

# AIR DEFENSE ARTILLERY



PB 44-88-5

SEPTEMBER — OCTOBER 1988

## WOMEN IN ADA



Photo by Cleveland McKnight

ADA went looking for a few good women and found Lieutenants Hayne, Bennett and Futernick. Statistics say they will excel in a variety of ADA assignments, sharing the same hardships and challenges as their male counterparts. The numbers also say they will leave ADA before they make major. Read "Women in ADA," Page 28, to find out why.

Approved for public release; distribution is unlimited

Headquarters, Department of the Army

# AIR DEFENSE ARTILLERY



Professional Bulletin of the United States Army Air Defense Branch

PB 44-88-5 SEPTEMBER — OCTOBER 1988

Approved for public release; distribution is unlimited.



Second Lieutenants Melissa Hayne, Magda Bennett and Michele Futernick are enrolled in the ADA Officer Basic Course, U.S. Army Air Defense Artillery School. They do not necessarily share the views expressed in "Women in ADA," Page 29.

## FEATURES

ADA in Honduras .....	8
ADA Commando Platoon .....	11
HIMAD MOS Consolidation .....	14
German Air Force ADIVS .....	19
Norwegian Adapted Hawk .....	23
Stinger APCs .....	27
Women in ADA .....	29
Mixed Batteries .....	40
Army-Marine ASP .....	44
ADA Jody Winner .....	46
HMMWV Driver Training .....	48

## DEPARTMENTS

Intercept Point .....	1
NCO to NCO .....	3
Vapor Trails .....	4
ADA Career News .....	50
First to Fire News .....	52
FAAD News .....	56

**Air Defense Artillery** (ISSN: 0740-803X) is an official professional development bulletin compiled 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 bulletin. Information contained in this publication does not change or supersede any information in other official Army publications. Distribution: Special.

**Air Defense Artillery** is approved for the official dissemination of material designed to keep ADA Branch members within the Army knowledgeable of current and emerging developments in air defense artillery for the purpose of enhancing their professional development.

By order of the Secretary of the Army:  
**CARL E. VUONO**  
 General, United States Army  
 Chief of Staff

Official:  
**R. L. DILWORTH**  
 Brigadier General, United States Army  
 The Adjutant General

**POSTMASTER:** Second-class postage paid at Laurel, Md. Department of the Army (ISSN: 0740-803X) **Air Defense Artillery** bulletin (USPS 307-010) and additional mailing offices. Send address changes to Superintendent of Documents, Mail List E (SSOM), Washington, D.C. 20402.

**CORRESPONDENCE:** Address article and letters to: Editor, **Air Defense Artillery** Bulletin, USAADASCH, ATTN: ATSA-AC-FP, Fort Bliss, TX 79916-7004, Telephone (915) 568-4133, AV 978-4133.

**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 for a one-year subscription (six issues). Individual copies are \$3 for domestic and \$3.75 for foreign addresses.

**Maj. Gen. Donald R. Infante**  
 Commandant, USAADASCH

**Blair Case**  
 Editor in Chief

**Hubert Koker**  
 Editor

**Lisa Henry**  
 Managing Editor

**Mary French**  
 Associate Editor

**Mark Yerrington**  
**Maggie Aguilar**  
**Victor Powell**  
**Frank Rivera**  
**Angie Garcia**  
**Dennis Kurtz**  
 Contributing Illustrators

# Making Training Priority No. 1 Part III

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

This is the third and last “Intercept Point” in a series on training — in this the Year of Training. However, as our Chief of Staff of the Army, Gen. Carl E. Vuono, recently emphasized, 1989, 1990 and 1991 will also be the Year of Training. The logic is obvious. Chief of Staff quote: “Training is the cornerstone of readiness.”

Previous “Intercept Points” focused on the training challenge, training guidelines and training objectives. I want to close out this series with some thoughts on the following:

- Quality training — how to achieve and how to ensure.
- Feedback — the essence of improving combat capability.
- Rewards of good training — payback far beyond the investment.

Quality training, like good Italian wedding soup, has all the right ingredients (see the illustration below).

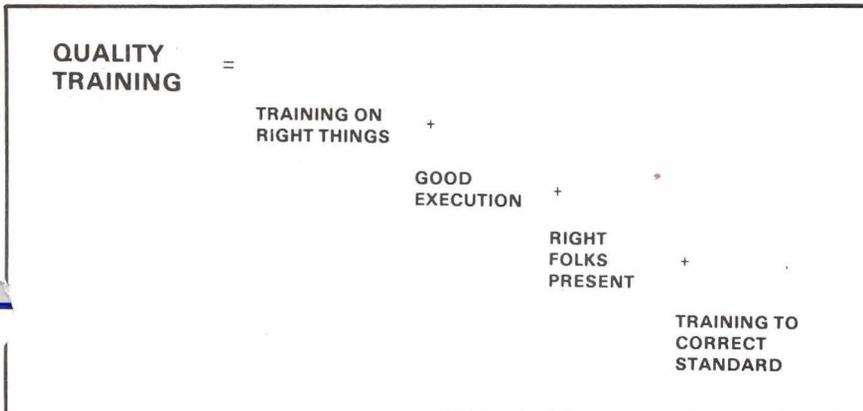
The trick, of course, is in knowing when and how to use each ingredient. The commanders who know are the commanders who succeed. A few tips and thoughts might help clarify this area.

First, quality training has as its focus practicing how to fight, and sustaining soldiers and their equipment during the fight. Quality training always relates to a mission — leaders must clearly state why training is being conducted. Quality training also realizes that war is a protracted event; therefore, we must take a long-term approach.

Second, quality training merits the commander’s personal presence. There is no substitute for personal presence which, of course, means that knowledge on the commander’s part is essential. This allows the commanding officer to evaluate unconfirmed levels of proficiency and ensure the training corrects identified weaknesses.



Intercept Point



Third, quality training reinforces the chain of command. Training together is the best way known to build trust, confidence and unit cohesion. By the way, the "checker" should always be one level higher than the unit level undergoing training; for example, the battery commander checks platoon-level training. To do otherwise robs the leader of fulfilling his role. Always train as you will fight.

In my opinion, based on 20 years in the training business, the one area that remains today as our Achilles' heel is feedback. Especially true in the Air Defense business where we overly focus on execution. This does not apply, however, to the 69th ADA Brigade, where Col. Bob Hardy has whipped the "feedback" problem by institutionalizing a training program that is second to none. I'll be distributing Col. Hardy's program to field commanders under separate cover. Feedback is essential to improving things!

Feedback begins with the non-commissioned officer being trained and flows up. Nothing is more upsetting than to view an after-action review (AAR) where the officer starts with, "Let me tell you . . . ." AARs should always

first hear from the NCO being trained. The voice of the NCO must be heard first.

Feedback focuses on the future. Focus on those things that need more emphasis in the future. *Remind* folks of all the essentials and those they need to continue doing well, but remember, most units don't have time to train on those things they do well.

Feedback must be practiced. A good AAR must be practical and does not come automatically. The best AAR I've ever witnessed was conducted by Col.(P) Jarrett Robertson, the commander of the 3rd Armored Cavalry Regiment (the "Brave Rifles"). The environment and tone of the AAR was one of learning with a combined arms focus. No threatening or harassment, just how to do it better and right. A tone that left everyone anxious to get on with doing it again so they could demonstrate the lessons learned. AAR is a real art. Practice is essential.

Time to close out by discussing the rewards of good training. Have decided that the best way to summarize these rewards is in chart form; thus, in the chart that follows are these many rewards. Note that good training touches every aspect of a unit. Note that a

really good unit will have good training.

This is a powerful chart. Study it. Copy this chart and carry it with you to remind yourself daily of the rewards of good training.

There is no excuse for not conducting good training. Lack of training areas, money, et cetera, are all cop outs. Gen. Vuono relates the story of viewing a superb platoon-level exercise, then asking the platoon sergeant after the exercise, "What did this cost you?" The sergeant replied, "Nothing, Sir, just sweat."

Are you willing to "sweat" in peacetime training to ensure that in time of war your troops fight, win and return? If so, you're our type of leader. If not, try pumping gas or selling shoes or some occupation where others' lives don't depend on you.

Our business, if we have not preserved the peace, is warfighting. To preserve the peace requires readiness. As the Army chief trainer stated earlier, "Training is the cornerstone of readiness."

The choice is yours. Will you train to fight, win and return — or will you be a soldier who does not come home?

First to Fire!

OKET

## THE REWARDS OF GOOD TRAINING

### GOOD TRAINING BONDS UNITS

- GENERATES CONFIDENCE IN THE ORGANIZATION AND ITS LEADERS

### GOOD TRAINING GIVES GOOD DISCIPLINE

- BOTH COLLECTIVE AND INDIVIDUAL

### GOOD TRAINING BUILDS FAITH AND TRUST IN THE CHAIN OF COMMAND

- IF CONDUCTED BY COMPETENT LEADERS

### GOOD TRAINING IMPROVES WARFIGHTING ABILITIES

- BUT IS SAFELY CONDUCTED

### GOOD TRAINING INTERNALIZES ARMY DOCTRINE

- STANDARDIZING WHAT IS TAUGHT

### GOOD TRAINING HOLDS SOLDIERS AND LEADERS RESPONSIBLE FOR TRAINING TO STANDARD

- WITH A LEARNING AND TEACHING FOCUS — NOT RETRIBUTION

### GOOD TRAINING MAXIMIZES SOLDIERS' TIME

- NO GREATER RESOURCE

### GOOD TRAINING DEVELOPS STRONG LEADERSHIP

- WITH NON-COMMISSIONED OFFICERS FULLY RESPONSIBLE FOR INDIVIDUAL TRAINING

# Enlisted Women

by CSM Harry E. Hicks  
U.S. Army Air Defense Artillery School

Being a command sergeant major is like being a first sergeant — you never hear about problems until they have to be fixed. A case in point is the 16H reclassification, which involved women in ADA and presented special problems.

The total number of enlisted women in Air Defense Artillery stands at 506, spread throughout all MOSs except the five short-range air defense (SHORAD) MOSs. The majority of women in ADA, except for seven E-7s and one E-8, are in the lower grades. This led me to realize that very few of our female soldiers stay in Air Defense Artillery long enough to attain non-commissioned officer rank and fewer still attend the basic Non-Commissioned Officers Course. Not having worked alongside enlisted women when I was coming up through the ranks, I went out on post and asked some young women why so many are leaving Air Defense Artillery and, in some cases, the Army. Here are some of the replies I received from junior enlisted soldiers:

Frustration. I am not a woman doing a man's work; I am expected to be a woman acting like a man doing a man's work.

Burnout. There just doesn't seem to be a light at the end of the tunnel.

Single parents. The military takes so much of my time I can't be both a soldier and a parent.

Males do not totally accept females in Air Defense Artillery.

Fear. I am afraid of sexual harassment connected with manning crews and night duty.

The NCOs and second and third enlistment females that I was able to talk with gave the following responses:

I enjoy my MOS and I know that I perform it as well or better than most males.

I have survived seven years in ADA and I know that I can hang in there with the best.

Some Leaders are still not sure how to handle and use female soldiers.

Too many males judge you by a bad experience they had with a woman. They think if one is bad all are bad.

Females in clerical work are treated differently than females in ADA MOSs; they appear to get more respect.

After turning all these comments around in my head I came to some conclusions. All service members lead double lives: the life of a soldier and the life of a civilian. To these the female soldier adds the life of being a woman and, perhaps, that of being a mother, in what heretofore was considered a man's world.

The answer to these complaints and opinions is not rebuttals, nor disclaimers, nor dismissals — the answer is straightforward facts. These complaints and opinions are valid and are not unlike the complaints and opinions we hear from all our young soldiers. Add rumors and stories to real fear and the responses are about the same. That's where we, as NCOs, come in.

Fear of the unknown is a problem we all face. Leadership, of course, is the key. To combat this fear we have information and training. A part of being a leader is keeping your troops informed. I am sure if these young soldiers are informed as to what to expect, what the big picture is and that the problems they are facing are the problems that all people are facing at this time in life and at this time in the Army, many of these complaints and opinions will regulate themselves. Motivation, education and performance do not seem to be a problem. Female soldiers are an important part of our branch. Proper training and proactive leadership will ensure the growth of ADA's future quality female NCO leadership.



NCO to NCO



# VAPOR TRAILS

## 6-56th ADA Redesignated

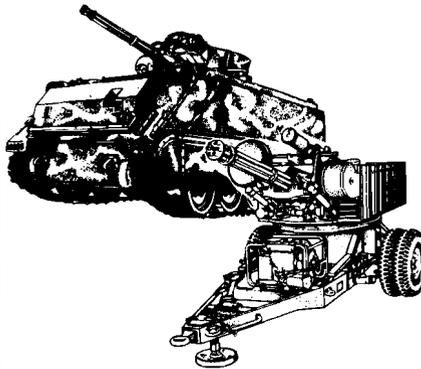
The 6th Battalion, 56th Air Defense Artillery, recently deactivated and cased its colors for the fifth time in the unit's history while, in the same ceremony, the 5th Battalion, 44th Air Defense Artillery, unfurled its colors for the fourth time.

The redesignation resulted from the Army Regimental System Act of 1983 which mandates the redesignation of ADA units to one of 12 ADA regiments. The goal of the U.S. Army Regimental System is to provide soldiers with a personnel system that fosters unit readiness and combat effectiveness by developing a sense of loyalty and commitment which comes from long-term identification with a unit.

The 5-44th ADA's activation makes them part of a family with the regimental headquarters and the 1-44th ADA at Fort Lewis, Wash.; the 2-44th ADA at Fort Campbell, Ky.; and the 3-44th ADA at Ramstein AFB, Federal Republic of Germany.

The 5-44th ADA is one of only two air defense battalions in the Army whose job it is to defend three strategic U.S. Air Force fighter bases. This important and demanding mission requires a great deal of joint training with the Air Force and was frequently cited by the guest speakers at the ceremony. The speakers included the ceremony's reviewing officer, Col. Larry R. Butterworth, 108th ADA Brigade commander; Maj. Gen. James C. Cercy, 32nd AADCOT commander; and Maj. Gen. Donald R. Infante, Com-

mander, U.S. Army Air Defense Center and Fort Bliss, Texas.



## 3-44th ADA Fires Vulcans

The 3rd Battalion, 44th Air Defense Artillery, recently participated in their annual Vulcan familiarization at Todendorf, Federal Republic of Germany. At Todendorf, the Vulcan crews practiced crew drills, aircraft recognition and record fire. Some soldiers sharpened their skills on the .50-caliber M-578 VTR, a weapon used not only for air defense but also for transporting inoperable Chaparrals in a convoy.

SSgt. Steven A. Metcalf of B Battery said, "We practice target engagement at Ramstein Air Base, but it's a lot different when you actually get to pull the trigger. We conduct crew drills in the motor pool and practice aircraft recognition constantly. We have high standards we have to meet. The senior gunner and the squad lead-

er are expected to get at least 95 percent for aircraft recognition. We have to keep our systems 100 percent combat ready," he added. "We train in uploading ammunition, which is very important, but the actual engagement of the sleeve is most important."

In the four days of firing, every gunner and assistant gunner qualified and, in all, fired over 76,000 rounds at both aerial and ground targets. The gunners fired all of the battalion's Vulcans and there were very few breakdowns. Lt. Col. Robert W. Tomblin, the battalion commander, praised the 565th Ordnance Company for the support they provided to the 3-44th. "We've never had so few problems in maintenance," said Tomblin.

However, in the rare instance when one of B Battery's Vulcans broke down, nearly 20 soldiers rushed in to assist in moving it off the firing line and moving a backup Vulcan on line. Because of the soldiers' teamwork, the replacement system was ready to fire in about three minutes.

Capt. Perry J. Delahoussaye, B Battery commander, was especially pleased with the soldiers' opportunities to actually fire their weapons. "Parts of the system that are used in firing needed to be tested," he said. "This gives the squad leader confidence that the weapon works. New people in the battalion got the opportunity to fire, and some of them haven't fired since AIT. The biggest thing was the esprit of working as a team and the confidence of firing," Delahoussaye said. "I could see the motivation of the troops, whether it be cleaning, loading or firing."

# VAPOR TRAILS

The teamwork inside the battalion showed how tight they are. They're geographically separated so they don't get the chance to work together that often. Lt. Col. Tomblin wants us to be well trained throughout the year, which I think we are, and it obviously showed here," he said.

At the end of a week's hard training, Tomblin congratulated the battalion. "I saw a lot of hustle out there and I was pleased with how well we did," Tomblin said. "When I see almost a whole platoon loading one gun, I know we're in business. Be proud of yourselves. You did a fine job."

## 2-60th ADA in AADCOM Eagle

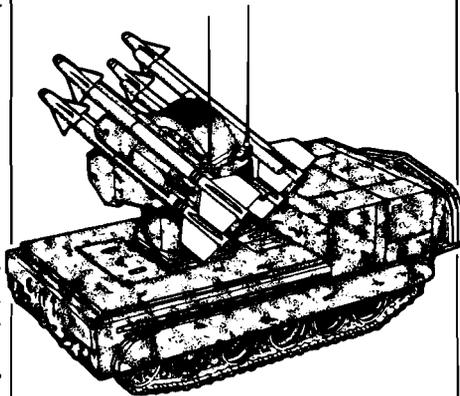
The 2nd Battalion, 60th Air Defense Artillery, recently worked with engineers and aviation during Exercise AADCOM Eagle. The exercise familiarized the air defenders with the intricacies involved in crossing rivers.

The scenario for the exercise required the 2-60th ADA to cross a river to guard their areas of defense. The hitch was that the bridges over the Rhine were either completely destroyed or so damaged that they were uncrossable; the air defenders needed to find an alternate route.

With the help of E Company, 23rd Engineers, 3rd Armor Division, from Hanau, the 2-60th ADA successfully completed its mission. "We're on the water practically every month," said 1st Sgt. Curtis Pennington of E Company. "River crossing is our 'bread and butter.' We cross at least once a week for training. It's our specialty," he said.

Rafts carried the vehicles, Chaparrals and Vulcans across the river at Petersau. At Quirnheim, Chinooks and Black Hawks transported jeeps and trailers and airlifted three Vulcan platoons.

Maj. John R. Suduth III, 2-60th ADA S-3, said, "The training has been positive. It's rare that we get the chance to combine aviation, engineers and air defense artillery for an exercise," he said. "Besides being a good exercise, we're having a lot of fun."



## 5-62nd ADA Goes for a Swim

Soldiers of the 5th Battalion, 62nd Air Defense Artillery, recently received some valuable training when they took their Chaparrals and Vulcans to Ascarate Lake, El Paso, Texas, for their annual swim. This year Gamma Goats were also added to the swim.

The exercise teaches the soldiers to prepare their vehicles for water operations by checking that the hull inspection plates are in place and that the swim barriers on the Chaparral and the trim vane on the Vulcan are erected.

Capt. Gary Scheid, commander of C Battery, 5-62nd ADA, said

that the swim "helps build the soldiers' confidence in their equipment."

First Lt. Robert Warburg, HHB, 5-62nd ADA, who participated in last year's swim as well as this year's, said this year's swim was much better because it gave more soldiers the opportunity to drive the vehicles.

Before the vehicles were allowed to swim the crew members were given a safety briefing. The next step was greasing the vehicles to waterproof them. Then the Chaparrals and Vulcans were "pre-dipped" to ensure they would float. (Pre-dipping is accomplished by connecting a cable to the vehicle and allowing it to enter the water to check for leaks. If the vehicle passes the pre-dip, the cable is then disconnected and the vehicle goes on its way.)

After passing the pre-dip, each crew member got the opportunity to maneuver the vehicles around in the lake. "This was the first time I have ridden on a Chaparral," said Capt. Kenneth Terry, HHQ, 1st Battalion, 2-65th Florida National Guard. "The ride was fantastic!"

## 4-61st ADA Trains 4-200th ADA

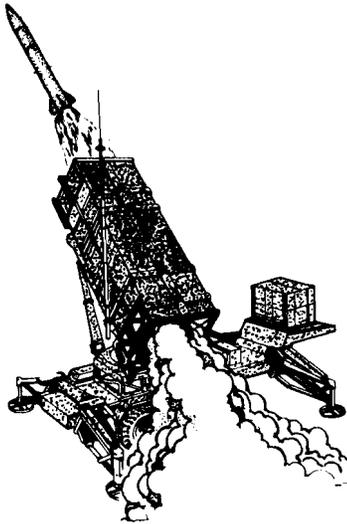
B Battery, 4th Battalion, 200th Air Defense Artillery, headquartered in Tucumcari, N.M., recently received some on-the-job training on the Chaparral missile system from five of Fort Carson's air defenders. The Chaparrals were issued to the Guard unit to upgrade its ability to maintain its wartime mission.

The team of five soldiers from D Battery, 4th Battalion, 61st Air

# VAPOR TRAILS

Defense Artillery, taught the National Guard troops some basics about the Chaparral missile system. They evaluated and trained the Guardsmen in battle drills; nuclear, biological and chemical procedures; communications procedures; and equipment camouflage.

"It was an experience for us to train them, and it was great for them to learn more about the system," said SSgt. Erskine Kelly. "The whole unit wanted to learn and just needed someone to show them," added SSgt. Jon Brown.



## 3-43rd ADA Makes History

The 3rd Battalion, 43rd Air Defense Artillery, became the first table of organization and equipment (TOE) Patriot unit to receive and evaluate the Post Deployment Build-2 (PDB-2) software for Patriot.

The PDB-2 software improves some of the capabilities of the current Patriot system and adds some new features, such as Patriot-Hawk interoperability.

Another new feature, the tactical ballistic missile (TBM) mode, formed the basis of the software changes. This radar feature allows Patriot to search, track and engage TBMs within its area of operation.

## 6-3rd ADA Rodeo

It may seem like a lot of fun, but underlying the 6th Battalion, 3rd Air Defense Artillery's first-ever Organizational Readiness Evaluation Rodeo was a serious training exercise. The purpose of the rodeo was to test "the total soldier — from standing alone for uniform inspection and CTT to actively working as part of a Patriot crew," said CWO 2 Charles Fishetti, ORE team chief.

The rodeo consisted of four parts: an inspection of each crew's uniforms and appearance, individual participation in a common tasks test, individual written tests and evaluation of crew drill procedures from the single soldier to the entire crew.

Each battery sent the two crews they considered the "best of the best." The C Battery team of 1st Lt. Michael Dandridge, Sgt. Cathy Jo Chin, Sgt. Poney Lacy, Spec. Darrel Duke, Spec. Tyrone Blackwood and Spec. David Knudson met the stringent requirements of the contest and had the least points docked."

"We've got a little over two years as a Patriot battalion," said Maj. Tim Lund, S-3, "and we're only the third Patriot unit to hit Germany. This is the first time anything like this has been conducted in a Patriot battalion."

Because morale was so high during this exercise, plans are to hold the rodeo quarterly.



## 5-200th Gets Special Send-off

The 5th Battalion (Roland), 200th Air Defense Artillery, New Mexico Army National Guard, will deactivate on Sept. 30, 1988. With it goes a long and proud history.

This heritage was stressed at the recent retreat ceremony for the unit which was attended by New Mexico Governor Garrey Curruthers, State Adjutant General Maj. Gen. Edward D. Baca, and Maj. Gen. Donald R. Infante, United States Army Air Defense Artillery Center and Fort Bliss commanding general, and included a wreath-laying ceremony to honor past and present members of the 200th Air Defense Artillery.

While the 5-200th ADA activated on July 1, 1983, its lineage dates back to 1880 in the New Mexico Volunteer Militia as the 1st Regiment. Throughout the 1880s and

# VAPOR TRAILS

90s its units were reorganized as cavalry and infantry regiments. In 1897, the New Mexico Volunteer Militia was redesignated the New Mexico National Guard.

As part of the New Mexico National Guard, the 2nd Squadron, 1st United States Volunteer Cavalry, was formed in 1898 and was popularly known as the Rough Riders. In 1916, the 1st Regiment of Infantry, of the New Mexico National Guard, participated in punitive actions against Pancho Villa after his raid on Columbus, N.M.

