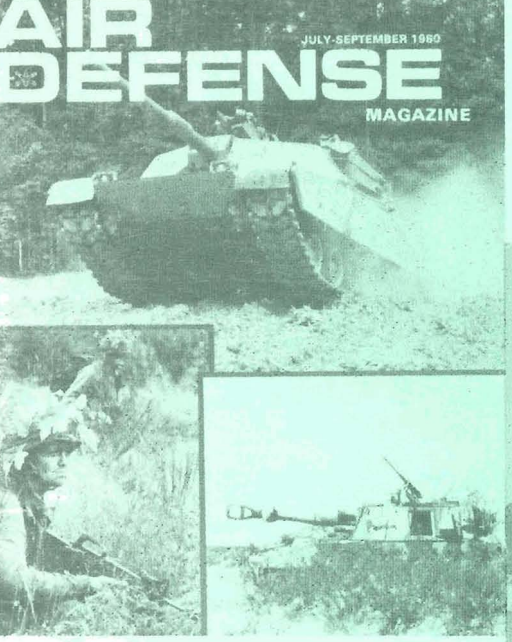
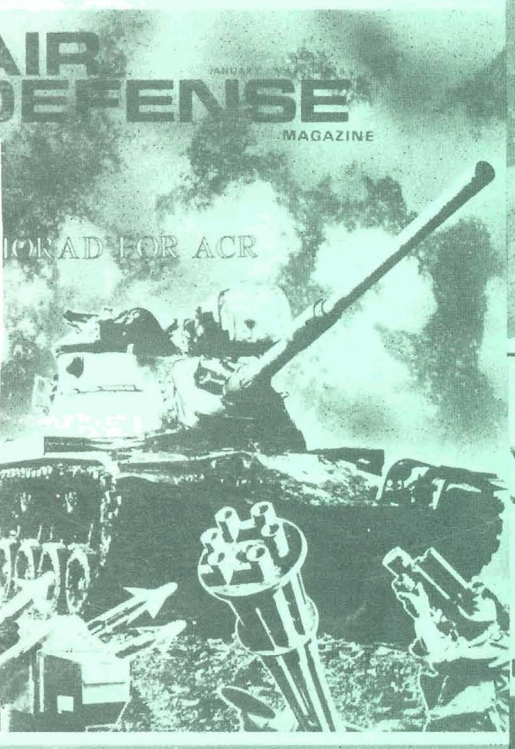
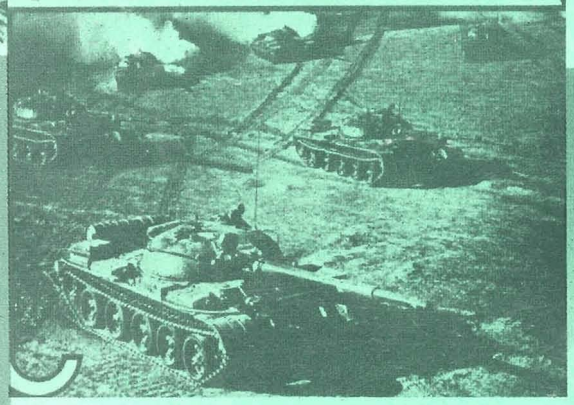
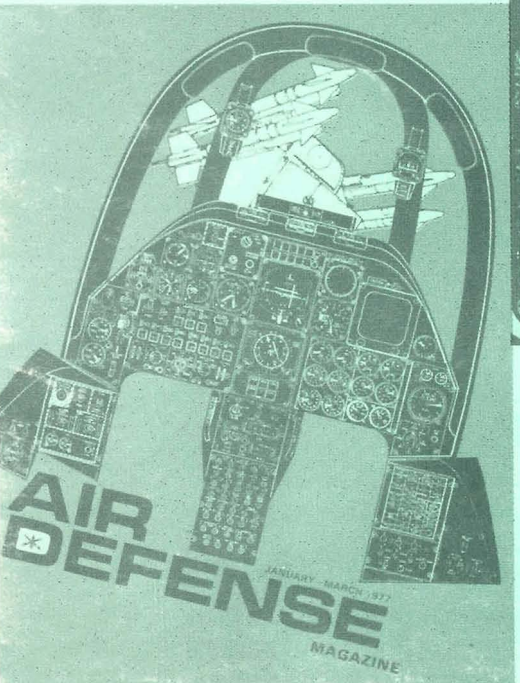
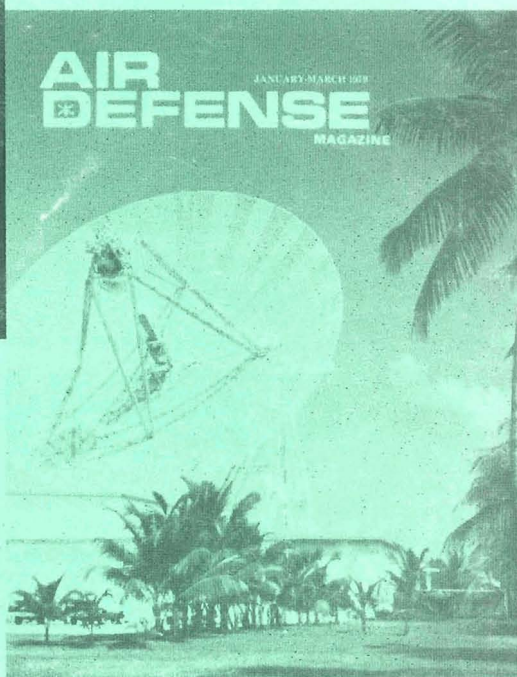
AIR DEFENSE MAGAZINE











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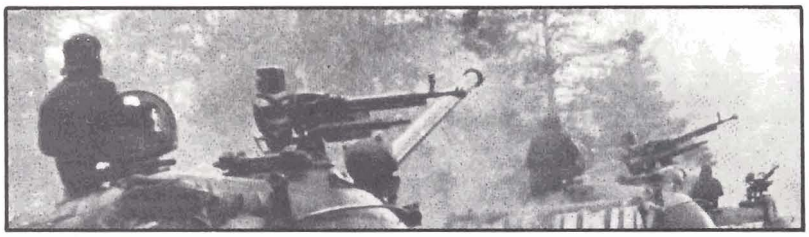

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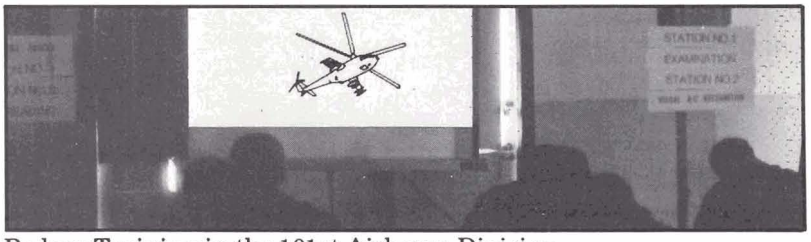

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AIR DEFENSE

"The Bridge over the Chasm of Defeat."

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INTERCEPT PO

The Status of New ADA Weapon Systems

Major General John B. Oblinger, Jr.

Air Defense Artillery is undergoing major changes as we progress with the development and fielding of four new weapon systems: Stinger, DIVAD Gun, Roland, and Patriot. These new systems, designed to cope with the enemy air threat of the 1980s through the 1990s, will fulfill much of the air defense needs at all echelons of combat elements.

Stinger replaces Redeye, the shoulder-fired, infrared-homing, antiaircraft missile. Delivery of Stinger to the field began in February 1981. The 11th Armored Cavalry Regiment in USAREUR was the first unit to receive the new weapon.

The mission of Stinger is to provide low-altitude air defense to battalions and selected combat support units operating near the forward edge of the battle area. Without protection, these units are vulnerable to high-speed, low-flying aircraft and heavily armed attack helicopters. Stinger can also protect small vital areas and support early phases of rapid deployment, air assault, and airborne operations. Stinger may be employed wherever ground combat soldiers are deployed.

An evolutionary development beyond Redeye, Stinger provides an increase in defended volume for forward area and critical asset defense. This improvement results from the addition of a forward aspect target engagement capability, increased range, and the introduction of an identification, friend or foe (IFF), interrogator. These improvements, coupled with an increase in lethality and reliability, provide better protection against the air threat in forward areas and allow maneuver commanders freedom of action to accomplish their missions.

Although Stinger is in production, the improvement process continues. A new seeker, identified as Stinger POST, is already in engineering development. Using passive optical seeker technique (POST) technology, it will have improved detection ranges and improved countermeasure immunity. The first Stinger POST guided test vehicle was launched in January 1981, and all test requirements were met.

A new gun system, the DIVAD Gun, is being developed to provide effective air defense for divisional maneuver elements, principally armored and mechanized infantry, against attack by armed helicopters and high-performance, close air support, fixed-wing aircraft. The DIVAD Gun Program is based on a "Skunk Works" development concept mandated by the Army Systems Acquisition Review Council (ASARC). The objectives are to shorten the development/acquisition time to achieve early fielding of the system and reduce program costs. Key features of this acquisition approach, as applied to the DIVAD Gun Program, are:

- Two competing contractors (General Dynamics and Ford Aeronutronics) in a 2-year development phase.
- Monitorship rather than management of the development contractors.
- A 5-month, combined developmental test/operational test (DT/OT) to aid in selecting the contractor to go into initial production.
- Minimum deliverables to reduce cost and scheduled development time.

The contractors were selected from an original field of five. These were given 12 firm design requirements to meet and 43 cost/performance trade-offs, with which each contractor was to develop 2 working DIVAD Gun prototypes for government testing. Design requirements included an acquisition and tracking radar, an optical sensor for computer-aided tracking, a 35-mm to 40-mm round, and a system reaction time of 8 seconds or less. Both contractors delivered systems that met or exceeded all firm design requirements.

The General Dynamics DIVAD Gun featured a twin Oerlikon KDA 35-mm gun and used a radar fire control system derived from the General Dynamics Phalanx fire control system currently in use by the Navy. The Ford Aeronutronics DIVAD Gun featured a twin BOFORS 40-mm gun and used a radar fire control system based on the Westinghouse F-16 design. Fire control systems on both guns allow search-while-track, IFF MK 12 compatibility, and shoot-on-the-move capability. Both systems are mounted on modified M48A5 tank chassis and employ a crew of three.

A "shoot-off" was conducted at North McGregor Range from June to November 1980. Results of this testing were analyzed to aid in contractor selection. Further testing and system refinement will follow the contract award with the first production line system scheduled for delivery to the Army in October 1983. Following a year of initial production testing, the first DIVAD Gun battery will undergo collective unit training at Fort Bliss.

The entry of the DIVAD Gun into the Army's family of air defense systems marks a drastically needed improvement in our maneuver divisions.

