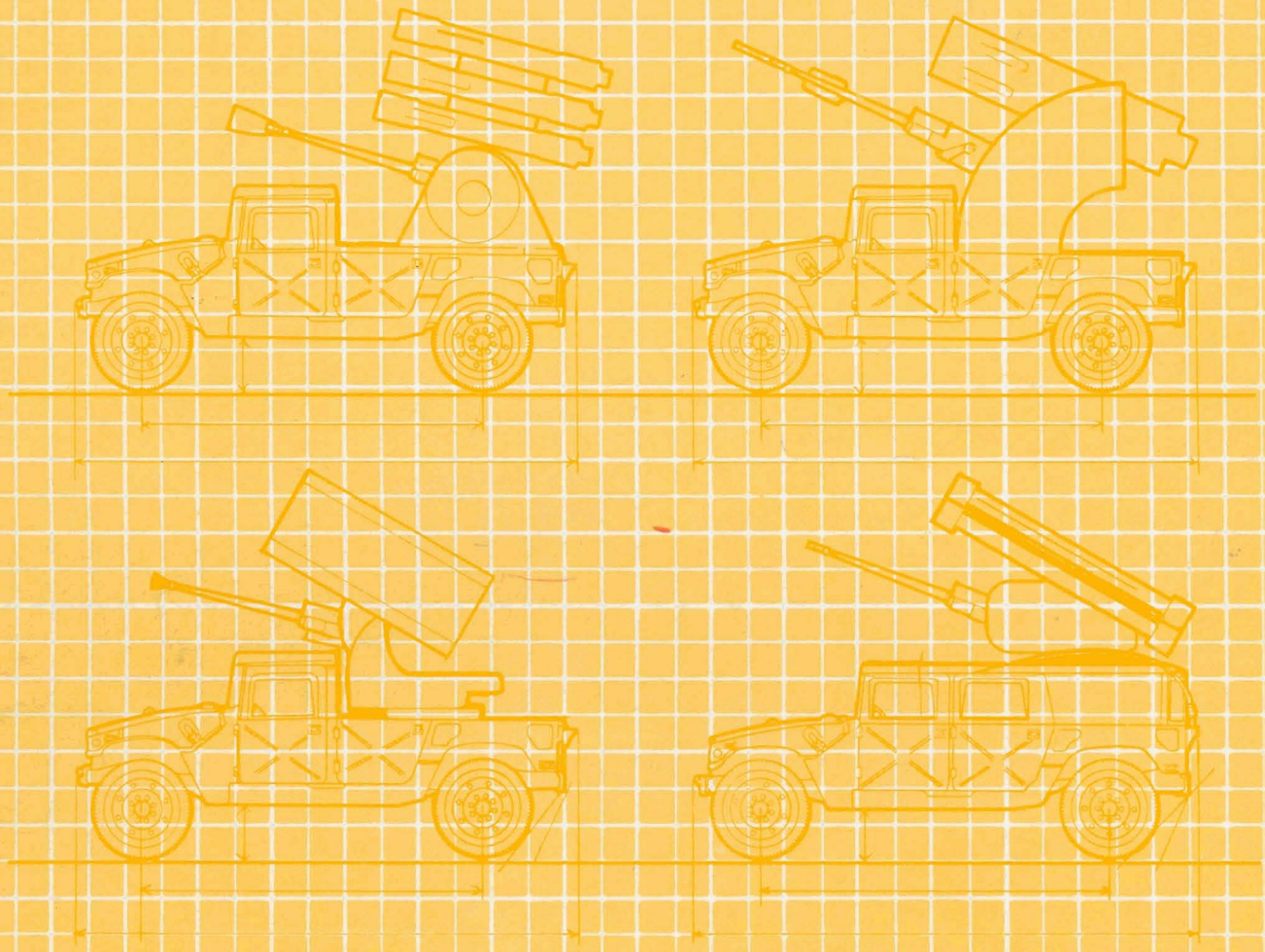
AIR DEFENSE ARTILLERY

SUMMER 1986

Pedestal Mounted Stinger

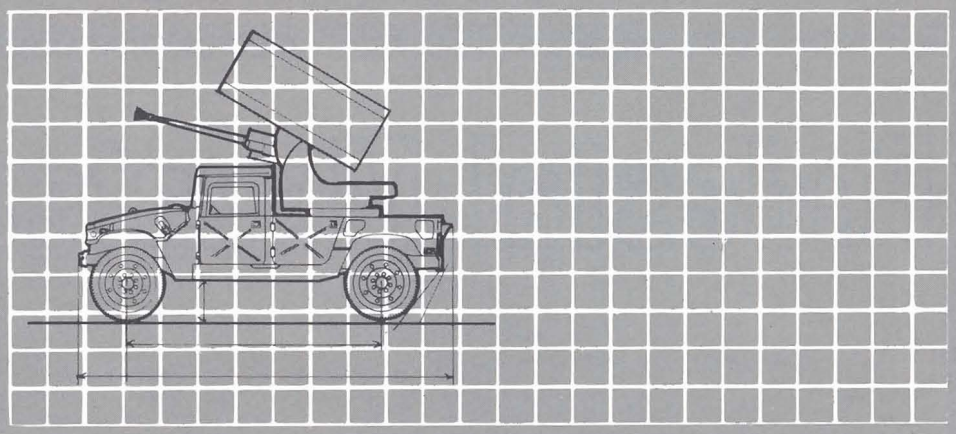


Forward Area Air Defense prototypes outperform manportable Stinger . . . Page 15

MAGAZINE

AIR DEFENSE ARTILLERY

The Pedestal-mounted Stinger (PMS) drawings in the original cover design by *Air Defense Artillery* magazine art director R. Keith Richardson are not meant to represent actual PMS prototypes. Destined to become forward area air defense's line-of-sight rear system, PMS is constantly evolving, and more prototypes are still to be tested. On Page 15, Capt, H. Keith Wooster Jr. compares the performance of PMS prototypes to the performance of manportable Stinger.



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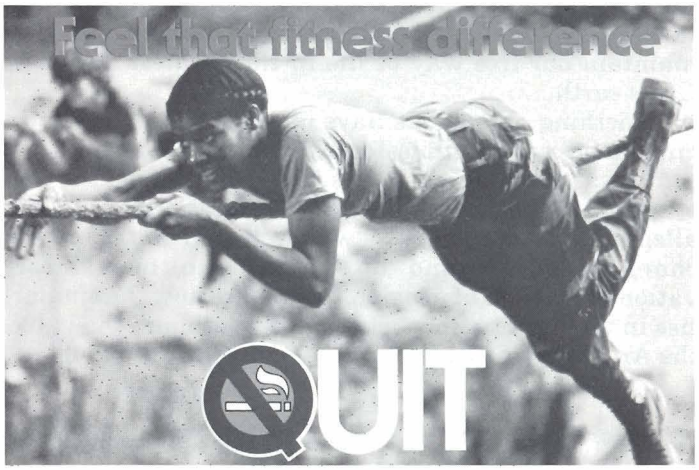

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F I R S T T O F I R E

INTERCEPT POINT

The Army's Year of Values

Maj. Gen. Donald R. Infante

Values — the Army's theme for 1986. A simple two-word definition of values is "what's important." One thing we all have in common that I would hope is important to all of us is that we are soldiers.

Being a soldier is something special. Soldiering is not meant for everyone, but only a select few. Soldiering is not a job, but a way of life. Soldiering is one of the few occupations that could require you to give your life for your country. The preferred option is that the other fellow gives his life for his country, which could mean that the one who takes it is you. But, you would be doing it for a reason — to maintain our free way of life in the greatest nation on God's earth.

Something all soldiers have in common is their initial enlistment and commissioning oath. Let's recall a few phrases: "solemnly swear to support and defend the Constitution of the United States;" to "bear true faith and allegiance to the same;" "will well and faithfully discharge my duties;" and "do so without any mental reservation or purpose of evasion." Compare now the similarities in the figure below between this oath and the values the Army has stated in this, the Army year of values.

OATH	VALUE
Support and Defend ★★★★★★★	Loyalty to Army and Country
Faith and Allegiance ★★★★★★	Loyalty to Unit
Faithfully Discharge Duties ★	Personal Responsibility
Without Reservation or Evasion ★★★★★★★★★★★★★★★★	Selfless Service

The point is something we already knew — underlying our oath is an ethic, a set of values, which makes a soldier something special. What our Army has done in the year of values is remind us of values we already possessed. Values that are important to each of us as soldiers.

With these values go a set of personal qualities which I recently heard Army Chief of Staff General John A. Wickham refer to as the four "C's" and an "I." They are commitment, competence, candor, courage and integrity. These personal qualities form the building blocks of our values. Let's expand briefly on these personal qualities.

Commitment: Means never passing a wrong no matter how tired you are or what the situation. Means having for your soldiers a good training and maintaining program that ensures the other SOB dies for his country.

Competency: Means knowing your soldiers and what they can and can't do. Means knowing your equipment and what it can and can't do. Means knowing how to integrate them both on a dangerous battlefield to produce the maximum destruction of the enemy with minimum loss of our soldiers' lives and equipment.

Candor: This quality is two little baby steps away from bluntness. Candor means not destroying a soldier's self-esteem but in private telling both the good and bad — hopefully more good than bad. Means in private suggesting to your boss a better way to do things and, if you can't convince him your way is best, keeping your mouth shut and supporting the boss' way. While candor is the first cousin to honesty, it must be practiced with care.

Courage: Two types, moral and physical. Moral courage is the true test of inner self. No one is perfect and no one is ever totally pleased with one's self. But moral courage is knowing your faults and doing something about them. Physical courage is doing the right thing when scared as hell. However, one of my heroes, Command Sergeant Major Gary Lee Littrell (U.S. Army, retired) states it a little differently. Littrell, who is quoted at length later in this article, says that courage comes from being so well trained and having so much confidence in your abilities because you're so well trained that you can deal with any situation under any conditions. Littrell's training and concomitant courage made him one of the surviving members of a select fraternity made up of one in every 32,000 soldiers who have worn the uniform since 1903 — the brotherhood of those who wear the Congressional Medal of Honor.

Integrity: Means being honest with yourself and others. One of the best things about the Army is we believe our soldiers are honest and assume soldiers tell the truth. When dealing in a business where other's lives are at stake, we can have it no other way.

From these personal qualities then flow the values that we related earlier to our enlistment and commissioning oath — the values that we hold important as soldiers:

Personal Responsibility: Accepting responsibility for our actions and those who we lead. Doing what's best for the unit and soldiers even when it's not necessarily what the boss wants.

Selfless Service: Remembering the two reasons for rank: (1) to help get the job done and (2) to serve others. Placing the good of your soldiers and their families ahead of personal good.

Loyalty to Unit: Best told by the example of Delta Battery, 2nd Battalion, 62nd ADA, while at Crete in 1985 for annual service practice. Every other unit in the battalion had fired honor battery. The pressure was on but the system was not cooperating. From the first day, a struggle. Finally, on Wednesday, pushed the fire button twice. Nothing! Two misfires. Evaluation showed not the unit's fault — they could quit and have their honor battery and the highest Hawk ASP score for a U.S. unit. Unit officers and NCOs huddled. Short huddle — answer obvious; they came to fire. And fire they did. Two good missiles. The unit still achieved highest Hawk ASP score for U.S. unit — but up front, with dignity and pride.

Loyalty to Army and Country: Let me quote a powerful talk by my favorite hero, Gary Lee Littrell, in an address he helped me make to the non-commissioned officers of Fort Bliss, Texas, on values:

"Values," he said. "I didn't have a mother. I didn't have a father. I didn't have anyone to teach me values. I found my first family at the age of fifteen when I joined the Army, and then I was separated from my family for two years. I rejoined my family on my seventeenth birthday when I was allowed to come back into the Army.

"Loyalty. Loyalty to unit and loyalty to country are very important to me. My first loyalty to a unit was when I was in basic training. I had loyalty to the unit because we were Bravo Company. We had our guidon. Our drill sergeants instilled in us that 'We're Bravo! We're the best!' True loyalty to a unit did not actually start until I joined my first regular unit. I think loyalty to a unit is not loyalty to a number. Headquarters, 503rd Combat Team, no longer exists. But the people of that unit still exist. My loyalty to the people of that unit still exists.

"That's loyalty — the inbred loyalty to a unit. I knew at the time the responsibility men take into combat. Not only the possibility, but the probability of dying. My loyalty to a unit was with my friends, and I hoped no one would have to die, because I knew I would never let my fellow soldiers or, therefore, my unit down.

"So loyalty to a unit takes deeper and deeper meaning. Loyalty to a unit took on the deepest meaning when I was in combat for the first time. That loyalty was not to the number 23 — the 23rd Ranger Battalion. That loyalty was to 473 because there were 473 people in our battalion. That loyalty number decreased rapidly over the next eight days from 473 to 41. The loyalty then was that no more men would have to die because I would do my job, or I would die in the process. That's loyalty to a unit. People make units. Units do not make people. Unit designations go away; people grow and people continue to develop.

"Loyalty to our country. The first loyalty to our country is much different. Sergeant Major of the Army Van Autrey taught me that — I didn't have values taught to me by family or friends. I don't remember the exact date, but I remember the occasion when I first became aware of loyalty to my country. It was the first time I turned to a flag — our flag of the United States of America. I placed my little hand over my heart and I recited words — words I didn't quite understand then: 'I pledge allegiance to the flag of the United States of America and to the republic for which it stands: one nation under God, indivisible with liberty and justice for all.' That stuck with me. Why? I didn't realize why. But I loved that flag, and I loved my country, so I enlisted in the Army. When I see the lifestyle and the lack of freedom some countries have, I realize what they are missing. They are missing what we have.

"I remember landing at Travis Air Force Base when I came back from Vietnam. Coming down the stairwell of the aircraft, I put my feet down on the ground of this great nation. I got down in the front-leaning rest position and gave the ground a big kiss. I was so glad to be home. So happy to be home because I knew we had so much, much more than they had in other countries.

"Loyalty to our country started taking on meaning, real meaning for me, when I saw my fellow soldiers dying. And when you have a 17- or 18-year old kid lay in your arms and take his last breath and take it with pride ('I died for a reason; I died so my fellow countrymen could have freedom; that my family could grow up and have freedom.') then loyalty to your country takes on a very deep, deep meaning — an entirely new dimension, because you are in touch with reality.

"I think my loyalty to my country took on its deepest meaning when I became a father. Now I had a second family.

"I missed what would have been my first family. I joined my first family, which was the Army, and from that I made my second family: my wife and two boys. When I look in the eyes of that big-brown-eyed little boy, I said, 'Now Lord, I know why.' My child will grow up in the land of the free. He'll have freedom of religion without worrying about which side of town he lives on. He'll have freedom to go to the voting booth and elect our leaders without having to worry about being shot in the process.

"So, loyalty to our country and religious freedom takes on deep, deep meaning. We get reinforcement today when we feel a part of this great nation that we serve. We went through a time in this country when this country wasn't proud of itself. It wasn't proud of its people and it wasn't proud of its servicemen. We went through a phase when America laughed and made fun of the flag. They cut it up and sewed it on the hip pockets of their blue jeans. We went through a stage when the National Anthem was no longer played at sporting events because of the disrespect to our great Nation. Those times are behind us.

"I was driving down the interstate from Colorado Springs a few months ago, and at one point on the interstate I could see three American flags flying — and flying proudly. I walked into a restaurant in San Antonio last March and I saw three soldiers walk in, in uniform, and I remembered the days after the commanding general forbade us to wear our uniforms off post. A chill went up my spine — here are three soldiers coming into a public restaurant. Were they going to be disgraced or humiliated? I turned to my wife and said, 'Sweetheart, be prepared to leave this scene because if someone messes with those soldiers, I'm going to be here for a while!' But you know what? Someone from across the room shouted, 'Buy that soldier a drink for me.' From the other side of the room came another shout, 'Buy that soldier a drink for me.' You know those soldiers got up and staggered out of that bar. And I remember a young couple that was sitting there. They stood up, and the gentlemen said, 'Son we love you; we love what you're doing, and God bless you for helping to keep this great nation free.' That's loyalty! That's loyalty to our country, and it's coming back to our country stronger and stronger every day.

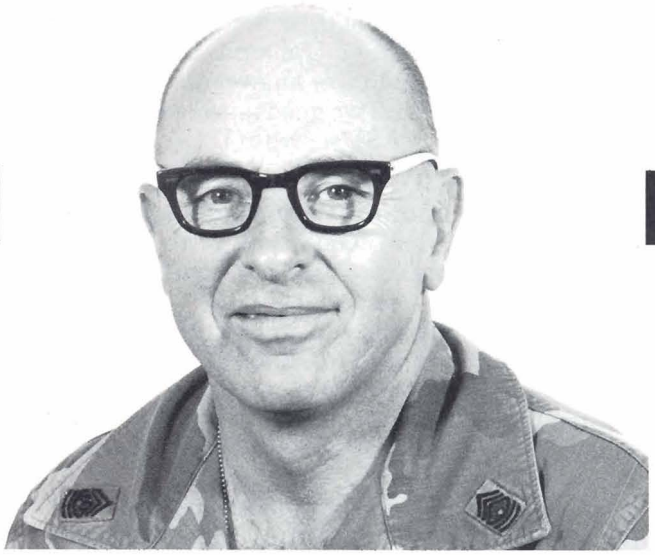
"Probably the greatest words to a song I have ever heard were written by country and western singer Lee Greenwood:

I'm proud to be an American for at least I know I'm free.
I won't forget the men who died, who gave that right to me.
And I'll gladly stand up next to her and defend her still today,
There ain't no doubt I love this land.
God bless the USA."

The bottom line is we must retain our belief in our Army, in our sense of values, in living up to the oath we all took. Lt. Gen. Julius Becton said it well. "Honesty, integrity, moral courage, selfless dedication and personal self-discipline are absolute requirements for every officer and leader in our Armed Forces — their compromise destroys the individual's ability to lead."

Being a soldier is something special. Make every day in your unit the day of values in this, the Army's Year of Values.

The Gospel According to GODfrin



CSM Raymond H. Godfrin

Take Charge of Your Career

The Enlisted Personnel Management System (EPMS) is the tool we use to weed out bad soldiers, retain good soldiers and promote the best soldiers. Having just returned from serving on a Sergeants Major Academy selection board, I can report that EPMS is working well. The system is fair, and soldiers selected for promotion deserve their new stripes.

But the system isn't working at peak efficiency. Some deserving NCOs don't get the stripes they've got coming. There are three main reasons: some soldiers aren't taking charge of their careers, some units haven't adopted a teamwork approach to enlisted personnel management, and some raters and endorsers aren't doing their part when it comes to preparing EERs that get results.

Making EPMS work within the unit takes a "soldiers first" attitude and teamwork throughout the chain of command. Effective enlisted personnel management and well-written EERs create an environment in which soldiers perceive that they are treated with fairness, justice and equality. It gives soldiers incentive to perform better. Sloppy enlisted personnel management and poorly written EERs have the opposite effect. When EPMS breaks down, unit morale and effectiveness break down.

Making EPMS work also takes individual effort. The primary responsibility for your career belongs to you — the individual soldier. You've got to take responsibility for your own career. You can do a lot to improve your chances for promotion.

Do your job well. Few soldiers experience a single "moment of truth" that makes or breaks their career. Careers are built little by little, day by day. A little piece of your career goes on the line with every assignment, every detail and every extra duty. You have to do your very best in your present job to be considered for promotion. Excel at your present assignment.

Work in your MOS. The Army promotes by MOS. Therefore, you must demonstrate primary MOS proficiency. Try to avoid prolonged assignments outside your MOS.

Consider MOS migration. The EPMS "fast track" program (see Page 56) gives NCOs in overstrength MOSs a chance to increase their promotion potential by switching to understrength MOSs.

Review your file. Selection board members see only four items: the microfiche, the personnel qualification record, the history data report and a photograph. It's up to you to make sure your file is current and accurate before it is reviewed by a selection board. The information such as height and weight has to be accurate and should reflect what's in your 201. For instance, if you happen to be a weight lifter who's a little over the weight limit because of the hard muscle you put on in the gym, make sure that's reflected in the file. Take the "pinch" test and make sure the results are included. Start getting your records in order at least six months in advance.

Put a good photo in your file. You can't afford even one negative discriminator. A bad photo severely damages your chances for promotion. Board members look at photos first. They check to see if you wear the uniform properly and if your appearance conforms to Army stan-

dards. Take a neatly fitting uniform to your photo session. Wear all the medals that your file says you are authorized to wear. Make sure that the photo that goes in your file is sharply focused and has good contrast. Keep the photo in your file current. If you've just lost weight to get under the Army weight allowance, have a new photo made. Reviewers match the weight listed in the 201 against the weight evident in the photo.

Never leave a unit without an EER. And never sign a blank one. That's like signing a blank check! You have to be able to check to make sure the information is correct. You owe it to yourself to see you get a fair shake.

Work on your education. Sign up for Army correspondence courses or register for civilian classes. I know that field training exercises and extra duty assignments make it difficult for soldiers to schedule night courses, but the winners in a close promotion race win by a small margin. Education indicates self-motivation and a desire for self-improvement. Don't wait to be selected for a Non-commissioned Officer Education System course. Show you care!

Although the primary responsibility for individual careers belongs to individual soldiers, a soldier shouldn't have to go it alone. The soldier needs and deserves support from senior NCOs and the chain of command.

Here are some of the ways the chain of command can help:

Prepare your soldiers for promotion. The Army promotes by MOS. Give soldiers a chance to demonstrate MOS proficiency by allowing them to work within their MOS. The Army promotes soldiers who can encourage others to give their best. Give your soldiers an opportunity to excel in leadership positions. Make sure that soldiers who have to take SQTs do well. The Army may drop SQTs as discriminators. This will put soldiers in MOSs which require SQTs on an equal footing with soldiers in MOSs that don't require SQTs.

Send your best soldiers to Non-commissioned Officer Education System courses. Encourage all soldiers to take military correspondence courses and to pursue their civilian education. I know duty assignments and field exercises make it difficult for soldiers to attend classes or work on correspondence assignments, but it's worth it.

Anticipate boards. About six months out, go on the offensive. Insist that your soldiers take the actions necessary to make themselves eligible for promotion. Make file reviews standing operating procedure. Publish milestones that tell when files will be reviewed and by whom.

Complete record EERs. Recently demonstrated excellence has an important impact. Recent EERs could substantially change weighted averages.

Establish logical rating schemes. It hurts a staff sergeant to be both rated and endorsed by sergeants first class. An EER for a staff sergeant has more punch when the rater is a first sergeant and the endorser is a battery commander. Check your rating scheme for fairness, compliance with regulations and what's best for your NCOs.

Award your good soldiers. The Army's decentralized awards systems puts the authority for Army Achievement Medals and Army Commendation Medals where it belongs, at battalion and brigade levels. There is absolutely no excuse for not recognizing good soldiers. Pats on the back are not enough. Give them something to pin on their chest and put in their file. Impact awards, when justified, can be timed to get the award into a soldier's file before a selection board meets.

Push the true "below the zone." Map out an aggressive plan to make sure his or her file catches the attention of board members.

Write effective EERs. Nobody likes paperwork. But an EER isn't ordinary paperwork. It's a soldier's report card. It's all a soldier has to show for the hard work and sweat, the hardships and danger, the long hours and extra duties, the frequent relocations, and frequent separations that are part of a military career. It's a soldier's career squeezed into the narrow confines of a standard form.

EERs are at the foundation of EPMS. Simply awarding soldiers high numerical ratings and filling in the blanks isn't enough. The competition for promotion is intense. All the soldiers near the top of the promotion list have high numerical ratings, almost all have been to the right schools, and they've all excelled at their positions.

So, promotion selection board members are forced to look for discriminators. They usually find them in the description of duty and evaluation blocks — the narrative comments where raters and endorsers have to use words to back up the numerical ratings they assign.

The narrative comments are critical. They carry the same weight as numerical scores. You don't have to be Shakespeare to write an effective EER. Eloquent language isn't what's required. You have to pay attention to detail. You have to cover all the bases. You have to sweat a little. You have to give a damn.

All the selection board members know about an NCO is what you tell them. This means you have to paint a "word picture" of the NCO you want promoted, and the word picture has to coincide with the numerical scores. Don't use acronyms. Use simple, concise language. Write the way you talk. For example, don't write: "Sergeant Jones displays outstanding leadership qualities." Instead, write: "Sergeant Jones gets results. He's a self-starter who looks like, acts like and talks like a leader and a trainer. The soldiers in his platoon admire him and try to be like him. He is expert at footlocker mentoring, and his platoon is always tops at everything."

The most important thing, however, is to include all the essential ingredients. The essentials are spelled out in AR 623-205 and in the U.S. Army Air Defense Artillery School's Enlisted Career Development Pamphlet. Don't leave anything out. I've seen too many careers sabotaged because the rater who filled out the description of duty blocks forgot to include the rated soldier's additional duties. Additional duty assignments are important. They are discriminators.

Poorly written EERs are evidence that many NCOs don't understand how the EPMS works or don't appreciate its profound impact on the NCO corps and overall Army readiness. There's never been a great Army without a great NCO corps, and we can't have a great NCO corps unless we can make EPMS work the way it's designed to work. NCOs devised the system. NCOs write the EERs. NCOs dominate the selection boards. And it's up to NCOs with help from the chain of command to keep the system fine tuned.

Remember, there ain't no such thing as a free lunch. Your chain of command owes you its support, but it's up to you to take charge of your career. Your efforts — and those of your chain of command — can't guarantee you a promotion, but they can guarantee you won't be left at the starting gate.

And that's gospel!

Think war! **Give a damn!**

Hawk Soldiers Participate In 'Uncanny' Field Exercise

Air defender Sp4 David Stone has seen his share of Hawk reloading exercises. However, Stone and his fellow air defenders from the 2nd Battalion, 62nd Air Defense Artillery, 32nd Army Air Defense Command, West Germany, have never seen one quite like their latest.

In past exercises, the missiles were delivered directly to the individual batteries. But during a recent exercise, all four batteries' allotments of missiles were delivered to a single field location. Launcher crews from the four batteries unloaded the missiles from the trucks, assembled them and delivered them to their respective batteries.

"Under this concept, the battalion works as one," said SFC Hugh Garretson, NCO in charge of the missile resupply operation. "The batteries' missile crews work together to accomplish the mission. We send the missiles to the battery that needs them the most.

"During the exercise, the first six missiles decanned and assembled have been designated for Charlie Battery," he said. "If we get word that Charlie was hit by enemy fire and is non-operational, we could then direct those missiles to be sent to Alpha. It is a much better concept than the old one, certainly more feasible in a wartime situation.

"This is really quite a mission," Garretson said. "Our batteries are all located within a 300-mile diameter. The soldiers worked around the clock to complete the exercise. Alpha and Charlie batteries' crews worked day shift until relieved by Bravo and Delta."

As members of the A Battery crew gingerly unloaded the cans off the trucks, Stone said, "This is the fastest I have ever seen the trucks unloaded. Of course safety is an important factor, and we didn't even come close to an accident. I think the battalion can be very happy with this kind of performance."

Pleased with the outcome of the exercise, Lt. Col. A.J. Madora, 2/62 ADA commander, said, "As far as I know, we are the first battalion to undertake this kind of concept. We will have to sit down and evaluate the results of this exercise, and it just may be the way we handle all future transfers."

Also pleased, Maj. Evans Spiceland, 2/62 ADA executive officer, said, "It was a tremendous opportunity for us to take part in this exercise. We will now know exactly how much time it takes the missiles to arrive from the 32nd Support Command, get unloaded, decanned, assembled and transferred to the batteries."

by Sgt. Jim Hekel

Island Coast Hosts Unique ADA Live Fire

The island coast of Kauai, Hawaii, provided a unique setting for elements of the 1st Battalion, 62nd Air Defense Artillery. The Vulcan unit broadened their experience during a live-fire exercise there.

The coast offers a training environment difficult to find elsewhere, according to SFC Aaron Keels, B Battery maintenance chief. "We have a much wider tracking area here. We're getting a lot of good practice that we can't get on Schofield [Barracks] or on the 'Big Island,'" he said.

The soldiers also practiced firing .50-caliber machine guns during the exercise.

Of the six Vulcan gun systems used for the exercise, two were equipped with the Vulcan 20mm six-barrel gun, two with M-60 7.62mm machine guns, and two were used for tracking.

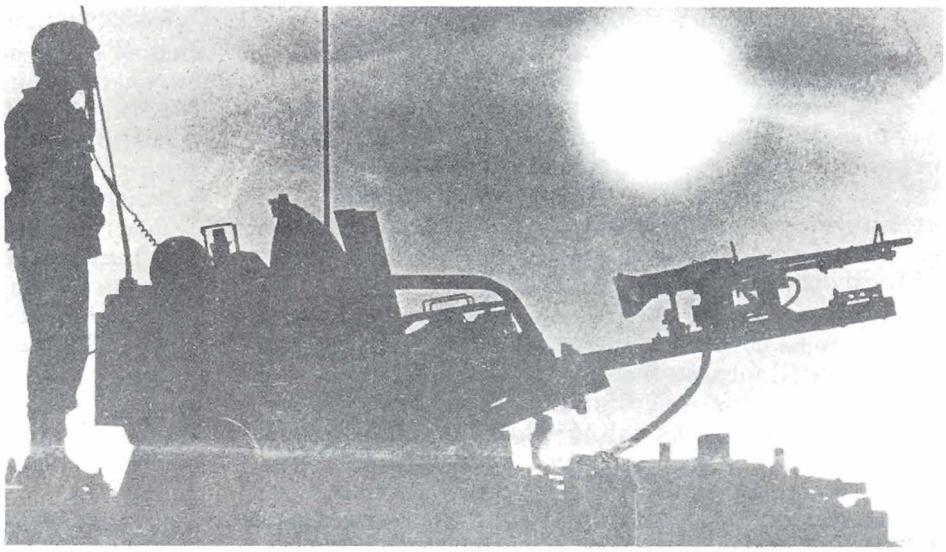
Equipping the system with an M-60 allows the gunner to experience the same tracking sensation that he would with the 20mm gun, but is much less expensive, according to Capt. Parris Sugg, battalion S-3.

But firing the 20mm gun is important for the air defense soldiers, Sugg said. "That gun kicks out a lot of rounds, and there's a lot of vibration. There's a lot of power there and, especially for the first time, it tends to make people a little tense. But, if there's a war, air defense has got to be ready," he said.

The soldiers also practiced engaging moving ground targets by placing two barrels in the water and letting them drift past. "They were both sunk very rapidly," Sugg said.

The battery's Vulcans are currently mounted on modified M-113 armored personnel carriers. This tracked version of the weapon system will be replaced by towed versions as the 25th Infantry Division reorganizes as a light division.

by PFC John Wittman



Soldiers of the 1/62 ADA track a target aircraft in a Vulcan equipped with an M-60 7.62mm machine gun. (Photo by PFC John Wittman)

3/68 ADA Simultaneously Fires Hawk Missiles

"It was just electric. Even people who have seen it over and over again still get excited," stated an air defender during a recent live-fire exercise.

Culminating five months of work, the 3rd Battalion, 68th Air Defense Artillery, Fort Bragg, N.C., fired seven Hawk missiles during a recent live-fire exercise.

Usually the battalion is given only one missile for each battery to fire. This year, however, the 3/68 ADA received four additional missiles for a test-bed evaluation.

These extra missiles were used in a simultaneous firing. Two batteries engaged a single target at the same time. Called "tactically extraordinary," by Capt. Don Ecklin, battalion S-3, units rarely test this type of combat situation. The simultaneous fire may be used, for example, if an enemy aircraft were verified as a nuclear weapons carrier. It would then be prudent to use this much firepower.

Despite the excitement over the simultaneous fire, one Hawk went wild and had to be destroyed. "If a missile never achieves front lock on its target, then we have to use command destruction," said CWO 3 Thomas Liedig, the Electronic Missile Maintenance Office chief.

Aptly named after a bird that flies at 200 mph and literally knocks its prey out of the sky, the Hawk is the only combat-tested operational missile system in the U.S. Army's arsenal. Cruising at Mach 3, the 1,490-pound missile operates by internal and external radar.

Radio waves are bounced off the target and back to receptors in the missile's head. While tracking its prey, the Hawk uses that energy to "home" on the target.

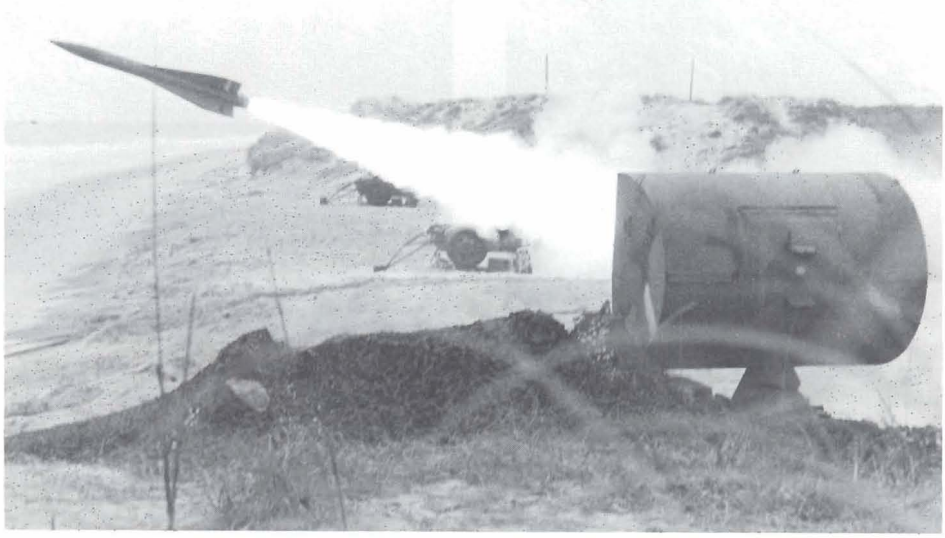
Using antennae mounted on its side, the Hawk will self-destruct when it senses itself flying past the target. The objective of the system is not to hit directly, but to explode near its mark. "This ultimately causes more damage," Ecklin said, "and will bring the aircraft down or at least send it home."