The 1st Regiment of Infantry was reconstituted in 1919 in the New Mexico National Guard as a separate squadron of cavalry. On the eve of World War II, it went through a major change: it was converted and redesignated as the 207th Coast Artillery and shortly thereafter, in 1940, was redesignated the 200th Coast Artillery. In 1941, the unit deployed to the Philippines. On April 9, 1942, the 200th Coast artillery surrendered to the Japanese, after being the "First to Fire" in the defense of the Philippines, and after holding out against impossible odds.

It was the 200th Coast Artillery, the "grandparent" regiment of today's 200th Air Defense Artillery, that about three dozen of the attendees, survivors of the ill-famed Bataan Death March and Japanese prisoner of war camps, vividly recalled at the flag-lowering ceremony. Many of the former prisoners of war, including Ruben Flores, remembered the Japanese forcing them to march about 80 miles in three days. In an interview with the *El Paso Times*, Flores said, "People were bayoneted to death for getting out of line to get a drink."

It was hard for Flores and his fellow World War II prisoners of war to watch the retreat ceremony. They hated to see an offspring of the 200th ADA, the 5th Battalion, deactivated. "I had goose bumps all over my body when they lowered that flag," Flores said.

During World War II, other elements of the Regiment served in the European Theater of Operations, earning 11 campaign streamers for their actions there. After the war, the regiment was returned to state control and underwent several reorganizations before five Chaparral battalions, one Hawk battalion, and one Roland battalion, the 5-200th ADA, made up what is today the 200th Air Defense Artillery.

In its short five years of life, the 5th Battalion proudly served the nation and the state of New Mexico. Headquartered at McGregor Range, N.M. (a range administered by nearby Fort Bliss, Texas), the 5th Battalion quickly gained a "can do" reputation.

As soon as they received their first issue of Roland fire units from MICOM, A Battery moved to the field for the first phase of collective training. It was non-stop from there — Roland soldiers deployed on 19 major joint readiness training exercises, 39 emergency deployment readiness exercises and numerous local training exercises in the hot dusty desert ranges of Fort Bliss. Between these exercises, there were 101 Roland missile firings.

Another way the battalion demonstrated its capabilities was by successfully passing the U.S. Army Air Defense Artillery School's ARTEP which was no easy feat. This resulted in certification on its initial operational capability test in December 1985.

Infante praised the Roland battalion as "the best short-range air defense battalion not only in the American Army but also in the free world," according to Maj. Michael F. Wilson, executive officer of the battalion. Infante is especially pleased with the 5-200th ADA's successful participation in exercise Green Flag. That a National Guard unit can successfully work with a Regular Army unit is proof that the Total Army works.

Wilson credits the soldiers of the Roland battalion with making the 5-200th ADA a "unique combat ready unit capable of deploying worldwide within hours of notification." The soldiers' contributions and those of their families, according to Wilson, "bonded the unit into a strong family which excelled in every aspect of their mission."

Most of the soldiers of the 5-200th ADA will transfer to a new Hawk battalion in Albuquerque. The rest will go to New Mexico's six other battalions, and a few, including Wilson, will remain at McGregor Range. Wilson is confident that the soldiers of the 5-200th ADA will do themselves proud in their new assignments — that they will, in Wilson's words, "carry the tradition and legend of Roland with them . . . strengthening the guard as it prepares to assume greater responsibility in defense of the nation."



# ADA in Honduras

by Capt. Tom M. Schossau

**T**he notice to execute deployment of troops flashed across the 7th Infantry Division (Light) hot line at 1200 hours on March 16. The previous night, the nation had listened anxiously to news reports as Nicaraguan troops stormed across the international boundary, attacking Contra forces deep inside Honduras. "This time it's for real," I thought, as I headed toward battalion headquarters to receive the alert message.

Honduran President Jose Azcona had asked the United States for help. It was easy to understand why. Honduras has fewer than 20,000 active and reserves, while Nicaragua has 100,000 regulars and 200,000 reserves. President Ronald Reagan reacted with the strongest possible show of force. He decided to place combat troops on the ground within easy striking distance of the Sandinista force.

On March 17 and 18, 55 C-141 Starlifters flew two combat-ready battalion task forces assembled on different coasts — 3,126 soldiers from the 82nd Airborne Division and 7th Infantry Division (Light) — to Palmerola Air Base, Honduras. Operation Golden Pheasant was under way.

The 7th Infantry began to arrive early on March 17. The Starlifters touched down every 30 minutes. Two days later, the Wolfhounds'

2nd Battalion flew south to set up a base camp near San Lorenzo near the Pacific Coast. The 3rd Battalion deployed to an area near James-tran, 21 miles from Nicaragua and 12 from El Salvador, with the Honduran 9th Infantry Battalion.

SFC Frank Cox best described the Honduran terrain in a *Soldiers* magazine article: "Extremely rugged, steep, jungle-laced mountains and barren, bone-dry valleys cover two thirds of the 43,310-square mile country. In some areas the earth is ash gray, denoting a volcanic past. In others, it's sandy or ochre, the color of dried blood. Tarantulas, venomous snakes, ticks and other critters crawl or slither across dry, cracked fields or through jungle litter."

None of this was new to 7th Infantry Division soldiers. We had conducted training in Honduras within the last year. This time, however, Sandinista infantry and aircraft were operating on "our" side of the border.

The "Light Air Defenders" of the 2nd Battalion, 62nd Air Defense Artillery, were confident. We had reason to be. Just two weeks earlier, we had racked up impressive kills against some of the world's best pilots — Marine Corps aviators.

The 2-62nd had deployed by air and "fought" Marine forces alongside the 7th Division's 3rd Brigade



KURTZ

at Twenty-Nine Palms, Calif. "Twenty-nine Stumps," as the troops call it, was a victorious battlefield for the light fighters and air defenders. This Marine brigade exercise (MABEX) was a major combined arms and interservice exercise that possessed tremendous training value, had no serious injuries and was highly successful.

The first days of the MABEX were fast and furious. A deception plan to move our ADA firepower and FAARs into visible "assault" positions disguised as intended positions set the operational framework. We knew the enemy rarely conducted aerial reconnaissance at night.

Under cover of night, we moved into our final defensive positions near critical chokepoints, defending well forward with the infantry at their battle positions. Vulcan squads were ready to provide both aerial and ground fires, but because of their limited mobility, they displaced to the rear first while the Stinger teams protected the infantry as they defended in sector.

The soldiers performed skillfully, with pride and with considerable motivation. The morale of the "A-Team," including the support soldiers, remained at its peak due to platoon, squad and team leadership. In the brigade's final defense, two Stinger teams, led by Cpl. Lee Rodriguez and Cpl. Randall Mathews, stunned the enemy aviators by providing early warning and early engagement from their hide positions two kilometers forward of the FLOT. They were also effective in calling for close air support on a tank column and calling for fire on enemy positions.

"We just stayed hidden until we fired them up," said Spec. David Johnson. "Then we hid and were ready to head for the hills to get back to friendly lines at night. You should have seen those aviators; they were surprised to see us there! Thank goodness we out-foxed the motorized scouts, too!"

Twenty-Nine Palms was only a training exercise. Golden Pheasant was for real. This situation in

2-62nd ADA was similar to the one I experienced while assigned to the 3rd Battalion, 4th Air Defense Artillery, 82nd Airborne Division, during Operation Urgent Fury, the October 1983 deployment to Grenada. The atmosphere in the 7th Infantry Division, prior to departure, was much the same: intense seriousness with complete

*"The love for air defense increased proportionately with the air threat."*

cooperation and teamwork.

While the ADA Light Fighters prepared to deploy Division Ready Brigades One and Two (DRB-1 and DRB-2; the first and second brigades to deploy), the battalion staff planned its operations. After several changes, the final plan required B Battery to deploy with DRB-1 and elements of A Battery to deploy with DRB-2. The difficulty, however, was that DRB-2 required deployment to Honduras first, forcing a simultaneous unloading of both brigades.

The Stinger section, under SSgt. James Sansom, waited anxiously in their vehicles after completing their preventive organizational maintenance (POM) records check. I noticed that this deployment sequence was more organized and controlled than Operation Urgent Fury.

Recalling these experiences and guidance from our battalion commander, Lt. Col. Peter C. Franklin, I turned to the Stinger platoon leader, 1st Lt. Gregg Richmond, and reminded him, "Remember, the quickest way we can get relieved is by losing

control of our teams and by losing accountability of our missiles."

When the section assembled, I told Richmond's soldiers, "Be flexible, work together, maintain your training habits and be disciplined. Don't eat the local food and don't drink their water or you will personally pay for it! And good luck!"

My watch display showed 22:30 as the soldiers rolled out of the staging area for Travis Air Force Base and for their eight-hour flight to Honduras.

Once on the ground in Pomerola, Richmond task organized the Stinger section as planned to support 2-27th Infantry at San Lorenzo. The 2-27th's mission was to guard against a possible armor threat and to support 3-27th Infantry at Jamestran guarding against further hostilities near the border.

The three teams at San Lorenzo provided local ground security and conducted small arms air defense training with the Hondurans. The infantry, knowing the Nicaraguan aircraft had been reported in the Jamestran area, eagerly supported the section minus (two teams and a headquarters element).

"They really treated us special. We didn't get detailed, and we ate well," said Sgt. Carlos Estrada. Richmond also noted increased respect for Air Defense Artillery in view of the enemy air threat. As Franklin summarized, "The love for air defense increased proportionately with the air threat."

Fortunately, the Sandinistas decided not to challenge the U.S. forces, and quickly withdrew across the border. The light fighters returned home at the end of the month.

Back home, the wives strongly supported the ADA Light Fighters. Upon the soldiers' return, they found a special welcome—yellow ribbons tied around unit signs, streaming in the Monterey Bay breeze.

Capt. Tom M. Schossau is the commander of A Battery, 2nd Battalion, 62nd Air Defense Artillery, Fort Ord, Calif.

# ADA Commando Platoon

by 1st Lt. William M. Schiffer

**P**icture yourself hanging off of a cliff 100 feet in the air, clinging to a nylon rope only as thick as your thumb. The wind howls through the night. You're cold, tired, hungry and thirsty. And someone "forgot" to hook up your safety line! Your mission: Successfully escape from an old French fortress, surrounded by a maze of walls and a dry moat, while soldiers with search dogs trail close behind.

*Picture yourself* paddling down a small river in the six-man Zodiac boat you have just assembled. The cool morning air leaves a layer of dense fog along the water that helps hide your movements. Your mission: Successfully complete a water navigation course to save yourself and your soldiers from enemy capture.

*Picture yourself* in the mountains of the Black Forest. You've got 80 kilometers to cover on foot, and you've got 40 to 50 pounds of gear on your back. You can't use trails or roads, because the enemy will spot your movements. Patrol teams with dogs are right behind you. In your



imagination those dogs are growling your name. You've had only a quart of water in the last two-and-a-half days. Frost covers the ground, but you don't have the proper clothing to keep you warm. When you stop you find a fellow soldier or two and share an Army blanket — the body heat keeps you alive.

*Picture yourself* in a place called the French Commando School.

Thirty-five soldiers from the 5th Battalion, 44th Air Defense Artillery, formerly the 6-56th ADA, attended one of the best military schools Europe has to offer: the French Commando School located in Breisach, Germany, along the Rhine river. The survival-oriented course stresses leadership, teamwork, endurance, courage and small unit tactics.

"If we run out of bullets and missiles, we all become light infantry. This kind of training is perfect for soldiers to prove to themselves they can push their bodies and minds beyond what they previously thought was possible," said SSgt. Ricky Bailey, a squad leader in the ADA Commando Platoon.

Planning began when the school notified the 5-44th ADA that they could attend because of another country's cancellation. The battalion commander, Lt. Col. Daniel L. Montgomery, decided that soldiers from each of the batteries should attend.

"By having soldiers from each of the batteries attend this school, the knowledge and experience brought back can be spread throughout the entire battalion. By each of the batteries sending their best people of all ranks, the entire battalion will benefit from experienced teachers," said Montgomery.

The hand-picked Commando Platoon was born through a systematic selection process that examined previous personal performance, medical history, swimming capability, upper body strength and endurance.

The 35 candidates took a physical training (PT) test that included push-ups, sit-ups, pull-ups, a 2-mile run and a 10-kilometer forced march with a full rucksack. The soldiers were then attached to one battery for training and given a training schedule to follow throughout the next month.

The platoon trained extensively in map reading, land navigation, patrolling techniques, night operations, mountaineering, rappelling, military operations in urbanized terrain (MOUT), leadership reaction courses and road marches — road marches, road marches and more road marches!

"We couldn't walk enough!" commented one lieutenant. They also continued a strenuous PT program. All their hard work finally paid off.

The 5-44th ADA Commando Platoon arrived at the

French Commando School and linked up with two platoons from the 54th Engineer Battalion of Wildflecken, Germany, to form A Company of the training brigade. The rest of the brigade consisted of a German Airborne Company and a French Marine Company.

"Seeing how other armies work and trading stories with the other soldiers was really great. I all learned a lot from each other," said Sgt. David J. Cornish of 5-44th ADA's B Battery.

The school's training covered MOUT, anti-tank demolitions, explosives, rappelling, moun-

taineering, booby traps, day and night land navigation, water patrols and operations, POW escape and evasion, hand-to-hand combat, individual and squad obstacle courses, water crossings and basic survival techniques. The school finished with a week-long physically and mentally demanding exercise during which soldiers applied their newly acquired skills.

Escape and evasion through enemy territory began with a night maneuver covering 30 kilometers across mountains. The soldiers carried a full field load of gear. The first night entailed a lake crossing using Zodiak six-man patrol boats. The entire company had to link up with a "partisan" at the lake front to obtain six boats. The 100-man company then had two hours to get all of its personnel and equipment across the two-kilometer lake.

The company covered great distances across the cold and mountainous countryside during the next day and a half. Each platoon and their respective squads performed side missions, such as demolitions, ambushes, route observations and partisan linkups for food and water. But the supply points



ever really existed — the name of the game became “forage and survival.”

The company was scheduled for a river crossing on the final night, but a near tragedy prevented this event.

While French cadre were selecting the river crossing site prior to our arrival and meeting, another “partisan,” a member of the cadre, was actively searching for a site. He stepped into the river to test the footing, water and current, slipped and fell, and was tossed down the icy, swift river. His fellow cadre members finally pulled him out. He suffered a broken shoulder and wrist, and severe hypothermia from the cold water and 30 degree temperature. The “commandos-to-be” were glad to pass up that obstacle!

The home stretch was another 30 kilometers long, over the most mountainous terrain the soldiers had faced up to this point in the exercise. They were hungry, thirsty, cold, tired and sore, but they pressed on to the very end. Tough it was, but they succeeded.

When all was said and done, the air defenders had set some impressive statistics. They were the first ever ADA platoon to attend and complete the course. All 35 platoon members received the French Commando Badge. The platoon did not have a single fallout, and the average fallout rate is about 25 percent. Unofficially, only a handful of platoons who have attended the school can claim such an extraordinary performance, and this school has put hundreds of platoons through its rigors over the years.

For the Commando Platoon members the training is over, but the teaching lies ahead. The air defenders have returned to protecting German skies with a newly acquired confidence — they know that, should their missiles and 20mm run out, they are prepared.

The ADA motto is “First to Fire.” The 5-44th ADA commandos may now add, “Sure to Survive.”

**1st Lt. William M. Schiffer**, 5th Battalion, 44th Air Defense Artillery, Spangdahlem, Germany, was the platoon leader of the Commando Platoon.



*From planning to implementation*

# HIMAD MOS Consolidation

*by Maj. Andre Hakopian*

**I**n the July-August 1988 issue, the article "HIMAD MOS Consolidation" provided information about MOS consolidations — where we are and where we are going. This article updates and discusses the latest decision to consolidate the HIMAD MOSs, when and how it will happen, and other consolidations you can expect down the road.

Why should Air Defense Artillery consolidate its military occupational specialties (MOSs)?

The Air Defense Artillery Enlisted Force Structure currently consists of 16 MOSs (not including the 16Z ADA Senior Sergeant). MOSs 16H ADA Op-Intel Assistant and 24U Nike-Hercules Custodial Mechanic are being deleted. Career management field (CMF) 16 has eight operator MOSs and CMF 23 has eight maintainer MOSs, two of which are operator/maintainers (24T Patriot Operation and System Mechanic and 25L AN/TSQ-73 Operator/Repairman). The personnel comprising these 16 MOSs operate and maintain the current six air defense weapon systems — not including the new forward area air defense (FAAD) system family of weapon systems being procured by Air Defense Artillery.

Amidst upcoming congressionally mandated personnel cuts, strict ceilings placed on personnel force structure and budget cuts, Air

Defense Artillery is moving forward at an unprecedented pace. In the near future we will witness a total rejuvenation of the branch.

We have applied product improvement programs (PIPs) to the Vulcan gun system and the Chaparral carrier and missile. We are currently improving Hawk hardware to solid state circuitry and improving the Patriot system to allow engagement of tactical ballistic missiles. The Hawk system will soon see a mobility PIP to allow transport of missiles on the launcher and digital technology downrange. A Stinger under armor PIP will integrate the Stinger and Vulcan systems. AN/TSQ-73 software is under revision. We are testing practical solutions to problems encountered in the field, and we will soon test the automated ADA command post. Actions are constantly underway to acquire, procure, test and evaluate the FAAD system family of weapons, including the line-of-sight forward (heavy) (LOS-F-H) (ADATS), line-of-sight rear (LOS-R) (PMS), non-line of sight (NLOS) and their associated sensors, both ground-based and masked target.

These changes make it evident that we cannot continue to train in the present manner and that we need new, streamlined initiatives to better manage the personnel structure. Air Defense Artillery has



## ADA MOS Realignment

Present MOS		Proposed MOS
16D Hawk LC + PIP III + 16E FC	=	14D Hawk Operator
16E Hawk FC + PIP III + 16D LC	=	14D Hawk Operator
16T Patriot LC + 24T FC	=	14T Patriot Operator
16J FAAR Operator + GBS Training	=	14J FAAR Operator/Maintainer
16P Chaparral + NLOS	=	14P Chaparral/NLOS Operator
16R PIVAD + ADATS	=	14R PIVAD/ADATS Operator
16S MANPADS Operator + PMS	=	14S MANPADS/PMS Operator
24C Hawk + PIP III + 24G Training	=	23R Hawk Maintainer
24G Hawk + PIP III + 24C Training	=	23R Hawk Maintainer
24R Hawk + PIP III	=	23R Hawk Maintainer
25L TSQ-73 + ICC + PCPAS	=	23L HIMAD C <sup>2</sup> Operator/Maintainer
24T Patriot Operator/Maintainer	=	23T Patriot Maintainer
24M Vulcan + PIVADS + ADATS	=	23M PIVADS/ADATS Maintainer
24N Chaparral + NLOS	=	23N Chaparral/NLOS Maintainer

Legend:  
 FC = Fire Control Operator  
 LC = Launcher Crewmember

adopted some near-term and long-term initiatives. Maj. Gen. Donald R. Infante, chief of ADA, described these solutions in detail in his "Intercept Point," *Air Defense Artillery*, March-April 1988. HIMAD MOS consolidation is the first of four phases of MOS consolidation.

### Realignment of ADA CMFs

To ease this massive consolidation effort and clearly identify soldiers who have trained on the new or product-improved ADA weapon systems as they

are fielded, Air Defense Artillery will realign CMF 16 to CMF 14 and CMF 23 MOSs from 24 and 25 to 23 series (see the illustration above). The new MOSs will be awarded upon completion of new equipment training. The current MOSs will remain as secondary MOSs until the transition is complete or until the old system has left the Army inventory. This initiative will eliminate the use of additional skill identifiers (ASIs) and help Air Defense Artillery retain the system-pure configuration necessary to support the eventual movement of ADA systems into the Army National Guard.

### HIMAD MOS Transition

Current		Proposed
16D Hawk Missile Crewmember	=	14D Hawk Operator
16E Hawk Fire Control Crewmember	=	
16T Patriot Missile Crewmember	=	14T Patriot Operator
24T Patriot Operation and System Mechanic (Operator Duties Only)	=	
24C Hawk Firing Section Mechanic	=	23R Hawk Mechanic
24G Hawk Coordination Central Mechanic	=	
24T Patriot Operation and System Mechanic	=	23T Patriot Mechanic

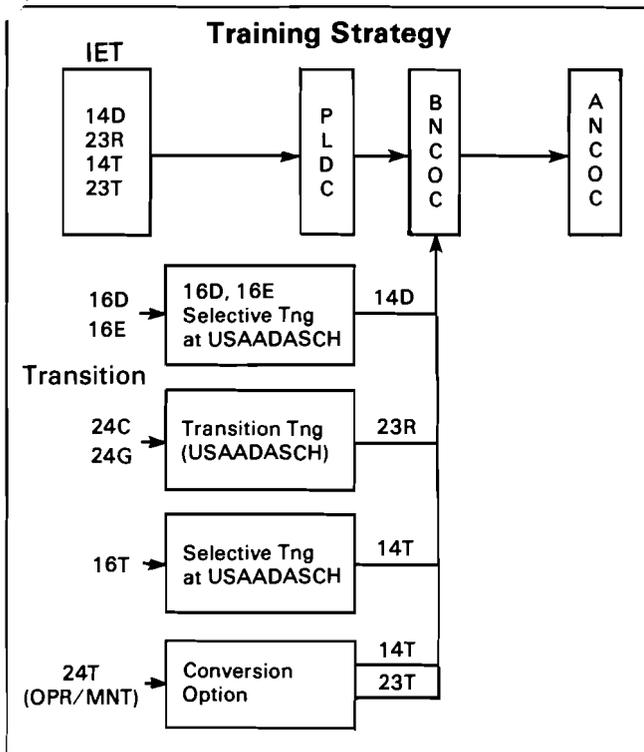
### HIMAD MOS Consolidation

On Aug. 23, 1988, Infante gave approval to start the HIMAD MOS consolidation process, which will reduce the number of HIMAD MOSs from seven to four (see figure at left). This initiative will —

- improve battlefield reconstitution (our ability to form new units on the battlefield and continue the battle),
- simplify personnel management (matching a soldier with the correct training to the right unit),
- expand the rotation base (having like units in CONUS and OCONUS to allow for stability) and, most importantly,
- enhance career progression (60 percent of soldiers in a given grade can expect promotions to the next higher grade).

Implementing these proposals will modify current training strategies. The blueprint for training (next page) indicates how initial entry training (IET) and transition of the existent force will be accomplished.

Effective FY 90, all new soldiers selecting operator or maintainer MOSs in Hawk or Patriot will receive either Hawk MOSs 14D (Hawk Operator) or 23R (Hawk Maintainer) and Patriot MOSs 14T (Patriot



length from 16D to 14D is 2 weeks and from 16E to 14D is 1.5 weeks.

Upon graduation, individuals will be familiar with all aspects of Hawk operations (including launcher and fire control under PIP III) and will be awarded the new MOS 14D.

**24C and 24G:** Transition training for Hawk maintainers will be conducted only at USAADASCH and only after individuals have completed the PIP III transition. The transition course length from 24C to 23R is 17 weeks and from 24G to 23R is 10 weeks.

Upon graduation, Hawk maintainers will be familiar with the maintenance of all Hawk equipment and will receive the new MOS 23R.

**16T:** Like their Hawk counterparts, the 16T proposed training strategy calls for first-term soldiers to maintain their current MOS until ETS. After their first reenlistment, remaining 16T soldiers will attend the 14T course at USAADASCH and learn the fire control portion of Patriot. The transition course length from 16T to 14T will be 9.5 weeks. Upon graduation, soldiers will be familiar with launcher and fire control operations in Patriot.

**24T:** Patriot operation and system mechanics are faced with two options. Option 1 is to continue as a Patriot maintainer, which entails no additional schooling and a change of MOS to 23T Patriot Maintainer. Option 2 is to become a Patriot operator, which also entails no additional schooling and a change of MOS to 14T.

Operator) or 23T (Patriot Maintainer). The differences in the amount of training associated with the current and proposed MOSs are shown in the chart below. The new courses will prepare a better trained soldier able to operate or maintain both launching and fire control equipment.

