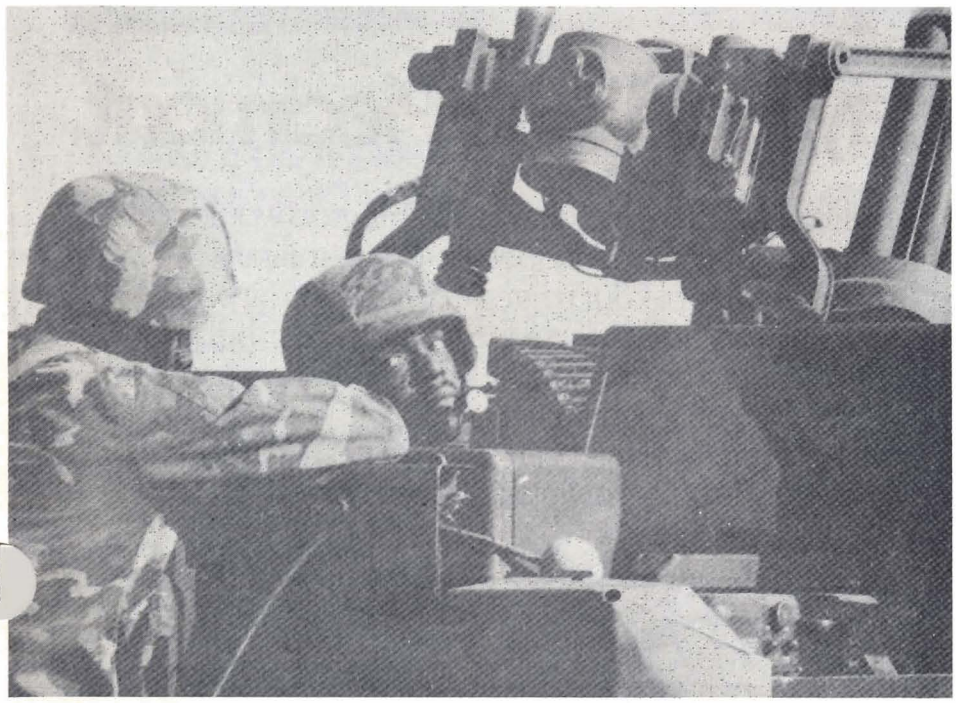
Many of the soldiers said they had never had the opportunity to train in infantry skills. For Sgt. Michael Rhodes, B Battery, his move to the 7th Infantry Division (Light) meant a lot of changes in training. "I had never rappelled or flown in a helicopter before." Before this week he wasn't anxious to go down a cliff on a rope. Now Rhodes says, "Give me a chance and I'll rappel now that I know I'm not going to slide off the rope." For most of the air defenders, the biggest complaint was that they had only one chance to go down the 125-foot cliff.

For many, taking part in the air-insertion operation meant their first rides in a helicopter. They rode in the division's new Black Hawk helicopters. On the last day of the Light Fighter Course, the Black Hawks returned. This time they picked up not only soldiers, but also their jeeps, trailers and the unit's main piece of equipment, the towed Vulcan. The soldiers had been given classes on sling-load operations. The troops made all the preparations necessary to sling load the equipment and, using hand and arm signals, brought the helicopters in and executed the hookup.

The Black Hawks then deposited their loads at Camp Roberts for the gunnery practice, the highlight of the soldiers' time in the field.

by Beth A. Allen

Pvt. 1 Phillip Strout, 1/51 ADA, keeps one hand on a safety device while keeping a close watch on the firing section. (Photo by Beth A. Allen)



Sgt. Allen Jenkins, 1/51 ADA, looks over his shoulder for some advice during Vulcan gunnery. (Photo by Beth A. Allen)

On a Patriot IRP, The Future Is Now

It's not the year 2001 on the Patriot tactical site at Giessen, Federal Republic of Germany, but some feel it's close.

"Tomorrow's air defense today" is a reality on a hill overlooking this central German town, the site of C Battery, 4th Battalion, 3rd Air Defense Artillery's initial readiness position (IRP).

The IRP contains the soldiers and equipment that make up a fire unit. There are antenna masts, the engagement control station, transport vehicles, generators, radars and launchers.

Just as strikingly new are the buildings, complete with a spotless dining area, sleeping quarters and offices with that fresh look. It's the best the Army offers.

"I re-enlisted for Patriot," says SSgt. Steve Riddle, a former Nike Hercules troop. "I wanted to stay in air defense, and I knew Patriot was the future—the 'state of the art.'

"It's been a good career move for me. I like the system's capabilities. Overall, it's been great for our soldiers. The equipment is new; the facilities are new. We have everything we need on the IRP — billeting, storage equipment, everything."

When a fire unit goes on "status," a readiness posture, the soldiers stay on the IRP, ready to move to the field on a moment's notice, Riddle says. The Patriot system has been proven to be highly mobile, an advantage during wartime.

SP4 Clement Gray finds Patriot an "extremely interesting, highly mobile system. Best in air defense." The 24T and ex-Nike Hercules soldier is impressed with the facilities and likes the IRP's "decent environment. We certainly didn't have this with Nike Herc," he says.

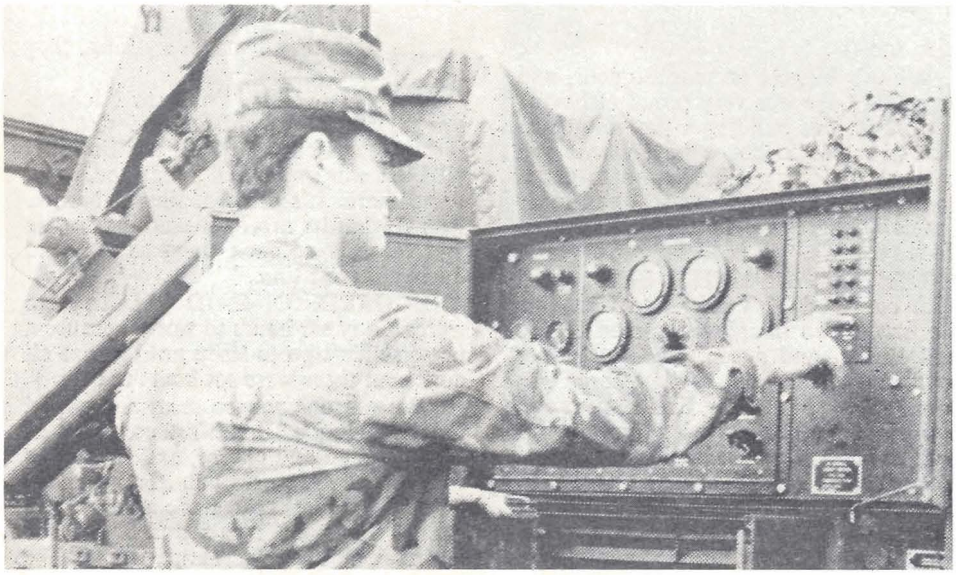
Along with the modern facilities at the IRP is the sophisticated technology that is prevalent with Patriot. When working on the equipment, the Patriot soldier uses computer software displays as well as the standard technical manuals. It's all just part of the new wave.

Of course, no Patriot soldier can do it all on the IRP. Support personnel are a vital part of the mission. The guards, clerks, motor personnel and cooks are participants contributing to the readiness on the IRP.

The 4/3 ADA soldiers on this IRP are on the cutting edge of a modern Army. On the IRP, the future is now.

by SSgt. Pete Durban

Sp4 Michael Burton (left) helps SSgt. James Arnold at the mask removal station during a recent 247th Chemical Detachment field training exercise. (Photo by SSgt. Pete Durban)



Sp4 Greg Lockridge, C Battery, 4/3 ADA, prepares a generator for operation at the Patriot IRP in Giessen, West Germany. (Photo by SSgt. Pete Durban)

Smart Troops Serious About Chemical Threat

Published reports over the past few years have documented the threat. It's a fact. The potential enemy will use chemical agents in war.

For soldiers of the 32nd Army Air Defense Command, Federal Republic of Germany, being prepared for the nuclear, biological and chemical (NBC) eventuality is vital.

Helping to counter the NBC menace is the 247th Chemical Detachment headquartered at Darmstadt. If a NBC attack were launched, the 247th would take the soldiers' routine NBC protective measures several steps further. Decontamination is the byword by which the 247th soldiers live. If a unit is "hit" by an NBC attack, it may

uest decontamination support from detachment through command channels, according to Capt. Felix Magalong, detachment commander.

The 247th's decontamination drill, from a field setup, is a thorough one designed to put soldiers and equipment back into the war. Unit vehicles are given a field "carwash" consisting of a primary wash, decontamination application, final rinse, and interior decontamination. They finish at check-monitoring stations.

Soldiers get a similarly complete treatment. Troops start with load-bearing equipment and weapon decontamination, then a chemical boot and protective-mask hood decontamination followed by chemical overgarment removal. They also go through a monitoring station, mask removal station and, finally, a reissue station.

The chemical experts, the MOS 54Es of the detachment, consider their chosen military professions important. Sp4 Ali Moontaz finds the job "interesting. I want to be prepared and have the soldiers prepared. Some of the sol-rs don't take this training seriously. s very serious."

Sgt Andrew Brown echoes Moontaz, saying, "A lot of the people we train are doing this for the first time. The smart ones take it seriously. They know that in an actual attack, the training they get will be very important."

Using the decontamination "station concept," teamwork plays an important role for the 247th. "Teamwork is essential," says PFC Julius Smith. "If one station is not moving smoothly, it ties up everything. We must work closely together."

Magalong said his unit sometimes has a thankless job. "It's time consuming and sometimes dirty and muddy. But my soldiers are consistently performing their duties in an outstanding manner. They know the importance of their mission."

Recently the 247th conducted a decontamination field training exercise. In the field with the detachment were soldiers of the 15th Ordnance. "This is great training. I've been in the Army r a while, and this is the first time I've ne this," said SSgt. James Arnold of e 15th Ordnance. "I learned just how important their mission is. It's good to know the 247th is ready."

by SSgt. Pete Durban

Vulcan Repairer Enjoys Learning Difficult Job

Returning to study electronics and circuitry after having been out of school for 27 years would not be easy for anyone. But one woman at the Ordnance Missile and Munitions Center and School, Redstone Arsenal, Ala., has managed to do just that.

Nancy Posey, an ordnance equipment mechanic assigned to the Vulcan system, has spent the last two years in training and says she's still learning.

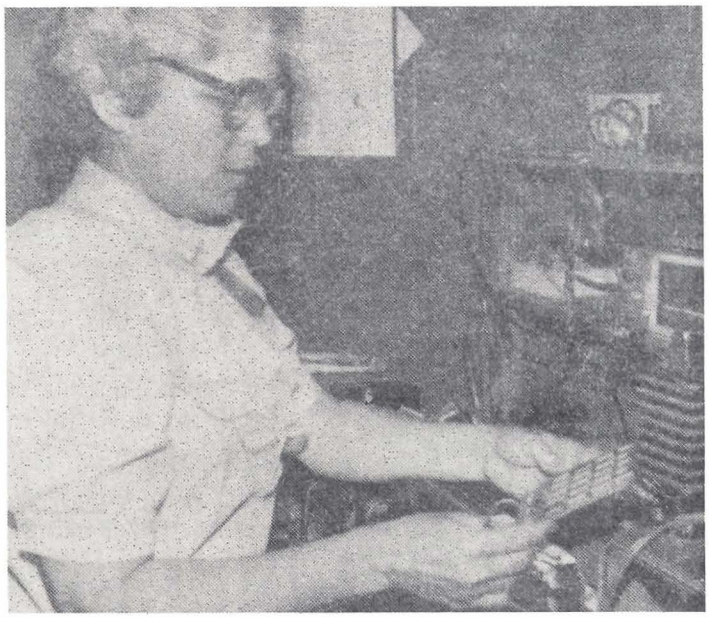
"I didn't think I would get the job," Posey said. "I left work in private industry. I guess I needed more job security." Posey worked as a quality control inspector for "PC" cards and schematics for a private firm. This experience led to her present job.

Posey's government training included seven months in the classroom. She spent that time going through basic electronics, soldering, circuitry and Vulcan system repairer courses at the school. "I've enjoyed it so far, but I think life is a learning process." This is especially true for Posey, who is working with the radar portion of the Vulcan system. "When you work with someone who has worked here 20 years, you always feel like you're in training," she said, referring to James Spears, systems integration electronics mechanic on the Vulcan system. "I have to use the books and go step-by-step. He does it from memory," she added.

Posey's job consists of support maintenance on the Vulcan electronic assemblies, radar test equipment and training devices. She inspects, tests and adjusts components to determine shortcomings and malfunctions in the system.

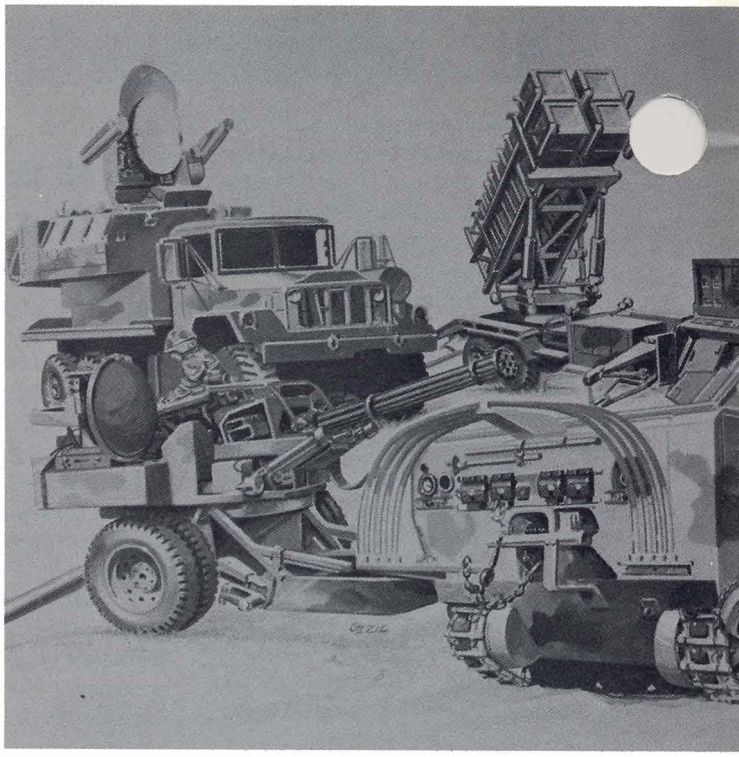
She is the only woman working on repairs to the Vulcan system. Posey doesn't need any pampering, according to Spears, her work companion. "She holds her own," he said. "She has really come up since I have been here. If she keeps going the way she is, she will be among the best in this type of work."

by Cindy Watson



Nancy Posey changes a "PC" card from a range computer. She inspects, tests and adjusts malfunctions on the Vulcan system.

The Branch Lives!



The summer of '84 was the summer of Air Defense Artillery's discontent. The branch, caught in the middle of a difficult transitional period, was being assailed by critics on all fronts. A popular ADA lieutenant colonel found the situation so depressing that he sat down and wrote an article titled "The Death of ADA" for *Air Defense Artillery* magazine.

The outlook for Air Defense Artillery, like that for "Casey" and the "Mudville Nine," wasn't brilliant. The branch was trailing in the bottom of the ninth with two outs, and the count stood 0 and 2. But, unlike Casey at the bat, Air Defense Artillery didn't strike out.

Instead, Air Defense Artillery has rebounded from the loss of the Sergeant York Gun with a Forward Area Air Defense (FAAD) concept (Page 12) that's winning new friends in high places. The Army is keeping Patriot (Page 17). The first corps ADA brigade organic combat unit has weathered its first year (Page 39). Product improvement programs have rehoned the fighting edges of older ADA weapon systems. New training solutions, including the new FAAD Mission Training Concept (Page 22) are emerging from the U.S. Army Air Defense Artillery School. And the ADA Office of the Proponent and MILPERCEN have untangled the personnel reclassification snarl (Page 20).

Sure, we still have problems. Today, for example, when ADA planners talk about the "threat" they likely as not mean Gramm-Rudman. But there's great cause for optimism. New ADA weapon systems work. Patriot's NATO debut is a success. Our doctrine and tactics are sound.

Air Defense Artillery magazine interviewed ADA officers during the recent ADA Commanders Conference at the U.S. Army Air Defense Artillery School (USAADASCH), Fort Bliss, Texas, and discovered that, in their opinion: The branch lives!

The need to plug the gap Sergeant York left in America's air defenses has taken Air Defense Artillery off DOD's back burner and placed it on the front burner, said Col. John H. Little, the officer who headed the ADA Laydown Group and director of USAADASCH's Directorate of Combat Developments.

"The cancellation of Sergeant York generated the reassessment of ADA concepts which, in turn, produced the Forward Area Air Defense concept. In briefing the FAAD concept, we had a chance to pitch Air Defense Artillery to the Army chief of staff, the undersecretary of the Army, the secretary of defense and Congress. We spent two hours with Secretary Weinberger. The amount of time we spent with them — when you consider the demands made on their time — was absolutely mind-boggling. I think Air Defense Artillery has made its case," Little continued.

". . . a new consensus in Air Defense Artillery"

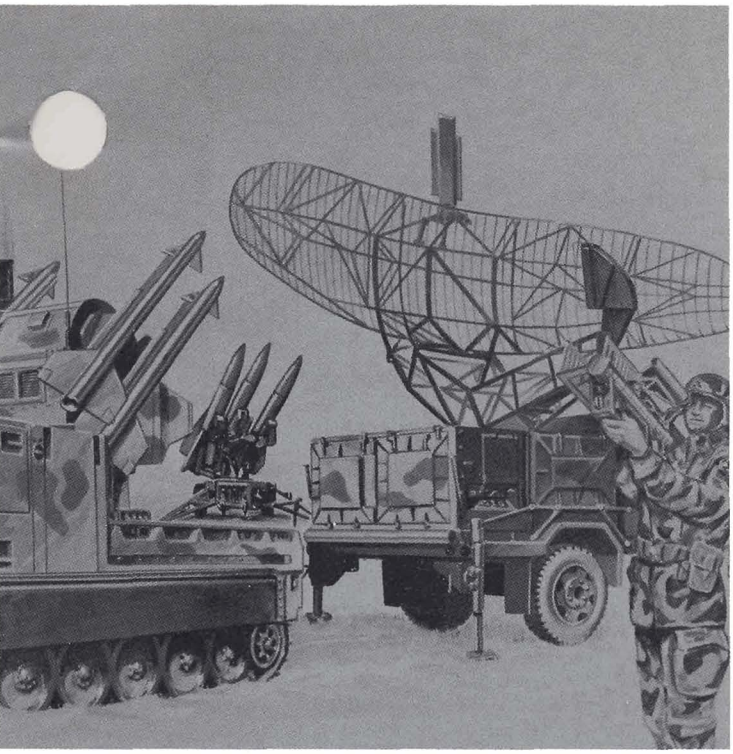
"Forward area air defense ranks second in priority only to the Bradley Fighting Vehicle in the official posture statement that the chief of staff of the Army and the secretary of the Army sent to Congress. That means DOD appreciates the vital importance of fielding an effective forward area air defense.

"We've got some problems. We need a two-year catch-up period to replace the Sergeant York. It will take us some time to field our new FAAD system. The Gramm-Rudman Bill places Air Defense Artillery in a precarious position. Our branch is small in number, but we consume a large portion of the Army's budget," he said. "But there's a new consensus in the Army and in Air Defense Artillery. A few years ago ADA gunners felt they were stuck with 'raggedy-ass' pieces of equipment while the other branches around them were modernizing at the speed of light. That feeling has changed. There's a feeling now that someone is in charge; that things are getting done," Little said.

The speed with which FAAD makes the transition from concept to reality depends largely on funding. Col. Donald M. Lionetti, an ADA officer who heads the Firepower Division in the Office of the Deputy Chief of Staff for Operations (ODCSOPS), is confident that Air Defense Artillery will be allotted the funds it needs. Lionetti, whose division is concerned with the management of Air Defense Artillery and Field Artillery organizations and the fielding and sustainment of their material systems, agreed that there's a new appreciation of the air defense mission.

"I think there is a great future for Air Defense Artillery," Lionetti said. "Out of the trauma we experienced with the Sergeant York Gun termination has emerged a new framework within which modernization can take place. There is no question that the air threat to our divisions is a severe one that is growing rapidly worse as time goes by. That threat and the mandate to counter it is clearly understood by Army leaders. We will make the commitment to find accelerated solutions to the problem.

"It won't be easy," he continued. "We face years of constrained resources, but in spite of the inevitable competition for funds, I'm confident that we will take the correct steps to provide protection for our maneuver forces. It makes no sense to field M-1 tanks, Bradley Fighting Vehicles, MLRSs and Apache helicopters without concurrently de-



The Branch Lives!

veloping the means to contribute to their survivability.

"I'm confident that, in the competition for resources ahead, our mission area will not be overlooked, and that we will be able to put modernized equipment into the hands of our soldiers," he said.

Lt. Col. Patrick D. Parker, chief of Tactics and Doctrine Division, Tactics Department, USAADASCH, said the results of the ADA Laydown has placed Air Defense Artillery on sounder tactical footing.

"The future has never looked brighter — not during my 18 years of service," Parker said. "We have a well-developed plan that obviously has been well thought out. It encompasses all systems, high-to-medium systems as well as short-range systems and brings them together in an integrated plan. It brings everything together for the first time."

Even though it will take time to field the new FAAD forces, there are some things ADA soldiers don't have to wait for. The deployment of the first Patriot battalions to West Germany in 1985 was one of the brightest spots in recent ADA developments. Col. Anson W. Schulz, whose 10th ADA Brigade includes the 4th Battalion, 3rd Air Defense Artillery, (Patriot); and 2nd Battalion, 43rd Air Defense Artillery, (Patriot), said Patriot's welcome to the 32nd Army Air Defense Command was a warm one.

"The Patriot system has far exceeded expectations. It's an absolute success. The machinery works well. The Patriot crews are well trained. And Patriot soldiers have the best living and maintenance facilities in the Army. We're off to a superb start," Schulz said.

"Both Patriot battalions have been well received by the community. We've had numerous important visitors from the United States and — more importantly — from our NATO allies. NATO is impressed with the system. The other combat arms are impressed. The deployment of Patriot has done much to improve our branch's image within the combat arms. They realize Air Defense Artillery has important new capabilities.

"My impression is that ADA's future is a bright one," he continued. "I am very impressed with work underway at the U.S. Army Air Defense Artillery School. There's a greater spirit of unity within the branch. There's a greater spirit of unity between ADA and other branches. I would say that the train has left the station."

The good news isn't all in hardware. Col. Robert S. Hardy Jr., director of USAADASCH's Directorate of Training and Doctrine, said Air Defense Artillery's new spirit extends to training.

"In the past, there may have been a case that Air Defense Artillery had a bias toward hardware or materiel solutions that inhibited doctrinal, tactical and training solutions, but that's true no longer," Hardy said. "Air Defense Artillery is truly working as a team.

"The FAAD mission training concept which will support our restructured FAAD forces is a good example of how the concept-based requirements system is driving the entire Air Defense Artillery train. It's a comprehensive training package that will capture every critical task and, for the first time, help ADA commanders with how, as well as what, to train.

"Air Defense Artillery faces difficult challenges, but we have the talent, determination and leadership we need to meet those challenges," he said.

Another piece of good news is that the branch will grow during the transition from older weapon systems to new weapon systems and from old force structures to new force structures. Luckily the phasing out of Nike Hercules, the termination of Sergeant York, and reductions in some ADA MOSs have left the branch with a pool of soldiers who possess a wealth of ADA savvy. Such soldiers represent an invaluable resource, said Maj. Sam Caldwell, chief of the Professional Development Branch, Office of the ADA Proponent, Fort Bliss.

"The basic transition plan for our ADA people is that they will not leave the branch — ADA stays ADA," Caldwell said. ". . . We recognize the intrinsic qualities of ADA career soldiers, aside from their technical qualities, and we don't want to lose them."

The new spirit of optimism is evidently contagious. Lt. Col. Vince J. Tedesco Jr., who authored the infamous "Death of ADA" article, says his pessimism has largely vanished since the summer of 1984. "We have a good azimuth, now," Tedesco said. "I think we have leadership now in the branch that is concerned with all the parts — the soldiers, the strategy, the tactics — not just the hardware. The FAAD concept that came out of the ADA Laydown is a very valid concept. We're back on track. The key will be our ability to execute."

Tedesco will share a large part of the responsibility for seeing that Air Defense Artillery's grand designs come true. Currently serving as the Firepower Division's ADA Team chief, the officer who once wrote Air Defense Artillery's obituary will report to Fort Bliss, Texas, in July to take charge of the FAAD TRADOC Systems Management Office.

by Blair Case

Forward Area Air Defense

The ADA Laydown has produced a new air defense concept that will re-equip and restructure ADA units whose mission takes them near the forward edge of the battlefield

by Col. John H. Little and
Maj. Michael A. Vane

The decision by Secretary of Defense Caspar E. Weinberger in August 1985 to cancel the Sergeant York Gun program has had a significant impact on the way Air Defense Artillery will fight in the forward area. The Army leadership — particularly the leadership of the Air Defense Artillery — has spent the intervening months analyzing and structuring a program to replace the ill-fated Sergeant York.

The Forward Area Air Defense Working Group under general officer leadership was established at Fort Leavenworth, Kan., to develop a comprehensive and fully integrated counterair approach to the forward area air defense problem. The ADA-specific input was provided by the ADA Laydown Group at the U.S. Army Air Defense Artillery School, Fort Bliss, Texas. Out of their combined efforts, the Army has formulated the Foward Area Air Defense (FAAD) system.

The system is analogous to a Navy aircraft carrier. The pieces fit together in a complementary fashion to produce a combat capability that exceeds the sum total of the individual pieces. The system only works if all the pieces function together.

A rigorous analysis of the forward-area air defense threat and the requirements necessary to counter it was the first step in the formulation of the FAAD system. Several significant factors emerged from the threat analysis.

First, the attack helicopter threat to the forward combat forces is already severe and is getting worse. Any direct-fire replacement system for the Sergeant York — particularly one that cannot be proliferated — must be able to counter the very threat helicopter tactics that pushed Sergeant York into early obsolescence.

Second, Air Defense Artillery cannot counter the threat alone, and neither can the other combat arms — Infantry, Armor, Aviation and Field Artillery. The Army's combined-arms team and a joint Army-Air Force effort are required to counter both the close-in air threat and the threat standing off at longer ranges. Air Defense Artillery, while contributing to the fight against the close-in helicopter, must focus on countering helicopters operating outside the range of the combined-arms weapons. Additionally, Air Defense Artillery must develop a non-line-of-sight kill capability to destroy attack helicopters masked by terrain in enemy territory.

Third, we must rely on Air Defense Artillery and the Air Force to provide protection against the fixed-wing threat to our division and corps forces deployed across the battlefield. The fixed-wing threat today is primarily aimed at destroying our sustainment capability and disrupting our command and control. Indications are, however, that in the future enemy fixed-wing aircraft will have an increased capability to inflict substantial damage to our forward forces and limit our ability to maneuver reserve forces — one of the keys to our success in battle.

Last, a robust command and control system is required. The system must employ a combination of active and passive sensors that have both line-of-sight and non-line-of-sight capabilities. In addition, it must warn all counterair capable assets and cue ADA weapons to the impending approach of threat aircraft.

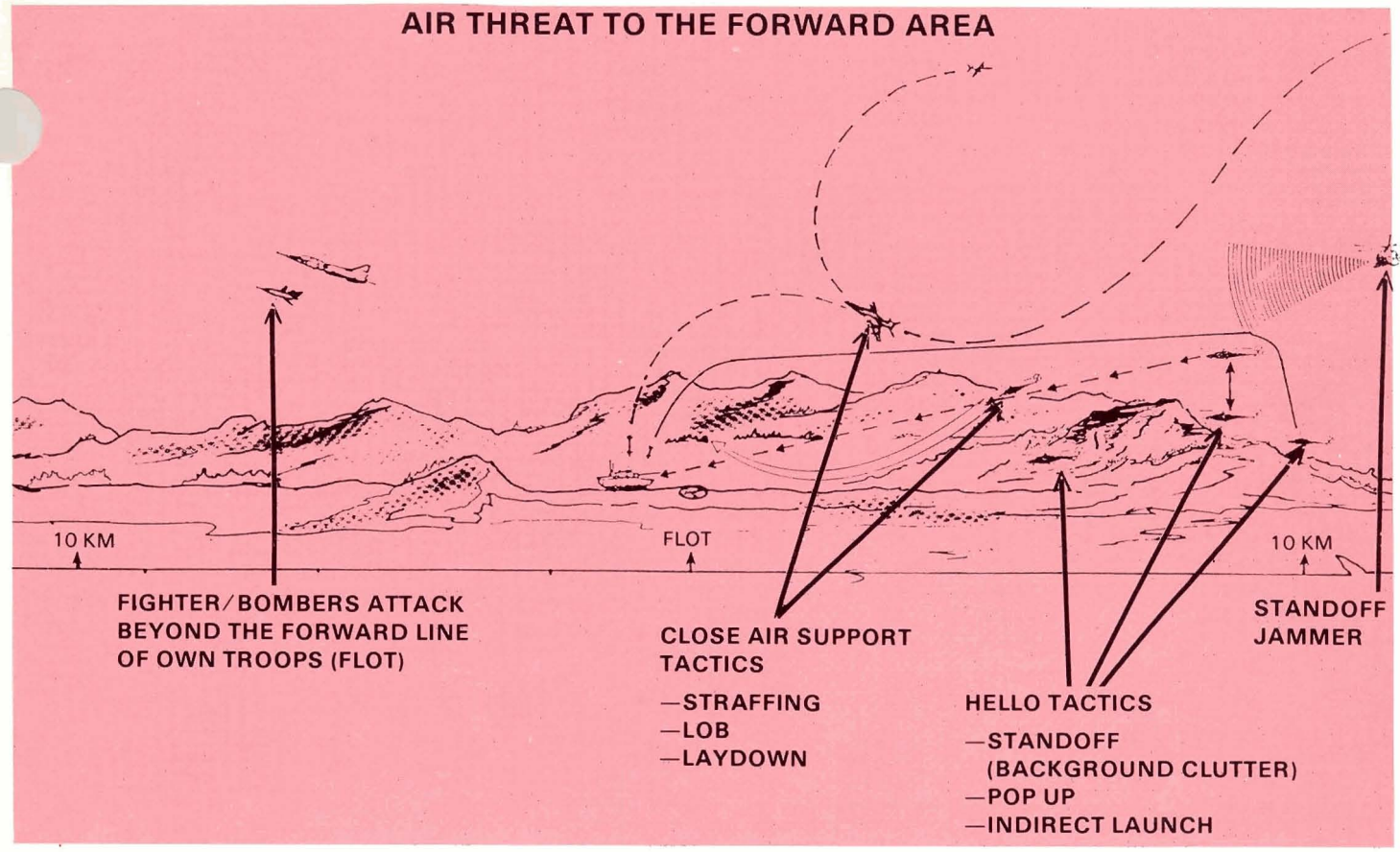
Threat Projections

In formulating the FAAD system, the Army did not want to fall into the same changing-threat trap that snared the Sergeant York. Our goal was to project likely increases in threat capabilities, stay ahead of threat evolution and force the threat to react to our increasing capabilities. We made the assumption the enemy will do what makes sense for him, and that we need not wait for him to demonstrate a capability if that capability is well within state-of-the-art technology.