During an exercise, the Hawk chases after drones. Flying at a speed of more than 650 mph, the drones release pods on 8,000 feet of wire for the missile to track. These pods are flanked by strips of reflective material that make the pod appear larger than it actually is to the radar. Even if the Hawk misses the pod, it is still considered a "tactical kill" if it flies within a six-meter radius of its objective.

Sp4 John Goates of B Battery had to wait three years to see what his system could do. "It's rare when we get the chance to see it fire," he said. Last year the unit fired only two of its seven Hawk missiles because of Hurricane Gloria. "It's rewarding to watch, especially when you see all the work that goes into getting it in the air. You're doubtful that it works until you see it. Then you're a believer," he said.

by Sp4 Cordelia Ann Chater

SSgt. James Harter, missile movement supervisor, guides the Hawk onto a platform for storage. (Photo by Sp4 Cordelia Ann Chater)



Soldiers of 3/68 ADA prepared five months in advance of this Hawk missile firing. (Photo by Sp4 Cordelia Ann Chater)

5/52 ADA's Skills Tested Against Time

The 5th Battalion, 52nd Air Defense Artillery, Fort Stewart, Ga., had a combat capabilities check one recent Wednesday. The training started at 3:30 a.m. with recall.

"The standard is to have 80 percent [of the personnel] in within two hours. We had 100 percent turn out in one hour and 10 minutes. . . . That kind of effort makes the difference in this type of exercise," said SFC Keith V. Arnold, 5/52 ADA operations sergeant.

With all the soldiers accounted for, the training started with a two-mile run. "The standard for the run was 17 minutes. We nearly missed that mark because one soldier had a case of the flu which gave him cramps. He was carried about the last one-half mile by three of his buddies who alternated using the fireman's carry. That's the type of teamwork we like to see," said 1st Sgt. Homer E. Puckett.

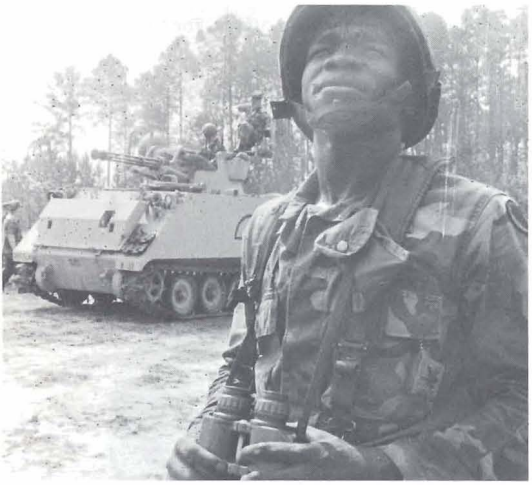
After the run, the actual training started. The men were broken down into teams, with each team training on a different skill. Some were tested on nuclear, biological and chemical skills while others were involved with land navigation maneuvers.

There was real action with the teams assigned to perform an emergency emplacement drill on the Vulcan.

"The essence of the exercise is to emplace the system and to simulate getting into a fighting position as quickly as possible," said Capt. Sam E. Brown, assistant S-3. "In detail it is an emergency emplacement check of the system to ensure combat readiness in 60 seconds. The second part of the drill is to use a generator as a power source in prolonged fighting situations. This is just a standardized way of testing skills," he said.

At the conclusion of the drill, the battalion commander critiqued the three-man crews in a discussion-type atmosphere. "The battalion commander is the primary evaluator for crew drills and important missions. He sets the standards, teaches and evaluates each crew individually," Brown said.

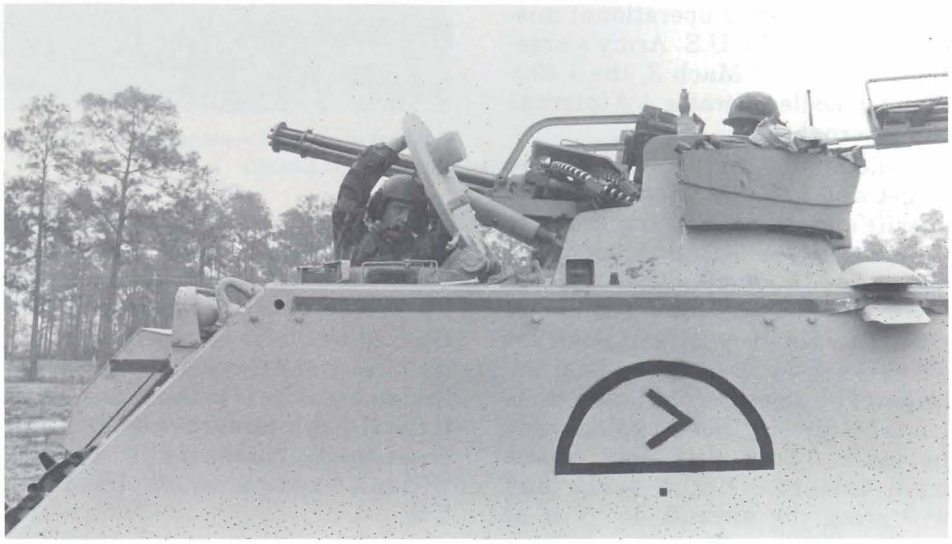
by Douglas Farwell



Pvt. 2 Kenneth Ray scans the forward area as fellow squad members prepare the Vulcan for firing. (Photo by Barry Reichenbaugh)

Lt. Col. Paul E. Semmens, 5/52 ADA commander, conducts an after-action review with a Vulcan crew following competition of the emergency emplacement drill. (Photo by Barry Reichenbaugh)

Squad leader and gunner unload a generator to power the Vulcan's communications equipment. (U.S. Army photo by Barry Reichenbaugh)



Sp4 Amos Hare (left) and Sp4 Ronald Morton prepare their Vulcan for a timed emergency emplacement drill. (Photo by Barry Reichenbaugh)

1/59 ADA Working for Best in Army Maintenance

It may be hard to imagine that in a mechanized infantry division, an air defense battalion would compete on the same level as armor and infantry battalions for the Army's Maintenance Excellence Award. Fact is that an air defense battalion has more equipment to maintain than most battalions within the division.

For the past three years, C Battery, 1st Battalion, 59th Air Defense Artillery, 8th Infantry Division, West Germany, has been selected as having the best maintenance program in the division, and this year was chosen to represent V Corps in the U.S. Army Europe level competition.

The maintenance excellence competition evaluates a unit's maintenance program, and includes areas such as supply; nuclear, biological and chemical; arms room; communications; dining facility equipment; and engineer equipment. The C Battery, 1/59 ADA, maintenance program is based on teamwork that involves every soldier and leader in the battery. Pride in their job is evident in their motivation and dedication, and in the mission they accomplished. Next year the unit intends to be selected best in the Army.

by Sgt. Michael Maeweathers

11th ADA Brigade Puts It in the Air

Quality training time is always desirable, so when Air Force Lt. Col. J.G. Schriever from the 463rd Tactical Air Wing, Dyess Air Force Base, Abilene, Texas, requested some unilateral training with Fort Bliss, Texas, units, the 11th Air Defense Artillery Brigade was one of many units who jumped at the chance.

Fort Bliss units occasionally conduct joint training with the Air Force, but it frequently becomes one-sided with one service "working for" rather than "training with" the other.

This exercise, however, was to be unilateral. Each had training objectives to accomplish that required the support of the other.

The Air Force arrived with three main objectives to accomplish during the four-day exercise. The first was to give the C-130 pilots experience flying with different loads. The second was to get additional experience in dropping parachutists and equipment bundles over selected drop zones, and the third objective was to practice different tactics while flying against hostile air defense.

The Army came into the training exercise with a desire to give individual soldiers the experience of preparing their equipment for air transport. The Army units also wanted to give commanders an opportunity to experience the challenge and headaches of coordinating the myriad of tasks that must be accomplished in order to get soldiers and equipment from one point to another via air transport.

To add realism to the exercise, 4th Battalion, 1st Air Defense Artillery, held a field-training exercise in conjunction with the airlift, transporting much of their equipment by aircraft to the airfield they were to defend.

The 5th Battalion, 200th Air Defense Artillery (Roland), Army National Guard, played the role of the "bad guys" by setting up Roland fire units in an air corridor the pilots had to fly through between two airfields.

A Vulcan is guided off the aircraft to join the rest of 4/1 ADA in their field-training exercise. (Photo by MSgt. William Darrah)

Video cameras were mounted on the optical sights of some of the fire units. The pilots, after viewing the video tapes, had their question of "How do we defeat it?" answered by the Roland folks with, "Don't fly."

Who benefits most after all is done? "The individual soldier," said Capt. Mark Porter, assistant S-3 and coordinator for the 4/1 ADA portion of the exercise. "He's really the one who gets the most out of an exercise like this."

by MSgt. William Darrah

Dragon Slayers' Mission Never Ends

For the "Dragon Slayers" of 2nd Battalion, 61st Air Defense Artillery, South Korea, the mission never ends.

During the recent Team Spirit 86 exercise, the battalion provided air defense for the entire 2nd Infantry Division, operating on the actual terrain that they defend every day of the year.

For the Dragon Slayers of 2/61 ADA, the mission is constant and the threat is near, but the skies always stay clear.

by 2nd Lt. Donald G. Fryc

ADA, ADEA Partnership Continues

by Maj. Richard A. Brown

In the Spring 1984 issue of *Air Defense Artillery*, Maj. Clyde Simmons reported on the "Partnership for Innovation" among Forces Command. This partnership included the 9th Infantry Division (Motorized), Training and Doctrine Command (TRADOC), Army Materiel Command (AMC), civilian industry and the Army Development and Employment Agency, better known as ADEA.

The article described the technologies that were under development and the evaluations to be conducted. What follows provides an update on the testing of several items of equipment and the continuing pursuit of the best forward area air defense artillery for soldiers; thus, the title "ADA, ADEA Partnership Continues."

Chaparral

The towed Chaparral, equipped with forward-looking infrared (FLIR), was developed by industry in 1982 and evaluated by soldiers of the 1st Battalion, 67th Air Defense Artillery, Fort Lewis, Wash., in 1982-83. It was approved for procurement in 1983 under the quick-reaction proposal (QRP), funded in 1984 and fielded for the 9th Division in 1985. The contract, awarded to Ford Aerospace in spring 1984, called for delivery in 12 tactical units and one float unit. The towed Chaparral, described by 1st Lt. Dan Mooney in the Spring 1984 issue, is designed to give the same firepower as the current self-propelled system including missile upgrades. It offers greater flexibility to the commander because the trailer-mounted system is air transportable anywhere on the the battlefield by CH-47D. The system is also easily transported on many strategic and tactical aircraft.

The towed-Chaparral system, purchased under a "limited procurement" contract, requires operational testing before the Army will commit to fielding beyond the current 13 systems. Initial production tests using the production hardware were successfully completed at the White Sands Missile Range, N.M., and Aberdeen Proving Ground, Md., test sites.

A new issue has emerged concerning the towed-Chaparral program. Under the Army of Excellence organization, Chaparral was deleted from all divisions, including the 9th Infantry Division. The program is still active, however, because of the interest expressed by I Corps and XVIII Airborne Corps for towed Chaparral in their organic ADA brigades. Towed Chaparral is currently assigned to D Battery, 1/67 ADA, where evaluation continues.

Early Warning Radar

The next concept is the lightweight early warning radar. It's a manportable, two-dimensional sensor which provides azimuth and range early warning to ADA units operating outside the coverage of the forward area alerting radar. A concept test was conducted by the ADA Board in August 1984 at the Yakima Firing

Towed-Chaparral prototype. (Photo courtesy of Ford Aerospace & Communications Corp.)

Lightweight early warning radar. (Photo courtesy of Lear Siegler)

Center, Wash. While the test results left some questions to be answered concerning assignment of responsibility for radar operations, it clearly established a need for local sensors in the vicinity of ADA forces. The 9th Infantry Division, the 82nd Airborne Division and the ADA School have been working together to establish a requirements document for a lightweight, manportable, two-dimensional alerting radar to augment the current radar. An organization and operational plan that describes the roles of a light weight, manportable sensor was drafted by ADEA in support of the QRP requirement document.

HMMWV-mounted Stinger system in desert environment at Fort Bliss, Texas. (Photo courtesy of Boeing Co.)

One prototype radar is assigned to each firing battery in the 1/67 ADA. Efforts are underway to convert these concept prototypes for use with the forward area air defense command and control shelters that have been delivered to Fort Lewis. The Marine Corps is using these radars to investigate an application for its own ADA forces. Soldiers of the 1/67 ADA have been participating with the Marines at Yuma, Ariz., in this investigation.

Stinger

The project receiving the highest visibility within the past two years is the pedestal-mounted Stinger (PMS). It was conceived as a program to package multiple Stinger missiles; provide ranging; and automate tracking, lead angle and superelevation tasks to increase firepower and maximize the engagement range of Stinger.

With the exception of the pedestal, the Stinger crew retains the same structure as currently listed in TOEs and the ability to fire Stinger as a manportable system, if necessary. The PMS gives 1/67 ADA soldiers opportunities to successfully fire Stinger missiles from a moving vehicle.

The first concept test conducted for ADEA by the ADA Board was the high-mobility, multipurpose wheeled vehicle (HMMWV) mounted Stinger. This sytem, developed by industry using independent research and development funds, has an eight-missile platform mounted in the bed of the vehicle. It uses technology components from other military programs, including the Bradley fighting vehicle. The operator sits in a turret similar to that found on the Chaparral.

The second system is a Stinger-only version of AMC's Research and Development Center light ADA system development concept. It also has an eight-missile platform integrated into the HMMWV. The operator, using a single grip similar to that used by helicopter pilots, relies on a television camera and FLIR for target acquisition, tracking and firing. Soldiers assigned to A Battery, 1/67 ADA, supported both evaluations.

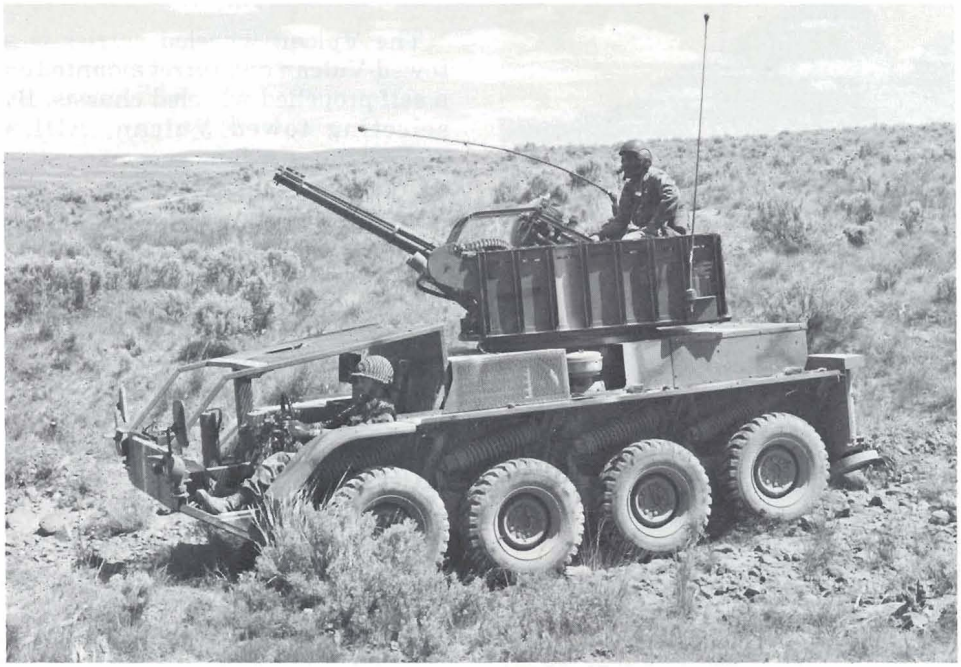
An essential expedited required operational capability document, which replaced the type of document used to obtain towed Chaparral, was drafted by ADEA, 9th Infantry Division, ADA School and the AMC's Stinger Project Office. It was approved by Department of the Army June 25, 1985. The Army is currently considering PMS as a rear area line-of-sight system for all divisions, but the final acquisition strategy has not been announced. See "Pedestal-Mounted Stinger," Page 15 for results of recent PMS tests.

Vulcan

The Vulcan wheeled carrier is a towed-Vulcan gun turret mounted on a self-propelled wheeled chassis. By selecting towed Vulcan, ADEA picked the air defense gun system currently authorized in light, motorized and specialty divisions. The Army needs a self-propelled system now to enhance Vulcan mobility in support of maneuvering combined-arms teams while the ADA School develops a replacement for the Vulcan. This particular concept of a self-propelled wheeled vehicle could change the way Vulcan forces are used in light, motorized and specialty division operations. Other Army branch schools have shown interest and will conduct careful reviews of test reports. Meanwhile, ADEA will continue to evaluate the chassis, looking at the vehicle for applications throughout the Army, particularly in combat and combat support roles.

The soldiers of B Battery, 1/67 ADA, tested two different prototypes. The first, developed by the contractor at no cost to the government, had a 90-horsepower engine and standard recreational vehicle tires. The second prototype, of which there are four units, was purchased on a competitive government contract through the Armament, Munitions and Chemical Command. It has a 6.2 liter (150 horsepower) diesel engine and HMMWV tires and rims. It is 214 inches long and has variable height adjustment of 95 inches in a full up position, or 83 inches in a

HMMWV-integrated multiple Stinger system configured for firing tests at White Sands Missile Range, N.M. (Photo courtesy of LTV)



First Vulcan wheeled carrier prototype, the Excalibur, at Yakima Firing Center, Wash. (Photo courtesy of Standard Manufacturing Co.)

Vulcan wheeled carrier, with larger engine, HMMWV tires and rims. (Photo courtesy of COBRO Corp.)

kneeling position. While this prototype is larger than the HMMWV, its dimensions are almost identical to the towed Chaparral.

The first independent test conducted by the Combat Development and Experimentation Center at Fort Lewis and Yakima Firing Center compared the HMMWV-towed Vulcan with the self-propelled wheeled Vulcan. The self-propelled wheeled Vulcan, with its three-man crew, carries 2,500 rounds of ammunition, weighs slightly more than 17,000 pounds and can travel cross-country like a tracked vehicle.

A third vehicle prototype will be built in 1986. It will be modular and able to mate and demate without material handling equipment. A UH-60 can transport the module, while a CH-47 can carry the chassis. Together, the module and the vehicle can be transported by CH-47D.

Three systems tested earlier will be subjected to additional testing by the Test and Evaluation Command at Aberdeen Proving Ground and by the Tank Automative Command at Warren, Mich. Industry teams have proposed concept evaluations of missile hybrids to the vehicle.

This program hasn't been without criticism. The continued use of the Vulcan gun in an air defense role, and the examination of a wheeled combat vehicle for which there is no identified Army requirement, have drawn critical comments. Until a replacement is fielded, the self-propelled wheeled carrier concept, using the towed-Vulcan gun turret, offers a real near-term solution for increasing the use of Vulcan forces operating forward with maneuvering forces. The missile-hybrid concept offers other options for a low-altitude air defense system for light,

motorized and specialty divisions.

FAAD C²I

Another project being examined at Fort Lewis is a joint effort that involves the following organizations:

Forces Command:
- I Corps — 35th Air Defense Artillery Brigade
- 9ID(MTZ) — 1st Battalion, 67th Air Defense Artillery

Training and Doctrine Command:
- Air Defense Artillery School
- Air Defense Artillery Board
- Combat Development and Experimentation Center
- System Manager

Army Materiel Command:
- Project Manager Air Defense Command and Control
- Human Engineering Laboratory
- Combat Identification System Project Office

Department of the Army:
- Army Development and Employment Agency

Department of Defense:
- Joint Forward Area Air Defense

The project is forward area air defense artillery command, control and intelligence (FAAD C²I). While the project manager is involved in a full-scale development program, Fort Lewis is examining the full spectrum of FAAD C²I in a tactical environment, including the combined-arms elements. Using surrogate equipment as a test bed, the examination includes:

- sensor concepts, sensor locations and distribution.
- integration into the Army command and control system, specifically into the command and control subordinate subsystem.
- positive hostile identification.
- interface from division ADA battalion to corps ADA brigade, including corps augmentation to division.
- automated interface with AWACS.
- automated interface with high-to-medium air defense artillery.

The task will be conducted in increments over the next three years. The entire initiative centers on three S-250 shelters mounted on commercial utility cargo vehicles (CUCV). Soldiers of Headquarters and Headquarters Battery and C Battery, 1/67 ADA, support the initiative known as the FAAD C²I test bed. The S-250 shelters house a JTIDS Class 2 terminal. Efforts are underway to add hand-held displays for the three platoons, local alerting radars, alerting and cueing radars, and devices like the FLIR that are integrated onto the weapons platform and into a gunner's sight. Devices like these are available in off-the-shelf hardware, but they will require further software program development.

The 1/67 ADA, through ADEA, took steps in 1984 to downsize their air battle management operations center (ABMOC) from the five-ton expandable van into two shelters mounted on the back of CUCVs. One S-250 shelter with slight modifications represents a reasonable facsimile to the downsized ABMOC. The design was developed by the Human Engineering Lab at Aberdeen Proving Ground. It was built and installed by the Adaptive Engineering Team "Skunkworks" at Fort Lewis. The downsized structure was

Emplaced Vulcan module. (Photo courtesy of Standard Manufacturing Co.)

Heavy HMMWV variant towing Vulcan during testing at Fort Lewis, Wash. (Photo courtesy of COBRO Corp.)

Carrier moving into position to remate with the Vulcan module. (Photo courtesy of Standard Manufacturing Co.)

Vulcan wheeled carrier during testing at Fort Lewis, Wash. (Photo courtesy of COBRO Corp.)

used during Border Star 85 at Fort Bliss, Texas, and in support of the Joint Forward Area Air Defense evaluation with the 1/67 ADA prior to the start of Border Star 85.

In addition to the three shelters within the battalion, there are plans to place a shelter to serve as a command post at the corps ADA brigade level. Through remote display, this shelter can provide the brigade staff the same information that's available from the AN/TSQ-73 Missile Minder. Here is where the 35th ADA Brigade and its organic 1st Battalion, 4th Air Defense Artillery (Hawk), interface with ADEA and the 1/67 ADA in developing, refining and validating requirements.

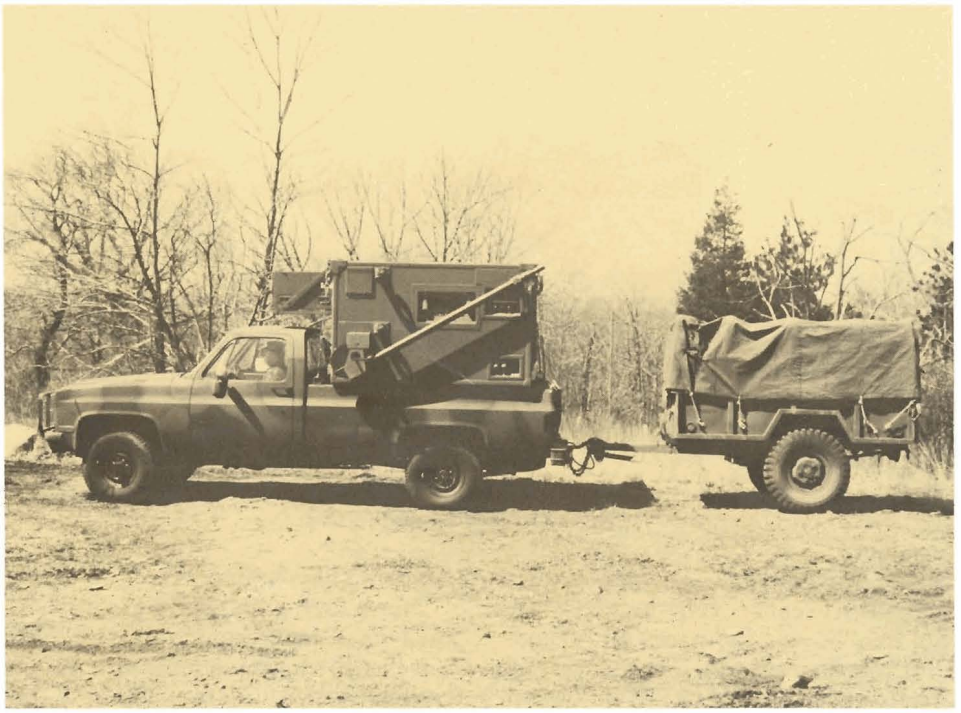
In the summer of 1985, ADEA and the 9th Infantry responded to another industry challenge and conducted an appraisal of the air defense variant of the Firefinder radar. The variant is a three-dimensional sensor that provides azimuth, range and elevation to a target. The radar demonstrated the passing of real-time targeting information to towed-Vulcan and towed-Chaparral squads and to a manportable Stinger crew. Although information wasn't displayed into the gunner's sight for Vulcan or Chaparral, the squad leaders were able to direct their respective gunners to the threat. A grid-compass computer was used as the display at all weapon locations. A pointing device was added to the Stinger sight which permitted the gunner to accurately acquire targets and simulate firings beyond visual range. Efforts are underway to get a similar three-dimensional sensor for the FAAD C^2I test bed and to continue evaluation of pointing devices.

Related to FAAD C^2I is the distributed command and control system described by Capt. David Eachus in the Spring 1984 issue. Renamed maneuver control system 2.0, its development is continuing at a rapid pace. The system was used by the 9th Division during Border Star 85.

Other automated command and control initiatives, which include the distributed intelligence system and the lightweight TACFIRE, are underway at Fort Lewis. Plans are to integrate the FAAD C^2I test bed into the command and control architecture in 1987, and a positive hostile identification program in 1988.

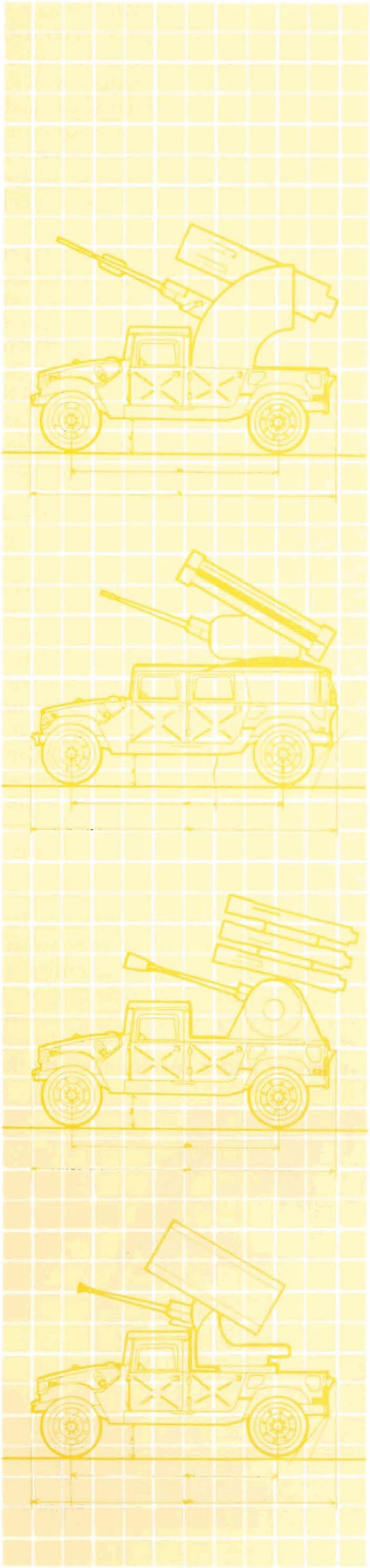
An organization like ADEA offers a great challenge to industry and the Army of the future. It provides a medium for examining technology that changes so frequently that military hardware procured through the normal way of doing business is obsolete before it ever reaches the field. Quick examination and valid testing identify technology that's readily available for follow-on evaluation and fielding. This not only supports the guidance from within the Department of the Army to find and field technology quicker, but also identifies technology that does not apply. For Air Defense Artillery, ADEA examinations will play a key role in deciding the next series of weapons and command and control systems that will be fielded.

Maj. Richard A. Brown is the Air Defense Artillery technology manager at ADEA, Fort Lewis, Wash.



Automated command and control shelter, with JTIDS antenna in stowed position, on CUCV towing 10KW generator. (Photo courtesy of Singer)

Air defense variant of the Firefinder radar. (Photo courtesy COBRO Corp.)



Pedestal-Mounted Stinger

Forward area air defense prototypes turn in impressive performances

by Capt. H. Keith Wooster Jr.

The evolution of the pedestal-mounted Stinger (PMS) into Air Defense Artillery's line-of-sight rear component has quickly gained acceptance as an important weapon development with tremendous potential. The capabilities of PMS have exceeded all expectations. The system's performance during tests has caused PMS to figure prominently in the future organization of forward area air defense (FAAD).

As an element of combat power, PMS combines in one system a high volume of dual-purpose firepower by virture of its eight Stinger missiles and secondary armament. A high-mobility, multipurpose wheeled vehicle, or Humvee, gives PMS good mobility while a degree of built-in, inherent protection is provided by PMS's design characteristics. The PMS design allows for flexible growth beyond the capabilities of its current design. It's a weapon system that can fight and survive on the modern battlefield.

The capabilities of PMS far exceed the capabilities of manportable air defense (MANPAD) Stinger. This increase in capabilities — the result of integrating current technology with that of the Stinger missile — will create a change in air defense employment and tactics equal to that caused by the introduction of the M-1 Abrams tank and Bradley fighting vehicle. The PMS system builds upon the capabilities of the Stinger missile and simultaneously creates new capabilities for the Stinger missile that results in a balance of firepower, mobility and protection.

The advantages of integrating MANPAD missiles into a modern mobile weapon system have been widely recognized. The U.S. Army, which has earmarked more than $3.8 billion for PMS and Stinger missiles, is not alone in recognizing the potential of such a weapon system. The British, French and Swedes have several similar systems either in development or procurement stages, and the Egyptians have adapted their Soviet SA-7 derivative to a mobile air defense gun system. If Air Defense Artillery succeeds in making the FAAD concept a reality, PMS will become the most numerous ADA weapon system and most MANPAD Stinger gunners will likely become PMS gunners.

Crewed by a driver and gunner, the prototype PMSs tested to date have two Stinger pods, each with four missiles, electronic stabilization, a

forward-looking infrared (FLIR) system and a laser range finder. Secondary armament covers the inner-launch boundary and provides a dual capability that will let PMS fight the ground battle as well as the air battle. The Humvee gives PMS good mobility. An up-to-date fire control system ties in the various PMS components and adds auto-tracking. Moreover, the PMS is designed for easy integration into the developmental FAAD command and control and intelligence (C^2I) system and can be equipped with additional onboard sensors to further increase system effectiveness. The design of PMS also allows easy integration of complementary missiles, further increasing the feasibility and lethality of the PMS system.

These features allow PMS to shoot on the move and engage aircraft at night or in adverse weather conditions. The fire control system keeps PMS gunners from wasting missiles that MANPAD Stinger gunners would probably waste. The PMS's auto-track provides consistently smoother and more accurate tracking of the target than a MANPAD gunner is capable of. An automated fire permit ensures that missiles are not fired at targets that are out of range. The result of this integrated technology is a new air defense artillery system that features significantly faster reaction time, increased adverse weather and night capabilities, and greater destructive power than not only MANPAD Stinger, but many other air defense artillery systems as well.

The PMS systems tested by the 1st Battalion, 67th Air Defense Artillery, 9th Infantry Division (Motorized), at Fort Lewis, Wash., have proven to be highly mobile, reliable and much more effective than MANPAD Stinger. Two prototype systems have been tested, and as many as five candidate systems are still to be tested.

Alpha Battery, 1/67 ADA, has been involved with PMS development and testing almost from the beginning. One of the battery's major responsibilities was the development and testing of Boeing Aerospace's Avenger and LTV's Setter pedestal-mounted Stinger candidates (General Electric has withdrawn its Defender from PMS consideration and is now teamed with Boeing on the Avenger). The battery used the Avenger and Setter to support armor and infantry battalions and as static assets during major brigade and division exercises.

The description of PMS and its capabilities in this article, however, is a generic description. The purpose of this article is not to compare the different prototypes, but to explain the specific advantages that PMS offers over MANPAD Stinger and how those advantages will translate into different tactics, training and procedures for units equipped with PMS.