### Transition Training

The chart at right describes the training needed to convert to a new MOS.

**16D and 16E:** The proposed strategy calls for MOSs 16D and 16E soldiers to receive additional training only after having completed PIP III training and after their first reenlistment. First term soldiers will remain with current MOSs 16D and 16E until their expiration term of service (ETS). Individuals continuing in Hawk will attend the Hawk Operator Course starting in FY 90. The transition course

Transition Training		
MOS	Tng Weeks	New MOS
Operators		
16D	2	14D
16E	1.5	14D
16T	9.5*	14T
Maintainers		
24C	17	23R
24G	10	23R
24T	0	14T or 23T (conversion option)

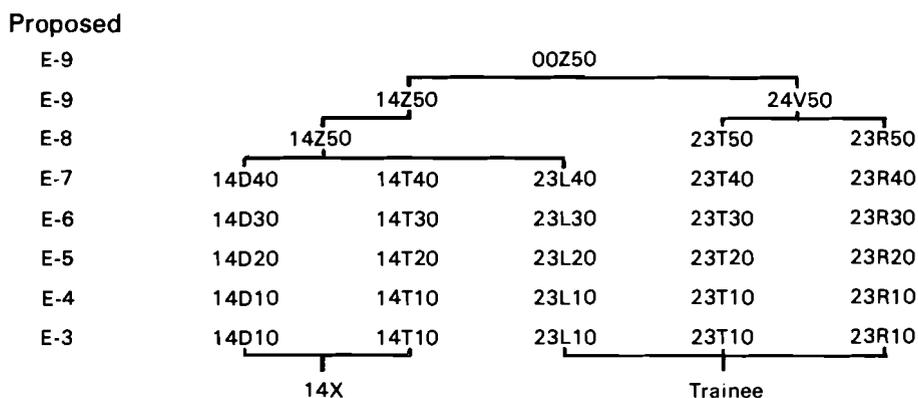
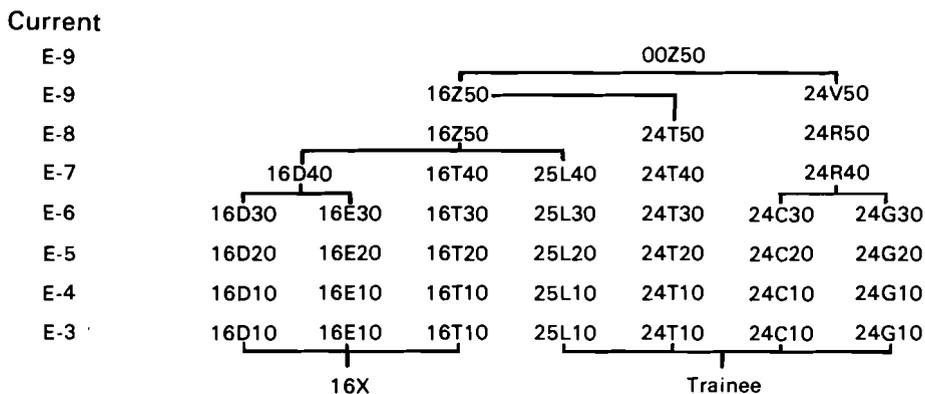
\* Currently being studied by DOTD

Initial Entry Training			
Current		Proposed	
MOS	Tng Weeks	MOS	Tng Weeks
16D	7	14D	9
16E	7		
16T	13.1	14T	15.1
24C	26	23R	37
24G	45		
24T	37.6	23T	23

### Career Progression

As HIMAD MOSs are consolidated and realigned into CMF 14 and 23, it is important to ensure that the new MOSs have the correct career progression. A comparison of current and proposed career progressions is shown at the top of the next page. Note that there are no changes to the operators' career progression. However, the current MOS 24T Patriot Operation and System Mechanic will convert to 23T Patriot Maintainer and, as a pure maintainer MOS, will cap into the 24V50 Intermediate Maintenance MOS instead of the 16Z50 ADA Senior Sergeant (proposal currently staffed with OMMCS).

## Career Progression



Since the approval of this initiative, the Directorate of Training and Doctrine has started incorporating MOS consolidation into individual training plans. The Office, Chief of Air Defense Artillery (OCADA) is readying MOS restructure packages for submission to the Soldier Support Center - National Capital Region, the first step in the approval process. OCADA expects approval from the Deputy Chief of Staff for Personnel before the second quarter of FY 89, with final documentation appearing in AR 611-201 by October 1989.

The original MOS consolidation effort consisted of four phases, of which HIMAD MOS consolidation was the first. The other three included studying the feasibility of embedding C<sup>2</sup>I (Operator/Maintainer) duties into existing HIMAD/SHORAD MOSs, embedding NLOS (Operator/Maintainer) duties into existing SHORAD MOSs, and combining the duties for the SHORAD weapon systems Chaparral and Stinger/PMS under MOSs 16P and 24N.

The approval of realignment of ADA CMFs (as shown in the first chart) solved the weapon transition issues. The decision to embed new FAAD systems into existing MOSs still stands, terminating the remaining three phases originally to be studied.

Once the new FAAD systems, Hawk PIP III and Patriot are fielded, we will relook the feasibility of further MOS combinations; for example, one operator and maintainer for HIMAD and one operator and maintainer for SHORAD. Reserve Components must retain single system identity and will retain the current 16 and 24 series MOSs for their system — Chaparral will remain 16P and 24N as long as that system remains in the inventory. Active Component soldiers will retain 16 and 24 series MOSs as secondary MOSs as long as the system remains in the active inventory.

Each soldier needs to understand the road to his future. If you have questions, call AV 978-7635/6217 or write to:

**Commandant  
ATSA-AC-FP  
Fort Bliss, TX 79916-7004**

We will continue to update and inform ADA soldiers as the consolidation process begins. This transition will not be easy, but it is definitely doable.

**Maj. Andre Hakopian** is currently assigned as Professor of English at the Mexican War College, Mexico City, Mexico. He wrote the article while assigned as Chief, Personnel Proponent Division, Office, Chief of Air Defense Artillery.

# German Air Force ADIVS

*by John W. Buckley*

**P**roviding a realistic environment for high- to medium-altitude air defense (HIMAD) systems training or testing has, up to now, required the use of costly, live integrated tactical system assets and numerous aircraft. The German Air Force Air Defense School (GAFADS) at Fort Bliss, Texas, recognized these problems.

Through recent actions GAFADS is set to provide their HIMAD soldiers a realistic training environment using an "off-the-shelf" simulator that reduces these live-asset requirements. The air defense interoperability validation system (ADIVS), developed by Whittaker Electronics Systems, Huntsville, Ala., performs HIMAD system operator training by simulating the normal interface system interactions.

The GAFADS' ADIVS is similar to the U.S. Army Missile Command's ADIVS developed to support HIMAD system and interoperability testing. MICOM's ADIVS consists of one or more ADIVS consoles from which the test director or instructor controls the exercise and monitors all activities of the system via color display consoles. The consoles contain the hardware and software to drive and monitor all of the data links. The console also controls all data recording and reduction for post-analysis.

The ADIVS has an environmental simulation unit (ESU) to stimulate the AN/TSQ-73, AN/TSQ-38 M-3 or elements of the Hawk system

with sensor inputs representing the operational scenario. These inputs are coordinated with the data link inputs to provide the same air picture to all participating units.

MICOM's ADIVS is a subset of a much larger distributed test bed system for U.S. joint services testing. This larger system includes ESUs for other systems such as the E-3A airborne warning and control system (AWACS) and the Patriot weapon system.

The NATO operational environment for a German Air Force Hawk air defense or *Flarak* battalion includes interfaces with joint elements such as a control and reporting center (CRC); subordinate and adjacent units; local radar; identification, friend or foe (IFF); and live aircraft. The objective is to represent this operational environment as faithfully as possible.

The German Air Force physical environment at Fort Bliss is limited to four Hawk systems (which cannot be used for higher echelon training), one or possibly two Hawk batteries and a battalion-level AN/TSQ-38 M-3 command and control system. The remainder of the operational environment must be simulated. Therefore, all data inputs into the AN/TSQ-38 M-3 Hawk batteries and CRC have to be simulated.

When developing the requirements for the GAFADS' ADIVS, we had to evaluate how the German Air Force conducts HIMAD training at Fort Bliss. We divided the

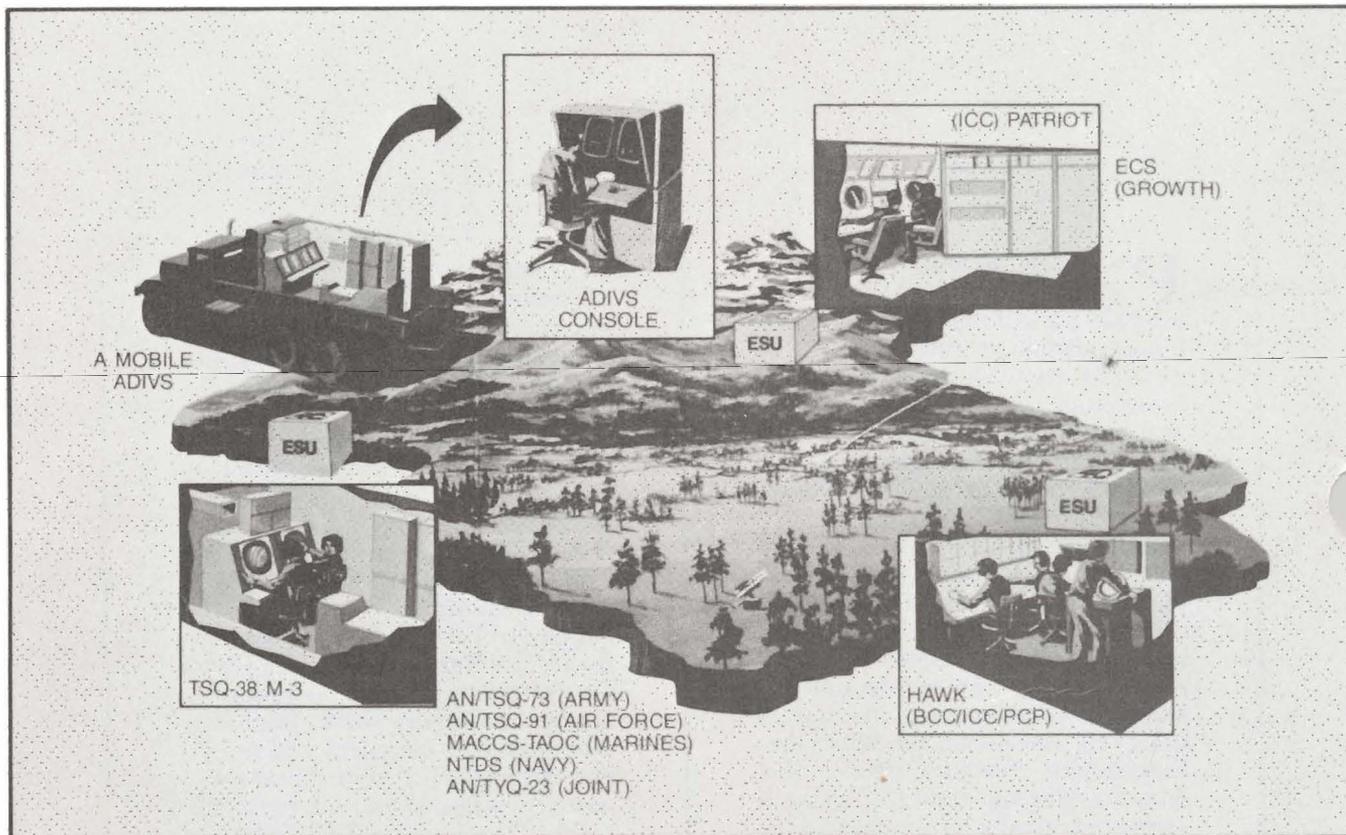
training activities into three major phases. Each of the phases generated different requirements for the system.

The *preparation* phase involves training planning. A major part of this phase is the development and scripting of scenarios representing the threat environment. The training system had to support scenario generation.

The system provides IFF responses to interrogation. The ADIVS allows up to 30 aircraft to emit electronic countermeasures (ECM). The ECM is somewhat simplistic in that currently the ADIVS only simulates broadband noise jamming and chaff. But the jamming is also realistic. When a jammer is killed, ECM emissions cease.

Hawk battery or higher level of command may appear to be the source of the target and the Hawk battery can lock on the simulated target for engagement (or can be prevented from lock on).

The ADIVS' capabilities and engagement simulations provide realistic training situations which will produce HIMAD operators capable of immediate operational



The *execution* phase consists of running the scenario. The scenario is executed without variation as pre-scripted real-time interaction by the instructor to drill troublesome areas or to set up special conditions.

During the *post-exercise evaluation* phase, the training system had to record the executed scenario and operator reactions.

Comparing the ADIVS' capabilities to the GAFADS' training requirements indicated excellent suitability. The GAFADS' ADIVS system simulates the need for live aircraft by simulating an environment of 500 data link tracks with 99 video input tracks — sufficient tracks to provide stressful training for HIMAD operators.

Instructors can change an aircraft's identification and can either change the commands or allow the ADIVS to issue commands automatically according to the scripted scenario. Instructors can manually change engagements by other weapons systems, including Patriot and interceptors.

The ADIVS simulates the functions of higher level systems, such as a CRC and the data link interfaces, during the execution of the scenario so that operators see the effect of operating with higher levels of command.

At the Hawk battery, simulated sensor inputs (radar and IFF) can be coordinated with the data-link-received air picture so that common targets are generated. The

effectiveness.

The GAFADS' ADIVS simulates the responses and functions of mission physical interfaces. It simulates the full complement of Hawk batteries so that the AN/TSQ-38 M-3 operators train with a full battalion — partially live, partially simulated. The ADIVS also simulates launcher responses to exercise full engagement sequences and to train in a fully operational environment.

Throughout the training exercise, automatic data recording records all messages transmitted on all links and records the times the messages occur. This recording of the scenario, whether scripted or instructor modified, keeps the true situation on file.

Once the exercise is complete, trainers use the recorded data to evaluate and critique operators. Data reduction software measures operator performances such as the time required to issue a command or acknowledgement or the time required to lock on after a command.

Trainers can follow the history of a track and point out the time and place of significant events. One of the most powerful tools this system provides is the capability to immediately play back a training scenario to illustrate operator

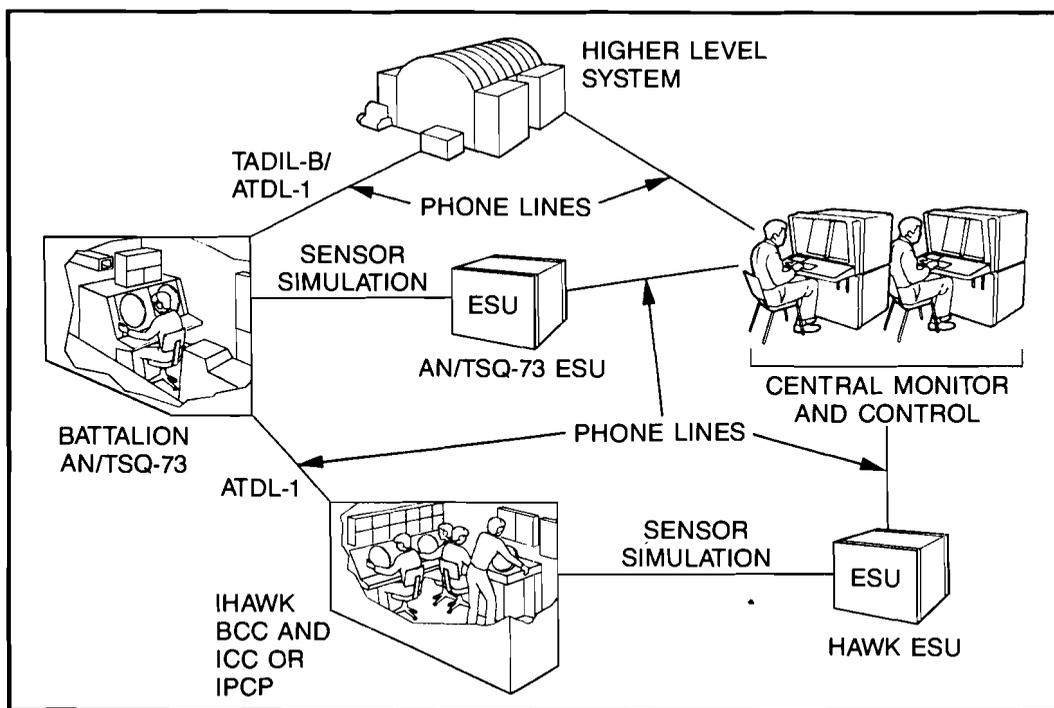
(ICC). Addition of the Patriot ESU and the Patriot digital information link (PADIL) would provide total HIMAD environment training.

An ADIVS capability which is not currently within the scope of needs at the GAFADS' ADIVS facility involves applications in the operational training of distributed systems. Control of the ESUs can be transmitted over telephone lines to remote sites so that entire air defense elements can participate in coordinated exercises. An example of this type of training

processing free text and preformatted character-oriented messages, including JINTACCS, between all HIMAD participants.

- Automate staff planning functions such as radar coverage diagrams and communications routing by performing terrain analysis using digitized terrain.
- Display the real-time air, land and sea tactical situation via large screen displays, remote screen displays and interactive, individual staff work stations.

The ADIVS will enable the GAFADS to train combat-ready



errors. All events occur in sequence exactly as they occurred in the exercise. Instructors can show the playback at real-time, fast speed or slow motion with a time compression or expansion ratio of 100 to 1. The instructor can freeze the exercise playback to explain some point about the exercise.

The ADIVS' primary purpose is to train AN/TSQ-38 M-3 and Hawk crews (with Hawk ESU). However, the ADIVS can also give the GAFADS a test bed for other HIMAD operations and training.

The ADIVS currently interfaces with and simulates the Patriot information coordination central

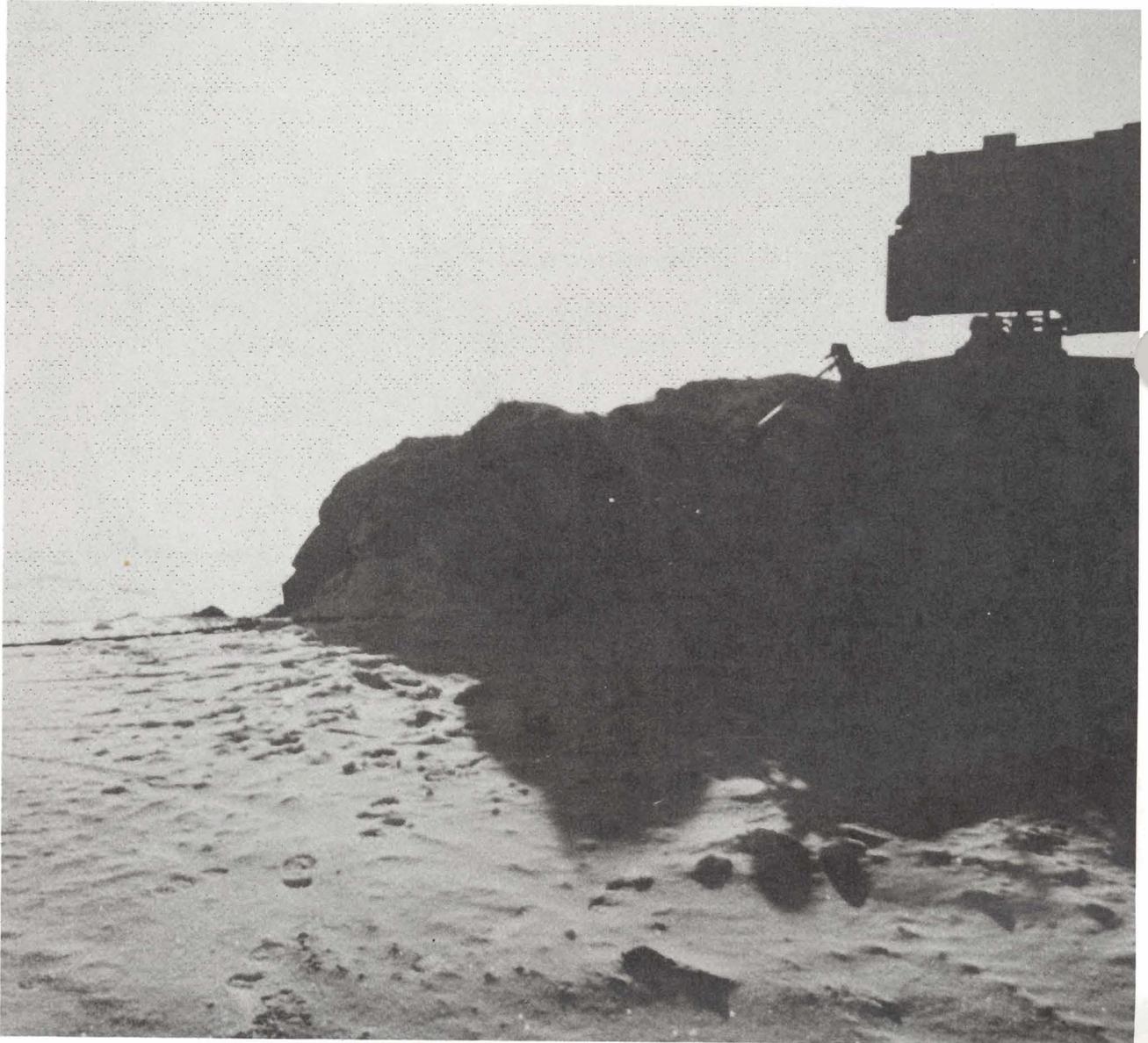
would be to link a U.S. battalion AN/TSQ-73 at a site in the United States with a U.S. brigade AN/TSQ-73 in either the United States or Europe.

The GAFADS ADIVS console can be used for training and evaluation of operations command and control (C<sup>2</sup>) functions within a HIMAD command post, as opposed to targeting C<sup>2</sup> functions performed by Hawk, Patriot and AN/TSQ-73 crews. The ADIVS console can perform the following functions required of an automated HIMAD command post:

- Eliminate paper and pencil operations by exchanging and pro-

HIMAD crews at both command and control and weapon system levels, and will produce HIMAD crews experienced in fully integrated coordinated operations using NATO theater combat procedures.

**Capt. John W. Buckley**, Alabama National Guard, is an instructor at the Alabama Military Academy and is the manager of Advanced Programs for Whittaker Command and Control Systems.



"We are confident and ready."

... **Brig. Gen. Finn Otterstad**,  
Norwegian Air Force inspector  
of anti-aircraft defenses

# Norwegian Adapted Hawk

**F**our Royal Norwegian Air Force air defense batteries successfully fired Hawk missiles this summer at McGregor Range, N.M., as part of the first annual service practice for Norwegian-adapted Hawk units. Although the armed forces of many countries send air defense units to Fort Bliss for annual service practices, the Norwegian live-fire exercises were observed with special interest for two reasons: Norway's air defenders play a particularly crucial role in NATO's defense plans for Europe, and they plan to accomplish their mission with a radical redesign and reconfiguration of the veteran Hawk air defense missile system.

Norway anchors NATO's northern flank, long considered one of the most vulnerable points in NATO's defense plan for Europe. The area is of such enormous strategic importance that Norway is sometimes referred to as the "ultimate early warning system."

The power that controls the land mass above the narrow strait between Norway, Sweden and Denmark controls shipping into the Baltic Sea.

Should mass air attacks or a ground push from the east out of the Kola Peninsula — where Norway shares a 226-kilometer border with the Soviet Union — neutralize Royal Norwegian Air Force bases, threat aircraft would have much more direct attack routes into the North Atlantic. The results could be disastrous for U.S. forces fighting in Central Europe. While the United States plans to airlift soldiers onto battlefields where pre-positioned supplies await, it will have to resupply them by sea.

The soldiers charged with defending vital Royal Norwegian Air Force bases from air attack, therefore, have an awesome responsibility. Norwegian air defenders, however, are anything but awed.

"We are very confident in our ability to accomplish our mission," said Brig. Gen. Finn Otterstad, the Royal Norwegian Air Force's inspector of anti-aircraft defense.