Following are trends we think all forces will follow and that our counterair developments must address:

- Surface-to-surface missiles to attack surface-to-air missiles and tactical missile launch sites.
- Low-observable techniques coupled with traditional electronic countermeasures to shorten the effective range of surface-to-air missiles.
- Anti-radiation missiles to attack low-density radio frequency surface-to-air missile systems such as Patriot or Hawk.
- Increased use of countermeasures, such as suppressed plumes and active infrared countermeasures, to degrade infrared surface-to-air missiles.
- Standoff missiles from low-altitude helicopters operating beyond the coverage of FAAD systems and combined-arms weapons.
- Standoff dispensers on fixed-wing aircraft to attack stationary targets from distances beyond the range of short-range point defense systems.
- Drones and decoys to saturate or exhaust surface-to-air missiles.
- Unmanned aerial platforms for surveillance and target acquisition.

Soviet forces have steadily expanded and upgraded every category of their aerial weapon systems. Soviet ground force division and air force structures are being reorganized, enlarged and equipped with increasingly lethal and more capable missile, artillery, helicopter, aircraft and electronic warfare systems.



The threat to our forces in the forward area includes both rotary- and fixed-wing aircraft employed in a variety of roles as well as artillery and armor systems. Rotary-wing aircraft use "run-in" ground-attack tactics and standoff delivery of anti-tank guided missiles. These capabilities allow the threat to use its weaponry at maximum ranges, permit it short exposure times and enable it to launch munitions from exceedingly low altitudes, thereby taking advantage of terrain masking and ground clutter. The fixed-wing threat to be countered includes high-performance aircraft operating in close-air support roles near the forward line of own troops (FLOT), aircraft performing battlefield interdiction, and aircraft with missions requiring them to overfly the forward-deployed maneuver forces into the division rear area. These aircraft will present themselves in a variety of altitudes, speeds and aspects.

The air threat is formidable, but not invincible. Our goal in developing future air defense programs was to capitalize on threat weaknesses and to hard against projected threat developments. That is exactly what we have done in formulating the FAAD system. Combining FAAD capabilities with those at corps and higher echelons will leave the enemy no preferred attack option. This combination will complicate his attack and force him to use options with a low probability of success no matter where he chooses to attack on the battlefield.

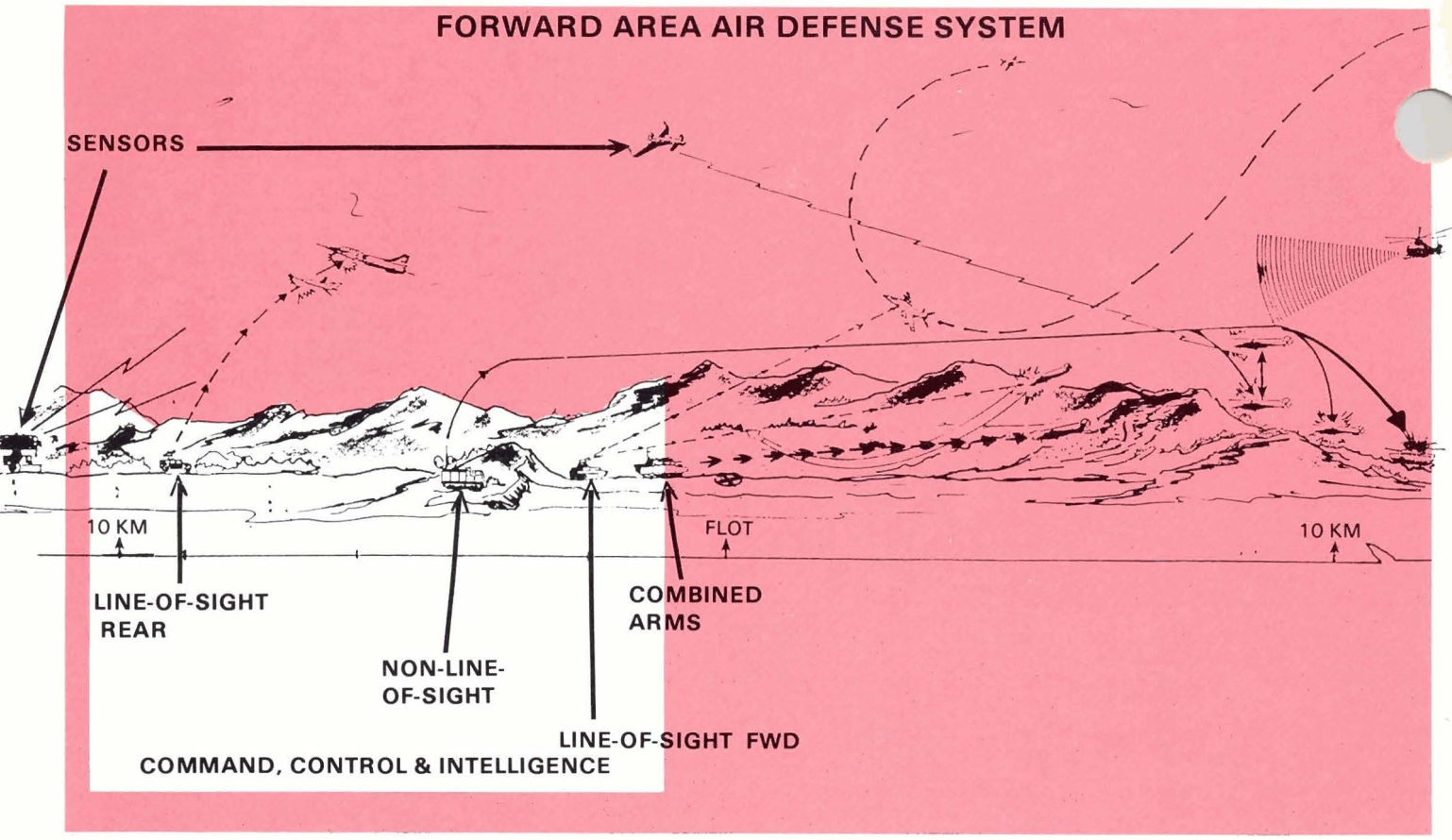
FAAD Employment Concept

The mission of counterair forces remains the same: destroy or reduce the effects of the air threat. Improvements to the air threat require a rethinking of our counterair employment concept. The specific tasks inherent in the counterair mission are to kill the air threat (on the ground or in the air) or to reduce its effectiveness. Reducing air threat effectiveness is accomplished through both active and passive measures. Active measures include actions to nullify enemy weapon capabilities; disrupt the enemy's command, control and communications means; and destroy enemy support capabilities. Passive measures include the use of terrain for cover and concealment, dispersion of forces and reduction of radio frequency signatures.

The traditional ADA concept evolved from the operational capabilities of individual systems and was modified as each new system was fielded. This concept could be characterized by descriptors such as "reactive," "defense oriented," "clusters" or "islands of defense." Air defense mass was concentrated around critical assets to ensure the engagement of aircraft that attacked those assets. Though ADA gunners hoped to destroy the attacking aircraft, reducing their ordnance delivery effectiveness or driving them away was considered an acceptable result of concentrated ADA firepower. Multiple, simultaneous engagements of a single target was the accepted price of protecting the assets. Manual command and control, marginal frontal engagement capabilities of short-range air defense missiles, and the limited number of guns participating in the air defense role were the realities that drove this employment concept.

The combined arms counterair concept and the FAAD system are products derived from working within a concept-based requirements system while maintaining touch with the realities of manpower, budget and technological limitations. This new concept can be characterized by descriptors such as "future oriented," "attrition oriented" and "dispersed but weighted."

In the forward area, we must look deeper and lower into enemy airspace to identify and kill enemy aircraft before they engage their targets. In the rear areas, we must positively identify hostile aircraft and engage them at greater distances from the protected



assets. While providing increased density around the most critical assets, systems will be located throughout the battlefield in order to engage and kill attacking aircraft before they reach their ordnance release points. This dispersion provides for sequential engagements of aircraft as they transit toward targets in the rear.

The missile savings realized by sequential versus simultaneous engagements, the intelligence denied by not disclosing protected assets by the firing signatures of massed ADA weapons and the multiple engagement of aircraft prior to ordnance release are advantages gained by the new employment concept. The components of the FAAD system provide the foundation upon which this increased protection of the maneuver forces and our war-sustaining assets is based. Proliferated, complementary, state-of-the-art weapons operating under the umbrella of an automated command, control and intelligence network — all of which are integrated into the maneuver arms segment of the combined arms force — provide for decreased fratricide while advertising the following message to the threat: "You come; you die."

FAAD Programs

Given this overall employment concept, the total FAAD force can now be discussed in context. For simplicity of explanation, the battlefield can be viewed as a collection of separate pieces. The total air defense solution, however, is a system of subsystems interlocked and interwoven to provide total coverage and to permit the enemy no preferred attack option. The pieces to be described are organic to the divisions and are part of the divisional air defense artillery battalion.

In the forward area, our present family of weapons (Chaparral, Stinger and Vulcan) and command and control systems severely limit our ability to carry out the counterair concept and defeat the enemy. The FAAD system, however, is a system approach that will give us the capabilities we need to win. The FAAD system has five components: command, control and intelligence (C^2I), line-of-sight rear, non-line of sight, line-of-sight forward and combined arms. Each system component complements the others. Together, the FAAD components form an array that can defeat any enemy attack option.

The different technologies inherent in missiles and guns make it extremely difficult for attacking aircraft to defeat any one component of the FAAD system without being engaged by another. Off-the-shelf equipment and technology is available, in many cases, to meet the FAAD system component requirements. To acquire this total system at the lowest cost, a non-developmental item (NDI) approach will be used when possible.

FAAD C^2I

FAAD C^2I — formerly known as SHORAD C^2 — will fuse intelligence and targeting information from organic sensors and other sources. Other specific battlefield contributions include alerting FAAD weapons, combined arms, and high-to-medium air defense (HIMAD) and/or joint air defense elements. FAAD C^2 will also cue FAAD weapons (and perhaps designated combined arms weapons) and provide the current air situation picture to FAAD and combined arms commanders. Simply stated, FAAD C^2 is the "glue" that binds all the components of the FAAD system together. This component also will provide for the interoperability of FAAD with allied, joint and HIMAD C^2 systems.

Low-altitude aircraft forward of the division are often masked from HIMAD and joint sensor surveillance. The deletion of the Sergeant York sensors has further complicated the surveillance and identification problem. To fill this void, a network consisting of active and passive aerial and ground-based sensors is required to detect and iden-

tify threat aircraft. These sensors must cover the entire divisional area and 20 to 30 kilometers forward of the FLOT. Mobile active ground-based sensors allow us to integrate targeting information from allied, joint and HIMAD sources and meet the requirements to search for, track and report accurate target locations in an electronic countermeasure environment. These sensors will provide the needed low-altitude coverage forward of the division where joint and HIMAD detection at low altitudes is limited. A small number of lightweight aerial sensors can provide detection of terrain-masked targets forward of the FLOT. This capability is needed to improve our non-line-of-sight weapons' ability to engage, particularly in enemy territory. These aerial sensors, which will complement our ground sensors, will also let us exploit the full capabilities of our FAAD weapon systems.

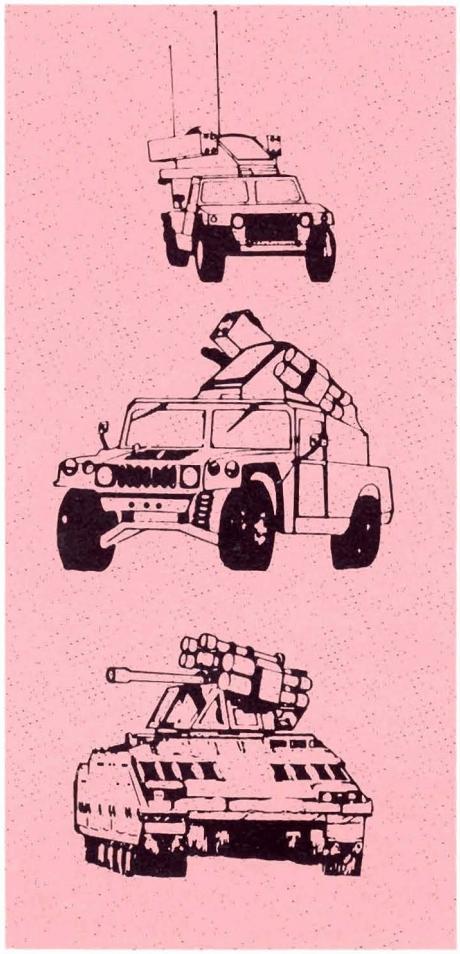
The incorporation of passive technologies such as non-cooperative target recognition will provide positive hostile aircraft identification. Non-cooperative target recognition technologies that use the entire signature spectrum of threat aircraft will allow us to engage targets beyond visual range. In addition, these technologies will likely provide a passive target acquisition capability for our aerial and ground sensors and FAAD weapon systems, thereby enabling us to remain silent with our active sensors.

In FY 1987, the Army intends to award a full-scale FAAD C^2 development contract; prepare for and conduct a demonstration for a non-developmental item sensor; conduct passive identification demonstrations; and complete aerial sensor system definition. The test bed units at Fort Lewis, Wash., will collect and evaluate FAAD C^2 data.

Line-of-Sight Rear

The second component of the FAAD system is the line-of-sight rear, better known as the pedestal-mounted Stinger. This component will be the most proliferated FAAD weapon and will be deployed in the brigade rear and the division and corps areas. Its cost should be minimal because we will use an NDI acquisition strategy that will include competitive procurement.

The pedestal-mounted Stinger will be a Stinger-based missile system with eight ready-to-fire missiles and a gun/gun surrogate mounted on a high-mobility, multipurpose wheeled vehicle. The system will lessen the man-machine interface problems associated with Stinger employment in a manportable configuration. With the addition of direct-view optics, a forward-looking infrared device and a laser rangefinder, the PMS gunner will be able to maximize Stinger's engagement capability. Existing Stinger missiles of any type (basic, POST or RMP) can be fired from the PMS system without modification. PMS will counter fixed-wing aircraft and helicopters and, because of its employment locations, will require less mobility and armor protection than other systems in heavy divisions which fight near the front in range of enemy direct-fire weapons. We will procure PMS through full and open competition as directed by the Congress in FY 1986.



Non-Line-of-Sight Rear

The third element of the FAAD system is the non-line-of-sight (NLOS) component. The NLOS component will be deployed in defilade near the FLOT where it can be masked from visual detection by the enemy. This weapon will give the Army an ADA capability to defeat helicopters behind mask. It will also allow us to engage enemy helicopters before they can engage us.

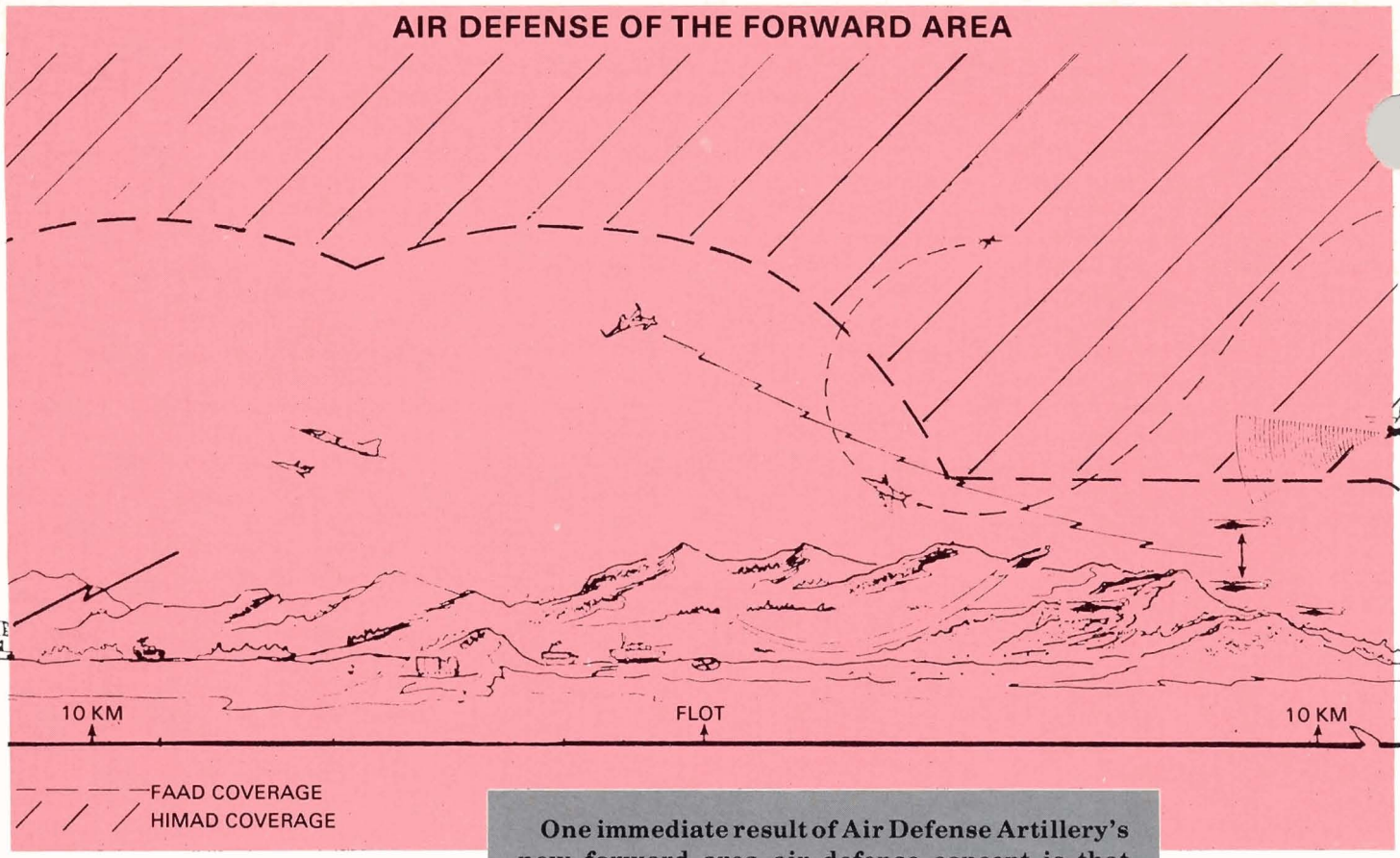
The fiber-optic guided missile (FOG-M) is one of the leading candidates for NLOS. FOG-M is a precision-guided missile developed in-house by the U.S. Army Missile Command's Research, Development and Engineering Center at Huntsville, Ala. It uses an image seeker for target acquisition, transmits the image from the missile to an operator on the FOG-M vehicle via a fiber-optic data link, and uses the steering signals it receives back through the link to control missile flight to target impact. In addition to its air defense capability, FOG-M will be able to kill stationary or moving tanks. The fire unit in the heavy division will be mounted on a standard fighting vehicle system carrier and will be manned by a crew of three.

The Army is currently investigating other NLOS alternatives such as the Air Force's advanced medium-range air-to-air missile (AMRAAM). Our initial look at AMRAAM, however, indicates it probably is better suited for other missions.

Since technology exists to counter the low-altitude, hovering helicopter threat, an accelerated acquisition strategy will be followed. To find out more about the leading candidate, the Army intends to buy a platoon of FOG-M weapon systems and test them in an operational environment. The results of the testing coupled with analysis results will allow the Army to ensure that the design meets the projected threat in a variety of battlefield situations.

Line-of-Sight Forward

The fourth component of the FAAD system is the line-of-sight forward (LOS-F) element which will replace Sergeant York, and be employed in the close combat zone of both the heavy and light divisions. There are two variants of this component — a tracked variant for the heavy division and a wheeled variant for the light and special purpose divisions. The variants will be designed to kill or suppress enemy fixed-wing aircraft and exposed helicopters. They will also be capable of operating at night and engaging helicopters in ground clutter. A gun-missile mix is the envisioned system configuration for both variants because it capitalizes on the strengths of both weapon types. Guns are effective at short ranges because they force fixed-wing aircraft to jink or fly higher, and compel helicopters to use terrain masking, thereby reducing the engagement opportunities of each. Missiles are effective at longer ranges and are more responsive to maneuvering



One immediate result of Air Defense Artillery's new forward area air defense concept is that FAAD (forward area air defense) will replace SHORAD (short range air defense) as a commonly used ADA acronym. For example, authors of ADA field manuals will now write: "Forward area air defense (FAAD) weapon systems will provide air defense for maneuver elements on the air-land battlefield." This doesn't mean the acronym "SHORAD" or short range air defense will become altogether obsolete. Vulcan gunners will still practice SHORAD gunnery, but they will now be part of the FAAD force.

aircraft. Solutions to the requirement for a gun-missile mix in the heavy division fall into three broad categories:

- A hybrid consisting of an air defense missile and air defense gun on the same vehicle.
- A mix consisting of an air defense missile and air defense gun on separate vehicles.
- An air defense missile-only system with combined-arms guns in their air defense roles to provide the gun component.

A request for information was released in January to solicit industry solutions to the LOS-F problem in the heavy division. A demonstration is planned this fall to verify data and contractor claims. System selection is scheduled for March 1987.

To satisfy the mix requirement in the light division, we are planning to product improve the PMS by adding a dedicated air defense gun and a complementary missile which will enable PMS to engage targets in infrared clutter. Specific system characteristics are being refined and should be finalized by the end of the fiscal year.

Combined Arms

The final component of the FAAD system is the joint and combined arms' contribution to countering the enemy air threat in the forward area. The primary mission of combined-arms weapons must remain focused on the enemy ground threat. However, other combat arms possess some capability to engage rotary-wing aircraft, and this capability should be exploited. These contributions have been identified and are being analyzed. Initiatives being taken include giving the Air Force the mission of defeating standoff jammers; enhancing tank ammunition to counter helicopters; accelerating the delivery of air-to-air Stinger; and evaluating the air defense effectiveness of guns currently on tanks and Bradley Fighting Vehicles.

The FAAD system, combined with existing HIMAD systems, provides complete coverage over the forward area, offering the enemy no preferred attack option.

The effort to develop a new FAAD system is not complete. It is just beginning. We believe we have made a good start, but there is much yet to do. We still need to fully define the exact requirements of the components of the FAAD system, how they will operate, how we will man them and how we will train our soldier to operate them. The dialogue has just begun. We have gained approval throughout the Army and the Office of the Secretary of Defense, but in a world of constrained dollars, there will be many more tests to come.

Col. John H. Little, *director of the U.S. Army Air Defense Artillery School's Directorate of Combat Developments, headed the ADA Lessons Learned Group at Fort Bliss, Texas.*

Maj. Michael A. Vane *is chief of the C^2 Section, C^3 Branch, Materiel and Logistics Systems Division, Directorate of Combat Developments, U.S. Army Air Defense Artillery School, Fort Bliss, Texas.*

The Army and Air Force chiefs of staff have agreed that the Army should keep primary responsibility for the Patriot air defense missile system. The decision was based on a year-long evaluation conducted by a joint Army-Air Force study group. Although a transfer of Patriot to the Air Force was pronounced feasible, the study pointed to possible disruption of system financing, manning and deployment as reasons the transfer should not occur.

Many Army air defenders had feared that the proposal to transfer Patriot to the Air Force might rob Air Defense Artillery of one of its major battlefield roles and its most sophisticated weapon system. The following explains how the transfer question came about, and how the joint working group came to its conclusion.

Army Retains Patriot

by Maj. Mark A. Robershotte
and Maj. Greg H. Parlier

In May 1984 Army Chief of Staff Gen. John A. Wickham Jr. and Air Force Chief of Staff Gen. Charles A. Gabriel signed a memorandum of understanding that contained 31 initiatives to increase combat effectiveness by restructuring or eliminating duplicate programs within the two services. The memorandum was to serve as "the initial step in the establishment of a long-term dynamic process whose objective will continue to be the fielding of the most affordable and effective air-land combat forces."

The first initiative called for an assessment of area surface-to-air missiles (SAM) and air defense fighter aircraft. An outgrowth of this initiative was the Area SAM Proponency Study. This joint effort was to evaluate the feasibility and advisability of transferring proponency for area SAMs, specifically Patriot, from the Army to the Air Force.

The remaining initiatives contained a variety of additional joint service issues, such as airlift, close air support, deep interdiction, special operations, air-base ground defense, development of new aircraft, night operations, ammunition development, electronic warfare and suppression of enemy air defenses.

Background

Within each major theater of operation the air component commander is responsible for planning, executing and controlling defensive counterair efforts. Assets include point and area SAM systems, air defense fighters, ground-based electronic warfare, ground control intercept radars, C^3 systems, and airborne warning and control systems. These systems are integrated to maintain air superiority over friendly controlled territory. Both Army and Air Force assets are intimately involved in the defensive counterair mission. Despite synchronized employment, the dual-service resourcing can have the potential of acquiring and using less effective force mixes at a greater cost. Many of our allies have addressed this situation by organizing all air defense assets, including ground-based ones, as part of their air forces.

Longstanding differences have existed between our Army and Air Force roles within the air defense mission. Traditionally, the Army emphasizes protection of assets, while the Air Force emphasizes the broader role of air superiority and, therefore, attrition. These different focuses are justifiable and complementary. To perform a protection role, Army systems cause attrition of enemy aircraft; in accomplishing attrition, Air Force systems reduce the air threat to all assets. While the differences in philosophy may appear subtle, technically they are different by design.

Complementary Army and Air Force roles in air defense will remain regardless of who has Patriot. The two services must maintain an operational and requirement interface. With Army proponency, the boundary is drawn between ground and air systems. Under Air Force proponency, the boundary becomes multidimensional since it would exist between remaining Army ground systems, and Air Force air and ground systems. Hence, many of the obvious advantages of one-service integration of Patriot and fighters can only be obtained by trading off the current advantage of one-service integration of ground systems.

Scope and Assumptions

The study was conducted within the context of joint air-land combat operations as they might occur during the 1986-1993 timeframe. Only programmed air defense forces and systems were used in the analysis. The European, Pacific and Southwest Asian theaters were considered.

Some of the most important assumptions used in the study were:

- There would be no net increase in the total combined Army and Air Force manpower ceilings.
- The system capabilities of Patriot would be the same whether operated by Army or Air Force personnel.
- Hawk would remain in the Army as a point air defense system and as a corps ADA asset according to current Army plans.
- The Air Force would deploy Patriot tactically in Europe according to the current Army plan (schedule and locations).

Methodology

The study evaluated Patriot's operational effectiveness, cost and other resource requirements over the prescribed time frame, under the existing concept and under a Patriot proponency transfer concept. A qualitative analysis was done for the operational effectiveness evaluation, and a quantitative analysis was used to evaluate costs. The focus here will be on the operational effectiveness portion of the study.

Only two alternatives were considered: that the Army retain all Patriot systems; that the Air Force acquire all Patriot systems. The study included a discussion of Patriot missions and functions; the Army and Air Force organizational, training, personnel, logistics

and system acquisition concepts; and a resource requirements evaluation. It also discussed the operational issues based on the air defense deficiencies noted in the Army Air Defense and Air Force Mission Area Analyses, and differences in the Army and Air Force organizational and operational concepts. The study further included an operational effectiveness evaluation, and the findings, conclusions and recommendations.

Operational Effectiveness Evaluation

To determine if transferring Patriot proponency to the Air Force would contribute to a greater operational effectiveness, the joint working group used decision analysis techniques. The group's nucleus consisted of eight voting members with equal representation from both services. Army representation consisted of officers from the Office of the Deputy Chief of Staff for Operations and Plans, U.S. Army Training and Doctrine Command; the Patriot Project Manager's Office; and the U.S. Army Air Defense Artillery School. Air Force representation included two air staff officers and one officer each from Tactical Air Command and the Air Force Center for Studies and Analysis.

The nucleus, supported by additional invited field experts, systematically identified and compared the operational effectiveness advantages of Patriot proponency either remaining with the Army or being transferred to the Air Force.

Each of the Patriot functions that support the air-land battle were identified and examined.

For deep operations, Patriot is considered to be a maneuvering unit protecting forward combat units and friendly air assets, including standoff and surveillance aircraft.

In support of the close-in battle, Patriot protects forward units, critical assets and friendly aircraft. It causes air-breathing threat attrition.

In rear operations, Patriot protects critical theater assets and units located in the rear and also inflicts attrition on the air-breathing threat.

In all three operations, Patriot must integrate with Hawk, forward area air defense elements and other services' defensive counterair assets; provide air attack warning; move frequently for survival and avoid shooting at friendly aircraft.

Next, the group examined eight operational issues to determine how Patriot proponency might relate to solving or alleviating the inherent operational difficulties. The eight areas and the major emphasis under these issues are listed in Figure 1. During the conduct of the analysis, several suggested areas for improvement, short of proponency transfer, also surfaced.

Air Defense Requirements:
Sufficiency of air defense assets and the evolutionary air defense capability to counter the projected threat.

Ability to Achieve Hostile ID:
Non-cooperative target recognition beyond visual range.