Pedestal-mounted Stinger is the generic term used throughout this article; however, the PMS system destined to be fielded as part of the FAAD force will evolve into an air defense weapon much different than the strictly Stinger-armed system originally envisioned.

Stinger Missile Pods

The destructive force needed to neutralize or destroy the enemy's aircraft is compactly packaged in the PMS. The heart of PMS consists of two Stinger missile pods, each with their four Stinger missiles, and a coolant reservoir with enough coolant for more than 30 engagements. The pods let the gunner engage with one missile while another missile's gyro is spinning up. This gives the gunner up to eight Stinger missiles that can be fired in rapid sequence.

During tests, video cameras taped a PMS as it completed an engagement of four helicopters in less than 38 seconds. Obviously, the number of missiles that can be fired by PMS in a short period of time far exceeds the number that can be fired by a MANPAD Stinger crew. This increases the destructive capacity of a section or platoon equipped with Stinger missiles.

The coolant reservoir provides a greater margin for error when large numbers of enemy and friendly aircraft occupy the same area. With PMS, aborting an engagement sequence when the target aircraft turns out to be friendly does not waste a battery coolant unit as it does with MANPAD Stinger. The additional coolant allows PMS gunners to begin the engagement sequence beyond maximum range and engage aircraft as soon as they have lock-on, rather than having to wait until the aircraft has entered the engagement envelope.

Complementary Missiles

The PMS system is adaptable. Different types of missiles can be substituted for some of the Stinger missiles to provide flexibility in dealing with the changing threat. The missile chosen could be one of many already in use or under development by the

Soldiers of A Battery, 1st Battalion, 67th Air Defense Artillery, found PMS prototypes easy to operate. At right, Cpl. Bruce Thomas trains Sp4 Brian Smith on PMS operations.

United States or our allies. These missiles are generally designed for forward aspect engagement, are immune to infrared countermeasures and have engagement envelopes that neatly complement that of the Stinger missile. In addition, some of these missiles can be fitted with dual-purpose warheads such as the high-explosive, anti-tank (HEAT) warhead with a fragmentation sleeve that detonates on contact. Examples of missiles that could become candidates include the Swedish RBS-70 and U.S. Saber, both laser beam-riding missiles; the British Javelin missiles; and the high-velocity follow-on to the Javelin which is still under development. These missiles would give the PMS system the ability to destroy targets employing infrared countermeasures and, with HEAT or kinetic-energy warheads, some capability against armor.

Secondary Armament

To back up the Stinger missiles, the PMS can incorporate various types of secondary armament to provide inner-launch boundary coverage and ground-engagement capabilities. Some possibilities include the 7.62mm machine gun, standard or Gatling .50-caliber machine guns, 25mm gun and hypervelocity rockets such as the Spike rocket.

The secondary armament should provide complete coverage within the inner-launch boundary engagement envelope of the Stinger missile, improve system effectiveness when enemy aircraft or helicopters pop up at close range and allow the PMS to engage light armor and dismounted troops. But there are other factors to consider in selecting the secondary armament. Will the PMS be able to carry a reasonable amount of ammunition? Will the secondary armament's signature give away the PMS position? What effect will the back blast and smoke have on subsequent engagements?

The secondary armament will allow the PMS crew to make significant contributions to the ground battle as well as the air battle — something that a two-man MANPAD Stinger crew armed with M-16s and pistols cannot do. They will destroy the enemy on the ground or in the air. Pedestal-mounted Stingers will give maneuver task forces and combat service support units a new dimension of firepower that MANPAD Stinger and Chaparral crews cannot provide. Pedestal-mounted Stingers defending fixed assets will significantly decrease the vulnerability of the assets to sudden air assault or attack by light-armor units without requiring an increase in other combat arms. These are important capabilities on a non-linear battlefield where enemy ground forces can appear suddenly from any direction.

> **“Engagement reaction times of PMS crews are significantly faster than those of MANPAD Stinger crews.”**

Stabilization

The electronic stabilization of the PMS gives the system a shoot-on-the-move capability that, in combination with the Humvee's mobility, will allow it to support battlefield maneuver. This capability has been tested cross-country and on roads, day and night, at speeds up to 40 mph. Army Air Defense Artillery Board tests have shown that the engagement reaction times of PMS crews is significantly faster than those of MANPAD Stinger crews whether stationary or moving (engagement reaction time equals the time elapsed between the time a crew detects a target and the time a crew finishes the appropriate firing sequence). The results of the tests are striking:

- The average engagement reaction time against multiple helicopters for a moving PMS was three times as fast as a MANPAD Stinger crew engaging from a mounted position.
- Against multiple fixed-wing aircraft, the PMS engagement average reaction time was four times faster than MANPAD Stinger.
- The PMS reaction times were, on the average, several seconds faster firing on the move than MANPAD Stinger reaction times were from a stationary position.
- The PMS systems demonstrated a higher percentage of successful engagements than MANPAD Stingers. The PMS systems scored 88 percent successful engagements while firing on the move compared to 56 percent successful engagements for MANPAD Stingers firing from a mounted position. In fact, against multiple targets, the PMS had a higher successful engagement rate when firing on the move than MANPAD Stinger had against single aircraft from a stationary firing position (88 percent versus 82 percent).

The data comes from tests conducted in August 1984 and November 1985. The two tests were conducted under different conditions and criteria, but they provide a useful comparison of PMS capabilities versus MANPAD Stinger capabilities. The test statistics demonstrate that PMS systems can provide greater air defense protection while moving than MANPAD Stingers can provide from stationary positions. This increased capability of the PMS over MANPAD Stinger gives the FAAD force wider tactical flexibility when supporting maneuver forces, convoys or fixed assets. In addition, the ability to move and still maintain coverage gives PMS systems a certain degree of increased protection.

FLIR

Aside from the ability to shoot on the move, the PMS also has a night and adverse weather engagement capability provided by a forward-looking infrared (FLIR) system. The PMS FLIR will rely on cueing from FAAD C^2I and will allow the crew to detect and identify aircraft at night. It will also increase the crew's ability to see through haze, rain and light clouds. During testing, the PMS demonstrated a higher successful engagement rate at night than during the day.

The FLIR also can help gunners identify aircraft at long ranges during day or night. The FLIR image is projected as a silhouette onto the gunner's screen which highlights the aircraft's major identifying features. The image is frequently clearer than an image viewed through binoculars. It should be noted that a high-resolution, black-and-white camera provides a better picture at long range during the day than the FLIR, but the FLIR provides an adequate image within the range of the Sting-

Pedestal-mounted Stinger prototypes tested to date are, left, the Boeing Aerospace Avenger and LTV Setter. The Army will test several other PMS candidates.

er missiles (color cameras provide inadequate resolution). Pedestal-mounted Stinger crews can also use the FLIR as part of the fire control for automatic tracking in some candidate PMS systems.

Fire Control

The PMS fire control system, with its integrated weapons display, ties in the various components and can tap into signals coming from the Stinger missile to produce a measure of infrared counter-countermeasure capability. The system displays a reticle on the FLIR screen showing exactly where the seeker is locked on. This visually shows the gunner if the missile has locked on to infrared background clutter or flares. The gunner can simply recage the missile and begin the engagement sequence again. A MANPAD Stinger gunner, on the other hand, has no quick way of verifying that he has locked on to a true target.

The fire control system determines target range, elevation and azimuth. A laser range finder gives the range to the target and ties into the fire control to give the gunner fire permits within the capability of the missile or secondary armament. The fire control also provides an auto-track capability that produces a smooth, precise tracking of the target that no MANPAD Stinger gunner can imitate. Auto-tracking is accomplished in different ways by various PMS systems. The auto-track can be provided by the seeker section of the Stinger missile itself, a television tracking device, or FLIR tracking.

The fire control functions are tied into switches on the control handles and reduce the number of steps that the gunner has to perform. The PMS fire control steps are easier to perform, can be performed faster and are easier to learn than MANPAD Stinger steps. The fire control system not only speeds up the engagement sequence, but it lets the gunner begin engagements closer to the limits of the infrared engagement boundary. This makes PMS's area of coverage larger than MANPAD Stinger's. The result is a faster-reacting, more reliable air defense system that will waste fewer missiles due to gunner error, firing at targets out of range, or infrared clutter and countermeasures.

Survivability

Kevlar armor protects the PMS from small caliber bullets and small fragments. The Stinger pods and secondary armament are mounted high on the PMS. This lets the crew fire from a defiladed or "hull-down" position while exposing only a small part of the system to enemy fire. The PMS, however, will rely heavily on its mobility and its shoot-on-the-move capability for survival. Tactics, cover and concealment and the careful selection of alternate firing positions are extremely critical. Pedestal-mounted Stinger crews will use "shoot and scoot" tactics, engaging an enemy plane or helicopter then scooting behind cover to an alternate position.

Employment

The forward area air defense concept assigns PMS to the brigade rear and division and corps areas, but we cannot draw imaginary lines across the battlefield and say a specific system will be only here or there. Certain situations will require as much air defense firepower along the forward line of own troops (FLOT) as we can get our hands on. The PMS can adequately support the maneuver units of special and light divisions. If necessary, the PMS can accompany heavy maneuver units to the forward edge of the battlefield.

The PMS will be employed similarly to MANPAD Stinger in terms of distance between systems and the requirements for engaging aircraft. Although a PMS section will have only three systems, its effective coverage will be somewhat larger than that of a MANPAD section.

If the enemy has established localized air superiority and is flying a large number of sorties, the PMS driver can dismount and, using part of the PMS's basic load, fight as a MANPAD gunner. The driver could take the identification, friend or foe (IFF) system with him or leave it mounted in the PMS. A PMS section with its drivers dismounted to fight as MANPAD gunners would present a hornets' nest of missiles to enemy aircraft. The PMS crew's ability to fight dismounted provides other tactical possibilities. If the system fails, the PMS crew, unlike other ADA crews, would still be able to provide air defense until a maintenance team arrives. In such a case, the crew would pull the IFF out of the system and use it in the MANPAD configuration.

Because of its dual capability, the PMS system should be emplaced to cover ground avenues as well as air avenues of approach. The secondary armament chosen for the PMS will determine which role PMS crews perform. The crew may be called on to

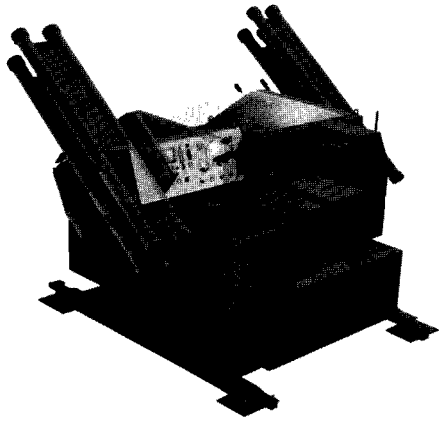
provide suppressive fires to cover the advance or aid in the defense. When dual-purpose missiles are substituted for some of the Stinger missiles, the PMS crew may be called on to engage enemy armor as well. Tying this firepower into the overall ground defense plan will be an important part of the PMS section sergeant's responsibilities. The PMS crews will develop range cards for both day and night to make sure their ground fires are not accidently placed on friendly forces.

Secondary armament means PMS crews will have to be taught to engage ground as well as aerial targets. They'll also have to learn the capabilities of their secondary armament against various types of enemy vehicles and how best to emplace the system to cover ground avenues of approach.

The mobility of current maneuver forces equipped with M-1 Abrams tanks and Bradley fighting vehicles and the nature of the modern battlefield will create conditions in which FAAD units will frequently protect forces that are on the move. The PMS is not intended to be the primary ADA weapon to support heavy maneuver units, but its capabilities allow it to support heavy maneuver units if required. Even though the mobility of the PMS does not match the mobility of the M-1 Abrams or Bradley vehicles, in most circumstances it will be able to keep up with units equipped with them. When supporting maneuver units, crews should place the PMS in over-watch positions 500 to 1,000 meters behind the forward maneuver units on ground which provides good visibility of the route of advance or defended area.

The PMS can bound from terrain feature to terrain feature or travel with the maneuver unit, depending on the type of movement technique employed. The stabilized turret, which gives PMS its ability to shoot on the move, allows the section chief to designate assigned sectors that can be projected onto each PMS gunner's integrated weapons display screen. Assigned sectors will provide either balanced or weighted coverage of the defended unit while moving. They also will shorten reaction time considerably since the PMS systems will be ready to fire and will be facing expected avenues of approach. When the PMS systems are linked into a command and control system, the PMS section chief can direct the PMS system most suitable to engage enemy targets, further shortening the engagement reaction time.

The PMS can also provide convoys with more potent and more responsive air defense. The section chief can select a balanced or weighted coverage and designate assigned sectors. The gunners will search along their assigned sectors while moving. Stinger employment guidelines will determine the distance between systems during the move. If the move is short enough, PMS systems could be pre-positioned along the route according to standard MANPAD Stinger employment guidelines. In either case, gunners would have to search their sectors for enemy ground forces as well as aircraft. The switch from missiles to secondary armament and back to missiles will have to be automatic and instantaneous actions for PMS gunners on the fluid battlefield.



An integrated weapon display coordinates PMS firepower.

Defending fixed assets and service support activities will be an important part of the PMS mission. These units or assets generally have a limited self-defense capability. When defending service support units or activities, the PMS will likely provide the bulk of the ground defense firepower. Integrating the firepower of the PMS will be critical to the defense of the asset. The PMS section chief will prepare day and night security arrangements for the section in detail.

Whether in the forward area or in the rear, "shoot and scoot" tactics will be especially vital when PMS crews engage attack helicopters or operate along the FLOT where direct or indirect suppressive fires can destroy the PMS system.

The PMS's capability to fight at night is in keeping with the widespread issue of night vision equipment and the increasing capability of all armies and air forces to fight at night as easily as during the day. The capability of the PMS may be degraded somewhat by the nature of the battlefield. The effects of tracers, exploding ordnance, burning battlefield debris, flares and other infrared clutter have not been tested on the PMS gunner's ability to discriminate targets from background infrared clutter. Attendant with PMS's 24-hour capability is the problem of two soldiers manning and maintaining the system around the clock while taking care of their personal hygiene, eating and sleeping.

The PMS crews will move into friendly defensive perimeters at night for security. This will allow the crew to integrate their fires with those of the defended unit's and allow the crew to perform maintenance, clean up, eat and sleep. Some degradation of air defense fires will occur when a PMS crew moves into nighttime defensive perimeters due to the more limited choice of firing positions. The PMS crewmen will have to carefully select and memorize alternate positions within the perimeter. The launch of a missile or use of secondary armament at night would immediately compromise the system's location, requiring its immediate and rapid displacement to an alternate position.

Pedestal-mounted Stinger will change Air Defense Artillery's capabilities and tactics. The system will continue to evolve as additional capabilities are added in the form of different missiles, new secondary armament and C^2I advances. Air defense artillerymen will have to teach the rest of the Army how best to use PMS against the threat both in the air and on the ground. The high firepower, mobility and survivability of the pedestal-mounted Stinger, when integrated with the other weapons to be fielded in the forward area air defense forces, will allow air defense units to fight the air-land battle as true members of the combined-arms team.

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Electronic Warfare: The Invisible War

by Tony LoPresti

(The following article was composed from unclassified sources readily available to the general public. It is not to be construed as policy, doctrine or opinion of the U.S. Government, U.S. Army or the U.S. Army Air Defense Artillery School. The purpose of this article is to serve as a model for air defense tactical planning.)

Ground air defense is instrumental in forcing a change in combat tactics more often than any other arm or branch of service. This is a bold statement since air defense artillery was initiated in response to the air threat. But, including aircraft, submarine and nuclear weapons, air defense dictates the conduct of war. Since World War I when guns were first used to counter the air threat, aircraft have flown higher and faster to escape devastation. As guns became more accurate and increased in size to attain higher altitudes, the aircraft found sanctuary by flying at the near edge of space and out of gun range. The aircraft had a distinct advantage in that it could conduct war from this near-space sanctuary. The aircraft was supreme.

The introduction of the Nike guided missile system into the weapons arsenal, and to a lesser degree the SA-2, eliminated any potential aircraft sanctuary. Flying on the fringes of space, these guided-missile aircraft killers ended conventional tactics and forced aircraft to seek new tactics to attack and destroy their targets.

Aircraft tactics shifted from flying higher and higher to flying extremely lower and faster. The combination of high speed and low altitude became impractical for attacking ground targets. This deficiency was corrected by the close-combat A-10 and Frogfoot aircraft. The mix of air defense weapons with ground force weapons in a counterair deployment, however, places even these aircraft at high risk and can prevent them from performing their mission.

Helicopter Threat Evolution

The helicopter gunship compensated for the limitations of ground-attack, fixed-wing jet aircraft. Helicopters flying extremely low and slow, it was discovered, could pop up from behind a hill or tree line and launch any form of ordnance deemed necessary to destroy the target. However, the helicopter is also vulnerable to almost every weapon on the battlefield — except maybe the bayonet. Survivability requires armor and longer range weapons. We are probably witnessing a traumatic transitional struggle between the tank and helicopter as the principal warfighting weapon on the future battlefield. The helicopter, not discounting the fixed-wing aircraft, will become the principal ground-attack weapon system. Air defense will force an evolution that will convert fixed- and rotary-wing aircraft into first-stage boosters for weapons delivery. (See Figure 1 — Threat's Seven Powerful Trends as expounded by Maj. Gen. Donald R. Infante, commandant, U.S. Army Air Defense Artillery School.)

Threat's Seven Powerful Trends

- ★ Surface-to-surface missiles to attack surface-to-air missile and tactical ballistic missile launch sites. These improvements include mobile transporter erector launchers, reduced circular errors of probability and warhead flexibility.
- ★ Low-observable techniques coupled with traditional electronic countermeasures to shorten the effective range of surface-to-air missiles.
- ★ Anti-radiation missiles to attack low-density radio frequency surface-to-air missile systems such as Patriot or Hawk.
- ★ Increase use of countermeasures, such as suppressed plumes and active infrared countermeasures to degrade infrared surface-to-air missiles.
- ★ Standoff missiles from low-altitude helicopters operating beyond the coverage of forward area air defense systems and combined-arms weapons.
- ★ Standoff dispensers on aircraft to attack stationary targets from distances beyond the range of short-range point defense systems.
- ★ Increased use of drones and decoys to saturate and exhaust surface-to-air missiles; further development of RPVs for surveillance and target acquisition.

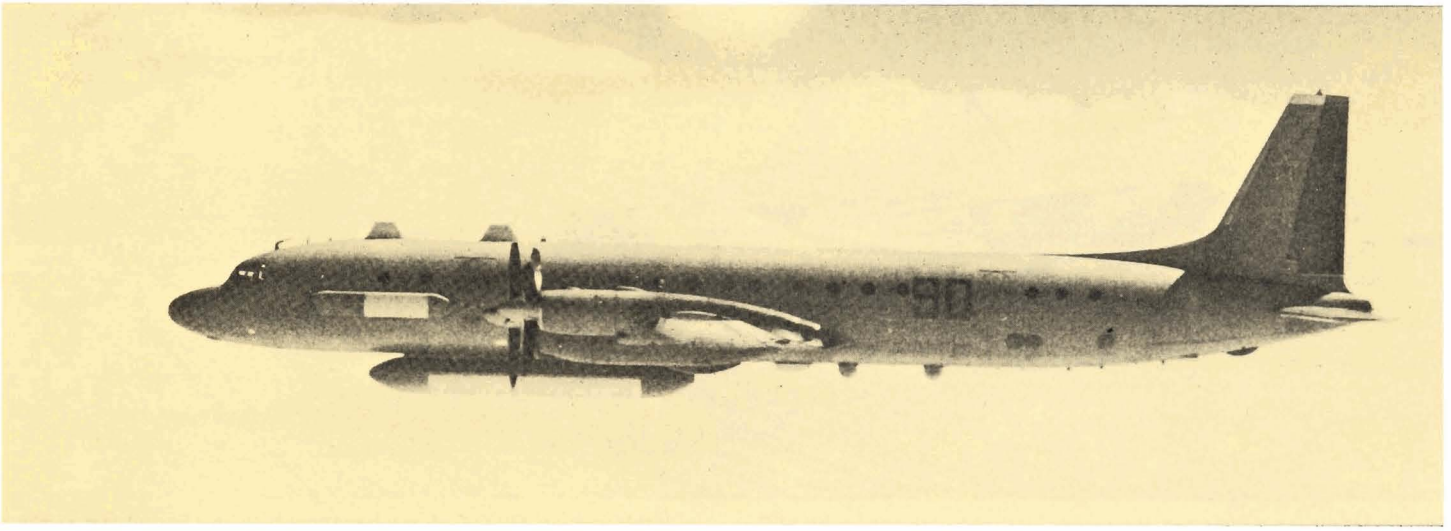
Figure 1.

Air Defense Artillery Mission

In the simplest of terms, the ADA mission is to provide a protective "force field" over the real estate agents riding around in Abrams and Bradleys so that they can negotiate land acquisition rights without fear of air attack. This freedom of maneuver of the ground forces is so important that the threat devotes great expenditures of time, money and equipment to develop ultra-sophisticated countermeasures against ground air defense. This is why tactics are extremely important. Typically, a new technology (and sometimes old) is superior when it's used the first time. Thereafter, the enemy changes his tactics and technology as a countermeasure response. Although tactics and technology are often viewed as going hand in hand, tactics by far is the most important. This is evidenced by all the aircraft and helicopters that have been destroyed by small-arms fire and, in some cases, World War I vintage weapons. It was not high tech that brought down these aircraft; it was coordinated tactical fire.

Ground air defense is capable of maintaining air superiority over the ground forces by having the proper weapon mix, density and deployment.

The Egyptians were able to maintain near air supremacy over their ground forces during the early days of the 1973 Yom Kippur War with only ground air defense units.[1] They did all the right things, but began to lose when their tactics didn't call for redeployment of air defense assets to match the forward momentum of their ground forces. They also failed to maintain ground rear defense forces. In addition, because of a failure of combined-arms tactics, the Egyptian air defense shield was broken



The Il-20 Coot-A is an ELINT version of the Il-18 airliner first noted by NATO in 1978. The main underfuselage container is assumed to house a side-looking radar. The large blisters on either side of the forward fuselage may house some other sensor(s). Several other aerials and blisters are visible both over and under the fuselage. *(Royal Danish Air Force photo)*

when Israel's Maj. Gen. "Arik" Sharon crossed the canal and destroyed air defense fire units with tanks. Sharon is not given full credit for punching a large wedge in the Egyptian air defense umbrella. Once this wedge was opened, the Israeli air force (IAF) was able to destroy isolated air defense batteries. Once the batteries began to cascade down, it was easier to claim IAF (ego saving) tactics and countermeasures than credit that rascal Sharon.[2]

The importance of tactics is clear in the example that follows.

Radio Electronic Combat

In 1969 the Soviets invaded Czechoslovakia and introduced a new meaning to electronic warfare when they deployed An-12 Cub standoff jammers (SOJ) flying a race-track pattern against air defense.[3]

Shortly thereafter, this tactic was replicated over the northeast coast of the United States by the Strategic Air Command (SAC)/North American Air Defense (NORAD) Operational Weapons Testing in a Military Environment (SNOWTIME) evaluation team. The SAC mission was to simulate bomb drops at the bomb release line, while air defense was geared to prevent them from achieving their objective. The usual attack tactic was to make high-speed B-52 dashes into the target zone with SOJs providing a screen with electronic countermeasures (ECM) and chaff.

The radar operators of the frequency-agile (in those days) Nike system had fun tracking the B-52s through the ECM. They were on their way to another successful SNOWTIME mission. However, the Air Force (Red team) flew two B-58 Hustler bombers out of Canada into the target zone at low altitude and high speed, which was a change in tactics. These aircraft penetrated the defense, giving the exercise victory to the Red team. Lt. Gen. George V. Underwood, commanding general of Army Air Defense Command, fired the entire SNOWTIME Army team right after his congressional inquisition.

The Soviet radio electronic combat (REC) is a well-developed and intricate air defense countermeasure. Notice that the "C" in REC is combat. This means that the attack planner views electronic warfare (EW) as another weapon of choice in his inventory. If he can't put explosives on a target, he will jam it until he can.

The principal REC target is command and control of weapon systems.[4] If air defense requires a minimum of 33 continuous seconds on target to engage and destroy it, REC will attempt to introduce delays into the command and control system to deny or disrupt several of those 33 continuous seconds. The aim is to inhibit target-engagement sequence or cause engagement abort.[5]

The REC plan is to jam some weapons, kill some weapons and to make the rest ineffective against the planned mission.[6]

Radio Electronic Combat Scenario

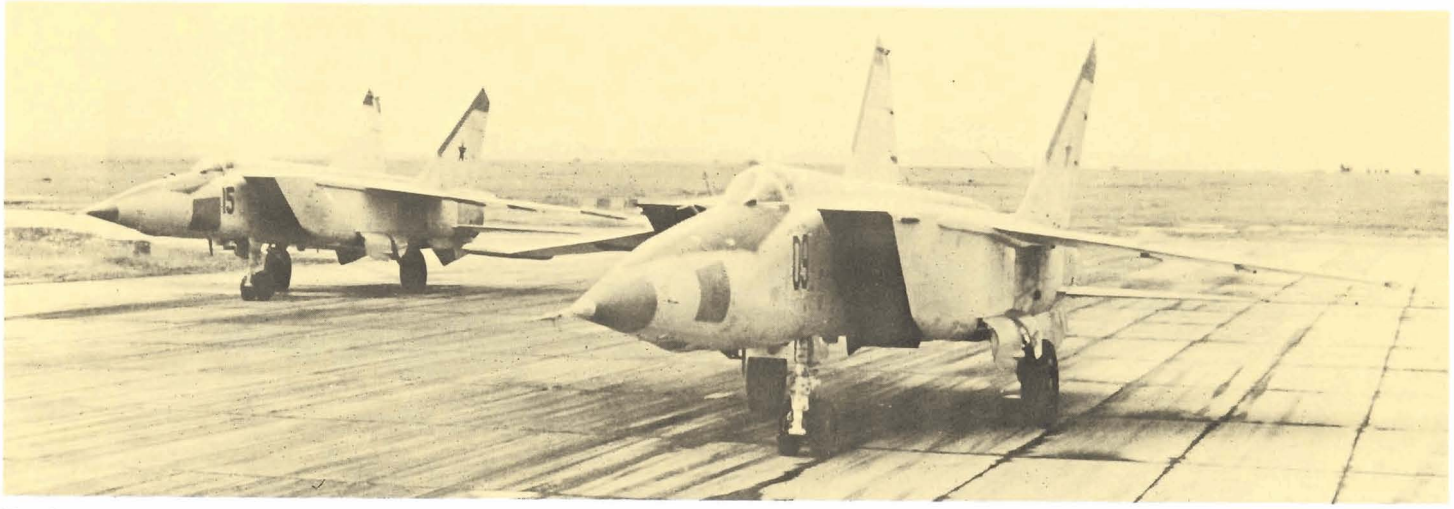
The following scenario was developed for illustrative purposes.

The first portion of mission planning for an airborne attack is to "ferret" out the electronic order of battle (EOB). This is done by satellites, reconnaissance or "Recce" aircraft and ground systems to determine where air defense systems are located and possibly determine areas of vulnerability. Satellites are used extensively to determine EOB.[7] The satellites don't have precise accuracy but do narrow the search for targets. This gives the Recce aircraft and ground stations a coarse azimuth from which to look for targets.[8]

Ground stations are not to be ignored as electronic-intelligence (ELINT) threats since they perform their function for artillery targeting. The attack planners construct radar coverage charts to determine where ground radars will have the best opportunity to detect their aircraft. In addition, they plot where passive missile systems would be located according to their understanding of normal deployment practices.

The ferrets have passive equipment that listens and detects. Every time a signal is detected, its azimuth is plotted. Quite often Recce aircraft feint a hostile act to provoke a response by the defense. If more radars come up, the Recce operator knows he has landed more "fish" in his net. Conversely, if he gets no reaction, he may interpret this as non-attentive radar operators and will keep pushing this hostile act until a response is received.

After several missions in conjunction with other intelligence, the Recce and mission-planner folks are able to tell which crews are on duty and how well they maintain their equipment.[9] This means that tactical evaluations (TACEVALs) are normally conducted not only by higher headquarters but also by the enemy. However, the enemy TACEVALs are designed to detect vulnerabilities to exploit during an attack. In addition to passive systems, Recce aircraft also have active sensors like side-looking airborne radar (SLAR). The SLAR active sensor is



The Soviet air force operates two reconnaissance versions of the MiG-25R Foxbat. The basic Foxbat-B, right, has a navigation radar in its small nose and a side-looking radar antenna just aft. It is not clear whether this particular aircraft carries the full range of cameras usually associated with this version. On the left is what appears to be a Foxbat-D that has a much larger side-looking radar antenna panel mounted further aft in the nose. Neither version is usually armed.

used in conjunction with the passive systems to detect targets practicing emission control (EMCON).

The association can be made this way. The enemy takes "radar" pictures of several known targets, such as air defense artillery sites or tank emplacements, and compares these "pictures" with what he knows of our unclassified deployment doctrine. The threat now has a data base to be used as a reference point for radar pictures of unknown targets. As an example, a Hawk battery or tank platoon takes up a position that provides an ideal mask for the unit. The naked eye, even when helped by optical enhancers (binoculars, telescopes), cannot distinguish deployed equipment that blends into the environment. Two countermeasures, EMCON and optical (camouflage), are now in use. The only way the enemy can now "ferret" out his targets is with an active system, SLAR.

With SLAR, a camouflaged Hawk site or tank platoon will appear on the radar scope as a typically deployed unit that is camouflaged. This is where the data base comes in. The ferret/Recce operator notes that he may have seen a particular "radar photo" before, although his passive systems don't record any electronic activity, radio or radar.

Back at the farm, the analysts start comparing the new radar photos with their data base, no doubt using computer enhancement. They then conclude their findings in an intelligence report which may read like this:

"Colonel general. The new photo is that of a redeployed Hawk unit (or Chaparral unit). It is Alpha Battery because yesterday they were not detected at their usual location. The battery commander is Capt. Adams because he does an excellent survey routine, and his equipment is always properly aligned according to the survey points. He typically maintains a regular redeployment rotation schedule between the points marked on the attached map. Adams is always at site C on Friday so that the soldiers on pass are close to the village. The radar operators congregate mostly at the "Pork Chop House" bar and restaurant. Previous radar ELINT indicates that his tracking radar is at a lower power than other Hawk sites and is operating slightly off frequency. The radar operators are typically underdisciplined on the radio and constantly disrupt communications because they talk too much."

A fictional report. But it conveys the product of intelligence efforts and how it will be used. The attack planners now have an overlay of the air defense fire units. Their data base tells them that there should be three batteries redeployed before the scheduled attack. They now have a known high probability of which batteries will move based on previous patterns. A final Recce update is scheduled one hour before the attack to confirm redeployments.

Standoff Jammer

It is commonly believed that the purpose of the standoff jammer (SOJ) is to jam radars. This could not be further from the truth. The purpose of the SOJ is to begin chewing up the 33 seconds discussed earlier. The tactic used to interrupt command and control is radar/communications jamming. The SOJ creates and pushes an interference "bubble" in front of the attack aircraft so that air defense is delayed in target detection and in making weapons commitments. This means that if we don't know what delivery tactic the enemy is up to, we cannot make a rational decision on how to defend.

Figure 2 depicts an REC coordinated attack and shows the approximate position of the SOJ in relation to the battle area. The SOJ drops chaff and jams those radars it detects on its ELINT receivers. This is the ECM phase, and the jamming is principally against acquisition and surveillance (early warning) radars. With these radars jammed, decision makers cannot be certain about the enemy's air order of battle (AOB). The defense cannot tell the size of the raid, nor can it determine in which direction the threat will vector. If defenders could determine where the attackers are grouping, they could also determine the type of aircraft being assembled in the raid and, consequently, guess at their intended target.

Typically, early warning radars are clustered within certain frequency bands which, unfortunately, make many radars susceptible to few jammers. This means that an aircraft can carry more effective radiated power against radars. If the radar frequencies are spread more widely across the frequency band, the aircraft would be forced to carry more jammers or jamming pods. More jammers equate to less ordnance onboard the aircraft. This, in turn, reduces its mission effectiveness.