To fulfill the requirement for rear area short-range air defense (SHORAD), the Roland missile

system is being introduced. The US Roland is an advanced, all-weather, short-range air defense missile system. It is the result of cooperation involving France, Germany, and the United States. The system's mission is to defend high-value targets against high-performance, low-flying aircraft (day or night) in all weather conditions.

After extensive, competitive testing with Britain's Rapier and the French Crotale, Roland was selected for adoption. The European and US systems will have complete interoperability on a system basis, plus interchangeability at the field replacement level. The US Roland contractors, Hughes Aircraft Company and Boeing Aerospace Company, are striving to keep interchangeability to the maximum possible.

Mounted on the modified M109 tracked vehicle (XM975), the US Roland with its four-man crew is capable of supporting maneuver units. It has a search-on-the-move capability that extends to about 16 kilometers in range and greater than 3 kilometers in altitude. The fire unit module can also be mounted on a wheeled vehicle or emplaced at a site for semifixed operation. A fire unit on the XM975 can be carried intact in a C-5A aircraft or the fire unit module can be transported separately by a C-141 cargo plane or heavy-lift helicopter.

The US Roland carries 10 supersonic missiles that can reach out, at all aspect angles, more than 6 kilometers and to altitudes greater than 5 kilometers. Two missiles in canisters are carried on the launch arms ready for firing. Two magazines carry four missiles each and provide a reload capability of 30 seconds.

The system includes a surveillance radar and IFF to detect and identify targets. The prime power unit supplies all power requirements for the system. Both the track radar and optical sight are available for target tracking. Switching between the two tracking schemes is possible both before and during missile flight. The surveillance radar is a low-frequency band, pulse doppler system designed to detect low-flying aircraft at supersonic speeds, as well as hovering helicopters. US Roland offers high probability of single-shot kill in either daylight or night/all-weather conditions.

Roland is in low rate production now. A decision whether to implement full-scale production is expected this fall. Fielding of US Roland is scheduled for the mid-1980s.

Finally, the Patriot air defense system is expected to replace the Nike Hercules system and selected Hawk systems. Patriot is an advanced surface-to-air guided missile system providing defense against high-performance, air-breathing targets. It is designed to cope with the theater army air defense threat of the 1980s and 1990s and can accomplish its mission with 90 troops per firing battery. Patriot features a multifunction phased-array radar, track-via-missile guidance, and automated operations with capability for human override.

The engagement control station (ECS) is the operational control center of the Patriot firing battery. It contains a central computer, various data and communications terminals, and tactical display consoles.

The multifunction phased-array radar, under control of the ECS, is unmanned in the operating mode. Its functions include surveillance, target detection, target track, target identification, and missile guidance.

The electronic power plant (EPP) is the prime power source for the ECS and radar set which, together with the antenna mast group, comprise a Patriot fire control section. The basic building blocks of the EPP are the two interconnected, nuclear electromagnetic pulse hardened 150-kw, 400-Hz, turbine-engine generator sets.

The launching station is a remotely operated, fully self-contained unit carrying integral onboard power and up to four ready-to-fire, cannistered, certified missile rounds. Operation of the launcher station is under control of the ECS via an RF digital data link, thereby eliminating the need for interarea control cables. The rapid-erect antenna mast set is used to carry the amplifiers and antennas associated with the UHF communications equipment that facilitates communications between the ECS and the battalion's information coordination center (ICC).

The command and coordination functions of the Patriot battalion are implemented by use of the ICC. The ICC functions as the center for coordination of Patriot firepower with other users of the airspace. It interfaces with Army air defense group facilities, neighboring ICCs, and the fire units' ECSs.

Patriot has completed its operational testing and in September 1980 the Secretary of Defense approved limited production. The system is currently undergoing confirmatory testing to refine areas such as software control, maintainability, and the development of technical manuals. This testing phase will culminate with a formal follow-on evaluation in October 1982. The first Patriot battalion (-), three firing batteries, and a headquarters battery will be activated and will undergo formal evaluation at Fort Bliss.

These new weapon systems are being fielded to blend into the family of air defense weapon systems. The maximum use of evolutionary developments, new technology, and the preplanned development program will insure continuous upgrading of these systems so the US will be prepared to defeat enemy air power through the 1980s and beyond.

John B. Oblinger

ENGAGEMENT ZONE

letters to the editor

Dear Sir:

I am a second lieutenant in the Air Defense Artillery (ADA) Branch. I recently graduated from the Officer Basic Course and the Chaparral/Vulcan Weapon System Course at Fort Bliss, Texas. Knowing that it is unusual for a female officer to hold the 14B specialty is the main reason I am writing to you.

I am a member of the New Mexico Army National Guard and a graduate of the state OCS program. When I chose to be an air defense officer, I had no intention of going against the system by choosing Chaparral/Vulcan as my weapon option. My reason was that it would help me in learning the tactics of a SHORAD weapon such as we use in the National Guard (M42 Duster). It made no sense to choose the other weapons (Hawk or Herc) for their tactics differ from the SHORAD M42 Duster. It would be a waste of time and government money to train me in a system unrelated to ours. I do know that I may never command a C/V or Duster unit, but if being in ADA means I'll have to work in or around the Duster units, then it is helpful to know how our Duster battalions function and just what their capabilities and limitations are.

The purpose of this letter is to encourage female ADA officers in the National Guard to choose C/V as their weapon option because many of the tactics are similar to Duster tactics while the others (Hawk, Herc) may be a little out of range. Also, during the C/V course, we National Guard personnel have the option to attend a course on the M42. The course was most beneficial to me.

I hope this letter benefits other female National Guard ADA officers as I have benefited from the C/V Course.

VICTORIA M. CHAVEZ
2LT, ADA
Commander, 209th RCAT

Dear Sir:

I am assigned to the Logistics Element of US Army Combat Support Coordination Team 1, Wonju, Korea. Our mission is to provide assistance to First Republic of Korea Headquarters staff personnel and to keep the Commander, Eighth United States Army, informed on current developments of the Korean Army. How well this is accomplished depends on the confidence, respect, and friendship I gain from the chiefs of the Korean Army staff elements. One way of doing this is to furnish them with information that is of use or interest to them.

The general officers in the First Republic of Korea Army are skilled in the English language. Many of them, including the First Republic of Korea Army G-4 and the First Logistics Commander, have received training in the United States. They are deeply interested in learning the US Army logistics system and carrying out much of the US Army doctrine. We can help them considerably if our office (Logistics Element, CSCT 1) is placed on your AIR DEFENSE Magazine distribution list.

GEORGE REYNOLDS
MAJ, Ordnance
Logistics Staff Officer

You certainly have a worthy cause. We have complied with your request and would like to point out that any organization, whether Regular Army, Reserve, or National Guard may be placed on our distribution list upon request.

— Ed.

AN ACADEMIC FIRST

For the first time in the history of the US Army Air Defense School, a German Army officer has been enrolled in a career course. He is Captain Dieter Schuster, a member of the German Army Air Defense Artillery. Enrolled in ADA Officer Basic Course No. 4-81 on 19 January 1981, he graduated on 3 April 1981. At that time he returned to his homeland for an assignment as Battery Commander, 7./Flugabwehr-regiment 12.

Captain Schuster has served in the German Army since October 1966. He holds a Master's Degree in Adult Education from the University of Wurzburg and is active in adult counseling when not engaged in military duties.

Captain Schuster says the ADA Officer Basic Course has great value. While there are certain differences between German and US air defense doctrine, such fundamentals as leadership are almost identical. What he feels he has gained most from the course is the ability to talk air defense with his American allies in specifics rather than in generalities as before. He strongly recommends that we continue to enroll German officers in ADA school courses but believes the ADA Officer Advanced Course would be more mutually beneficial than the Basic Course.

MILITARY INCENTIVE TAX EXEMPTION

Dear Sir:

To encourage trained military personnel to remain in the service, I have introduced legislation providing tax incentives to make military pay more competitive with civilian salaries, namely, the Servicemen's Retention Act, H.R. 1308. At a time when international crises have dramatized the need for a trained, ready defense force, we cannot afford to have only one-third of our experienced servicemen staying in the armed forces past their first obligation. Qualified personnel, upward of 47 percent of the eligible reenlistment pool, are leaving the military for more lucrative civilian employment. People, not hardware, are the military's largest investment; we must protect that investment.

The Servicemen's Retention Act exempts from taxes 25 percent of the serviceman's salary after his first four years of duty. After eight years of service, the exemption climbs to 35 percent; after twelve years, the exemption is 45 percent; and after sixteen years, the exemption reaches 50 percent.

With his disposable income nearly approaching similar civilian occupations, the serviceman is less likely to leave to look for a more lucrative job. The nation's armed forces will thus be considerably strengthened due to improved morale and readiness through the retention of the most experienced personnel. The improvement in pay would also serve as an inducement for enlistment, thus increasing the quality of the Volunteer Army and reducing the necessity of a draft.

I encourage you to share this idea with your readers. There is no effort too great to maintain the quality of our military forces.

PHILIP M. CRANE
Member of Congress
12th District-Illinois

EDITOR'S COMMENT

Besides informing our readers about a given subject, most articles published in AIR DEFENSE Magazine have several other functions. They may stir up some debate and generate pros and cons from the experts that others should know about. Some invite expansion on the subject matter that would give a more vivid or complete picture. Others will be seen by some readers to need change in the interest of updating or total accuracy. Still others open the door to related or even different subjects which, if published, would serve a useful purpose to those professionally interested in air defense.

We ask our readers, then, to look at all articles with these thoughts in mind. Don't reject or condemn an article that contains controversial material. It serves the purpose of stimulating deeper thought, possibly resulting in solutions to some of our many and changing problems. If you see the need for expanding an article where comprehensiveness may be lacking, don't just "let it ride." Provide us with the information and together let's "flesh out" the report with a follow-up article. Notify us promptly of changes that you feel should be made. And, finally, send in articles or letters covering subjects that are subtly suggested by published articles.

Air Defense of Stationary Critical Assets

by Major Stephen F. Likins, USAR

FM 44-3, Air Defense Artillery Employment, Chaparral/Vulcan, states that frequently enemy intelligence will pinpoint an asset's location and will conduct preplanned air strikes against it (p 6-13). On the modern battlefield, however, once a critical asset has been pinpointed it is in serious danger of destruction, regardless of the quality or quantity of air defense employed to protect the asset. If attacked by aircraft, the use of laser-guided or optically guided air-to-ground missiles allows pilots to hit targets the size of a small tank, even when the attacking missile is launched at ranges in excess of 5 miles from the target. (See July-September 1980 AIR DEFENSE Magazine, p 57.) If an asset is indeed critical, it would most likely be attacked via surface-to-surface missiles from even longer ranges, thereby totally circumventing any possibility of an adequate air defense of the asset.