Air Battle Management:
Coordination of airspace management and fire distribution to maximize the efficiency of integrated air defense resources.

Communications:
Equipment (including JTIDS) and multi user netting needed to integrate air defense assets.

Air Base Survivability:
Active defense by PATRIOT.

Ground-based Air Defense Survivability:
Ability for PATRIOT to conduct the air defense mission while under hostile ground and air attack.

Sustainability:
Reinforcement, reconstitution, resupply and maintenance of PATRIOT.

Training:
Integrated training with other SAMs and fighters.

Operational Issues

Figure 1.

Decision Analytic Procedure

Very little quantitative comparative information was obtainable. However, qualitative, subjectively assessed information was available. Multiple attributes — the issues and functions — were important to the decision makers. Although conflicts and tradeoffs existed among the attributes, determining the best alternative was the desired solution. This type of decision problem consisting of primarily qualitative (fuzzy) attributes is often best tackled by using multiattribute utility analysis.

The specific approach used was to

- structure the issue areas and functions;
- record expert assessments of the degree to which each service proponency would produce an operational effectiveness edge
- record expert assessments of the relative importance of functions and issue areas;
- combine assessments of the proponency-related operational effectiveness edge with the assessments of importance.

All participants informally discussed each issue. The discussion included a definition of the issue or function and the benefits or drawbacks of proponency as it would affect the particular issue. Next, each of the voting members assigned a numerical score that reflected the degree to which the function or issue favored the Army or the Air Force and also reflected on the importance weight of the issue.

All scores were displayed to the voters, and each voter explained the rationale behind his chosen score. More general discussion followed, and individuals were allowed to change their scores. The results were summarized once each member was satisfied with his score. Where possible, a consensus position was defined and the supporting reasoning listed. In the few cases where a consensus could not be reached, the positions were noted, and the process continued. The results were entered into the multiattribute utility model for later analysis and discussion. This same procedure was continued for each set of issues and functions.

Results

In contributing to solutions or alleviating existing operational issues, the joint working group found that service proponency resulted in different advantages, but in all cases, the advantages were found to be only slight.

Furthermore, when the functions of Patriot in support of the air-land battle were considered, Air Force proponency offered no greater operational effectiveness advantages than did Army proponency. These results are shown at Fig-

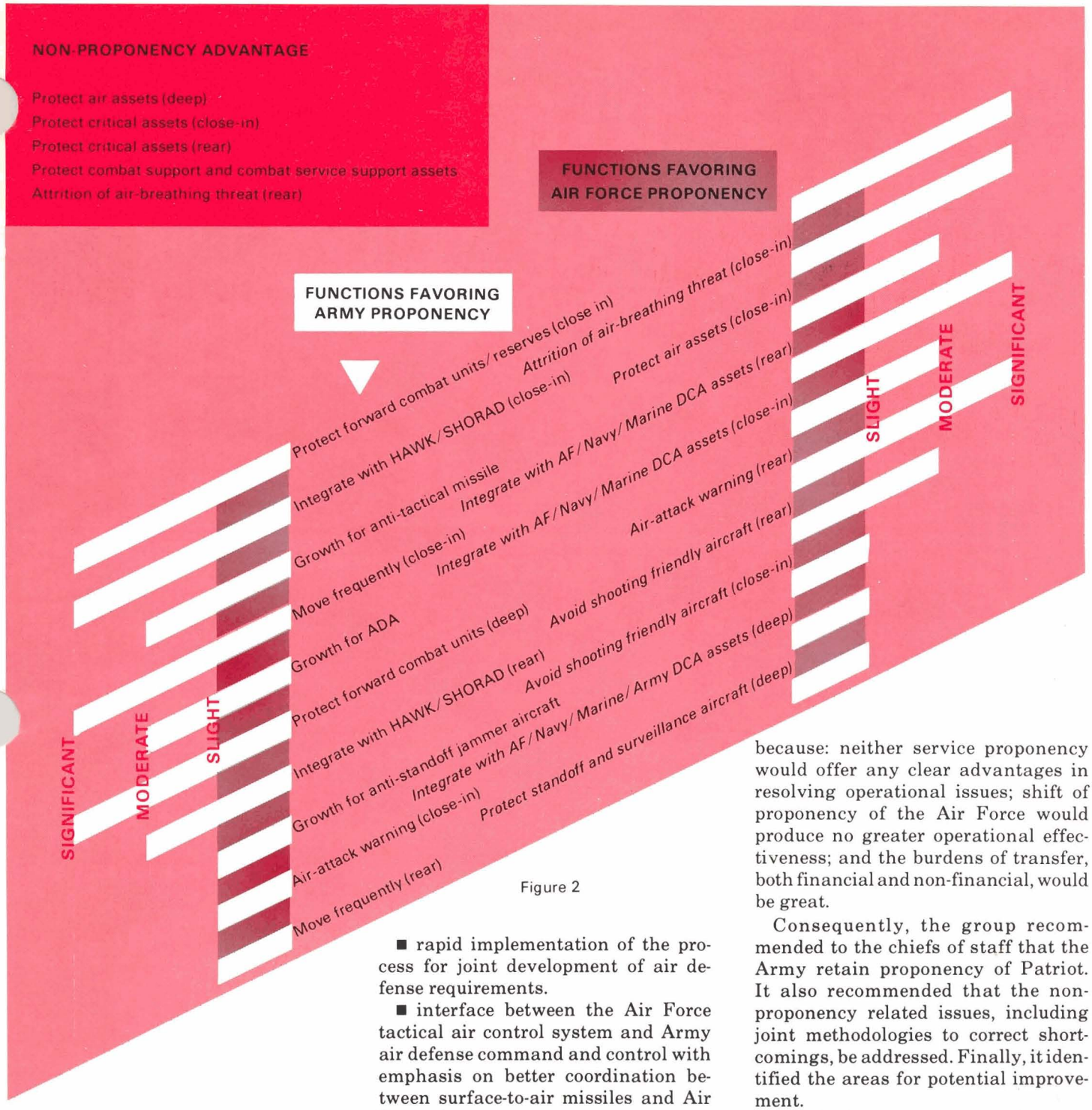


Figure 2

ure 2. Although each service maintained somewhat different points of view, the basic findings remained equally valid from either service perspective.

Suggested areas for potential improvement, independent of proponency, emerged during the operational effectiveness evaluation. These are:

- use of common, reliable, redundant and jam-resistant communications like JTIDS, or a JTIDS-type, communications system.
- joint development of surface-to-air missile and fighter tactics.
- joint Patriot and fighter training.
- rapid implementation of the process for joint development of air defense requirements.
- interface between the Air Force tactical air control system and Army air defense command and control with emphasis on better coordination between surface-to-air missiles and Air Force elements.
- wider use of available Patriot surveillance data to improve the overall air situation picture at all echelons.
- procedures for the protection of high-value airborne Air Force platforms like the AWACS.
- dedication of security forces to Patriot.

Study Conclusions

The joint working group concluded that transferring Patriot proponency to the Air Force would be feasible. However, the group's analysis indicated that the transfer would not be advisable because: neither service proponency would offer any clear advantages in resolving operational issues; shift of proponency of the Air Force would produce no greater operational effectiveness; and the burdens of transfer, both financial and non-financial, would be great.

Consequently, the group recommended to the chiefs of staff that the Army retain proponency of Patriot. It also recommended that the non-proponency related issues, including joint methodologies to correct shortcomings, be addressed. Finally, it identified the areas for potential improvement.

An Air Force officer summed up the decision when he said, "The transfer would have been a good idea five years ago. But with the cooperation we've [Army and Air Force] got going now, the payoff just wouldn't be that big."

Maj. Mark A. Robershotte *is an assistant professor of engineering management at the U.S. Military Academy. He is a graduate of the Air Defense Artillery Officer Advanced Course.*

Maj. Greg H. Parlier *is an assistant professor of operations research in the Department of Engineering at the U.S. Military Academy. He is a graduate of the Air Defense Artillery and Infantry Officer Advanced courses.*

ADA People Puzzle

Air Defense Artillery is undergoing the most dynamic force modernization in its history. This modernization includes major equipment, structure and doctrine changes that will severely challenge the personnel system's ability to field and man organizations to readiness levels needed to fight the air defense battle.

Air Defense Artillery's transformation will take place in transitional stages that will continue through FY 1992. A vital part of the personnel challenge is to continue to man established systems while new ones are fielded. This requires transitioning a portion of the old career force to new systems without degrading the old systems below acceptable readiness levels.

To smooth the transfer of expertise and doctrinal experience during the transition, the following general reclassification guidelines will be followed. Air defenders will most often reclassify from one HIMAD system to another HIMAD system and from a SHORAD system to another SHORAD system. Accordingly, reclassification will be from operator to operator and maintainer to maintainer. These guidelines prioritize reclassification first into new military occupational specialties (MOS) within the air defender's career management field (CMF), then to a shortage MOS, a balanced MOS or, as a last resort, an MOS outside the soldier's CMF.

"The basic transition plan for our ADA people is that they will not leave the branch — ADA stays ADA. Though a piece of hardware may be transitioned out of the active Army inventory, the people manning that system still possess a wealth of air defense knowledge and experience that should be carried forward to a new system. We recognize the intrinsic qualities of ADA career soldiers, aside from their technical knowledge, and we do not want to lose them," said Maj. Sam Caldwell, chief of the Professional Development Branch, Office of the ADA Proponent, Fort Bliss, Texas.

"Large numbers of reclassifications of operators, maintainers and repairers will be required to support the ADA transition. Our challenge is to do what is best for the Army, the branch and the soldiers involved," he said.

An obvious sign heralding the mounting transition in ADA is the incorporation of new equipment. Patriot and the replacement, or replacements, for Sergeant York are systems designed to enhance air defense capability. New equipment will have a definite impact on personnel management and support.

The structure of Air Defense Artillery is undergoing dramatic changes to maximize the capabilities of equipment and to support emerging doctrine. Overall, during the transition, the force structure of Air Defense Artillery will grow slightly.

The organizational structure has been changed by the addition of air defense artillery brigades and Chaparral battalions at corps. The structure has also changed with the formation of light infantry division ADA battalions, conversion to the Army of Excellence structure in heavy divisions, and the development of the air battle management operations center in each divisional forward area air defense battalion. Each of these will impact on personnel requirements.

Emphasis on Volunteering

Emphasis throughout the transition period will be on voluntary reclassification, particularly within the maintenance area, from within the ADA community. However, when necessary to meet the needs of Air Defense Artillery, soldiers will be involuntarily reclassified. The priority of reclassification in force modernization MOSs will be based on the goal of filling all transition seats up to 100 percent. If voluntary reclassifications cannot meet these requirements, involuntary reclassification actions will be taken to ensure 100-percent class fill.

Temporary overages in some MOSs to support modernization is inevitable. The Office of the Chief of Staff for Personnel Force Alignment Plan (FAP) I is designed to reclassify excess soldiers in MOS grade cells over 120-percent strength. For ADA MOSs on the FAP I list, reclassification of excesses will only be within the ADA field, unless it is determined that they are definitely not needed to support the ADA transition.

Reclassification of personnel for new ADA systems will be from existing air defense operator and maintainer MOSs, and from other non-ADA MOSs as individually requested. All reclassification will be controlled by the U.S. Army Military Personnel Center (MILPERCEN).

Reclassification targets for CMF 16, 23 and 27 will be established with the intent of bringing an MOS in the CMF to within the 95 to 105 percent management window.

Air defense artillery MOS transitional reclassifications will generally occur as shown below.

Current MOS	New MOS			
	First Choice	*Second*	*Third*	*Fourth*
16B, 16C	16T	16R	16H	16S
16D, 16E	16T	16H		
24C, 24E	24T	24M	24N	
24P,Q,G,R,U	24T	24TT5		
22L, 22N, 23N, 23U, 23W, 24H, 24J, 24K, 24L, 24V	27F	24TT5	27G	

Piecing together the dynamic elements of the ADA force modernization challenges the versatile spirit of air defenders

As a guide, this table will help soldiers understand the trend of reclassification in their CMF. However, the table does not explain some of the special situations being encountered by many air defenders during this transition period.

For example, April 1, 1986, the 16B and 16C MOSs were eliminated. Career ADA soldiers have been either reclassified, in training or scheduled for training by that date. These soldiers received priority for transition training seats.

Also, the 16H MOS has been affected by the formation of the air battle operations center, which drastically increases the authorizations for 16H, particularly at the NCO grades. Reclassifications to MOS 16H from all overstrength ADA MOSs will be necessary to meet the growing authorizations.

At the same time, ADA soldiers who had been part of the Sergeant York program (16L, 24W, 27P, 27Q) are being reclassified to their old primary MOS, providing it is still valid and is short in that grade. Soldiers whose MOS is valid but is balanced or overstrength in grade will be reclassified into another shortage MOS within the CMF. Soldiers whose old primary MOS is not valid will be reclassified to a shortage MOS within their CMF. As an exception, 27Q soldiers will be allowed voluntary reclassification to MOS 35C. Some soldiers in CMF 27 may be permitted to reclassify outside the CMF because of CMF overages.

Slips in Patriot fieldings have resulted in training cuts and eliminated opportunities for soldiers to transition to Patriot. Until Nike Hercules inventories are exhausted, priority for Patriot seats will go to 16B and 16C soldiers. Sustainment of Patriot in the future, however, will be a challenge. It may become necessary to reclassify some SHORAD soldiers to support or sustain Patriot. This will be done when HIMAD soldiers are not available.

Hawk inactivations or conversions are causing overstrengths to grow in 16D and 16E with no transition for Patriot available until FY 1987. Hawk soldiers will be given first priority for Patriot training after Nike Hercules soldiers.

In addition, MOS 16P is being changed to cap at sergeant first class because of the formation of corps Chaparral battalions. Soldiers in MOS 16R in the E-7 grade who have received contractor or formal Chaparral training and are serving in Chaparral units or duty positions will be reclassified to MOS 16P. Soldiers in MOS 16R as E-7 who are Chaparral trained and presently assigned to Vulcan units desiring reclassification to MOS 16P may apply following procedures in Chapter 2, AR 600-200. Soldiers with lengthy service in Chaparral units, but not formally trained and serving in either Chaparral or Vulcan positions, may request reclassification to 16P also.

Making the Change

Recognizing the challenge of the ADA force modernization, MILPERCEN has indicated points of consideration for individual soldiers, units and the personnel system in which they are managed.

To help with the transition process, project development identifiers (PDI) will be used. These PDI codes are used to identify soldiers who have had training in a force modernization system prior to an MOS or additional skill identifier becoming effective. Soldiers qualifying for award of a PDI code should be identified to MILPERCEN, attention: DAPC-PLO. Soldiers receiving PDI codes must be first considered for reclassifications into new systems. Possessing a PDI code, however, will not guarantee automatic reclassification. Requests for reclassification on the basis of a PDI code must include a certificate of training, indicating completion of formal training; or the appropriate proponent officer must certify that the individual has received sufficient training for award of the requested MOS.

Aptitude area scores may be waived by MILPERCEN when soldiers are transitioning into an MOS with a requirement for more stringent criteria than their current MOS. Demonstrated leadership ability and competency in the current MOS are primary considerations for granting a waiver.

The MILPERCEN policy for service remaining obligation for all manditorily reclassified soldiers is 18 months at the completion of training. Soldiers with less than 18 months will be handled as an exception to policy on a case-by-case basis. No soldiers with less than nine months remaining in service at the completion of training will be considered for retraining and reclassification. Service remaining obligations for volunteers will be in accordance with AR 614-200.

The possibility of retraining ADA soldiers more than once has been considered by MILPERCEN. If projections indicate that there will be a prolonged overstrength in a transition MOS, it may become necessary to retrain a soldier more than once to sustain an effective ADA personnel force structure.

Key to this is the commitment that soldiers will receive the training needed to ensure their smooth career progression. All soldiers will be required to receive formal school training to qualify for reclassification into a new MOS.

Soldiers requesting reclassification from existing overstrength MOSs will be given priority in retraining. Soldiers identified for retraining must receive MILPERCEN clearance prior to attending training, for MILPERCEN has final approval or disapproval authority on identifying personnel to attend formal retraining.

Soldiers identified to attend formal retraining will be awarded the new MOS with a 00 skill identifier (for example, 16T00, 24T00) upon entering formal training.

Personnel resources must be managed skillfully through the transition period to ensure fielding of new systems and, at the same time, sustainment of existing systems. Within this dynamic environment, air defenders are assured that they comprise a vital piece of the transition puzzle.

New FAAD Mission Training Concept

Air Defense Artillery's Forward Area Air Defense Mission Training Concept will at last provide commanders with the tools they need to conduct unit training

by Col. Robert S. Hardy Jr.

One of Air Defense Artillery's worst training deficiencies becomes glaringly apparent to most forward area air defense (FAAD) officers the day they begin to plan their unit's training. Field manuals, field circulars, training circulars, and Army training and evaluation programs (ARTEPs) tell us what to train, but they don't help much with how to train. A good FAAD training package that includes targets, simulators and devices just isn't there.

A FAAD mission training concept being brought to fruition at the U.S. Army Air Defense Artillery School, Fort Bliss, Texas, will correct that deficiency for those units who represent Air Defense Artillery at the forward edge of the battlefield. The concept is based on a reduced-distance training strategy that admits our past attempts to imitate full-scale, ground-to-air or air-to-ground combat haven't been realistic enough, cost effective enough or training effective enough. It's a comprehensive training package that will capture every critical collective task and, for the first time, aid ADA commanders with how, as well as what, to train.

The Air Defense Artillery School will export tactical hardware simulators, in the past largely reserved for institutional training, to units in the field along with a vastly improved aerial target system. We will include a series of drills, situational training exercises and field training exercises that will standardize and improve ADA collective training. The supporting document will be the improved ARTEP, that is, the ARTEP Mission Training Plan (AMTP).

One AMTP will be developed for every FAAD echelon that performs tasks collectively. Individual tasks documented in soldier's manuals and military qualification skills manuals will support, and will be tied to, collective tasks. In other words a commander who determines that his unit is deficient in a collective task will be able to look into his AMTP and find the individual soldier and leader tasks that support that collective task. He will find the drills related to that task and will be given situational exercises to train the task.

Every critical collective task will be included in the AMTP, while supporting individual skills will be included in soldier's manuals or military qualification skills manuals. The detailed "how to" of the drills, tactics, techniques and procedures will be documented in the field manuals, training circulars and technical manuals. Thus, doctrinal literature plus the AMTP will give the commander the documentation he needs, but that still isn't enough.

AMTP Architecture

An architecture of methods and media will be standardized and made available throughout the force to help commanders train their units to perform AMTP tasks. The cornerstone of this architecture will be the unit conduct-of-fire trainer (UCOFT), a stand-alone simulator, and/or the troop proficiency trainer (TPT), a trainer which will be embedded in, or strapped onto, the weapon system. Commanders will be able to use the UCOFT/TPT to train their soldiers in all collective tasks related to crew conduct of fire. The UCOFT/TPT will train soldiers in the whole engagement task but will diagnose results to the part-task level.

Performances will not simply be evaluated as Go or No-Go. The UCOFT/TPT will sense and indicate deviations from performance standards built into the UCOFT/TPT software. When a crew member is late taking an action or positions switches out of sequence, immediate feedback will allow the trainer to evaluate those and many other part-task functions and switch actions. When problems in crew conduct-of-fire actions are diagnosed as individual skill deficiencies, the commander will have specific remedial training to provide on part-task trainers located within the unit.

Training Extension Courses (TEC) and follow-on interactive video disc (IVD) system packages will be exported to the field. Although the Air Defense Artillery School will continue to produce films and graphic training aids, the new TEC/IVD packages will form the basis for unit individual-skill training, just as the UCOFT/TPT will form the basis for crew training.

If training stopped at this point, conduct-of-fire training might be adequate, but mobility and survivability training and sustainment would be neglected. Therefore, training must continue. To help commanders accomplish this type training, the AMTP will provide more situational-training exercises using realistically scaled target systems.

Aerial Targets

In order to execute AMTP training, an inexpensive aerial target system scaled to a reduced-distance training strategy will be made available to the commander. The new aerial targets will consist of a suite of 1/5-scale platforms. The three basic targets are fixed wing, rotary wing and pop-up helicopters replicating both threat and friendly airframes. The sub-scale targets will be presented within a narrow "visually scaled" window at close range in order to approximate the size

and speed of a full-size threat aircraft operating at a greater proportional range and speed. The resulting crew reaction time, gun lead angles and slew rate will be the same as those required to down a full-scale aircraft operating at tactical range and speed.

The new aerial targets will carry interchangeable modules that will allow them to simulate the technical characteristics of the replicated threat platform while stimulating the sensing systems of the respective short-range weapon systems. The platforms, which will be compatible with the multiple integrated laser system (MILES), will "shoot back" and perform scoring and evaluation functions.

With these resources, commanders from the crew level to battalion level, including combined-arms task force commanders, will be able to enhance their mobility, survivability and sustainment training.

Cooperative Training

Another element of the FAAD mission training concept is cooperative training between FAAD elements and aviation elements in the form of situational training exercises (STX) at the appropriate echelons. There will be three types of STXs:

- Both ADA and Aviation will play blue forces to practice command and control tasks necessary to synchronize the two combat multipliers.
- ADA will play blue and Aviation will play orange, allowing ADA units to practice their battlefield performance. The MILES air-to-ground engagement system/air defense (AGES/AD) will be used as the scoring system.
- Aviation will play blue and ADA will play orange, allowing Aviation to practice its battlefield tasks. MILES AGES/AD will be used as the scoring system.

Gunnery

Like tank crews, FAAD crews must qualify in gunnery. The old method of setting up a firing line of ADA weapons and moving a target back and forth in front of the line must change. Crews will train and qualify on tank gunnery ranges or multipurpose range complexes during reduced-distance training exercises that will rely on multiple arrays of sub-scale targets and MILES to produce a much more accurate representation of actual combat conditions.

The Air Defense Artillery School is identifying currently available ranges, usually tank gunnery ranges, and multipurpose range complexes that can support, or can be modified to support, the reduced-distance training strategy. The school is developing a series of combat tables to support the FAAD gunnery qualification and certification. The tables will portray a series of situational training exercises, beginning with dry fire and concluding with live-fire engagement by crews and platoons. Gun systems will fire live ammunition while missile systems will use launch simulators and MILES.

CALFEX

The reduced-distance training strategy will carry over into combined-arms training on a three-dimensional battlefield. The combined-arms live-fire exercise (CALFEX) will combine full scale operational training with ADA's new reduced-distance training strategy. Air defense artillery units will maneuver with tanks, infantry and field artillery on a full-scale battlefield, but will engage subscale, multiple array targets at reduced distances.

The culmination of the new FAAD AMTP training concept will be a three-dimensional, force-on-force training exercise with both blue and orange forces using the full capabilities of MILES AGES/AD.

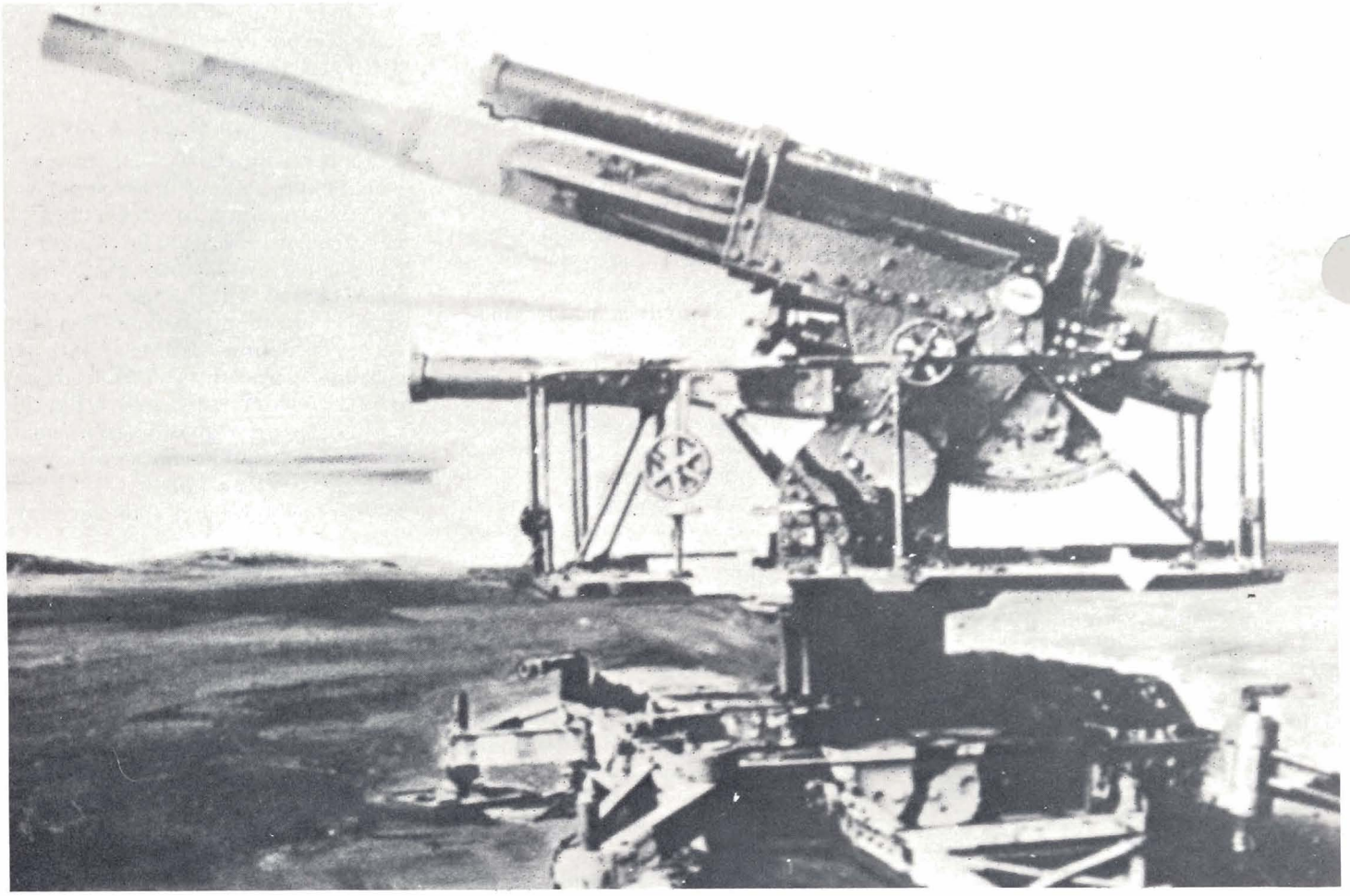
Near Term

For those who contend that the only realistic training is live-fire training, I would like to point out that the reduced-distance training strategy does not mean the end of live fire for Stinger and Chaparral crew members. Periodically, FAAD crews will fire live missiles in support of round certification and lot survey programs. These events will continue to provide FAAD missile gunners with live-fire experience, but they will not be crew qualification events. Results on target are not significant as missile systems objectives of live-fire exercises are met upon successful launch.

The reduced-distance training strategy does, however, mean increased training realism and training effectiveness for FAAD crews. The AMTP is not a concept of the distant future, but a near-term product. Much of the hardware and software, including the unit conduct-of-fire trainer, troop proficiency trainer, new aerial targets and interactive video disks will be delivered to field commanders as early as FY 1990. The concept is beginning to become a reality.

Col. Robert S. Hardy Jr. *is director of the Directorate of Training and Doctrine, U.S. Army Air Defense Artillery School, Fort Bliss, Texas.*

The Westervelt Anti-aircraft Gun Deliberations



A 3-inch anti-aircraft gun circa 1918.

by Scott R. Gourley

(Portions of the introduction to this article appeared in the September-October 1985 issue of ***The Field Artillery Journal*** *as "The Westervelt Board" by the same author.)*

In the history of the U.S. Army, few cases can be found where a small group of men have been able to exert massive influence upon the future course of events. One of the exceptions took place during early 1919. Known alternately as The Caliber Board and the Westervelt Board, this group of seven Army officers left a mark on the U.S. military that can still be felt today. The Westervelt Board faced problems similar to those which were to face the ADA Laydown Group nearly 7 decades later (see "Forward Area A Defense," Page 12).

One of the areas covered by the board's report included recommendations for the development and use of modern anti-aircraft guns within the U.S. Army. In light of the ongoing

debate over the need for some form of gun or gun-missile mix in the air defense role, it may be illuminating to take a look at one of the earliest rounds of this 70-year-old debate.