The SOJ is typically an aircraft that is packed with electronic gear. Because of its load, it flies slower. The need to fly a jamming profile prevents it from too much maneuvering. These constraints apply whether the aircraft is

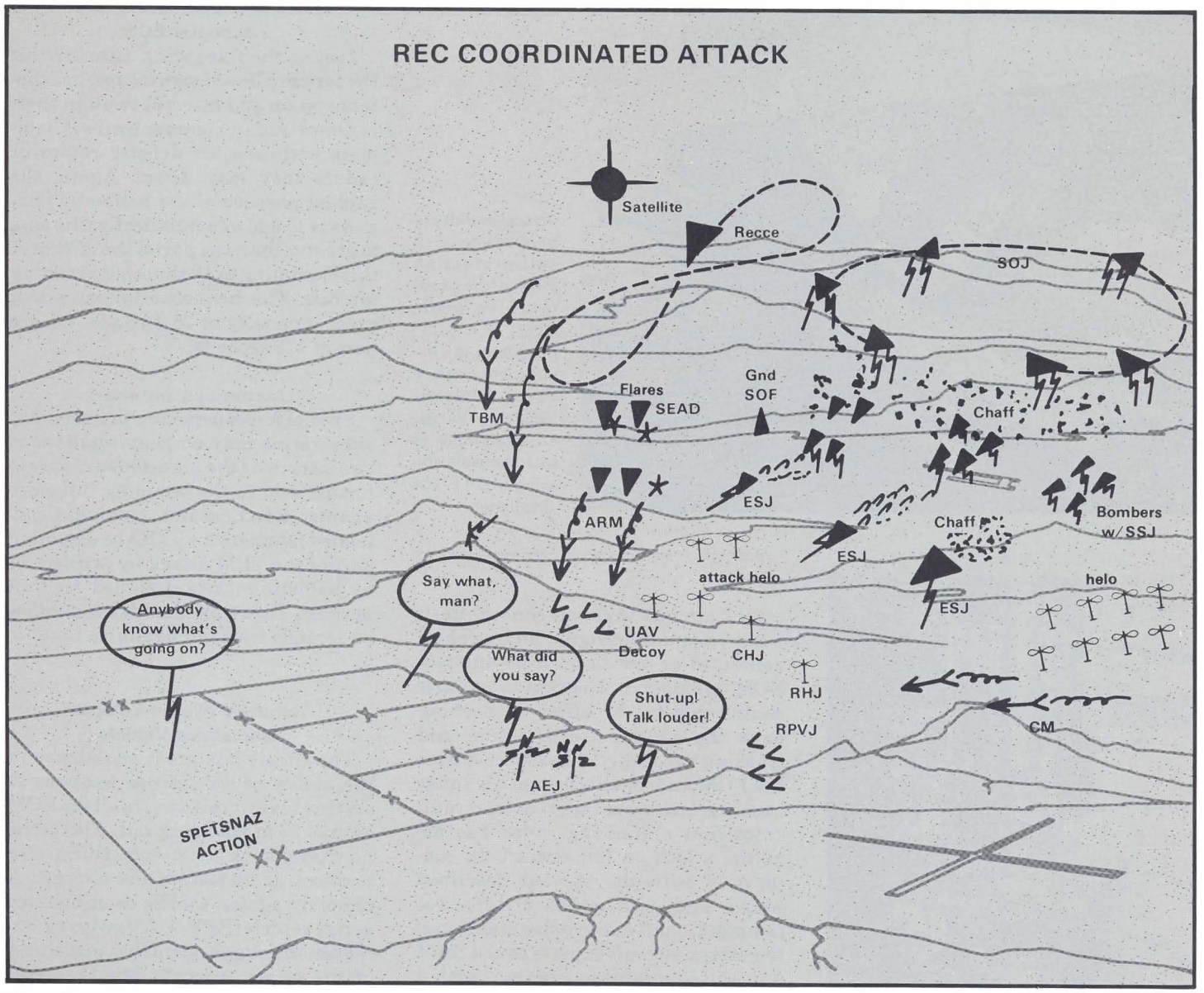


Figure 2.

the An-12 Cub, the EF-111 or EA-6B — the latter two definitely being faster than the Cub but slower than the strike version of the same aircraft. Therefore, the SOJ must fly just out of the surface-to-air missile (SAM) range. Because of its rear area deployment, it also has friendly SAM protection against airborne air defenders. Hypothetically, if early warning gives us 1,000 seconds for warfighting preparations, the SOJ attempts to rob 300 of those seconds. No problem. We only need 33 seconds.

Tactical Ballistic Missile

Ground air defense worldwide is the only military arm that fights "Rocky" style. That is, hold your face out there and let your opponent pound on it until he falls in exhaustion. This means SAM weapons try to "burn through" all the countermeasures that are directed against them. The radars look directly into the jammers, and the jammers look right down the throat of the radar receivers. By contrast, all other arms block and flank the enemy. When the jammers turn on, so do all the radars to determine the parameters of the enemy attack plan. Remember, the Recce aircraft went airborne for a final confirmation of air defense fire unit plots and to target those air defense sites. All air defense units are in place exactly where the enemy predicted them to be deployed. What would be better than to drop a few tactical ballistic missiles (TBMs) on the SAM sites as openers for the air battle? How about also dropping a few on airfields so that the airborne air defenders are not slighted?

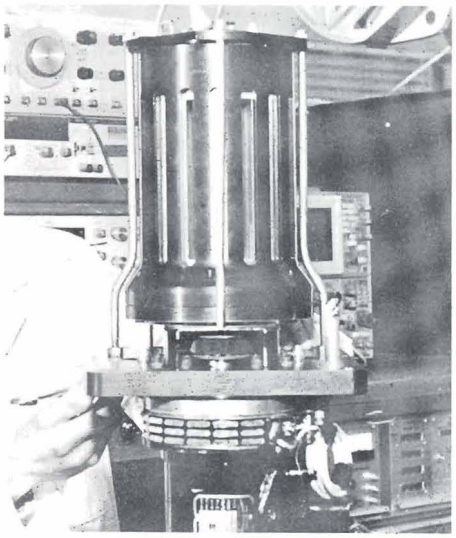
The TBMs, if successful, could open a hole all the way through air defense, resulting in some serious defense problems. If TBMs are partially successful, they may buy 100 seconds by forcing radars to turn off, move or take some other defensive action for survival. We still have 600 seconds left, and we only need 33 seconds.

Escort-support Jammer

It's time to launch the strike force. The enemy strike force is escorted by an escort-support jammer (ESJ) aircraft, which functions as a magnifier of the SOJ. The ESJ is not as big or powerful as the SOJ, but it capitalizes on the confusion the SOJ has started with its ECM. Using onboard jammers and chaff, it precedes the strike force.

On the basis that air defense cannot see well enough to aim a weapon because of SOJ interference, the ESJ moves forward toward the enemy and extends the bubble of interference created by the SOJ. ECM is used against radiating radars and a chaff

Attack aircraft are provided with self-protection through the use of jamming pods. ALQ-167 jamming pods in various configurations cover different frequency bands. This example is fitted beneath the wing of an F-104 Starfighter.



An active infrared jammer developed by British Aerospace Dynamics Group is now entering service on British military helicopters. The jammer's broad-band IR source is a graphite radiating element contained within a sapphire envelope. The optical assembly surrounding the lamp is rotated at high speed to provide a shutter action as the assembly passes between the lamp and 16 slots in the other drum. (IDR)

corridor is dispensed for the attackers to use as screen against the same radars. The ESJ occasionally synchronizes (sort of hit and miss ECM sweeping) its jamming with the SOJ so that it will be additive. The interference is just enough to prevent air defense from getting a bead on a target. The ESJ targets acquisition radars to prevent target transfer to tracking radars, and cuts our time by about 150 seconds, still leaving 450 seconds for a successful engagement. We only need 33 seconds.

Self-screening Jammer

A self-screening jammer (SSJ) is an attack aircraft that can conceal itself within a jamming signal and/or chaff generated or dispensed from onboard ECM equipment. The SSJ is another contributor to the effort of pushing back the air defense detection and tracking capability. The attacker uses the ECM and/or chaff when his radar homing-and-warning receiver indicates that a tracking radar has acquired a lock on his aircraft. In conjunction with the support described above and with onboard deceptive jamming, chaff and evasive maneuver, the attack aircraft expects that a SAM unit will be unable to engage it with a missile. The SSJ buys the attacker 150 seconds of time. Not to worry, right? We still have 300 seconds and only need 33.

Infrared Countermeasures

In the meantime, an air defense countermeasure tactic is to fly low, like the B-24 Liberators in World War II that flew at 50 feet above ground level. (Talk about pilots with guts! But then they WERE Army.) The threat aircraft then drop flares if there is any short-range or manportable air defense activity. The aircraft "jink" or maneuver if they detect any machine-gun fire. Flying low also means reduced detection range for ground-based air defense radars. This is an assessment of 100 seconds. We are now at 200 seconds remaining available for a successful engagement. The threat, knowing that his personnel will not always do the correct thing at the correct time, throws in a few more surprise air defense countermeasures.

Helicopter ECM

Just as the fixed-wing attackers hit the forward line of own troops, helicopters pop up and attempt to align their onboard radar/communications jammers with any air defense radios or radars they may detect. Again, the explicit purpose of the heliborne jammers is to add synergistically (the sum is greater than the parts) the effects of their jamming to all the other jamming aircraft. The heliborne jammers will exact a penalty of 75 seconds. We are now at 125 seconds.

Unattended Jammers

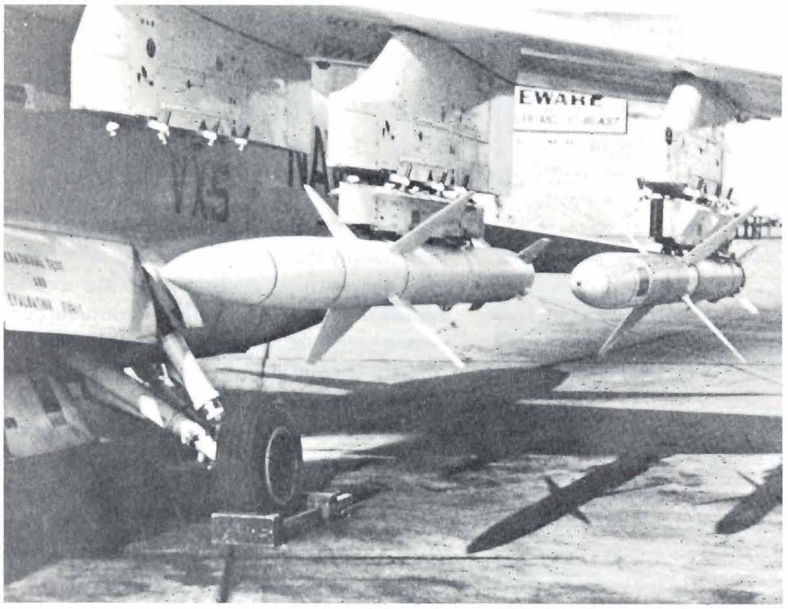
Special forces personnel or in-country subversives may emplace unattended jammers near the air defense radars to further add to the jamming influence against detection and tracking. Unattended jammers may also be emplaced during the TBM attack by artillery or by ballistic rockets designed for that purpose. These jammers delete another 25 seconds from our available time.

Remotely-piloted Vehicle/ Unmanned Vehicle

The threat has great confidence in the ability of air defense weapons to destroy his aircraft despite all the ECM he has been squirting out. Therefore, he gives us a little something else to shoot at instead of his aircraft. A remotely-piloted vehicle or unmanned aerial vehicle (RPV/UAV) with radar-reflection enhancement flies just ahead of the attack aircraft. The theory is that with radar-reflection enhancement to allow decoys or drones to burn through ECM, they will meet all the criteria for hostile aircraft and, consequently, will be engaged. This has two disastrous effects: it sucks off our missiles against worthless targets, and it delays us from engaging the real threat targets. Penalty is 25 seconds; 75 seconds left. If all the missiles from a fire unit are launched against the RPV/UAV, the desired result (no air defense) is achieved. The battery(ies) is then out of action for reload, and time equals zero.

Cruise Missile

To ensure maximum force survival, the attack planners can launch several cruise missiles (CM) to be on target just before the bombers arrive. The CMs can be targeted at either the target area or against air defense sites. These are small, highly lethal, low-flying vehicles that are just as much a threat as manned aircraft. The CMs exact an-



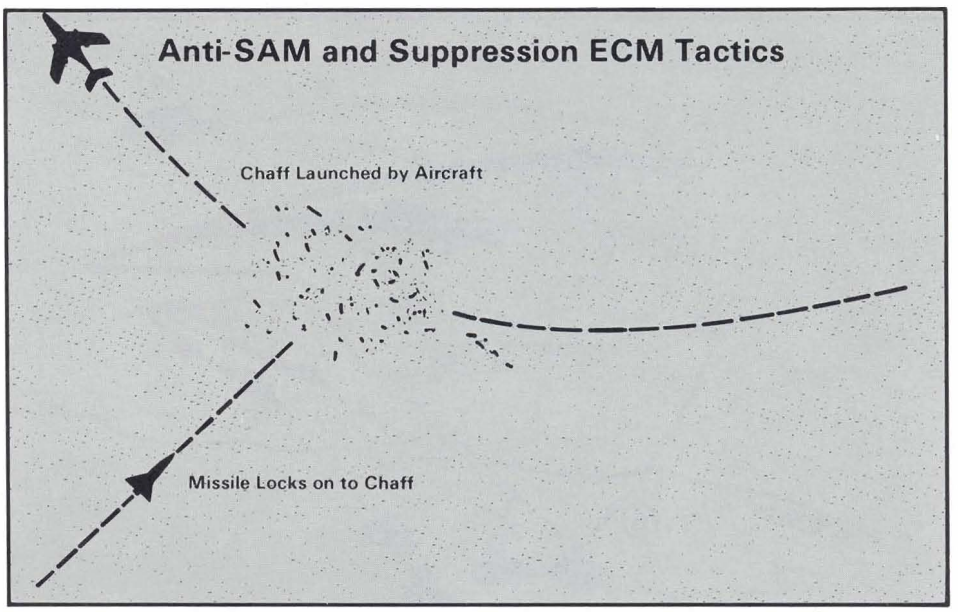
This A-7 Corsair has a high-speed anti-radiation missile (HARM) inboard and a Shrike anti-radar missile (ARM) outboard.

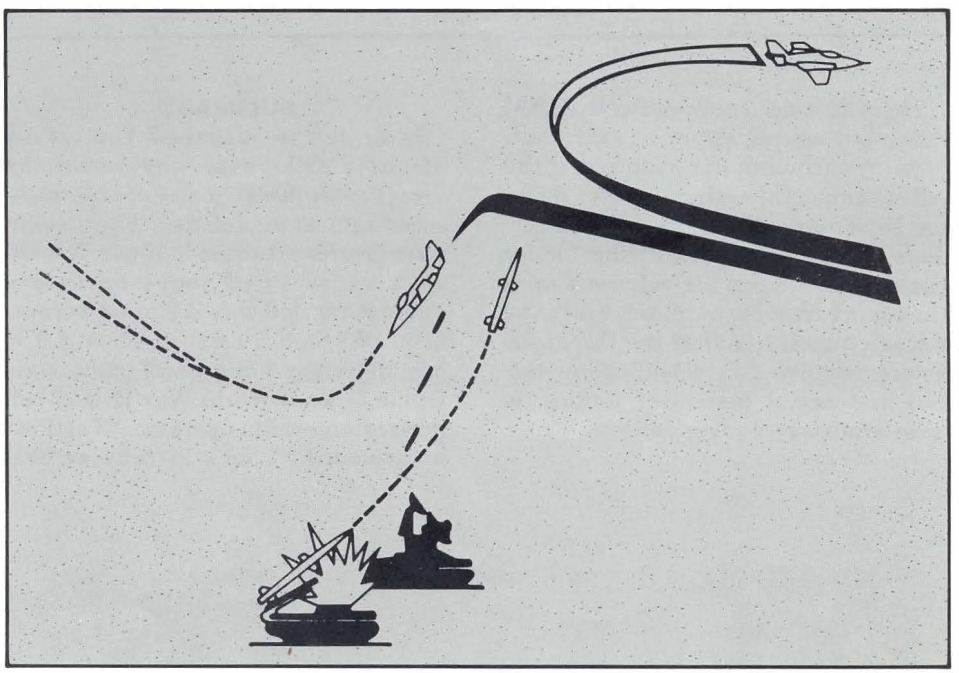
other penalty of 25 seconds; 50 seconds left.

Anti-radiation Missile

We can sweat our way through the heat the threat could throw at us. We can burn through the jammers. With the decoys and cruise missiles disposed of, we now lock up and engage. Oops! When we locked our radar on him this time, he launched an anti-radiation missile (ARM). The ARM tracks our signal (acquisition or track) as a homing device and zeros in to destroy it. The air defenders then face the question, "Do we do an 'OK' corral shoot-out or shut down?" High-speed ARMs, like the Air Force HARM, are designed to "out gun" the SAM site by destroying the radar before it can command guide the missile to the aircraft. An Israeli commander who elected to track an AS-5 during one of the Israeli-Arab conflicts caught the full burst of that big warhead.

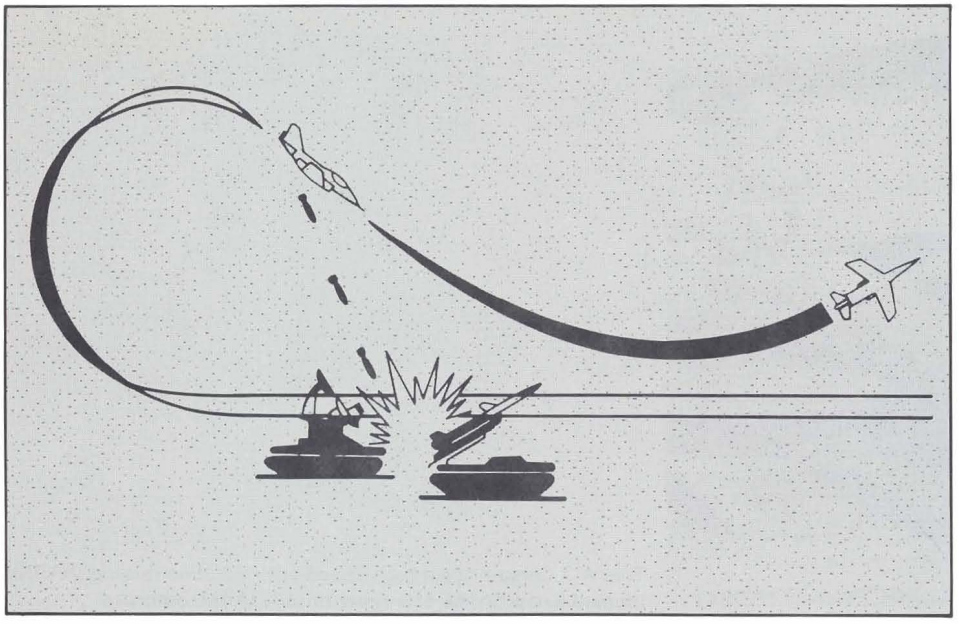
The ARMs give the attackers the ability to destroy or suppress SAM sites to gain control of the air. Therefore, the air defender must know not only the technological tactics but also the aircraft maneuver tactics, some of which are depicted here.



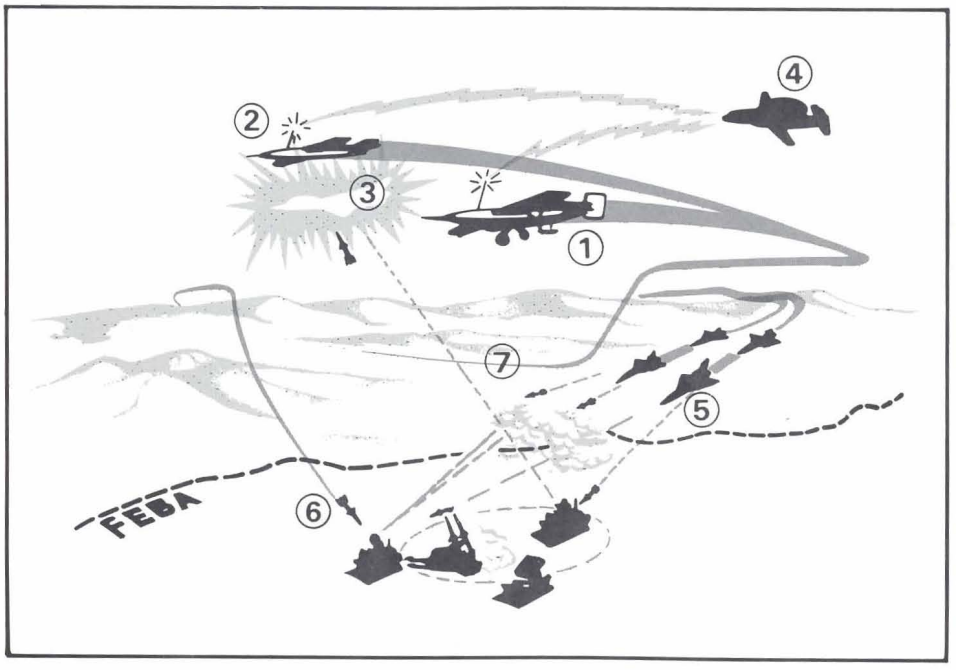


Israeli aircraft used chaff against Syrian missiles (above right).

In this tactic, the first Israeli aircraft turned back, launching chaff to deceive enemy radars, while the other carried out a dive-bombing attack on the missile battery (lower right).



Exploiting the weak points of the SAM-6 system, mainly the battery's inability to respond well at very low elevation, Israel's aircraft approached at an extremely low altitude, concealed by the confusing radar echoes reflected from the ground (ground clutter). After passing the battery, the aircraft pulled up vertically, then nose-dived onto the target, launching anti-tank missiles or bombs. On completion of the attack, the aircraft, still flying very low, launched chaff and infrared flares to deceive any other SAMs which might be launched.



This was a typical Israeli air force air strike to seek and destroy Syrian SAM sites. One RPV (1) carried a TV camera for reconnaissance of the sites; the other RPV (2) beamed signals which deceived the Syrians into believing that the tiny fiberglass aircraft were Israeli jets (3). The Syrians turned on their radar systems, allowing the RPVs to "fingerprint" the radar emissions and relay this information to the E-2C aircraft (4) which vectored strike aircraft to attack the sites. Air-to-surface ARMs launched by F-4 Phantoms (5) and surface-to-surface ARMs (6) destroyed the radars. The attackers defended themselves by launching chaff (7) and flares to prevent lock on by tracking radars and missiles' homing IR seekers. Without the radar, the blinded SAM launchers were destroyed by cluster bombs dropped by F-15s and F-16s.

The ARMs need not destroy the SAM radar but simply enforce radar shutdown. Continuing our example, if the ARMs cause the radars to shut down for 18 seconds, there are only 32 seconds left — not enough time for an engagement. Since air defense denies the enemy freedom of maneuver in the air, it's imperative that the threat develops technology, technological tactics and aerial maneuver tactics as countermeasures to air defense.

SUMMARY

Is air defense effective? You bet his life it is. Otherwise why would the threat assemble so many countermeasures against air defense? Those countermeasures are listed in Figure 3. With such an array of countermeasures against air defense, it should become clear why tactics are so important. The best authority I know on tactics is my Uncle Mike, a World War II B-17 tail gunner and radio operator. "Tactics!" he exploded. "That's the way we beat the enemy when we were outnumbered. And today, when these young guys ask me how I beat them, I tell them — Tactics." At 73, he's still a champion bicycle racer, taking home medals and trophies from each race.

It's no revelation that whoever controls the sky controls the war. Ground air defense is one key element in maintaining this control over friendly territory. The Air Force, naturally, is the other. *VIDEBIMUS*

Countermeasures

Reconnaissance:
- Space: Satellites
- Airborne: Fixed wing
- Ground Based: Direction-finding station

Active and Passive Sensors

Countermeasures:
- Standoff jammer: ECM and chaff
- Escort-support jammer: ECM and chaff
- Self-screening jammer: ECM and chaff
  - Also possibly on-board: Anti-radiation missiles
    - Flares
    - Infrared countermeasure pod
    - Radar homing and warning

Helicopter: Radar ECM
Communications ECM

Remotely piloted vehicle/unmanned aerial vehicle: ECM
Chaff
ELINT
Sensor
Warhead

Tactical ballistic missile: Surface-to-surface
Possible ARM

Unattended jammers: TBM emplaced
Artillery emplaced
Subversive emplacement

Cruise missiles

Spetsnaz: (Not covered in this article. See FM 100-2-2, Unconventional Warfare)

Stealth: Technology for signature reduction

Figure 3.

Notes:

[1]These new weapon systems, together with those already in existence (SAM-2 and SAM-3), constituted a truly exceptional air defense system, permitting the Egyptians to advance even though their air force had not achieved air superiority. Israeli aircraft . . . found that there was no way to avoid that network of fire; if they dived to low altitude to avoid SAMs, they inevitably flew straight into vicious flak from the rapid-firing Shilka guns, or became targets for small Strela missiles. Israeli air losses were so high that ground commands decided no longer to request air support against enemy armored columns. — Mario de Arcangelis, *Electronic Warfare*, Milan, Italy, 1981. Distributed by Sterling Publishing Co., Inc., New York, 1985.

[2]Maj. Gen. Sharon's task was to establish a bridgehead at the canal and hold it open for Maj. Gen. Adam's three brigades of tanks and several brigades of paratroopers in half-tracks to sweep across the canal.— Chaim Herzog, *The Arab-Israeli Wars*, Random House Publishing Co., New York, 1982.

Sharon, well known for not obeying orders, disliked the idea of being a doorman and sent his own tanks across the canal into the Egyptian rear. The Egyptians had committed all reserves to the battle to help take pressure off Iraq. Sharon had a free ride behind enemy lines.

[3]As part of its electronic war, the Soviets can be expected to attempt to saturate and confuse our C^3I with powerful barrages of electronic jamming supplemented by thick corridors of radar-reflective chaff (as they did in 1969 in Czechoslovakia) and also to destroy electronic emitters with flocks of anti-radiation missiles. . . . The Soviet incursion into Czechoslovakia was heralded by the launching of huge clouds of chaff and powerful jamming that completely disrupted Czechoslovakian warning and communications systems. . . . It is important to note that REC is integrated operationally into all elements of Soviet military planning. — *National Defense*, April 1985.

[4]The purpose of REC is to limit, delay or nullify the enemy's use of his command and control systems, while protecting one's own by electronic counter-countermeasures. An estimated goal is to destroy or disrupt at least 50 percent of the enemy's command, control and communications, either by jamming or destructive fires. . . . Against this background, the aim of REC is to disrupt the enemy's critical time phasing to the extent that perishable information (on which decisions and orders are based) is obsolete; the enemy's original goal, therefore, cannot be met. — *Soviet Army Operations*, IAG-13-4-78, April 1978.

[5]The Soviets recognize the impossibility of completely depriving enemy forces of their sources of control for extended periods of time. Accordingly, Soviet REC planners have established mathematical models to estimate "critical times" in command and control procedures. This critical time is defined as the sum of the times required to complete a sequence of steps in control: collection and reporting of data, evaluation and decision, issuance of orders and preparation and completion of action. — *Soviet Army Operations and Tactics*, FM 100-2-1, July 1984.

[6]The most common air ECM operations are spot or barrage jamming and dispensing chaff directed against enemy air defense early warning and fire control radars. Frontal aviation bombing operations will be protected or camouflaged by aircraft using ECM in either a standoff or escort role. Jamming equipment, with an effective range up to 200 kilometers and covering frequencies used by NATO air defense radars, is installed in these ECM aircraft. They also may eject chaff to achieve jamming, deception and camouflage. Individual aircraft may carry self-screening jammers and chaff dispensers. — FM 100-2-1.

[7]About 70 percent of Soviet space systems serve a purely military role. Soviet military satellites perform a wide variety of reconnaissance and collection missions. Recent reconnaissance satellites have improved intelligence collection processing capabilities. ELINT satellites can lock onto intercepted signals to provide information concerning target location. Large area radar surveillance satellites have also been identified. — FM 100-2-1.

[8]The Soviet direction-finding capability is equivalent to that for intercept. Various types of mobile directional antenna systems can be used in a radio direction-finding role. Forward-area mobile elements include a VHF tactical radio direction finder with an Adcock antenna, as well as the POLE DISH radar direction finder. — FM 100-2-1.

[9]Airborne electronic reconnaissance platforms provide a much improved capability to intercept radio and radar signals more frequently and at greater distances than ground-based systems. These airborne electronic reconnaissance platforms are aimed at the detection and location of enemy battlefield surveillance radars, command posts, communications centers and tactical nuclear delivery systems. They also are used in standoff or escort-jamming roles. — FM 100-2-1.

Tony LoPresti is chief of the Tactical Air Defense Branch, Concepts and Studies Division, Directorate of Combat Developments, Fort Bliss, Texas.

Air Attack Warning

OPFOR attack helicopters prowl the National Training Center

by Capt. Steve Makarsky

"**They are representatives** of the dark force — the mechanized embodiment of everything that is vile and evil in the world," says Maj. Patrick Ritter, editor-in-chief of *Armor* magazine. "I have nightmares about them."

Soldiers now have a chance to confront these "representatives of the dark force" on the mock battlefield of the National Training Center (NTC) at Fort Irwin, Calif. In addition to fighting all the other elements of the opposing forces (OPFOR) stationed there, rotational units now face a new threat: Mi-24 Hinds. These U.S. Army "Hinds" are actually four UH-1H helicopters visually modified (VISMOD) to resemble Soviet Hinds. They made their combat debut in February and met with immediate success: a pair of Hinds on their first attack run destroyed two M-1 tanks. Since then, they have continued to fly against the Blue forces with even more devastating results.

While this news may be met with less than an enthusiastic response on the part of units preparing to go to the NTC, the Hinds demonstrate that the "vertical dimension" of the modern battlefield cannot be ignored or forgotten. They also illustrate the vital importance of fielding an effective forward area air defense system to support and protect the combined-arms team. All of this is underscored by the fact that the Soviets make heavy use of their attack helicopters in the close-air support role. The five-kilometer standoff range that the AT-6 Spiral anti-tank guided missile (ATGM) gives the Hind further complicates the problem of detecting and engaging the attack helicopter threat.

The Hind program began when the U.S. Army Training and Doctrine Command (TRADOC) decided that an authentic OPFOR attack helicopter force was needed to give Army units practical experience in countering enemy attack helicopters. Army leaders felt it was particularly necessary in light of the growing threat posed by Soviet attack helicopters. Forces Command provided eight pilots and four UH-1Hs while TRADOC furnished Soviet attack helicopter doctrinal information. Red Thrust, FORSCOM's OPFOR Training Detachment, developed the training program and provided instructors.

The Red Thrust mobile training team arrived at the NTC in August 1985 to begin training the attack helicopter team. The attack helicopter team consisted of the eight pilots who would fly the VISMOD UH-1Hs and the S-3 Airs from the two battalions which comprise the 32nd Guards Motorized Rifle Regiment, the NTC's OPFOR. The S-3 Airs were trained to act as air direction officers (ADO), the Soviet equivalent of ground-based forward air controllers. Their training was especially important because, under Soviet doctrine, not only would they control virtually all aspects of the helicopters' employment, they would have to do it while moving as part of the support ground force.

The training was divided into three phases conducted over eight days. In Phase I, the attack helicopter team received basic information. Subjects included Soviet attack helicopter characteristics, employment doctrine, helicopter missions, weapons capabilities, flight formations,

mission (attack) profiles and attack tactics. Also included was background information on Soviet attack helicopter development, pilot training and the Soviet "mind-set."

Phase II began with in-flight practical exercises. As the attack helicopter team mastered one stage, the training progressed to the next, harder stage. During the first stage, the pilots learned to fly various Soviet formations. Next, they learned to incorporate the formations in standard mission profiles for ATGM as well as rocket and gun attacks. Finally, they combined the formations and profiles into attack tactics. Here, they learned to use a variety of techniques, including staggered and simultaneous attacks from one or two directions, and practiced in conjunction with ground attack forces. All the while, the pilots were taught to increase their survivability by using terrain masking and the maximum standoff ranges of their weapons systems.

In the final certification phase, the attack helicopter team demonstrated its proficiency. Experts from the Threat Directorate, Combined Arms Center, Fort Leavenworth, Kan., used a five-page checklist to evaluate the team. The pilots displayed their ability to fly standard Soviet formations and execute various tactical close-air support missions. These missions included a simultaneous ATGM attack from a hover; a staggered ATGM attack from one direction; a staggered rocket and gun attack from one direction; simultaneous ATGM attacks from two directions; and simultaneous rocket and gun attacks from two directions. At the same time, the ADOs displayed their ability to control the aircraft while moving as part of the ground attack force. They selected the correct weapon system to engage targets; specified the formations, profiles and tactics; and designated attack positions and attack times. They also kept the pilots informed as to friendly and enemy locations, including the location of enemy air defense artillery units.

Visually modified UH-1H helicopters simulate the weapon systems and tactics of the Soviet attack helicopters.

The attack helicopter team passed the certification and was prepared to fly according to Soviet doctrine. Still, fielding the Hinds was not without its difficulties. Problems with getting the VISMODs air-safety certified and all the multiple integrated laser engagement systems (MILES) working properly had to be overcome before the team could fly as part of the OPFOR. This caused a six-month delay between the training of the attack helicopter team and its initial use at the NTC. Most of the major problems have since been eliminated, with the exception of scoring ATGM kills. The VISMODs use a modified MILES TOW system to replicate Soviet AT-6 Spiral ATGMs. This causes the MILES equipment to register a TOW kill when a Blue vehicle is hit and makes sorting out Hind kills from cases of fratricide a problem. The scoring problem, however, should be solved shortly.

The attack helicopter team has been more thoroughly integrated into OPFOR operations with each passing rotation and has quickly picked up the esprit de corps that characterizes the 32nd Guards. "Our mission is to provide close-air, anti-armor support to the OPFOR in defense as well as in attack," attack air section leader CWO 3 Bill Butts told Fort Irwin's *Combined Arms Monitor*. "We are the Army's only opposing force attack air element. Nobody has been trained and certified like we have."