Otterstad's mission is the education and training of Norwegian soldiers charged with defending four vital air bases (Bardufoss, Andoya, Evenes and Bodo) in the northern part of Norway and two air bases (Orland and Vaernes) in the central part of Norway. His confidence stems from the Viking spirit of Norwegian soldiers and the superb performance of the new breed of Hawk called Norwegian Adapted Hawk, or NOAH.

The Norwegians began fielding the new medium-range system last summer when they fired two missiles at McGregor Range as part of a test to accept the system. Since then, they have made some software and minor hardware changes.

Otterstad listed four important NOAH advantages:

- The reconfiguration allows the Norwegians to integrate acquisition radar with identification friend or foe systems.
- NOAH's three-dimensional radar allows fire distribution center (FDC) operators to receive altitude information as well as azimuth and range information.
- The Norwegians are able to control their radars from their FDC van which also serves as their command and control element, a capability U.S. Hawk personnel consider a tremendous plus.

• The FDC links NOAH units together visually, giving them all the same air battle picture while the computer prioritizes the targets and recommends which fire unit should engage.

The first annual service practice left little doubt about the effectiveness of NOAH or the soldiers who man the new breed of Hawk. The Norwegian batteries which came to McGregor Range fired four Hawk missiles and scored four hits. "The firing was very successful," said Otterstad. "We were very pleased, but we were not surprised. We, of course, owe much of our success to the tremendous support provided us by Fort Bliss and the U.S. Army Air Defense Artillery Center."

NOAH is based on the Improved Hawk surface-to-air missile system. The Norwegians retain the Hawk firing section's high-powered illuminator radar (HIPIR), launchers and missiles, but replace the sensors and information coordination centrals with a newly fielded acquisition radar and control system (ARCS). The ARCS replaces the following units of conventional Hawk: the pulse acquisition radar, improved continuous-wave (CW) acquisition radar, range-only radar, information coordination central, platoon command post and battery command central.

The equipment reduction increases mobility and reliability while decreasing manning and maintenance costs.

The contractor for ARCS is HKV, a joint venture between Hughes Aircraft Company of the United States and Norsk Forsvarsteknologi (NFT). The U.S. company designed and developed the sensor while the Norwegian company handled the command, control and intelligence component or FDC.

The Norwegians have ordered 24 ARCS. They will use 18 in conjunction with NOAH and six to provide target information to fire control units which direct Norway's 40mm Bofors L-70 guns. There are no differences in hardware or software between any of the ARCS systems — a system compatibility that permits considerable operational versatility.

Each ARCS can operate in a main and a secondary function at the same time. Those attached to NOAH primarily handle Hawk missiles while performing the secondary function of providing information and

target allocation to short-range air defense (SHORAD) or man-portable air defense (MANPAD) systems.

As many as four ARCS can be netted together so that each will have a consolidated air picture, including the status of other ARCS in the net. The communications equipment relies on a digital switching system that features particle fiber-optic transmission. Another notable ARCS feature is a built-in simulator that generates realistic scenarios for operator training. All ARCS connected to a particular net can exercise to the same scenario or run stand-alone exercises.

A NOAH fire unit consists of a Hawk HIPIR, three launchers (each with three missiles) and an ARCS. The last item consists of a trailer-mounted LASR and FDC contained in a shelter. The shelter is transported on a flatbed truck and may be dismantled and lowered to the ground using integrated hydraulic jacks.

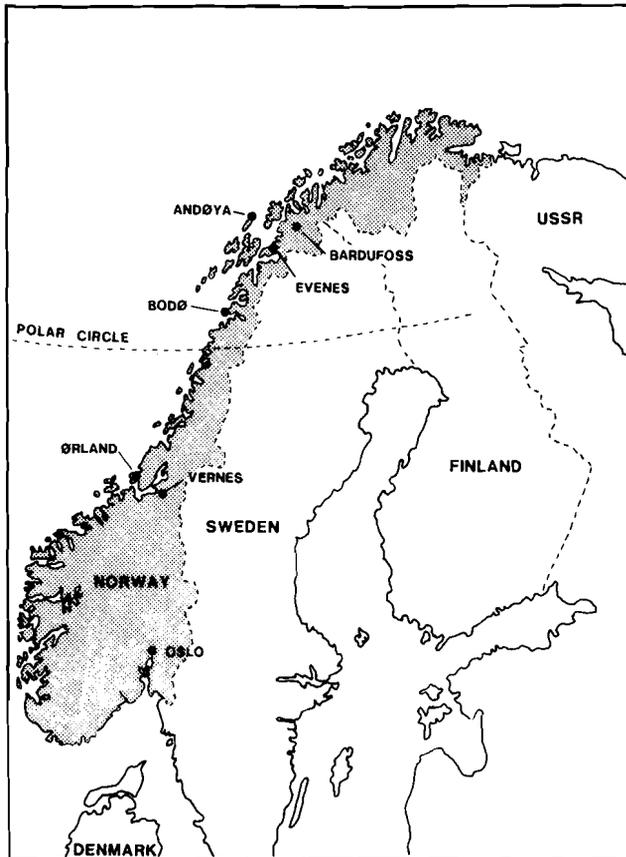
Each NOAH battery consists of three NOAH fire units and an ARCS L-70. Digital data and voice communication links connect all air defense elements. When two or three fire units are netted together, one of them is designated the senior fire unit (SFU). A special software function within the SFU then executes automatic fire distribution within the battery.

Operational and evaluation studies conducted

by the Royal Norwegian Air Force have defined how NOAH batteries will fight. Since Norway's rugged terrain prevents the effective use of a centralized radar, a NOAH battery is deployed in a triad configuration.

Each of the battery's three independent fire units has its own surveillance-radar coverage and fully automated command and control facilities. A netted surveillance system — including superior and lateral commands — provides each NOAH battery with a correlated air picture and allows FDC operators to coordinate firepower in the face of heavy electronic countermeasures and anti-radiation missiles.

Each individual fire unit tracks enemy emitters and generates jam strobes which are automatically used for triangulation to establish the source's azimuth, elevation and range. The availability of height



information from the three-dimensional LASR allows FDC operators, using sophisticated algorithms, to generate exact jammer locations and disregard ghosts.

The FDC contains two NFT KMC-9000 control consoles with peripherals, the LASR signal processor, a communications rack and a Hawk interface unit. The two consoles are normally manned by a tactical control officer (TCO) and a fire control officer (FCO). Each has a main color monitor that displays 1,024 lines by 1,024 pixels, a communications control panel, a programmable entry panel (PEP) and an alphanumeric keyboard. A pair of KS-500 computers process command, control and intelligence software.

The TCO's main display shows a tactical picture that includes all air traffic, safe corridors and defended areas, while the FCO's display shows the target to be engaged. A third display above the TCO's main display indicates the status of orders and alert stages, status of resources such as dedicated weapons and associated SHORAD or MANPAD defenses, and the status of own equipment and communications nets.

The FCO's panel includes a screen showing the output from the Norwegian tracking adjunct system (NTAS). The NTAS is an infrared tracker mounted on the HIPIR antenna pedestal. It enables the FCO to track and identify targets without emitting RF power, and to visually search for other targets while tracking by use of the HIPIR. The FCO's panel also includes an A-scope which displays the return signal from the HIPIR.

An operator can call up all data or a selection of data from all sensors. The display indicates the locations of weapons and corridors and shows the status of all units within the battery. Automatic algorithms perform track correlation, identification, jamming-strobe triangulation, threat evaluation and weapon assignment. The operator can select a fully automatic engagement, which provides hands-off operation up to the moment of missile launch, or select other engagement modes, allowing him to take a more active part in the process. In operationally quiet periods, all functions may be handled by one of the two operators from either position.

The Hughes LASR operates with J-band. The planner antenna, which scans electronically in both azimuth and elevation, has average side lobe levels more than 50dB below the main-beam gain. As the antenna rotates at 30 revolutions per minute, the LASR computer controls the pencil beam in both axes so that the complete surveillance volume — extending to 75 kilometers in range and more than 15

kilometers in height — is searched. This volume is scanned at different rates. The search pattern is contoured so that it follows the horizon even in mountainous terrain. The radar searches the horizon every two seconds to guard against the severe threat posed by pop-up targets.

The LASR, which can detect small fighters out to 50 kilometers, shares energy between its search and tracking functions. Search is normally performed up to 55 degrees. When a new target is detected, the

beam is back-scanned under computer control to verify that it has discovered a real target. This eliminates wasteful processing of false alarms and acts as the first step in the tracking process.

LASR tracks each target every two seconds and employs a special waveform in the tracking mode to maximize clutter suppression and target detection as a function of target range and radial velocity. Each track waveform is shaped to minimize the amount of time and energy needed to track a given target. Targets at long range receive more energy than those closer to the radar. Target-return waveforms can be submitted to additional signal processing to identify, for example, helicopters.

Jammers are tracked automatically to generate jam-strobes. The radar can also direct all available energy in the direction of a jam-

strobe to burn through a self-screening jammer and measure its range by skin-tracking.

The ARCS, providing three-dimensional data, feeds target height as well as azimuth and range to the HIPIR. This reduces the volume to be searched as compared to two-dimensional radars by a factor of 90:1. The resulting improved acquisition time permits NOAH to engage helicopters and fighter ground-attack aircraft before they release their ordnance. It also significantly increases the chance of the HIPIR acquiring the right target.

The availability of height information allows the FDC to make engagement decisions before an illuminator is allocated to a target. Before a fire command is issued, the intercept point is checked against launcher cut-out zones, preventing the TCO from ending up with a dud after having tried to fire in a fire cut-out zone. This improves fire power and reduces costs since a missile has to be taken out of service for re-assembling once its battery has been activated.

A further benefit is that the HIPIR does not radiate until an engagement is ready to proceed, thus reducing the advance warning to the target. The operator's choice of using launcher pre-slew also reduces reaction time.

In addition to traditional fire control functions (threat evaluation, target selection and weapon

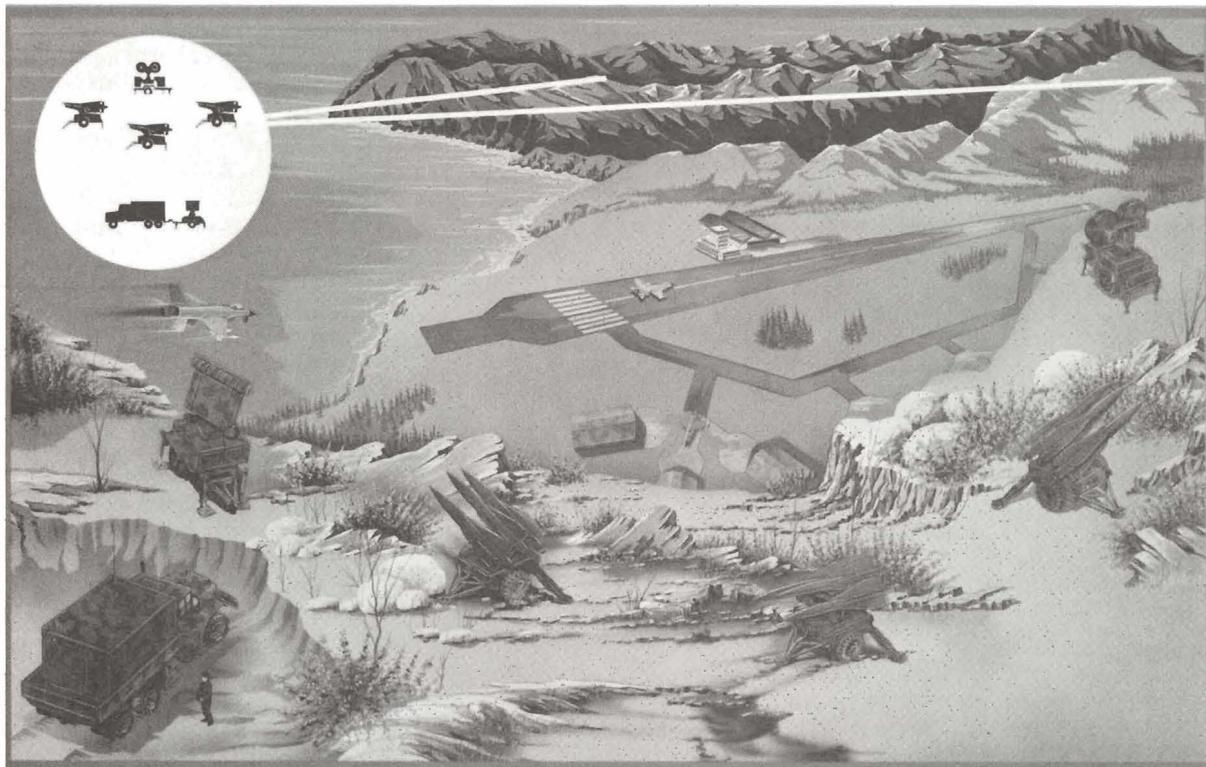
HAWK CONFIGURATIONS		
STANDARD HAWK		ARCS HAWK
PULSE ACQUISITION RADAR		
IMPROVED CW ACQUISITION RADAR		
RANGE — ONLY RADAR		
INFORMATION COORDINATION CENTRAL		
BATTERY CONTROL CENTRAL		
ILLUMINATOR		
LAUNCHER 1		
LAUNCHER 2		
LAUNCHER 3		

assignment), ARCS has built-in airspace control and battle management functions. This is possible because of the high degree of automation and computer-assisted functions afforded by the KMC-9000.

The NOAH batteries were supported during their annual service practice by the 11th Air Defense Artillery Brigade's C Battery, 2nd Battalion, 1st Air Defense Artillery. The Norwegians brought their ARCS and Hawk missiles while the U.S. Army

School, and Lt. Col. Svein Hagen, NOAH project officer, joined Otterstad to congratulate the soldiers of each NOAH battery at the end of each successful firing.

Cheers broke out following each firing. FDC officers emerged from their van into the bright sunlight. Cameras clicked, champagne corks popped and plastic cups were lifted to choruses of *Skoal*, the familiar Norse salute. *Skoal*, of course, means "health," and Norway's air defenses, in Otterstad's estimation, are



provided a high-powered illuminator radar and zero-length launchers.

"Working with the Norwegians is a great opportunity for us to see and learn about their equipment and procedures while building lasting relations between allies," said Capt. Timothy D. Bond, C Battery commander.

The NOAH annual service practice consisted of three phases: preparation, pre-fire and fire. The preparation phase consisted of daily and weekly checks, assembly of missiles and weapon integration checks. The pre-fire phase involved the performance and evaluation of 20-minute crew drills with the fire phase immediately following the crew drills.

Since the Norwegian batteries which came to Fort Bliss are normally stationed above the Arctic Circle, the Norwegian soldiers found the Desert Southwest "kind of hot," the phrase heard most often on the firing range. Lt. Col. Arne Hill Jensen, commandant of the Royal Norwegian Air Force Air Defense

in very good health.

"Norwegian Adapted Hawk has lived up to our expectations," he said. "The anti-aircraft guns — our 40mm Bofors L-70 guns — have been refurbished and modernized. Our Nike Hercules systems are being phased out and we are looking toward future developments. I would say Norway's air defenses are in very good shape. We are confident and ready."

by 2nd Lt. Shirley J. Lancaster, Hubert Koker and Blair Case

*Improving the gun-missile mix*

# Stinger APCs

*by Lt. Col. William L. Bond*

**A** continuing problem facing short-range air defense (SHORAD) in protecting a maneuver force is how to provide early engagement without getting yourself killed. This problem is most ominous when protecting tanks with Vulcans. The 2nd Battalion, 61st Air Defense Artillery, has developed a solution.

The Vulcan has a 1,200-meter range, and it must be in front of, or collocated with, the tanks it supports to get any kind of early engagement at all. The Soviet Hind helicopter is equipped with the AT-6 anti-tank guided missile (ATGM) which has a range of five kilometers, so not only will Vulcan prove ineffective when deployed forward, it will also not survive for very long due to the minimal protection provided by the M-113 chassis.

The addition of a Stinger crew member to each Vulcan squad provides the ability to engage at a much greater range with improved lethality, and increases the survivability of the Vulcan squad which does not have to remain in such close proximity to the maneuver force.

This solution, though viable, has problems: the Vulcan does not have room to carry the Stinger's basic load, the Vulcan crew is degraded because optimum it would consist of three 16Rs rather than two, and the vehicle does not have enough room for four crew members and their equipment. The 20mm gun essentially becomes a last ditch defense — the Vulcan gunner will engage aircraft that have escaped the Stinger and come within the Vulcan's 1,200-meter range.

Another solution has been to use M-113 armored personnel carriers (APCs). Units have taken the APCs from their Chaparral platoon leaders and placed Stinger crews in them. This adds only six "Stinger under armor" crews and limits the operational capability of the Chaparral platoons. Moreover, the upcoming transition to the Vulcan/Stinger L series table of organization and equipment (L-TOE) will remove Chaparrals from the divisional

SHORAD battalion and eliminate this option.

The 2nd Battalion, 61st Air Defense Artillery, the battalion supporting the 2nd Infantry Division in the Republic of Korea, has found another way to support and defend armor units. Through an intra-divisional swap of 24 high-mobility, multipurpose wheeled vehicles (HMMWVs) for 24 M-113s, the 2-61st ADA now has 24 APCs totally dedicated to providing Stinger under armor.

The initial employment of these Stingers under armor has been in three-man teams: one driver, one team chief and one Stinger gunner. Although this limits the number of teams that can be deployed, the added protection and weapon capability more than make up for the fewer teams. The Stinger team will now be able to provide maximum coverage forward of the supported unit and will have a much better chance of survival. The .50-caliber machine gun on the M-113 allows the Stinger crew to engage aircraft in the missile dead zone and provides much needed self-protection.

The 2-61st ADA has added one Stinger APC to each Vulcan platoon, allowing a more balanced air defense design (2-61st ADA is now under the L-TOE and has three Vulcan/Stinger batteries with three platoons of three squads each). The additional weapon system gives the platoon a better gun and missile mix. The 15 Stinger APCs are used for pure Stinger sections in support of mechanized and armor units.

Although this solution is not applicable to all theaters of operation, 2-61st ADA has developed an effective plan which gives the battalion added operational capability and flexibility. We welcome comments from other units who may have attempted to place Stinger under armor as this is a new, dynamic program that we are constantly seeking to improve.

Lt. Col. William L. Bond is battalion commander of the 2nd Battalion, 61st Air Defense Artillery, Korea.



"Isn't this a dead issue? Women in the military is 'old hat;' the novelty has worn off."

... Capt. Pamela Dzervens, ADA

"No, I believe the public has no idea what you really do over here."

... Mike Wallace of "Sixty Minutes"

# Women in ADA

by Mary French

Whether or not women belong in the Army is no longer seriously debated. The demographics of the volunteer Army demand their presence. Women in combat, as a "Sixty Minutes" segment scheduled for October is likely to reveal, is another matter.

Air Defense Artillery offers women a variety of jobs that look like, feel like, sound like and taste like combat. The women who serve in Patriot and Hawk batteries may not be on the combat exclusion list, but they are definitely on the threat's target list.

*Air Defense Artillery* recently explored the evolving role women play in air defense and their feelings toward the branch. It discovered that women in Air Defense Artillery carry on a love-hate relationship with the "First to Fire" branch.

One reason they love the branch is that Air Defense Artillery offers women more combat MOSs than any other branch, a matter of fierce pride to the women who command or serve in ADA high- to medium-altitude air defense batteries.

"Air Defense Artillery gives women a chance to participate fully," says a Hawk assault platoon leader. "I don't feel I'm at a disadvantage when my records go before the promotion board. My files show that I've taken on the same challenges as my male contemporaries."

On the other hand, Air Defense Artillery excludes women from its short-range air defense (SHORAD) batteries. This exclusion presents a major stumbling block for ambitious female ADA officers. Brig. Gen. Donald M. Lionetti, currently Director of Plans, J5, U.S. Space Command at Peterson Air Force Base, Colorado Springs, Colo., and formerly deputy commanding general and assistant commandant of the Air Defense Artillery School, Fort Bliss, Texas, feels that a higher percentage of women officers than men may be leaving the branch prematurely. "I hope," said Lionetti, "that there remains a sufficient number of female officers to ensure an adequate pool of quality officers from whom to select future battalion commanders and brigade commanders."

Lionetti does not see any serious problems concerning the issue of career progression for enlisted women in Air Defense Artillery. "As far as women enlisted soldiers, I really don't believe we have a problem," said Lionetti. "From my observations, women enlisted soldiers have been performing in our HIMAD MOSs competitively with men. My understanding is that they are achieving promotions and authorities commensurate with their male counterparts."

Lionetti does not feel the closure of half of the ADA field (SHORAD) to women adequately explains why

women are leaving the branch. "If it is true that many women are leaving prematurely and using SHORAD exclusion as an excuse," said Lionetti, "I would counter and say that there have been many general officers in Air Defense Artillery who have not had dual experience in both HIMAD and SHORAD. Many came up a single track. So there are examples galore of male officers who have been able to make it, so to speak, to the highest ranks by focusing in one or the other tracks."

As Lionetti indicated, using career progression as an excuse to leave Air Defense Artillery may be just a cop-out — or at least only a partial excuse. There may be hidden reasons — reasons many women may be reluctant to voice — as to why women are leaving the branch. The 1987 Air Defense Artillery Commissioned Officer Survey allowed ADA officers to anonymously voice their feelings about the branch, and the most common complaint that women made about the branch didn't involve career progression.

As the following comment from the survey shows, many ADA women, like their counterparts in other branches, generally feel they suffer from a lack of respect: "Women are not treated with the same respect as their male counterparts. Many men feel women have no place in Air Defense Artillery, let alone combat arms."

Here's another comment from the survey: "Air defense has not made significant efforts to acknowledge its female members as equals within the branch. Because of this, we feel disillusion and discontent and are unable to be proud of this branch. If we are to hold our heads high as the other branches do, then we must satisfy needs within (this includes officer and enlisted female ranks in air defense)."

Administered under the auspices of the Office, Chief of Air Defense Artillery (OCADA), U.S. Army Air Defense Artillery School, this survey provided concrete evidence of the difficulties that are inherent to any institution or organization undergoing a profound social change. In this case, Air Defense Artillery — which was opened to women soldiers in 1973, then closed, then opened again in 1977 — comes across to many female ADA soldiers as not being a very accommodating branch.

Statistics back them up. Female captains tend to leave Air Defense Artillery in search of greener pastures in non-combat arms branches or in civilian life. The fact that combat arms branches experience the same migration is small consolation. It indicates that the problem Air Defense Artillery is having now in attracting and keeping female soldiers mirrors the problems the Army has had in the past with integrating females. Army history in the 20th century has been characterized by such difficulties as low morale and job dissatisfaction among soldiers because of the

adjustments that have to be made to accommodate a new group, such as female soldiers, as it becomes part of the organization — not just an auxiliary part, but an integral part.

Capt. Cynthia E. McAlister, former commander of Headquarters and Headquarters Battery, 3rd Battalion, 6th Air Defense Artillery, Fort Bliss, Texas, sees these adjustments and the ensuing difficulties as part of the whole problem: "How can you change 4,000 years of social opinion overnight?" McAlister said. Her overall view of ADA and the opportunities for women is a positive one. She admits that "the guys have more fun" because they have a greater opportunity for field assignments. Gender in some ways still holds women back in ADA, but McAlister believes the opportunities for women in ADA are growing. More and more opportunities will arrive for women in this branch, but it

takes time and an open dialogue.

The problems women are experiencing with attitudes and perceptions of their abilities can't be swept under the carpet. The underlying causes of these problems must be explored so that ADA can attract and keep qualified female soldiers and better use them for the benefit of the branch and, at the same time, increase job satisfaction for the women. It is also worth exploring how ADA is already offering challenging and highly responsible positions to its women soldiers.

One of the more challenging aspects of being a female ADA soldier is the possibility of some day facing combat. The first part of this article addresses this issue and is based on an interview that CBS's "60 Minutes" correspondent Mike Wallace had with three female ADA officers on the possibility of women being in combat.