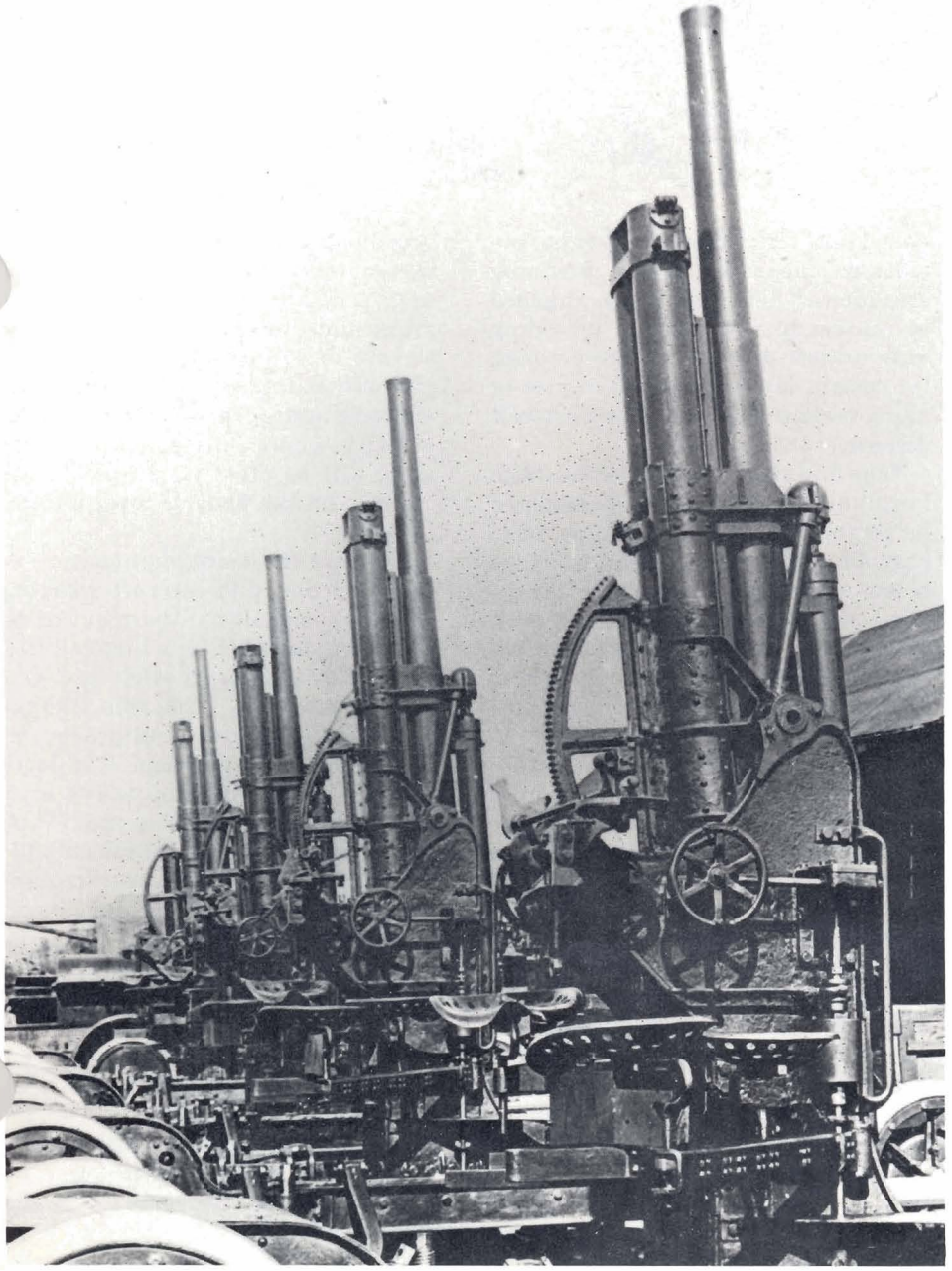
The groundwork for the debate was laid by Maj. Gen. William J. Snow, chief of Field Artillery in 1918. During the days immediately following the end of World War I, Snow became alarmed at the speed and finality with which the American Expeditionary Force (AEF) was demobilizing. His primary concern was that the rush to return to a peacetime footing would trample the artillery lessons so painfully learned during the Great War.

While Snow pondered the feasibility of conducting his own personal fact-finding mission to preserve these combat experiences, he held a conversation with Brig. Gen. E.H. DeArmond, a member of his staff. DeArmond proposed that a board of officers be appointed for an artillery study. The study would look at the total artillery experience of the war and would cover issues of artillery organization, vehicle mechanization, infantry-accompanying guns and anti-aircraft guns. Snow liked the idea so much that he had DeArmond prepare a memo to Army Chief of Staff Gen. Peyton C. March. The memorandum, signed by Snow Dec. 5, 1918, also included a list of proposed participants. March approved the proposal, and orders activating the board were cut within the week. Their charter was quite broad:

"Make a study of the armament, calibers and types of materiel, kinds and proportion of ammunition and methods of transport of the artillery to be assigned to a Field Army."

Brig. Gen. William I. Westervelt was the officer selected to lead what would later be called The Caliber Board. At the time the orders were issued, Westervelt was assistant to the chief of artillery, AEF. His selection was based upon his years of Ordnance Department experience as well as his personal specialization in artillery materiel.

The board also included a number of other specialists: Brig. Gen. Robert E. Callan, a heavy-artillery brigade commander in France and a specialist in heavy-artillery materiel; Brig. Gen. William P. Ennis, commander of the 13th Field Artillery Brigade, Camp Lewis, Wash., and an expert in both horse and motor transport; Col. James B. Dillard, an Ordnance Department specialist in gun and carriage design; Col. Ralph McT. Pennell, commander of the 34th Field Artillery, Camp McClellan, Ala., and a former materiel specialist for the Office of the Chief of Artillery; Lt. Col. Walter P. Boatwright, a specialist in heavy-artillery materiel; and Lt. Col. Webster A. Capron, an Ordnance Department motor transport specialist.

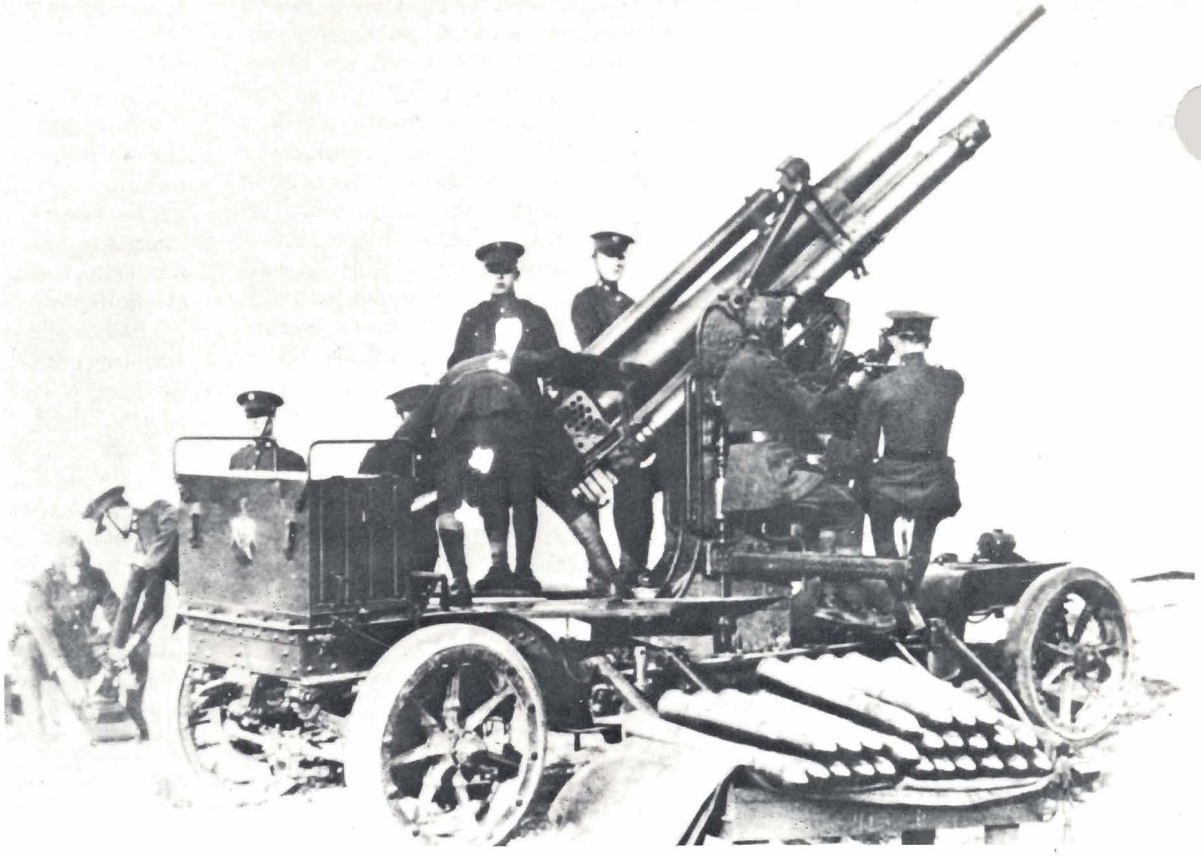


Three-inch anti-aircraft guns probably undergoing inspection at Rock Island Arsenal, Ill., prior to being shipped to the field.

The board members assembled at Chaumont, France, Jan. 12, 1919. They began a lengthy series of discussions with veteran French and American artillery officers, and toured French manufacturing facilities. They also visited Italy to meet with Italian artillery officers and technical representatives. Finally, they met with the British, both in France and at the War Ministry in England. It was from these visits and discussions, supplemented by their own personal combat experiences, that the board members made their final report May 5, 1919.

The board organized their final report into five major categories: the functions of the division, corps and army artillery; the types of artillery on the battlefield (e.g., light field gun, light field howitzer, medium field gun, etc.); suggestions for improvement of the design and construction of projectiles; a long section on recommended types of artillery; and a discussion of artillery transport.

It was the section recommending types of artillery that made the report so important. The United States had entered World War I with very little



A 4.7-inch anti-aircraft gun circa 1918, experimental type, on Christie mount.

domestic artillery. The artillery supporting the AEF was largely supplied by its European allies. For example, of the total 4,194 pieces of artillery in the AEF, 3,532 were from France, 160 were from Great Britain and 502 were from the United States.

American defense planners recognized that the United States would have to undertake a massive effort to develop its own artillery base after the war. The complex mix of artillery used by the AEF (not including railroad artillery) had included: 37mm guns, 75mm guns, 4.7-inch guns, 5-inch (sea coast) guns, 155mm guns, 6-inch (sea coast) guns, 8-inch (sea coast) guns, 10-inch (sea coast) guns, 155mm howitzers, 8-inch howitzers and 9.2-inch howitzers. It fell upon the shoulders of The Caliber Board to recommend specific materiel development. In addition to being the most important area, it was here that The Caliber Board left its greatest impact on the Army. The 105mm, 155mm and 8-inch howitzers that comprise today's field artillery cannon inventories are exactly what the board recommended as the ideal light, medium and heavy weapons.

In the board's report, the first mention of "anti-aircraft artillery" occurs in the initial section on functions of artillery organizations. Under the section on corps artillery, the report notes:

"There is another class of artillery, called anti-aircraft artillery, to be considered. This is used first in providing anti-aircraft defense to troops engaged in combat and, second, in providing anti-aircraft defense for army zones, for certain areas in rear of armies or along certain line [sic] of anti-aircraft defense.

"The first class gives protection from low-flying air-planes to troops engaged in combat; it should, herefore, form part of the field army. The second class is part of the general anti-aircraft defense and works in coordination with the air service, balloon defense, searchlights and anti-aircraft machine guns, thus forming the anti-aircraft defense service."

Summarizing their early findings — and providing fodder for the popular guns versus howitzer debates — Westervelt and the others concluded the first section of their report by stating that the normal artillery missions assigned to a field army could be accomplished by seven calibers. They defined the first six as both a gun and howitzer in the light, medium and heavy classes, "and a satisfactory anti-aircraft gun."

The next major discussion of anti-aircraft artillery occurs in the fourth section on artillery recommendations, both ideal and practical. In this section, the board envisioned some dual purpose division and corps weapons as well as heavier types of artillery. This was illustrated by their "ideal" description of division and corps weapon with a maximum elevation of 80 degrees and "heavy types" that could elevate to 65 degrees. The report explains that this is because the board viewed a future of greatly increased air activity where "division and corps guns will be often used against airplanes and the heavier types against balloons."

However, the board was quick to note that "special anti-aircraft weapons will probably always be required on account of the need for a higher initial velocity than is permissible in a general purpose gun." This was followed by recommendations for future courses — both ideal and practical — in development of a light and heavy anti-aircraft gun for the U.S. Army. (Their dual weight recommendations tend to contradict their earlier stated requirement for "a satisfactory anti-aircraft gun.")

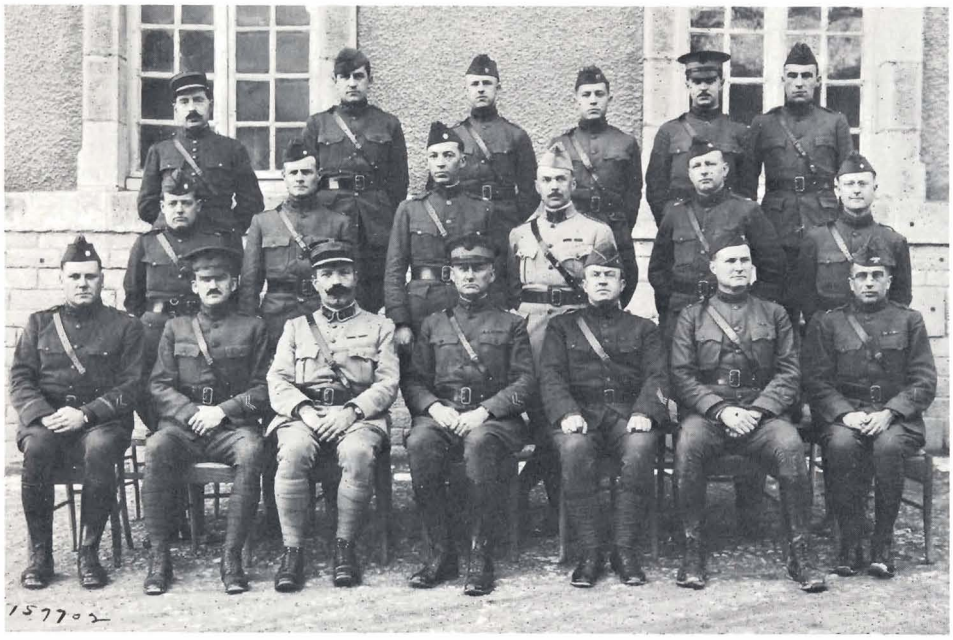
They proposed development of an ideal light anti-aircraft gun with the following characteristics:

Caliber: "about 3 inch."
Initial velocity: 2,600 f.s.
Semi-automatic breech block.
Carriage permitting 80 degree elevation and 360 degree traverse.
Projectiles weighing not less than 15 pounds.

Left to right, first row: Col. E.W. Putney, CAC; Col. F.E. Williford, CAC; Col. Maitre, French Mission; Maj. Gen. Earnest Hinds, chief of artillery AEF; Brig. Gen. Westervelt, assistant chief of staff, AEF; Col. D.G. Cubbison, FA; Col. A.F. Brewster, FA.

Second row: Lt. Col. J.H. Cunningham, CAC; Lt. Col. Curtis H. Nance, FA; Lt. Col. W.P. Boatwright, CAC; Maj. Degrand, French Mission; Lt. Col. John Mather, CAC; Lt. Col. E.K. Smith, CAC.

Third row: Lt. Roux, French Mission; Maj. Augustus Norton, CAC; Maj. Rex W. Beasley, CAC; Capt. B.E. Carter, CAC; 1st Lt. Wesley C. Miller, S.C.; 2nd Lt. B.P. Scanlan, FA.



This photo of the staff of the chief of artillery, AEF, was taken Jan 17, 1919, at Chaumont, Haute Marne, France.

High-explosive shell with maximum ballistic qualities and as large explosive charge as possible.
Fixed ammunition.
Smokeless, flashless powder.
Mechanical fuse.
Increased rate of fire and decreased time of flight.

Not to be accused of losing touch with reality, the board also supplied a practical solution for the light weapon. It consisted of arming units with the 3-inch anti-aircraft equipment then available while development took place on the ideal weapon.

For the ideal heavy anti-aircraft artillery gun, Westervelt's group had many of the same requirements. The exceptions were an ideal caliber of 4.7 inches to 5 inches and projectiles weighing not less than 45 pounds. Their practical solution involved using the available 4.7-inch gun until the ideal weapon could be developed.

In both cases, the group addressed the subject of mobility and transport for their ideal systems. Their light gun should have a tracked mount or a tracked trailer mount drawn by a tractor permitting a sustained speed of 12 miles per hour. Their heavy gun was envisioned on a self-propelled tracked mount permitting a sustained speed of eight miles per hour and a maximum weight not to exceed 10 tons. They included the interesting caveat that trailers were to be provided for long and rapid hauls of the heavy guns.

Submitted May 5, 1919, the final report was approved by March on May 23. Yet in spite of the impact wielded by the board, there was considerable disagreement among the officers over the final report. In fact, three of the seven board members — Westervelt, Callan and Boatwright — attached their own "minority report." In their dissenting view, the report overlooked the most important artillery development of the entire war: "The inadvisability of forming organic army artillery." They went on to claim that organic corps artillery was of "questionable value." Instead, the trio favored the creation of an "Artillery Reserve . . . for strategic reinforcement of divisions and corps during such times as the allotment to such units may be insufficient."

Their envisioned Artillery Reserve included: anti-aircraft artillery, trench mortars, pack artillery, guns and howitzers of division and corps types, guns and howitzers heavier than corps types and railroad artillery. It was their view that the high command, guided by the general missions, should assign selected units from this reserve to the Army rather than create a formal army artillery.

It is difficult to judge the effect of the minority report. When he signed the complete package on May 23, the chief of staff made the simple notation: "The minority report is noted and need not delay the approval of the report proper."

In looking back at the Westervelt Board, one is initially struck by the monumental task that the seven men faced when they started out in December 1918. While some of their findings were quickly overlooked in the postwar years, the results of many of their recommendations can be viewed within the U.S. Army today. But the board provides an even more important modern lesson. During an era when task forces and study groups seem to abound within the Army, the Westervelt Board serves as a reminder of the tremendous impact that can be wielded at certain moments in history by a group of highly dedicated individuals.

Scott R. Gourley, *a Field Artillery Reserve captain, is employed by the FMC Corporation Ordnance Division, San Jose, Calif. He is the author of numerous magazine articles and is the recipient of the U.S. Army Forces Command Fourth Estate Award for Excellence in military journalism. He is currently a member of the U.S. Army Reserve Control Group Reinforcement.*

Sp4 Timothy Jones, a motor pool mechanic, gives his feet a rest after completing a six-mile road march that began an afternoon of 32nd AADCOM's Go-to-War Task Training.

32nd AADCOM Paper Pushers Prep for Combat

Go-To-War Task Training

Story and photos by SSgt. Michael D. Myers

At Headquarters, 32nd Army Air Defense Command, Darmstadt, Federal Republic of Germany, the ultimate purpose of every action is to prepare for war. But suppose the war comes? Picturing a clerk with an M-16 valiantly defending his or her work station at the word processor while the officer in charge desperately drafts a letter of instruction pertinent to the occasion may bring a smile; but a smile does little to address a valid dilemma. No unit has a wider gap between its peacetime and wartime missions than a headquarters, and yet no unit spends less time training for war.

Traditionally, the bottom line has been that headquarters soldiers have placed their peacetime job requirements in the "must-know" category while lowering basic soldier and combat skills to the "nice-to-know," "at-least-be-familiar-with," and "go-through-the-motions-of" level. While a war is not likely to break out on any given day, it is definite that, on any given day, the chief of staff will have an urgent message he wants sent out.

In this way at least, the 32nd AADCOM headquarters has been no different from any other headquarters. Even participation in a command post exercise usually falls prey to a routine that requires soldiers to perform the normal day-to-day administrative actions, much to the disadvantage of their training needs.

But now GTWTT has changed everything for everybody. It stands for Go-To-War Task Training, and it means that on any given Wednesday it's possible to see once rare sights, such as the chief legal clerk teaching a stenographer to emplace and arm an anti-personnel mine; a chaplain's assistant building an individual fighting position; and a military policeman learning the finer points of operating an immersion heater.

"Closed Wednesday afternoon for training" is a literal statement throughout 32nd AADCOM headquarters. Every enlisted soldier from sergeant major down is out in the woods, learning things that suddenly are must-know type skills.

While the tasks and skills studies would seem routine and overly simple to the average soldier in a Patriot, Hawk, Chaparral or Vulcan battery, they were, at the beginning anyway, as alien to the desk-bound headquarters soldiers as typewriter keyboards would be to a launcher crewman.

It doesn't take a vivid imagination to predict a change as drastic as the GTWTT would include a large number of problems and present many seemingly insurmountable obstacles. Even with a thorough understanding of the purpose and a belief in the need for the training, many supervisors were tempted to balk.

The overwhelming success that GTWTT has become since its inception last September has been a surprise to everyone from trainers to trainees. The secret of its success and its bright prospects for a long-term future in the 32nd

SSgt. Dennis Brown oversees SSgt. Diane Harley while she prepares a light anti-tank weapon for firing. Both NCOs work in the 32nd AADCOM's G-3 section.

SSgt. Wallas Faye takes aim from a hasty firing position during Go-to-War Task Training. Faye is an intelligence analyst assigned to the G-2 section, Headquarters, 32nd AADCOM.

AADCOM is that it is perceived by soldiers as being worthwhile and enjoyable.

It's not that any of the soldiers are going to drop their desk jobs and transfer to a missile or gun unit so they can experience combat training every day. On the other hand, they are not looking for reasons to stay at their desks on Wednesday afternoons either. Whether the balance between desk duty and combat training is ideal or not, is a matter of perspective, but there is a balance and it is working.

What makes GTWTT enjoyable? For privates it represents a return to the Army they joined. Starting with basic combat training and continuing through soldier skill training at their advanced individual training schools, these soldiers were given an impression of the Army that didn't seem to apply once they found themselves confined to the desks and word processors of a major headquarters.

For the NCOs it provides an opportunity to become better acquainted with their soldiers. With this personal interaction, they are better able to understand their soldiers' needs and motivational factors. In addition, GTWTT allows the NCOs to display talents other than their administrative skills.

The result is stiff competition between the privates and NCOs at GTWTT. Given the importance of the game being contested, this can only produce many winners. This competition carries over into battles among the five groups into which the unit is divided for GTWTT.

The NCOs are the trainers and leaders during GTWTT. They are not above competition. More importantly, faced with intelligent and motivated soldiers, these professional NCOs will not enter the training area without proper preparation. Herein lies a major positive feature. The average senior non-ADA NCO in the headquarters had never even heard of half the tasks listed on the first GTWTT schedule that featured skills such as leading an NBC survey team or erecting a RC 292 radio antenna. The chances were that whatever the NCO knew about the other half of the tasks was so outdated it was useless. Therefore, class preparation became a major learning experience in itself. For the senior NCOs, this learning of new skills added enthusiasm to the GTWTT presentations.

Location is another secret to the success of the 32nd AADCOM's GTWTT. It's not a matter of filing into a theater or gathering around a chart at the office. It's out in the woods where there is room to actually perform all the steps of every task. But even better, there are no telephones to be answered and no last-minute typing. This is significant in a headquarters where even top priority actions that "had to be done yesterday" seldom receive preferential treatment. One reason GTWTT succeeds is

that it is alotted specific and undisputed time, not just on the training schedule but in the actual operating schedule.

Not everyone at first viewed GTWTT as a viable part of an overall training program. As things turned out, sections were able to complete their routine tasks without major turbulence. At first there were reports of soldiers having to work extra hours to make up for time lost due to GTWTT, but this ceased to be a complaint after the second week of GTWTT training. It seems that it is possible for the soldiers of 32nd AADCOM headquarters to train to go to war while at the same time preparing the command to go to war.

The possibility that they will go to war together has brought beneficial changes to 32nd AADCOM headquarters. A driver at motor stables can be heard reminding his or her NCO that a vehicle might be needed suddenly if enemy tanks appear on the horizon. An unserviceable sleeping bag with a stuck zipper is now recognized as a liability since headquarters soldiers are more keenly aware that they may be suddenly forced to move out of their comfortable quarters into the German winter. Soldiers can now be heard discussing topics like fields of fire and rapid escape routes.

Although GTWTT is heralded as an excellent training tool, it does not come free, or even cheap. Perhaps the biggest problem is lack of materials. The headquarters does not have the vast amount of equipment required for ideal training. It's a case of having plenty of live grenades for war but no dummy grenades for practice. So far, however, ingenuity has managed to procure an adequate, if not optimum, supply of training materials.

The next major problem is the absence of a well-defined small unit breakdown within the headquarters. The headquarters is not divided into platoons or squads, much less into fire teams or special weapons teams that are necessary for combat.

Finally, the characteristic top-heaviness of the NCO rank structure of the command in garrison can be a liability in the field. Headquarters NCOs who are "rank-senior" but "situationally junior" have to be willing to take on tasks normally considered beneath their ranks. This problem has been at least partially solved because the NCOs find themselves caught up in the spirit of teamwork.

At 32nd AADCOM, GTWTT is an idea whose time has come.

Headquarters and Headquarters Battery, 32nd AADCOM, double-times during a six-mile road march to its Go-to-War Task Training sites.

How GTWTT Works

Go-To-War Task Training at 32nd AADCOM headquarters began because of a need for a more efficient way for the headquarters battery to train its soldiers to perform common soldier skills.

Training is conducted away from the duty section in a field environment to minimize distractions and maximize realism. To maintain section cohesion, the chain of command conducts training using the "train-the-trainer" method. The headquarters battery is divided into five training groups, each made up of approximately 50 soldiers headed by a sergeant major.

Each group prepares a three-hour block of instruction each week. The schedule operates on a 15-week cycle so that each group can cover all assigned tasks — a total of 45 hours of training.

Tasks are assigned varying times. The M-60 machine gun crew drill takes up an entire three-hour block, and personal decontamination, convoy operations and cold-weather training are done on the same day. Because the five groups never have the same tasks to cover on the same day, each group always has the maximum amount of training aids and material available for any given session.

The soldier's need to move, shoot and communicate determines which tasks are selected for GTWTT. They can be broken down into five basic types.

Fieldcraft tasks are the skills a soldier needs to operate and live in a field environment during wartime. They include such tasks as operating and maintaining various types of generators (three hours), wire communications (two hours), erecting an RC 292 radio antenna (two hours), first aid (one hour), operations security (one hour), and noise and light discipline (one hour).

Fighting tasks are the skills a soldier needs to defend himself and his unit. They include the M-60 machine-gun crew drill (three hours), defending unit positions (two hours), clearing fields of fire (one hour), mine warfare (two hours), and grenades and pyrotechnic signals (one hour).

Survival tasks are skills that a soldier needs to survive in a wartime environment. Examples are survey and monitor team training (three hours), chemical agent alarms (two hours), personal decontamination (one hour) and cold-weather training (one hour).

There are also a number of skills that cross categories such as reaction to indirect fire training (one hour); immersion heaters and tent stoves (two hours); NATO nuclear, biological and chemical markers sets (two hours); processing prisoners of war (one hour); and personal hygiene (one hour).

Some tasks that require continual training to sustain proficiency are repeated during ensuing cycles. New tasks are selected based on a wide variety of input. Recommendations from supervisory trainers are compiled at weekly meetings. Field training exercise after-action reports and the composite score on the common task test are also major factors in task selection.

Since headquarters batteries have no Army Training and Evaluation Plan of their own, training standards are drawn from the ARTEP manual for the air defense artillery battalion, particularly as it relates to the battalion headquarters.

In this manner, each cycle remains fresh and challenging while fulfilling the GTWTT goal of preparing 32nd AADCOM headquarters soldiers to fight — tonight if necessary.

Sgt. Heriberto Perez, right, normally works in the headquarters battery supply room. During 32nd AADCOM's Go-to-War Task Training, he teaches M-60 machine-gun crew drills.

Recently, instead of the normal morning physical training, the afternoon GTWTT began with a six-mile march to the training area. The uniform for the march was helmet, load-bearing equipment, protective mask and weapon. The majority of the soldiers claimed to have no memory of the last time they walked such a distance — even in West Germany, the land of the volksmarch.

Every soldier that started, finished at the same time and still in formation. There were blisters from boots that had been spit-shined but not broken in. There were bruises on shoulders that usually only carry metaphorical weight. But neither these nor any other problem could break the formation.

This is 32nd AADCOM headquarters today — working together to prepare for war. The idea of manning the parapets to defend a word processor may still bring smiles, and the idea of placing a minefield around a file cabinet may cause a few chuckles, but the soldiers of Headquarters, 32nd AADCOM are learning to go to war.

SSgt. Michael D. Myers *was command information NCO for the 32nd Army Air Defense Command, Darmstadt, Federal Republic of Germany, prior to his discharge from the Army.*

Steel on Target

by Wolf Prow

During World War II, the world's most potent air defense force placed all the steel on target that Krupp and Rheinmetall barrels could endure, but the bombardiers won the air war hands down. Can modern air defense artillery do any better?

A British Avro Lancaster caught in heavy flak trails smoke from a port engine. German anti-aircraft crews made the word *flak* part of the English language, but were unable to save German cities from destruction.

The Air-Land Battle Concept readily concedes that U.S. forces may not enjoy aerial superiority in a future conflict. This compels an assessment of struggles ground-based air defenses have waged against superior numbers in the past.

The most applicable lessons come from World War II Germany where the Allies enjoyed a 61-to-one air superiority, and where air defenses were almost entirely in the hands of the defenders on the ground.

Studies of the air war over Germany emphasize the glamorous exploits of fliers, but have so far paid little attention to the achievement of the ground defenders. Yet the word *flak* (literally *flieger abwehr kanone* or anti-aircraft gun) became an international synonym for ground-based anti-aircraft defenses. The Germans also left the legacy of surface-to-air missiles which evolved into successive generations of anti-aircraft weapons on both sides of the Iron Curtain.

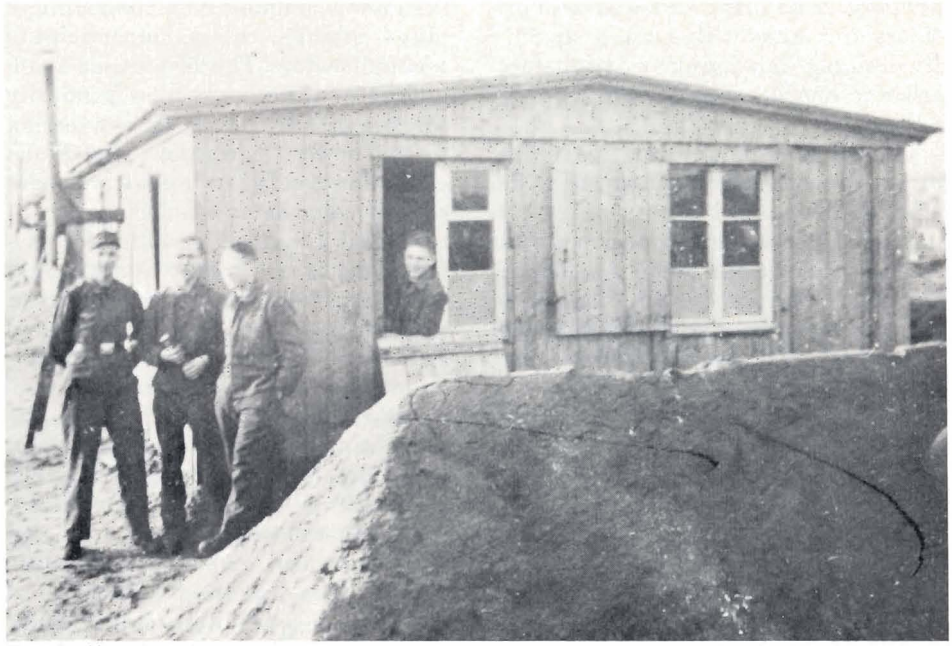
Defense against air attacks was an awesome task that rested with defenders on the ground and the population at large. Air defense represented a vast, national effort. Weapon systems were operated by about 900,000 men. In addition, expanded warning networks and control systems had to be devised. Shelter projects and underground facilites were needed and had to be constructed. There were also problems of administration, production and law-and-order to wrestle with. In short, air operations had imposed total war.