Blue forces are steadily improving at the NTC. Among other things, they are doing a better job of integrating air defense units into the maneuver force, especially against OPFOR fixed-wing aircraft. The new helicopter threat will make them even more conscious of the need to develop air defense expertise. Friendly forces will learn to detect Hind vulnerabilities and adjust to Hind tactics, just as they've learned to counter other Soviet weapon systems and tactics at the NTC. The Hinds will make sure they learn on a battlefield that is as realistic as possible.

Capt. Steve Makarsky, an Infantry officer, is a Red Thrust mobile training team chief with the U.S. Army Opposing Force Training Detachment, Fort Hood, Texas. He led the team that trained OPFOR Hind pilots and air direction officers at the NTC.

CWO 2 Darrell Bowen is one of eight OPFOR attack helicopter pilots assigned to the 32nd Guards Motorized Rifle Regiment at the National Training Center. (Photo by Sp4 Fred Baker)

OPFOR Pilots Exploit 'Operational Window'

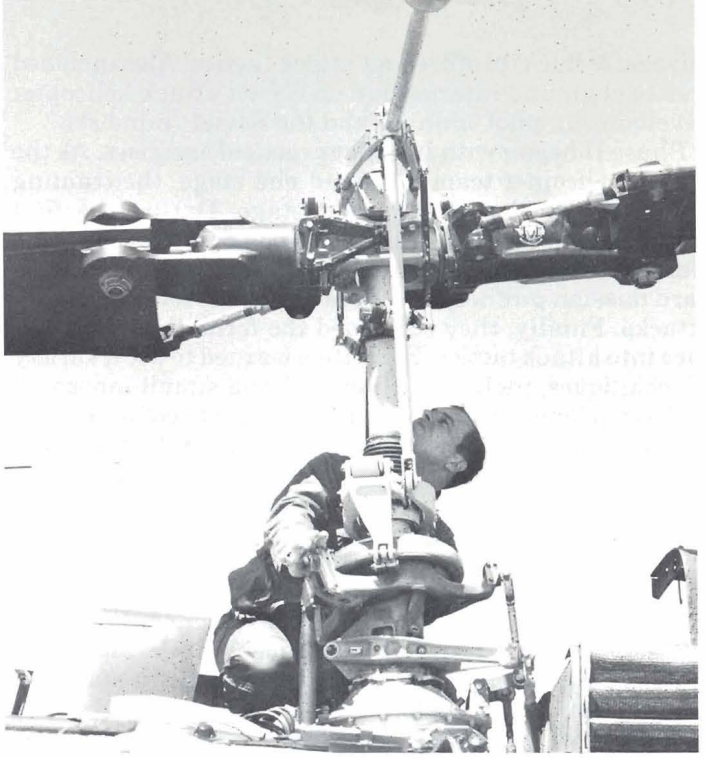
by Dewey Bennett

Air defense units can expect opposing force (OPFOR) attack helicopter pilots operating at the National Training Center (NTC), Fort Irwin, Calif., to exploit an "operational window" created by the "dead zone" of air defense missile systems and the inability of air defense guns to reach out to the standoff ranges of attack helicopters.

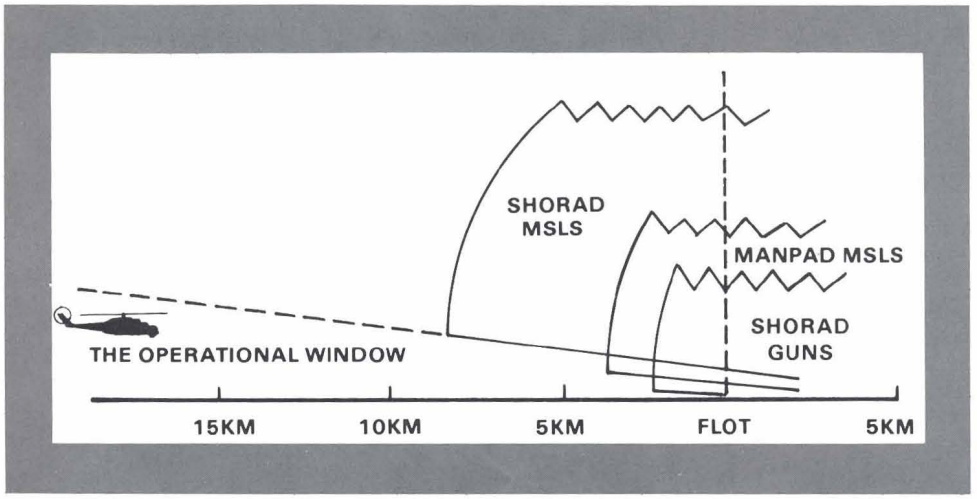
The Yom Kippur War first demonstrated the ability of attack helicopters to operate effectively within the window. The effectiveness of attack helicopters within the window has since been documented by field exercises, NTC rotations and the follow-on evaluation of the terminated Sergeant York Gun. The Soviets are well aware of the window's existence. "Closing the Window," an excellent analysis of the Soviet's attempt to close their own air defense window by Edward J. Bavaro, was published in the January 1986 issue of *Aviation Digest.*

The attack helicopter threat is growing rapidly. The Soviets consider the attack helicopter the most effective weapon against armor and are constantly upgrading and expanding their rotary-wing capability. At divisional level, helicopter detachments continue to expand into squadrons. In some squadrons, the number of Mi-24 Hinds has increased. At army level, about 20 attack regiments have been formed, with as many as 60 Mi-8 Hip and Hind helicopters in each regiment.

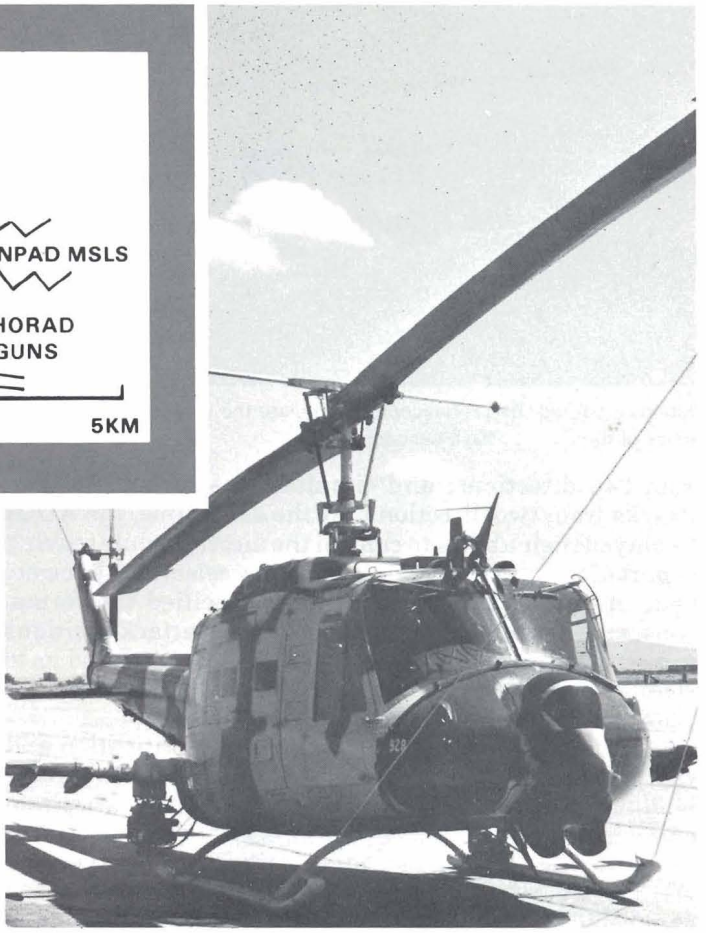
The most numerous Soviet attack helicopters are the



Keeping the National Training Center's four mock Hinds aloft takes constant maintenance. Above, CWO 2 Darrell Bowen performs preflight checks. (Photo by Sp4 Fred Baker)



Attack helicopters can operate effectively within an "operational window" created by the dead space between long-range and short-range air defense missiles and the inability of air defense guns to reach out to the standoff range of attack helicopters.



The OPFOR attack helicopters are equipped with multiple integrated laser engagement system devices that simulate the full array of threat attack helicopter armament. (Photo by Sp4 Fred Baker)

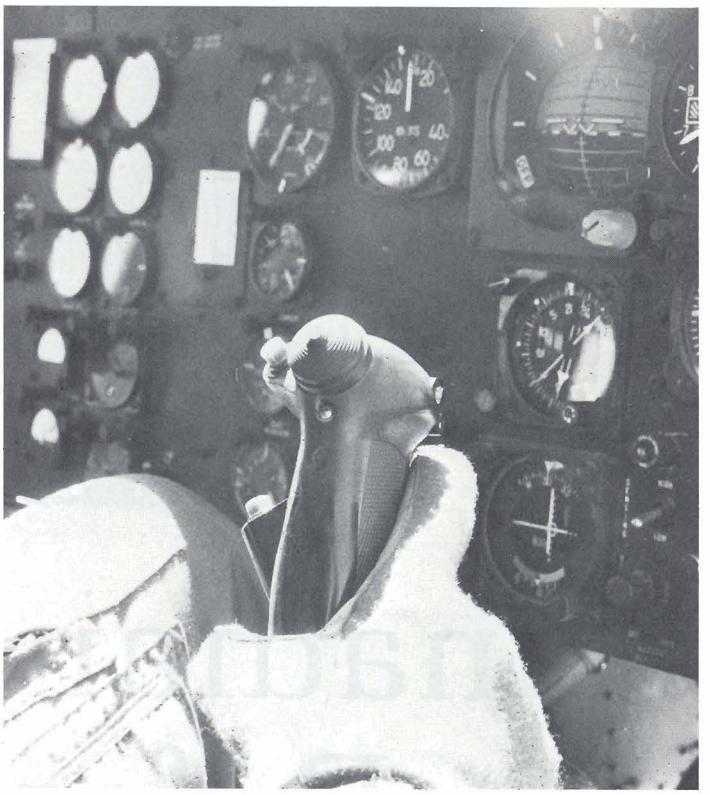
heavily armed Mi-24 Hind Ds and Hind Es. A new attack helicopter, the Mi-28 Havoc, similar to the Apache, is designed for ground support but equipped for air-to-air combat. Another new attack helicopter, the Hokum, has no Western counterpart. *Aviation Digest* reported that the Hokum is tailored for air-to-air combat and may give the Soviets rotary-wing superiority.

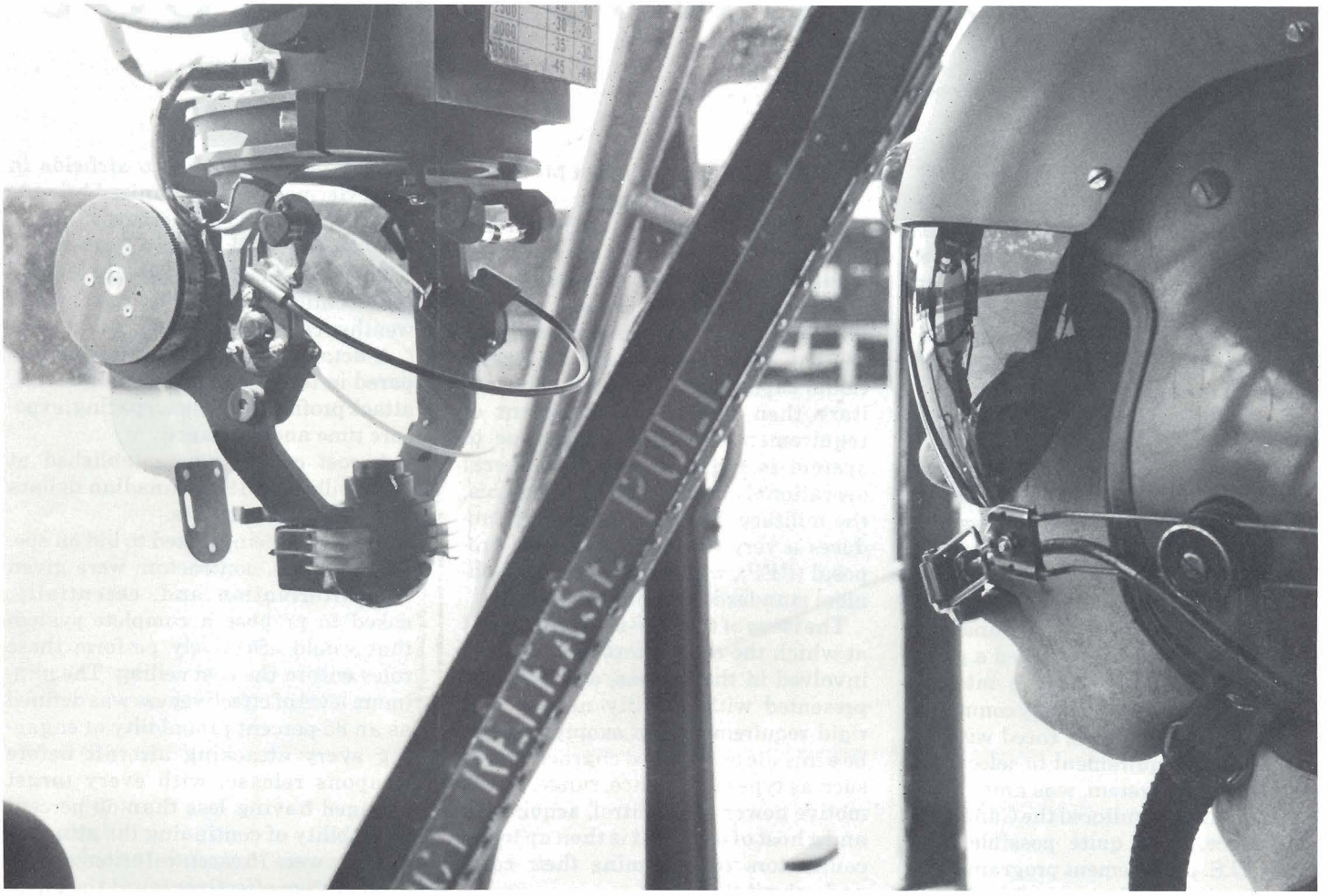
The Soviets are equipping their helicopter with infrared suppressors, infrared decoy dispensers and additional armor to increase their survivability — modifications that are probably the result of lessons learned in Afghanistan.

Air Defense Artillery hopes its forward area air defense (FAAD) system will slam shut the operational window, but the FAAD system with its new weapon systems is years away from fielding. Air defense units, in the interim, must make the best use of existing weapon systems and sound air defense tactics to counter attack helicopters.

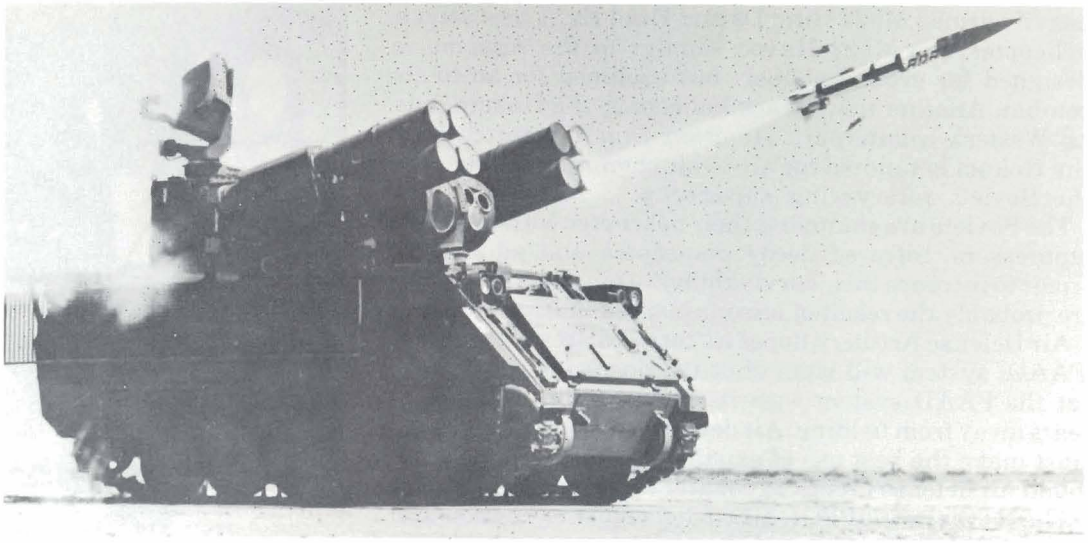
The NTC's new OPFOR attack helicopter team provides very realistic training for ADA units supporting a maneuver force. In the past, the task force was not subjected to a realistic air threat. The OPFOR attack helicopter team has changed that condition. There is now a well-rounded, three-dimensional threat to give air defenders a chance to learn to close the operational window.

Dewey Bennett is a training specialist with Lessons Learned Integration Division, Directorate of Evaluation and Standardization, U.S. Army Air Defense Artillery School, Fort Bliss, Texas.





Trained to imitate threat attack helicopter tactics, the OPFOR pilots take advantage of the Hind's five-kilometer standoff range. (Photo by Sp4 Fred Baker)



The air defense/anti-tank system (ADATS) is a fast, mobile, laser beam-riding missile system. It will be used in airfield and forward area applications.

Canadian Low-level Air Defense Project

by Maj. D.R. Hopper

An article in the Winter 1985 issue of *Air Defense Artillery* described the status of Canadian Air Defense Artillery at that time. In it, mention was made of a project to acquire a new short-range air defense system. Since that time, the seven proposed systems were narrowed to three. These were subjected to further rigorous evaluation before the final selection was made.

Of even more interest than the final outcome was the methodology used to solicit bids and procure the system. The program used methods which were, in many respects, significantly different from the traditional processes of military procurement. The Canadian project consequently attracted a great deal of interest among the international industrial and military communities. The United States, faced with its own sudden requirement to select and acquire a new system, was among the nations which monitored the Canadian experience. It is quite possible that future U.S. procurement programs will incorporate some features of the Canadian methods.

This article outlines the methods and status of the Canadian low-level air defense procurement program.

Traditional Procurement Method

The traditional military procurement method puts the burden on the military to decide precisely, in great detail, what type of system it requires. To meet a perceived deficiency in capability, a materiel solution is derived by the combat developer. A required operational capability is compiled. The military then produces a statement of requirement detailing what type of system is required and its general operational characteristics. From this, the military procurement agency produces a very detailed request for proposal (RFP), which incorporates technical standards and other aspects.

The issue of the RFP is the first point at which the contractors are formally involved in the process, and they are presented with a fairly narrow and rigid requirement. An example might be a missile of specified characteristics such as type of guidance, range, speed, motive power, fire control, acquisition and a host of others. It is then up to the contractors to determine their costs and submit their bids.

Canadian Approach

The Canadian requirement was quite well defined. The elements requiring air defense were two airfields in West Germany, a mechanized brigade task force in West Germany and a light-brigade task force in Norway.

The RFP was able to specify the role and location, from which terrain and weather could be derived.

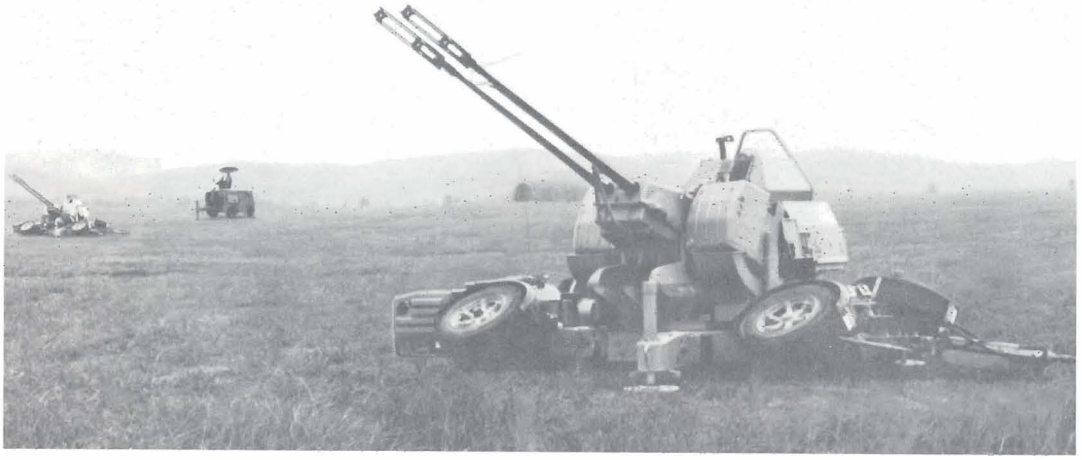
A detailed threat scenario was prepared in terms of numbers of aircraft, attack profiles, sequence, spacing, exposure time and ordnance.

A cost ceiling was established at $600 million in 1982 Canadian dollars for total program costs.

Instead of being asked to bid on specific systems, contractors were given this information and, essentially, asked to propose a complete system that would effectively perform these roles within the cost ceiling. The minimum level of effectiveness was defined as an 85-percent probability of engaging every attacking aircraft before weapons release, with every target engaged having less than 50 percent probability of continuing the attack.

There were 16 essential criteria, with total system effectiveness at the top of the list. Additionally, there were many "highly desirable" and "desirable" criteria.

The important feature to note is that



The Oerlikon twin 35mm towed anti-aircraft gun, controlled by the Contraves Skyguard fire control system, is a powerful supplement to the ADATS systems in the air defense of airfields.

contractors were not limited to any particular type of system or mix of systems. If a contractor thought that missiles alone could do the job, he was at liberty to submit an all-missile solution. Criteria were stated in such a manner as to meet the requirement but still allow the contractor maximum flexibility in how to achieve it. For instance, the mobility requirement was stated as "similar to a modern APC," but did not require a specific vehicle type or category. As criteria were developed, so were methods of evaluating each. If a characteristic could not be evaluated, it was not included as a criterion.

The RFP was sent to 38 companies in 12 countries. Of these, seven replied with complete systems, and eight bid components of a system.

Evaluation

The objective of the evaluation was to either select a source or to narrow the selection to a "short list" of two or three.

The main criteria of evaluation were operational objectives, to include operational effectiveness, technical quality, supportability and growth potential; and cost, risk, schedule and "others," such as human engineering. Here again, it is important to emphasize that the objective was to evaluate the effectiveness of the total system, including missiles, guns, radars, and command and control.

The systems were evaluated separately in each of the three roles: airfield defense; field, Central Europe; and field, Norway.

Operational evaluation consisted of a general assessment against the statement of requirement, detailed cloth model and map exercises, simulation, war-gaming and detailed evaluation.

Engineering evaluation consisted of a check for completeness of the proposal, confirmation that the proposals met the essential criteria, confirmation of data and claims, and very detailed engineering evaluation including rating and ranking.

As a result of these evaluations, three of the proposals were assessed as being consistently more effective in all three roles than the other four. All three were consequently retained for further evaluation. These were:

- Bofors: RBS-70 laser beam-riding missile and Trinity 40mm ground-mound for airfields; RBS-70 and Trinity; mounted on armored vehicles for brigades; Giraffe radars.
- Contraves: ground-mounted Sparrow and 35mm Oerlikon guns on airfields; ATAK-35 twin 35mm SP armored guns for brigades; Super-Giraffe radars.
- Oerlikon: ADATS laser beam-riding missiles both on airfields in brigades; Oerlikon twin 35mm ground-mounted guns on airfields.

All proposals included fire control and C^3 systems.

These three systems were subjected to an even more rigorous evaluation process, which included hands-on operation of the equipment. Draft contracts then were negotiated. Final presentation of the Army position and the contracts to the government took place at the end of January 1986.

On April 16, 1986, the Canadian government announced that the Oerlikon-Buhrle-Litton proposal had been selected as the Canadian Armed Forces low-level air defense system. The consortium is composed of Oerlikon-Buhrle Limited Tool Works of Switzerland and its Canadian associate, Litton Systems Canada.

Conclusion

The Canadian approach obviously cannot be applied to all circumstances. There were well-defined roles and operational areas, and there were no components of existing air defense equipments which would be retained for reasons of economy. The project team combined the operational and engineering components right from the start and kept the same individuals together throughout the requirement development and evaluation process.

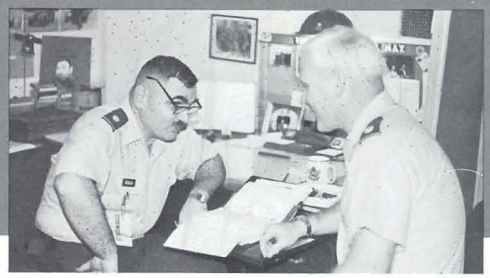
The advantages enjoyed by the Canadian Army as a result of their approach to procuring a short-range air defense system are many. By allowing maximum flexibility to the contractors, the Army received the benefit of the talent and experience of many capable minds in the defense industry of the Western world. In turn, the contractors have gained invaluable experience by having to consider the total air defense problem. The Army has not had to incur any costs for development or testing up until the final selection. Total program costs were kept predictable by specifying a dollar ceiling. Probably most important of all, the Canadian approach took maximum advantage of competition to obtain high quality at an affordable price.

The bottom line is that, when the contract is signed, the Canadian Army can be confident that it is getting the best air defense system for its particular requirements that the Western world can offer.

Maj. D.R. Hopper is the Canadian Forces Liaison Officer at the U.S. Army Air Defense Artillery School, Fort Bliss, Texas

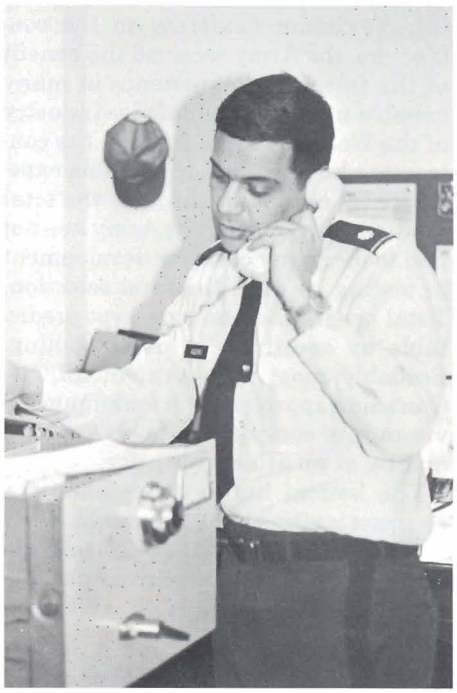
ADA's Talent

Lt. Col. Gene Williams reads data with Lt. Col. Charles Lamkin, (left). Lt. Col. Vince Tedesco and Lamkin discuss strategy (middle). Lt. Col. Jim Starkey heads the FAAD team.



ADA's Pentagon "heavy hitters" work to match the right weapon-system talents with the right roles

Brig. Gen. Donald Lionetti, *now assistant commandant of the U.S. Army Air Defense Artillery School, has turned over the reins of the Firepower Division to ADA officer Col. Jay Garner since this article was written.*



FISO Lt. Col. Pascal Aquino

Despite rave reviews on the dinner-theater circuit, an actor still needs help moving from summer stock to Broadway. Most actors admit they need someone who knows the "ins and outs" of the industry, someone to get that Tony-winning role for them. In the entertainment business that someone is called a talent agent. In the military, that someone may be called a FISO, a force integration systems officer.

For Air Defense Artillery, the FISOs of the ADA Team of the Firepower Division, Office of the Deputy Chief of Staff for Operations, are constantly on the move — coordinating, explaining, planning, advocating, exchanging, surveying — doing whatever it takes to represent Air Defense Artillery within the maze of the highest levels of DA and DOD, not unlike the "moving and shaking" an aggressive talent agent might do for a gifted actor.

Much of their job requires gathering expert information and then capitalizing on their own extensive field backgrounds to make tough decisions and recommendations on the management of ADA organizations and the fielding and sustainment of the materiel systems employed by these organizations. But, perhaps the toughest responsibility of their job is to be constantly on the firing line — answering inquiries, explaining ADA strategies and defending the collective positions of the ADA proponent and the Firepower Division.

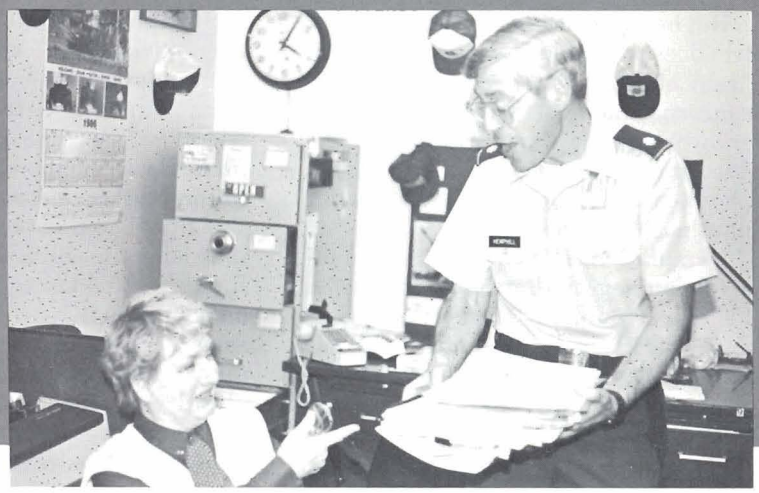
"If there is a question about ADA anywhere within DOD, here at the Pentagon, we answer it," said Lt. Col. Vince Tedesco Jr., the ADA Team chief of the Firepower Division. "Col. Donald Lionetti [Firepower Division chief] is the senior ADA officer at the Pentagon and is intimately involved in the combined arms and joint war planning.

"He's the heavy hitter," Tedesco said. "On a daily basis, he is advocating the ADA position to 'three stars,' vice chiefs of staff and, often, the undersecretary of the Army. This is an advocacy-based system and this office acts as the advocate for Air Defense Artillery. Requirements exceed what's available. So we do the explaining on why we need what we do."

Tedesco sees the Firepower Division as being the guys who can't have knee-jerk reactions to the constant threat of lost force structure and money. "We have to keep calmer heads. When a proposal is made, we can't just react instinctively. We have to investigate and report back on a rational level."

Lionetti, confidently reacting to the aggressive program developed from the recent ADA Laydown, said, "There is a new appreciation by the leadership for the threat to the divisions. It is serious and they understand it and are squarely behind us to find the most suitable solutions. I'm optimistic and pleased that our leadership — the chief of staff, secretary of the Army, vice chief of staff and undersecretary — devoted an enormous amount of time to understanding the various recommendations from the study groups.

Agents



Cora King aids Lt. Col. Douglass Hemphill with research.

"In my judgment, this investment will pay dividends

in the future. With the sophisticated understanding of the leadership, despite the constrained budget, we will have the support to develop and deploy the pieces of the forward area air defense [FAAD] system," he said.

However, it falls to the Firepower Division and the ADA Team to carry this momentum into the future and ensure that each year — as a review is made and priorities are rearranged — this clear rationale is not lost.

According to Lionetti, this constant vigilance will be carried out by a crack team of ADA officers. "The Firepower office is the hub and center for ADA excellence. The office has a deciding influence on budget and force development and requires seasoned staff officers. Here, we have collected the most talented staff officers that we can. There is superb experience and training in each of them, most as battalion commanders and as graduates of senior service colleges," he said.

Besides having extensive practical ADA knowledge through years of diverse branch assignments, it's pertinent that FISOs also understand how the Pentagon functions. "Besides a solid field background, FISOs also need to understand the system here and the language. It can be very frustrating not knowing how things are done," Tedesco said. "The ADA Firepower Team is sort of an island here. We handle all the ADA money and force structure questions; it's the nature of the job. But that means we are also the only ADA branch representation up here. This creates a strong camaraderie in the office. We work together, sort of circle the wagons when there's an attack coming."

The complex responsibility of managing the funding and sustainment of the materiel systems of ADA organizations requires daily coordination with many agencies and major commands. Each FISO is responsible for a number of diverse projects. He must "know all there is to know" about his project and be prepared to handle a volley of questions and concerns from other agencies on how his project impacts on research and development, logistics, personnel and other concerns.

Since the work of the FISO cannot be done in a vacuum, the Firepower Division develops a strong association with agencies that require constant coordination to ensure smooth project planning. On top of the list of key Army staff interfaces are:

- The Office of the Deputy Chief of Staff for Research, Development and Acquisition. The DA system coordinator is responsible for materiel development and funding for developing systems.
- The Program Analysis and Evaluation Directorate (PA&E). All Firepower Division programs, as are others, are monitored by PA&E which performs independent analyses for the chief of staff. To ensure that the most current data is used, daily coordination is required.
- The Office of the Deputy Chief of Staff for Logistics. The fielding of new organizations is a complex operation and involves significant logistical challenges. Coordination, as well as much advance planning, is necessary between the FISO and the Department of the Army Logistic System staff officer.
- The Office of the Deputy Chief of Staff for Personnel. The extensive personnel coordination inherent in fielding new systems also requires an integrated effort between the personnel system staff officer and the FISO.