The CBS report on "Women in the Military" is tentatively scheduled for broadcast in October. Although the segment was conceived as a type of progress report to ascertain how well women are doing in the Army, Navy, Air Force and Marines, the question of women being in combat was raised during the ADA segment. Thus the "60 Minutes" story on "Women in the Military" not only explores the reality of women being an integral part of today's military, but also the various societal issues that compound this story — especially, is the nation ready for women in combat? what contribution do they make to readiness? and so forth.

Like the "60 Minutes" story, this article will also examine the sociological and historical reasons behind the resistance not only to the idea of putting women in combat but to integrating women into the military at all. It is specifically the problem of whether or not women should be in combat that has kept women from holding certain ADA MOSs, thus hampering their career progression in the branch. It

*"Many men feel women have no place in ADA"*

is hoped that this article will help women who are or who wish to become ADA soldiers to understand some of the deeply entrenched historical and cultural barriers that society has set up against the idea of women in the military and in combat.

This article uses historical precedent to show that the barriers will not come down overnight; it will take time to bring at least some of the barriers down, and this can be done only through the efforts of "pioneers" — women willing to take on the challenge of being in Air Defense Artillery.

## ADA Under the Spotlight

If, given the existing positions women are holding as Hawk and Patriot battery commanders in West

Federal Republic of Germany. After eating lunch at the local Baumholder Burger King, they visited B Battery, 4th Battalion, 1st Air Defense Artillery, 94th ADA Brigade. All interviews and on-camera work were performed out of doors in front of a loaded Hawk launcher. The Hawk missile launcher was set against the rolling green hills and hazy sky of a typical German valley and village.

The women that Wallace interviewed included two women selected by the 32nd AADCOM PAO — 2nd Lt. Dawn Reed, tactical director, FDC, 4-1st ADA; 1st Lt. Kimberly Warren, platoon leader, B Battery, 4-1st ADA — and Capt. Pamela Dzervens, the B Battery commander who Bonin insisted be included in the interview.



Germany, Warsaw Pact military forces were to cross the border into NATO territory tomorrow, then women, ADA women, would be in combat tomorrow: such a sudden invasion would blur the concept of the front line; all of West Germany would become a battleground.

Such a scenario provided a tantalizing subject for "60 Minutes" correspondent Mike Wallace, whose ability to "sniff out" a good, oftentimes controversial, story is almost legendary. Europe was important to Mike Wallace and the story's producer Richard Bonin because it represents the forward edge — the most likely area for hostilities to break out in a World War III-type scenario.

Thus, in late May of this year, "60 Minutes" went to Europe to examine how female soldiers and airmen were doing, to discover who they were and to identify their daily mission at 21st SUPCOM, V Corps, VII Corps and 32nd AADCOM. ("60 Minutes covered the Navy and Marines at CONUS locations.)

On Friday, May 27, 1988, Mike Wallace and the "60 Minutes" production team arrived in Baumholder,

Although unplanned, Dzervens' inclusion in all probability made the entire session stronger, especially concerning the issue of equal opportunity, which paled before a gung-ho female battery commander. She rightly pointed out that battery command is highly competitive — the selection based on past and anticipated performance, gender having nothing to do with the process. The officers were candid, personable and fielded all questions posed by Wallace in a professional, thoughtful manner.

No female ADA NCOs were included in the interview though, originally, it was planned to include Sgt. Ida Menendez, a motor sergeant from Headquarters, 94th ADA Brigade, Kleber Kaserne, Kaiserslautern. Bonin was impressed by her bearing and ability to communicate; however, given the limited time available, the amount of territory to be covered and the variety of female soldiers to be interviewed, his schedule simply could not support an interview with Menendez.

As the interview got underway, Wallace began to fire those tough questions he's so famous for.

Dzervens, because of her outspoken and frank views on women's equality, which Wallace termed "female bravado," was a target of opportunity for Wallace's questions.

**Wallace:** Are you a likely target?

**Dzervens:** Yes.

**Wallace:** Would you leave the unit in time of war?

**Dzervens:** How could I just leave all these soldiers I'm responsible for?

**Wallace:** Would you want to go to combat?

**Dzervens:** We will be in combat, if it comes to that.

**Wallace:** Do you think the combat exclusion rule should be changed?

**Dzervens:** Yes. It doesn't make much sense to deny women certain jobs, then put them in places where they'll be in combat.

The rest of the interview questions covered such areas as, "Why join the Army?"

"What do your parents think?" and "Will you make it a career?"

After the interview, the comments by the interviewees on Wallace, whose abrasive interview style strikes fear even in the bravest of hearts, were very favorable. Dzervens, in a subsequent interview with *Stars and Stripes*, recalled her feelings upon learning that Mike Wallace would be conducting the interview. "I thought, 'Oh, boy.' He is known to be a hatchet man from time to time," she said. But she added, "He is very professional, very relaxed. I think he enjoyed himself."

1st Lt. Kimberly Warren had the same opinion about Wallace. "I thought he was going to be that way, but he wasn't," she said.

The overall impression of the interview from the USAEUR OCPA is that the "60 Minutes" production on women in the military will be favorable and factual. Wallace's line of questioning contained no surprises, but the interview contained pointed, although expected, questions. Johnson helped to calm pre-interview nerves by giving the three ADA officers reading material on women in the military and on the issues of equal opportunity, sexual harassment and women in combat to prepare them for the type of questions they might be asked. Consequently, the three officers were — at least outwardly — unintimidated by Wallace's confrontational interview style and handled themselves extremely well, providing honest, from-the-gut answers.

Dzervens, a native New Yorker, describes how she handled pre-interview jitters by setting the following guidelines for herself: "Be honest, say what's in your heart, but don't talk out of your league." Dzervens' self-confidence was evident when, at one point, she turned the tables and asked Wallace a question:

**Dzervens:** Whose idea for a story was this, anyway?

**Wallace:** As a matter of fact, it was my idea, why?

**Dzervens:** Well, isn't this all a dead issue? Women in the military is "old hat;" the novelty has worn off.

**Wallace:** No. I believe the public has no idea what you really do over here.

The following were the parting comments to USAEUR OCPA representatives from Wallace: "I am amazed at the can do attitude of the soldiers . . . not just the ones we talked to, but all of them. It was a real pleasure and probably couldn't have been done better. Thank you."

The DA and USAEUR public affairs escorts, as well as the CBS crew, believed the interview at B Battery, 4-1st ADA to be the highlight of Wallace's trip.

At this magazine's press time, it is impossible to tell what parts of the "Women in the Military" story will end up on the cutting-room floor, but given the "60 Minutes" producers' positive reactions to the

professionalism of the three ADA officers Wallace interviewed, chances are ADA will be featured on national television.

## Women in War

The key to the discontent that many of the women in ADA, especially the junior officers, are feeling may lie in Wallace's statement to Dzervens that the public has no idea what women are really doing in Europe. For in this lies the seeds of controversy: women face the possibility of being in combat at any time. This fact tugs at the very roots of our society's cultural and social beliefs. It has taken the efforts of "pioneer" women who served in two world wars, Korea and Vietnam as well as in the peacetime military to bring about public acceptance or at least tolerance of women in the military.

Until recently (and in many cases this is still so), history shows us that while it may have been all right to encourage women to take up arms in wars for independence, often called people's wars, it was not all right for women to be professional soldiers, carrying out their duties in a foreign land and exposing themselves to actual combat. And it is in this history that the public's attitudes and beliefs are reflected.

Prior to this century, history shows us that women have played a minimal, almost negligible role in combat and in the military. Yet, interestingly, the myths and legends of prehistory are rife with tales of women warriors. One of these mythological women warriors, the Greek goddess Pallas Athene, became the symbol of the Women's Army Corps and was, according to Rogan, the archetypal warrior goddess born out of a man and dedicated to battle.

Some of these legends are based at least in part on fact, such as the myth of the Amazons. In his book, *The Barbarians*, Tim Newark maintains that the Sarmatians, an Iranian-speaking people who once inhabited what is now southwest Russia, are the

## Myths and legends are rife with tales of women warriors

source of the legend of the Amazons. It is believed that Sarmatian wives fought alongside their husbands in battle and that virgins were not allowed to marry until they had killed an enemy in combat. Archeologists have found evidence that these stories may at least in part be true. At ancient grave sites in Russia, women were found buried next to spearheads, arrows and suits of scale armor.

In her book, *The Celts*, Nora Chadwick states that, in Celtic lore, there are many tales of women warriors. Chadwick points out evidence suggesting that, prior to the seventh and eighth centuries, Celtic women may have fought in battles.

Historical records exist of one of the most famous women to challenge what was then the world's great-

military and combat roles. The rise of industrialism led to the development of complex organizations that allowed the division of labor, which in turn allowed women to acquire certain job skills that permitted them to work outside the home. In fact, by the first world war, the Army had a hard time finding skilled male telephone operators and typists. Along with the division of labor, the quest for social equality that arose from the nationalist movements produced the environment that made it possible for most industrialized nations and some third-world countries to integrate women into their military organizations.

Working against the changing political and industrial climate, however, were long-held cultural barriers toward using women in combat. Thus, the idea



est military power, Rome. Her name was Boadicea and her story was recorded by Tacitus, the Roman historian. As queen of the Iceni tribe in Britain, Boadicea led her people to several victories but was finally defeated in a decisive battle against Suetonius and his troops in A.D. 61. According to Tacitus, "the Romans did not spare even the women." There was no reason to, according to Helen Rogan, author of *Mixed Company*, since women of the tribes throughout Ireland, Germany, Britain and the Iberian Peninsula were as fierce as the men in defending their land against the Roman invaders.

Despite the few examples cited above, the regular employment of women in battle or as professional soldiers throughout history has been the exception, not the norm. There have been strong cultural and social barriers against women participating in combat, let alone as members of their nations' armed forces.

With the rise of national revolutionary movements in the 18th, 19th and 20th centuries, and with the rise of industrialism came an increased use of women in

of women taking up arms had to be sold, albeit in ways that suited the culture, so that the populace would find it acceptable. One way to do this was to mythicize the female soldier — couch what she is doing in reality in the popular beliefs, ideals or traditions of a people.

For example, during their Revolutionary War and World War II, the Russians reached into their own traditions and, as is seen in Soviet artwork and war monuments, depicted their symbols of victory or of defense of the motherland as powerful, arms-bearing women not unlike the goddess Athene or the Valkyries who inspired men with their superhuman battlefield prowess and in whose protection lay the very survival of the motherland.

Not only was Soviet propaganda based on the myths and legends of the many cultures that had some impact on their own, but the images or archetypes used to sell the idea of women warriors were also based on solid practicality. It made sense for Soviet women to band together in military, or armed, groups.

Whether fighting their own people in a bitter and cruel civil war or fending off foreign invaders, as Nancy Loring Goldman states in her book, *Female Soldiers: Combatants or Noncombatants?*, women have been effectively used in combat when the wearing of the military uniform or the bearing of arms does not increase the danger that women face and may actually serve to protect them. According to Goldman, "such involvement by women occurs especially when the very existence of the society is at stake and when women are extensively molested and raped by the invader. Women are drawn into combat, when at all, only when their native land is menaced by occupying forces." Thus once the foe is defeated, the women will not remain a permanent feature of the combat services in combat roles.

It is interesting to note that during both world wars, the Soviets' utilization of women in combat is the single major example of the large-scale use of women in combat in regular international war. Yet, despite this, according to Rogan, the Soviets resisted the presence of women at the front during their revolutionary war and both world wars. Furthermore, after World War II, women were demobilized from the service and today make up only a very small percentage of the total military force.

Goldman states that, during the two world wars, British society was extremely reluctant to allow women to hold significant roles in the military until the national emergency and manpower shortfall became too great. The British also held a culturally deep-rooted, chivalrous view that women needed to be protected. This attitude was seen in efforts to "militarize" or defeminize female troops in external ways (uniforms, ranks and titles) to put to rest the public's fear of sexual intermixing. Even with these measures, there were still terrible slander and rumor campaigns directed at British military women. British women were not to be professional soldiers but rather they, bearing quasi-religious titles, were to minister to the sick or wounded, or they were to perform tasks, such as secretarial, that kept them out of harm's way, fitting the image of servicewomen that society could accept. British women, with a few isolated exceptions (see following article, "Mixed Batteries"), did not bear arms or serve in combat, and they have yet to serve in combat on active duty.

Based on the preceding historical examples, Goldman believes that "there is little evidence for a correlation between the level of women's participation in a given war and the place of women in their nation's army in peacetime." But what about today? Israel is often cited as proof that women today are utilized as combat troops on a large scale. However, the pattern that Israel followed with women in their military is similar to the examples above. The only difference is that Israel is still in danger of invasion.

Jewish history contains several examples of women who have led their nation to military victory, such as Judith and Deborah — strong, historically-based, nevertheless mythicized or archetypal images, not unlike the legendary Celtic women warriors who took up arms to protect their homeland from invaders. It is true that, in keeping with the pattern of women fighting in wars of national liberation or in pioneer defenses, Israeli women have courageously taken up arms and died in service to their nation. However, when Israel won its war for independence and the new permanent Israeli Defense Forces were created in 1949, women were excluded from combat roles, and since then, according to Goldman, have had a low profile in the Israeli military.

United States history is replete with its own archetypal women warriors. Women have taken up arms since the earliest days of the Republic. There was Mary Hays (known as Molly Pitcher) who served alongside her husband in the Revolutionary War. When her husband was wounded in battle, Mary promptly assumed his duties at the cannon. Margaret Corbin was another woman who helped her husband at the cannon. When her husband was killed, Corbin took over until she too was killed. Another American Revolutionary heroine was Deborah Sampson, who served for three years with the Fourth Massachusetts Regiment in the Continental Army; however, she had to disguise herself as a man to get away with it.

During the war of 1812, Lucy Brewer disguised herself as a man and fought with the Marines. Then, during the Civil War, women again turned to disguising themselves as men so they could fight. Such women included Sarah Taylor, Mary Ellen Wise, Anne Lillybridge, Mary Hancock and Loreta Velasquez.

During World War I, Gen. John "Blackjack" Pershing urged the Army to enlist women to free men for combat service. Women had been serving in the Army Nurse Corps since 1901, but the Army, unlike the Navy and Marines, did not allow women to fill other noncombat jobs. Instead, women worked as contract civilians, serving as dietitians, telephone operators and surgeons.

After World War I, women were not represented at all in the military until the 1940s. As Hitler's actions in Europe became more and more threatening to the interests of the United States, Congress acted to set up a women's auxiliary. Various proposals for such a force ranged from a completely civilian force to one with full military status, as was proposed by Congresswoman Edith Nourse Rogers. First Lady Eleanor Roosevelt suggested that American women be used in antiaircraft barrage work as were British women, but military planners avoided this since they felt it was dangerously close to combat work.

## *Women have taken up arms since the earliest days of the Republic*

Despite Rogers' efforts to create a women's organization with full military status, an auxiliary, the Women's Army Auxiliary Corps, was proposed instead, on May 28, 1941, under H.R. 4906. This bill was shelved, and it wasn't until after Pearl Harbor that plans for a women's corps speedily took shape. By the last day of 1941, Rogers reintroduced the WAAC bill to Congress as H.R. 6293. On May 15, 1942, the WAAC bill was signed into law by President Franklin D. Roosevelt.

By the end of 1942, Oveta Culp Hobby, Director of the WAAC, said, "Our six months' achievement is really something to boast about." She had promised the War Department 12,000 Waacs by July of 1943, but as early as December 1942, the Corps had already

Field, within sight of the Pentagon, to defend the nation's capitol against air attack from either Germany or Japan.

Two WAAC companies, totaling 10 officers and more than 200 enlisted women, were part of the experiment. The AAA organized these WAAC companies into two composite batteries using women in at least 55 percent of the jobs. The AAA worked out tables of organization showing exactly which jobs in the batteries, battalions and regiments could be held by women, and whether the whole idea was feasible.

While the women who participated in this experiment were not permitted to fire guns and were not given small-arms training, they manned the entire range section and operated various instruments and



surpassed that strength with 12,767 enrolled, and there were plans in the works, because of the success of the WAAC and the manpower shortage, to increase the number of Waacs to more than one million. In addition, the WAAC now had two training centers open and a third being readied, 27 Aircraft Warning Service units, nine service command companies shipped or ready to ship, two secret units with the Antiaircraft Artillery (AAA) and one unit on its way overseas.

It was in the AAA units that American servicewomen, for the first time as a matter of policy, were placed in a position where they could possibly face combat — that is, on a potential front line in the event of an air attack.

In late 1942, a secret, official experiment involving another first — mixed tactical units — took place. Despite the objections of the judge advocate general against the assignment of women to "combat" units and the probable illegality of such an action, AAA units under the actual command of the Military District of Washington, D.C., were deployed to Bolling

Field, as well as performed clerical duties. The AAA was pleased with the results of the experiment and reported, "WAAC personnel exhibited an outstanding devotion to duty, willingness and ability to absorb and grasp technical information concerning the problems of maintenance and tactical disposition of all types of equipment."

No publicity was permitted on this project for a variety of reasons. One reason was the highly secret nature of the unit which was equipped with the latest in radar, height finders, fire directors, and other such apparatus. Another reason was based on the fear that WAAC recruiting might be harmed by mistaken notions that women were to fire guns or sleep in the men's barracks.

The experiment was also kept secret so that publicity would not cause Congress to kill it. The attitudes of the American public on exposing women to combat differed from that of other countries. The British were more open about their servicewomen serving in mixed antiaircraft batteries, and, while other countries tended to have all-female antiaircraft batteries,

antiaircraft duties were a natural entry point for women into the military. The very nature of enemy air attack in Europe had already brought war directly to civilian women and children, and it was only natural and reasonable that women would take up arms to protect themselves, their children and their homes.

In the case of the United States, however, it seemed highly unlikely by 1943 that Germany or Japan would attack the nation, and the mixed AAA batteries were disbanded. There were no follow-up experiments. Yet, the experiment was a success for the Waacs.

The experiment was designed to test whether female personnel could adjust to the special rigors preparing them for a shooting war. Several months after the conclusion of the experiment, a full report on the possibility of using women in such duties was sent to the War

Department. The report concluded: "WAAC personnel can be used in performing many of the tasks of the Antiaircraft Artillery. They are superior to men in all functions involving delicacy of manual dexterity, such as operation at the director, height finder, radar, and searchlight control systems. They perform routine repetitious tasks in a manner superior to men . . . The morale of women used in the AAA was generally high due to the fact that they felt that they were making a direct contribution to the successful prosecution of the war."

While the AAA units were dissolved and their personnel reassigned, the records of the secret experiment were preserved to permit reactivation of such units should future need arise. This action was taken, over the protest of the AAA, but even the War Department admitted that there was no reason why women couldn't be employed in AAA tasks, saying, "The experiment which has been conducted of employing WAAC personnel in antiaircraft artillery units has demonstrated conclusively the practicability of using members of the Corps in that role."

Morale in the WAAC remained high during its first year, unlike the British experience in the two world wars where women's services would fall prey to slanderous charges, which, in the process, would lower morale, alarm parents and make it impossible to secure a large corps except by drafting women.

Yet, by May of 1943, it was already known within the War Department that the WAAC, in spite of its good record, was not to escape the traditional fate of slanderous attack, which became familiarly known to the department's investigators as the "Slander Campaign."

The slanderous attacks mainly consisted of widespread rumors of pregnancy among WAAC personnel deployed overseas. There were also rampant rumors of promiscuity and assertions that the only reason females were allowed into the armed services

was to provide sexual companionship for the men doing the fighting. In reality, enlisted women's morality exceeded the civilian average. The WAAC rate of venereal disease was almost zero and the incidence of pregnancy among unmarried women in the WAAC was about one-fifth that among unmarried women in civilian life. Yet, typical newspaper headlines at this time were as follows: STORK PAYS VISIT TO WAAC NINE DAYS AFTER ENLISTMENT and ARE WOMEN PERSONS? DEBATED BY HOUSE VETERANS COMMITTEE.

Originally thought to have been Axis-inspired, the rumors turned out to be the product of the natural biases of American servicemen and civilians. Several years after the slander campaign, Mrs. Hobby remarked, "I believe now that it was inevitable; in the history of civilization, no new agency requiring social change has es-

caped a similar baptism. I feel now that nothing we might have done could have avoided it."

Furthermore, morale among servicewomen fell due to the frivolous treatment accorded them by the news media. For example, press conferences on the plans to convert the WAAC from an auxiliary to a branch of the Army would often degenerate into questions about women's outerwear and underwear.

Despite all the rumors and efforts to discredit women in the armed services, the War Department, which had supported military status in advance of proof of WAAC efficiency, now found its action justified by all field reports. Not only from the reports of the secret AAA experiment, which had concluded at about this time, but from North Africa, from which Gen. Dwight D. Eisenhower's headquarters expressed enthusiasm for the performance of the first WAAC company and forwarded requests for hundreds more enlisted women, stating that, without the Waacs, it was "literally impossible to conduct effective administration."

Furthermore, War Department files contained a plethora of favorable reports — many of which came from post commanders who had been adamantly against Waacs being sent to their installations. One such commander informed Col. Frank U. McCoskrie that Waacs would be sent to his post only "over my dead body," and then, a few months after their arrival, and still alive, he requested that two more companies of Waacs be sent. In another case, the commanding general of a port embarkation wrote, "I am greatly impressed with their discipline, intelligence, efficiency and devotion to duty. They have raised the standard of discipline of the command."

The following is a list of similar comments on the women of the WAAC from the Signal Corps, Air Forces, Adjutant General's Department, and service commands: "Proved its value in hundreds of departments; Their work is splendid; Looking forward

***"No new agency  
requiring social change  
has escaped a similar  
baptism"***

to receiving more Waacs; Highest type of intelligence and aptitude."

While in 1942 it was hard to imagine that the WAACs could be used in areas other than the Army Service Forces, by mid-1943 Waacs were assigned to every major Army command in the United States and to two active overseas theaters, and they were stationed in 44 of the 48 states. The women of the WAAC had proven themselves, and the War Department moved to fully integrate women into the Army. On July 1, 1943, the president signed a bill creating the Women's Army Corps (WAC). On July 5, 1943, Director Hobby of the WAAC was commissioned Colonel Hobby of the WAC.

Under the WAC, women were represented in antiaircraft artillery. In the Antiaircraft Command of the Army Ground Forces, Wacs performed a variety of duties on the firing ranges where trainees were taught the principles of antiaircraft defense. At some antiaircraft firing points the entire training operation, with the exception of technical supervision by male officers, was handled by enlisted women: Wac control tower operators kept the tow-target plane on course while other Wacs gave the fire signal over the field telephone, and Wac mathematicians computed the correct angle of fire and the accuracy of fire. However, women in the Antiaircraft Command were completely barred from combat.

A rapid and almost total demobilization of American armed forces followed World War II, and the number of women in the services also went down quite a bit. There were 265,000 women in the uniformed services in 1945, out of a total of 12 million total U.S. military personnel. By 1948, the number of women fell to 14,000.

Even with the reduction in the number of women in the armed services, the progress women made during World War II was not undone. In 1948, Congress passed the Women's Armed Services Integration Act of 1948, establishing the female branches of the military services on a regular and continuing basis and giving regular and reserve status to military women. Legislation regarding the female branches of the U.S. Navy and U.S. Air Force specifically forbade the employment of women in combat, while no mention was made of this in the new legislation on the female branches of the U.S. Army or Marine Corps. The Women's Armed Services Act limited the number of women to two percent of the total force.

While women served with the U.S. forces deployed to Korea after 1950 and to Vietnam after 1963, they never served explicitly in combat. However, in Korea, four Air Force nurses died, and in Vietnam where the guerilla type of combat exposed U.S. servicewomen to attack, one Air Force and seven Army nurses died.

████████████████████

***"We were a branch — separate and restricted"***

████████████████████

The effect that the Vietnam conflict had on the Army was demoralizing for both servicemen and women. In addition, women in Vietnam suffered the stress of oftentimes being under combat conditions without the ability to fire back to defend themselves. In an interview with the Fort Bliss *Monitor*, MSgt. Gloria Chicoine said of her experience in Vietnam with the WAC, "I think that the Women's Army Corps was a splendid thing for its time," she said. "But we couldn't be fully effective until we became part of the total Army. We were a branch — separate and restricted." She added, "Each woman fought her own battle and found her own place over there. As for me, I think I ought to be there in combat if everybody else is. But don't send me back to Vietnam without a weapon."