The Weapons

The ground-based air defense of World War II Germany, backed by about 10,000 anti-aircraft guns, was predominantly operated by the *Luftwaffe*, the German air force. However,

each service had its own organic air defense systems and its own procedures. For example, the flak batteries of the *Luftwaffe* based data on a 400-degree circle, whereas the German army and navy clung to a more traditional 360-degree circle. Light, automatic anti-aircraft weapons of all services included machine guns and guns with calibers of 2.0, 3.7 and 5.7cm. A few 4.0cm Bofors and captured Soviet 2.3, 3.0 and 5.7cm weapons were also pressed into service.

The famous 8.8cm (*Acht Komma Acht*, or Eighty-eight) "Ack Ack" was used extensively against ground as well as aerial targets by *Luftwaffe* gun crews. Its high muzzle velocity of 880 meters per second permitted its shells to reach altitudes of about 10,000 meters and made the Eighty-eight highly effective in penetrating tank armor. The navy also used a version of this dual-purpose gun on destroyer-class vessels. Towed or platform versions of the Eighty-eight were deployed behind the protection of earthen walls to defend the perimeter of cities or installations. Fire direction centers were placed 100 meters from the center of six-gun batteries.



Four LwH assigned to a heavy anti-aircraft artillery battery are shown in front of their temporary building in this 1943 photograph. Note the berm, wooden shutters and stove pipe. Only one of the four boys survived the war. The author is the one with the cap.

Ideas and Tactics

There was no shortage of ideas about how to employ anti-aircraft weapons. The basic organization of batteries into *Geschuetzstaffel* (gun sections) and *Messtaffel* (control sections) remained unchanged throughout the war. But batteries were shuffled around and were frequently assigned different sectors or given new missions. High mobility and the ability to entrench were considered important. The ineffectiveness of flak bursts with thousands of tiny fragments led to the development of preformed projectiles of greater lethality. Metal shortages compelled the substitution of aluminum for copper in rotating bands.

Additional weapons were made available by using captured equipment, primarily Soviet 85mm guns rebored for German 88mm fixed munitions. The German navy converted light cruisers to flak ships. These flak cruisers also served to integrate and coordinate fire and provided highly mobile defenses. Another problem was the shortage of ammunition. Initial demands for "*Eisen an den Feind*" gave way to curt orders to save ammunition. Batteries were allowed to fire only when definite data were available. Firing on receding targets was eventually prohibited.

Tactics changed dramatically. Placing radars, guns or missiles on mountaintops was tantamount to suicide. The valley side to be defended gave better protection and permitted better spacing. Instead of selecting the lead plane, gunners found it more effective to track an aircraft in the middle of formations. The reliance on optical tracking was replaced by new confidence in radar-derived data. Allied radar jamming and the practice of dropping strips of aluminum foil (chaff) caused the German air defender to adopt targeting techniques based on many sources. The navy developed an anti-aircraft tactic using regular ship artillery. Time fuzes were set by directions from on-board computers, or were preset to cover zones of approach. The 28cm guns aboard battleships were quite effective firing such barrages. This tactic was also applicable to field

Occasionally the Germans gave firepower demonstrations for propaganda purposes. Here the tracers of light AA weapons are shown in a time exposure over a German city. In reality, the "heavies" carried the lion's share of urban defense.

artillery. Zone firing endowed field artillery and tanks with a crude capability to engage low-flying aircraft before lesser caliber weapons could be brought to bear.

There was no doubt that light anti-aircraft weapons would continue to be effective if appropriate tracking and aiming devices could be developed and suitable munitions were available. However, weapons, equipment and manpower were tied up for long periods just to be available for critical, but fleeting, moments.

Radars and Controls

The brain of the German World War II air defense system was the "Opera House" where all actions of the air war were orchestrated. Regional subdivisions and tactical controls augmented this central command post. A combination of numerous sources of information provided accurate and redundant data for the German defenders. The approach of bomber formations was known, at the latest, when Allied aircraft assembled over the North Sea. The Freya radar gave early warning, but the Allies countered with the Mandrel jammer. When the bombers passed over the cordon of German patrol vessels, the size of the formations, their composition and course were definitely known. Unfortunately for the Germans, their targets could not be determined, and Allied diversionary tactics compounded the problem. Anti-aircraft batteries along the expected flight path went on alert and remained on alert in the event that returning formations might come within range.

Inside Germany, the big dish Wuerzburg Giant radars tracked and plotted aerial targets as well as friendly fighters to integrate control and defense efforts. These big radars were not totally impaired by countermeasures because of the large size of Allied bomber formations. On the other hand, the two types of radars at the battery level were either crude, but more impervious to chaff and jamming, or very accurate but highly susceptible to electronic countermeasures. The early battery radar was the solid-dish radar of 1939. The more accurate was the wire-mesh, P-band radar of 1942.

This new battery radar was effective up to 15 kilometers, but chaff and, especially, the carpet-jamming device carried by American bombers virtually neutralized these P-band radars.

A partial solution to this problem was devised by a Major Malis. He invented a simple device consisting of maps, strings, rulers, paperweights and protractors. The device used available data from other sources, primarily the Wuerzburg Giants, for conversion to the battery's location. The Malis crews directed fire by voice when more sophisticated devices failed.

Optical tracking was suited for daytime targets, but worked at night only when searchlight beams converged on a single aircraft. When two or more searchlights concentrated on a target, angulation and visual tracking provided reasonably accurate data, depending on the effectiveness and training of *Messtaffel* team members. Night vision devices were still in their infancy.

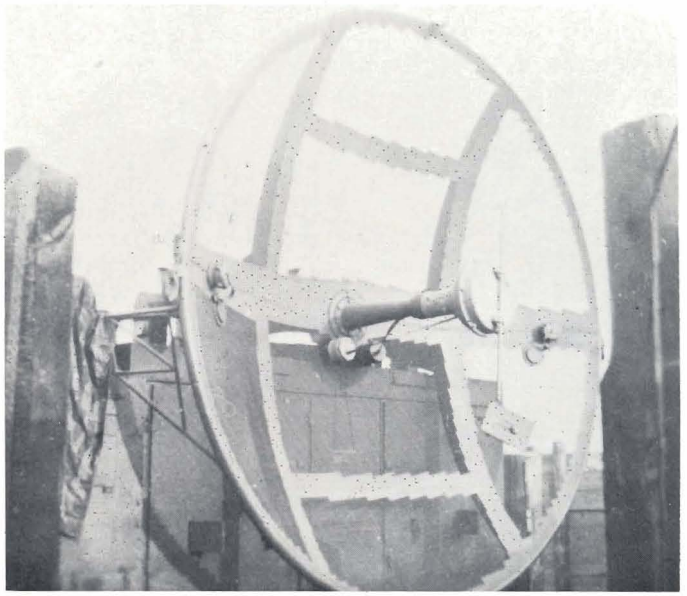
The inner defense of cities consisted of 10.5cm and 12.8cm heavy anti-aircraft guns organized in batteries of four. The heavies were protected by revetments, earth berms, or were mounted on flak bunkers or railroad cars. The navy put the heavy caliber weapons on heavy cruisers or battleships. These systems were mechanically loaded. As the war progressed, the heavy anti-aircraft guns were assigned to perimeter defense.

Improvements were made in gun design throughout the war. A long-barreled version of the Eighty-eight with a muzzle velocity of 1,050 meters per second, developed in 1941 and fielded late in the war, was very successful. A new heavy 150mm gun was under development but never saw action. Despite these and other tactical and technical innovations, it became evident that the heavy anti-aircraft gun was no longer effective against fast, high-flying targets.

There was excitement when the command "*Eisen an den Feind*," or "Steel on target," galvanized gun crews to put as much steel on target as Krupp or Rheinmetall gun barrels could endure. Yet it was frustrating to see groupings appear in the contrails of American bomber formations. It was even more unsettling when occasional well-placed flak bursts were on target and nothing happened except that the Flying Fortresses and Liberators, completely undaunted by the clouds of flak, droned relentlessly on toward their targets. Soviet TB-3s and PE-8 heavy bombers also began carrying out massive air raids toward the end of the war and were equally undeterred by anti-aircraft fire. The effects of anti-aircraft barrages on British aircraft, which attacked by night, remained invisible unless a fireball briefly flashed in the sky.

In low-level attacks, the effects of fire were observed, but often seemed to leave the attacker unscathed. American and British fliers seldom broke off an attack. Sorties of one or two aircraft were common and their aim was usually good. The only way to stop attacks of American or British planes was to disable or destroy the aircraft, or kill the pilot. To achieve this was no easy task, especially when flak-supressio missions were flown.

Soviet fliers were less adroit and not as accurate. Shells from light anti-aircraft guns glanced off the armored *Ilyushin Shturmoviks* and the *Yakovelv* ground-support aircraft. Soviet resurgence in the air brought flocks of these Ils and Yaks to the scene with a corresponding rise in aggressive spirit on the part of the Soviet pilots. When scores of Soviet aircraft attacked from several directions, the sheer number of bombs, rockets and machine-gun



The P-Band Wuerzburg radar was fielded in 1942. The battery radar was accurate to 15 kilometers, but was seriously affected by chaff and Allied jamming devices.

bursts eventually scored successes. The Soviets did best when attacking targets, such as hospital ships, that did not shoot back.

Rockets and Missiles

The Germans devised an interim solution with unguided Taifun rockets. These were fired from conventional gun tubes and proved quite effective. Insufficient quantities, however, precluded a significant change in the deteriorating situation.

High hopes were placed on the weapons developed at Peenemuende, the most famous of which were the V-1 "buzz bomb" and the terrifying V-2 rocket, the forerunner of today's intercontinental ballistic missile. The German scientists at Peenemuende, many of whom worked at Fort Bliss, Texas, following the war, also added to Germany's air defense arsenal. The surface-to-air missiles developed at Peenemuende were either subsonic, aerodynamic vehicles exemplified by the Schmetterling and the Enzian, or ballistic designs which included the Wasserfall and Reintochter.

The Wasserfall had the greatest promise. It was a scaled-down version of the army's V-2, traveled at Mach 2 to altitudes of 20 kilometers and attained a horizontal range of up to 25 kilometers. These first-generation, surface-to-air missiles flew at 400 to 500 kilometers per hour and were employed against bombers. They might have tipped the scales in favor of the defenders. But again, they came too late.

The shiny aluminum skin of American bombers at 7,000, 8,000 or even 10,000 meters made optical tracking difficult. This was one reason for selecting an aircraft in the middle of the formation. British night bombers were painted dark colors to blend with the night. German night fighters were equipped with airborne radars and occasionally transmitted data to Malsi crews. The countermeasure was the 88kw Tuba transmitting diversionary signals from the British coast.

The German fire-direction device was primarily the EM2mR40. This was essentially a stereoscopic rangefinder with a two-meter base that was wedded to a computer. A crew of five operated this fire-direction device. The E-1, E-2 and E-3 determined range, azimuth and elevation, respectively. Each of them could substitute radar information transmitted by data link simply by matching dials. After the initial fix and data surge, the computer held the target and automatically followed it along the predicted flight path.

The B-4 operated the computer while the B-5 controlled outgoing firing data transmitted to the guns. The B-5 saw target speed, altitude and course on his instrument, recognized changes and initiated the computer process to fire on turning, ascending or descending targets. Confidence in this device was so great that wild boasts about the invincibility of German flak were publicly aired. The older, 1934 fire-direction device was widely available, was smaller, more rugged, but much slower and less accurate.

Manpower

The manpower shortage was met by drafting boys from German secondary schools. By 1943, entire classes were conscripted and 10th and 11th grade students from small towns which had not yet felt the impact of war were brought to the cities threatened by air attacks. These highly motivated boys were called *Luftwaffenhelfer* or *LwH*. They were air force auxiliaries in baggy and threadbare uniforms salvaged from air force depots. The youngsters were initially assigned to light duties. As the manpower shortage worsened, they began to operate radars, fire direction centers, Malsi devices and even took to the seats of the heavier guns to set azimuth and quadrant. Flak-suppression attacks by Allied fighter-bombers exacted a heavy toll, but strengthened the resolve to fight.

In upper Silesia, air force auxiliaries defended their batteries against the onslaught of the Red Army. Their flak islands were ringed by the carcasses of burned out Soviet tanks and continued as pockets of resistance while nearby factories still cast guns. The flak islands fell one by one only after the Red Army had bypassed them and was approaching Berlin. The Silesian *LwHs* suffered bitter casualties or died in Soviet prison camps.

Other manpower augmentations included Russian prisoners who performed menial chores and carried ammunition. Skilled Russians worked hard in jobs they knew, such as operating diesel generators, earthwork construction or repair of facilities. These Soviet citizens worked well and reliably when treated fairly and when fed the same rations as the rest of the battery.

In 1944, some batteries were manned by physically strong women. They operated guns with efficiency and equaled any crew, even when loading Eighty-eights at the maximum elevation of 85 degrees. Soviet women demonstrated the same determination when defending Soviet cities against German air attack.

Conclusions

During World War II, it became obvious that ground-based air defenses were at a disadvantage. It required an enormous effort to warn, control and manage resources, and to recover from attack. The air war affected every facet of life of the entire population. Technical innovations introduced during the war set the pace for decades to come. Dual-purpose weapons firing fixed munitions offered alternatives. Munitions became more lethal. Automatic loading and data linkage of anti-aircraft guns became standard. Advances in electronics and computers brought sweeping changes and revolutionized the conduct of war. Electronic warfare, with endless countermeasures and counter-countermeasures, reached a climax in phases of the air war, and the technical or tactical advantage seesawed between attacker and defender.

The fundamental lesson of World War II anti-aircraft weapons was the realization that, all boasts notwithstanding, determined air attacks cannot be stopped. The awesome legacies of World War II still haunt the world with today's almost invulnerable air and space vehicles containing nuclear warheads. Surface-to-air missiles offer an excellent chance to defeat manned aircraft and aerodynamic vehicles, but have not equaled the reliability and versatility of guns. Air defense efforts must transcend not only service rivalries; they must integrate the resources of an entire nation. It was also demonstrated that attempts to standardize procedures in wartime are costly and inadequate.

The example of boys from secondary schools, together with women and prisoners of war serving in anti-aircraft batteries, amply illustrates that the human element is the ultimate determining factor in the effectiveness of air defenses. As long as ballistic missiles, air-breathing missiles, long-range bombers and other aircraft pose a threat, these lessons are critical in assuring our national survival in the event that America and Americans become targets.

Wolf Prow *is an intelligence research specialist at Headquarters, U.S. Army Training and Doctrine Command, Fort Monroe, Va. Assigned, at the age of 16, to a heavy anti-aircraft artillery battery in Berlin, Prow came to the United States as a stowaway following World War II. He taught at the College of William and Mary prior to his present assignment.*

Soviet Ground Air Defense Weapons Employment

(The views expressed in this article are those of the author and do not imply indorsement by the Department of Defense, the Department of the Air Force or the Department of the Army of factual accuracy or opinion. —Editor)

Two SA-8 Gecko firing batteries can give direct support to the two first-echelon maneuver regiments. Seen here is the latest version of the amphibious SA-8.

by Capt. Brian E. Powers, USAF

While in a column formation, air observers are on all vehicles and in air defense elements. These observers are equipped with SA-7 Grails.

Soviet front through division air defense assets are employed to create area defense for the front sector of responsibility. The air defense plan for the front is initiated by the front chief of air defense whose job it is to use all fire units and radars to provide unbroken detection and engagement envelopes extending laterally across the entire front and forward of the forward edge of the battle area (FEBA).

The front's own air defense units carry out various missions. Some SA-4 Ganef units may be used to augment the air defense assets of an army or some lower unit operating in a critical area of the front's main area of operations. Other SA-4 units may be used to provide front-wide air defense coverage or to fill gaps that may have developed between individual armies.

SA-4s assigned to brigade at army level provide medium- to high-altitude air defense and augment air defense assets of the divisions. Their engagement envelope extends from the army's rear to about 45 kilometers beyond the FEBA or front-echelon armies.

The SA-6 Gainful and SA-8 Gecko regiments assigned to defend motorized-rifle and tank divisions protect the division's maneuver regiments, division headquarters, and the division's artillery and rocket units. A chief of air defense and his staff direct the division's air defense operations.

Air defense regiments equipped with either the SA-6 or the SA-8 are capable of true area defense. Both systems have the mobility and the range to provide air defense for all units in the division. The ranges of the SA-6 and SA-8 allow them to be deployed several kilometers behind the FEBA, thus reducing their exposure to enemy ground-based weapons.

Typical employment of the regiment's five firing batteries might involve two batteries providing direct support to the two first-echelon maneuver regiments, while the remaining three batteries provide protection for the remainder of the division.

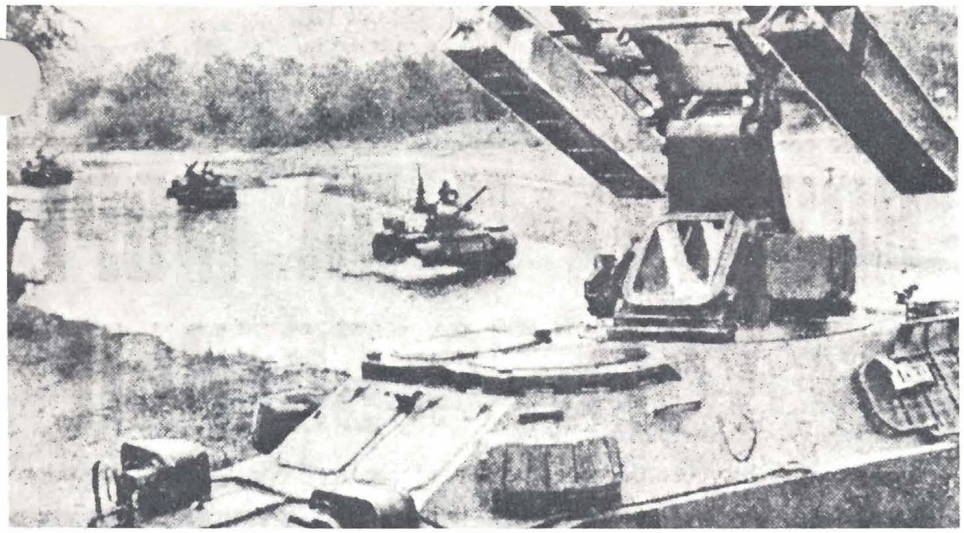
Air defense regiments equipped with the S-60 towed anti-aircraft gun are only capable of a limited area defense and suited only to protect individual locations, not maneuvering units. The effectiveness of the S-60 should not be underestimated. Its range gives it an excellent capability. SA-7 Grails are located in the rear area to provide point defense against enemy aircraft that penetrate the division's primary air defense network.

If enemy aircraft penetrate the air defense systems of the front, army and divisional regiments, they will be engaged by the SA-9 Gaskin and ZSU-23-4 quad self-propelled anti-aircraft gun batteries at the regimental level or by the short-range SA-7 at the company level.

Protecting Marching Columns

One of the most critical missions for Soviet tactical air defense forces will be to protect the forces that are on road

An SA-9 Gaskin covers a river crossing. This particular vehicle has only two missiles in the ready-to-launch position.



The Soviets' tactical emphasis on a fast-moving advance leads to a strong reliance on radio. A technical officer and his technician watch as they test a bank of equipment.

marches, reinforcing or withdrawing from the FEBA.

In mobile warfare, ground forces will spend much of their time moving in column formation. The Soviets expect their tank, motorized-rifle, artillery and other units conducting road marches to be subjected to heavy attacks by ground-attack aircraft and armed helicopters. Ground forces are especially vulnerable to enemy air power since they are in continuous motion with limited opportunity for independent maneuver. Air attack is particularly likely at choke points, such as bridges, mountain passes, built-up areas and other similar locations.

To meet this threat, maneuver units are protected by their organic air defense elements and, if necessary, additional air defense elements from their parent unit. While in a column formation, air observers are on all vehicles. To reduce the chances of detection by enemy electronic intelligence, radars may not be used unless the requirement for their use outweighs the risk of detection. Additional radar from the division's air defense regiment may be used if increased radar coverage is desired. Two radars are usually used. One may be set up adjacent to the march route or placed in the advance guard and the other placed with the main body of the unit.

Regimental defense weapons, particularly the ZSU-23-4, play a major role in protecting maneuver units making road marches. The use of all four guns, employed within 1,500 to 2,000 meters of each other, seems to be the rule. This permits the ZSU-23-4 to maintain effective communications and mutually supporting fire. The ZSU-23-4 has the advantage of being able to fire on the move (up to 20 kilometers per hour) or during a halt.

SA-7 Grails can also be effective during the march. Individual SA-7 gunners can be assigned specific sectors of observation and fire to prevent several gunners from engaging the same target.

If the air threat is not severe, the air defense unit can move to its new position separately. The air defense commander usually sends out a reconnaissance party to identify temporary firing positions along the march route, confirm the suitability and location of the new firing positions, provide local security, then guide the air defense unit into its new position.

River Crossing

The geography and terrain along Europe's Central Region would demand many water crossings. The Soviets realize that water obstacles are potential choke points which would make their units extremely vulnerable to enemy air attack. Accordingly, they place greater emphasis on providing air defense coverage during river-crossing operations.

A typical river crossing would be conducted by an advance guard, probably a reinforced motorized-rifle battalion. Its mission would be to clear enemy forces from the river and establish a bridgehead. The regimental support units and combat units would reinforce the bridgehead. The air defense of the river-crossing operation is usually covered by a platoon of four ZSU-23-4s or a battery of six S-60 guns. The ZSU is preferred because of its mobility and firepower.

The SA-8 is also useful because of its amphibious capability. In addition, SA-9 launchers from the company can be posted at key locations and assigned sectors of observation of fire. During the crossing, SA-7 gunners provide continuous protection while crossing with their companies.

Some of the problems encountered by the Soviets in river-crossing operations are difficulty in maintaining 360-degree fire coverage, resupplying ammunition to elements on the far side, and maintaining comprehensive radar and visual observations to deal with multiple threats.

Night Operations

Night provides useful protection for air defense units because they can move their firing positions without the likelihood of detection by the enemy. Relocation is important to avoid attack by enemy ground and air forces. As Napoleon said: "A battery seen is a battery lost."

Night operations, however, are more difficult and complex than daytime operations. Unforseen terrain obstacles, enemy action or simply getting lost create problems. The Soviets stress the use of reconnaissance parties to reduce these problems.

Night air defense operations are also degraded since weapon systems are dependent on their electronic sensors at night. Intense electronic countermeasures by enemy aircraft could blind or seriously disrupt Soviet air defense acquisition and guidance radars. In addition, the use of target illumination could further reduce the effectiveness of infrared missiles such as the SA-7 and SA-9.

Despite the protective steps taken, Soviet air defense operations are still hampered by nighttime conditions. But because Soviet military doctrine dictates that the offensive must continue

at night to deny the enemy the opportunity to resupply and reinforce, it is expected that air defense would also continue.

Air Defense Ambushes

One of the tactics used by the Soviets to protect vulnerable targets is the air defense ambush. An anti-aircraft ambush is usually set up along likely approach routes for low-flying enemy aircraft, especially helicopters.

An ambush usually consists of one or more ZSU-23-4s, S-60 guns or SA-7s. The ZSU-23-4 is well suited for this type of operation.

Achieving surprise is essential to a successful air defense ambush. This requires secrecy in establishing the ambush, effective camouflage, radar and radio silence, engagement of only those targets that are near the designated route of approach and immediate repositioningafter engagement or discovery by the enemy. Two other contributing factors essential in a successful air defense ambush are accurate data on the enemy situation and the timely decision to employ the ambush.

The Soviets believe that sudden and intense ground fire from an unexpected location or direction can be highly effective in destroying attacking aircraft. The ambush cannot only force enemy aircrews to break off their attack and fire their weapons early, but they can also cause the enemy to believe that significant air defense elements are located in areas where actually there are only limited resources. This can reduce the effectiveness of enemy reconnaissance and the likelihood of enemy air attack in the area of operations.

Command and Control

The Soviets aim for close coordination of air defense with maneuver units from battalion level upward, while retaining flexibility of operation and centralized control of all air defense assets under the army air defense branch.

Air defense branch officers are attached at all headquarters down to the regimental level. At front and army levels, a separate air defense commander and staff is usually collocated with the general headquarters. This air defense commander is subordinate to the unit commander, but he is responsible for the coordination of air defense in the maneuver units, which, at army and front levels, include area defense surface-to-air brigades and fighter support.

The divisional air defense commander, usually a colonel, will be in full charge of deploying the division's missiles, anti-aircraft guns and radars, setting up coordination procedures with the maneuver units and establishing the priority of the points to be defended.

The Soviets normally assign high priority to protecting their nuclear weapons, followed by headquarters, assembly areas, river-crossing sites and other key targets.

Early warning and target acquisition information is passed from front or army-level air defense headquarters to the divisional air defense commanders by radio or landline. This system permits the Soviets to maintain control at as high an echelon as possible. For example, the air defense units at division level may receive orders direct from front and army air defense rather than from the division commander and his staff. Radio communications are handled by a separate air defense network which is reserved for warning and target designation. Prearranged code words are used to transmit orders in the clear. Division air defense subunits will normally operate within VHF radio range.

Small units such as motorized-rifle companies are equipped with short-range VHF communications systems which have their own discrete transmission frequencies and the capability to monitor higher-echelon air defense units. The Soviets maintain air defense command and control at these low levels by having the commander of an air defense battery or platoon that is attached to a maneuver battalion serve as the battalion's staff air defense as long as the unit is attached. Within the unit, a variety of visual signal arrangements is also used for air warning. For example, a daylight method uses a system of red and white flags.

Conclusion

The Soviet Union has produced and developed the world's largest array of air defense systems. This vast force consists of aircraft, surface-to-air missiles, anti-aircraft artillery, radar and electronic warfare systems, all of which are supported by a logistical system that can support their operations.

In evaluating the air defense forces of the Soviet Union, it can be seen that they consist of a large variety of weapon systems that are able to provide integrated and overlapping coverage for the ground forces. The Soviets have developed their tactical air defenses to the point where ground forces down to company level have their own organic air defense unit. These units, from platoon (SA-7) to brigade size (SA-4) are able to provide air defense in depth with mobility. As a result, maneuvering ground forces are provided with continuous and adequate air defense.

Capt. Brian E. Powers *is assigned to Headquarters, U.S. Air Force Intelligence, Washington, D.C. He holds master's degrees in international relations from Creighton University, Omaha, Neb., and in national security affairs, Soviet area studies, from the Monterey Institute of Foreign Studies (Naval Postgraduate School), Monterey, Calif.*

Suggested Reading

Air Defense in the Soviet Motorized Rifle Divisions and Tank Divisions, Maj. Allan D. Williams (Washington, D.C.: Defense Intelligence Agency, 1979)

Weapons and Tactics of the Soviet Army, David Isley (London: Jane's Publishing Co., 1981)

Military Strategy—Soviet Doctrine and Concepts, Marshal Vasily Dnilovich Sokolovsky (New York: Frederick A. Praeger Publisher, 1963)

Soviet Tactical Air Defense, Maj. William H. Crutcher (Washington, D.C.: Defense Intelligence Agency, December 1979)

Evolution of the Corps ADA Brigade

by Col. Peter Swenson

The corps air defense artillery brigade is one of the additions to the Army's force structure that resulted from the Army of Excellence initiatives. The first unit, the 35th ADA Brigade, was formed at Fort Lewis, Wash., Nov. 28, 1984. Since that time, the brigade staff has been examining doctrinal implications that drive the use of ADA forces assigned to I Corps. Numerous exercises and planning sessions have addressed the operation and organization of the brigade. What follows is an outline of our first cut at "how to fight" the ADA brigade of I Corps, with consideration given to command and control, tactical missions, intelligence and firepower.

The unique situation of I Corps has served as the backdrop for investigation and evolution of the brigade's approach to operations. As part of a contingency corps, units assigned to I Corps must be prepared to execute through the spectrum of conflict. The conceptual framework for the corps ADA brigade is bonded by the air-land battle doctrine, as applied

One Year After

First Corps ADA Organic Combat Unit Going Strong

by Lt. Col. William A. Kunzman
and Capt. Duane L. Pouncy

The date: Nov. 28, 1984. The place: Fort Lewis, Wash. The occasion: birth of the first corps air defense artillery unit.

More than one year has passed since the 9th Division Air Defense Artillery (DIVADA) retired its colors. The event not only heralded the end of the Army's only division air defense unit, but launched the 35th Air Defense Artillery as the genesis of a new breed of unit — the corps air defense artillery brigade.

The 9th DIVADA was formed Sept. 25, 1978, as an experimental organization to evaluate increased air defense capabilities within a division. DIVADA strongly supported the 9th Infantry Division and contributed greatly to improving all general light air defense forces. Composed of the 1st Battalion, 4th Air Defense Artillery (Hawk), and the 1st Battalion, 67th Air Defense Artillery (C/V), DIVADA provided many ideas and innovations which placed it in the forefront since the late 1970s.

With its selection to form the base for the first corps air defense artillery brigade, DIVADA made the transition to 35th Air Defense Artillery Brigade. It was, however, more than a change of unit designation; it was a change of concept, mission and structure.

The Army of Excellence initiatives, which established corps-level air defense, provided for a long recognized need: a responsive and flexible force capable of providing air defense to the corps on the air-land battlefield. The 35th ADA Brigade has been uniquely structured to accomplish this objective. With a mix of both high-to-medium (HIMAD) and short-range air defense (SHORAD) units, it is expected to counter the threat spectrum in a myriad of contingencies. The brigade has the challenge of supporting I Corps as a major subordinate command and as a corps-level staff element.