Thus, the supported commander must consider one critical guideline in the employment of air defense fire units in the defense of a critical asset — insuring that the air defense employment itself

does not allow enemy intelligence to pinpoint the asset. The continued increase in enemy electronic detection capability has brought with it the near impossibility of concealing the location of fire units. Even the Stinger fire unit will include an IFF device to assist in target identification, and the electromagnetic radiation associated with this capability can allow the rapid and precise location of fire units via enemy electronic intelligence operations. Air defense systems more sophisticated than the Stinger (including DIVAD Gun, Chaparral, Vulcan, Hawk, Hercules, and Patriot) will incorporate at least one target detection/tracking radar. This will add significantly to the electromagnetic signature projected by the fire unit, making the enemy's task of precisely locating the fire unit much easier. On the modern battlefield, air defense fire unit locations, when operational, will become known to the enemy, and the air defense commander must be aware of this fact when positioning his fire units about a critical asset.

Figure 1.

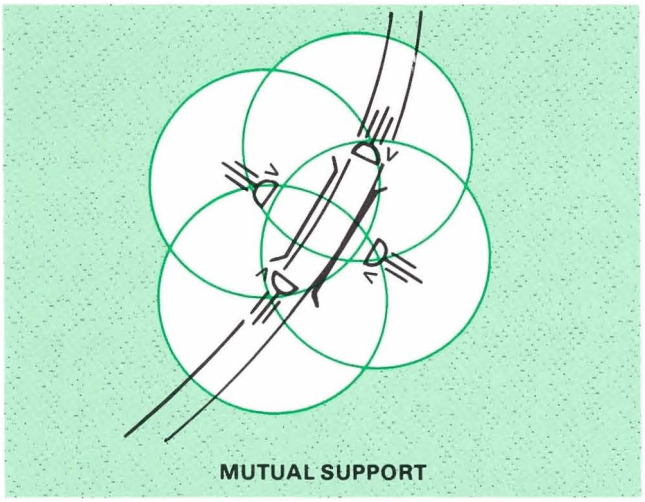
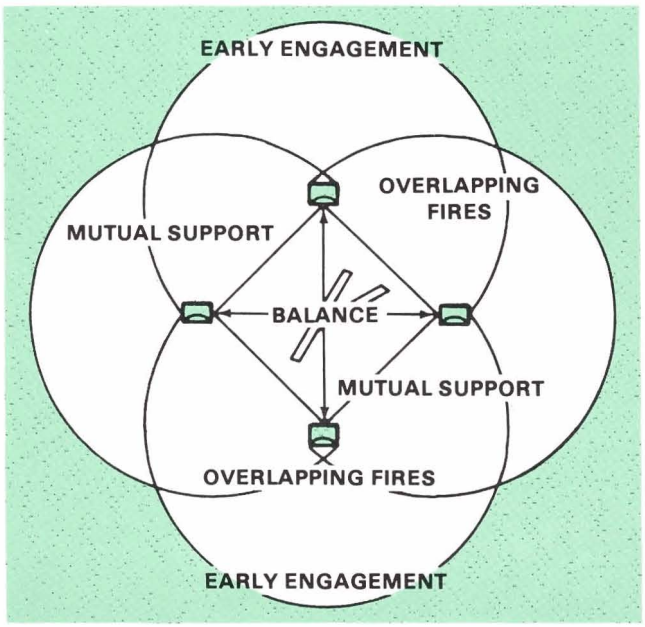


Figure 2.



If we assume the asset's location is not known to the enemy, any symmetrical arrangement of air defense fire units about the asset will have the same effect as drawing an electronic bull's-eye about the asset. True, the enemy will not know the nature of the asset; however, the more symmetrical the employment about the asset, the more precisely we tell the enemy exactly where to look to determine the nature of the defended target.

Air defense field manuals on fire unit employment do not address the possibility of unintentionally marking the location of critical assets as described above and, in fact, frequently present diagrams of symmetrical employment of fire units about defended assets as shown in figures 1 and 2 (taken from FM 44-3 and FM 44-90). FM 44-90 addresses only the terrain limitations and constraints barring the symmetrical configuration of defenses and states simply, "Seldom, if ever, will a defense be symmetrically configured."

Thus, the air defense commander, when tasked with employing air defense fire units in the defense of a critical asset, must consider not only the guidelines of early engagement, balance, mutual support, and overlapping fires, he must also consider the supported commander's employment guideline of maintaining the secrecy of the asset's location. It would appear that the only valid reason for ever configuring air defense fire units symmetrically or nearly symmetrically might be to purposely mislead enemy intelligence into believing there is a critical target centered within the defense when there is not.

MAJOR LIKINS *received his BS and MS Degrees from the University of Southern Mississippi and is currently a PhD candidate at Ohio State University. He has served with air defense units on Okinawa, at Fort Bliss, and in Germany, and with field artillery units in Vietnam.*

General Miki (above) prior to his recent promotion to the rank of Lieutenant General.

AIR DEFENSE MAGAZINE USED EFFICIENTLY IN JADA SCHOOL

A message from Lieutenant General Hideo Miki, Commandant, Air Defense Artillery School, Japan Ground Self Defense Force.

The Air Defense Artillery School of the Japan Ground Self Defense Force (located at Chiba City, near Tokyo) has been making efficient use of the AIR DEFENSE Magazine to advance air defense expertise and promote mastery of the English language among our students. Improvement in the use of the English language by students and faculty members is one of our principal goals.

Through the magazine, we obtain information on the latest tactical, doctrinal, and technical developments in air defense worldwide. This information is essential to general knowledge of the subjects and to the research and development aspect of education and training of students at the school.

Our established method of assimilating information and improving our proficiency in the English language is through oral reports and discussions on articles from AIR DEFENSE Magazine. We select articles from the magazine and assign them to the education departments, the research and development department, and the school support unit. Designated individuals prepare discussions and present summaries of the articles in the English language.

A long-standing practice at the school has been to present speeches at intelligence meetings on matters concerning international situations, domestic situations, and military techniques. Since October 1980, we have added speeches in English based on articles appearing in the AIR DEFENSE Magazine. This practice has substantially improved the content of the speeches and has increased the value of the program.

In these ways, we are not only increasing our knowledge of air defense, but improving our command of the English language, thus enhancing understanding between the Japan Ground Self Defense Force and the United States Army.

This plaque was presented to AIR DEFENSE Magazine by the Commandant of the Japanese Air Defense Artillery School in recognition of the part the magazine has played in the School's program to advance air defense skills and improve understanding of the English language.

GUARDSMEN IN EUROPE

by Second Lieutenant Sue Picco

Schnitzel, sauerkraut, and beer. That's what members of the New Mexico Army National Guard's 642d Maintenance Company expected during their 2-week summer tour in Germany. What they received, in addition to good food and drink, was some of the finest field training available in Europe at the United States Army Europe (USAREUR) Kaiserslautern Maintenance Center (KMC).

The 642d, from Las Cruces, New Mexico, is primarily responsible for repair and maintenance of heavy machinery and tracked vehicles. The unit is unique in that more than half of its members work as full-time technicians at the Dona Ana Range Camp Mobilization and Training Equipment Site (MATES), near Fort Bliss, Texas.

According to Captain Ray Shaw, commander of the 642d, "There is great training potential for guardsmen sent overseas for their summer camp. At the KMC, under the jurisdiction of the 29th Area Support Group, my men are not only maintaining the skills they already have, but are learning new procedures on new equipment and are becoming

EXCELLENT TRAINING — New Mexico guardsmen were involved in welding, machine repair, and even worked at the parachute packing and repair facility. Periodic work inspections were made by unit personnel and German workers at the Kaiserslautern Maintenance Center.

familiar with their German counterparts through a one-to-one work relationship."

When the 642d landed at Rhein-Main Air Base (for some it was their first trip by air), the sight of the green countryside of southwest Germany was greeted enthusiastically by the natives of the deserts of southern New Mexico.

After a bus ride from Frankfurt to Kaiserslautern, the troops — complete with jet lag —were ready to start their summer camp training the next day at the KMC. Paul Davis, chief of the KMC, explained the Maintenance Center's mission and its summer training program designed for National Guardsmen. "We employ a total of 261 personnel in the shop and have already had four National Guard units train with us during 1980. The shop houses more than 13,000 items — some of which won't be seen by guardsmen until mobilization. An evaluation of the National Guard training at the KMC is based on the effective use of training time, supervision of procedures, and operations maintenance."

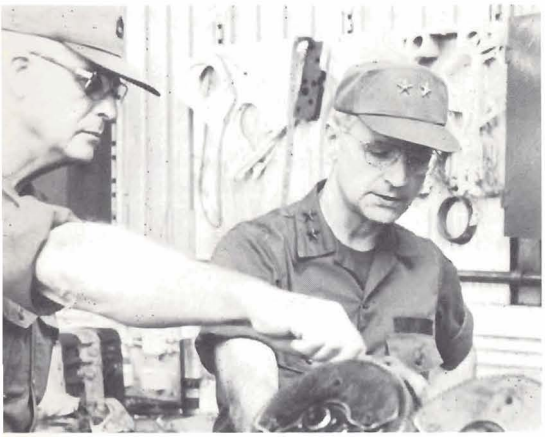
"Just as important as their MOS training, however," explained Davis, "is the guardsmen's exposure to German culture. If troops were to be mobilized in this area, it is important that they know something about the people and lifestyle of this region."

In keeping with this emphasis on familiarization with the local population, New Mexico guardsmen took advantage of the many tour opportunities during their "middle weekend." Trips to town were a chance to sample new culture and new cuisine, and to view the historic edifices of European culture. USAREUR encourages guardsmen to enjoy their host country and gave several orientation briefings and "how-to" tips about the European lifestyle.

A tour to the East/West German border, along with a border briefing, helped guardsmen realize the importance of their summer camp mission and their work in the US.

The unit returned to Las Cruces happy to be home but, according to one guardsman, "with the experience of a lifetime."

Other guard units from New Mexico are expected to take their summer training in Germany this year.



INTERESTED IN GUARD — During the 642d Maintenance Company's summer camp in Germany, many liaison officers from the National Guard and Regular Army visited the Kaiserslautern Maintenance Center. Here SFC George Wadsworth discusses maintenance procedures with MG Ernest Peixotto from HQ, US Army Europe.