MSgt. Rebecca Gardner echoes Chicoine's view. "What we have today is a lot better.

They sent women to Vietnam who weren't even allowed to hold a weapon. Sometimes I wonder what would have happened if we had been overrun. We were at the mercy of whatever happened." The same argument exists today with the presence of women in areas, such as Germany, where the potential for falling under attack exists. The logic of this argument usually follows this line: If women are present in such a dangerous area, then they should be able to fire back. Therefore, why not let them hold combat positions?

Another legacy of Vietnam was the decline in the number of men in the armed forces. With the draft gone, few young people wanted to join the military so soon after an unpopular war when anti-military sentiment was still so fresh. There were other factors at work at this time, such as the declining birthrate and the women's equality movement. These factors made the growth in the number of women in the U.S. military possible and also contributed to opening up discussion as to whether or not women should be allowed to fill combat positions.

In 1967, the government, under Public Law 90-130, lifted the two percent ceiling on female end-strength. Women were now allowed to serve in the National Guard in positions other than nursing, and promotions to general officer rank were allowed. WAC officers were integrated into male officer courses and were permanently assigned to all branches except combat arms. In 1973, the all-volunteer force (AVF) was created, and because of the factors listed above, it became imperative that the AVF rely on women. Thus opportunities for women began to grow, and from 1971 to 1980, the total number of women as a percent of total U.S. military personnel grew from just under two percent to eight percent.

In 1976, women became eligible to attend the service academies and in basic training received the same training as men. In 1978, the WAC was

disestablished, allowing women to become part of the Army's "body" instead of one of its "limbs."

In the late 1970s the Carter administration suggested a figure of 13-percent female representation in the U.S. military by 1983. President Carter also requested that women as well as men register for the draft. But "the old taboos and attitudes" resurfaced, and even the Democrats in Congress turned down Carter's request.

With the election of Ronald Reagan in 1980, there was a return to more traditional values, but even so, President Reagan has campaigned for greater U.S. military preparedness, and women have continued to play an ever-increasing role here. The percentage of women in the U.S. military now stands at 10.3. Currently, women work in 318 of the 368 enlisted MOSs, 70 of the 77 warrant officer specialties and 198 of the 207 commissioned officer specialties. Furthermore, four women hold general officer rank in the Army.

Women did not enter Air Defense Artillery until 1973. However, as studies were being conducted, ADA MOSs were opened to women, then closed, and then opened again. It wasn't until 1977 that the Army announced that female soldiers could hold most ADA MOSs provided women would not be involved in actual combat. That year the Secretary of the Army announced the official policy of the Army regarding the employment of women in combat. The Combat Exclusion Policy allows women to serve in any officer or enlisted specialty, at any organizational level, in any combat arm except Infantry, Armor, cannon Field Artillery, Combat Engineers, and low-altitude ADA (Chaparral, Vulcan and Stinger) units of battalion, squadron or smaller size.

Currently, females in ADA are not permitted to hold the specialties shown below.

#### **Officers**

14B SHORAD Officer

#### **Warrant Officers**

SHORAD System Technician

#### **Enlisted**

16F Light ADA Crewman  
16J Defense Acquisition Radar Operator  
16P Chaparral Crewmember  
16R Vulcan Crewmember  
16S MANPAD Crewmember  
24M Vulcan System Mechanic  
24N Chaparral System Mechanic

The Direct Combat Probability Coding (DCPC) policy determines where women may serve. According to Maj. Cheryl Zales of the Army's Office of the Deputy Chief of Staff for Personnel, a DCPC is one of seven codes assigned to every military position in the Army. The codes, P1 through P7, indicate the probability that a soldier in that position has of

participating in direct combat. P1 has the highest probability; P7 has the lowest.

Zales said the Army defines direct combat as "engaging an enemy with individual or crew-served weapons while being exposed to enemy fire, a high probability of direct physical contact with the enemy, and a substantial risk of capture."

"Direct combat takes place while closing with the enemy by fire, maneuver or shock effect in order to destroy or capture, or while repelling assault by fire, close combat or counterattack."

The mission of the low- or short-range ADA battalion is to visually identify and engage enemy aircraft with direct fire. Thus these ADA positions are classified P1.

This affects the career progression of female ADA officers because approximately 50 percent of the job opportunities in Air Defense are closed to them.

Since ADA female officers can

only be assigned to the high-altitude ADA weapon systems, their preference as to where they are assigned is severely limited. Female officers cannot be assigned to divisional units or any Chaparral or Vulcan unit. This restricts their choice to Fort Bliss, Texas; Fort Lewis, Wash.; Fort Bragg, N.C.; or Europe.

For women to gain command experience at the company grade level, chances are that Europe is the place where they'll end up. Approximately 60 percent of ADA assets at the company grade level are overseas, but because of the restrictions on what jobs female officers can hold, the percentage of female officers overseas is much greater than 60 percent.

Between September 1986 and September 1987 there were approximately 40 female officers returning from OCONUS. Over a three-year period, approximately 120 female officers will be looking for commands to become branch qualified. This puts a female officer at an obvious disadvantage. If most female ADA officers start their careers in Europe, they will need command opportunity in CONUS upon their return. With the large percentage of female officers competing for limited available command opportunities, many female officers will have to go back to Europe for an additional assignment to become branch qualified, hurting their career progression in other areas.

However, the career progression problem women face in ADA must be looked at in the whole context. Air Defense Artillery is a COMBAT ARM. Air Defense Artillery, more than the other combat arms, gives women a chance to get as close to combat as current Department of Defense and Army policies allow — and it's pretty darn close. The positions open to women in Hawk, Patriot and HIMAD command and control specialties, given the nature of AirLand Battle doctrine, will play a vital role in modern warfare. It cannot be overlooked that women holding

## *The career progression problem . . . must be looked at in the whole context*

such positions will be exposed to hostile fire in the event of war.

As an example of the training and career growth opportunities that exist for women in ADA, 1st Lt. Terrie A. Olson recently became the first woman to lead a combat arms platoon into simulated battle at the National Training Center, Fort Irwin, Calif. Olson, who is currently being considered for promotion to captain, led a Hawk assault firing platoon through the most grueling and realistic combat training the Army has to offer.

"The National Training Center is a great learning experience," said Olson. "The OPFOR duplicates threat tactics, and the third dimension of combat is realistically portrayed. The experience builds unit cohesiveness and expertise in working as a member of a fully integrated combined arms team.

"The trip to the National Training Center also made me thankful that I belong to Air Defense Artillery," Olson continued. "Other combat arms exclude women from combat roles. Air Defense Artillery gives women a chance to participate more fully. I don't feel I'm at a disadvantage when my records go before the promotion board. My files show that I've taken on the same challenges as my male contemporaries."

As Lionetti suggested, the problem of career progression for women in Air Defense Artillery may not be the true or underlying problem. Capt. Jacqueline Murray, like McAlister interviewed at the beginning of this article, believes that a lot of the perceived problems that women, officers and enlisted, are experiencing in ADA lie not so much with the branch but with society as a whole. Murray, who was a platoon leader at a Hawk missile site near Frankfurt, Germany, told the *El Paso Times* that there have been a few instances where she felt she had been discriminated against, but she also sees the problem as being based on societal views rather than just on military or ADA views. "Mostly, I have had good support from the leadership. They know women are in the Army to stay and to fail to support them would not be in the best interests of the Army," she said. "The Army is a microcosm of American society. There are those who discriminate and those who do not, but we are fortunate to have policies that distinctly prohibit discrimination. The challenge for both men and women in the Army is to make sure they are enforced," she added.

In the same interview Murray gives her views on the possibility of ADA women experiencing combat: "I am in air defense, considered part of the combined arms team. In any kind of war, my exposure to combat is there. I have already worked in that capacity and I have no qualms about doing it.

"Women have an important role in our national defense. That role includes potential combat

exposure," Murray continued. "The issue is the Army needs quality individuals and there are members of both sexes who do equally well in the same job."

The women in ADA are, for the most part, still young. The highest ranking female ADA officers are captains, four of whom are promotable. Currently, there are 149 female ADA officers compared to 3,615 male ADA officers. Thus, it will still be a few years before women begin to represent the senior officer positions in any significant number. In the enlisted ranks there are 506 women, about four percent of the total number of enlisted personnel in ADA.

Women in ADA must remember that they are still pioneers and that the reality they face is that things change slowly; just because there are opportunities for women in ADA to participate in units that could be involved in combat doesn't mean that everyone in ADA,

given social and cultural constraints, is going to make women feel welcome.

A lot of the responsibility for women's success in ADA lies with ADA women themselves. ADA offers unmatched opportunities to women undaunted by the challenge of serving in a combat arm, and today's society continues to produce more and more women who are willing to accept the challenge.

"It was partly the technology and partly the leadership challenge," said 2nd Lt. Melissa Futernick, an ADA Officer Basic Course student. "I think the branch offers types of experiences that will be valuable no matter what options I may choose later on," she added. "If I decide to transfer to a combat support branch, my record will show that I've served in a combat leadership role. ADA was the best experience I could get."

"ADA offers women something the other branches don't — combat-related leadership positions. Other branches offer you staff duty," said 2nd Lt. Magda Bennett, one of Futernick's classmates. "I found the leadership opportunities in ADA extremely attractive," she added.

Both Futernick and Bennett think the combat exclusion list an archaic idea.

"I don't think it should be mandatory; I think we should be allowed to volunteer," said Futernick.

"I'm sure there are plenty of women who could handle SHORAD jobs or combat jobs in other branches that are closed to women. I would have chosen Armor except for the combat exclusion list," said Bennett.

A lot of the responsibility for women's success in ADA also lies with the leaders in ADA (commanders, decision makers and those in positions of authority) in giving women a chance to prove themselves and in creating an environment of acceptance for them. One thing is for sure, though. On both parties' parts, it will take patience.

## *"The Army is a microcosm of American society"*

# Mixed Batteries

by "J.W.N."

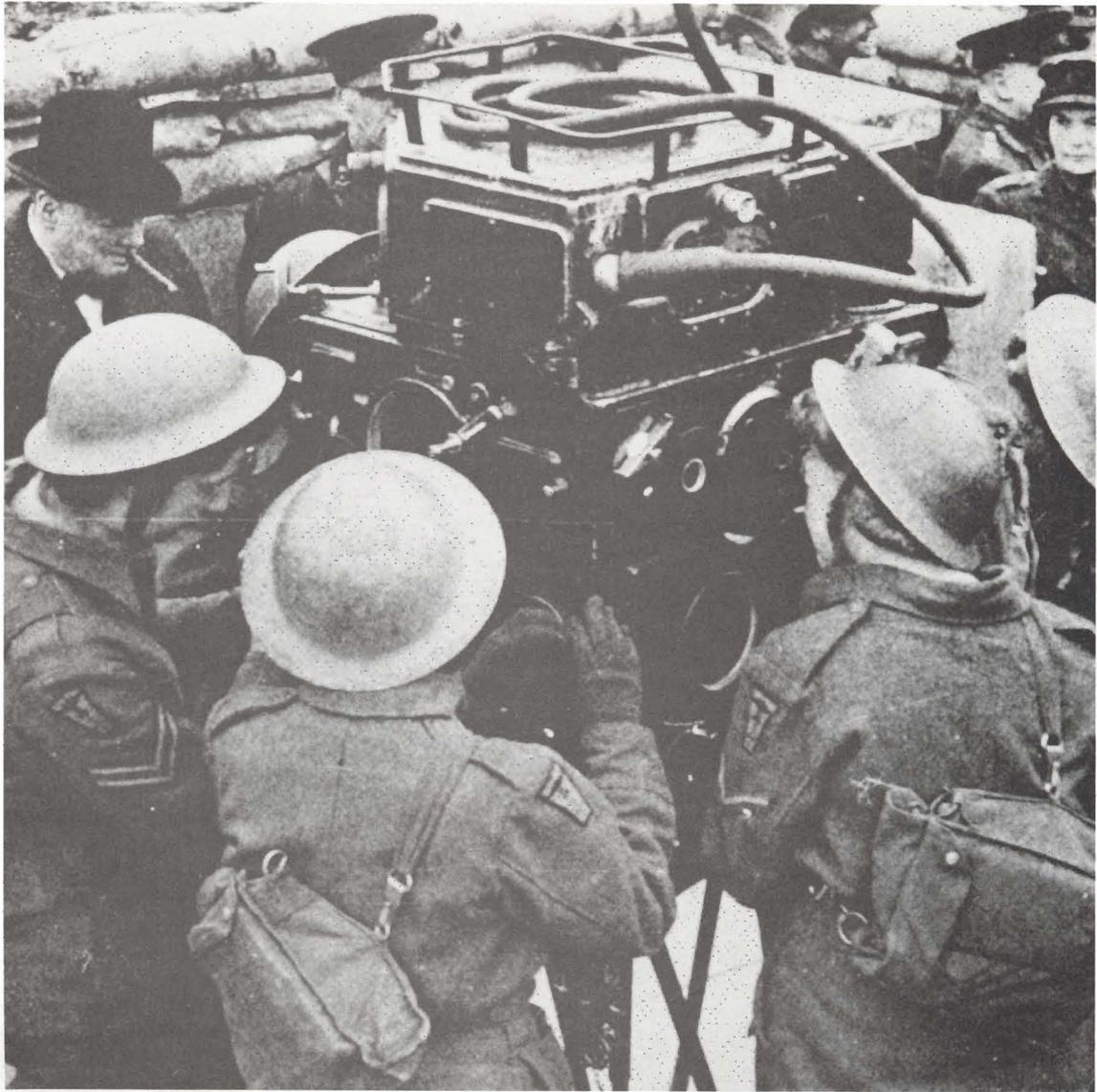
**T**he Auxiliary Territorial Services (A.T.S.) was formed in September 1938, to provide personnel to do noncombatant duties in replacement of men. Later on General Sir Frederick Pile, the G.O.C. in C., A.A. Command, investigated the idea of using girls for certain technical jobs. The first job they took on was the Kine-Theodolite. They have done this ever since they started on it which is in itself sufficient confirmation of their capabilities. They had also been doing instrumental observation work of a special kind at an artillery range somewhere in South of England. They were also used in units as cooks, orderlies, telephonists, M.T. drivers, etc., but to have the fullest use of the nation's manpower, the girls were tried out on various operational jobs.

All the women serving in A.A. are volunteers so far as the operational numbers are concerned. These women join one of several A.T.S. Training Centers all over the country. The first thing that happens to them is to be given selection tests. These tests take various forms and are designed to determine the recruit's suitability for certain jobs. The tests are generally reliable and only a very small percentage fail to make the grade selected for them. From the tests the height-takers, spotters, predictor and radio-location numbers are obtained. The non-operational numbers such as

cooks, orderlies, telephone orderlies, drivers and clerks are selected from intakes, usually because they had previous experience in one of these categories, or because they are keen to make this their army career, and more often than not, with a view to learning something that is going to be of use to them after the war — a very healthy sign. Nowadays, of course, the majority of recruits are conscripts, but they still have to volunteer for A.A. operational service. Tests are made and recruits who in civilian life did a job which they can continue to do in the army are encouraged and allowed to continue it.

## Technical Training

I think the outstanding thing about their technical training in its early stages is the amount of "chatteration" that goes on, in say a predictor or height-taker team! It takes quite a long time to stop it. However, it is all due to enthusiasm rather than vice. Generally speaking they are slow starters, but once they get the main idea the progress is quite rapid. Height-takers are always good, and in my own opinion are better than men. Predictor numbers after steady progress become really very efficient. The "spotters" are fair. They are rather slow in picking up targets and seem to find difficulty in the recognition of aircraft. This is quite understandable as women have never shown



"Mixed Batteries," originally published in the *Antiaircraft Journal*, was ahead of its time, but will seem unbearably patronizing to today's military women. However, the article, written during the London Blitz, does illustrate that female air defenders perform perfectly well in combat. It also demonstrates that attitudes toward women soldiers have improved. What battery commander today would send the women inside to make lace curtains during severe weather or, as a matter of course, assign only female soldiers to mess and dining hall duty?

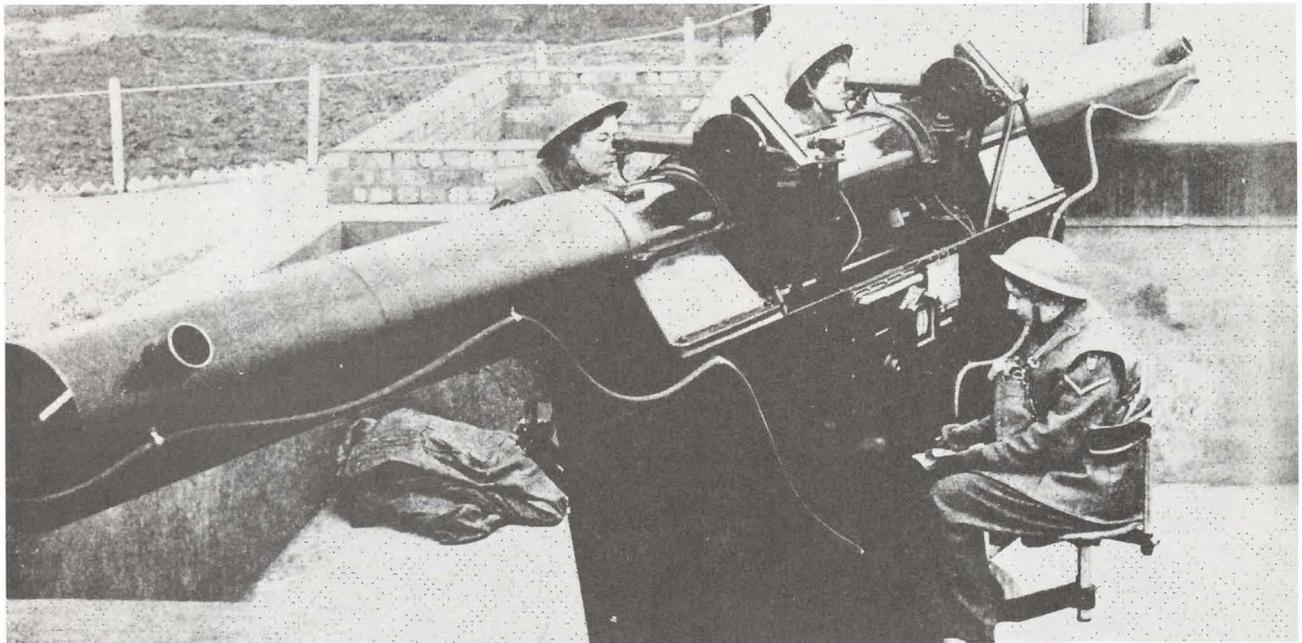
anything like the same amount of interest as men have in types of aircraft. They are picking it up very well though and, womanlike, once they have mastered anything of this sort, the thing sticks. Good spotters are very good, and their progress, if slow, is sure.

### How It Works

The foregoing sets out briefly the beginning of a mixed battery. Let us now see how it is formed, and how it becomes an active unit. My cadre of officers and N.C.Ss. came from Scotland. As soon as they arrived they got down to their technical training, which goes on and finishes up with a concentrated period given over to battery training. This ended, the

Then the end of camp. The whole battery, now complete with the various specialists sent to us to make us up to establishment, was given leave before taking over our action stations.

We were on our two sites by nine o'clock of our first day of duty. At ten o'clock the outgoing battery marched out! That night we had a raid, but neither we nor any other batteries in the area were called upon to fire. We have had a grounding that no other battery has had. All the battery commander's prophecies came true. Deep snow all over the sites, no hot or cold water for several days on end, bitterly cold weather lasting several days, odd alarms in the night necessitating waiting up at the gun park until "stand easy." All these things happened, but never a let-up



great day comes when the battery leaves the training regiment and goes off to practice camp. The battery commander has the whole battery on parade, tells them that they have done well at their training, and worked hard; that there will be other batteries at camp and we just keep ourselves smart and clean, march about properly, etc., etc. We arrive at practice camp at about midday in time for dinner. We have our own cookhouse and dining hall, so for the first time we find ourselves standing on our own feet. It is noticed that the girls and men still sit entirely apart, but this does not worry us and we do not intend to force the fraternizing. The remainder of the afternoon is devoted to getting the battery settled down and accustomed to their new surroundings.

The weather at camp was just as appalling as it could possibly have been. Day after day a section would stand by waiting to fire. Both men and girls were grand and stuck to it magnificently. They began to look healthier every day and ate enormous meals. So we went on; firing whenever we could, and drilling when we couldn't fire.

on the part of the girls. They carried on picquet duties throughout the day, and the only difference we made to ordinary routine was to put reliefs on for half hour on and one hour off, instead of the usual one hour on and two hours off. During the bitterest weather we put them on to painting their hut interiors and making window curtains. The sickness during this very hard and trying weather was almost negligible.

### Routine

There is practically no difference at all between the running of a mixed or any other battery. Hours of reveille, meals and lights out, are all the same. The battery "falls in" in sections, girls on the right, men on the left. Male officers or NCOs usually take a parade of mixed personnel and always take a parade of men only, but it sometimes happens that an A.T.S. NCO has charge of a mixed party. The girl in charge of a mixed parade is taken quite as a matter of course, no signs of embarrassment are shown by either the girls or the men, and the men never try to take a rise out of the A.T.S.

All ranks have their meals together in the common dining hall, and now instead of seeing girls on one side of the hut and men on the other, one invariably sees tables being shared by mixed personnel.

In addition to the mixed canteen we have two huts set aside as Rest Rooms. One of these is for the girls only, and the other for men only. They are very nicely furnished, have open fireplaces and curtained windows. The girls use their room a lot, but the men don't use theirs a great deal.

Officers' and Sergeant's Messes are of course mixed. Here again the A.T.S. sergeants have their own sleeping quarters, which they also use as a sitting room when they want to be on their own; similarly the officers have a private quarter, but share a

guard which comes on for the night. The changing of the guard with the picquet is carried out exactly as done by two guards. When the men's guard "Present Arms" the girls give a "Front Salute." This is taken very seriously and is still watched by a number of spectators.

The picquet's duties are operational as well as ceremonial. The sentry checks arrivals at the gate, is responsible for sounding the gas, fire and general alarms, and turns out the picquet for ceremonial purposes.

### Miscellaneous

The presence of opposite sexes certainly makes for a pride in turn-out condition of huts, and manners in



common mess. Messes and dining halls do undoubtedly benefit from "the touch of a woman's hand."

There are three A.T.S. officers in a battery. One senior commander (captain) and two subalterns. The senior commander is the battery messing officer and the two subalterns include in their jobs that of site messing officer. This works very well. Cooks, and mess and dining hall orderlies are, of course, all girls.

### Training

Training goes on daily, according to the battery's training programme. Marching and saluting drill are done separately. Gun drill for men, and command post drill for girls. Gas lectures and drill are mixed. Physical training is done separately. All lectures are mixed except when on a domestic or medical subject.

### Guards and Picquets

There is picquet of girls on duty throughout daylight hours, which is the equivalent to the men's

general. Bad language is extremely rare.

There is a really very fine spirit of mutual help between the sexes. The girls do odd jobs for the men, and vice versa.

There is a very definite policy to be suggested for entertainments in a mixed battery, and the answer is — make your own as much as you possibly can. This gives an added interest to the performances and brings the battery together in a way where other methods may fail.

The battery has been in one action which lasted for about three and one-half hours. Everybody stood up to the ordeal extremely well, and I am quite sure they always will. We have several times "stood to" for varying lengths of time, at all hours of the day and night, and in all weathers. This always produces one grouse — "Oh, I wish we could fire!"

Recently a girl in another battery was killed in action while serving her predictor. Her place was immediately taken by a girl spotter, and the whole command post continued to do their job. Grand girls.