The former DIVADA soldiers of the 1/4 ADA (Hawk) became the nucleus of this new unit, while those of 1/67 ADA (C/V) were retained by the 9th Infantry Division as an organic air defense battalion.

The brigade's first year witnessed many changes and many accomplishments. Now consisting of a Headquarters and Headquarters Battery to support the 1/4 ADA (Hawk) and the 7th Battalion, 7th Air

against contingency-driven scenarios. Brigade plans are being formulated using three general corps employment scenarios.

- Scenario 1. The corps deploys to a theater with an established echelon-above-corps command and control system. This is a mature theater.
- Scenario 2. The corps deploys independently to an area of joint operations. The corps commander is the joint task force commander on the ground.
- Scenario 3. A part of the corps, such as a division, deploys, and corps augments the force.

Basic assumptions complete the foundation for the conceptual design.

- The corps commander sets the priorities which guide employment of the brigade's air defense artillery weapons. This applies to scenarios 1 and 2 only.
- The ADA brigade commander assigns tactical missions which support the corps commander's priorities and concept of operation in scenarios 1 and 2.
- The ADA brigade will *never* have sufficient ADA weapons to accomplish all critical asset protection and augmentation missions.
- The brigade has all required equipment. Communications and mobility shortfalls do not exist.

Command and Control (C^2)

The corps participates at the tactical and operational level of war. The corps commander fights the deep, close and rear battle. As the ADA major subordinate commander, the brigade commander requires liaison and communications with the forward forces, the corps main and the higher air defense authority. The ADA brigade is the hub of air defense information within the corps area of operations. It draws air intelligence from the tactical air control center or other Air Force activities (control and reporting center, control and reporting post, E3A AWACS) through its liaison efforts and automated data link. This information passes to the forward divisions. In reverse, situational data and the forward air picture passes up from lower ADA units for analysis.

Additionally, the corps ADA brigade provides a node where airspace management dovetails with Army airspace C^2. The corps air defense operations center, in conjunction with the corps air defense element at the corps main, processes requests for airspace controls from major subordinate commands and coordinates their implementation with the Air Force activity and/or regional air defense authority.

Within the corps ADA structure, fire distribution is decentralized to the subordinate battalions. The brigade commander and his staff analyze the intelligence data, operational plans and logistical state. Based on their analysis, air defense artillery execution and resource management are guided to best support the tactical and operational objectives.

The scenarios which drive ADA participation through the spectrum of war from low- to high-intensity conflict require that design flexibility be inherent in the C^2 structure. Light, air-transportable, data and voice communications, in sets which allow tailoring C^2 to the force, are needed at the low end. Large storage and high-speed information processing packages must be present to infuse, prioritize, correlate and communicate data in the mid- to high-intensity arena. The commander must be given adaptability in the C^2 organization that permits tailoring to meet all contingencies. Once real time exchange of ADA information is achieved, staff

Defense Artillery (Chaparral), the 35th is at the forefront of the air defense community, planning and participating in exercises from Iceland to Japan and from Texas to Alaska. Exercises during 1985 included Yama Sukura VII, Brim Frost, Border Star 85, Team Spirit 85, Balikatan 85, Laser Bayonet, Tropic Lightning 85, Celtic Cross III, Northern Viking, Octofoil 1-86 and Cascade Peak III.

In addition, the brigade has conducted ARTEP and ASP evaluations for the 1st Battalion, 62nd Air Defense Artillery; participated in the Joint Exercise Support System field validation; activated the 7th Battalion, 7th Air Defense Artillery (Chaparral); and has recently completed Hawk Phase II PIP.

I Corps' charter to the 35th ADA Brigade includes taking the lead in air defense actions in the Pacific area. Toward this end, the brigade is studying this often-overlooked portion of the world and will participate in a series of exercises in Japan, Korea and Alaska. The 35th plans for a significant presence in Team Spirit 86, deploying to Korea with the brigade, two battalion tactical operation centers (TOC) and a full Chaparral battery. The brigade will strive to integrate its operations with Republic of Korea air defense forces and test the interoperability of systems.

The brigade is assisting I Corps with the certification of the 7th Infantry Division (Light) at Fort Ord, Calif., and is contributing to the development of doctrine to provide corps support for light forces. The brigade has taken the lead in the corps staff's implementation of new Army airspace command and control doctrine and integrating it into corps operations.

Brigade training has focused on TOC exercises using a manual air battle management operations cell for HIMAD and SHORAD integration. It will support the SHORAD command and control testbed, enabling the evaluation of its integration with brigade TOC operations. Finally, to increase the scope of training and exercises to encompass active and reserve component headquarters, reserve component battalions are scheduled to be assigned.

The 35th ADA Brigade is justifiably proud of its mission and its role as the first corps air defense artillery brigade. It is moving forward in the vanguard of air defense doctrine.

Lt. Col. William A. Kunzman *was the executive officer of the 35th Air Defense Artillery Brigade. He currently commands the 1st Battalion, 67th Air Defense Artillery, Fort Lewis, Wash.*

Capt. Duane L. Pouncey *was the plans officer of the 35th Air Defense Artillery Brigade. He currently is the assistant operations officer of the 6th Battalion, 52nd Air Defense Artillery, 32nd Army Air Defense Command, Wurzbug, West Germany.*

estimates and analyses allow the commander to organize his forces and assign tactical missions which are fully complementary to the concept of the operation.

Tactical Missions

Tactical missions as described in FM 44-1, U.S. Army ADA Employment, are relevant to the corps brigade. However, there are some points which bear consideration when applying tactical missions to subordinate units. Keep in mind that distances commonly associated with the corps boundaries are much greater than those of divisions with which we are most accustomed. This increase in distance (lateral and horizontal) stretches our communications capabilities and is a major consideration when assigning tactical missions.

Direct support. This is the exception rather than the rule, and is likely to be used in scenario 3 when a subordinate corps force is deployed independently and has no assigned organic air defense artillery. In some instances, lines of communications and support capability may dictate attachment, rather than a tactical mission.

General support. This is the normal mission given to corps ADA units. It gives the brigade commander flexibility to respond to changing priorities.

General support reinforcing. This mission allows the brigade commander to retain control of the battalion through prioritization and positioning, while augmenting the defense of another ADA unit.

Reinforcing. As the pure mission for augmentation, reinforcing is used for a long-term operation when the brigade's estimates indicate that priorities will remain constant. Support constraints may require further clarification of this assigned mission.

Until JCS Pub 8, Doctrine For Air Defense From Oversea Land Areas, is revised, clear understanding of "operational control" is impossible in the joint arena, and ADA commanders should avoid its use when issuing guidance. This term in the past has caused a great deal of confusion, especially with regard to C^2 relationships. But, there will never be a clear guide for the application of tactical missions in every instance. All cases require exacting intelligence analysis with good staff estimates. Terrain considerations, communications capability, sustainment and resupply have always influenced the manner in which air defense artillery is employed on the battlefield; these factors have considerable impact on the corps brigade as well.

Intelligence

Effective C^2 will never be achieved without sound intelligence analysis. Enemy air order of battle, attack profiles and air avenues of approach are significant to the development of an air defense plan. Positioning of limited brigade air defense artillery weapon systems to maximize protection of designated corps assets is essential to satisfy the principle of economy of force. Sensors arrayed on the battlefield and centrally processed at the brigade operations center will assist in analysis of the air threat and the massing of forces.

Threat analysis is the key to a successful ADA active and passive defense, as well as a logical ADA deception plan. At the corps air defense operations center, intelligence collected from the higher Air Force activity can be managed and

35th ADA Brigade Has Proud Lineage

Today's 35th Air Defense Artillery Brigade, constituted in the coast defense of the Potomac as Headquarters, 35th Coast Artillery Brigade, was organized June 1, 1918, at Fort Hunt, Va. It was demobilized March 11, 1919, at Fort Totten, N.Y.

The unit was reconstituted Oct. 1, 1933, in the Regular Army as Headquarters and Headquarters Battery, 35th Coast Artillery Brigade. However, it was not reactivated until Nov. 20, 1942, at Camp Stewart, Ga.

On June 14, 1944, the unit was redesignated as Headquarters and Headquarters Battery, 35th Antiaircraft Artillery Brigade. It was inactivated Oct. 26, 1945, at Camp Kilmer, N.J., and reactivated Nov. 1, 1948, at Fort Bliss, Texas.

Other redesignations occurred March 20, 1958, when it became Headquarters and Headquarters Battery, 35th Artillery Brigade (Air Defense); and March 15, 1972, when it became Headquarters and Headquarters Battery, 35th Air Defense Artillery Brigade.

It was again inactivated June 4, 1973, at Fort George G. Meade, Md., and was reactivated Nov. 28, 1984, at Fort Lewis, Wash.

The 35th Air Defense Artillery Brigade has the following campaign participation credits:

World War I— without inscription.

World War II — Naples-Foggia, Anzio, Rome-Arno, Southern France (with arrowhead), Rhineland, Ardennes-Alsace and Central Europe.

The unit has no decorations.

The rectangular shoulder patch has three gold mountains on a red background. The three mountains represent the "3" while the gold "V" background of the arrow represents the "5" of the 35th ADA Brigade. The red arrow symbolizes a missile destroying the wings and tail section of a black aircraft.

passed to the corps commander through the corps G-2. Air battle intelligence centrally processed at the operational level provides insight for protection of deep battle assets and positioning of forces for the close and rear battles. Precise analysis allows commitment of scarce ADA firepower where protection ensures freedom of action for the force commander and the accomplishment of the tactical and operational objectives. As with C^2, firepower must be available in types which permit tailoring to the threat and the mission. We must ensure that our intelligence estimates are "academically" honest and that we avoid "bogey man" portraits. Risk is inherent in combat and must be accepted by the commander when applying ADA combat power to the protection of the corps.

Brigade Firepower

Early designs have pictured the brigade organized with a Hawk battalion, Chaparral battalions and a gun/Stinger battalion. Cancellation of the Sergeant York Gun program has caused the community to rethink the brigade organization. Again, our conceptual development is being structured on contingency plans. Just as C^2 requires flexibility, so do the firepower options available to the brigade commander.

The spectrum of conflict requires medium- to high-altitude missile units to destroy or nullify a hostile threat to the corps' deep attack assets and sustainment base. Short-range air defense forces — a gun-missile mix — must be included to give the brigade commander flexibility of firepower options. Guns that augment forward forces in a traditional role will drive the low-attack platform to medium or high altitudes for missile engagement.

Additionally, these guns become a force multiplier for the maneuver commander when the situation dictates their use in the ground-attack mode. Missiles are complementary. Man-portable systems offer rapid mobility and positioning in difficult terrain. Future short-range air defense missiles will also solve the firing problem presented by threat platforms masked from engagement by other ADA forces.

The organization and equipment of the battalions must allow for tailoring to other than total corps commitment. At the low end of the spectrum, air-deployable guns and missile systems protect initial lodgement sites. As the support base grows, ADA augmentation extends the engagement capability and expands protection to other assets. In the event the conflict escalates toward mid and high intensity, follow-on seaborne ADA forces will enhance C^2 and reduce the risk. As we consider follow-on ADA forces, it is immediately evident that support packaging is equally as important as firepower tailoring, if ADA forces are to conduct sustained operations. Considerable development work is needed in this area.

I have offered no "real world" solutions and have only outlined a generic design. A lesson we have so painfully learned is that solid conceptual understanding must be established before the parts of the system can be assembled. Our work with the brigade organization and operation will continue. Hopefully, it will provide some significant additives to formal doctrine growth and future weapons procurement. Our ultimate goal is an ADA brigade which has a solid foundation of tactical and operational doctrine and participates as a potent force in the counterair program supporting every I Corps contingency.

Col. Peter Swenson *commands the 35th Air Defense Artillery Brigade, I Corps, Fort Lewis, Wash. He graduated from the Naval War College, Newport, R.I., prior to assuming command in November 1984.*

The broad gold arrow represents the artillery round in whatever form it may take: shell or missile. The gold stars that flank the arrow symbolize the European campaigns of World War II in which the unit was engaged. The blue star on the arrow denotes an assault landing in the Southern France Campaign. The stylized cloud formation alludes to the brigade's air defense mission. The unit's motto, "Ready in Defense," is in gold letters.

One of a Kind

by Capt. Helmut Roberts

October 23, 1985, heralded the formal return to the Air Defense Artillery family of a distinguished and venerable member: the 7th Battalion, 7th Air Defense Artillery.

Formerly a component of the 1st Battalion, 51st Air Defense Artillery, the organic air defense unit of the 7th Infantry Division (Light), the 7th ADA was consolidated as a separate element during the conversion of all intrinsic 7th Infantry Division units to the new light infantry configuration.

The 7/7 ADA is the first "pure" corps Chaparral battalion in the U.S. Army. Its reorganization made the 7th ADA the newest member of the 35th Air Defense Artillery Brigade, headquartered at Fort Lewis, Wash. The battalion, however, will remain at Fort Ord, Calif., for the time being.

The present configuration of the 7/7 ADA is composed of the Headquarters Battery and two Chaparral firing batteries. The battalion is scheduled to receive its third Chaparral firing battery in FY 1987. The entire battalion will move to Fort Lewis in FY 1989.

Stinger Trainers 'Get No Respect'

by Capt. Tim Eckberg

Since Stinger crews engaged in field training exercises deploy with trainers rather than tactical weapons, there is a tendency for them to sometimes treat the training equipment like toys. The results are unrealistic training, lost training time, unnecessary maintenance costs and the danger that soldiers will be tempted to treat the actual weapons and live rounds with the same nonchalance.

Because Stinger is a certified round and no annual service practice currently exists, most crews may never fire a live weapon short of actual combat conditions. It is therefore paramount that soldiers exercise the same care in handling their training equipment that they would give to tactical weapons. This will ensure proper training and enhance the safety and reliability of tactical weapon rounds.

The U.S. Army Missile Command (MICOM) recently conducted maintenance assistance visits to selected U.S. Army Forces Command units where Stinger assets have been deployed. The purpose of these visits was to follow up the initial deployment by resolving maintenance and supply problems or procedures in handling Stinger equipment. The maintenance assistance team directed most of its attention to the serviceability of tracking head trainers (THT) and field handling trainers (FHT), items that are subjected to extensive use during field training exercises.

While equipment conditions varied from unit to unit, based upon frequency of use and tactical training requirements, the maintenance assistance team noted that most THTs were well cared for, in contrast to the FHTs which were generally in poor condition and, in some instances, abused. In one battalion, 53 percent of the FHTs were so damaged that no constructive training value could be derived from their use. These FHTs required immediate evacuation to the Special Maintenance Support Facility, Fort Bliss, Texas, for repair, at considerable cost to the battalion in terms of dollars and lost training time.

The THTs and FHTs are sturdy, durable items of equipment when soldiers handle them as they would a tactical weapon or missile round. When stored or transported in the shipping and storage container, they are adequately protected from external force, pressure or elements.

Special Bulletin 742-1425-92-002 (Draft), which supersedes SB 742-1425-92-002, dated Oct. 14, 1981, states: "Weapons in containers that fall 36 inches or less are considered functionally operable. Weapons in containers that fall from a distance in excess of 36 inches must be turned into a depot for test and evaluation. Weapons in containers that fall more than 84 inches are not safe to handle." Although these limitations apply only to tactical weapons, they serve as guidelines for proper handling of THTs and FHTs as well.

The practice of transporting trainers in a ¼-ton trailer without protective containers will unnecessarily expose the sight assembly, gripstock and protective covers to breakage and increase the potential for corrosion of movable parts.

It is the responsibility of all commanders to impress upon their soldiers that Stinger training equipment must be handled with care.

Should your unit need assistance in either supply or maintenance of Stinger equipment, contact your MICOM logistics assistance representative after addressing the problem with your chain of command. Further assistance may be obtained by contacting Capt. Tim Eckberg at AV 746-2281 or commercial 205-876-2281. The mailing address is Commander, USAMICOM, ATTN: AMCPM-ST-SS, Redstone Arsenal, AL 35898-5630.

Capt. Tim Eckberg *is the missile maintenance officer for the Stinger Project Manager Office, U.S. Army Missile Command, Huntsville, Ala.*

Army Values —

From values we draw purpose, direction, vitality and character — the bedrock of all that we do in the military profession

Our profession involves deep moral values because we are dealing with matters of life and death, of freedom and oppression, and of right and wrong. We deal with these issues for ourselves, for those who serve shoulder to shoulder with us, for our nation, for our families, and for adversaries and non-combatants.

It is true that, while personal value systems or ethics may vary from individual to individual, professional integrity demands of each soldier and Army civilian an uncompromising commitment.

The values we subscribe to, spring from, and even transcend, those of the society we serve. They become the framework for the lifelong professional and personal development of our soldiers, leaders and civilians.

Our profession also involves matters of public trust for the responsible care of human as well as material resources provided to us. In times of danger, it is the ethical elements of soldierly conduct and leadership which bond soldiers and units together, enabling them to survive the rigors of combat. In peacetime as well as in times of danger, rock solid, ethical underpinnings help us resist the pressure to compromise integrity, to cheat, to shade the truth, or to debase patriotism for material gain.

The Army ethic comprises four enduring values.

Loyalty to the institution includes two basic loyalties. One is to the nation and the other is to the Army. Loyalty to the nation is demanded by our oaths and involves an obligation to support and defend the Constitution of the United States and all it stands for. Loyalty to the Army involves supporting the military and civilian chain of command and implies that we will base our actions on those values that enable the Army to accomplish its mission.

Loyalty to the unit addresses the responsibility of every soldier and Army civilian to serve as a member of a team, regardless of position. This loyalty is a two-way street. We have a unique personal responsibility and an unlimited liability to ensure the survival of those who serve with us and the United States. It may mean the sacrifice of our lives.

Personal responsibility means exactly that — every soldier and Army civilian must take responsibility for his or her actions. Leaders must always accept responsibility for the actions of their subordinates. All soldiers and Army civilians have a responsibility to accomplish all tasks to the fullest, abide by their commitments, and seize opportunities for growth and improvement.

Selfless service means that we must do what is good for our nation, our unit and our fellow soldiers. This leads to teamwork where we suppress our motives of self-interest and self-gain for the collective and greater good of those whom we serve.

The Professional Army Ethic does not displace but rather builds upon

Why Make Them Yours?

those soldierly qualities which have come to be recognized as absolutely essential to success on the battlefield and in our daily lives. These qualities are:

Commitment. Serving in the military is not easy. It is not for those who just want to "try it out." Our Army must have soldiers and civilians who are dedicated to serving their nation and who are proud to be members. This commitment to service may ultimately represent a willingness to risk one's life in defense of our nation. On a day-to-day basis, commitment to the unit is also important. This gets back to the idea that each soldier and Army civilian is a member of a team. This team only functions well when every player executes his assignment. Every soldier and Army civilian must be committed to working as a member of a team and must realize that others depend on him or her.

Competence. Crews, squads and sections can only function effectively if every person knows his or her job. Thus, values directly relate to success on the battlefield and during the preparation and training phases. The increasing complexity of our weapons and other systems demands a high level of proficiency. What has not increased, however, is the time available for training. To make the best use of our time available, all soldiers and Army civilians must be dedicated to thoroughly learning their jobs and maintaining proficiency in those jobs. There is an additional reason for the importance of competence as a quality — when soldiers and Army civilians know they are part of a unit whose members are well-trained, dedicated professionals, they gain confidence, pride and unit esprit.

Candor. More simply, honesty. No value is more basic and fundamental to our nation and particularly to our Army. There is no time in combat to verify reports or question the accuracy or completeness of information; people's lives may be at stake. It goes beyond combat. If we cannot rely on each other to be honest and truthful in our dealings, then we will never have an Army where we can trust each other — and this trust is vital to the Army accomplishing its mission. We can't get the job done anywhere in the Army without honesty. Each soldier and Army civilian has a personal responsibility to be honest, without engaging in half-truths or "small" lies. We owe the Army — soldiers, civilians, superiors, subordinates and peers — that much. We must be able to expect honesty from them in return.

Courage. The ability to overcome fear and carry on with the mission is what makes it possible for soldiers to fight and win against overwhelming odds. American history is full of examples of brave soldiers who accomplished the seemingly impossible. Ask them and they will tell you that they were just as afraid as the next soldier, but managed to overcome that fear. Courage, however, goes beyond the physical dimension. Moral courage, the courage of one's convictions, is equally important. It takes a different kind of courage to stand up for what you believe is right. The Army depends upon soldiers and Army civilians who display this kind of moral bravery. This doesn't mean that every policy is to be questioned, but if the person truly believes that something is not right, he or she has the responsibility to make his or her views known.

This is the Professional Army Ethic, and these are the qualities that all soldiers and Army civilians should strive to demonstrate in their personal and professional lives.

Working With Moral Courage

An air defense artillery unit decided to fire at all cost, knowing if they failed, at least they failed while daring to be great

by Maj. Evans C. Spiceland

The soldiers and leaders of D Battery, 2nd Battalion, 62nd Air Defense Artillery, had to make a judgment call during their annual service practice (ASP). The call was much like the one the legendary ball player Ted Williams once had to make. The final day of the season found the "splendid splinter" with a .400 batting average. All he had to do was to sit out the last game and secure his place in baseball history. The air defenders of 2/62 ADA had also secured a record and they too had to decide whether or not to sit out the game.

The battery, part of 32nd Army Air Defense Command, West Germany, is a NATO-deployed Hawk firing battery. The Hawk's air defense mission is an integral part of the U.S. Army air defense. In July 1985, Delta Battery was bound for Hania, Crete, to culminate a year of intense training at their ASP. The ASP for each air defense artillery unit is an opportunity to determine the success or failure of its training over an entire year. The ASP affords the unit the opportunity to apply, through this live-firing exercise, the tactical and technical expertise they have gained during the year. The ASP is also a yardstick the unit can use to measure their preparedness for war.

The battery arrived on Crete, aware that the other three firing units within the battalion had already received honor battery distinctions; each one had fired over 95 percent. Scoring over 95 percent is the goal every unit carries to ASP. It's a goal that is seldom accomplished. This created a considerable amount of pressure for Delta Battery; they knew they had an opportunity for battery and battalion honor laurels. A possible collective firing score was at stake.

The standard for Delta Battery was to go to the ASP, fire a missile, and do the best it could do. The leaders of the battery, from commander to junior NCO, had aggressively trained for the mission. Delta Battery has a motto: "No problem. No cuts." To the soldiers, the motto means, "Let's strive for excellence, let's grow and learn, and be the best."

The first day, the unit inspected and later accepted the pre-positioned Hawk system and support components that they would be working with, and began integrated systems checks. The entire Hawk system had to be aligned, and each radar had to be checked both locally and when remoted to the platoon command post van. While conducting this procedure, the unit found two major faults in the system. One fault was found in the high-powered illuminator radar and the other in the control van. These faults prevented a positive integrated system check.

Under the close scrutiny of the evaluators, it was determined that the faults were due to malfunctioning equipment and not to any incorrect procedures on the part of the unit. So, no evaluation points were lost because of it. However, the unit was given a completely new system which they had to align and perform integrated checks. This doubled the possibility of a point loss and increased the pressure. But, as the chief evaluator stated, "The unit seemed to

get stronger the more adverse the situation."

The unit was supposed to fire on the third day. The anticipation and unit effort mounted as countdown approached. The missile, however, would not fire, and the unit was directed to attempt to fire the optional missile. This missile did not fire either, and the evaluators again thoroughly inspected each missile and the entire system. The evaluators determined that the missiles were inoperable. The unit commander was then informed that the present score was 99.25 percent. The commander and the unit had a difficult decision to make — either go home and accept the score of 99.25, ensuring not only battery and battalion honor laurels, but also a NATO record, or complete the firing sequence and risk losing their record score. There was no opportunity to gain points, only lose them. The unit had already put considerable time into their work and had had to put two systems together as opposed to using one. Now, they faced constructing a second launcher section. No other unit had ever faced such a challenge at an ASP.

The ASP reflects the success of a unit's training for the calendar year. The commander, Capt. Jerry D. Thomason, held a meeting with his leaders to decide what action to take. The soldiers were a major consideration in the decision on whether to fire a second time. They had trained all year to be given the chance to actually fire a Hawk missile. The importance of the firing is to build confidence in the system and in the soldier. This became even more important after some system failures. But, the minimal point loss demonstrated how earnestly the soldiers had learned and how precisely they had applied this knowledge. Each soldier had already displayed technical and tactical proficiency in his or her job.

The battalion commander was present and could have interceded to change the decision of the battery commander, but elected to support the decision without involvement. A key aspect of this unit's leadership was the application of the teacher-mentor concept. The battalion commander trained and prepared his battery commanders. He taught them how to plan and how to lead. The battery commanders then accepted this knowledge and used it to perform the mission and make decisions. This concept was applied at all levels. In this way, each leader learned and taught, and the unit became more cohesive and better trained.

Thomason considered thoughts from his key officers and NCOs before making the decision to fire or not, as the NCOs sought out input from the soldiers on the decision to fire. This shared responsibility sparked a solid decision by the leaders. The unit came to fire, and the unit decided to fire at all costs. The soldiers of Delta Battery knew that at worst, if they failed, they failed while daring to be great. Considering the accomplishments already made, the soldiers could be led to do only one more thing — make history.

The unit worked an additional day, decanned two missiles, emplaced them, performed system checks, ran the firing sequence and fired a Hawk missile. Many evaluators and observers commented that the unit's performance was the most amazing demonstration of unified purpose they had ever witnessed.

The strength and guidance of the unit's leadership combined with the perseverance and morale of the soldiers worked to display a year of training excellence; the unit made history, receiving no additional point cuts. The unit completed their ASP with a score of 99.25 percent, which became a NATO record for a Hawk firing battery. The battalion cumulative score was 98 percent, also a NATO record.

Success came, though, from setting tough standards all year long. Delta Battery's decision demonstrated the moral courage to make the proper decision and the motivation to overcome severe adversity to triumph. They sparred with defeat, but in the final analysis, they achieved their victory in the truest sense — they earned it, just as Ted Williams earned his record. He came to play and he did. History records that Ted Williams batted .406 in that historic season.

Managing Your ADA Enlisted Career

The 10-year-old Enlisted Personnel Management System (EPMS) was recently examined to help eliminate career bottlenecks and smooth career progression. But air defenders must still take part in managing their own careers.

The goal of EPMS is to promote career progression and professionalism throughout the enlisted ranks. Selections for promotion, assignment and schooling, as well as most other management actions, all come under the guise of EPMS. The eight major components of EPMS are: classification, training, utilization, promotion, evaluation, reduction, qualitative management and separation.

The management system was developed more than 10 years ago, and major initiatives impacting on career development have evolved within that time. Therefore, an Armywide EPMS review, with input from each branch proponent, was conducted recently to address these factors which included force modernization, establishment of a proponent system, new manning systems and the volunteer force. The future structure of EPMS was also considered under the Army of Excellence and Army 21 concepts.

The Office of the Air Defense Artillery Proponent, Fort Bliss, Texas, was an integral part of this extensive EPMS review and has since published an air defense artillery enlisted career development pamphlet which outlines EPMS for air defenders.

Long before this pamphlet was created, many issues had to be addressed and decided during the Armywide EPMS review. The Office of the ADA Proponent was asked to review a number of proposed recommendations on these issues. These recommendations were reviewed within the framework of air defense artillery enlisted careers, and were either agreed or disagreed with by the office. In addition, the office offered justification for its decisions, and offered insights and analyses on the recommendations.

Issues addressed included:

- duty position distinction
- EPMS structure
- women in the Army
- assignments
- promotions
- reclassification training
- secondary MOS
- skill qualification test
- skill badge
- NCOES attendance
- specialist rank

Since the review, some recommendations, such as the elimination of the specialist 5 and specialist 6 ranks, have been implemented. Of course proponents did not agree or disagree unanimously on every issue. The aim was to improve EPMS in general without serious negative impact on any specific situation.

The all-encompassing issue of soldiers' awareness of career progression was also included in the EPMS review. The problem focused on the fact that many soldiers are unaware of how to enhance their career progression, and supervisors are not adequately prepared to counsel subordinates about career progression. The review noted that, in FY 1984, 61 percent of soldiers in the centralized promotion zone did not review their performance fiche. One of the recommendations to these problems was for all proponents to publish a professional development pamphlet.

The Office of the ADA Proponent agreed with this and other recommendations to increase career progression awareness, and a career development pamphlet for air defenders was consolidated and updated after the EPMS review.

ADA Career Partnership

The professional development of th air defense artillery soldier is a partnership based on a triad of the proponent, the commander and the soldier. The Military Personnel Center is the coordinator for this triad.

The Chief of Air Defense Artillery has the primary responsibility for providing logical career development for air defenders. To carry out this responsibility, the chief institutes changes to enhance professional development and makes recommendations to Department of the Army concerning development of, and changes to, personnel management functions that would affect the total Army.

As the second part of the triad, the commander must efficiently use soldiers to accomplish the mission. The commander must place soldiers in the jobs which require the skills, knowledge and abilities of their MOSs. Also, good personnel management policies which will provide soldiers the opportunity to grow in their MOSs must be applied. The commander must prepar soldiers for progression, responsibility and diversity of assignment.

Soldiers, the most important element of the triad, must maintain proficiency in all aspects of their MOSs. Soldiers must also maintain their records and

take a strong interest in their career development by using the system to obtain duty assignments and training. Additionally, soldiers must motivate themselves to accomplish those requirements that will show interest in their careers and place them above their peers.