LIEUTENANT PICCO *is assistant press officer of the 136th Public Affairs Detachment, New Mexico Army National Guard.*

THREAT

VOLATILE SMALL ARMS & HELICOPTERS DO NOT MIX

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SMALL ARMS ARE effective against low flying, high speed aircraft and helicopters. In the Korean conflict the U.S. Air Force lost 544 aircraft to combined small arms and air defense fire—almost five times as many as were lost in air-to-air combat. In South Vietnam 410 fixed wing aircraft and 2,100 helicopters were lost. Over North Vietnam small arms fire contributed to significant losses of U.S. aircraft. During the Mideast War of 1973 units on both sides used small arms weapons to drive off, damage, or destroy attacking aircraft. (FM 44-1, "U.S. Army Air Defense Employment")

The result of the quantitative and qualitative changes in the design characteristics of these American helicopters was that combat operations directed against helicopters have to be conducted not only by antiaircraft defense troops, but also by troops from other armed forces branches and services equipped with other kinds of weapons. *(Przeglad Wojsk Ladowych,* June 78)

Both United States and Soviet Armies recognize the effectiveness of small arms against armed helicopters. However, the Soviet concept of air defense is universal. It ranges from training the lowest ranking infantry troops about the value of their weapons in an antiaircraft role to the use of highly sophisticated acquisition and missile systems to protect all maneuver elements. Surprisingly, Soviet tactics and organizations are still fashioned from experience gained in World War II, especially antiaircraft protection. A hindsight look at Soviet tactical air defense during World War II has discovered it to be "grossly inadequate" in both numbers and the caliber of weapons.

Additionally, the Soviets learned many lessons from our experience in Vietnam. They feel that we relied too heavily on air support as a substitute for infantry combat. Also, the conflict provided them with significant data for "determining the optimum mix of weapons in defense of various ground targets against close air support, including helicopters." Furthermore, it confirmed the value of rapid firing antiaircraft guns and reinforced the *importance* of small arms, antitank weapons and vehicle-mounted main guns in providing a complete air defense umbrella. The Soviets feel they must have overlapping air defense coverage with redundant weapon systems to the point where "in the event of

war, a maneuver enemy could not count on tactical air support."

Therefore, it is imperative that Army aviators know the concept of Soviet antiaircraft employment. Granted, a lot has been written about the threat from the extensive and sophisticated surface-to-air missile systems and antiaircraft artillery in the Soviet inventory. But, because of present employment techniques of our scout and attack helicopters, we cannot afford to overlook the density, lethality and range of motorized rifle unit's small arms weapons.

The Soviets define small arms weapons as armament carried by the infantry troops in the motorized rifle, tank and airborne units, whereas mounted weapons are those guns installed on combat vehicles such as BMPs, BTRs, BRDMs and tanks.

The standard rifle in Soviet units is the 7.62 mm AKM, which is capable of both semiautomatic and fully automatic fire. The AKM has a relatively short sight length with open sights and a semiautomatic range of 300 meters and an automatic range of 200 meters. There are about 10,000 AKMs found in a motorized rifle division. Also, there is a semiautomatic 7.62 mm sniper's rifle (SVD) with an effective range of 800 meters that uses a 10-round magazine. Each motorized rifle platoon has one SVD. The sniper's rifle range can be extended to 1,300 meters by using an infrared-sensitive telescope. The magazine-fed 7.62 mm RPK light machinegun is an AKM with a longer, heavier barrel. It has two magazines—a 75-round drum and a 40-round curved box. Its maximum range is 2,500 meters, and the effective range is 800 meters. There are almost 200 RPKs in the motorized rifle division, with most being found in the BTR-equipped units.

A heavier and longer range machinegun is the 7.62 mm general purpose PK. It has an effective range of 1,000 meters with a maximum range reaching 3,800 meters. The GPPK uses 25-round sections of nondisintegrating metallic feed belts. The majority of the approximately 200 PK machineguns are issued to the BMP units of the motorized rifle division.

The armored personnel carriers (APC) and infantry fighting vehicles (IFV) have a variety of weapons for use against armed helicopters. The basic IFV, the BMP, is armed with a 73 mm smoothbore, short recoil gun that can fire a rocket assisted HEAT projectile out to a maximum range of 1,300 meters, with an effective range of 800 meters. Additionally, it has a 7.62 coaxial machinegun with a 2,000-round basic load and four AT-3 SAGGER antitank guided missiles (ATGMs). The BTR-60 APC has a 14.5 mm heavy machinegun capable of firing HE/AP and API rounds, as does the BRDM-2 scout vehicle. The BRDM can mount three different models of ATGM, including the AT-5. The 14.5-mm heavy machinegun has a basic load of 500 rounds with a maximum effective range of 2,000 meters.

When considering the threat to armed helicopters, the use of handheld antitank grenade launchers and recoilless guns in the antiaircraft role must not be overlooked. All motorized rifle units down to squad level are equipped with the RPG-7 AT grenade launcher. The RPG-7 is a 40 mm rocket-assisted, reloadable grenade launcher which is shoulder-fired. Additionally, the launcher can fire an 85 mm HEAT round. "This type of weapon was used most effectively against low-flying aircraft in Southeast Asia. The HEAT round of the RPG-7 will penetrate 13 inches of armor at zero degrees obliquity, can engage targets up to 500 meters and has a self-destruct range of 900 meters. Testing of the HEAT round fired at a 45-degree elevation resulted in an airburst at an altitude of about 701 meters (2,300 feet) at a slant range of about 920 meters. Although the RPG is an inexpensive and effective weapon it is expected to be replaced by an improved grenade launcher, the RPG-16."

The current recoilless gun in the motorized rifle division is the 73 mm SPG-9 served by a four-man crew, with two weapons per motorized rifle battalion. The munitions for the SPG-9 are similar to the RPG-7 and can penetrate about 350 mm of armor at an effective range of 1,000 meters. The maximum range is 1,960 meters.

The Soviets believe that during the performance of their combat missions, units will be operating under conditions marked by a threat of air attacks. Their mounted weapons and small arms will be the only weapons they can use to provide an effective focal defense against attack helicopters. This situation will occur most often when our helicopters are launching attacks from altitudes of less than 50 meters and from hiding places provided by terrain features. The Soviets also feel that

Combined Arms Assault ▶

this reduces to a few seconds the amount of time that will be available to a unit to prepare to open fire.

Consequently, time is the most important factor when determining whether or not both small arms and mounted weapons can be used against this type of target. In this regard the Soviets estimate that it will be necessary to modify the current communications chain, methods of fire direction, firing techniques, and also to introduce new, more functional methods which guarantee efficient and prompt mission performance. Even the most well-organized fire direction and the selection of the most accurate firing methods will not produce any useful results if troops move too slowly in engaging aircraft.

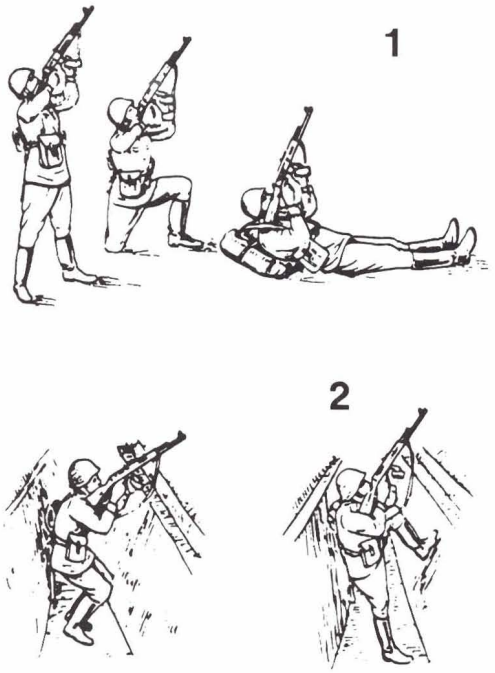
The Soviets insist that only those units and weapons which are constantly ready to immediately open fire and which are backed up by a well-organized reconnaissance and alert notification system will be able to mount an effective defense against armed helicopters. *For this reason, an infantry company should always have at least one platoon serving as a "watch subunit" which is ready to open fire on air targets with small arms and with all of the heavy machineguns at the company's disposal.* These rules do not apply to offensive and defensive actions in which a company is in direct contact with enemy forces (i.e., when it is operating as a battalion's forward echelon). In this case an infantry company will not detail a unit to be on alert for engaging aircraft with either small arms or mounted weapons.

When the air attack alarm signal is given, attacking helicopters will be engaged only by those squads and gunners operating mounted weapons who at that given moment are not directly involved in fighting enemy ground forces. The Soviets perceive that the readiness of a watch subunit is based on the fact that in addition to having a well-organized "circumambient" air-spotting and alert system, its Soldiers must have weapons that are loaded with a ratio of three to four armor-piercing incendiary shells and one tracer shell and are ready for action. The weapons are required to have locked safety catches and preset sights. The Soldiers who are engaged in the performance of observation duties are required to continuously scan their assigned sector.

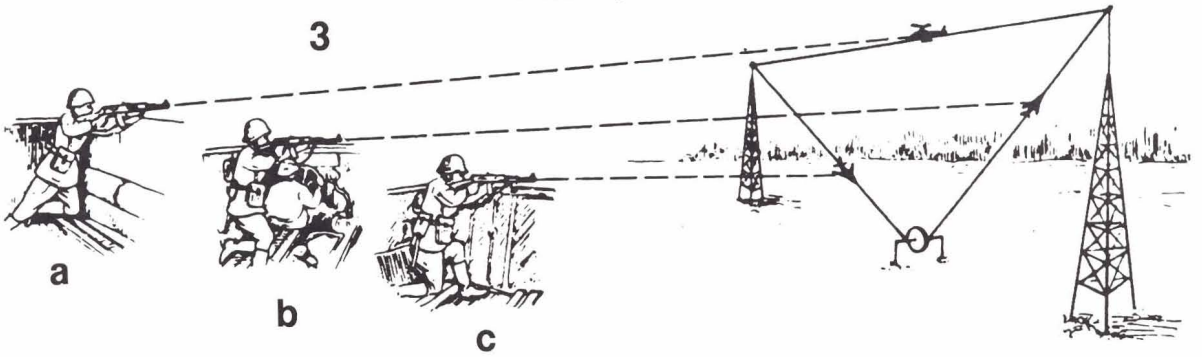
The Soviet gunners manning mounted weapons, as in the case of the BTR, go to their battle stations, put on their communications headgear, switch on the "electrofiring locks," load the 14.5-mm heavy machineguns, release the bolts on the weapon and "turret-aiming mechanisms," and set gunsights for targets moving at speeds of 285 knots. The Soviets instruct, for safety reasons, that the small arms and the mounted heavy machineguns will not be fired simultaneously from the combat vehicles.

In combat situations units are required to organize circumambient air surveillance systems. Observers wearing headphones scan their assigned sectors with the naked eye from the open compartment slots of the APC or IFV. If units are operating in a fast-march configuration, air-spotting duties are performed by several units. Observers sound the alarm only for those aircraft which are recognized as targets and whose heading or combat actions pose a direct threat to their unit.