Each FISO in Firepower Division maintains a list of agencies and contacts involved in managing the organization for which he holds proponency. The Firepower Division includes a Field Artillery and an Air Defense Artillery Team of FISOs, each dealing with weapon systems and force structure projects in their branches. Though the chief of the Firepower Division may be a Field Artillery or Air Defense Artillery colonel, the job lately has been falling to an ADA colonel. The ADA Team is made up almost entirely of lieutenant colonels. The senior lieutenant colonel, in addition to being responsible for a number of projects, also acts as the ADA Team chief. The remaining staff officers become responsible for certain project packages when assigned to the office.

"I handle Stinger, pedestal-mounted Stinger, the light air defense system, Joint Defense Initiative No. 2, airbase air defense, and organization integration for light, special and corps units, among other projects," listed Tedesco. "This is pretty typical of the diversity of projects handled by the guys in this office. We work closely together, though, to make sure that we aren't duplicating effort. This also helps us keep in mind the total picture. But if a specific question comes in, we also know who to pass it to. If there's a question on Patriot, it goes to Doug. . . ."

Doug, or Lt. Col. Douglass Hemphill, is the FISO with Patriot expertise. Matching talent to position, Hemphill has watched and fretted over the deployment of this new ADA weapon system.

"It was great to actually work on the fielding of a new system. Considering the two-to-three years a FISO may be assigned to this office, and the number of years it takes to field a system, you can see that not many get the pleasure. There are major hurdles in fielding a system, but the Patriot proved itself in testing and since then has exceeded standards in Europe — this makes my job easier."

But being the FISO for a proven system does not mean Hemphill is now on "easy street." "There are still a lot of concerns that must be addressed. We are working on Phase III testing, product improvement, and continuing deployment in Europe. This is not a stagnant position," he said.

Hemphill has been working intensively on negotiations here and in the Federal Republic of Germany on German Patriot units. "We must work out a schedule and agreement on who trains the German-manned Patriot units," he said.

With each project comes special

concerns. For Lt. Col. Larry Luper, a major concern is putting together the "new look for Hawk." Luper, another high- to medium-altitude air defense (HIMAD) authority, shoulders the responsibility of managing Hawk projects, ADEWS, HIMAD command and control projects, and air defense interests in a number of joint projects.

One would be mistaken to think that because Luper is in charge of an established weapon system, that the job is routine. "Hawk's been around a few years, but we're always doing new things with it. At one time it looked like the beginning of many Hawk unit inactivations, but the system is being retained for corps Hawk battalions," said Luper.

The organization is changing and so is the system itself. "We're reorganizing the Hawk battalion to make it more strategically mobile. At the same time, we are concentrating on Hawk Phase III. Hawk may have been around awhile, but we are still working with it. It has many years to go," he said.

Luper is also FISO for MSAM or medium surface-to-air missile, a new system concept now being developed. "It will replace Hawk and Chaparral some day. MSAM will be a common NATO weapon that will significantly improve air defense," he said.

Luper finds his FISO assignment demanding, but rewarding. "It is professionally satisfying to know that I have a hand in influencing Army leadership on the correct way to use ADA assets. I make recommendations — provide a full picture of issues so they can make a good decision."

According to Lt. Col. Pascal Aquino, the job of a FISO also helps to develop a sense of the "full" picture within the FISO himself. While assigned as deputy G-3 of 32nd Army Air Defense Command, he remembers having problems training with identification, friend or foe (IFF). "I had a more immediate time perspective. I wanted the problem corrected in terms of today. But now I understand why problems take longer to solve. I'm able to use my first-hand field experience in working on solutions to help develop IFF to be easier to train and use in combat. And, now having been a FISO, I will understand the time constraints also," Aquino said. "We must work far into the future — years ahead."

Besides IFF, Aquino also works on many NATO and joint projects. "Working here offers a personal benefit. Everything is happening here. I'm aware of so much. This is where it all comes together," he said.

A hefty chunk of these ADA concerns go to Lt. Col. Gene Williams, the FISO for Chaparral, Vulcan, the Product-Improved Vulcan system, National Guard modernization, Roland, Duster and the Multiple Integrated Laser Engagement System.

Restructuring has been his current byword. "I'm working on reorganizing the Chaparral/Vulcan battalions to build as many battalion as weapons allow. The restructuring involves the National Guard and active corps battalions," he said.

"This is a job with impact," Williams said. "We try and take our field experience and incorporate this in our projects. We may not always be able to convince the leadership of the ADA stand on an issue, but we can reassure the branch that their concerns were brought to the attention of the leadership."

Williams is presently working on the Chaparral and Vulcan crew-member reduction. "It's been decided and now we must make it work. With the nighttime capability of the Chaparral it's going to be demanding," he said.

Also working on the crew reduction is Lt. Col. Charles (Gene) Lamkin Jr. He works to ensure that the proper force structure in Air Defense Artillery is in concert with the equipment. In other words, he makes sure that the number and qualifications of the people in Air Defense Artillery match up with the projected weapon systems.

Placed squarely in the center of the ADA Team office, Lamkin works closely with the other FISOs to make sure that the correct people are trained and meshed with the equipment projected. "I work to develop what spaces we need, project this into the future according to the equipment plans of the other FISOs, and then work to justify this number within the total army analysis. There is a ceiling on how many people may be on active duty in the Army. Every branch is competing for a set number of slots. I work to make sure we have the slots we need. The equipment doesn't mean a thing if we don't have the people to man it," he said.

Recently Lamkin struggled to preserve

ADA personnel spaces in the heavy division after Sergeant York was cancelled. "We had already projected the number of slots we would need for the heavy division based on the size of the Sergeant York crews. Though these slots may have seemed up for grabs, we knew we had to preserve them for Air Defense Artillery units in the heavy division for the Sergeant York replacement, and we did. However, whatever systems may replace Sergeant York, they will have to be manned according to the slots we preserved for Sergeant York," he explained. "We are locked in."

The ADA Firepower Team is also locked in on making sure the newest ADA concept, FAAD, is a success. In order to ensure a FAAD focal point at DA level, the FAAD Team was created. Headed by Lt. Col. James Starkey, the team acts as the FISOs for the newest FAAD systems as they are integrated into Air Defense Artillery.

Starkey is optimistic about the FAAD concept, "This is a systematic approach — not just one weapon at a time. The FAAD concept gives us a sense of stabilization for the future. We are not focusing on just one weapon, but several. Though a weapon may come or go, the system will remain. This involves many weapons and a combined-arms effort and so requires the centralized management of a FISO team at DA."

"The requirement for ADA in the divisions is urgent," he continued. "We need at least a year to resolve the major issues and we will be here to address the joint issues. I'm enjoying this mission."

Whether it's a New York agent getting his actor a Broadway play, or an ADA FISO seeing a new weapon deployed, their savvy is in their ability to match the right "talents" with the right roles.

'First to Fire'

ADA's official motto gives air defenders a rallying point

Say Armor and you think tank. Say Infantry and you think bayonet. Say Field Artillery and you think cannon. But, say Air Defense Artillery and anything from Patriot to Stinger or Vulcan to FAAR may come to mind.

Air Defense Artillery is a branch long on technologically diverse equipment but short on common identity — the one symbol or rallying point that binds all members of the branch as one.

Air Defense Artillery's new *official* motto, "First to Fire," gives past, present and future air defenders something to identify with. It is not only supported by our history, it is also in keeping with expectations of the course of any future war.

Our motto is historically supportable. Anti-aircraft units in the Philippine Islands were the first units of the field army to fire in World War II. Anti-aircraft units were also the first to fire in the Korean War at Suwon Airfield.

The motto is also in keeping with our expectation of the course of any future war. That is, Air Defense Artillery would most likely be the first unit to have to fire because the enemy would almost certainly seek first to suppress friendly air defenses.

The branch's motto was not "picked from a hat" or decided by a tiny committee. The entire branch had a part in creating motto candidates and selecting the final winner.

Maj. Gen. Donald R. Infante, chief of Air Defense Artillery, decided the branch lacked an official symbol of unity. His guidance was that the motto be short, to the point, dignified and in keeping with our combined-arms focus. The motto was also to express a positive and active outlook, rather than a purely defensive one.

With this in mind, a message was sent to all ADA units in the field about January of this year, and between 70 to 80 possible candidates were collected. A committee of air defenders then went to work to pare down that number. Besides following the generic guidelines for the motto, the committee worked to see if candidate mottos could be twisted or construed in such a way as to embarrass the branch or its regiments. They also tried the mottos out on their tongues. Were the phrases strong, vibrant, easy to remember statements?

The best of these were randomly listed on a ballot. During the 1986 ADA Commanders' Conference at Fort Bliss, Texas, attendees reviewed the list of proposed mottos. Each attendee expressed his top three preferences. The results were tabulated according to a weighted average in which first choices received higher values than second and third choices.

"First to Fire," submitted by Capt. Michael E. Zaborowski, then commanding A Battery, Staff and Faculty Battalion, U.S. Army Air Defense Artillery School, received the preponderance of support from officers and senior non-commissioned officers from the field. A sampling of mottos considered were:

Motto

First to Fire
Blazing Skies
The Sky is Ours
Freedom to Maneuver
First in Battle
Aim High

The new motto expresses branch pride far better than any of the final nominations. The motto is strong, easy to remember and adaptable for use as a slogan while returning a salute.

The other choices lacked some of the virtues indicated above. "Blazing Skies" has the connotation of an operational readiness exercise or a tactical evaluation. "The Sky is Ours" and "Freedom to Maneuver," while laudable sentiments, are clumsy expressions. "First in Battle" is a less forceful variant of "First to Fire." "Aim High" can be construed as meaning that we miss our targets.

"First to Fire" is being recorded as the official Air Defense Artillery motto with the Institute of Heraldry, Washington, D.C., and will soon be found on ADA letterheads, instructional materials, unit signs and other appropriate places.

The most important place for the motto, though, is in the hearts and minds of soldiers. Say Air Defense Artillery and think "First to Fire."

Air Defense Artillery RANGERS

Within the demanding framework of the pared-down light division, ranger-qualified air defenders are no luxury

by 1st Lt. Steven M. Briggs

Sgt. Craig Edwards and Sp4 Larry Waddell, 1/55 ADA, "train like we plan to fight."

Light infantry forces operate most often as combined-arms teams. The forces' forte is operating at night or under conditions of limited visibility. On defensive missions in close terrain or built-up areas, light infantry forces will habitually ambush, attack and counterattack. As part of this combined-arms team, it is essential that air defense artillery leaders are intimately familiar with the techniques of their infantry counterparts.

The massive firepower of air defense artillery extends from the initial ready company to the final support package of light infantry divisions. All light infantry division soldiers must be motivated, physically fit and self-disciplined. Therefore, air defenders wearing ranger tabs establish immediate credibility for their ADA operations by gaining instant identification with their infantry counterparts.

Since the light division often operates under austere and isolated conditions with less than optimum firepower, logistical support and numbers, it is highly desirable that ADA platoons, squads and crews possess the confidence and skills of ranger training, either by individual attendance or infusion from ranger-trained leaders.

The 7th Infantry Division (Light), Fort Ord, Calif., and other light infantry divisions, are crucibles within which leaders can put lessons learned from specialized schools, such as Ranger School, to work in unit training situations. Sound judgment and leadership skills, as exemplified by ranger instruction, work to produce a high standard of instruction and morale within any conventional military organization.

Commander of the 1st Battalion, 51st Air Defense Artillery, 7th Division's organic air defense battalion, Lt. Col. Frank G. Brown III, made the following analysis of ranger-qualified air defenders:

- Rangers demonstrate a special confidence in their individual ability to lead subordinates under extremely stressful conditions.
- Ranger-qualified leaders are more apt to know the true physical and mental limits of subordinates when stressed or "how much is really too much."
- In the absence of actual combat experience, training in small isolated unit operations and survival skills enables ADA platoons, squads and crews to operate autonomously with confidence and skills superior to otherwise identical elements.
- Ranger leaders exhibit a special sense of pride and esprit de corps that can be passed to subordinates through successes in difficult training. This bonding and confidence in a unit's collective ability is essential for success on the battlefield.

The chief of staff of the Army has approved the expansion of annual

Hit and run soldiers practice three-second rushes during light-fighter training which incorporates some tasks found in ranger training. (Photo by Rachel Snyder)

ranger training from 2,100 to 3,000 soldiers. The gradual increase should be completed by FY 1987. School slots are filled with volunteers who are assigned or will be assigned to units with requirements for ranger-trained soldiers, such as light infantry divisions.

The ranger course consists of 58 days, each averaging 19 training hours. An introductory phase at Fort Benning, Ga., is followed by mountain, desert and jungle training at U.S. sites. No rank is worn during the training since volunteers from all grades, branches and allied countries develop an elaborate buddy system.

Before attending the course, volunteers must, among other prerequisites, pass the combat water survival test (the training area that causes the most dropouts during the course) and the ranger physical readiness test (a minimum of 45 push-ups, 45 sit-ups and a two-mile run in 16 minutes or less). Volunteers also must execute six chin-ups (palms facing inward), certified by the commander, and have commander-certified knowledge of the 46 entry skills of the Infantry Skills Qualification Test (DA Pamphlet 131-4). In addition, applicants must possess a medical, dated within one year of the reporting date, stating the applicant is medically qualified for Ranger School. Airborne qualification is not required to attend the school.

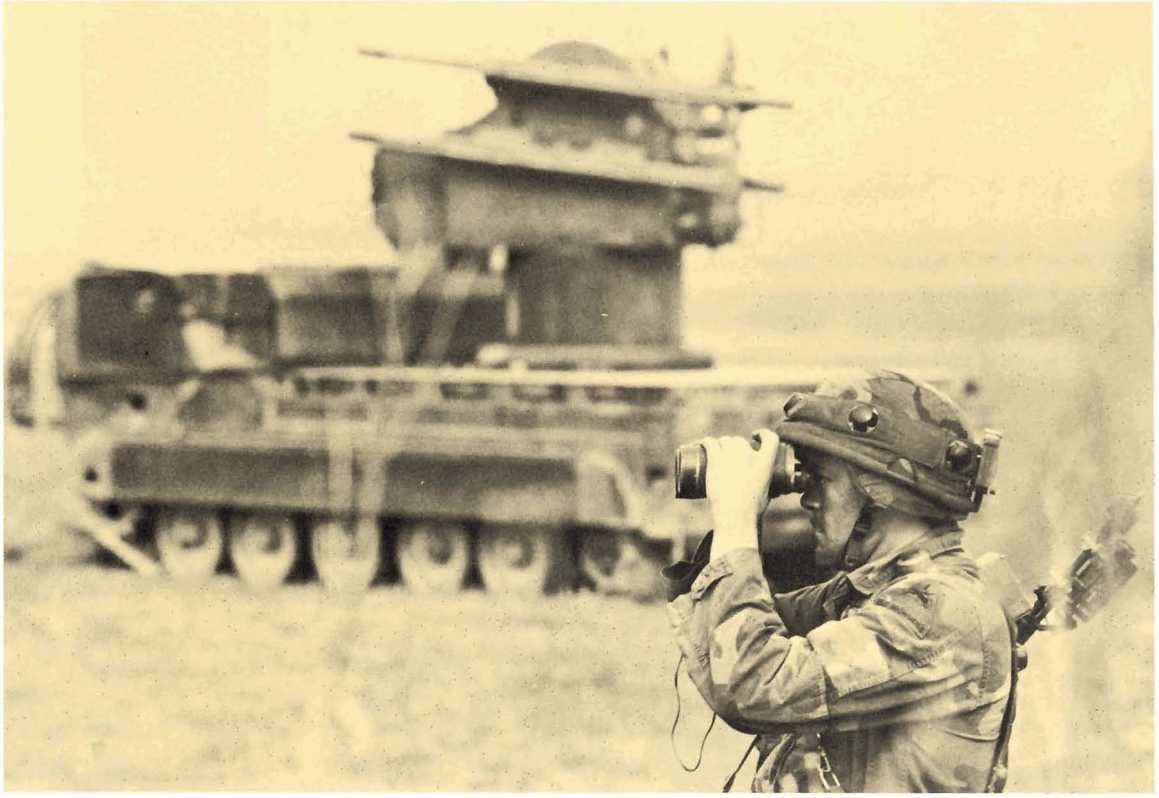
The overall purpose of the course is to develop and enhance leadership skills by requiring effective performance under stress-filled situations modeled after actual combat conditions and scenarios. Training occurs in hilly, wooded, mountainous, jungle, desert and swamp environments. Skills taught include the planning and conducting of dismounted infantry, airborne, air-assault and amphibious operations.

A 7th Infantry Division soldier wearing his protective mask, low crawls under barbed wire. (Photo by Rob Jagodzinski)

The lessons and experiences gained at U.S. Army Ranger School leave an indelible mark upon the participant. More than a test of physical stamina and strength, it is a test of leadership, self-respect and grim determination to do what must be done. Ranger candidates are constantly evaluated by peers and cadre. The singular decision to continue carries you one step closer to the "coveted" black and gold tab.

Ranger black and gold wears as well with Air Defense Artillery's red as it does with Infantry's blue. Wearing the tab quickly identifies air defenders as intimately familiar with the techniques and tactics of their light infantry counterparts. It's our responsibility to go through this type of training if only to provide well rounded leaders and soldiers who work to enhance the demanding missions of the light infantry division.

1st Lt. Steven M. Briggs is a platoon leader with A Battery, 1st Battalion, 51st Air Defense Artillery, and a graduate of Ranger School.



Spreading ADA's Influence in the Divisions

by Majors William C. Bielefeld and Robert J. Curran

The lack of Air Defense Artillery influence in U.S. Army divisions is identified as one of the major obstacles facing the branch. Maj. Gen. James P. Maloney, in his last "Intercept Point" article for *Air Defense Artillery*, Summer 1985, pointed out that much of this problem is caused by the fact that the divisional Air Defense Artillery organization is a battalion, and there is no Air Defense Artillery full colonel in any division.

While creation of a colonel-level ADA position in the Army's divisions is unlikely, the ADA branch increases its divisional influence when ADA officers graduate from the Advanced Military Studies Program (AMSP) and are assigned to divisional staff positions. Besides ensuring that ADA officers ascend to key operation positions in corps and divisions, ADA officers participating in AMSP elevate their professional development and enhance the AMSP itself.

The AMSP gives field grade officers a chance to spend a year contemplating the roots of their profession, and it allows them to become specialists in the art and science of war. This prepares them for follow-on assignments to command and staff positions in the Army's corps and divisions.

The U.S. Army Command and General Staff College (CGSC) established the one-year, follow-on course of instruction for selected students in June 1983. The AMSP evolved from a growing realization that one year of CGSC was insufficient to educate all field grade officers for the challenges of future command and staff assignments. Prior to World War II, CGSC was a two-year course. Much of the American success in that war was attributed to the "common cultural bias" developed by the officer corps during their two years at Fort Leavenworth, Kan. However, extending the CGSC course of instruction to two years is impractical with the worldwide commitment of today's Army. But, it was felt that something needed to be done to develop a similar common reference in today's officer corps.

The AMSP fills this gap in the education of field grade officers. The stated purpose of the AMSP is:

> . . . to develop a leavening core of potential commanders and general staff officers who possess a mature professional character and are deeply dedicated to the service of the Army and the nation; who thoroughly understand the dynamics of war at the tactical and operational levels and how principles of combined operations must be adapted to the changing conditions of combat; and who possess the practical skills required to apply that understanding to the solution of current and future Army challenges in peace and war.

The long-range goal of AMSP is to develop a pool of officers versed in the

art and science of war who will help raise the level of knowledge and performance of the entire officer corps by interaction with other officers on the job. The short-range goal is to provide corps and divisions a transfusion of majors who have spent an extra year studying "warfighting."

The program specifically seeks to refine the following character traits: intellectual honesty, moral courage, personal responsibility, professional candor, loyalty to the Army and the unit, self-discipline, and selfless service to the Army and the nation.

As combat-arms officers, Air Defense Artillery officers should be especially interested in participating in AMSP. By learning alongside other combined-arms officers they will develop the "common cultural bias" necessary for the Army to succeed in future conflicts. This program provides the ADA officer the best possible professional development the Army has to offer, and the participating ADA officer has the coveted opportunity to inject air defense perspective into the AMSP curriculum. By interaction with other AMSP students, the ADA officer can influence many officers who will hold key operational positions in the Army's corps and divisions in the near future.

Graduation from AMSP provides ADA officers an avenue toward assignment to divisions and corps. Each of the first three AMSP classes included at least one ADA officer. The ADA graduates of the first two classes are assigned to III Corps and 82nd Airborne Division. The ADA students of the 1985-1986 class are slated for assignment to the 3rd Armored Division and 25th Infantry Division (Light).

The 1986-1987 class will not have an ADA student, however, because of a dearth of Air Defense Artillery applicants from the 1985-1986 CGSC class. Air Defense Artillery has missed a twofold opportunity to make its influence felt at the divisional and corps level. First, the AMSP class of 1986-1987 will not have the benefit of an ADA officer participating in their seminars and may not be forced to consider air defense issues as intensely as in the past. Second, no Air Defense Artillery officer will be graduating in 1987 to assume a place in the U.S. Army's division and corps staffs. If just two or three ADA officers graduate each year, eventually their influence would be felt in nearly every division.

All ADA officers attending CGSC are encouraged to investigate and seriously consider applying for participation in AMSP. The ADA AMSP student will receive the best operational-level military education available in the U.S. Army, and he will help spread the influence of Air Defense Artillery.

Majors William C. Bielefeld and Robert J. Curran are graduates of the 1985-1986 Advanced Military Studies Program, Fort Leavenworth, Kan.

AMSP Focuses on the Art and Science of War

The Advanced Military Studies Program (AMSP) consists of three phases. Phase I is the resident Command and General Staff College (CGSC), Fort Leavenworth, Kan., and includes enrollment in AMSP individual development courses during phases II and III of CGSC.

Phase II is the 48-week resident advanced military studies course. The focus during this phase is the preparation for and the conduct of battles and campaigns, and completing the requirements for a master of military art and science degree.

Phase III is the initial post-course assignment which is viewed as an internship. All graduates of the resident phase are assigned to general staff positions in one of the Army's corps or divisions. The only exception to this assignment policy is that an officer who needs time with troops may be slotted in a field-grade position in one of the division's battalions.

The Phase II resident course is a graduate-level study of the science and art of war. Classes are conducted in 14-man seminars made up of 12 AMSP students, an advanced operational studies fellow from the Army War College, and a seminar leader who graduated from the Advanced Operational Studies Fellowship Program the previous year.

The core curriculum consists of seven courses. The Foundation of Military Theory course focuses on how to think about war by studying the theoretical foundations of U.S. and Soviet doctrine. In the Dynamics of Small Unit Action course, AMSP students learn how current theory and tactical doctrine is applied at brigade level and lower. The Division/Corps Operations course applies theory and doctrine at a higher level.

Core curriculum continues with the Theory and Application of the Operational Level of War course which offers analyses of major operations and campaigns of World War II. The Theater Operations course helps students develop an understanding of the conduct of military campaigns in a joint and combined force environment. The Low Intensity Conflict course deals with the lower end of the conflict spectrum and how theory and doctrine are applied to operations at that level.

The final course, Preparation for War, develops an in-depth knowledge and understanding of how the Army must get ready for war, emphasizing those tasks that enhance combat effectiveness.

Rigorous preparation is required for each class with readings from the military classics and contemporary writings relating to the topic of the day. Numerous war games and exercises are conducted to refine principles developed during the course.

Additionally, AMSP students participate in major real-world exercises at NATO, Pacific Command or Central Command to enhance their operational understanding and to allow them to gain firsthand experience in the operations of higher headquarters.

The final requirement for Phase II is to earn a master of military art and science degree. The student must write two monographs to complete this requirement. The first monograph must cover a tactical-level topic. The second monograph is on an operational-level topic and must be defended during a rigorous end-of-course comprehensive examination.

Fort Polk resembles a modern college campus according to an ADA commander.

Transformed into a 'model' military post, the home of 1/55 ADA is ready to challenge its negative image

Fort Polk

By Linda Thompson

If Fort Polk were suddenly given the ability to speak, surely its first words would be Rodney Dangerfield's line, "I don't get no respect!" Seems like the post has contended with a poor image since it was hacked out of the virgin pine forests of west central Louisiana 45 years ago.

Camp Polk was created shortly before World War II; after the war, it was called on to serve only when a national crisis arose. Camp Polk was temporary — painfully so for local folks. On one hand, the economy of the area was vitally linked to the Army's presence; on the other, sinking money into area improvements spelled financial disaster when the gates were locked.

Polk became an infantry training center in 1962, and more than a million soldiers learned basic and advanced infantry skills there during the next 12 years. Most people who are familiar with Fort Polk either trained there as a recruit or heard about it from someone who did. Memories of basic tend to focus on the negative — the meanest drill sergeant, the roughest training, the worst chow, the loneliest weekends, the biggest mosquitoes — and so no wonder there's an image problem.

Truth is, someone returning to Fort Polk after a 10-year absence wouldn't recognize the place. The transformation began in 1974 when the Army decided to make Polk the permanent home of the "Red Devils" of the 5th Infantry Division (Mechanized). Almost concurrently, Congress passed the largest construction bill ever allocated to a single installation. Almost $403 million worth of construction has improved virtually every facet of the lives of Fort Polk soldiers and their families.

Its modern barracks complexes are a far cry from the old open-bay facilities of the past. College-style suites offer two- and three-person rooms with semiprivate baths and a shared living area. Each complex includes a branch exchange store, snack bar and dining facility.

Bachelor officers find the comforts of home in a new multistory, 150-suite quarters.

Quarters for families, long one of Fort Polk's shortcomings, have been built almost continuously since 1973. The post receives first priority from Forces Command for family housing construction, and if the housing problem hasn't been fixed, at least a

Pvt. 2 Gary Jones, a Redeye gunner, is working toward an associate degree in electronics.

The 1/55 ADA headquarters and barracks complex are some of the newest buildings at Fort Polk, La.

solution is well on the way. So far, 2,873 quarters are in use — spacious duplex and quadruplex units with central air and heat. Officials estimate an additional 3,000 units are needed.

Another 200 two- and three-bedroom units intended for junior enlisted soldiers are being built now. The FY 1987 and 1988 military construction bills list an additional 1,400 units which, if approved, should be in use by 1990.

Fort Polk was one of four Army installations named in Section 801, Public Law 98-115, which authorizes an innovative test program to provide housing for military families. Basically, the law allows the installation to enter into a build-to-lease agreement with a civilian contractor. The contractor constructs, maintains and operates the housing for a 20-year period, while the post guarantees to lease it.

Polk's plan includes building 498 units, townhouses and apartments to be built off-post for use by junior enlisted soldiers and company-grade officers.

Housing needs have been treated with urgency, but not at the expense of other requirements. Completed projects also include administration and operations facilities for more than 125 separate activities. Tactical vehicle and equipment maintenance shops for 20 activities are also being built.

To ease cleanup operations for soldiers returning to garrison from field training, two tactical vehicle wash facilities now use high-pressure water and other technologically advanced features to break down mud and wash it away. The new structures accomplish in hours what previously took soldiers days to do. Wash water is recycled through settling ponds so there is no discharge into the environment.

A 51,000-square-foot commissary and a large solar-powered post exchange were completed in the late 1970s. Shopping privileges and medical care at Fort Polk have convinced some 10,000 military to retire near the post. Comprehensive medical and dental care is provided to them and about 18,000 of their family members.

Polk's new dental and troop medical clinics attest to the Army's commitment to providing excellent health care. Bayne-Jones Army Community Hospital provides hospital care and outpatient services in an ultramodern medical facility fully accredited by the Joint Commission on Accreditation of Hospitals.

Fort Polk's 198,356 acres lie in a picturesque region of rolling hills, evergreen trees, lakes and streams — ideal for training, but relatively isolated.

A major complaint of the past has been "there's nothing to do." In the last decade, the Army has pumped millions into recreational facilities here, including brigade-size gymnasiums, a skill development center, music center and the huge La Louisiane Recreation Center. The latter is temporarily housing the post's enlisted club until two new club buildings are finished.

Other new leisure-time facilities include bowling centers, swimming pools, movie theaters and an 18-hole golf course. Polk also operates a recreational site on Toledo Bend Lake, a 75-mile long, man-made reservoir famous for good fishing and water ski-

ing. The site features a swimming beach, camping facilities, and mobile homes and boats for rent.

Construction in progress amounts to another $50 million. Projects include tactical vehicle and maintenance shops, a helicopter maintenance hangar, an ammuniton storage complex and a physical fitness center.

A new youth activities center, replacing an outmoded, outgrown facility, caters to the needs of the children of Fort Polk's soldiers. Also recently completed is a 20-station paved fitness and jogging course with equipment for 48 different exercises.

Post commanders and staff at every level are continuously on the lookout for ways to make Fort Polk better. Caring for soldiers and their families is second only to combat readiness in the eyes of 5th Division and Fort Polk Commander Maj. Gen. K.C. Leuer. A 24-hour "hotline" makes the general readily accessible to soldiers.

The post also relies heavily on input from advisory committees and wives groups to determine which areas receive priority attention. One such area targeted last fall was the lack of adequate child care for post youngsters. A new child care center which will double the present 200 spaces is planned. An additional 300 children receive care in certified government homes under the quarters-based program.

Another problem Fort Polk recognizes is the scarcity of employment opportunities for spouses. Although paid jobs are few, there is a tremendous market for volunteer help in service organizations. The situation inspired creation of a volunteer coordinator to recruit and train volunteers and assist family members in the transition from volunteer to paid status.

As a part of the secretary of defense's Model Installation Program (MIP), Fort Polk has implemented a proposal which has brought welcome relief for soldiers being assigned to Fort Polk. Recent studies concluded that it costs more than $900 to settle off-post in this area. Many soldiers must collect advanced pay in order to make the move. An approved MIP suggestion resulted in a longer payback period for advance pay, from 6 to 12 months, significantly reducing the financial stress experienced by newcomers.

In addition, post and Association of the U.S. Army representatives contacted local utility companies for help. Several, including telephone, electric and gas companies, agreed to eliminate deposits for military personnel. These utility agreements have taken a $400-$500 chunk off relocation expenses.

Fort Polk enjoys numerous such examples of the civilian community's support and appreciation of their neighbors in uniform. Military-civilian relations are at an all-time high, with emphasis from civic leaders and post officials alike.

Quality education is offered to the Fort Polk community. Leesville High School, the largest in the parish, was one of 73 high schools in the United States selected as "models of excellence" by the U.S. Department of Education in 1983. Polk elementary, an on-post school for grades kindergarten through fourth, has also attained model school status.

Louisiana's Northwestern State University has operated a campus on Fort Polk since 1969 offering a wide variety of courses leading to associate, bachelor's and master's degrees. A day program is offered, but the bulk of the 1,200-member student body attends night classes.

Despite its low priority among Army divisions on the DA Master Priority List for fielding new equipment systems — or perhaps to compensate for it — the 5th Division is known for tough training. Its first priority is combat readiness — to be prepared to fight, if necessary, and to win.

In 1985, the focus was on the realism and challenge of the Army's National Training Center (NTC) at Fort Irwin, Calif. The NTC schedules 14 unit rotations annually. The 5th Division completed its fourth in a six-month period, an unprecedented record.

What does the future hold for Fort Polk?

Plans for construction continue with no end in sight, projects that will literally make Fort Polk the most modern in the U.S. Army.

The Abrams tank and the Bradley fighting vehicle are expected in the near future. The post is awaiting approval to construct a multipurpose range complex to accommodate the increased mobility and firepower of the new weapon systems.

Fort Polk's evolution is not complete, and may never be. Continuous adaptations are needed to keep pace with the changing needs of the nation's defense structure.

But if Fort Polk is anything, it is flexible. And it has definitely earned the right to some respect!

A Chaparral crew from D Battery, 1/55 ADA, reacts to a gas attack during a recent division command post exercise.

Fort Polk 'Greased the Skids' for ADA Move

When Capt. David R. Green made the move with 1st Battalion, 55th Air Defense Artillery, from Fort Bliss, Texas, to Fort Polk, La., he was a young lieutenant on his first duty assignment as a platoon leader in A Battery.

The rumor of a possible relocation had floated around for some time, so when the decision was announced, it took a day or so for Green to believe it. He had been on TDY to Polk for a 5th Infantry Division (Mechanized) command post exercise and had liked what he had seen. But he naturally had some concerns.

"Everybody started wondering about housing — how they were going to take care of that many new soldiers at one time," Green said.

He found that Polk officials had "greased the skids."

"They had set aside family quarters for a percentage of the soldiers coming down to kind of offset the housing crunch. The housing seemed pretty nice . . . new," he said.

Although the major public facilities such as the PX and commissary were new, the soldiers' billets were not.

"They moved us up to North Fort first. Those are the big, open-bay World War II buildings," Green said. "They put in heat, modified the orderly rooms and fixed things up, but we still had some work to do ourselves," he continued.

In a way, the isolation helped the battalion adjust. "It gave us the opportunity to make it our own place, and it kind of had an air of distinction. We were *the* battalion at North Fort; we didn't know the 588th Engineer Battalion was sitting around the corner from us," he said.

SSgt. Milton Nunez, 1/55 ADA.

"We had a lot of space up there to conduct training and it's pretty quiet. And the soldiers didn't seem to mind until they started seeing what the other soldiers were living in at South Fort," he said.

The "others" were in modern, dormitory-style permanent barracks. But as more new barracks were completed, 1/55 ADA joined other elements at South Fort Polk and is now closer to facilities like the post exchange, commissary and recreation activities.