# Army-Marine ASP

by 1st Lt. Charles B. Millar

The Army tactical director in the AN/TSQ-73 assigned the target to the Marine fire unit. The assault fire unit had been at emission control silent and the remote symbology along with the engagement command was all that alerted them to the in-bound target. The assault fire unit radars locked onto the inert Tow-bee target being towed by the MQM-107C Streaker within seconds. The USMC senior missile director declared the target hostile as soon as telemetry confirmed the lock. The tactical officer in the platoon command post engaged the target with a dramatic ripple-two.

This engagement marked a very important first. The U.S. Army 2nd Battalion, 52nd Air Defense Artillery (formerly 3-68th ADA), from Fort Bragg, N.C., and the U.S. Marine Corps 3rd Light Antiaircraft Artillery Missile (LAAM) Battalion from Cherry Point Marine Air Station, N.C., had conducted the first ever joint live-fire exercise using integrated command, control and communications (C<sup>3</sup>).

The first joint Army-Marine Hawk firing took place at Onslow Beach range, part of the Marine Corps Base at Camp Lejeune, N.C. It was also the first joint annual service practice (ASP). For anyone who has never fired at a range other than Crete or Fort Bliss it is hard to understand the complex coordination required to fire in the middle of the East Coast near some of the nation's busiest fishing waters.

The major objective of the exercise was to totally integrate the five fire units into one C<sup>3</sup> system. The integration of the fire units into the AN/TSQ-73 validated what Army Lt. Col. Johnnie D. Shaw and Marine Corps Lt. Col. Richard Armstrong had visualized could be accomplished between the two units. The units learned a lot about each other's operations. The Marines even acted as tactical directors in the AN/TSQ-73.

Each battalion also focused on their respective ASP training objectives. The 2-52nd ADA's objective, in addition to the joint C<sup>3</sup> mission, was to conduct a firing exercise (FIREX) similar to the conduct of an ASP at Crete.

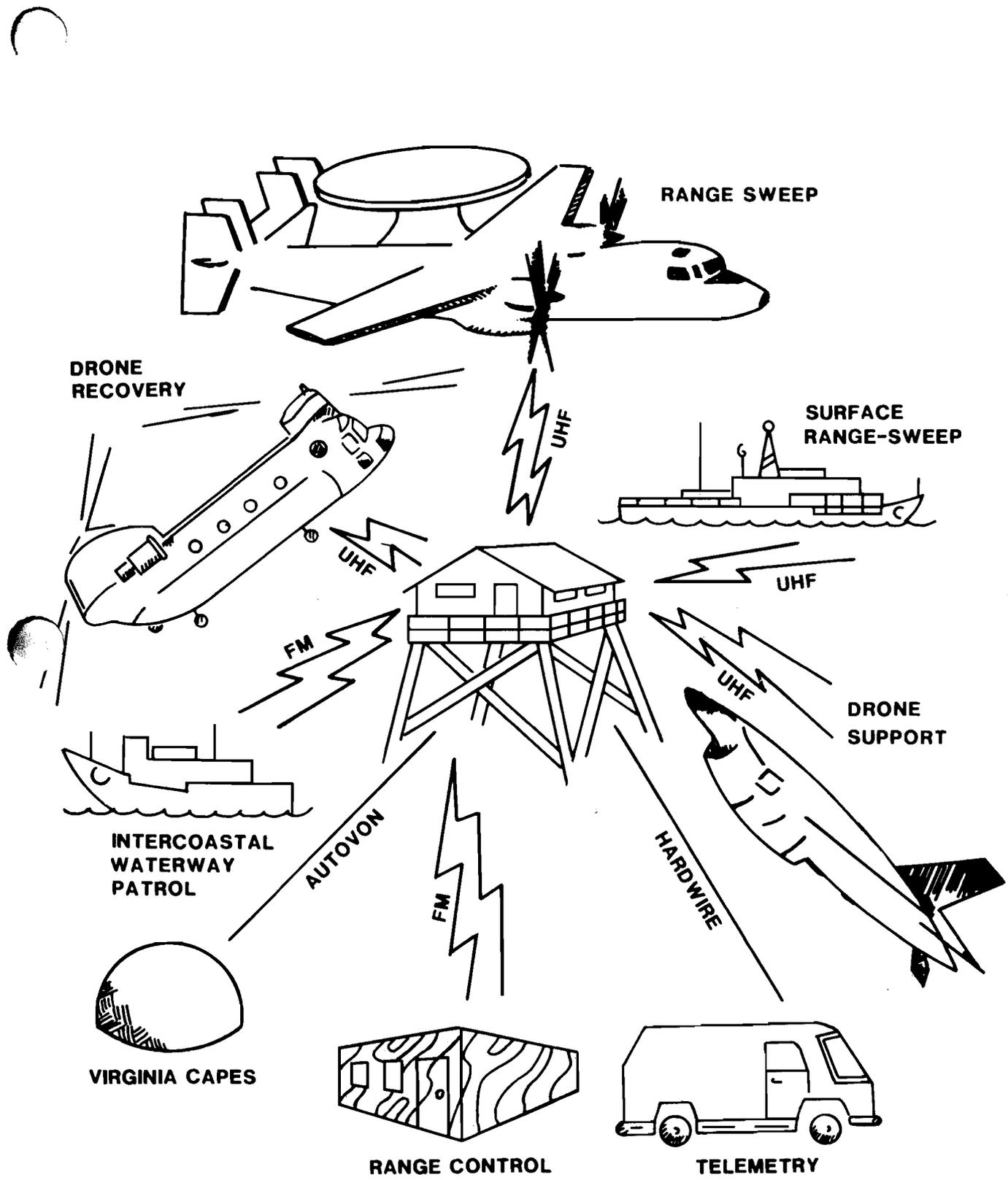
All units were evaluated in several areas including missile assembly, missile transfer and operational readiness evaluations according to the 2-52nd ADA's FIREX standing operating procedures. All batteries performed well, with B Battery achieving the highest score. Three Army batteries successfully fired missiles and the battalion demonstrated its ability to fulfill its wartime mission. The Marines successfully fired six missiles from their two assault fire units.

Despite the different structures of the units, the experiences shared during this week will help both units immensely. The fact that neither battalion had any major equipment problems during the shoot is due greatly to the experience and competence of the units' maintenance support.

The two units were tied together internally and externally to numerous agencies through a variety of communications networks. External communications used leased telephone lines and UHF, VHF and FM radios. Internal communications relied primarily on UHF radio and hard-wired safety and telemetry networks. The communications effectiveness was the crowning touch on this highly successful exercise and was established with assets organic to the 2-52nd ADA and 3rd LAAM.

Maj. Gen. M. P. Sullivan spoke for the Marines. "... deployed together using the AN/TSQ-73 missile minder for range control purposes and fired as a single combat unit. . . . It is without reservation that we would fight alongside such a superb unit."

1st Lt. Charles B. Millar is officer in charge of the battalion operations center, 2nd Battalion, 52nd Air Defense Artillery, Fort Bragg, N.C.



## First to Fire

by SSgt. Leamon Montgomery Jr.

Engine roaring, gonna take a trip,  
C-130 rolling down the strip.  
1st Sgt. has us all take a seat,  
We'll be gone while others sleep.

*'Cause we're first to fire  
Day and night  
First to Fire  
Do it right*

Patriot ripple one and two,  
Hawk standin' by for shoot look shoot.  
Got C-V waiting in the wings,  
And Stinger crewmen doin' their thing.

*'Cause we're first to fire  
Day and night  
First to Fire  
Do it right*

We train hard at NTC,  
Second to none and can't be beat.  
Up every morning by the break of day,  
Air Defense still leadin' the way.

*'Cause we're first to fire  
Day and night  
First to Fire  
Do it right*

Allies are part of the team,  
With Air Force, Navy and Marines.  
If the enemy comes that'll be unwise,  
'Cause ADA will clear the skies.

*'Cause we're first to fire  
Day and night  
First to Fire  
Do it right*

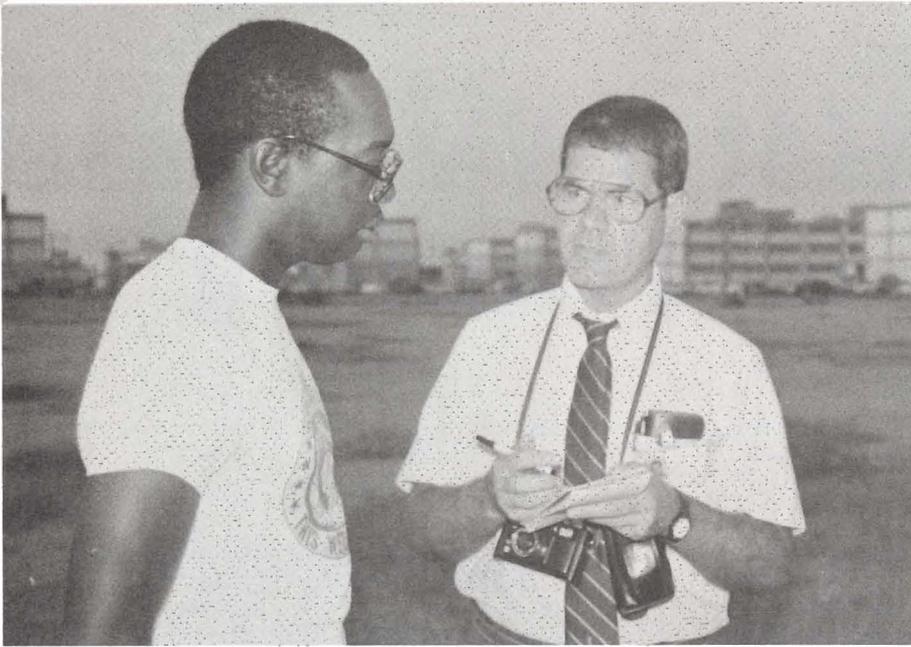
# ADA Jody Winner

by Sgt. John Brenci

As the first light of sun crept over the desert, the 4th Battalion, 56th Air Defense Artillery, led by Maj. Gen. Donald R. Infante, chief of Air Defense Artillery, began a two-mile run. As they ran, they sang the award-winning Jody call, "First to Fire."

Infante, who has made building branch pride a cornerstone of his tour of duty as chief of the branch, came up with the idea of announcing a contest to select an official ADA cadence call. He then scheduled the two-mile run to honor the author of the winning entry, SSgt. Leamon Montgomery Jr., a 4-56th ADA drill sergeant, and to allow him to lead his battalion in the first cadence singing of "First to Fire."

Montgomery's cadence, titled after the branch motto, was selected from among 39 calls published simultaneously in *Air Defense Artillery* and the *Fort Bliss Monitor*. The Air Defense Artillery School will feature the official branch Jody song in an ADA Jody Call booklet scheduled for publication this fall. All the cadences which were submitted along with "First to Fire" in the contest — plus several submitted after the contest deadline — will be included in the new cadence booklet.



An El Paso newspaper reporter interviews SSgt. Leamon Montgomery Jr., author of "First to Fire," the official ADA "Jody" song.

In a letter encouraging ADA commanders to use the official ADA Jody song, Infante noted that "the military and songs have long been compatriot on the battlefield. Songs have always fostered pride and stirred emotions in troops." Montgomery's song, said Infante, "emphasizes new ADA weapon systems, the spirit of fighting and winning and the leadership provided by our non-commissioned officers. The lyrics reflect great pride in our branch and will enhance the morale and esprit de corps of air defenders worldwide."

An awards ceremony which followed the two-mile run drew civilian as well as military reporters. "In building esprit de corps, that's where Staff Sergeant Montgomery comes in," said Infante as cameras flashed. "This Jody call will be heard worldwide as the ADA Jody call." He presented Montgomery with

a certificate of appreciation, an ADA plaque and a Commanding General's Coin. The coin, the general said, was "good for a three-day pass and five free wishes."

The song made Montgomery a media celebrity for a day. The native Texan is a Patriot missile system instructor for basic trainees at the U.S. Army Training Center, Fort Bliss. He has served in Germany and Korea and has spent three previous tours at Fort Bliss. Known to his peers as "The Mouthpiece," Montgomery's love for writing cadences stood him in good stead during the contest.

Asked how he thought he would do in the contest, he responded, "I felt really confident about it because there was so much attention paid to it by my chain of command. I received a lot of support because of the enthusiasm directed towards it."

## Branch Motto Gets Response

In addition to an official cadence call, Air Defense Artillery recently adopted an official response to the official branch motto, "First to Fire," as well as an official branch philosophy.

The official response to "First to Fire" is "On Target," rendered, of course, with a snappy salute.

The official branch philosophy is "Aim High," once the "unofficial" branch motto before being appropriated by the U.S. Air Force for use in its recruiting cam-

paigns. The Air Defense Artillery School listed the following rationale for its selection:

- Aim High is an attitude . . . . A commitment to excellence we jointly share . . . . Another way of saying "Be all you can be."
- Aim high implies a proactive U.S. Army Air Defense Artillery School personality . . . . Encourages setting our sights on lofty goals . . . . And presumes the tenacity to pursue the greatest challenges because they are right for

Air Defense Artillery worldwide.

- Aim High means never being satisfied with just meeting requirements . . . . Rather we strive to do the best possible in all our endeavors.
- Aim High demands we reserve no energy in training Air Defense Artillery warriors, and in creating for them the best possible doctrine, organizations, tactics and weaponry.

# HMMWV Driver Training

by Lt. Col. Bill Kunzman

**T**he U.S. Army began fielding the high-mobility multipurpose wheeled vehicle (HMMWV) in 1985 as a replacement for the M-151 series 1/4-ton vehicle. Our soldiers have driven this extraordinary vehicle thousands of miles.

The HMMWV is highly reliable and safe. Until May 1988 the only deaths associated with the HMMWV resulted from an accident that killed four civilian pedestrians.

The first soldier killed while operating or riding in the HMMWV was an ADA maintenance sergeant. He and a fellow soldier were returning from a Vulcan firing range when they were struck almost head on by a 5-ton truck. The accident occurred in a heavy dust cloud created by the convoy in which the 5-ton truck was traveling.

Soldiers have found as many ways to have accidents in the HMMWV as they ever did with the jeep. An analysis of lessons learned shows that most HMMWV accidents result from excessive speed for road conditions.

There are four major areas where training emphasis will improve the safety of the HMMWV. I have outlined these areas in terms of the training required to prevent another soldier death or additional injuries.

*Seat belts* and rollover protection provide HMMWV occupants with substantial protection during impact or rollover accidents. The combination of the restraint system

and the rollover protection make the HMMWV considerably safer than the jeep. However, the seat belt is not self-tightening. During testing, because the seat belt continuously tightened while traversing rough terrain and made a very tight and uncomfortable fit for the soldier, it was replaced.

Passengers must now pull the seat belt completely out of the retractor and adjust it to fit tightly. If passengers do not adjust the seat belt properly, it will not restrain them during an impact or rollover accident. Front seat passengers have suffered numerous head injuries because they didn't properly tighten their seat belts.

The maintenance sergeant killed in the head-on collision did not properly adjust his seat belt. If his seat belt had been tightly adjusted, he might not have received fatal head injuries. The senior occupant was not injured. The cab did not collapse as much on the passenger side, providing more space; however, his seat belt *was* properly fastened.

A second soldier lost his life in a HMMWV during a rollover. He was thrown from the vehicle and crushed. He was not wearing a seat belt and he was exceeding the speed limit.

Unit training programs must be aggressive and specific about the proper technique for adjusting HMMWV seat belts. This training problem is compounded by the fact that most privately owned vehicles (POVs) have inertial activating

devices which automatically tighten seat belts in the retractor receptacle. Our soldiers understandably assume that the HMMWV's seat belts are similar and, without a training program and constant emphasis, they invariably forget to properly adjust the seat belt. This leads to a false sense of security in the vehicle. Our soldiers will prevent many head injuries if they wear their helmets and properly adjust their seat belts.

A different sense of false security arises when HMMWV occupants properly secure their seat belts. They feel stable when driving across sideslopes because of the vehicle's width. Although the HMMWV can diagonally cross slopes of 40 degrees, drivers easily exceed that limit before realizing the danger. Some units have devised inclinometers for the passenger dashboard, which give an indication when the steepness of the slope approaches a dangerous limit.

Excessive speed causes accidents. The HMMWV is a powerful machine. The 6.2-liter, 150-horsepower diesel engine can generate speeds over 80 mph. This vehicle has an unusually wide and "boxy" design. Consequently, the driver's experience with other vehicles causes him to drive faster than he thinks he is, and he exceeds the safe speed limit for the road conditions.

The power available to the driver and the vehicle's response are greater than with other military vehicles. It's easy to lose control of the vehicle by suddenly accelerating in mud, snow or ice or when reacting to an emergency situation. The HMMWV does not have good handling characteristics on slippery terrain. Drivers sometimes feel invincible because the extremely good suspension system gives them a false sense of stability at high speeds or on slippery terrain.

An extensive practical training course is absolutely essential to provide drivers with the experience necessary to safely drive the HMMWV. Drivers need much more training than familiarization to safely operate the vehicle. The goal of every unit's training program should be mastery of the HMMWV to overcome the distinctive characteristics of speed and handling.

The HMMWV's design makes it difficult for the driver and the front seat passenger to have good all-around visibility. This hazard can lead to tragic results if drivers do not know how to compensate for the lack of visibility. An adequate training program will eliminate this hazard.

The roll bar pillars and the vehicle's width actually reduce the area that the driver and front seat passenger can see during operation. In motor pools, closed-in areas and bivouac areas ground guides

must control the HMMWV's movements. Five soldiers have been run over because ground guides did not control vehicles in sleeping areas or motor pools.

Simply ensuring that ground guides control movement is not enough. Training programs must teach ground guiding during driving training, and standing operating procedures must include specific duties.

The driver and senior occupant should each have specific duties while operating the HMMWV. The two must work together as a crew; for example, the senior occupant should check the driver's restricted vision areas before the driver changes lanes. Knowing the vehicle's "dead space" is critical to safe operation of the HMMWV.

Units must train drivers how and when to use the outside rearview mirrors, which are essential for positive control of the vehicle. These mirrors vibrate until they are loose. Every rest stop during

a convoy should include tightening the mirrors as a regular safety check.

The reduced visibility caused by the width of the vehicle makes it difficult for drivers to judge left and right distances. Vehicle rollovers have occurred because drivers misjudged where their tires were tracking and allowed the left or right side of the HMMWV to go off the edge of a bridge or over an incline.

The HMMWV does not have a parking gear. When drivers park the vehicle or place the transmission in neutral, they must use the parking brake; otherwise, damage to equipment and injury to personnel may occur.

Most POVs with automatic transmissions have a park gear at the top of the gear selector — the same place as the HMMWV's neutral gear. Breaking the habit of leaving a POV's transmission in the park position without applying the parking brake is a problem that unit training programs must address.

Drivers can easily disengage the HMMWV's parking brake by inadvertently hitting the brake lever, and must be alert to this potential danger because they regularly emplace on slopes.

Another problem with the parking brake arises after driving the vehicle through mud. Dried mud will cause the brake to freeze, and it will not release. The powerful engine overpowers this condition and overheats the brake, causing a fire or an inoperable parking brake.

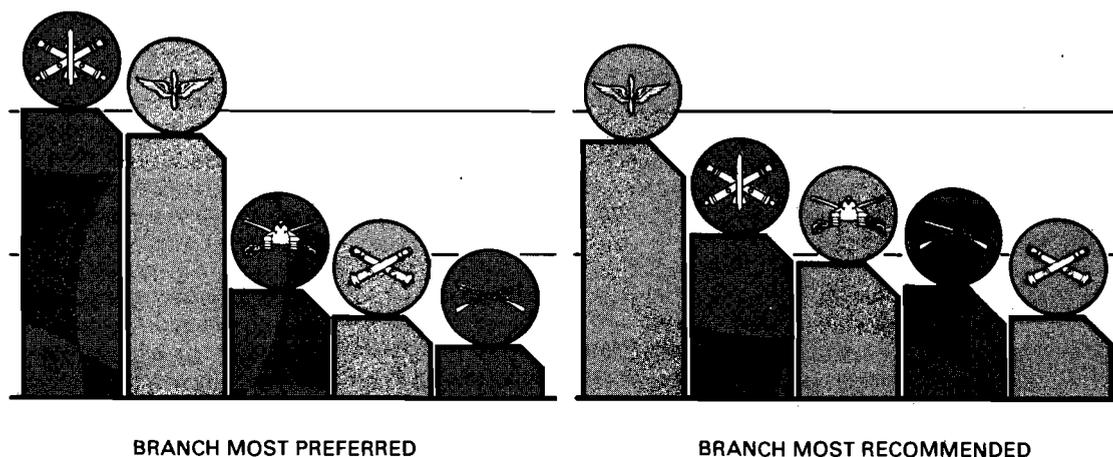
The HMMWV has a good safety record so far, but like any other piece of equipment, soldiers must learn to properly operate it. Proper training is the only positive accident remedy.

Lt. Col. Bill Kunzman is the ADA safety manager at the U.S. Army Safety Center, Fort Rucker, Ala.

## *Proper training is the only positive accident remedy*

# ADA Career News

## Officers Rate ADA



**A** DA leaders care about ADA soldiers — what they think and how they feel. The recently conducted ADA Officer Survey is another example of that caring leadership.

Concerned about why good officers leave Air Defense Artillery and the Army, Maj. Gen. Donald R. Infante, chief of ADA, tasked the Army Research Institute (ARI), Fort Bliss field unit, and the Office, Chief of Air Defense Artillery (OCADA), to survey the officer corps and find the answer to this important question.

OCADA prepared a pilot survey and 19 ADA officers answered it. Based on the officers' responses, OCADA and ARI refined the survey's content and prepared a final survey for distribution to the field.

OCADA and ARI correctly believed that this survey would reveal the true feelings of our officers in the field, point out areas of concern to ADA officers and indicate areas where Air Defense Artillery could improve.

OCADA distributed the final survey to 1,000 ADA officers

worldwide ranging in grades from first lieutenant to colonel.

The survey addressed 15 major areas and covered such issues as the significance of an officer's job to the Army, stress on family life, career opportunities, job variety and commitment to Air Defense Artillery and the Army as a whole. Officers were free to comment about how they feel about themselves and Air Defense Artillery, and did so with an overwhelming return — more than 62 percent of the officers surveyed returned their forms.

Officers like to feel that their jobs are important — important to them, to the organization and to others. ADA officers believe that service in their branch fulfills this need. Forty-eight percent of the officers are very satisfied with the importance of their jobs. In the words of one officer, "I believe in ADA."

One issue raised separately by officers in the field was being responsible for multi-million dollar ADA weapon systems while their combat arms brethren are responsible for less expensive weapons, such as rifles. One officer stated his feelings,

"The responsibilities (system cost) in Air Defense Artillery are far greater than those in other branches and are a direct cause of early 'burnout' in ADA."

This concern with the cost-related stress of our branch is not overwhelming. Although 23 percent of those responding were somewhat dissatisfied in this area, 38 percent reported that they were not concerned.

ADA officers also expressed discontent and concern over career opportunity. This is nothing new — ADA leaders have addressed this issue in the past and are continually working to solve the problem.

Of those responding, 54 percent were somewhat to very dissatisfied with career opportunity, as evidenced by a myriad of comments: "There is no incentive program for ADA officers," "There are too many captains for too few battery commands," "Not all ADA lieutenants get the opportunity to be platoon leaders," and "Officer career management is non-existent."

A legion of officers declared: "ADA eats its young." The officers

surveyed hit this point repeatedly: "Commanders are protected for inefficiency while good junior officers shoulder the blame," "ADA has a penchant for eating its young," "ADA has a reputation for destroying its good officers," "ADA kills its young lieutenants," and "ADA eats its young — it pushes young officers too hard and too fast."

One officer in the survey addressed this problem with a different perspective: "It seems that ADA lieutenants lack loyalty toward ADA. This is due to uncertainty by young officers as to what will happen to them at the three to five year point after commissioning."

What is Air Defense Artillery doing to protect its young?

Senior ADA leaders, including Infante, acknowledge the problem and continually urge ADA commanders to create a training environment in which subordinates have the "freedom to fail." The establishment of such a training environment, in fact, is one of the cornerstones of the "Army Year of Training."