Observers performing lookout duties from combat vehicles designate targets by means of an intercom



Organization of Troop Air Defense Training Areas
1 and 2: Training in conducting fire against air targets of various methods in dismounted formation. 3. Training in conducting fire against air targets while mounted in a vehicle; (a) Firing from the side; (b) Firing from the front; (c) Firing from the rear



system, while observers performing duties from outside the vehicle (in dismounted formations) sound the alarms vocally or by means of predetermined signals. Also, signal lights of a predetermined color are used as an additional means of sounding the alarm from APCs. The Soldier detailed to perform this duty turns on the signal light as soon as the observer sounds the alarm over the intercom system.

Observers mark the location of air targets in relation to the direction of the march route, attack or defense (on the march, attack and defensive actions) or in relation to compass points (in staging or troop assembly areas). After having marked the location of an air target and during the time a unit is getting ready to open fire, the observer or commander continues to follow the target's movements and identifies it, making sure that the decision to open fire is correct. If during this interval it turns out that the detected object is not a target, the observer will revoke his decision at once by issuing the command: "Stand fast! Ours!," thereby halting the firing sequence. The same procedures are followed by gunners operating mounted weapons. After marking the location of a target, observers help mounted-weapon gunners to get a fix on the target by transmitting appropriate commands over the intercom system; e.g., "higher!, lower! to the right!, to the left!"

A combat vehicle's commander, to whom the target has been pointed out, will immediately pass on information concerning the target in unaltered form through the company's communications network. This information will be picked up by those unit commanders and equipment operators who are wearing headphones (i.e., vehicle commanders, drivers, mounted-weapon gunners and observers).

The Soviets conducted a graphic time frame analysis of the functions performed by observers, commanders and riflemen when firing small arms at helicopters from an APC. The calculations showed that a unit does not have much time to get ready to fire on slow-flying air targets with their organic infantry weapons. The calculations were based on a helicopter at about 2,000 meters, at an altitude of 50 meters and a flight speed of 95 knots.

Therefore, the Soviets altered their firing procedures so that after the air raid alarm signal is given, each Soldier of the watch subunit independently takes up his assigned firing station, releases the safety catch, chambers a round and takes aim. At the same time the commander locates the target, makes sure that it is an enemy aircraft, and determines the firing technique and the exact time to commence firing. He then designates a firing technique and issues the order to fire. The firing technique depends on the range, about 2,000 meters maximum, at which the target was detected (identified) and the target's heading and flight speed. The order to commence firing depends on the range of the weapons to be used. Therefore, the commanding officer should give the order "Fire!" as soon as the Soldiers have finished aiming their weapons, and as soon as the target has moved in close enough so the first burst of fire will hit it at a range that corresponds to the maximum range of their weapons.

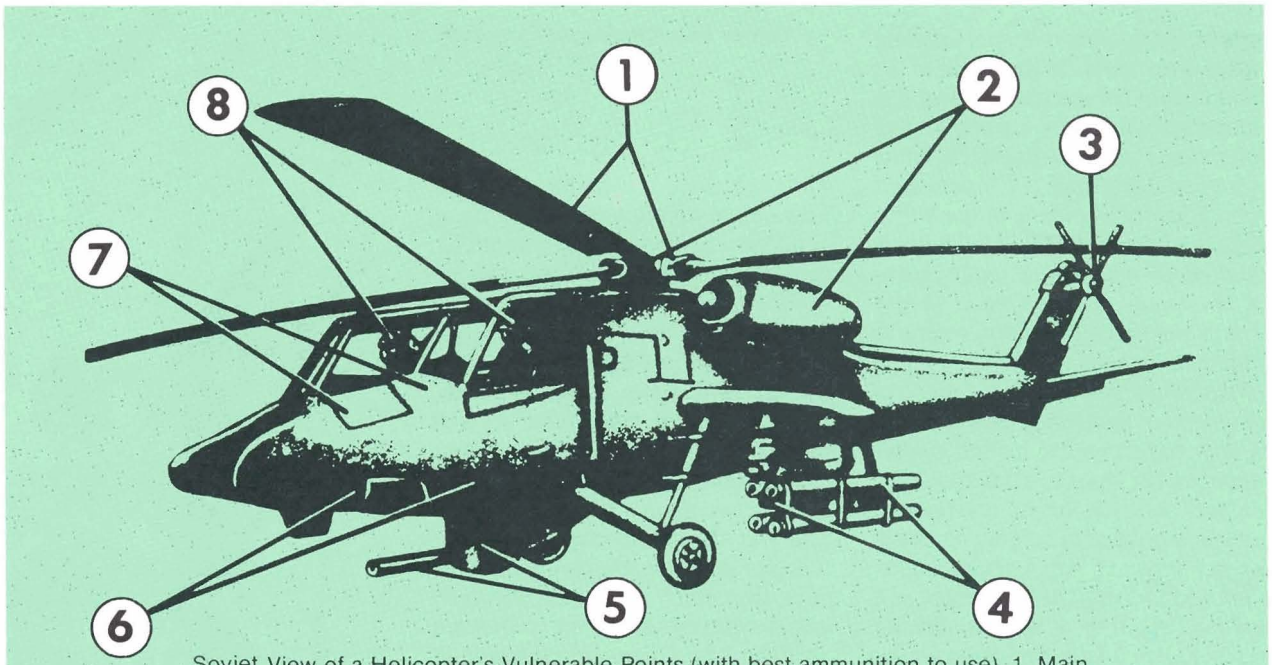
The commander can only issue firing orders to mounted-weapon gunners from the APC's command compartment. The periscope located in this compartment limits his forward field of view to 7.5 degrees. On the right and left sides of the vehicle the field of view is limited and there is no way to make observations from the rear section of the BTR. Under these conditions the commander is unable to locate the airborne target identified by an observer. Even if, under favorable conditions, the commander (squad leader, deputy platoon leader, platoon leader and company commander) were able to spot an aircraft and issue firing orders, it would take too long to do so, and in the meantime the helicopter could fire and take evasive maneuvers.

Riflemen Engaging Aerial Targets ▶

The Soviets conducted another similar time frame analysis of the function performed by the crew using the vehicle-mounted weapons. The procedural time of the mounted weapon, when the gunner was allowed to fire at his discretion, was 22 seconds. In contrast, the procedural time to engage a helicopter with infantry small arms was 146 seconds.

The Soviets arrived at the following conclusions on the basis of this fire control analysis:

- Firing techniques should be decentralized, allowing squad leaders to decide when to open fire on aircraft with small arms in all combat situations, whereas platoon leaders (or company commanders) should be entitled to do so only when certain conditions exist.
- The decision to open fire on helicopters with mounted weapons is to be made by the gunners themselves (in response to an air attack signal received over the intercom system or via company command communications networks), while taking into account the general instructions issued by commanders



Soviet View of a Helicopter's Vulnerable Points (with best ammunition to use). 1. Main rotor—general purpose (GP), and armor piercing incendiary (AP/I). 2. Turboshaft engines (AP/I). 3. Tail rotor (GP, AP/I). 4. Antitank guided missile launcher (GP, AP/I). 5. Cannon on ring mount (AP/I from heavy caliber machineguns). 6. Crew armored areas (AP/I from heavy caliber machineguns). 7. Controls (GP, AP/I). 8. Cabin (GP)

per combat mission orders. Only in special situations will commanding officers be able to direct the mounted weapon gunners' fire.

- In order to reduce the amount of time it takes for a unit to get ready to open fire on air targets, the message formats used by observers and by commanders in issuing orders during the firing of small arms should be modified and abbreviated.
- Steps should be taken to essentially eliminate the company commander's (or platoon leader's) centralized fire direction of a unit's mounted-weapon gunners during the course of repulsing air attacks with respect to the distribution, concentration, redirection or correction of fire. Nevertheless, the Soviets stress that every commander should still strive for a centralization of fire direction, especially when it comes to the distribution or concentration of fire.

In 1967 the Soviet-backed Arab countries failed to adequately protect themselves against Israeli air forces. This brought about an extensive effort to improve the Soviet and Arab air defense protection. Therefore, they developed new systems, refined their antiaircraft technology and improved training. Included in improving training, the Soviets instituted an elaborate program to teach the maneuver units to protect themselves without the broad antiaircraft artillery and surface-to-air missile assets. In 1973 the Israelis' air power was eroded by the improvements the Soviets had incorporated in their antiaircraft protection for ground forces. Admittedly, small arms and mounted weapons did not "do the most damage" —but, they did reinforce the Soviet belief that the maneuver units can provide a highly lethal and extensive air defense coverage that is capable of acquiring and destroying attack helicopter teams.

Below: Tank Mounted Antiaircraft Machinegun

HAWK IN A DIRECT SUPPORT ROLE (Another View)

by Major James L. Hubbard

Current air defense (AD) doctrine is wrong, I think. The Hawk system should *not* generally be assigned a mission of direct support (DS) to a division. This mission is inappropriate for several reasons. The traditional AD command control (C^2) structure correctly ties Hawk closely to the Air Force, several tactical principles are violated by this mission assignment and, finally, logistics and administrative support for the Hawk battalion do not require a DS mission relationship. These reasons, as expanded below, become especially compelling when considered with the Army's modernization program wherein Hawk will be replaced by the longer-range, greater-firepower Patriot system.[1]

The principle of integrating area air defense under the control of the Air Force component commander is well recognized and firmly established. This is especially true in the central region of NATO. Although the subject of much criticism for a "shaky doctrinal foundation,"[2] FM 100-5 recognizes that the US Army must be structured primarily for the central European contingency. Further, this structure is considered compatible with other possible joint contingencies.[3] Hawk in the central region is deployed (and employed) in an integrated, multinational forward missile intercept zone or "belt." The belt is deployed well forward to allow early, coordinated engagement of attacking aircraft and to provide protection for NATO ground forces. Command control and coordination of the belt are vested ultimately in the commanders of the Allied Tactical Air Forces (ATAFs) and the Allied Air Force, Central Europe (AAFCE). Clearly, a divisional DS mission for US Hawk battalions would not be consistent with this structure, since the divisions would then control positioning and priorities[4] of the Hawk battalions.