Green compared the 1/55 ADA missions at Bliss and Polk. "At Fort Bliss we had a dual mission. We provided equipment and personnel to support the ADA School during certain cycles. Off cycle we would conduct training in the field."

Although 1/55 ADA was a sister unit to the 5th Division, Green recalls little contact except for special events like command post exercises and exercise Border Star, where the 5th Division units went to Fort Bliss.

"Once at Fort Polk, I had to learn how to run an ADA platoon in support of a battalion task force. Although I had read lots of doctrine and tactics, that didn't help a lot when I was actually trying to control the air defense movement," Green said. "It was a big learning experience for me and my platoon.

"So far as being able to support the 5th Division, there is no question that the move made us better able to perform that mission," he said.

Green took command of a battery in November 1984. The only drawback to Fort Polk, he reflected, is its distance from the U.S. Army Air Defense Artillery School where air defense doctrine is constantly evolving.

"Air defense is coming up with a lot of new weapon systems, and the exposure to the new doctrine, new thoughts, new approaches was interesting," Green explained. "It's a little more difficult to get information here than just hopping in your vehicle and driving to the school."

'First to Encounter' Unit Makes Home at Fort Polk

The 1st Battalion, 55th Air Defense Artillery, relocated from Fort Bliss, Texas, to Fort Polk, La., during the summer of 1982. The move reunited the "First to Encounter" battalion with its parent unit — the 5th Infantry Division (Mechanized). The unit supported the 5th Division during World War II as A Battery, 50th Field Artillery Battalion. After numerous inactivations, reactivations and redesignations, the 1/55 ADA was activated in 1975 — again to support the 5th Division — but was stationed at the Air Defense Artillery Center.

Since the unit's primary mission is to provide forward area air defense to the 5th Division during training and on deployment, its move to Polk carried many benefits: increased combat effectiveness, greater integration of combined-arms training, and increased ability to conduct realistic training.

Lt. Col. Joseph M. Cosumano Jr. took command of the battalion almost two years ago and reports that 1/55 ADA is now "at home" at Fort Polk. The unit numbers approximately 700 soldiers, including 40 officers, and is made up of four Chaparral platoons, four Redeye platoons and six Vulcan platoons.

"The 1/55 enjoys tremendous training opportunities as a battalion assigned to the 5th Mech at Fort Polk," Cosumano said. "Within the last year and a half, we've participated in a Reforger exercise and ac-

Pvt. 1 Jim Caro, D Battery, 1/55 ADA, dismounts in reaction to an "artillery attack" during an exercise.

SSgt. Milton Nunez (left) helps Pvt. 1 Jim Caro check the seal on his protective mask.

companied the division to the National Training Center four times.

"Polk is a great place to be a commander. The command climate allows you to train your unit based on your own ideas — and you are provided all the resources in terms of real estate and munitions that allow this."

According to Cosumano, the training has enabled the unit to exercise its complete menu of war plans, from deployment to simulated combat operations with maneuver forces.

The battalion lived up to its "First to Encounter" motto during NTC rotations. All of its Chaparral platoons conducted live-fire exercises, the first forward area air defense (FAAD) battalion in the Army to list this accomplishment.

Cosumano is proud of this and many other successes enjoyed by his men. He gives credit to the U.S. Army Air Defense Artillery School for its contributions.

"The school is doing a tremendous job with basic and advanced individual training for air defense artillery soldiers, as evidenced by the numerous successful maneuvers my

ADA soldiers practice emplacement procedures during a recent exercise.

Wearing protective gear, these ADA soldiers seek cover from artillery fire during a command post exercise.

soldiers have participated in," he said.

The 17-year Army veteran grew up in Shreveport, La., and attended Northwestern State University in Natchitoches, La., only 60 miles from Fort Polk.

"As an ROTC cadet, I stayed in the same billets at Fort Polk that my battalion was living in when I came here," he said. "I can recall in the late '60s, the only permanent buildings were a theater and a very small PX; all the other buildings were wooden and temporary.

"Facilities at Fort Polk have grown tremendously, particularly in the last five years. The living and dining facilities here challenge any college I have ever visited or attended in terms of quality and serviceability. Although the post is situated in a somewhat rural community, it has a multitude of morale support activities," he said.

The unit is involved with the local civilian community through Fort Polk's "adopt a community" program, cultivating friendships with the citizens of Many, a small city 40 miles north of the post.

Although good working relationships exist between post and government officials in the local towns and communities, their adoption by various Fort Polk units has allowed more contact with the grass-root level of society. Ordinary people are coming to see Army facilities, take a look at training and get acquainted with the soldiers who defend them.

The results are beneficial for everyone according to Cosumano.

"An assignment at Fort Polk provides an opportunity for the soldier and his family to really become a part of the community. If the soldier is willing to put out his hand," he concluded.

Air defenders also positively contributed to Fort Polk. Sgt Christopher Johnson, C Battery, 1/55 ADA, was selected as soldier of the year for 1985.

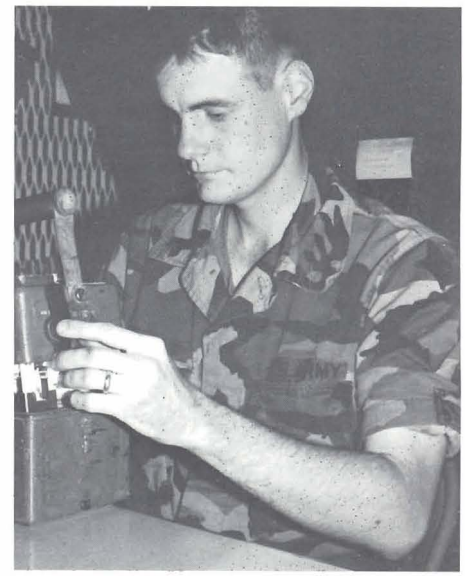
"You've got to be able to look in the mirror and say, 'I want to do it. I will do it!' That pride is what gets you through the Army," said Johnson.

Johnson believes that such pride played a big role in his selection as Fort Polk's 1985 soldier of the year in the specialist four and below category.

Upon arriving at Fort Polk last year, he was pleased that his expectations of the post were shattered. "Fort Polk's a lot better than I had heard it would be," he said. "The post and the programs here are excellent. Being married and with children, I really appreciate everything the post does for families.

"It's a real honor," Johnson said about his selection. "I feel a sense of heavy responsibility. I just try to keep doing the best I can day to day."

A month after he was selected as soldier of the year, he was promoted to sergeant — only a year and a half after joining the Army.



Sgt. Christopher Johnson

QUIT Just for the health of it!

As part of the Army Tobacco Cessation Action Plan, smokers will be encouraged to quit through a program of education, information and assistance. The Army leadership has also proclaimed they will safeguard the health of smokers and non-smokers alike by limiting the areas in which smoking will be permitted.

The Army Chief of Staff Gen. John A. Wickham Jr. and Secretary of the Army John O. Marsh Jr. said in a proclamation, "Ours is a profession unique in many respects, requiring physical fitness and stamina to get the job done. Each of us must be ready physically to endure the strains of a crisis. Additionally, caring leadership dictates that we demonstrate a sincere, unambiguous concern for the health and safety of those entrusted to our care."

The recently implemented Army policy establishes uniform guidelines for controlling smoking. The policy enhances readiness by establishing the standard of a smoke-free environment that supports abstinence and discourages the use of tobacco.

Full cooperation of all commanders, supervisors, soldiers and civilian employees is expected to ensure that people are protected from the effects of secondhand smoke, and people who desire to smoke are not unnecessarily inconvenienced, the policy states.

The policy applies to all organizational elements that occupy space in or on conveyances, offices, buildings or facilities over which DA has custody and control. Some excerpts from the policy are:

★ Smoking is prohibited in DA-occupied space, except for designated smoking areas that are necessary to avoid undue inconvenience to people who desire to smoke.

★ Supervisors may designate smoking areas only when they have determined that the secondhand smoke from tobacco products can be sufficiently isolated to protect non-smokers from its effects.

★ Smoking areas may not be designated within auditoriums, conference rooms, classrooms, restrooms, gymnasiums, fitness centers and elevators.

★ Smoking is prohibited in all military vehicles and aircraft.

★ When two or more individuals must be assigned to one room in living quarters, smoking and non-smoking preferences shall be considered when assigning rooms.

The proclamation noted that "every Army member is charged to make this goal a reality. All of us have a clear responsibility in making this happen."

An official said, "There's no way we're going to completely eliminate smoking. But we're going to make an effort to drastically reduce the habit in the Army."

First to Fire
But Never to 'Fire Up'

Air defenders are responsible for clearing the air of enemy aircraft, but today one air defender is helping to clear the air of tobacco smoke.

Citing health and readiness concerns, the Army leadership has launched an aggressive tobacco cessation program. Maj. James E. Paige, an Air Defense Artillery officer, and Maj. Bruce Murphy, an Infantry officer, are project officers for the Army's Tobacco Cessation Program. Earlier this year, the chief of staff and secretary of the Army charged that "the readiness and well-being of total Army members and their families challenge us to deal with the problem of tobacco use." Since then Paige, with other members of the Leadership Division, Office of the Deputy Chief of Staff for Personnel, Pentagon, has been charged with developing the Army's Tobacco Cessation Program. Paige offers insight into the goals of the program and reveals new evidence that the use of tobacco products does more than compromise a person's health, it may also compromise a soldier's readiness.

ADA: What is the purpose of the Army's Tobacco Cessation Program?

PAIGE: As part of a sweeping health promotion program by the Army, the Tobacco Cessation Program aims to create a social environment that supports abstinence and discourages use of tobacco products. It aims to create a healthy working environment and provide tobacco users with encouragement and professional assistance in quitting. The Army environment must be one that says it's all right not to smoke.

Uncle Sam Wants You — Not to Smoke

Note: The United States Army Training Center (USATC), Fort Bliss, Texas, embarked on a austerity program aimed at reducing the use of tobacco products by trainees before TRADOC prohibited the use of tobacco products by soldiers during initial-entry training. The USATC, like all TRADOC initial-entry training units, will be instituting the total ban. Following is a look at the informal program by 2nd Battalion, USATC.

Privates may now add cigarettes and smokeless tobacco products to the list of articles considered contraband during the beginning of their initial entry training in one company at Fort Bliss, Texas.

In an informal pilot program, trainees of A Company, 2nd Battal-

ADA: Are you saying that the Army has traditionally had an environment that encouraged smoking?
PAIGE: Statistics do show that the Army has a higher percentage of smokers than the civilian population. The civilian average is about 30 to 33 percent. The Army's number of smokers averages 52 percent. We do not have the immediate answers on why soldiers smoke more. But perhaps some of our policies and traditions have inadvertently endorsed using tobacco products, like smoke breaks during training or lighting smoking lamps after formal military dinners. We've had outstanding commanders stand on their tactical vehicles smoking cigars while speaking to their troops. That is why one of the goals of the Tobacco Cessation Program is to review Army programs and policies in light of the effort to combat or eliminate tobacco use. This is perhaps the most difficult task because, in essence, we are talking about changing part of the Army culture. We want to create an environment that makes it OK not to smoke.

ADA: What are other goals of the program?
PAIGE: To reduce smoking and the use of tobacco products in the Army to the projected civilian national average by the year 1990. The goal in the U.S. is to reduce the current smoking population of 33 percent to 25 percent by 1990. We would like to meet that goal, and that's a tough goal to meet in just a little over three years.

ADA: So, how do you plan to meet that goal?
PAIGE: We have to inform the total Army — Active, National Guard and Reserve soldiers, and DA civilians, retirees and family members — of the detrimental consequences of tobacco use and the benefits of not using tobacco products. Remember this is one part of a total health program. We will educate, update practices and develop supportive programs to promote physical fitness, good nutrition, stress management, and reduce or eliminate substance abuse — tobacco, alcohol and drugs. This is a positive effort aimed at smokers and non-smokers.

ADA: Besides the obvious health hazards of using tobacco, what other reasons are there for giving up tobacco?
PAIGE: The fact that struck me was the impact tobacco has on soldier readiness. And I don't just mean the increased sick days for smokers or increased incidents of respiratory problems and cancer. Right there in the field where everything counts, studies show that smoking impairs a soldier's night vision. It also reduces a soldier's hand-and-eye coordination and increases the chance of cold-weather injury.

ADA: The use of tobacco adversely impacts on readiness?
PAIGE: Yes. We address four readiness issues. One, smoking reduces stamina. The 7th MEDCOM in Europe gave us the facts in a nutshell. PT scores were generally higher for non-smokers than smokers on the two-mile run. Smoking takes your breath away. Two, using tobacco does impair hand-and-eye coordination. It's obvious how that impacts on readiness. Soldiers fire weapons.

1985 DOD WORLDWIDE SURVEY ON CIGARETTE USE (PERCENT)

	SERVICE				
PAYGRADE	ARMY	NAVY	MARINE CORPS	AIR FORCE	TOTAL DOD
E1-E3	55	46	44	41	47
E4-E6	57	54	46	46	52
E7-E9	63	54	49	50	56
W1-W4	40	50	31	—	40
01-02	25	17	16	12	17
03	21	19	15	15	18
04-010	24	22	27	14	21
TOTAL	**52**	**48**	**43**	**39**	**47**

ion, U.S. Army Training Center, are not allowed to use tobacco products for the first four weeks of training.

It is not only tobacco products that have been singled out for attack by the training command. Tobacco is only one aspect of a total fitness program which emphasizes educating new soldiers to reduce salt in their diets, improve their physical fitness, and to reduce stress on their jobs.

"Privates arriving here expect to be restricted. We are aware that this is a special environment and a lot of good habits can be developed here," explained Lt. Col. Michael Byrnes, battalion commander. He is an ex-smoker who started in his teens and quit when he saw his tennis game suffer because of his smoking.

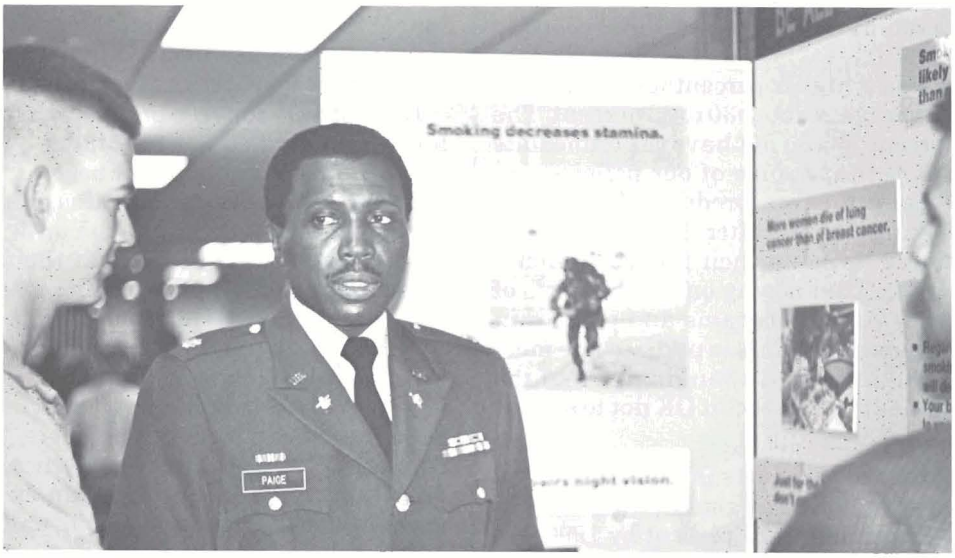
"It is a total fitness program. We are not sure that we have the answer by restricting the use of tobacco products for four weeks. But we care enough to give it a chance," he said. "One thing is certain, these soldiers will know that the Army is serious about promoting good health. They are required to get into good physical shape here. That means proper exercise, proper diet and a chance to quit bad habits."

No longer are privates given "smoke breaks" during training. In fact, once confiscated cigarettes are returned after four weeks, soldiers must go to a specially designated area to smoke away from the rest of the unit, and then only with permission from the drill sergeants.

"The smokers are roped off in a separate area. Most of the soldiers use their breaks to fill their canteens or relax in small groups. There is no encouragement to light up," Byrnes said. "Drill sergeants may not smoke in view of the troops."

Smoking is prohibited in the barracks at all times. "That rule stands. It is not part of the pilot program. Smoking is not allowed in the barracks because of fire safety and health concerns. Soldiers are under a lot of stress during their training and a clean, well-ventilated sleeping area is critical to keep down the number of cases of upper respiratory infections," explained Byrnes.

Besides the appearance of fresh fruit, bran cereal and low-fat milk in dining facilities, the training areas are also dotted with encouraging posters on health and kicking the tobacco habit. Drill Sergeant Paul Willard explained, "We set an example, and we educate the soldiers at the



Maj. James Paige, project officer, discusses the Army Tobacco Cessation Program with soldiers near a portable display located in the foyer of the post exchange, Fort Meyer, Va.

Three, smoking impedes night vision. The pupils of the eyes constrict when you smoke, at night the pupils must dilate to see better. Four, smoking makes the body more susceptible to cold-weather injury.

ADA: As an air defender, do you see any special implications for air defense artillerymen on the issue of readiness?

PAIGE: Yes. It's obvious for weapons like Stinger and Vulcan. It must be ready, aim, fire, and that takes good hand-and-eye coordination. Chaparral is the same, it's lock on, track and fire. For radar directed systems, Patriot and Hawk, firing is done essentially inside a van where light sensitivity is critical. It's tough to go from daylight to the subdued light of a van and smoking makes it even harder for an air defender's eyes to adjust. As a side note, smoke particles are known to create havoc for sensitive computer hardware. And, with the computer-driven weapon systems most of ADA is using, I can see some special concerns, especially for Patriot and Hawk.

But, the program is aimed at all soldiers. And like all soldiers, air defense artillerymen must be concerned about their level of readiness. As the 'First to Fire' branch, it's essential we are at an optimum state of readiness at all times. The air defense soldiers I've known have seemed truly dedicated to doing their best. They are concerned about their physical fitness and their ability to do their job. That's why this program of education is important. I know our soldiers will do what it takes to be ready. And our leadership must be prepared to set the example. Soldiers will sacrifice personal comforts and psychological crutches to do their job well. They've proven it all along, and I'm sure they will continue.

ADA: What do you see as the major obstacle for this program?

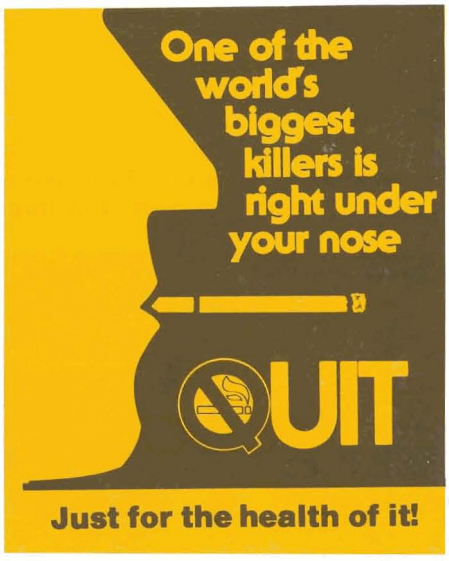
PAIGE: Resistance to change. We may be able to catch initial entry trainees and alter bad health habits early, but we have outstanding older NCOs and officers who will not be comfortable with this change of social attitude in the Army about smoking. But this is not a punitive program. The Army leadership understands that smoking is a matter of choice. However, we will restrict the places someone may smoke. That's to protect the healthy environment of non-smokers and the comfort of the guys making an effort to give up smoking. Our research shows that about 78 percent of smokers have tried to quit at some time. We want to give them all the help they need to try again.

ADA: Do you smoke? How do you feel about the program?

PAIGE: No, I have never smoked. I never cared one way or the other about people smoking. I think this is a fair and reasonable program. We are not dictating, we are encouraging. The Army leadership decided early on this would not be a punitive program. In the brainstorming stage, we did look at some hard-knocks sort of ways to get the program started — like putting smoking on OERs and EERs. That was eliminated early. Privileges have not been taken away. Cigarette sales in the PXs and commissaries are continuing. We hope we have a program that has tolerance and balance — and still enough teeth to help the total Army improve its health and readiness.

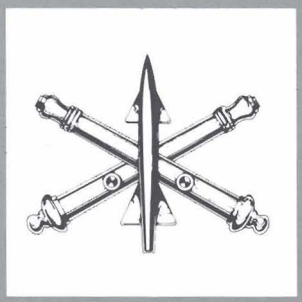
same time." A non-smoker, Willard is enthusiastic about the program and notes that there has been little resistance. "We take away non-military prescribed medicines, knives, junk food and tobacco all at the same time. They don't say anything. They expect to be controlled. Then we start telling them what this stuff does to them. We tell them about cholesterol and about how bad it is to smoke in this hot climate," he said.

Capt. William Leavenworth, A Company commander, who smokes occasionally only at the office, is enforcing the four-week rule in his unit, but is not ready to claim victory for the program. "There are many pros and cons to consider. On one hand, these soldiers may be getting their first chance to really consider giving up the habit. But on the other hand, this is a stressful time in their lives and trying to give up smoking may be too much too fast. Either way, we need to continue to educate soldiers on all aspects of a healthy life. These soldiers will be NCOs one day setting examples for new troops," he said.



This is one of a series of health-promotion posters created for the Army Tobacco Cessation Program.

ADA Assignments MILPERCEN



Lt. Col. James L. Frederick
Chief, Air Defense Artillery Branch

The Personal Touch

Since I am new to the job of branch chief, my introduction shall be just that — an introduction. I am a ROTC graduate from the University of North Alabama, Florence, Ala., and have had many assignments common to air defense officers, both in the United States and overseas. I have served in the 32nd Army Air Defense Command, 4th Infantry Division, 82nd Airborne Division (twice), 25th Infantry Division and the 101st Airborne Division (Assault). Schools I've attended include the Air Defense Officer Basic Course, Marine Corps Amphibious Warfare School, Command and General Staff College and the Army War College.

This is my second assignment to MILPERCEN. Another chance to try and do it right! With the constraints in which we are presently operating, this is a challenging time for us all. The personnel assignment business, I'm sure, has changed since I was last here but there is one aspect that has remained the same — that being the personal touch. We are here to help you manage your career and to do what we can to assist in meeting your desires. I will again say we are here to *help*! In order for the job to be accomplished, we need your input and comments. Do not hesitate to call, write or visit. If we do not know what you want to do, chances are pretty good that you will not get to do it.

I will close by saying that I am pleased to be back in the personnel management business, and I look forward to working with each of you as we continue to ensure our branch is a viable member of the combined-arms team.

From the Lieutenant Colonels Desk

Maj.(P) Roger A. Wright

More Command Vacancies in '88

As a brief introduction to this issue's column, I would like to say that my seven months as acting branch chief were both challenging and rewarding. With all the personnel restrictions and constraints governing our actions these days, I have to say that the personnel business has been no easy task. I would publicly like to thank Maj. A.D. "Dave" Batron, Capt. John Westwood and Capt. Leslie Pettet for their assistance and support during this demanding time. In this same breath, I again would like to welcome Lt. Col. James Frederick, whose presence is appreciated.

In this issue I will discuss comments from the last lieutenant colonel command board and available future assignments.

As most of you probably know, Air Defense Artillery had 18 commands for FY 1987; FY 1988 looks more promising with a projection of 24 commands. The final number could vary by one, possibly two, depending on command extensions, activations or inactivations. Any way you look at it, the number remains small and competition is tremendous. The prime year group for the last board was Year Group 69; for the next board it will be Year Group 70. Basically, that means Year Group 70 will more than likely get the biggest share of commands.

The official photograph remains very important to boards. If there is any doubt about the quality of your photo, please call me for advice. I recommend new photos upon changes of assignment, promotion, every four years or when otherwise necessary. Out of approximately 200 files that went before the board, five photos were missing. Any indication of being overweight continues to be a totally negative aspect to the board members. That point cannot be emphasized enough.

Continue to monitor and update your Officer Record Brief (ORB). Make sure it is as current and accurate as possible. Pay particular attention to Section IX, Assignment History. Avoid cryptic entries, abbreviations of job descriptions and repetitive listings. Work with your servicing military personnel office and me. An automated system is available to ensure necessary changes are made. Also make sure the awards on your uniform in your official photo match your file; don't omit awards you have or add ones you do not have.

Whatever job you have, do it well. Try to get with troops as late as you possibly can as a major. Ideally, just coming out or in the last part of an executive officer or S-3 assignment before the command board convenes would be best.

Relief or derogatory OERs, if not successfully appealed, basically end your chances for command (if not your career) primarily if the OER was as a battery-level commander or as an executive officer or S-3. Boards are pretty unforgiving in these cases and bad OERs are virtually impossible to overcome.

Closing comments about the command board. All those chosen by the board had highly competitive files and were deserving of command. Whatever jobs they had, they did them well — be it ROTC, recruiting, functional area assignments or with troops. Several had multiple battery commands and multiple assignments with troops as a major. Now is not too early to prepare for the FY 1988 command board. The convening date should be sometime during the first part of FY 1987.

If you are within six to 12 months of reassignment, call me or send in a preference statement. Any sooner than 12 months is a little too early, but it will not hurt. A normal CONUS or OCONUS accompanied tour is three years. I have several oversea tours that are two years, accompanied or not. ROTC time is getting close and these are traditionally hard fills (a master's is required for PMS). Be realistic in your desires and

bear in mind that I must have a valid open requisition that is OPD supported before I can send anyone anywhere.

Areas that are coming up: ROTC (five or six unknown schools — two nominations have to be submitted for each school); recruiting; Turkey and Saudi Arabia (one year); United Arab Emirates and Kuwait (two years); Korea (one or two years); and various U.S. assignments. All of these could be in the air defense arena or in functional areas.

Please let me know if you are interested in any particular assignment or if I can be of any assistance. Critical for me to do my job is for you to list a current and accurate phone number in your file, both work and home, and a correct mailing address. This information is important to all assignment officers, be it for lieutenants, captains, majors or lieutenant colonels.

Our phone numbers at MILPERCEN are AV 221-0025/0026 or commercial 202-325-0025/0026.

From the Majors Desk

Capt.(P) John S. Westwood

Beating Those OER Problems

The absolute core of the Army's evaluation system is the Officer Evaluation Report (OER). Right or wrong, the only way a board member knows how well an officer performs is to see his or her OERs.

Having worked in the Personnel Actions Branch, and the Air Defense Artillery Assignment Branch for three years, I have had the opportunity to read hundreds of OERs and would like to pass on some common problems that I have noted as well as some problems that have been identified by the OER Branch here at MILPERCEN.

In order for us to take care of our people, we must understand the tools we have to work with. On numerous occasions an officer is hurt on an OER when the intent was not to do so. In April 1985, I took a poll of 500 OERs. The OERs represented lieutenants through lieutenant colonels. These officers were all from combat arms. More than 70 percent of the reports have all "ones" in Part IV, Performance Evaluation-Professionalism. Also they were marked in the "Always Exceeded Requirements," and "Promote Ahead of Contemporaries" in Part V, Performance and Potential Evaluation. Oftentimes a rater will make the statement that, "No officer can always exceed my requirements. If they do, something is wrong with my requirements." In reality this statement is true. Unfortunately marking the "Usually Exceeded Requirements" box on the backside of an OER puts the officer in the bottom 50 to 70 percent of his contemporaries. If this is the intent of the rater, then so be it. Too often, however, it is because the rater was not familiar with what renders a report good or bad and ends up hurting his or her officer.

The 1986 Army Major Promotion Board noted several other problems with the way we write OERs. Some of the more common ones are listed below.

★ Too many acronyms are used in the OER, particularly in Part IIIa, Principal Duty Title. Because of time restraints, board members cannot always read the duty description; therefore, the title is critical. Often the simple TDA or TOE position title alone is used. This is neither required nor in many cases desired. The title should be meaningful. For instance use "air defense artillery commander" or "division headquarters company commander."

★ One or two word statements in Part IV, Professionalism, of the OER do not help the board in evaluating the officer's file. For example, a.1. "Always," a.6. "Consistently." The board does not have time to correlate numbers to the specific trait listed. Make comments stand alone such as "judgment is superb," "integrity is unquestioned," or write out a detailed description.

★ The senior rater narrative should not repeat elements of the rater's performance narrative. Two key elements of the senior rater's narrative to board members are the first and last sentence. These usually summarize performance and potential. Senior raters should not use their first sentence to "concur with comments of the rater." Too many senior raters are also failing to address potential, leaving the impression that if they "can't say anything good, they won't say anything at all." Comments on potential, good or bad, are a must.

★ The senior rater profile, taken in the context of the report as a whole, remains the most important element of the OER. Profiles which include only the top two blocks, lose credibility. Likewise, obvious discrepancies between the placement of the rated officer in the profile and the comments in the narrative — for example, highly laudatory narrative or "top 10 percent" with placement in the bottom one third of profile —reduce the credibility of the report. More importantly, it conveys to promotion boards a lack of moral courage on the part of the senior rater who may be fooling the rated officer with words, while hurting him or her with numbers. Recently, a report was received where the senior rater stated that the officer was one of the three best battery commanders in the brigade. He gave the officer a three box with a 14-19-7 profile. It was obvious that the block placement was either a mistake or his narrative was less than honest. In either case, the officer rated was hurt.

★ Rating officials continue to feel compelled to fill narrative space from margin to margin and top to bottom. It is absolutely essential that quality not quantity of words be emphasized. Lengthy and compressed narratives are difficult to read.

There are many additional problems within the OER system not mentioned above, and perhaps the examples listed are not the best ones to use. Point being, we need to be aware of what we are doing to our officers when we rate them. Too often we cause our officers to be less than competitive when that is not our intention.

The OER Branch members are the experts and spend a great deal of time tracking reports and statistically analyzing the differences between above and below average OERs. They are here to help us all. If any of you have a question pertaining to the OER system, please call and I will do my best to get an answer. Call anytime at AV 221-0025.

From the Captains Desk
Capt. Leslie P. Pettet

Boards Work on a Go or No Go Basis

I'd first like to talk about school selection and promotion boards, specifically Command and General Staff College (CGSC) selection boards and major promotion boards.

The CGSC selection boards work on a Go or No Go basis. They do not accomplish the slating — who goes to which CGSC school. Slating is done by professional development officers in the Combat Arms Division. They match personal preferences with Army requirements. The next CGSC board is in October.

All promotion boards do one thing and one thing only, they select officers for promotion on a Go or No Go basis. Although promotion boards use an internal administrative tool called an order of merit list (OML), this is used only by the board to help establish cut-off points and other things. The OML is destroyed before the board adjourns. The promotion sequence number each selectee receives is based on date of rank. If your date of rank to captain is incorrect, then your sequence number will be incorrect. Hint: make sure your Officer Record Brief (ORB) is correct. Principles governing seniority are your—

- ★ date of rank in current grade.
- ★ date of rank in previous grade.
- ★ total active Federal commissioned service.
- ★ date of original appointment.
- ★ date of birth.
- ★ last name, alphabetically.*

***Note:** Sequencing of date of birth and last name do not apply to officers who receive their commission from the United States Military Academy. All who graduate from West Point on the main graduation date are sequenced in order of their class standing.

For those officers who need to go to the Officer Advanced Course (OAC), when you receive your orders, make sure you send in a new preference statement with current duty and home phone numbers. If in Europe, the best work number to give is the European city prefix with the military crossover number followed by the last four numbers on the phone, for example, 06151-69-6316.

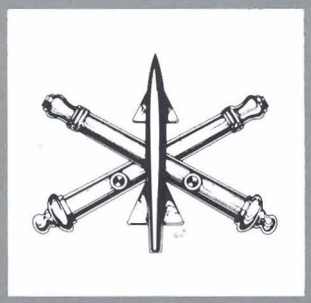
I am trying to make post OAC assignments on non-branch qualified officers far enough in advance so that you get your follow-on assignment before departing your present location. Since most officers depart for leave and travel to Fort Bliss, Texas, about 30 days before the report date, I need to go to our Distribution Division and get the requisitions at least two or three months before OAC. Bottom line, make sure you mail in a new preference statement *to the branch* shortly after you receive your orders.

Assignment cycles are structured so that requisitions are built about five months prior to the report date. Before this, only a general picture of what will be possible can be painted. But, again, the significant factor in this process will be discussion and to do that a good phone number is needed. Exceptions to the cycle windows are assignments to ROTC. These are generally made the fall prior to the summer semester. For example, in October I will learn which universities are available. Interested officers should call in September with their preference of school or general location.

In the assignment process the best thing you can do for yourself is also the best thing you can do for your assignment officer, have a current home and work phone number. I cannot stress this enough.

Let's look at this short scenario of what might occur to someone who does not have a current phone number on file. At the beginning of September we get our requisitions for January 1987. I begin calling officers available to move in January. Based upon preferences, professional development, and Army needs, I offer them choices of jobs. As I call and talk and give away jobs, I'm also hunting down someone in Germany. By the time I find him, get his phone number and get through to Germany, it may be the middle or end of September. At that time I may only be able to offer him a choice of two jobs. Not exactly what he had in mind. But my hands are bound by requisitions given to me and what was left when I reached him. Now it could be that he would not have liked the choices offered in the beginning of the month, but at least there was a variety. Keep in touch at AV 221-0025.