No one expects the "you've got to do everything perfect the first time" mind-set to disappear overnight. U.S. Army Air Defense Artillery School publications, including *Air Defense Artillery*, will execute media campaigns in an attempt to institutionalize a different sort of mind-set, but this is a long-term approach to an old problem.

Meanwhile the Personnel Development Division, OCADA, is closely monitoring the career progression of junior ADA officers in an effort to ensure they keep pace with their contemporaries in other branches.

How is Air Defense Artillery's image as a branch? Some ADA officers believe the branch's image is nonexistent: "ADA is a mystery to our fellow arms! I don't think the Army perceives ADA as a true combat arm; therefore, we don't train as, or project an image of being, true soldiers." "I expected ADA to be like the other combat arms branches. It is not." "ADA is not looked upon as a combat arm by other combat arms branches." "ADA is perceived as not part of the real army."

Other officers believe ADA's image exists, but that it needs a shot in the arm: "ADA as a branch must make a conscious effort to improve its image in the Army structure to be considered an equal with the other combat arms." "Air defenders, to help increase their image in the Army, need to be better all-around soldiers. We need to do it better to decrease the image the Army has of us as being separate from them." "Educating other branch schools to the need and mission of air defense is crucial in achieving respect for our branch as a combat arm."

A few forthright officers believe ADA's image is alive and well: "ADA's biggest problem is the prevalent attitude that we have to 'prove' something to the other combat arms branches to 'earn our wings.' It has created a never-ending inferiority complex in the branch. I say screw what others think. The Engineers don't worry about it, and they're highly regarded." "The image of ADA has changed dramatically in the last two years for the better. I think Maj. Gen. Infante's initiatives to link us closer to the rest of the combat arms is right on target."

This last comment is probably best supported by Infante in his "State of ADA" speech at the 1988 ADA Commanders Conference. Infante focused on where ADA has been, where ADA is today and where ADA is going in the future.

Infante talked about branch pride. "In 1985, we were feeling sorry for ourselves. We lost the York battle. We didn't know where we were going."

Infante believes branch pride has returned through an understanding of ADA's role in AirLand Battle doctrine, professional education reforms and morale builders such as the ADA March and growing membership in the ADA Association.

In 1985, Infante said, senior combined arms leaders had serious doubts as to the role of ADA in the combined arms team. Even today, Infante added, some combined arms leaders still have a two-dimensional focus. Infante stressed

that ADA must make sure that the Army understands we need a three-dimensional battlefield. He presented several ways to do that: possess a clear mission with a strong three-dimensional focus and make sure that all ADA officers, especially senior officers, are fully aware of AirLand Battle doctrine.

USAADASCH likewise intends to present a more positive image of Air Defense Artillery by employing a mix of media publications. For example, the school plans to produce a series of "ADA in Action" illustrations accompanied by historical articles to publicize the exploits of air defense artillerymen and their predecessors in wars ranging from the American Revolution to Grenada. The articles and illustrations will appear in editions of *Air Defense Artillery* and will be eventually compiled into one publication for distribution, not only to ADA units, but also to the combined arms service schools.

The ultimate responsibility for "selling" Air Defense Artillery, however, will always rest on the shoulders of individual air defense artillerymen.

One section of the survey that most respondents agreed upon asked for adjectives describing Air Defense Artillery. The compiled results showed that these are the three adjectives ADA officers use most often to describe their branch: challenging, demanding and stressful.

When ADA officers voted on which branch they would prefer, Air Defense Artillery came out the undisputed leader. Overall, ADA officers believe their branch is a good branch to select.

The concern with how ADA officers think and feel will not end with this survey.

OCADA and ARI will continue to study the results of the survey to determine if the problem areas identified are peculiar to the branch or Armywide and will develop a structured exit interview to be used with ADA officers departing the Army.

Through these efforts, ADA leaders hope to alleviate officers' concerns and develop Air Defense Artillery as the "branch to select."

# FIRST ★ TO ★ FIRE NEWS

## Scanning



Brig. Gen. Jay M. Garner

### New Assistant Commandant

Brig. Gen. Jay M. Garner is the new Deputy Commanding General of the U.S. Army Air Defense Artillery Center and School. Garner replaces Brig. Gen. Donald M. Lionetti, who left Fort Bliss July 8 for an assignment with Space Command, Peterson Air Force Base, Colo.

Garner, a 50-year-old Florida native, previously served as Director of Requirements, Office of the Deputy Chief of Staff for Operations and Plans, United States Army, Washington, D.C.

His awards and decorations include the Legion of Merit (two oak leaf clusters), Bronze Star Medal, Meritorious Service Medal (oak leaf cluster), Air Medal, Joint Service Commendation Medal, Army Commendation Medal, Combat Infantryman Badge, Parachutist Badge and the Army General Staff Identification Badge.

### Sensor Milestone

The U.S. Army Strategic Defense Command (USASDC) announced the successful completion and safe delivery of the most complex, long-wavelength infrared (LWIR) sensor ever built.

This multi-million dollar sensor is a critical component in USASDC's Airborne Optical Adjunct (AOA) Project, which is designed to validate the use of LWIR technology in detecting, tracking and discriminating ballistic missile targets. Such components would alert defenses in the event an ICBM attack slips through other defense systems. AOA is managed by USASDC for the Strategic Defense Initiative Organization (SDIO).

Built by Hughes Aircraft Company in El Segundo, Calif., under subcontract to Boeing Aerospace, the AOA prime contractor, the sensor subsystem consists of an optical telescope with an infrared focal plane assembly, analog and digital signal processors and a pointing and stabilization system.

The one-of-a-kind AOA sensor was transported to a Boeing Aerospace facility near Seattle, Wash. There it will undergo further testing and be integrated with other AOA flight and data processing equipment before being installed in a specially-designed cupola on top of a Boeing 767 aircraft. The integrated AOA sensor is expected to be ready for flight tests next year.

### Hitler's Eagle's Nest

The Discovery Channel will present a four-part series on Adolf Hitler's "Eagle's Nest." Episodes will air Mondays at 11:00 AM (ET), Tuesdays at 11:00 PM (ET) and Fridays at 8:00 PM (ET).

Nestled in the Bavarian Alps at Berchtesgaden is the remains of Hitler's luxurious headquarters, the Eagle's Nest. This Alpine headquarters was the inner sanctum of Hitler's personal and political life and his favorite place to receive and impress kings and world leaders.

It was from this heavily guarded stronghold that Hitler moved his armed forces, like pieces on a giant strategic chessboard, to complete his plans for world domination.

Footage of Hitler with his elite and mighty inner circle and his jealously guarded mistress, Eva Braun, add insight about this ruthless tyrant. Interviews with some of Hitler's closest friends and confidants recount conversations with the Nazi party's highest ranking officials. Nazi propaganda films show Hitler's core of fanatics from the beginning of the Third Reich movement, through the height of its power, to its ultimate defeat.

# FIRST ★ TO ★ FIRE NEWS

The four three-hour specials will be aired as follows: Part I, October 3, 4 and 7; Part II, October 10, 11 and 14; Part III, October 17, 18 and 21; and Part IV, October 24, 25 and 28.

## Hot Skies Forecast over North Sea

The world's first privately owned air-combat training range will be built between England and the Netherlands.

British Aerospace Company (BAe) has signed a \$50-million contract with Cubic Defense Systems of San Diego, Calif., to install six unmanned tracking stations on platforms in the North Sea and an analysis and display system at RAF Marham in the United Kingdom. Five other bases in the United Kingdom and the Netherlands will also be electronically linked to the range. BAe will sell time over the 30-square-mile training site to British, Dutch and American air forces.

Instrumented pods on all aircraft over the training site will transmit engagement and weapons data to the tracking stations. The data will go from the stations via underwater fiber-optic cables to Marham. At RAF Marham the data will be analyzed and fed into a debriefing system that displays each engagement on dual screens in a theater. Observers will be able to watch the action in 'real time'; the action also will be recorded on tape — in digital form — for playback to the participants.

The North Sea range will be similar to the USAF "Red Flag" training area at Nellis AFB, Nev., and the U.S. Naval Strike Warfare Range at Fallon, Calif.

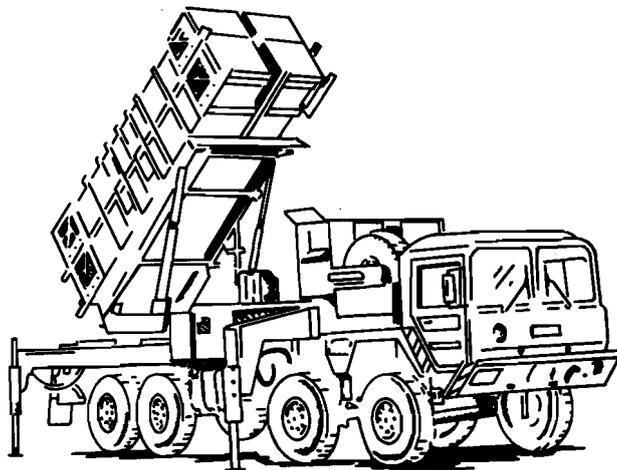
A range off Sardinia, Italy, is the only other similar facility in the NATO area. That system can handle only eight aircraft and 12 weapons at a time. The proposed facility will record engagements involving up to 36 aircraft and 50 weapons.

The training area is scheduled for completion in 1990.

## TRADOC TEXCOM Formed

Effective Oct. 1, 1988, the U.S. Army Air Defense Artillery Board will be transferred from the U.S. Army Air Defense Center and Fort Bliss to the TRADOC Test and Experimentation Command (TEXCOM). The assignment of USARADABD and the seven other test boards will constitute the creation of TEXCOM as a major subordinate command of TRADOC.

The USARADABD will continue to directly support the Air Defense Artillery School. Any test assignments made by TEXCOM headquarters that conflict with ADA School requirements will be negotiated.



## German Patriot

A recent test at White Sands Missile Range, N.M., demonstrated the compatibility of West German equipment with the U.S. Patriot air defense system.

German Patriot fire units equipped with German trucks, power generators and communications equipment fired a Patriot missile which intercepted a QM-107 drone programmed to fly a simulated tactical missile flight path.

This was the first official test to determine how well the equipment interfaced and it functioned perfectly, Patriot project office officials said.

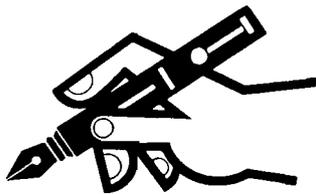
The success of this test is the culmination of one of the biggest agreements ever signed by the Army Missile Command, involving nearly \$3 billion in equipment and logistical support. Signed in 1984, the 10-year pact provides an elaborate network of Patriot and Roland missiles to protect and defend U.S. and German military facilities.

One unique aspect is that West German soldiers will operate some Patriot and Roland battalions protecting American facilities.

Under part of the agreement the United States is providing 12 tactical fire units, less the German government-furnished equipment which was tested (trucks, communications and power generators, etc.).

Germans will man the 12 fire units for the United States as part of our NATO commitment, Patriot officials said. The agreement and interoperable equipment draw the allies closer together and greatly strengthen NATO air defense.

# FIRST ★ TO ★ FIRE NEWS



## Writers Wanted

All students attending officer advanced courses and the Sergeants Major Academy during calendar year 1988 are eligible for the 1988 Military History Writing Contest.

The Center of Military History will accept unpublished manuscripts of 2,000 to 4,000 words (approximately seven to 14 pages), typed and double-spaced. Subjects should deal with the historical perspective (case studies, changes over time, etc.) of one of the aspects of Training — the Army's theme for 1988 — shown below.

Unit Training  
Staff Training  
Logistic Training  
Training the Trainer  
Leadership Training  
Initial Entry Training  
Intelligence Training  
The NCO and Training  
Civil War Training or Other Period Training  
Effects of Training on Warfighting/Combat  
Training Exercises/Maneuvers/Simulations

Documentation is required but footnotes or end notes do not count as length.

A panel of three military historians will judge each entry based on the following criteria:

- Originality.
- Historical accuracy and documentation.
- Style and rhetoric.
- Usefulness of article to today's Army leader.

Entrants should contact their command's historian for assistance in writing their essays to acceptable historical standards and methodology.

Send two copies of the manuscript along with any accompanying photographs, maps or other graphics to: Center of Military History, ATTN: History Writing Contest, 20 Massachusetts Avenue, NW, Washington, DC 20314-0200. POC is Billy Arthur (CMH), AV 285-1279 or commercial (202) 272-1278/1279.

All entries must be postmarked by midnight Dec. 31, 1988. Entries must include the Sergeants Major Academy or advanced course title, course number and dates, and forwarding address upon completion of the course. Five monetary prizes will be awarded, with the first prize beginning at \$500.

## Air Defenders Swap

Now that the U.S. Army has selected the air defense anti-tank system (ADATS) as its line-of-sight forward (heavy) (LOS-F-H) component for the forward area air defense (FAAD) system, a common weapon system will exist between the United States and Canada. Both the U.S. Army Air Defense Artillery School (USAADASCH) at Fort Bliss, Texas, and the Canadian Air Defence School at Chatham, New Brunswick, have forwarded proposals to their army departments to exchange instructors. One officer instructor from the USAADASCH Combined Arms and Tactics Department (CATD) and one senior enlisted man from the Short-Range Air Defense (SHORAD) Department will instruct ADATS students at Chatham. Canada will reciprocate by sending an officer and a senior NCO to Fort Bliss.

The proposal will establish instructors at both ADA schools for successive two-year tours of duty.

The Canadian NCO (E-7 or E-8 equivalent) will instruct ADATS in the USAADASCH SHORAD Department while his exchange U.S. Army E-7 will instruct in the ADATS section at the Canadian Air Defence School.

The Canadian officer (a captain) will instruct air defense with CATD USAADASCH. His exchange officer, also a captain, will instruct air defense in the Tactics and Doctrine Section at the Canadian Air Defence School.

## ADA Association

The Air Defense Artillery Association requests members to send updated active duty addresses to: U.S. Army Air Defense Artillery Association, P.O. Box 6101, Fort Bliss, TX 79906, or telephone commercial (915) 564-4331. The association is mailing an Air Defense Artillery Association Newsletter to all members.

"We have come a long way since 1985," said Col. V. J. Tedesco Jr., president of the Air Defense Artillery Association. "In the past year alone our membership has almost doubled, from 1,485 to 2,865. The ADA gift shop located in the ADA Museum is doing extremely well and the *Air Defense Artillery Yearbook* published earlier this year was a great success. Pride in Air Defense Artillery is on the rise."

# FIRST ★ TO ★ FIRE NEWS

## Secretary of Defense

Defense Secretary Frank C. Carlucci became the first visual aircraft recognition (VAR) expert on at least one threat aircraft — the Soviet bomber Tupolev, known in the west as Blackjack. Carlucci saw the Blackjack firsthand when he climbed up through the bomb bay into the cockpit on his 15-minute tour. The Blackjack is the world's heaviest and largest strategic bomber. The white needle-nosed jet, which looks very much like an overgrown Concorde, is roughly equivalent in some performance characteristics to the American B-1 bomber.

The defense secretary also viewed MiG-29s, an Il-78 tanker and the Mi-26, the world's largest helicopter, before watching the Taman Motorized Rifle Division in a training exercise.

Carlucci was in the Soviet Union on a four-day visit with Soviet Defense Minister Dmitri Yazov, laying the groundwork for reciprocal military attaché visits.

## What's New

Harry Diamond Laboratories showed five technological prototypes at a recent technology and firepower demonstration at the 7th Army Training Center, Grafenwoehr, West Germany.

The prototypes were demonstrated before Gen. Glenn K. Otis, commander, U.S. Army Europe, and his staff. Others attending included Richard Vitali, U.S. Army Laboratory Command (LABCOM) technical director, and Lt. Col. Robert Mathewson, special projects officer for HDL.

Mathewson said the prototypes were developed through the sponsorship of the Army Materiel Command Field Assistance for Science and Technology program (AMC-FAST). The following prototypes were included in the demonstration:

- *M-16 muzzle brake, compensator.* The device, fitted to the muzzle of an M-16 rifle, improves accuracy by keeping the weapon stable during firing. It dampens recoil and stops the barrel from climbing during automatic firing. The muzzle brake is currently being refined to completely eliminate recoil, Mathewson said.

- *Fluidic navigation system.* This system is designed to help vehicle operators find their way in unfamiliar territory or when operating at night. Used in conjunction with a map, the system employs a fluidic angular rate sensor, a transmission pulse sensor and a computer to provide the operator with information readouts such as distance traveled, map grid coordinates and heading references. The system uses a

commercially-produced sensor but the computer and other components were built at HDL, according to Mathewson. It is vehicle independent, non-magnetic and has no moving parts.

- *Individual soldier operated personnel acoustic detection system (ISOPADS).* Intended for use by soldiers on patrol and involved in perimeter defense activities, the ISOPADS can extend a soldier's hearing range up to 300 meters for operating equipment or 150 meters for normal conversation depending on terrain and atmospheric conditions.

The ISOPADS uses no electronic devices; therefore, it requires no batteries and does not emit an electronic signal that might be detected, Mathewson pointed out. Rather it works by pumping air into the device to amplify sound using a fluidic amplifier more sensitive than an electronic microphone. The system can be hand-held, is highly directive and can be attached to a tape recorder to gather intelligence. There are no moving parts to wear out.

- *.50-caliber rifle.* Designed to have less recoil than a 12-gauge shotgun, the rifle can be fired from the shoulder by one man. According to Mathewson, the rifle is the first .50-caliber weapon that can be fired from the shoulder using modern day ammunition. "It carries the punch of a 20 to 25mm cannon," he said.

- *Auxiliary power unit (APU) for the M-1 tank.* Two types of APUs, one fueled by diesel and one by gasoline, were demonstrated, according to Dr. Carl Campagnuolo, supervisory physicist at HDL. They provide electrical power to operate on-board systems when the tank's engine is not running. This conserves the tank's batteries to provide starting power.

The AMC-FAST program, managed by the U.S. Army LABCOM, is intended to provide rapid solutions to problems through research and development conducted at AMC laboratories and research, development and engineering centers. The program serves as a link between the scientist and the soldier in the field.

"All of these prototypes resulted from programs designed to support the soldier in the field," Mathewson said. "They show that LABCOM is making a major contribution to the soldier."

For example, he said the .50-caliber rifle, which he invented, can be used in a large number of combat scenarios, such as against non-armored and light armored vehicles and aircraft.

He termed the weapon, developed jointly with the Materials Technology Laboratory, Watertown, Mass., a "breakthrough in small arms technology" made possible by the use of lightweight space-age materials.



## C-131 Simulates FOG-M Flight

**A** white and blue, twin engine airplane flying low over Redstone Arsenal, Ala., will be a familiar sight in coming months.

With target seekers mounted on its belly, the C-131 will crisscross the arsenal at the altitude and speed of a FOG-M searching for targets on the ground.

"The aircraft will simulate a FOG-M in flight," explained Ron Wicks, the test manager. "It will fly about 250 meters (825 feet) off the deck and at the approximate missile speed (200 knots)."

The test will evaluate the relative effectiveness of combat versions of the missile fitted with television seekers (these have been used in all FOG-M testing to date) and infrared seekers. Present plans are to field the system with a mix of both.

Two of each type seeker will be mounted underneath and toward the front of the aircraft. They will be evaluated for their ability to find various targets such as tanks, armored vehicles and stationary and hovering helicopters under simulated battlefield conditions that will include smoke screens.

Practice runs with the C-131 will start soon and continue until mid-October, when the actual seeker test consisting of 216 flights will begin. "There will be some night flights because the missile has a day and night operational requirement," Wicks noted. When these captive flight tests conclude, a second set will be conducted at White Sands Missile Range, N.M.

Georgia Tech owns and will fly the aircraft. The Atlanta college is

working for Computer Sciences Corp., which is contracted to the U.S. Army Missile Command (MICOM) to support the seeker test. The C-131 has been instrumented for the test by MICOM's Research, Development and Engineering (RD&E) Center.

A FOG-M firing unit will participate in the test. A soldier manning it from a vantage point on Madkin Mountain will be able to see the same images as the seekers via a radio link to the aircraft.

FOG-M, which takes its name from fiber-optic guided missile, is the non-line-of-sight candidate weapon for the forward area air defense system. The missile is being developed primarily for air defense, but also has anti-tank capabilities.

Conceived in the RD&E Center, FOG-M in flight pays out a glass fiber that transmits instant, jam-proof pictures to a ground station where a gunner, seeing exactly what the seeker in the missile sees from the air, simply locks on to the target with a hand controller and presses a button which makes the missile fly automatically to the aim point.

With FOG-M, a soldier can fight without exposing himself to hostile fire; for example, firing the missile over a hill to find and kill a hidden tank or hovering helicopter. The Army has no other weapon with FOG-M's unique capability to attack a target not in the gunner's line of sight. FOG-M is the product of a major technological thrust at MICOM to develop weapons that not only deliver

firepower to defeat an enemy but also keep U.S. soldiers out of harm's way.

The test, known as an IOE (initial operational evaluation), is being conducted by the Army Materiel Test and Evaluation Directorate of White Sands Missile Range and independently evaluated by the Army's Operational Test and Evaluation Agency, Falls Church, Va.

As a separate part of the test eight FOG-M rounds will be fired at Englin Air Force Base for practice followed by 16 rounds at White Sands Missile Range for scoring purposes.

A contract moving FOG-M into full-scale development, from which production hardware will result, will be let soon by the Non-Line-of-Sight Project Management Office under Col. Oleh Korpoy. Dr. Paul Jacobs is the FOG-M technical manager at the RD&E Center.

Wicks points out that IOE testing ordinarily isn't done until completion of the development cycle, but is possible in this case because the RD&E Center on its own has brought FOG-M so far along. This means the missile will go into production with the unique benefit of having undergone actual field evaluation by the soldiers who would use it in battle.

In testing already accomplished by the RD&E Center, FOG-M has hit tanks and helicopters on Redstone Arsenal ranges at distances of about 10 kilometers (6 miles).

# Freedom to Maneuver



Field Marshal Erwin Rommel

The rules of maneuver warfare, on which our AirLand Battle doctrine is based, are valid only as long as the balance of air power over the AirLand battlefield — the third dimension — is in our favor.

During World War II, Field Marshal Erwin Rommel, the "Desert Fox," emerged from North Africa and the wreckage of the Afrika Corps with a keen appreciation of the "third dimension" of warfare.

"Non-stop and very heavy air attacks by the RAF, whose command of the air had been virtually complete, had pinned my army to the ground and rendered any smooth deployment or any advance by time schedule completely impossible," he said.

Assigned to protect Normandy beaches against the long anticipated Allied invasion of Europe, Rommel contended the balance of air power which existed during the summer of 1944 made the "old rules" of maneuver warfare invalid.

"Anyone who has to fight, even with the most modern weapons, against an enemy in complete command of the air, fights like a savage against modern European armies, under the same handicaps and with the same chances of success." — **Field Marshal Erwin Rommel**

Most German generals, however, had never experienced the paralyzing effect of massed Allied air attacks. They hoped to stage a reenactment of the glorious blitzkrieg campaigns of 1939. Field Marshal Rundstedt, Rommel's superior, proposed to first contain the invasion forces inside the beachhead, and then maneuver reserve panzer divisions to crush them.

Rommel thought the battle must be won at the water's edge or not at all. Warning that the panzers were stationed too far from the beaches, he unsuccessfully petitioned Rundstedt to move the reserves forward before the battle began.

D-Day, the 6th of June, proved Rommel right.

In an interview granted after the war, Rundstedt blamed his lack of success not on the preponderance of men and materiel the Allies poured into Normandy, but on his inability to maneuver his forces against the beachhead.

"The Allied air forces paralyzed all movement by day and made it very difficult even at night. They had smashed the bridges over the Loire

as well as over the Seine, shutting off the whole area. These factors greatly delayed the concentration of reserves. They took three or four times longer to reach the front than we had reckoned," he said.



Field Marshal  
Gerd von Rundstedt

*Air Defense Artillery ensures our AirLand battle commanders freedom to maneuver.*

# The Third Dimension

"Anyone who has to fight, even with the most modern weapons, against an enemy in complete command of the air, fights like a savage against modern European armies, under the same handicaps and with the same chances of success." — Field Marshal Erwin Rommel