Perhaps even more persuasive reasons why command control of Hawk should remain with the Air Force are protection of friendly aircraft and conservation of limited AD resources. The latter can be accomplished only by the Air Force since it involves at least the coordination of engagements by interceptors and Hawk fire units. The former can be accomplished only by positive C^2 in the system possessing the best identification information — the Air Force's Tactical Air Control System (TACS).[5] Coordination is difficult because the division cannot provide the essential, timely, and accurate identification information. This inability of divisional elements has been well demonstrated.[6] One primary cause appears to be the undermanned divisional AD element which must be split between the tactical and main CPs.[7] This is aggravated by the lack of reliable tactical communications[8] and because the sophisticated AD C^2 systems (e.g., the AN/TSQ-73 Missile Minder, currently being fielded) have no counterpart with which to interface at the division.[9]

A divisional DS mission for Hawk would violate basic tactical principles. It would establish a command relationship between the division and the Hawk battalion fragmenting the forces of and

possibly creating conflicts with the orders of the Air Force regional AD commander. The Air Force regional AD commander would be unable to significantly mass fires or concentrate forces,[10] and reconstitution of depleted or damaged AD forces on a scale larger than a battalion would be inhibited if not prevented. The AD protection of the division's ground forces might be enhanced by DS Hawk, but recognizing the limited AD resources that will be available, the enhancement could be at the expense of defending corps and theater critical assets, which are recognized to be high-priority targets.[11]

The division and Hawk battalion areas of interest are not commensurate. To commit the entire battalion to a division would result in a wasteful redundancy that the US Army can ill afford. The need for extra division coordination and distribution of AD fires is clear. This area incompatibility is aggravated in that the division must be oriented on the dynamic forward edge of the main battle area, whereas the AD structure is primarily concerned with the more static forward line of troops (FLOT). The FLOT is used as a control measure for the identification and recovery of friendly aircraft from hostile territory and, therefore, must be limited to a much slower rate of change.

This paper would be incomplete without a brief consideration of administration and logistics. It has been the author's experience, having recently been assigned for 18 months as a Hawk battalion S3 in Germany, that common-item logistical support is generally made available to the Hawk battalion. This support comes from a local division on an area basis whether a DS mission is assigned or not. In either case, the division is incapable of providing Hawk missile-peculiar support, which is better managed at theater level. Administratively, the DS mission might establish a more legitimate relationship for the Hawk battalion, thereby facilitating coordination of such things as key terrain and road use. However, this is certainly not a direct consequence and is open to debate. In any event, there does not appear to be any compelling logistical or administrative reason to either assign or not assign a DS mission.

The various special operations and circumstances wherein a divisional DS mission might be appropriate and desirable have been intentionally omitted from this discussion. The probable existence of such exceptions is conceded; however, they exist only as exceptions to the general case which is at issue here.

In summary, a chain of command control for Hawk beyond the division is necessary and even doctrinally required. Basic tactical principles are violated by the assignment of a DS mission. An entire Hawk battalion is not required to provide AD coverage for a division. There appear to be no logistical or administrative requirements that compel the assignment of a DS mission. All of these reasons support the contention that the Hawk should not generally be assigned a divisional DS mission.

Editor's Note: A change to FM 44-1 addressing the role of Hawk, plus other topics, is now in final draft at USAADS.

Footnotes:

[1]Street III, MG O.D. and Brown, LTC K.N., "Army Air Defense: A New Role," Army (May 1980), pp. 24-29.

[2]Oseth, MAJ J.M., "FM 100-5 Revisited: A Need for Better Foundation Concepts," *Military Review* (Mar 80), pp. 13-19.

[3]*FM 100-5, Operations* (Washington D.C., 1 Jul 76), pp. 1-2.

[4]*FM 44-1, US Army Air Defense Artillery Employment* (Washington D.C., 25 Mar 76), p. 5-5.

[5]*FM 100-5*, p. 8-7.

[6]Cassetori, CPT M.H., "Vulnerability of Friendly Aircraft to Friendly ADA Fires," *Air Defense Magazine* (Jul-Sep 78), pp. 14-16.

[7]*TC 101-5, Control and Coordination of Division Operations* (Washington D.C., Apr 76), p. 19 and p. 25.

[8]Staudenmaier, COL W.O., "The Restructured Division," *Air Defense Magazine* (Jul-Sep 78), pp.34-36.

[9]*FM 44-90*, p. 5-7 and p. 6-6.

[10]*FM 44-1*, p. 5-4 and *FM 100-5*, p. 3-3.

[11]*FM 44-1*, P. 1-2 and Dumbrigue, A., "C³I," *Air Defense Magazine* (Jan-Mar 79), pp.21-26.

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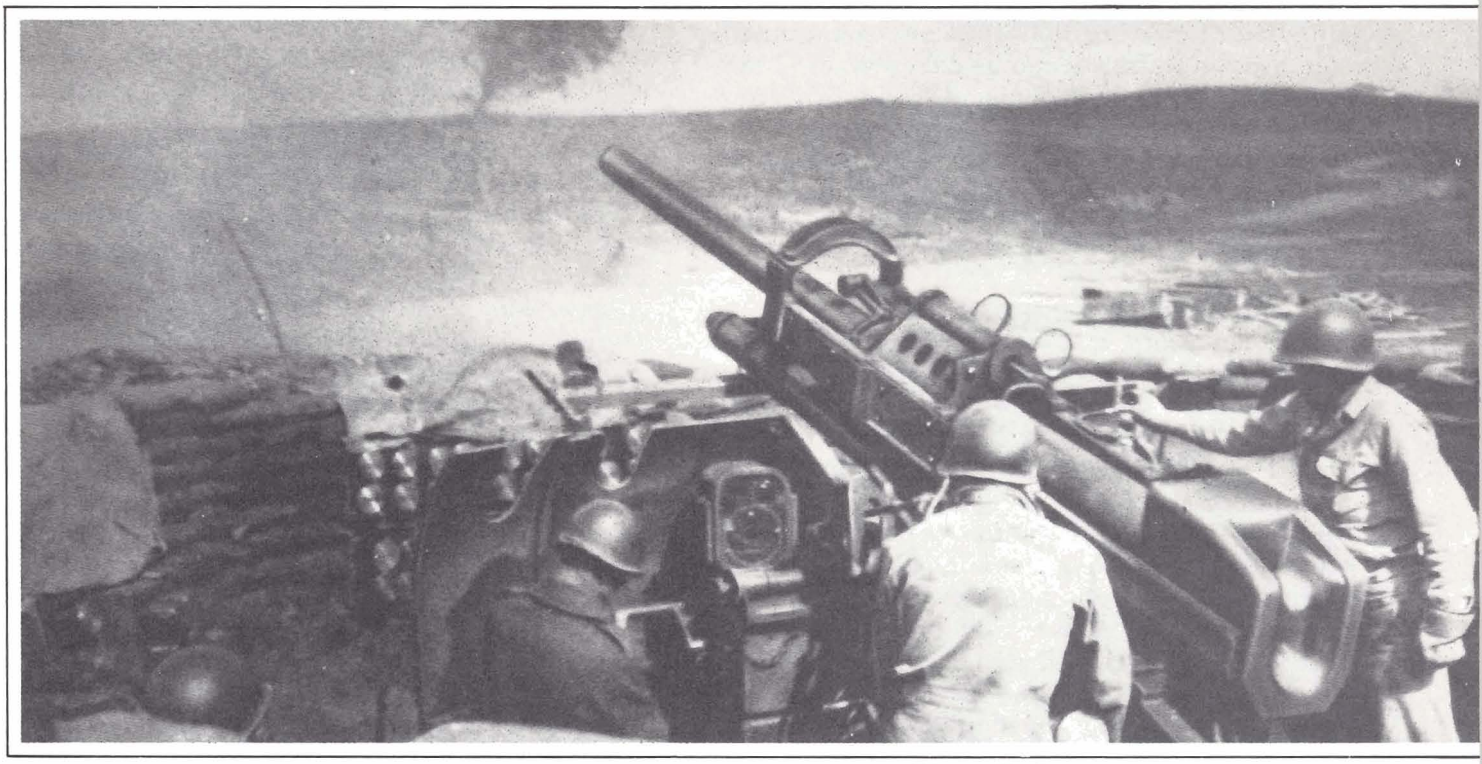
AA GUN FLEXIBILITY



by Lieutenant Colonel Joseph P. Frankoski (US Army Ret)

The antiaircraft (AA) gun has been proved one of the most valuable and flexible battlefield resources available to the ground commander. From WW I to the present, AA guns have been prominent in the air defense role. But that role is only one of several by which the battlefield commander can influence the battle. He must, however, be alert to the fact that his adversary may have the same resource and in greater numbers.

The thoughts expressed in this article are not directed towards the use of AA guns in the air defense mission. Rather, the purpose is to reacquaint ground commanders with the flexibility of employment of AA guns and to consider how such weapons can be used for and against them. The examples that are the vehicles for this brief study have been selected from WW II combat actions. This does not mean that more recent examples are inappropriate. WW II was chosen because of the different theaters, terrain, types of forces involved, and the availability of unclassified information concerning foreign military forces.

The Field Artillery Role

Anzio. In early 1944, the Allied amphibious operation at Anzio, Italy, was stalled. German forces held the high ground overlooking the beachhead and were conducting an active defense. To alleviate the critical situation, the US VI Corps executed a counterbattery program on all known enemy gun positions on the west flank of the beachhead. Two British cruisers (Orion and Phoebe), together with the American cruiser Brooklyn, supported the program with their 5-inch and 6-inch guns. Along with division artilleries, the 68th Coast Artillery Regiment (Antiaircraft) added the fires of its 90-mm guns. Besides naval and ground fire support, fighter bombers, dive bombers, and B-25 medium bombers supported the corps counterbattery program.

The Antiarmor Role

North Africa. Although the German 88-mm AA gun was perhaps the most famous (or infamous if you were on the receiving end) antitank gun of the war, other AA weapons were pressed into service for the antiarmor role. In his book, *Bir Hakim*, Richard Holmes provides an illustration of an antiarmor engagement in which AA guns were used with effect. In mid-1942, a Free French brigade was issued 40-mm AA guns. Quickly

learning the trade, the gunners downed a number of enemy aircraft near Bir Hakim, but a critical situation arose. A number of tanks from an Italian armored division penetrated the brigade defensive minefield. Lowering the tubes, the AA gunners engaged the Italian armor as did crews of 75-mm field guns. Amid the 40-mm and 75-mm firing and the ensuing confusion, infantrymen joined the desperate defense, firing their weapons through tank observation slits. The penetrating tank unit was destroyed and the brigade's position remained intact.