From the Lieutenants Desk
Capt. Robert Woods



Top Priorities for Lieutenants

One of the problems your assignment officer confronts at the Military Personnel Center, Alexandria, Va., is officers, of all ranks, not understanding their role in maintaining their Official Military Personnel File (OMPF).

Whenever your Career Management Information File (CMIF) is pulled, your Officer Record Brief (ORB) is reviewed. Without question it is the most important administrative document in your file. Unfortunately, many officers do not realize the importance of the ORB and consequently do not keep it current. The only way your assignment officer knows what civilian education you have, your marital status, assignment history, date of rank, religion, or a myriad of other bits of information is from the information contained on your ORB. In fact, your ORB is sent to every promotion board. If the information is wrong, you lose.

The Officer Evaluation Report (OER) is the most important official performance document in your OMPF. Any time your file is reviewed for promotion, branch transfer, civilian schooling, voluntary indefinite or any other personnel action,

your OERs are carefully evaluated. If your OERs show poor performance, your promotion potential is severely hampered.

Every week, we receive many telephone calls requesting a certain assignment. Many officers want to return to their college or university and teach ROTC. Some officers want to go to special forces or forward area officer training. As assignment officers, we must do our best to ensure the officers we assign are branch qualified before they go to other jobs besides troop assignments. To some, this policy seems unfair. The fact is, however, without being branch qualified, an officer is not competitive in the Air Defense Artillery arena.

Assignment officers would not be doing their job if they disadvantaged an officer's career by allowing him or her to do other types of jobs prior to branch qualification. To be branch qualified an officer must have:

★ graduated from Officer Basic Course.
★ had a hardware assignment.
★ graduated from the Officer Advanced Course.
★ commanded a company or battery-size unit.

Until these four requirements are met, an officer will be assigned to troop units.

We have covered three important responsibilities of every junior officer in Air Defense Artillery: the importance of the ORB and keeping your administrative data current; how your success or failure is driven by your performance reflected on your OERs; and the importance of being branch qualified.

It is our responsibility at MILPERCEN to help you plan your career. We want to do just that. You can help us, however, by ensuring that your ORB is correct at all times, that your OERs do not leave your place of duty with incorrect administrative data, and that we have a current preference statement (DA Form 438) on file with your home and duty telephone number. Nobody can do a better job at orchestrating your career than you can. But, we can help if we have correct information. Call anytime at AV 221-0025.

Enlisted Personnel Management
Capt. Howard Bromberg

When the ADA Assignment Branch Nominates You

Traditionally assignments for air defense soldiers have been managed by the Field Artillery/Air Defense Artillery Branch within the Enlisted Personnel Management Directorate of the U.S. Army Military Personnel Center (MILPERCEN). Earlier this year the commanding general of MILPERCEN directed that the Field Artillery Branch reorganize its personnel management operations into a prototype organization combining officer and enlisted personnel management for a one-year evaluation.

The goal of this prototype organization is to enhance readiness, increase the quality of service to the Army and maximize the individual potential of the soldiers. An evaluation will determine if this type of consolidation will lead to better management.

Due to this prototype organization, air defense enlisted management is now handled by a separate branch within MILPERCEN. What this means for the air defense soldier is that a separate branch now exists that solely manages the distribution and developmental assignments of approximately 14,000 air defenders.

The Air Defense Branch mission is to direct the selection and assignment of trained quality soldiers in career management field (CMF) 16 to meet readiness. This includes numerous subordinate missions such as professional development, recommending changes to personnel policies, force modernization needs and reclassification.

The branch is divided into two sections: the Assignment Section and the Professional Development Section. It is important to understand how each section affects the soldier.

Professional developers monitor the development of career enlisted soldiers. They review each individual's career management information file at regular intervals to ensure it is up to date. The soldier's assignment history is examined to verify if a soldier has been working in his or her primary MOS and has held the key leadership positions necessary for proper career progression.

Also the professional development NCO reviews each official DA photo before it is placed in the soldier's official file. If your uniform is improperly worn, you can bet your photo will be returned. A photograph is the first impression a board member gets of a soldier and, therefore, it is the easiest way to help or hurt yourself.

The professional developer reviews all requests for personnel actions submitted on a DA Form 4187, such as extensions, curtailments and reclassification actions. The professional developer is a monitor, and sometimes a member, of various personnel action boards such as qualitative management program and physical evaluation review boards.

The assigners working with the Professional Development Section assign all soldiers with the exception of initial AIT assignments. Each assignment manager is responsible for two or three ADA MOSs. They ensure the assignments are made against actual vacancies.

The assigners review each individual's preference statement before making an assignment. Keep in mind the assignment manager prioritizes assignments to ensure units are filled to the authorized strength level.

Assignment managers keep track of volunteers for oversea assignments. If a soldier asks to go to Germany and at present no openings exist, the assigners maintain a volunteer roster so they can assign the soldier to Germany when a vacancy comes up. If the soldier changes his or her mind and fails to inform the branch, then the soldier would be assigned based on the last request. Additionally, the assigners review requests for joint domiciles, compassionate reassignments, curtailments and extensions. An important point to remember is that the assignment manager cannot guarantee a soldier an assignment based on a telephone conversation. A DA Form 4187 must be submitted through proper local channels before any action can or will be taken.

One way to show how the ADA Assignments Branch performs its mission is to examine the assignment process. First, a requisition is initiated from the field through the Central

Assignment Procedures (CAP) III (an automated assignment process used to identify and assign personnel). Once the requisition is entered into the CAP III system, the requirement is matched by a computer against a soldier's qualifications and eligibility as recorded on the enlisted master data file. This is known as a nomination. When nominated, the soldier's record is first reviewed, including the preference statement, by the assignment manager to make sure the soldier is fully eligible for the assignment.

The nominated soldier's assignment is then coordinated with the professional development NCO who reviews the soldier's record for additional training required, professional development aspects, personal desires and any special considerations. After both sections have reviewed the assignment, the soldier is entered against the requisition, and assignment instructions are transmitted to the field.

It is important to understand that assignments are made to installation or major command levels only, except for master sergeants who receive pinpoint assignments.

The Air Defense Assignments Branch not only responds to requisitions put into the CAP III system by the field, but also identifies how soldiers in a shortage or overstrength MOS could be best managed.

The Enlisted Personnel Management System works, but works better if soldiers understand the system. The ADA Enlisted Assignments Branch is working for you. We welcome your questions.

Air Defense Enlisted Assignment Branch

Capt. Howard Bromberg

Chief

Assignment Section

Mrs. Judy Howard

Assignment Supervisor

Professional Development Section

MSgt. Frank Borowsky

Deputy Branch Chief,
Senior Professional Development NCO

Assignment Managers

Mr. Howard Traphagen
(16P, 16R)

Ms. Tracy Graves
(16S, 16Z)

Ms. Connie Moreno
(16D, 16E, 16T)

Ms. Kenney Emerson
(16H, 16J)

Professional Developers

SFC John Mead

Professional Development NCO

SFC Robert Shelton

Reclassification and
Administrative NCO

Ms. Catherine Williams

Schools Manager

Fast Track Program on Track

The Realignment of Overages Through Reclassification and Re-enlistment — Fast Track Program — has two major objectives: to get soldiers into military occupational specialties (MOSs) which will provide career enhancement and to meet readiness needs.

The number of critical MOS imbalances (those MOSs overstrength by more than 120 percent and those understrength by less than 80 percent) in 1983 was approximately 26,600. That number has dropped to 16,000, according to Ron Canada, enlisted retention manager at MILPERCEN. The grades which have the largest number of imbalances (12,000) are E-5 and E-6.

Some future changes will give more soldiers the opportunity to reclassify to shortage skills. Currently, first-term soldiers are not allowed to reclassify during their initial term of service.

The Fast Track Program "allows soldiers who are serving in overstrength MOSs to re-enlist into a shortage skill regardless of their expiration term of service," Canada said. "Currently, if soldiers were trained in an MOS on their current term of enlistment, regulation prevents reclassification. This also will change to let these soldiers reclassify to shortage skills."

All eligible soldiers will receive letters explaining the program and why reclassifying to a shortage skill enhances their careers. Only soldiers eligible to re-enlist may select the retraining option. Others will be given 90 days to choose a shortage skill, if otherwise qualified.

If not enough soldiers volunteer for shortage skills, the Army may direct reclassification to meet readiness needs. Soldiers participating in the Fast Track Program will receive formal training in the new MOS.

Testing of this new program began in May and will continue through August in three skills: MOS 03C, Physical Activity Specialist, grades E-4 and E-5; MOS 63B, Light Wheel Vehicle Mechanic, grade E-4; and MOS 97G, Signal Security Specialist, grades E-4, E-5 and E-6. "We need about 1,750 soldiers to reclassify or re-enlist out of these skills," Canada said.

Contact the Retention Management Branch, Enlisted Personnel Management Directorate, AV 221-9695, for more information.

Clearing SQT Concerns

Soldiers have expressed two major concerns about Skill Qualification Test (SQT) scores: a conflict between the score shown on the Individual Soldier's Report (ISR) and the score shown on the DA Form 2A; and the delay between the time the SQT is taken and the time the score shows on the DA Form 2A.

A soldier takes an SQT within a three-month test window. The local training standards officer (TSO) forwards the test to the U.S. Army Training Support Center, Fort Eustis, Va. The Support Center scores the test and forwards the results on the ISR through the TSO to the soldier.

The soldier should receive the ISR within 30 days after testing. If it is not received 45 days after testing, an ISR may be requested through the TSO. The score on the ISR is an interim score and may change because of subsequent regrading or invalidation of parts of the test. If the score changes, another ISR is sent to the soldier.

Sixty days after close of the SQT test window, the Support Center forwards a final score to MILPERCEN for posting on the enlisted master file (EMF). This delay in forwarding scores to the EMF is necessary to allow certification of SQT validity by the proponent school; final regrade, if necessary; and the production of percentile rankings.

When the EMF is updated, SQT scores are transmitted automatically to the local SIDPERS activity according to the soldier's current assignment. After the local SIDPERS file is updated, the final SQT score (which should correspond to the latest ISR the soldier received) will be reflected on the next printed DA Form 2A. To account for soldiers in transit during transmission of scores, SQT data is forwarded when an arrival transaction reaches the EMF from the new unit. SQT data is also transmitted upon request from the field.

When more than 60 days have passed since the close of the test window and information in the local SIDPERS file has not been updated, or when erroneous SQT information is discovered, the Enlisted Records Section of the local military personnel office can request EMF SQT data.

The MILPO Assistance Branch, MILPERCEN, should be contacted when EMF inquiry does not resolve the conflict. *(Army Personnel Bulletin)*

Recording Training Made Easier

Commanders and NCOs should consult AR 350-1, Army Training, on the use of job books. The job book, used for skill levels one and two, serves two basic purposes: it provides trainers a written record of soldier proficiency on common tasks and MOS-specific soldier's manual tasks, and it provides trainers a management tool to guide unit training of individual soldiers. Job books must be maintained and transmitted to the soldier's next duty station.

It is also suggested that the field expedient squad book (DA Form 5165-R) be used, even though its use is optional. Refer to AR 350-37, Army Individual Training Evaluation Program. This form standardizes the recording of task proficiency information on individual soldiers.

Although called the "squad book," it is designed for any situation (squad, crew, team, etc.) where soldiers work together. Skill qualification test, common task test and commander's evaluation go/no go results can be entered on this form.

The "squad book" benefits the trainer in several ways:

★ It eases the recording and maintaining of go/no go task results for soldiers in the same MOS skill level.

★ It consolidates soldiers' tasks proficiency for easy analysis.

★ It pinpoints training weaknesses and helps focus remedial training.

★ It allows soldier task proficiency to be recorded at all skill levels, not just skill levels one and two.

If this form is used, go/no go results for skill levels one and two soldiers must be transferred to job books. AR 350-37 contains a blank copy of DA Form 5165-R for local reproduction. *(TRADOC)*

Electronic Information Delivery System

The electronic information delivery system (EIDS) is an electronic storage, retrieval and video disc display system that provides the user technical data that is accurate, timely and readily accessible. It will replace the Beseler Cue/See, selected 3/4-inch tape players and 16mm projectors for all unit operational information.

The EIDS is a subsystem of the technical information management system, a total Army effort to improve the generation/receipt, storage, manipulation, delivery and use of technical information through the user in the school and field. The EIDS will be able to electronically accommodate massive amounts of technical data for resident and extension training.

Currently, officials are working on an initial procurement contract to allow the schools to receive some EIDS units during FY 1986. The Air Defense Artillery School has a recognized requirement for an initial issue of 185 units of EIDS. The Army Training Support Center has established standard issue as four per battalion. Distribution is scheduled to begin the third quarter, FY 1987 through 1988.

FAARs Can Radiate at NTC

Some air defense units have lost valuable training at the National Training Center (NTC), Fort Irwin, Calif., because the task forces they supported would not let them radiate their foward area alerting radars (FAAR).

The problem is that FAARs radiating on the lower four frequencies trigger multiple engagement laser system (MILES) sensors within 1,000 meters of their locations. To eliminate the problem, ADA units should radiate their FAARs only in the higher eight frequencies and follow NTC standing operating procedures by employing FAARs at least 400 meters away from any system equipped with MILES.

Air defense commanders should resist attempts to prohibit FAAR radiation at the NTC. Shutting down the FAARs degrades forward area air defense because FAAR operators relay early warning from higher sources and report any additional aircraft they detect on their radar scopes. They also act as additional FM radio links between battalion tactical operations centers and fire units.

For more information, contact Lt. Col. Michael Rosebeary, Directorate of Standardization and Evaluation, Air Defense Artillery School, Fort Bliss, Texas. His telephone number is AV 978-5721 or 978-3895.

FOG-M Test Results Impressive

The U.S. Army Missile Command, Redstone Arsenal, Ala., continues to achieve impressive results with its fiber-optic guided missile (FOG-M).

The FOG-M has successfully engaged tanks and a moving helicopter. The FOG-M is fired from a defiladed position and, as it proceeds along its trajectory, plays out a fiber-optic cable that links a missile-borne TV camera with a receiver at the firing position. Once a target is on the screen, the operator can lock on and steer the missile for a direct hit. Coupled with Copperhead, the FOG-M gives the Army a strong capability for delivering one-shot, one-hit precision fire into the enemy's forward areas. *(Defense Electronics)*

Patriot Contract Awarded

A Patriot system contract valued at nearly $1 billion has been awarded for the production of 15 fire units, 770 missiles and spare parts.

To date, the Army has deployed two Patriot battalions to West Germany and activated a third Europe-bound battalion that is currently training at Fort Bliss, Texas. All told, 103 Patriot systems will be bought for the United States, 14 of which will be provided to West German forces under the terms of an air defense agreement between the two nations. The Germans also will buy 14 systems on their own, while the Netherlands will buy four. Japan also has selected Patriot.

Spike Testing Continues

Two series of test firing of the Spike rocket will be conducted this summer in preparation for using the weapon against a flying helicopter target later in the year.

Developed by the U.S. Army Missile Command (MICOM), Spike is a hypervelocity rocket that is being tested for a role in light air defense. It has been described as "a shotgun for air defense" because of its unique warhead that blasts a target with a swarm of nail-like penetrators.

In February 1986, a nine-round volley of Spike rockets fired at a stationary helicopter one kilometer downrange scored killing hits on the cockpit, engine and rotor blade.

The test, conducted at Eglin Air Force Base in Florida, was the first in which Spike was fired from the experimental Setter air defense weapon "full-up and alive," said Rich Jones, manager of the Setter program.

Engineers at Redstone Arsenal, Ala., are also exploring other applications for Spike. They are particularly interested in its potential as a helicopter armament, according to Jim Burt, Spike program manager.

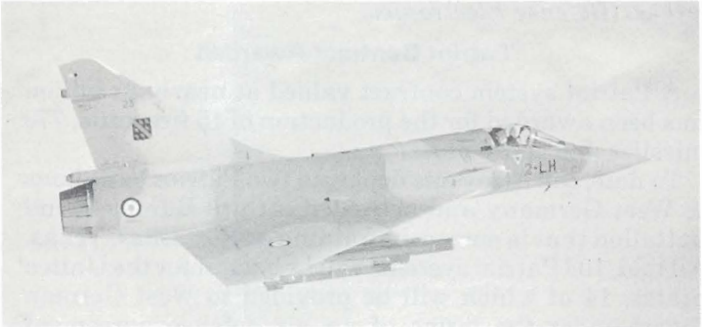
Spike is a small, inexpensive rocket that derives its punch from high speed and a warhead containing 88 tungsten penetrators that hit in a swarm like a shotgun blast.

In the Eglin test, four penetrators entered the cockpit, two went through the engine, one hit the rotor and five went into the helicopter at other points. In another test volley, 37 penetrator hits were achieved on life-size helicopter front and side profiles drawn on a target board.

MICOM is teaming Spike rockets with Stinger missiles in a potent firepower package for light air defense. The weapons, which are interfaced with advanced sensors that locate and track targets automatically, are turret-mounted on the high-mobility, multipurpose wheeled vehicle to form the Setter experimental light air defense system. The weapon's head carries eight Stingers and 54 Spikes in launch tubes.

The hypervelocity rockets can be fired in volleys of three, six or nine. They can be employed in a gun role against ground targets, but Setter's developers see Spike mainly as a quick-reaction weapon for pop-up, close-in air targets.

New Paint Scheme for Mirage 2000



The French air force has improved the camouflage paint scheme of its Mirage 2000s. The new scheme incorporates a gray-colored radome instead of the traditional black nose section.

The use of light gray paint on the aircraft's relatively large radome reduces its visual profile by blending with the cloud cover. The aircraft's overall camouflage color pattern is blue-gray.

Foreign customers for the single-engine Mirage 2000 include India, Egypt, the United Arab Emirates, Greece and Peru. So far, 75 Mirage 2000s have been delivered to the French air force and foreign customers. *(JDW)*

West Germany Tests Su-20s

The West German air force is testing two Soviet-built Su-20 Fitter single-seat attack aircraft. The aircraft, now painted in Luftwaffe colors, were acquired about a year ago from a "friendly country." Su-20s are operated by Egypt, Iraq, Algeria, Czechoslovakia, Poland, Syria and Peru.

The Germans are gathering information about Soviet materials, technology and construction methods. They are also determining effective tactics to counter the Soviet aircraft.

India to Produce MiG-27M

Indian-produced MiG-27M Flogger fighters will have increased strength with lighter and better quality titanium and steel alloy materials than did the earlier MiG-21 series.

The MiG-27M program is divided into four phases as Hindustan Aeronautics, Ltd. and the Mikoyan-Gurevich design bureau in the Soviet Union work to transfer production of the aircraft to India. This is the only non-Soviet production site for the MiG-27M.

Phase I, delivery of test aircraft from the Soviet Union and flight test experience by Indian pilots, has been completed.

Phase II, assembly from major subassemblies built in the Soviet Union and installation of operating subsystems, is in progress.

Phase III calls for assembly of the aircraft in India from component parts provided by the Soviets.

Phase IV, fabrication of detail parts from raw materials and total manufacture within India, is targeted for 1988-1989. *(IDR)*

Study Details Soviet Helicopters

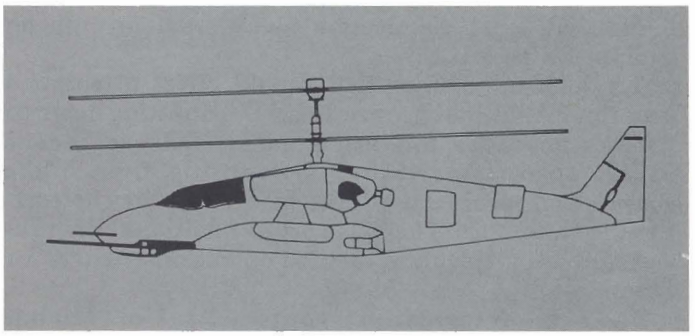
A study, written by an 18-year veteran engineer of the Mil helicopter design bureau, provides the most detailed examination of Soviet aircraft design practices, industrial organization and test procedures ever published on an unclassified basis in English.

Lev Chaiko, in *Helicopter Construction in the USSR*, claims that the Mil design bureau began design of two tilt-rotor transports in the mid-1970s. The Mi-30 was designed to transport 15 troops, and the Mi-32 was designed to lift 30 troops. He suggests that the bureau is likely to be working on a twin-rotor, heavy-lift helicopter based on the Mi-26 Halo rotor system, capable of lifting up to 50 tons.

The author indicates that design work on the new Mi-28 Havoc anti-tank helicopter began in 1978 with flight trials starting in 1980. Series production was scheduled to begin in 1983. Chaiko states that the Mi-28 does not have a cargo hold (as does the Mi-24), but is fitted with an electronics assembly over the main rotor hub, presumably an electro-optical target acquisition and guidance sight.

The Chaiko study appeared as part of the Delphic Emigre Series, published by Delphic Associates Inc., Falls Church, Va.

Soviet Helicopters Update



Hokum

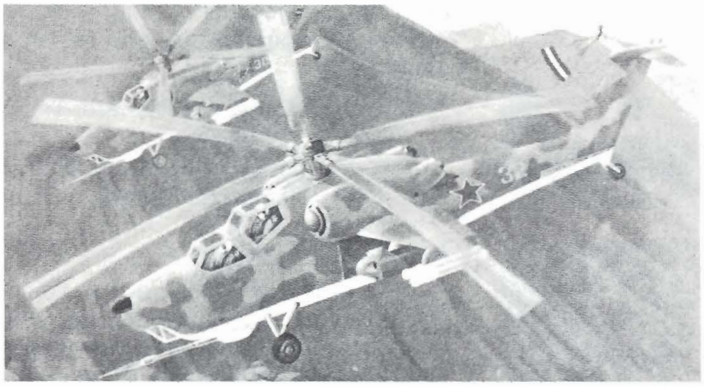
The Department of Defense has been compelled to admit that the Hokum, newcomer from the Kamov design bureau, "will give the Soviets a significant rotary-wing air superiority. The system has no current Western counterpart."

The only details known with reasonable certainty are that it has an estimated take-off weight of 11,990 tons, co-axial contra-rotating main rotors and probably a two-man crew side by side under a flat-plate canopy. What makes this aircraft of particular significance is that it is likely to be the first helicopter with the necessary high performance, agility and armament to offer a genuine air-to-air combat capability as well as a formidable ground-attack potential. Like the Mi-24 Hind, the Hokum

has retractable landing gear and a heavily armored cockpit.

With its large rotor disc area giving it high maneuverability, it is thought to be suited to nap-of-the-earth operations. Soviet trials of helicopters flying in such operations in the anti-tank role have apparently shown that a kill ratio of about 30 tanks for one helicopter can be obtained.

Soviet Military Power 1986 credits the Hokum with a speed of 217 miles per hour and an action radius of 155 miles. The sketch indicates a considerably revised outline of the Hokum, consistent with the high performance expected. In particular it appears to carry armament in a gun turret under the nose.



Havoc

To date, no unclassified photographs of the Mi-28 Havoc have appeared. But an artist's impression released by the Department of Defense (DOD) in *Soviet Military Power 1986* offers few surprises.

The Havoc is depicted with a slim fuselage, slightly shorter than that of the Mi-24 Hind, a stepped cockpit, non-retractable tailwheel landing gear, weapon-carrying stub wings and undernose gun turret that have become the pattern for attack helicopters. The twin engines are almost certainly similar to those of Mi-8 Hip H and Hind. The slimness of the center fuselage dictates side pods. DOD officials suggest upturned jet nozzles to minimize the infrared signature.

Although the diameter of the main rotor appears to be much the same as that of the Hind, the rotor head is a new design, and the tail rotor is switched to the starboard side of the fin/pylon. The radar housed in an undernose pod on the Hind appears to be transferred to a nose position on the Havoc.

It has been assumed generally that the stepped undernose glazing identifies an observer's station, providing an optimum forward/sideways/downward field of view. However, the flat-plate sloped window at the front could enclose further sensors, such as low light level TV or a laser designator and marked target seeker.

The Havoc is expected to be operational within two years.

Halo

The Mi-26 Halo helicopters began service with Soviet groups of forces in Central and Eastern Europe in January 1986. According to John Stanley, British minister of state for the armed forces, the Soviet Union was to deploy the giant Halo heavy-lift helicopter to front-line units in Eastern Europe, beginning in East Germany.

The Soviet military magazine *Zname-nosets* (Banner Carrier) reportedly gives the helicopter's range as 434

miles unladen and 248 miles with a full load (44,000 pounds). The helicopter can lift two BMD IFV or 90 men.

Hind

Mi-24 Hind D helicopters have been delivered to the Polish air force. These Hind gunships are reported to be equipped with a modernized version of the AT-2 Swatter anti-tank guided weapon.

Libyan Aircraft

Mirage F-1

Fitter J

Navy F-14 Tomcat fighters from the *USS Saratoga* intercepted this Libyan air force Su-22 Fitter J. The aircraft, the export version of the Soviet Su-17 Fitter H, is equipped with external fuel tanks and armed with two AA-2 Atol missiles. The Atol is an infrared heat-seeking air-to-air missile. Canted fairing on lower left side of the nose contains ECM equipment.

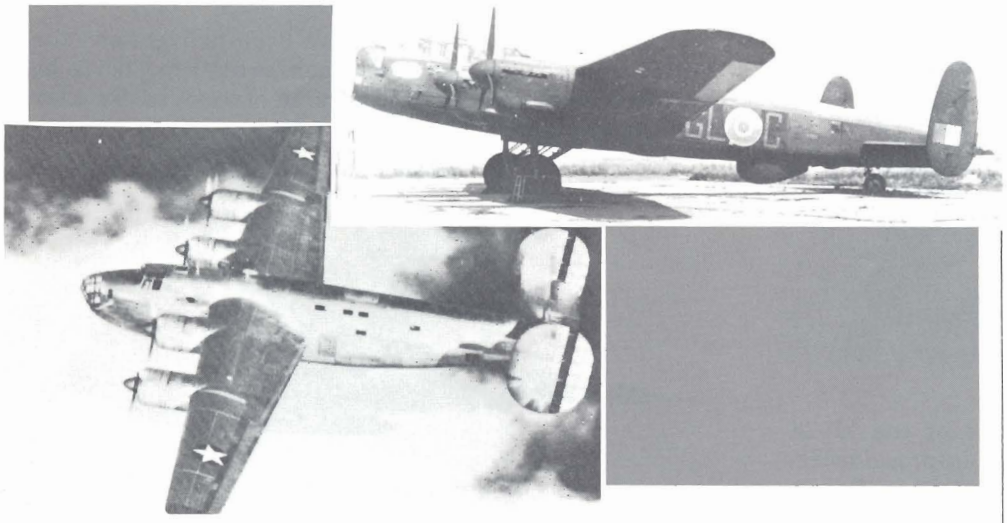
The Tomcats also intercepted a Libyan Dassault Mirage F-1 during the same operation in the Mediterranean.

The photographs were taken during a 6th Fleet missile firing exercise near the Libyan coast.

L E T T E R S

Mistaken Identity

As author of the current FM 44-30, Visual Aircraft Recognition, and editor of the revised FM, I am probably over sensitive to the incorrect identification of aircraft. Because I am a vocational nitpicker, I am forced to correct the photograph on Page 32 of the Spring 1986 issue. I used the WEFT (wings, engine, fuselage, tail) method and came up with the following possibilities:



B-24J Liberator		Avro Lancaster
Long, narrow (Davis) wing	W	Broad wings
Four *radial* engines*	E	Four in-line engines
Box-like body with top gun turret *above* wing*	F	Box-like body with top gun turret between wing and tail
Twin tail with oval fins	T	Twin tail with oval fins

**Big clues*

Aside from the WEFT method, a USAF insignia is displayed on the upper side of the left wing to help identification (although not a reliable means).

Another giveaway, if you read the article carefully, is that the photograph portrays a daylight raid ("British aircraft, which attacked by night . . .").

Yes, it is indeed a B-24J Liberator and not the Avro Lancaster.

The new FM 44-30 should be available to the field by the first of 1987. (Only the latest operational aircraft are shown — no Liberators.)

Robert Upton, DAC
DOTD Fort Bliss, Texas

Getting Known by Writing

It is with great pleasure that I read your magazine from cover to cover every quarter. The subjects are always interesting and covered well with good pictures.

Often I found myself referring to these articles in many researches I have done. More recently I used some of your past articles in a short paper I wrote on early warning and electronic silence. For that purpose, articles like "Automated Communications for Air Defense" were instrumental. The quality of those articles are a definite asset to your magazine.

The broad range of your writers is certainly something the *Air Defense Artillery* magazine should be very proud of. Too often I hear the young officers say: "I really have no idea what I could write about," or the NCOs comment: "Really isn't my job to write; somebody else will."

As my CO said three years ago, "An officer must get himself known by his writings." I feel this applies as well to our NCOs and it is an art to be developed. From Sp4 to Maj. Gen., all your articles truly show the mental alertness and the poise of your air defense soldiers. "Intercept Point" in the Winter 1986 edition has been reproduced for all my NCOs, and the "Gospel" was read by my officers to show the profound thinking and the quality writing an air defense soldier is capable of.

Keep your powder dry and let your pen flow.

Maj. Andre Richard, Cmdr.
"V" Batterie
5e Regiment d'artillerie
legere du Canada

A Matter of Accuracy

In the interest of accuracy, I would like to bring to your attention that the photographs on Page 16 of the Winter 1986 issue are incorrectly captioned.

The two photos of the half-tracks are not Quad .50-calibers, M-16s. If my memory serves me correctly, the mount is twin .50-caliber machine guns, and one 37mm automatic cannon.

My old school notes do not describe this multiple-gun motor carriage, but was not this vehicle designated the M-13?

Byron W. Keagle
Capt., USMC retired

The captions should have read: Colt 37mm automatic cannon bracketed by .50-caliber machine guns. This configuration for air defense application was designated as the M-15.

About the Westervelt Board

The work and effects of the so-called "Caliber Board" (Spring 1986 issue) were widely publicized in the early 1920s, but tend to have been forgotten. One corrective comment: on Page 26, the "complex mix of artillery used by the AEF (not including railroad artillery)" lists, among other items, 8- and 10-inch seacoast guns. While a fair number of each of these calibers were, in fact, mounted for field use, the mounts in both cases *were* railroad mounts. Whether any of either caliber were actually used by the AEF prior to Nov. 11, 1918, is doubtful.

E.R. Lewis
Capt., CAC, Artry (ret.)
Washington, D.C.

ADA ASSOCIATION

Distinguished Grad Receives Plaque

In its effort to recognize outstanding soldiers, the ADA Association honors each distinguished graduate of the Basic and Advanced NCO courses with a plaque. SSgt. James K. Sanborne, A Battery, White Sands Missile Range, N.M., was the distinguished graduate of the Basic NCO Course 3-86. CSM Gary Cabato presents the first BNCOC recipient with the association's plaque.

Corporate Members Recognized

Maj. Gen. Donald R. Infante, representing the Air Defense Artillery Association, presents the association's Corporate Life Member Plaque to Malcolm R. Currie, executive vice president of Hughes Aircraft Co. and president of Delco Electronics Corp. In joining the ADA Association as a corporate life member, Hughes displays support for the ADA Branch and its soldiers who make up the combat arm that will be the "First to Fire."

Representing the two newest corporate members are Jim Kilgore from the Scientific Application International Corp. (left) and Terry Shaw from Raytheon Corp. (right). Brig. Gen. William H. Riley presents each with the ADA Association's Corporate Life Member Plaque.

Why Aren't You Joining Us?

Every professional needs to belong to an organization, one that supports its members' professional development by providing programs and information. The ADA Association is such an organization.

A tremendous effort is under way to recruit all air defenders into the association. This effort is to convince every Air Defense Artillery soldier that there are good solid reasons to belong.

There are numerous unit and individual incentives for joining. The $30 lifetime membership fee is the absolute lowest of any organization associated with Army units or branches. The absolute lowest! The $15 gift pack that every new member receives is unique to our association; no one else offers such gratuities.

The ADA Association makes two pledges to its members. First, membership is for life; no request for additional contributions will ever be made. Second, the membership fee will not be spent but will be part of the endowment fund that will support all future programs.

There is, however, one problem. Endowment funds work because there is strength in numbers. If few people join an organization, the fund will be small; therefore, the interest it earns will be small. The results are obvious. There will be little money for the programs planned for the members of the organization.

The ADA Association needs you just as we think you need the association. The strength resulting from your participation will be returned to you in the programs designed to assist members and their dependents. You will also receive information, and professional and personal support.

Why, then, haven't you joined us? Approximately 800 new members have joined the association since the start of our new membership drive. But this is far short of the number necessary for our association to be successful.

The ADA Association is for all of us. Please support it. You will find that your support will come back to you tenfold. Remember, your branch is special. It is the "First to Fire."

Motto To Be Memorialized

These inspiring words by Capt. Michael E. Zaborowski were selected in March 1986 as the official motto of Air Defense Artillery (see Page 37). Capt. Zaborowski's winning submission will be recognized on a memorial plaque to be placed either in the Air Defense Artillery Museum or in an appropriate location in the headquarters building of the Air Defense Artillery School, Fort Bliss, Texas.

Coming in the Summer issue . . . The New Look of Hawk