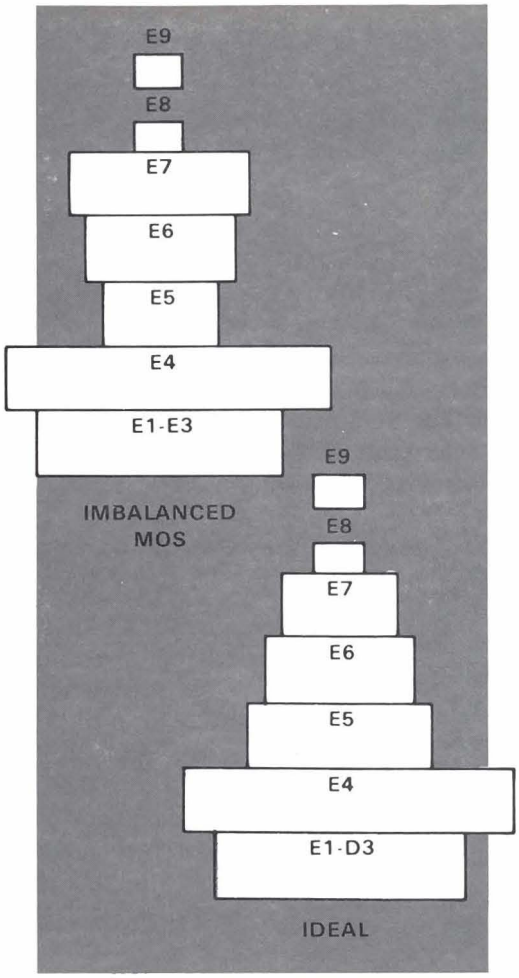
EPMS Works For You

The objectives of EPMS are to restructure each career management field (CMF) to provide a logical progression for soldiers by the most direct route from private to sergeant major; to eliminate promotion and career bottlenecks; to afford fair promotion and career opportunities to all enlisted soldiers in the same grade; and to provide continuous training throughout a soldier's career.

To meet these objectives, the Office of the ADA Proponent studied enlisted grade imbalances for CMFs 16 and 23. The authorized grade structures in tables of distribution and allowances (TDA), and tables of organization and equipment (TOE) have been compared and adjusted to ensure that grade structures support promotion opportunities and eliminate promotion bottlenecks. Additionally, the restructuring of certain MOSs has established a logical career progression path so that soldiers can see and understand the steps they should take to progress in their MOS all the way to command sergeant major.

Some MOSs within CMFs 16 and 23 showed severe imbalances. This means there are either too many or not enough authorizations at a given grade to allow for a smooth flow of promotions. Ideally, these structures should look like pyramids for all soldiers at all grades to have equal opportunity for promotion. An example of one out of balance ADA MOS structure as compared to an ideal structure is shown in Figure 1. Although the situation appears to be unacceptable and unmanageable, its impact is lessened by specific personnel management procedures and will be corrected in time. As a whole, CMF 16 and 23 structures are close to ideal.

The continuing realignment of MOS structures under EPMS will have no adverse impact on the individual soldier or the soldier's professional development. Enlisted soldiers will not face reduction in grade as a result of any realignment. Translated into positive impact, these adjustments will actually improve promotion opportunity for air defenders by eliminating bottlenecks in the authorized grade structure.



ADA Promotion Gigs

There are four objectives for the promotion system. They are to:

- fill authorized enlisted spaces with qualified soldiers who have demonstrated a potential for increased responsibility.
- provide for career progression and grades equal to ability and potential.
- attract and retain high-caliber soldiers for careers in the Army.
- exclude from promotion soldiers who are not productive or who do not show a potential to perform at higher grades.

A review of CMF 16 and 23 soldiers' personnel records by the promotion selection board panel is submitted at the end of each panel. The record review of 1984 showed recurring problems in personnel use within these two CMFs.

One problem has been repetitive assignments in the same type duty such as instructor, drill sergeant, operations NCO or range NCO, and others. These repetitive assignments do not permit air defense artillery NCOs to fully demonstrate their ability to cope with the broad range of air defense artillery duties worldwide.

For enlisted soldiers there are three levels of promotion: decentralized for grades E-2 through E-4; semicentralized for grades E-5 and E-6; and centralized for grades E-7 through E-9.

No matter which promotion an air defender is aiming at, there are important considerations to make and actions to take. The important thing is to know what is required of you to ensure you are fulfilling your part in the triad. Your training, job performance reflected through the enlisted evaluation system, skills qualification test (SQT) score, time in grade and time in service are just some of the factors affecting the promotion process. (For more promotion tips, see Page 58.)

ADA Enlisted Career Development Pamphlet Published

THE OFFICE OF THE ADA PROPONENT has published the *Air Defense Artillery Enlisted Career Development Pamphlet*. The pamphlet provides guidance to soldiers in air defense artillery MOSs, commanders and personnel managers on how to develop and use the ADA non-commissioned officer. The pamphlet is not intended to replace Army regulations or to change EPMS; rather, it complements both by adding the proponent's philosophy on career development. It also brings together information relevant to the professional development and assignment of ADA soldiers.

The pamphlet includes graphs outlining the steps soldiers should take to enchance their own career progression and when they should be taken. The pamphlet gives a complete explanation of the promotion process on each level and the criteria that must be met by the soldier. In addition, the pamphlet contains a wealth of information on how to prepare for a DA board, training and education needs, civilian education, enlisted evaluation reports, reclassification, bar to re-enlistment, qualitative management program and more.

The ADA Enlisted Career Development Pamphlet is available through your battalion S-3 or by writing to Commandant, USAADASCH, ATTN: ATSA-AC-FP, Fort Bliss, TX, 79916-7004.

Scanning

Revised STP Coming This Fall

STP 44-24 M14 SM-TG, Vulcan System Mechanic (24M) and FAAR System Mechanic (X7), is under revision and is scheduled for distribution this November. The next skill qualification test (SQT) for these MOSs will be based on the revision. The SQT "A-date" remains unchanged. The 24M and (X7) SQT notice, however, may reach the field before the new STP. This may generate questions from soldiers scheduled to take the test.

The revision will present material once found in the soldier's manual in the new STP format. Some tasks will change from one skill level to another based on the results of critical task review board findings, but the technical information will remain virtually the same. Some FAAR tasks pertaining to schedules of maintenance on test equipment and section generators will be added.

New STPs must be requisitioned. They are not automatically distributed. DA Circular 310-85-4, December 1985, has changed requisition procedures for officer and enlisted skills training publications. New publications will be listed in the circular as they are published. Commanders and training managers should ensure their pinpoint requisitions are kept up to date. For more information, call Tom Cooper at AV 978-1050 or commercial 915-568-1050.

Hawk PIP II Completed

Fort Lewis, Wash., was the last Army installation to modify its Hawk missile systems with the new equipment provided by the product improvement program II (PIP II), according to 1st Lt. Kyle MacGibbon, PIP II project officer for 1st Battalion, 4th Air Defense Artillery.

Hawk is the primary weapon system of the 1/4 ADA, part of the 35th Air Defense Artillery Brigade, the air defense arm of I Corps.

The modification program introduced two major sets of equipment: one that cuts maintenance needs; another that improves the weapon's tracking capability.

Air defenders refer to the new equipment as RAM-TAS. RAM stands for reliability, availability and maintainability. The RAM equipment has solid-state components with few removable parts. According to MacGibbon, RAM increases the meantime between repairs on the Hawk system from 15 to 43 hours.

TAS is for tracking adjunct system, which involves a camera with a television monitor. Before this addition, the Hawk radar continuous beams alerted an enemy aircraft crew that they were being tracked. By using the camera, soldiers can "silently" track the aircraft without the pilot's knowledge, thereby cutting down his reaction time. The monitor enables the crew to visually identify the target.

The 1/4 ADA's equipment was sent to Fort Bliss, Texas, for the modifications, which took 870 man-hours to complete. — *Ranger*

Patriot Can Be Upgraded

Preliminary studies indicate that the Patriot surface-to-air missile system can be upgraded — with major modifications — to provide significant capabilities against Soviet SS-22 tactical ballistic missiles and advanced cruise missiles.

An anti-tactical missile upgrade program is already under way on the Patriot to permit the system to counter Soviet SS-21 and SS-23 surface-to-surface missiles, the successors to the Soviet Frog short-range and Scud medium-range tactical missiles. — *Aviation Week & Space Technology*

RCMAT Operator's Course Available

The U.S. Army Training Center, Fort Bliss, Texas, is offering radio-controlled miniature aerial target (RCMAT) operator courses for soldiers who want to become ace RCMAT pilots. Soldiers, private through sergeant first class, holding 16P, 16R, 16S, 16H and 16F MOSs are eligible to attend. Those completing the five-week course will be awarded an additional skill identifier.

Class 486 begins July 18. Classes scheduled for FY 1987 and their starting dates are Class 187, October 24; Class 287, January 16; Class 387, April 17; Class 487, July 17; and Class 587, September 18.

Soldiers who wish to attend must complete a school application. Consult Page 158, DA Pamphlet 351-4, Army Formal Schools Catalog, for proper procedure. For more information, call Daryl Cooley at AV 978-1234 or commercial 915-568-1234.

Article Reprint Offered

The article "Are ADA Guns Dead?" in the Winter 1986 issue of *Air Defense Artillery*, contained paragraph order errors on Pages 16 and 17.

Anyone wishing a copy of the correct version may obtain one by writing to Editor, Air Defense Artillery Magazine, HQ USAADASCH, ATTN: ATSA-DTP-SP, Fort Bliss, TX 79916-7090.

JSTARS Development Team Selected

The Air Force has selected the team of Grumman Aerospace, Norden Systems and Boeing Military Airplane Co. for full-scale development of the Joint Surveillance Target Attack Radar System (JSTARS) program.

JSTARS is a joint Air Force and Army project aimed at developing an airborne battlefield surveillance and target designation system. It is specifically intended to allow engagement of second-echelon forces on the move by directing and coordinating attacks by ground- and air-launched missiles, and strike aircraft.

In detail, JSTARS will be comprised of two main elements: the look-down radar to detect and track enemy forces, and the C^3 assets to process radar data and direct and coordinate engagement of the targets.

In the first phase of the project there were discussions between the Air Force and Army about the airborne platforms to be selected to carry the radar, and about whether the C^3 systems should also be airborne or ground based. But, in the frame of a "gentlemen's agreement" between the two services, the Air Force had its way in adopting a single airborne platform — the Boeing C-18, a modified 707 transport — to carry the radar and the processing and control station.

The Air Force is responsible for the airborne portion of the system (meaning the aircraft itself, the radar and the C^3 system), while the Army is managing development of the ground stations needed to relay the information provided by the C-18s to ground forces.

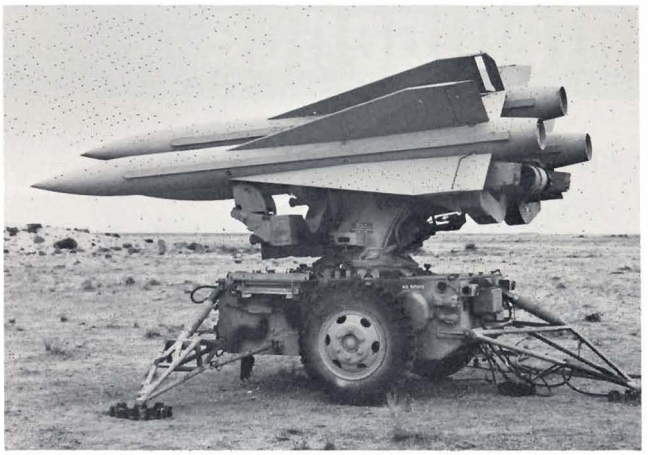
Salvaging Hawk Parts Saves Money

A team effort involving Redstone Arsenal, Ala., organizations resulted in potential cost avoidance of $6.2 million on repair part purchases for the Hawk missile system.

Representatives from the U.S. Army Missile Command, the Ordnance Missile and Munitions Center and School, and the Marine Detachment went to Letterkenny Army Depot, Pa., in December 1985 to recover repair parts from obsolete Hawk major items. The trip resulted in the recovery of 1,176 items. Their estimated purchase value is $6.2 million, according to Capt. Stephen Engle, logistics/readiness officer in MICOM's Hawk Project Office.

The basic Hawk equipment had been manufactured from 1960-67 and was fielded throughout the world. It was deemed obsolete and withdrawn from the field from 1967-81. Since then, the items were stored at Letterkenny Army Depot.

"The major end item is obsolete. However, some of the components used in the major item, once



modified, are used in today's configuration," said Jack Ray, chief of the Logistics Management Division, Hawk Project Office. "The modified parts can be used in the product improved Hawk," he added.

The team was sent to Letterkenny as the result of an earlier trip there that led to the removal and reclassification of 152 items with an estimated total value of $855,000. "Once the concept is proven beneficial, it's hoped that future removals can lead to further cost avoidance," Ray said. — Skip Vaughn, *Redstone Rocket*

1/67 ADA Trains With Setter

The soldiers of the 1st Battalion, 67th Air Defense Artillery, Fort Lewis, Wash., continually find themselves in the forefront testing new equipment or a proposed system for the air defense artillery community.

The members of A Battery, 1/67 ADA, tested a pedestal-mounted Stinger, nicknamed Setter. The Setter has a missile-launching platform capable of firing Stinger missiles and hypervelocity rockets. The launcher is mounted on a high-mobility, multipurpose wheeled vehicle and can fire on the move and at night.

After completing some familiarization training on the vehicle at White Sands Missile Range, N.M., crews moved to the Yakima Firing Center, Wash., to participate in Octofoil Focus and to put the Setter system through some realistic field maneuvers.

At one point in the training, they fired a Stinger missile, while on the move at a speed of 22 mph, scoring a direct hit on a ballistic aerial target.

Soldiers of the 1/67 ADA often have dual missions: training for their real mission of today while also testing high-technology air defense systems for tomorrow. This gives them the opportunity to increase their readiness posture while performing necessary tests for the Army researchers and planners. — Kenneth Stivason, *Ranger*

Intelligence

The Netherlands Tests Enhanced Stinger

In late 1985, The Netherlands and the Federal Republic of Germany conducted aiming tests to demonstrate the effectiveness of Stinger with a prewarning system. The tests were conducted in West Germany.

To examine the effect of the prewarning system, the Royal Netherlands Army used Signaal's "Reporter"—radar equipment providing omnidirectional reporting of targets at extended ranges. Dornier had the technical responsibility.

The gunner's reaction without prewarning was first measured. Then the gunner received early information (range, direction, speed and threat priority) from the Reporter. The tests clearly indicated that prewarning considerably enhances the Stinger's performance. — *Signaal Flash*

Colombia Accepts New Defenders

Delivery of six 500-MG Scout Defender helicopters to the Colombian air force has been completed. Colombia is the first military force to operate the newest variant of the 500/530-MG Defender family.

Model 500-MG Defenders are five-seat, turbine-powered helicopters that can be equipped with numerous military options including a modular, quick-change weapon system; roof and mast-mounted sights; a night surveillance thermal imaging system; and advanced avionics packages.

A variety of weapon system and cockpit options are available, including a fully integrated electronic flight control station. The Scouts delivered to the Colombian air force are equipped with standard military cockpits. Colombia's Scouts can be armed with 7.62mm EX-34 Chain Gun[R] machine guns, 70mm rocket launchers and other armament systems.

The Colombian air force has operated 500-series military helicopters for nearly 20 years. The new MG Scout Defenders will be added to Colombia's fleet of 500-M Defenders — the first international version of the U.S. Army's OH-6A Cayuse, introduced in 1963. — *McDonnell Douglas*

Japan, U.S. to Share SAM Technology

As the first milestone of a 1983 technology exchange agreement, Japan will transfer to the United States the technology of the most advanced shoulder-fired, surface-to-air missile designed to date. The Keiko missile uses a charge-coupled image sensor, which incorporates infrared and video image seekers, to acquire a target.

With this unique dual-set target seeker, the missile is launched under optical guidance and switches to heat-seeking after lock-on. Theoretically, if the target jet drops a flare, the missile, seeing two heat sources, will use its optical system to determine which target is the correct one. This would make virtually all current defenses against such weapons useless.

The Keiko reportedly is a generation beyond anything on a U.S. drawing board. Defense Department sources indicate that a dual-source contract may be used, with the Japanese selecting an American subcontractor, then sharing each year's production with them. — *F.Y.E.O. & Defense Electronics*

Mi-28 Seen in Afghanistan

According to Pakistani sources, Soviet forces are using a new type of helicopter in Afghanistan against the Mujahedin. It is somewhat smaller than the Mi-24, but considerably faster. Sources think it's very likely that this helicopter is the new Soviet Mi-28 Havoc, which is said to be equal to the Apache.

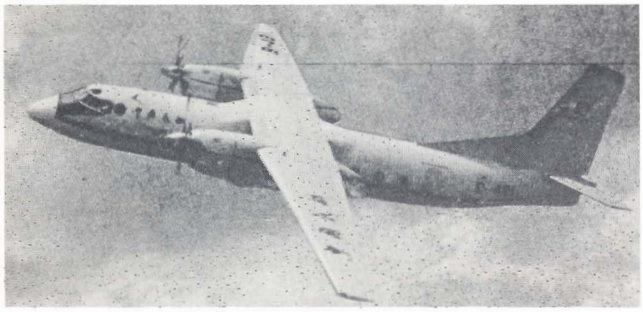
The Mi-28 is thought to be designed to engage static ground targets, tanks and other helicopters. It carries weapons underneath its stub wings. It's not known whether the helicopter carries a Gatling-type cannon or a single-barrelled Chain Gun[R] type of cannon. Figures given for the helicopter's performance are a maximum speed of 186 miles per hour and a radius of action of 155 miles. The helicopter is powered by two turbine engines, each producing 1,700 horsepower.

NATO Radars to Close Gap

NATO has selected the Hughes HR-3000 phased-array radar to cover the southern borders of NATO nations. Eight radars will be purchased. Three will be based in Turkey, two in Greece, two in Italy and one in Portugal.

These radars are similar to the type now deployed in Norway, Malaysia and West Germany. They can detect a fighter-sized aircraft at 200 miles. The first seven will form a barrier from Sardinia to Armenia; the 500-mile gap between Sardinia and Portugal will be partially covered by Spanish and French systems. The radar barrier will prevent any surprise terrorist or wartime attacks from pro-Soviet countries in Africa. —*F.Y.E.O.*

China Modernizes Air Fleet



The Chinese People's Liberation Army has taken delivery on the last of 24 S-70C Black Hawk helicopters ordered from Sikorsky Aircraft in mid-1984. Four of the Black Hawks are reportedly being used for search-and-rescue work in the mountainous regions of Tibet, while others are being assigned to military commands in Beijing (formerly Peking) and in the Sichuan and Xinjiang provinces.

In another action, China has started an expansion program to build new commuter and cargo aircraft, many of which are built under license from Soviet designs. The Xian Y-7 twin turboprop, shown here, is based on the An-24 Coke.

The Hanzhong Y-8, based on the four turboprop engine An-12 Cub, is now used for long-range cargo flights within China and to Hong Kong.

More Details on the Su-25 Frogfoot

The newest Soviet attack aircraft, the Su-25 Frogfoot, has been observed in some detail since a small number entered service with the Czech air force. The most impressive factor is its speed and maneuverability. While slightly smaller than the A-10, it has 50 percent more power. The addition of double-slotted flaps, dog-teeth on the wings and all-moving slab tailplanes indicates high maneuverability at Mach 0.75 at low altitude.

The current production model Frogfoot-B has eight weapon pylons, plus two rails for AA-8 Aphid missiles. The internal cannon is 23mm, doubtless a 6-barrel Gatling gun. It has significantly less anti-armor capability than the 30mm weapon in the A-10. The Su-25 obviously depends on laser-guided rockets for anti-tank duties.

The aircraft is designed for survivability. Titanium armor surrounds the cockpit. The fuel is in the fuselage, surrounded by the engines and air ducts. There are internal flare dispensers and a tail warning radar. The Su-25 is the only Soviet aircraft built with two engines when a single engine of the same total thrust was available. Even so, an Su-25 could never survive an attack by a fighter such as the F-16, while the A-10 would have an even chance of outmaneuvering the sluggish MiG-23. The Su-25 is intended to spot its target in one pass, then turn and attack in a second pass.

The first squadron of preproduction Frogfoot-As was deployed to Shindand, Afghanistan, in early 1982. The Frogfoot-B was deployed to Afghanistan in 1984. In early 1985, squadrons in the Czech and Bulgarian air forces were equipped. A regiment of three squadrons was deployed to East Germany in late October 1985. Total production to date may be less than 100 aircraft.

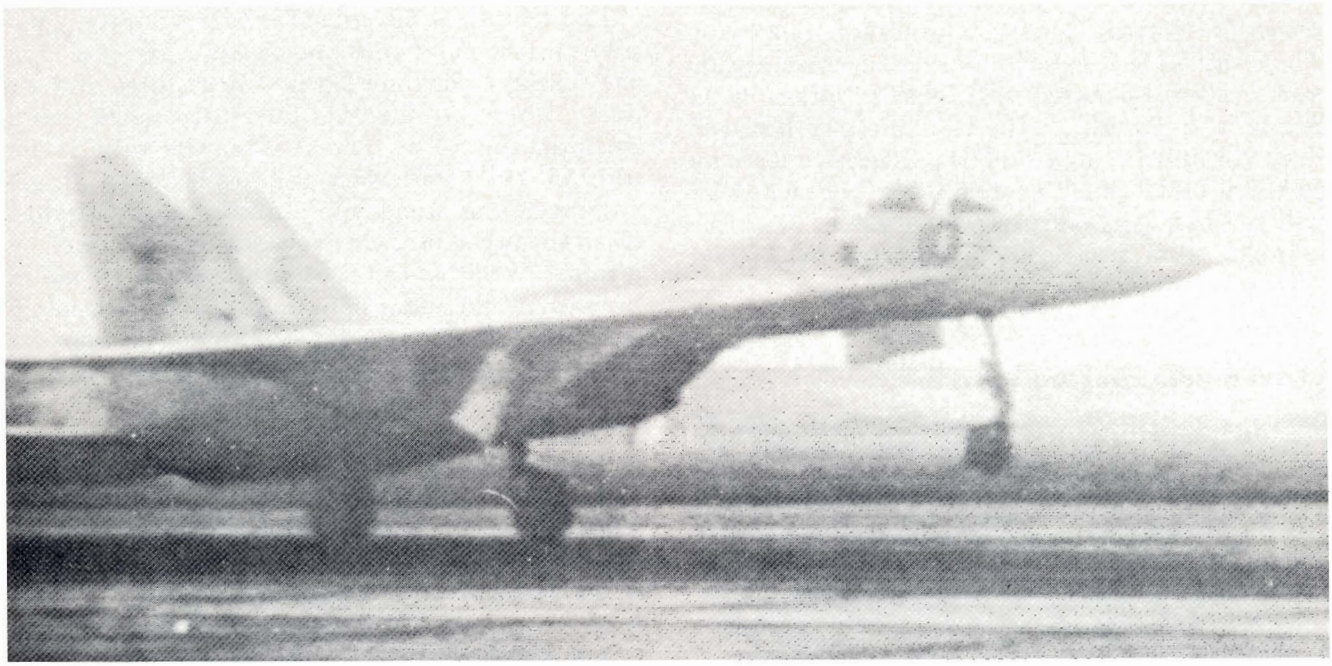
Perhaps the most astounding news, however, is that the Su-25 has been tested on the Soviet Navy's "concrete carrier," a special airfield in Crimea the size and shape of an aircraft carrier. The low landing speed, long range (compared to the MiG-23) and versatile bomb load would make a variant of the Su-25 an excellent carrier aircraft. It could be equipped with radar to carry long-range air-to-air missiles for fleet defense. — *F.Y.E.O.*

Soviets Show Su-27 Flanker

The editor of the 1986 edition of *Jane's All the World's Aircraft,* John Taylor, warns that the Soviet Union is rapidly closing the technology gap with the introduction of such new aircraft as the Condor heavy transport plane and the Su-27 Flanker fighter plane.

The Su-27 now is entering service with the Soviet air force. *International Defense Review* reports that more than 100 have been built, although few are in service yet. This is apparently due to problems with the look-down, shoot-down pulse-Doppler radar/weapon system.

Photos of the Su-27 twin-engine jet, said to be the counterpart to the F-15 Eagle, are published in the latest edition of *Jane's*. The photograph published here was shown on Soviet television. According to *F.Y.E.O. (For Your Eyes Only),* a semimonthly publication, the aircraft is apparently intended for



strategic air defense and, as such, will probably never be exported (as the Su-15 never was).

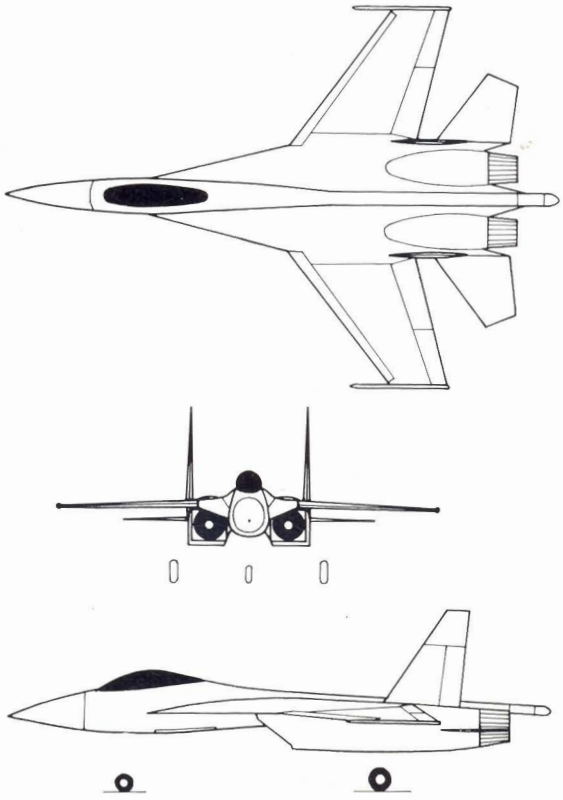
Stephen Cole, editor of *F.Y.E.O.,* describes the Su-27 as being maneuverable enough for counter-air operations, dueling with F-15s and Tornadoes. The forward fuselage climbs above the wing (as on the F-14), and the bubble canopy provides an excellent view.

The radar is copied from the radars on the F-14 and F-15. It may have a detection range as great as 150 miles and a tracking range of more than half of that. This depends on how well the Soviets have been able to copy individual components and microchips. Analysts estimate that it will carry six air-to-air missiles, probably four AA-10 medium-range homing air-to-air missiles and a pair of dog-fight missiles on the wing-tip launch rails.

Reports indicate that a version of the Su-27 will be deployed on the new aircraft carrier, but this has also been suggested for other aircraft. Certainly the Su-27, with its long-range radar and its ability to carry 12,000 pounds of bombs (calculated from estimates on wing area and engine thrust) would be ideal for that mission.

The engines are thought to have 30,000 pounds thrust each with afterburners, comparable to the F-15. Top speed is probably about Mach 2.35 at medium altitude and Mach 1.1 at sea level.

Flanker production is thought to be about 115 a year. It is expected to gradually replace medium-range Su-15 Flagon and long-range Tu-28 Fiddler fighters. This will give the air defense forces some 500-600 Su-27s and 2,000 MiG-23s, plus smaller numbers of MiG-29s and MiG-31s.



ROTC Selection Board Results

A 16-member board completed its ROTC selection deliberations Nov. 26, 1985. The board consisted of seven members from the ROTC community and nine members from the Officer Personnel Management System proponents and the Medical Service Corps. All branches were represented. Four members were former battalion commanders, three are currently in battalion commands, and three are battalion-commander designees.

The board considered 6,112 ROTC accession files. Determinations of active duty, reserve forces duty and active-duty branching were based on individual qualifications and records of performance. Of the 6,112 ROTC graduates considered, 4,630 (76%) were designated for active duty and 1,482 (24%) were designated for reserve forces duty.

School Year 1986 graduates were placed on an order of merit list. Branching of graduates started with first branch choice.

The following is a breakout of ADA data derived from the accession board.

Total number designations:	305
Male:	220 — 72.1%
Female:	85 — 27.9%
Total number selected RA:	44 — 14.4%
Male	18 — 5.9%
Female:	26 — 8.5%
Total number selected OTRA:	261 — 85.6%
Male:	202 — 66.2%
Female:	59 — 19.3%
Requested branch:	
1st choice:	92 — 30.2%
2nd choice:	84 — 27.5%
3rd choice:*	129 — 42.3%
Type of college degree:	
Science:	23%
Business:	24%
Other:	52%

** Nine females were forced branched. This means that ADA was not one of their first four choices. Cadets listed 10 branch preferences.*

Force Alignment Plan III

Force Alignment Plan III deals with the acquisition, distribution and promotion of officers to specialty immaterial positions. The combat arms branches have more requirements for junior officers (platoon leaders) than senior officers, while the combat support (CS) branches and combat service support (CSS) branches have more requirements for senior officers than junior officers. Consequently, all branches are either top or bottom heavy, resulting in overages and shortages across the board. Air Defense Artillery is bottom heavy, which causes overages at the captain level.

This puts ADA in the position of being a donor branch (ADA officers transferring to CS/CSS branches) at the three-year mark. The plan is to allow a certain number of RA and OTRA officers to branch transfer into shortage specialty fields in CS/CSS branches.

Officers can volunteer for transfer after they have completed three years or seven years of active federal commissioned service. The end result of the Force Alignment Plan III is to align the force and meet budgeted end strengths.

The projected numbers of ADA officers who will transfer to a CS/CSS branch are:

FY 1986	FY 1987	FY 1988
43	105	53

Retirement Change

Officers who have been approved to retire, but who are subsequently selected for promotion, may now withdraw their retirement application and accept promotion, MILPERCEN announced in February 1986.

Prior to the change, the procedures for officers to request withdrawal of their retirement application upon selection for promotion were no different than those used by other officers requesting withdrawal.

The change to AR 635-100, Personnel Separations — Officer Personnel, is as follows: "An officer who has an approved retirement pending, and who subsequently is selected for promotion, has the option to withdraw his or her retirement application and accept the promotion. The officer continues to be subject to worldwide assignment in accordance with the needs of the Army. Request will be forwarded through channels to HQDA (DAPC-OPP-R)."

ADA Assignments MILPERCEN

From the Lieutenant Colonels Desk

Maj. (P) Roger A. Wright

I would like to give a brief introduction of myself along with a few insights as to what's happening with the ADA Branch at MILPERCEN. Currently, I wear two hats — branch chief and assignment officer for lieutenant colonels. I will continue to serve as branch chief until July 7, at which time Lt. Col. James L. Frederick will take over. Lt. Col. (P) Lowe, who was branch chief until December 1985, is now chief of assignments, Combat Arms Division.

I have now been at the desk for a little more than nine months. I never knew how difficult it was to manage the careers of more than 500 lieutenant colonels. I arrived here from the 2nd Battalion, 55th ADA, Fort Bliss, Texas, where I served as the executive officer for 18 months. Prior to that, I was the 11th ADA Brigade adjutant for seven months, having arrived at Fort Bliss from the Command and General Staff College, Fort Leavenworth, Kan. My primary training was in basic Hawk, but I have also served in Chaparral/Vulcan and Nike Hercules.