The Coast Defense Role

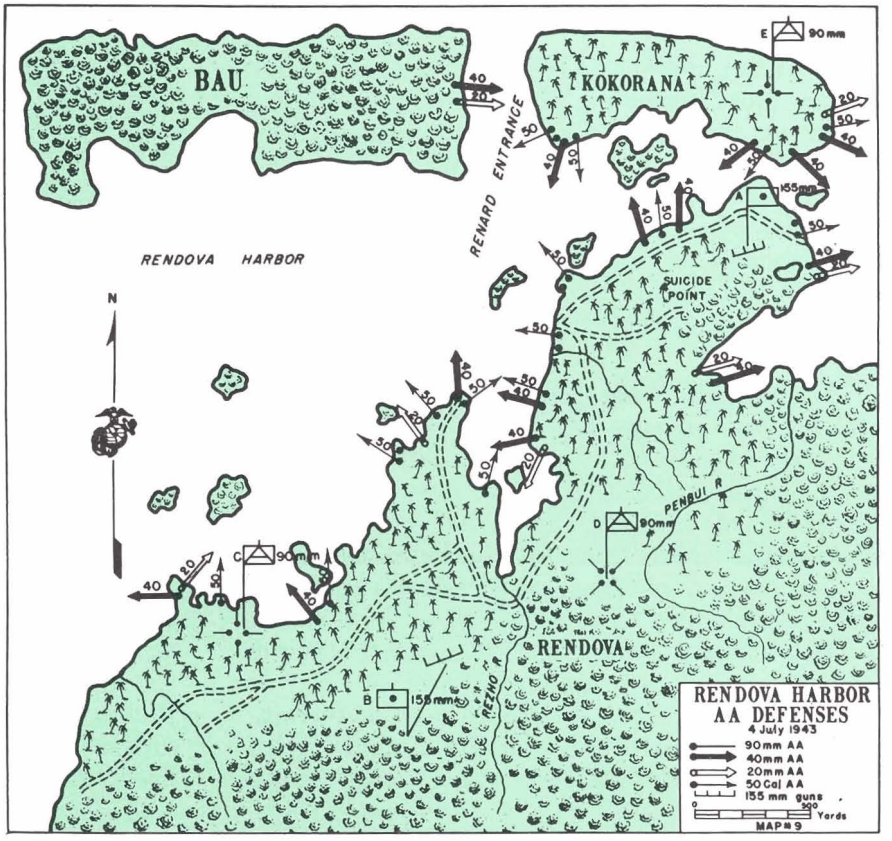
Solomon Islands. Combat operations in the Solomon Islands provide yet another interesting example of the flexibility of AA weapons in other than an air defense role. The 9th Defense Battalion, USMC, was an antiaircraft unit with a mixture of weapons including 40-mm guns. During its operations, the battalion was tasked with antiboat and ground-support missions besides the normal mission of shooting down Japanese aircraft. The Japanese used small boats and barges to reinforce and maneuver forces in the islands as well as to supply them. The antiboat and coast defense mission given to the 9th Defense Battalion was a critical one. The Marines reported that the 40-mm was an exceptionally fine antiboat gun, which had the capability of destroying barges at long range with just a single short burst of fire.

Multiroles

USSR. The ability of an AA unit to perform simultaneous, multiple roles is perhaps no better illustrated than in the activities of the Luftwaffe 7th Flak Division during operation ZITADELLE. This major German offensive took place in 1943 and is often termed the Battle of Kursk.

The 7th Flak Division was organized into three regiments with seventy-two 88-mm and about 900 smaller caliber AA guns. The division's general mission was to support the XI Infantry Corps (German). This division had a number of specific tasks to perform, and to accomplish them it echeloned subordinate elements in depth. Each echelon consisted of one regiment. The first was located close to the frontlines where it could place direct fire on the Soviet weapon positions and defenses. This regiment also formed flak assault units, which had the job of killing tanks and supporting the advance of the infantry.

Initially, the other two regiments were to join corps artillery in firing preparatory fires. Upon completion of that mission, the second regiment was to provide support for the infantry, while the third was to provide antiaircraft protection for the artillery area and fire counterbattery missions.



During combat operations in the Solomon Islands, the USMC's 9th Defense Battalion was tasked with a coast defense mission. Note the weapons' positions which afforded sites to engage Japanese boats that might try to enter Rendova Harbor.

On 5 July 1943 the attack jumped off. With the direct fires of the AA guns in support, the German infantry quickly pierced the first Soviet defenses. As the attack progressed, the flak regiments fired both counterbattery missions and fired on Soviet reserve forces. In addition, the third regiment was busy in its air defense role, shooting down 20 Soviet aircraft in the first 2 hours of the offensive.

The Germans used AA weapons in ground support roles early in WW II. This photo shows a German AA gun supporting infantry along the Bzura River west of Warsaw in September 1939.

A Soviet tank counterattack was halted by field artillery and a concentration of all the medium AA batteries. On the third day of the offensive, a Soviet tank and motorized infantry counterattack succeeded in pushing into the center of the corps. However, flak assault units, antitank guns, and an armor attack succeeded in destroying more than 60 Soviet tanks, which had made a deep penetration, and ended that particular threat. Although operation ZITADELLE was not successful, the employment of the Luftwaffe's 7th Flak Division in multiroles played an important part in the offensive and defensive successes of the XI Infantry Corps.

Some Conclusions

The illustrated combat actions graphically point out that AA guns provided ground commanders with more than just air defense resources. AA units substituted for field artillery, coast artillery, and antitank artillery. In the case of the 7th Flak Division, one can find a number of roles executed simultaneously. The use of AA weapons, especially in conjunction with the other arms, seems to have been limited only by imagination and professional judgement of the ground commanders.

What can be inferred from these examples? First, most armies today possess rapid-fire AA weapons ranging from machineguns like the .50 caliber to 20-mm, 23-mm, 30-mm, 35-mm, 37-mm, 40-mm, and 57-mm. All of these weapons are capable of engaging personnel and thin-skinned vehicles. Several variants of the 35-mm can penetrate 40-mm armor plate at about 1,000 meters, and they have an effective horizontal range of about 3 kilometers. More than 30 countries have larger caliber AA guns including 75-mm, 85-mm, 90-mm, 94-mm, 100-mm, and 130-mm. Weapons such as the Soviet 130-mm can penetrate 250-mm armor plate. The Soviet KS-12 model of the 85-mm gun is equipped with both antiaircraft and antitank optical equipment.

Ground commanders who have such weapons and trained units at their disposal have the resources to substitute for or reinforce their field artillery, coast defense, and antitank forces. For example, a commander who has AA gun resources near a coastline might find it profitable to site some of these weapons where they can not only engage aircraft but also fire on hostile seacraft.

Certainly, the ground commander with AA guns considers other than air defense missions for this resource. Therefore, a commander opposing an enemy that has substantial AA gun resources must take into account the several roles in which these weapons can be employed against him. The great number of AA guns of all calibers in service today makes it even more imperative to consider diversifying their employment. It is estimated that Warsaw Pact Forces have large numbers of AA guns. During the height of the Vietnam war, it was estimated that the North Vietnamese alone had more than 10,000 AA guns of various calibers.

Future armed conflicts probably will again demonstrate that the AA gun is a valuable and flexible resource for the ground commander who uses it wisely.

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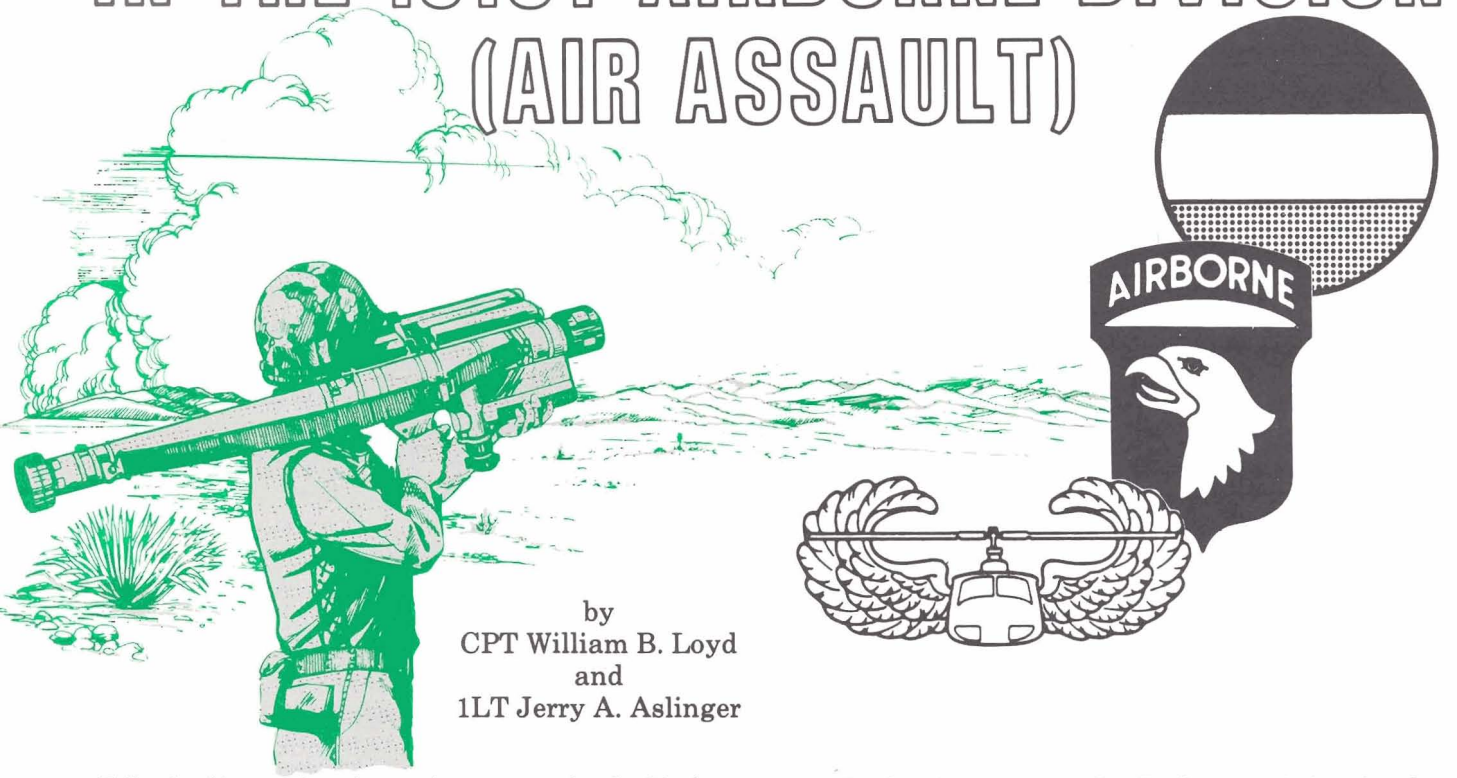
REDEYE TRAINING IN THE 101ST AIRBORNE DIVISION (AIR ASSAULT)



by
CPT William B. Loyd
and
1LT Jerry A. Aslinger

Editor's Note: The Army has recently decided to consolidate divisional Redeye assets into the division air defense battalion. A series of TOE-related actions are now underway to effect this consolidation. Plans call for publishing final requirements documents this spring.