My first priority in making assignments is to meet the Army's needs. I also would like to meet the desires of every officer, but that's impossible to do. Consequently, some of you will get assignments that you don't like or want.

To help me, you need to have a current preference statement on file. A letter stating your desires will also do. But let's be realistic in what you ask for. Before I can assign anyone, the position has to be supported by the officer distribution plan. For example, I cannot send someone to Norfolk, Va., unless I have a valid open requisition. The whole process is too long and complicated to discuss here, but just remember that I'll help you all I can.

Oftentimes, my hands are tied in that I have to nominate someone for an assignment with no flexibility allowed. The normal CONUS tour is three years, but you could move sooner. In some critical functional areas, such as 49, 51 and 53, two years is more realistic. In any case, I will give you as much notification as I can.

My hard assignments to fill are ROTC PMSs (master's degree required) and such OCONUS places as Kuwait, Saudi Arabia, Italy, UAE and others. I have already talked with many of you, and I expect to eventually talk with all of you. Call me anytime. The sooner we start working on an

assignment, the better the opportunity is to satisfy both the Army's and your desires.

I want to leave a few thoughts with you:

★ Send in an updated preference statement with current telephone numbers.

★ Ensure that you have a current photo on file.

★ When you visit MILPERCEN, call ahead to make an appointment with your assignment officer, since he is the best one to tell you what to expect. We do go TDY quite often.

As a sidenote, we have recently moved to Room 4N65, Hoffman Building II — down the hall from where we used to be. We now have our old telephone numbers back. They are AV 221-0025/0026 or commercial 703-325-0025/0026. Feel free to call me anytime.

From the Majors Desk

Capt. (P) John S. Westwood

I have been at MILPERCEN for 34 months with responsibility at the Lieutenants Desk. I am a graduate of the ADA Officer Advanced Course. My assignments include S-3 with the 6th Battalion, 52nd ADA (Hawk); and commander, A Battery, 3rd Battalion, 7th ADA (Hawk), both in Germany.

Maj. A.D. "Dave" Batron, whom I replaced at the Majors Desk April 1, is now coordinator of the Combat Arms Division, MILPERCEN. Before he left the Majors Desk, he wanted to share with you the results of the recent Command and Staff College (CSC) Selection Board.

Selection to attend a resident CSC program is highly competitive. The Selection Board convenes annually, usually in September, to consider more than 5,000 officers for potential selection. The selection process programs 1,000 selections, usually spread over four year groups.

An officer is eligible for consideration if he is a promotable captain, major, promotable major or lieutenant colonel not having completed more than 168 months of active federal commissioned service as of Sept. 30 in the year the board convenes. One must be a graduate of an officer advanced course and not have attended or declined to attend a resident U.S. Command and Staff College or an equated foreign college. The selection system is geared to select approximately 50 percent of a year group. This may or may not be aligned by branch.

The 1985 CSC Selection Board considered 5,474 officers and selected 997, of which 995 had at least a bachelor's degree. The oldest selected was 41, the youngest 31. The results, by year group, were:

YG	Prior Selections	1985	Total Selected	Projected Remaining
72	946	85	1,031	0
73	632	263	895	50
74	363	264	627	325
75	29	363	392	570
76	0	22	22	920

Combat arms officers comprised 511 of the 997 selections. The overall selection rate was 18.2 percent.

Air Defense Artillery did quite well. Of 261 officers considered, 43 were selected, resulting in a 16.4 percent selection rate. When compared with all combat arms branches, ADA was behind Aviation (17.8%) and Infantry (22.9%) and ahead of Armor and Field Artillery. But, the results were positive: YG 76 — 4; YG 75 — 16; YG 74 — 9; YG 73 — 12; and YG 72 — 1.

The military education level "4" that results from completing a CSC program is ultraimportant for promotion potential to lieutenant colonel. If you have not been selected to attend a resident program by your second year of eligibility, I recommend enrollment in the Command and General Staff College non-resident program. The six-phase program normally takes two-and-a-half to three years to complete. It's the only non-resident course that will result in level "4" credit.

The CSC selection "season" will begin in April with a message announcing the convening of the FY 1986 board. It's important that the critical documents seen by the board — ORB, OMPF (microfiche) and full-length photograph —are accurate, up-to-date and reflect the most favorable impression. If a "complete the record" efficiency report is authorized, react in time to have it in the record. Prepare now.

From the Captains Desk

Capt. Leslie Pettet

I will use my corner of these features to highlight trends, policies and career moves that impact upon ADA captains. Information will be general in nature most of the time. First, however, I would like to introduce myself.

I arrived in MILPERCEN 18 months ago from Fort Lewis, Wash., where I served as a commander, battalion S-3, brigade S-1 and, lastly, in the 9th Infantry Division G-1. Upon arrival at MILPERCEN, I worked as the ADA lieutenants assignment officer and in the Personnel Actions Branch for Combat Arms Division.

One of the most common questions about assignments is, "What is available for me?" When you are available often determines reassignment possibilities. Major commands project losses normally six to eight months out and request backfills. Large losses normally generate large requirements. If the requirements are validated and the officer distribution plan supports it, I will get a requirement to send an officer. Assignment officers do not generate requirements or places to go; we are given them. Please do not think that my left desk drawer has some hidden paradises.

Year group 1979 functional area designations have been completed. Remember that combat arms officers hold a functional area as an alternate skill. Almost everyone received their first choice. However, several designations had to be made without a preference statement.

Year group 79 breakout by functional areas is: 18 (Special Operations) — 6; 41 (Personnel Management) — 42; 45 (Comptroller) — 14; 46 (Public Affairs) — 7; 48 (Foreign Area Officer) — 12; 49 (Operation Research/Systems Analysis) — 21; 50 (Force Development) — 0; 51 (Research & Development) — 29; 52 (Nuclear Weapons) — 4; 53 (Systems Automation Officer) — 19; 54 (Operations, Plans and Training) — 67; 97 (Procurement) — 4; 99 (Combat Development) — 11.

For assignments, the most important item in your branch file is a current telephone number, CONUS or OCONUS. Since almost all assignments are made without the benefit of a face-to-face meeting, the telephone number is critical. Please update it each time you change home or work telephone numbers.

The 1986 Majors Selection Board results should be out by the end of June or mid-July. Those officers selected will be seen by the 1986 Command and General Staff College Selection Board in October. Make sure you have a good

current photo (within the last three years) and an ORB which presents a clean image of yourself. If you have problems in your ORB, start now to get them ironed out. It sometimes takes several tries. If you wait too long, it may be too late to get them corrected by October.

From the Lieutenants Desk

Jack Fish and Capt. (P) John S. Westwood

If your have dreams of the "Golden Triangle" for a possible next assignment, your dream may turn into a nightmare of the "Bermuda Triangle."

The "Golden Triangle" is the slang term used when referring to assignments to Fort Lewis, Wash.; Fort Ord, Calif.; and Fort Carson, Colo. It's a fair estimate that 90 percent of the officer preference statements (DA Form 483) we receive from ADA officers include at least one of these three posts. And about 50 percent of all preference statements list the entire "Golden Triangle." It's not difficult to see how the area got its name. However, a little simple arithmetic will show that you are up against tough odds for an assignment there. There are not as many slots as there are takers.

Just because the preference statement is called a "dream sheet" does not mean that it cannot work for you. The point is that, when listing your three choices for possible assignments, it makes sense to think of agreeable possibilities outside of the "Golden Triangle" and list those too.

The first priority for an assignments officer is to meet Army requirements. As assignments are targeted to be filled, we try to make a compatible match. If the assignment is "Siberia," then that's what has to be filled. If no one has that as a preference, we have to select the best qualified officer for the particular job. The most important thing that any ADA officer can do is to stay in touch with his assignment officer. You are not imposing on us when you stop by or call for a one-on-one. You are your best career manager. By talking candidly and regularly with us, you can take an active part in managing your career..

Impact is a word bantered about pretty loosely at times. But there is one way ADA officers can have tremendous impact — that is by keeping your ORB updated.

Whenever your individual file is pulled, your ORB is reviewed. Without question, it is the most important administrative document in your file. Unfortunately, many of you do not realize the importance of the ORB and, consequently, do not keep it updated and accurate. The only way we can know about your civilian education, marital status, assignment history, date of rank, religion, or a myriad of other bits of information is from what is contained on your ORB. In fact, your ORB is sent to every promotion board. If the information is wrong, you lose. You should check your ORB and then, generally speaking, your local military personnel office can correct wrong or outdated information. But, it is your responsibility to make corrections happen.

Warrant Officer Applications

Members of warrant officer selection boards have voiced numerous comments and complaints about applications which recently have been evaluated.

Some problem areas were:

★ Application was not signed, dated or completed, particularly items 24, 25, 26, 31 and 42.

★ Applicant obviously lacked mandatory prerequisites.

★ Photograph was outdated or missing.

★ Individuals had failed to review their official personnel military file and did not know what it contained.

★ Height and weight were not verified and had no comments from the chain of command.

★ Resumes were poor and inadequate. Since this is the applicant's primary means of communication with the board members, it deserves the applicant's best effort.

★ Periodic medical exams were outdated or non-existent.

★ Medical profile records were outdated. Incidents of poor health or inability to take the Army physical readiness test were not fully explained or documented.

★ Applicant failed to obtain recommendations from his chain of command. Comments from a battalion-level commander or higher are necessary.

★ Commanders' recommendations could be expanded. "Recommend approval," and "Forwarded for consideration" are overworked and inadequate. A commander's recommendation should be strong if he believes the soldier should be a warrant officer.

Some applicants and military personnel offices sent in three and four copies of each application. The original application to MILPERCEN and one copy to the 201 file, pending final action, are sufficient.

Countless extraneous documents were submitted by applicants or appended by the military personnel offices. DA Circular 601-84-4, Appendix I, depicts what is to be submitted. This must be strictly adhered to. Documents authorized to be in the OMPF which are not in the applicant's file may be attached to the application. Nothing else is authorized for submission to the board.

Because storage space is limited, use of notebooks, prong fasteners, folders or other semi-permanent binding are highly discouraged. Voluminous documents also cause long delays in the selection process.

Finally, the quality of copied documents has been generally fair to poor. Quality records are extremely critical. Changes posted on an applicant's personnel qualification records must be legible and certified by the military personnel officer prior to submission

This is not an all-inclusive list of problems and comments provided by board members, but should help applicants and thereby prevent delays in the warrant officers' procurement process.

For further assistance, call CWO 4 Manuel Gonzalez at AV 978-3022/5312 or commercial 915-568-3022/5312.

Automated Officer Preference Statement

There has been a myth around for many years in officer personnel management that it's useless to submit a preference statement. That is just not true. A preference statement allows an officer to participate in the assignment process, and, although it does not guarantee the desired assignment, it is used.

To improve the process, the Army implemented an automated Officer Preference Statement, DA Form 483, in 1985. MILPERCEN assignment managers have computer terminals at their desks that display preference statement information. Every time a record is reviewed, preference information should be available.

The statement is now a mark-sense form, and the terminals provide the only readable translation of the information coded on it. If you don't accurately complete the form, it can cause processing delays. Those delays could prevent the latest preferences from being included in your files at assignment time.

Officers need to be particularly careful about certain aspects of the form that can cause processing delays.

★ Use a No.2 pencil to fill out the form — *not* a pen, crayon or felt-tipped marker.

★ Mail the form in a 9-by-12 envelope, and do *not* fold it. The reader cannot process folded forms.

★ *Completely* darken the entire mark-sense circle.

★ Include your social security number in the area indicated.

A preference statement can be submitted at any time.

However, MILPERCEN recommends certain times an officer should do one. These are:

★ approximately 12 months before completing a long tour overseas.

★ on arrival at a short-tour area.

★ approximately 12 months after reporting to a CONUS assignment.

★ at least 60 days before beginning a military service school, a civilian school or training with industry that requires a permanent change-of-station move in CONUS.

Changes in the preference statement are expected in the future, based on comments received from people who have used the form. Changes in the Officer Personnel Management System will also affect it. The goal will remain the same — to improve the form's usefulness to you and your assignment manager. But it won't help MILPERCEN assign you as you want if you don't fill it out correctly and send it in to your career management branch.

Enlisted Personnel Management (EPM)

Capt. Richard E. Bedwell

Although I'm no longer chief of MILPERCEN's ADA Enlisted Branch, I want to share some information that is critical to your careers.

I served as branch chief and as senior career advisor for the Field Artillery and ADA branches from 1983 until January 1986. I'm now assigned to J-5, Office of the Joint Chiefs of Staff. In the next issue, Capt. Howard Bromberg, the new chief, will provide input to guide you in your career management.

Contrary to what some soldiers may think, there is no enlisted personnel management done by the dart-board method; nor does a computer make assignments.

Essentially, the assignment process is as follows.

The MACOM submits a requisition. The EPM distribution division reviews it and makes validation decision. The requisition is then entered into the Centralized Assignment Procedures III (CAP III). This is an automated assignment process used Armywide. Next, the CAP III computer searches the enlisted management files for the best qualified, most eligible soldier. A civilian assignment manager reviews this for technical accuracy of assignment. A professional development NCO reviews it again for additional training that might be necessary, professional development aspects and other soldier needs. Finally, the assignment manager assigns a soldier against the assignment and the information is transmitted to the field.

Although the assignment process for enlisted soldiers is computer-assisted, the decisions concerning assignments are made by soldiers from within the same career management field (CMF) as the soldier being assigned. The EPM System has been around about 10 years and is modified continually for refinement and improvement. The system is designed to give every soldier an opportunity to progress from E-1 through E-9 in a CMF that has a supporting NCO education system.

Ideally, a soldier enters into CMF 16 and, through a quality selection process, progresses to sergeant major. Along the way, lower-quality soldiers fall away. We need to remember, though, that the competition is so intense that often even extremely qualified soldiers cannot make it to the top.

For every frustrated soldier who cannot get the EPM System to work for him or her, there is a soldier who understands the system and knows how to make it work. These soldiers have gained this understanding from their own experience and initiative. No one is in a better position to know the professional and personal needs of the individual soldier than the soldier himself. Therefore, you are the key ingredient in making the enlisted personnel system work for you. Periodic contact with your career branch will provide you with the highest possibility of satisfying your needs and the needs of the Army.

Aside from the people at MILPERCEN, there is another key player who has considerable influence on managing your career: your chain of command. There is little doubt that your commander can have a significant impact on your career. What can you do? What can your chain of command do? Here are some helpful hints.

How You Can Help Yourself

Rule 1: No matter what the job, it's important to do it well and without disciplinary problems.

Rule 2: Work in your primary MOS, and, if possible, within a tactical unit. It will enhance promotion potential, especially if the job is done well in a position of increased responsibility such as a grade higher.

Rule 3: Some TDA assignments, such as drill instructor and recruiting duty, have a more positive impact on promotion and career development. No single assignment in a TDA position is the "kiss of death," but consecutive or repetitive assignments have a negative correlation with promotion.

Rule 4: You are expected to be physically fit; the PT test does count. Overweight and profiled soldiers not only face elimination, but reduced promotion and assignment opportunities.

Rule 5: Personal appearance (hair, mustache, glasses, uniform, ribbons, posture, etc.) as reflected in your official DA photo has an effect on promotion.

Rule 6: Seek self-improvement on a personal and professional level. Low GT scores are a negative indicator; college and correspondence courses are positive indicators of a soldier's initiative.

Rule 7: Attend professional development courses. Good soldiers should seek and not miss any opportunity to attend.

Rule 8: Ensure that your OMPF is complete, accurate and that it reflects the best possible image of yourself. Boards promote soldiers based upon potential — not just what you have done, but what your records indicate you can do. The "I do a good job, forget the record" attitude keeps good soldiers from getting promotions.

Rule 9: Learn the EPM System and the administration that goes with it. The soldier who knows the development process can seek the type of jobs that give him the experience he needs to progress. You should use the Enlisted Preference Statement to seek opportunity. It is a "dream sheet" if you focus on one or two CMF 16 slots at Fort XYZ. If the choices are reasonable and in a location where your MOS is authorized and needed, you have a good chance of going to one of your three choices. Use the remarks portion to articulate your logic — the PDNCO reads this in the assignment process. Don't wait until notified via CAP III to establish rapport with your career manager.

Rule 10: Request and review your OMPF often. Get a knowledgeable person to review it periodically with you. If recently promoted to E-6, send a handwritten letter to your PDNCO. Provide him a copy of your promotion orders, past EER, Enlisted Preference Statement, and Forms 2 and 2-1 so a file can be established.

How the Enlisted Chain of Command Can Influence Careers

Rule 1: Train the good soldiers on the EPM System, and show them how to grow within it.

Rule 2: Use your experience to counsel and develop your subordinates on a regular basis.

Rule 3: Develop high standards and qualities in subordinates through example and enforcement.

Rule 4: Provide good soldiers the opportunity to attend professional development courses (whether they want to or not) and see that they are well prepared. There still exists a tendency to keep the good soldiers and send the "expendables."

Rule 5: Provide the good soldiers an opportunity for college credit and general equivalency diploma (GED). **Force** them to raise their GT scores.

Rule 6: Ensure that every soldier has a microfiche record of his OMPF, and offer to review it with him so it reflects him in the best possible light. Follow up to ensure that included material is updated.

Rule 7: Discuss with and help the soldier develop a career

progression plan for himself that is doable and appropriate to move ahead. Make certain that the preference statement and other documents support this plan.

Rule 8: Help the good soldiers remove adverse material from their file. It will not help them in any instance.

Rule 9: Write EERs and review EERs written by others so that they are administratively correct. Consider possible inflation. Place the soldier where he should be among his peers. Emphasize degree and level of responsibility, leadership ability, efficiency trends, length of service and maturity, moral standards, integrity and personal characteristics. When writing an EER, say what you mean in clear precise English — don't hint or dilute. Be specific, personal and sincere. Word the narrative as an evaluation — not an award recommendation.

Rule 10: Work the soldier in his MOS.

Language Program Seeks ADA Soldiers

The Army is looking for certain ADA soldiers who are qualified linguists and also for non-linguists to attend the Defense Language Institute Foreign Language Center located at the Presidio of Monterey and at its branch at the Presidio of San Francisco, Calif.

The language program available in FY 1986 within ADA in which linguists and non-linguists can apply is Italian for E-7 in MOS 16B, and for E-8 in MOS 16Z.

To qualify for language training, applicants must (see AR 611-6):

★ have successfully completed high school or have a GED.

★ have a minimum defense language aptitude battery (DLAB) score of 85.

★ have an interim or final secret security clearance.

★ have no major speech impediment to cause language acquisition to be difficult or personally embarrassing.

★ have a physical profile of 1 in the "S" (psychiatric) factor and a minimum of 2 in the "H" (hearing) factor.

★ meet the height and weight standards of AR 600-9.

★ must have a skill technical score of at least 95 to qualify for DLAB testing.

★ meet the re-enlistment criteria outlined in AR 601-280.

Each request for language training must include an updated DA Form 2A and 2-1, and verification of DLAB.

Applicants should send a DA Form 4187 through the chain of command to: Commander, MILPERCEN, ATTN: DAPC-EPT-L, 2461 Eisenhower Ave., Alexandria, VA 22331-0400.

Applicants who are already qualified in the MOS and language should send their applications to the ADA Career Branch (DAPC-EPK-A) with a copy of their DA Form 2A and 2-1 and an updated copy of DA Form 330 (Language Proficiency Questionnaire). Soldiers selected will incur a service obligation as outlined in AR 614-200.

Details on language training to include class schedules, starting and ending dates, specialities, grade and programmed units of assignments are contained in DA Circular 350-Series (Language Training for Enlisted Personnel).

Contact your military personnel office for further details.

PLDC Now Required of Sergeants

Sergeants will need to be graduates of the Primary Leadership Development Course (PLDC) as of July 1 to be promoted to staff sergeant. Soldiers on the standing list for promotion to staff sergeant who are not graduates of PLDC will be removed from the list June 30, 1986.

The new requirement is being made to ensure all soldiers being promoted to staff sergeant have had a primary level of leadership training. The effective date of July 1 was established to give commanders sufficient time to send their sergeants, who are otherwise qualified for and deserving of promotion, to PLDC.

Sergeants who have graduated from a primary non-commissioned officer course, a primary leadership course or a basic non-commissioned officer course prior to Jan. 1, 1986, will be considered to have met the requirement. These sergeants should make sure their diplomas are in their official personnel files.

Attendance to PLDC will be restricted until July 1 to only sergeants and promotable sergeants to give them every opportunity to attend a course. These courses are conducted at non-commissioned officer academies Armywide.

More MOSs Added to Imbalanced List

Two MOSs have been added to the space-imbalanced MOS program. They are MOS 24C (Hawk firing section mechanic) and 27L (Lance system repairer). These additions bring the number of space-imbalanced MOSs to 39.

An MOS is considered space-imbalanced when more than 55 percent of its manpower is overseas. Soldiers in these MOSs are offered incentives to extend their oversea tours by at least one year.

MILPERCEN has a special management program to find stateside jobs for space-imbalanced MOS soldiers upon their return to CONUS. Since the majority of the jobs for these soldiers are overseas, MILPERCEN must assign them to secondary or alternate skills.

Major Changes to EER

The enlisted evaluation report (EER) is being revised to better prepare NCOs for their duties. The new EER was ordered after the NCO Professional Study Group recommended establishing eight essential categories of competency to help select and develop NCOs.

The eight categories are:

★ NCOs must be thoroughly proficient and knowledgeable in the full range of duties of their present assignment.

★ NCOs must maintain a level of understanding of their particular MOS, even where certain responsibilities do not fall under their present assignment.

★ NCOs must possess the basic educational skills required to effectively communicate, train, counsel and write reports pertinent to their positions.

★ NCOs must be physically fit and maintain proper military bearing at all times to be ready to fight and lead, and to be strong positive examples to those under them.

★ NCOs must be attentive to the needs and concerns of their soldiers, continually looking after their interest while making sure they can fight and survive in battle.

★ The primary mission of the NCO is that of trainer.

★ NCOs must possess the professional values and standards of the service, which lead to greater dedication to duty and discipline.

★ NCOs are responsible for managing and accounting for the soldiers, property and equipment placed in their charge.

Retention Rate for ADA MOSs

Zone A: Re-enlistment between 21 months and 6 years.

16D	26.67%	16E	23.48%	16H	53.70%	16J	48.04%
16P	42.18%	16R	39.06%	16S	46.33%	16T	44.44%
24C	30.00%	24E	19.12%	24G	14.52%	24M	23.96%
24N	14.29%	24R	100%	24T	63.16%	25L	17.35%
26H	37.50%						

Zone B: Re-enlistment between 6 and 10 years.

16D	52.14%	16E	45.07%	16H	75.00%	16J	80.00%
16P	67.33%	16R	53.78%	16S	66.35%	16T	70.27%
24C	66.67%	24E	28.57%	24G	74.07%	24M	77.78%
24N	61.54%	24R	100%	24T	73.91%	25L	85.71%
26H	66.67%						

Zone C: Re-enlistment between 10 and 14 years.

16D	73.68%	16E	55.56%	16H	95.83%	16J	70.00%
16P	68.89%	16R	79.25%	16S	88.24%	16T	82.35%
24C	75.00%	24E	88.89%	24G	70.00%	24M	100%
24N	66.67%	24R	100%	24T	92.31%	25L	66.67%
26H	100%						

LETTERS

AAA And the Sergeant York

In the early 1960s, our Army developed the Skysweeper, a 75mm anti-aircraft gun on a tracked vehicle, complete with an onboard radar gun director system. It was said to have failed in field trials, reportedly due to recoil vibrations which rendered the radar gun director system ineffective.

If recoil vibrations caused the demise of the Skysweeper, could not similar vibrations have caused the problems reported with the Sergeant York twin 40mm gun system? One wonders why the Ford Aerospace & Communications Corp. did not know of this problem, and why they spent more than $4 billion to repeat this same mistake.

If recoil vibrations are the cause, could not the vibration sensitive radar gun director portion of the system be isolated from the gun carriage by mounting the electronics package in a towed trailer? Today's computers should be able to solve the mathematics of any angle and offset between the gun and the radar set. Also, it would be easy for the radar to sense the flight of the projectile and correct the gun settings accordingly. The Winter 1986 issue shows on Page 17 a trailer being pulled by an M-19 twin 40mm gun, so why not a radar set in a similar trailer?

By the way, the anti-aircraft artillery halftracks shown on Pages 16 and 17 show the 37mm gun between a pair of .50-caliber machine guns. This was the alternative arrangement to the halftrack-mounted Quad .50-caliber.

Maybe we need both the twin 40mm and the Skysweeper 75mm guns, both with trailer-mounted radar sets (or equivalent). Since every trailer could have a program for both types, only one trailer need be produced. Both should also have an override for manual control.

As Brig. Gen. W.H. Riley Jr. and Maj. C.E. Kirkpatrick point out, simplicity is a virtue, and guns have that virtue.

Robert P. Kingsbury
Lt. Col., FA, USAR (Ret.)
Laconia, N.H.

Confidence Plus

I would like to propose a solution to an ammunition-confidence problem for air defenders of 2nd Battalion, 61st Air Defense Artillery (C/V) (S/P), 2nd Infantry Division, Republic of Korea. It is the only U.S. Army air defense artillery unit whose mission requirements dictate that all Vulcans remain uploaded at all times. As a result, the 20mm rounds are exposed to weather which causes substantial deterioration of the rounds.

These air defenders would be a lot more confident of this ammunition if they knew that the 20mm basic-load ammunition uploaded in their Vulcan tracks, at any given time, would fire without incident if they went to war. Confidence could be won by allowing them to fire a percentage of this 20mm ammunition at their semiannual service practice (SASP) live-fire exercise. Present Army policy requires the unit to fire training ammunition only.

The climate of Korea is one of extremes: harsh, frigid winters; dusty, humid summers; and wet, torrential monsoons. As a result of numerous field-training exercises and alert deployments, the rounds suffer from rust and dirt buildup that normal munition maintenance cannot prevent.

Semiannually, personnel from the division ammunition supply point inspect the 20mm basic-load ammunition for serviceability and safety. Inspectors who determine rounds to be unserviceable because of rust buildup will allow an exchange for new munitions. However, it is still unknown if the degraded rounds will fire successfully.

By firing a percentage of the rounds in question at the SASP live-fire exercise, the crews can see for themselves whether the ammunition is good or bad. If the rounds fire successfully, the crews' confidence in the Vulcan weapon system will increase. If they do not fire, an immediate exchange for replacements must take place.

The cost of firing the 20mm rounds would be minimal if the crews fired only a sampling of the degraded ammunition. This is a small price to pay for the results that would be yielded. We would gain the confidence of the Vulcan crews and our Korean allies, and be assured of 2/61 ADA's ability to accomplish the air defense artillery mission required of them within the 2nd Infantry Division.

As the saying goes, "What you don't know can hurt you." We cannot afford "not knowing" with all that is at risk.

Capt. George Amadio

(Capt. Amadio, a recent graduate of the Air Defense Artillery Officer Advanced Course, is a former platoon leader and executive officer, and was the S-4 with 2/61 ADA.)

Missing Out on ADA

I am a captain currently assigned as U.S. Army Air Defense Artillery exchange officer to the British Army in the Federal Republic of Germany.

I am assigned to a track-Rapier battery and enjoying this tour very much. However, I do miss the *Air Defense Artillery* magazine, which is normally available at air defense artillery battalions. Having departed Fort Bliss, Texas, last August, after four years there, I feel I'm losing touch with the ADA community. Unfortunately, I am not located near any U.S. installation.

Considering the nature of my assignment, could you please assist me in obtaining the magazine?

Robert W. Yingling II
Capt., AD
22nd Air Defense Regiment
Royal Artillery

(Anyone in ADA who would like to keep in touch with Capt. Yingling can call the editorial office of **Air Defense Artillery** *for his address. Our telephone numbers are AV 978-4133/560 or commercial 915-568-4133/5603.)*

Do you have a comment about this issue you would like to share with the readers? We encourage letters from everyone. Write to: Editor, Air Defense Artillery Magazine, HQ USAADASCH, ATTN: ATSA-DTP-SP, Fort Bliss, Texas 79916-7090. Letters should be concise, timely and legible (preferably typed). The staff reserves the right to condense letters as necessary or to refuse publication. Unsigned letters are not acceptable.

An Organization For Everyone

Current Membership Status

Five hundred and fifty new life members and four new corporate life members have joined the Air Defense Artillery Association as of March 31. The Air Defense Artillery Association is for everyone — enlisted and officer alike. The membership drive continues at Fort Bliss while other ADA units receive letters of instruction and detailed information on the goals of the association and how to join. Anyone not assigned to a TDA or TOE unit may receive membership by writing to: ADA Association (Col. Causer), P.O. Box 6101, Fort Bliss, TX 79916.

First to Support

Representing Ford Aerospace Corp., Paul B. Adams, director of the corporation's El Paso office, receives a corporate life membership plaque from Brig. Gen. William H. Riley Jr., assistant commandant of the Air Defense Artillery School, Fort Bliss, Texas. Ford Aerospace Corp. was the first company to become a corporate life member of the Air Defense Artillery Association.

ADA Association Honors NCO

In recognition of his achievement, the ADA Association presented SSgt. Jackie Wilhite an Army dress blue uniform. Wilhite was the distinguished graduate of the Advanced NCO Course, Class 1-86. Wilhite is a Stinger platoon sergeant with 1st Battalion, 3rd ADA, Fort Campbell, Ky.

T-shirt Design Contest

Be a part of ADA Association's history — help us design the new ADA Association T-shirt. A tip to get you started is to include the new branch motto "First to Fire" and the ADA Association logo in your design. Send your rough sketch, including information about colors, by May 15, 1986. The designer of the T-shirt selected for production will receive a $50 U.S. Savings Bond if he or she is already a life member of the ADA Association, or a life membership if not. Send your design to: ADA Association, Box 6101, Fort Bliss, TX 79916.

Become a member.
See your ADA Association unit representative today.

AIR DEFENSE ARTILLERY ASSOCIATION

ARTILLERY

First to Fire