The greatest threat to the air assault (AASLT) battalion is low-altitude attack by enemy aircraft and helicopters. Infantry battalions of the 101st Airborne Division AASLT rely on Redeye gunners to nullify this threat and prevent enemy aircraft from accomplishing their mission. To be effective, all Redeye personnel must be thoroughly trained in both technical and tactical skills.

Although the US Army Air Defense School conducts a resident course for Redeye personnel, this course provides only the primary skills for the soldier. To meet the demanding air defense requirements of the 101st Airborne Division AASLT, the Commander, 1st Battalion (Vulcan) (Towed), 3d Air Defense Artillery, has established a Division Redeye School and a number of follow-on training programs which amplify and build on the advanced individual training foundation.

The basic program for Redeye training in the 101st Airborne Division AASLT is the Redeye Gunners' Course. This two-phase course is conducted quarterly, by allocation, for personnel with PMOSC 16P. It is designed to enhance the 16P training conducted at the US Army Air Defense School and orient the Redeye gunner to divisional procedures.

Phase I, conducted at Fort Campbell, Kentucky, consists of 2 weeks of classroom activities. Here the Redeye gunner receives instructions on the Redeye weapon system, visual aircraft recognition, communications, early warning procedures, and air defense tactics. Students who demonstrate a proficiency in these subjects proceed to Phase II conducted at Fort Bragg, North Carolina.

Phase II consists of 1 week of classroom activities and use of the moving target simulator (MTS). The MTS enables the gunner to engage an assortment of aircraft types with varying target courses, speeds, maneuvers, and ranges that would be encountered under actual combat conditions.

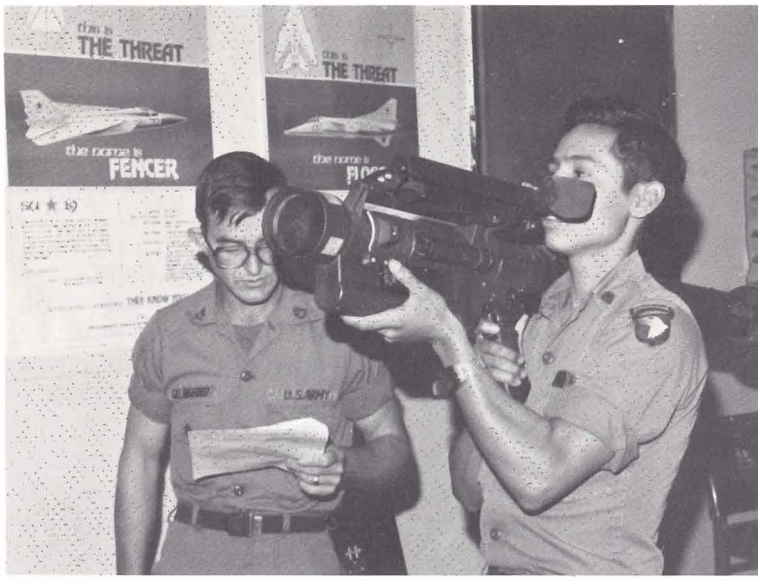
Redeye gunners are tested on visual aircraft recognition.

To graduate as a fully qualified Redeye gunner, a soldier must score 90 percent or higher on a visual aircraft recognition (VACR) examination, 80 percent or higher on a hardware examination, and successfully engage three of five aircraft in the MTS. Personnel failing to meet these standards may be recycled if they have demonstrated adequate motivation and progress.

The capstone of individual Redeye training at Fort Campbell is the Redeye Quarterly Verification (QV). Redeye QV not only provides a vehicle for individual evaluation but also provides section leaders and battalion commanders with cues for developing relevant section training plans. The administrator of the Redeye QV is the assistant division air defense officer (ADADO). In his capacity as officer in charge of the division Redeye school, the ADADO determines QV content, evaluates QV results, and reports to the chain of command on the relative proficiency of Redeye soldiers and sections.

QV is multifaceted and brings together in one system the best of current Army training programs — Army training and evaluation program (ARTEP), skill qualification test (SQT), and battalion training management system (BTMS). The basic components are a written examination, a visual aircraft recognition test, a range-ring profile test, and hands-on skills. The ADADO can focus the QV on the most relevant training and skill requirements as dictated by current SQT directives and most recent ARTEP field results. This presents the chain of command with the clearest picture of Redeye proficiency. It also sets the stage for modifying BTMS training plans and objectives to properly address training deficiencies.

The Fort Campbell Redeye QV system has four different written examinations which focus on increasingly difficult and detailed material. The selection of which QV test to administer is based on previous QV results. The tests cover such material as missile hardware, communications, ADA tactics, and general military knowledge. The selection of hands-on skills to be evaluated follows current SQT directives and typically presents the soldier with 5 to 10 skills to perform in an SQT hands-on component format. The VACR and range-ring profile tests use audio-visual presentations in a timed format. The range-ring profile test incorporates special Training and Audiovisual Support Center produced 35-mm slides of aircraft in attack profiles superimposed on the Redeye range-ring.



A gunner demonstrates hangfire procedures during Quarterly Verification.

A crucial part of the QV system is the study reference which is disseminated following each evaluation. The study reference (one of which is tailored to each of the four written components) provides units with BTMS-oriented training guidance based on content of the next QV. References are made to subject topics and cross-referenced to all available training literature. Additional guidance is provided throughout the quarter on hands-on skills and proficiency shortfalls.

A logical offshoot of the Redeye QV is the Redeye awards program. Each quarter, the section with the highest average is presented the Commanding General's Screaming Eagle Redeye Trophy by the commanding general himself during a division award ceremony. Certificates are presented to highest scoring individuals and to best annual sections.

Redeye QV accomplishes several goals for the division:

- Commanders at all levels can assess the proficiency of their Redeye sections and the efficiency of their training programs.
- Redeye gunners receive tailored in-depth training in the skills of their duty position.

A gunner performs preventive maintenance checks and services on the Redeye.

▸ Redeye gunners are given the opportunity four times a year to perform hands-on skills in an SQT format.

▸ Exceptional Redeye sections are recognized through presentation of the Commanding General's Screaming Eagle Redeye Trophy.

The ability of the Redeye section to function as a member of the combined arms air assault team in a tactical situation is essential to success on the battlefield. The ARTEP outlines performance in the form of collective training objectives. It specifies the *tasks* and *conditions* under which the tasks are to be performed, and the *standards* of acceptable training performance.

Two of the principal ARTEP tasks, engage hostile aircraft and visually recognize forward area aircraft, are not tested in the field but are a part of Fort Campbell's unique centralized training programs. Redeye sections are taken annually from a major unit command and transported to Fort Bragg, North Carolina, for Redeye Intensive Training (RIT). RIT presents each soldier with 1 week of intensive ARTEP-related individual training in the MTS. The training focus is on those skills not readily evaluated during the ARTEP external evaluation. ARTEP standards for both VACR and tactical engagement are applied across the board. Scheduling the RIT trip to coincide as close as possible with the actual field evaluation gives the chain of command the clearest picture of the Redeye section's tactical proficiency at a time of maximum unit readiness.

The Redeye section's field evaluation is conducted concurrently with the Redeye section's supported unit external evaluation. A Redeye-qualified officer from the assistant division air defense officer's office evaluates the section's ability to perform the collective tasks to acceptable standards. Commanders and senior evaluators are debriefed on the results of the evaluation.

The current centralized Redeye training program can easily be adapted to any man-portable air defense system. With the acceptance of Stinger into the division in the near future, only minor changes will be required to train the new Stinger gunner. The existing Redeye Gunners' Course will enhance the transition for personnel with PMOSC 16P to PMOSC 16S.

Effective Redeye training today is the key to air defense for the air assault battalion on the battlefield of tomorrow. Protection for the combat power and mobility of the 101st Airborne Division AASLT against enemy air attack will be assured as long as every member of the division instinctively thinks AIR DEFENSE.

LIEUTENANT ASLINGER *graduated from the United States Military Academy in 1977 and was subsequently assigned to a Hawk battery in Korea. He has served as a battery executive officer in the 1st Battalion (V)(T), 3d Air Defense Artillery, and is now the Assistant Division Air Defense Officer, 101st Airborne Division (Air Assault).*

CAPTAIN LOYD *is a graduate of Arkansas State University with a degree in Business Administration. A graduate of the Air Defense Artillery Officer's Advanced Course, he has served as commander of Headquarters Battery, ARADCOM; a Vulcan battery commander; a battalion adjutant; and a Hawk battalion operations officer. Formerly the Assistant Division Air Defense Officer, 101st ABN Div (Air Assault), he is now Assistant G1, Retention.*

ADSPR 81 Looks at the Future of Air Defense

by E.C. Starnes
(All photos by the author.)

Senior military officials followed an intense day-and-a-half schedule as they met last February at Fort Bliss, Texas, for Air Defense System Program Review 1981 (ADSPR 81). Some 127 senior military and civilian leaders attended the review, which was chaired by General John W. Vessey, Jr., Vice Chief of Staff of the Army, to take a close look at critical air defense artillery (ADA) issues that affect the Army today and will affect it in the future.

According to Lieutenant Colonel Irvin S. Butler, project officer for the review, the purpose of the meetings was to focus senior Army management attention on those critical issues and to achieve a common level of understanding necessary to prepare an air defense action plan for the future.

Subjects broached during the review included the current ADA program, ADA command control doctrine, how we fight the air defense battle, the threat through the 1990s, ADA modernization, NATO transition issues, advanced technology, and the ballistic missile defense program.

Using information presented during ADSPR 81 and resulting answers to questions raised during the review, the ADA plan is projected to address three basic time frames.

The near-term (FY 81-83) priorities are in the areas of doctrine, force structure, personnel, equipment, and training. In the area of doctrine, emphasis will be placed on a review and update of the rules of engagement, validation of airspace management procedures, standardization of early warning procedures, and development of a greater capability for airborne warning and control system interface with ground forces.

FOUR STAR DISCUSSION — General John Vessey, Vice Chief of Staff of the US Army, discusses air defense with NCOs from the 1st Air Defense Artillery Training Brigade during an equipment display at the Air Defense System Program Review.

Near-term force structure requirements include the establishment of air defense elements for the headquarters of corps, separate brigades, field artillery groups, and armored cavalry regiments. Also to be considered is the establishment of a user-oriented software support center. The plan currently recommends a "vigorous pursuit" of product improvement programs and a close look at air defense forces to identify equipment, ammunition, and command control shortfalls.

In the near-term training arena, the stress will be on Air Defense Artillery as a member of the combined arms team. Procurement of training devices for the institution and the field will also be emphasized. In the personnel field, a personnel transition plan must be developed in harmony with materiel fielding plans to preclude an exodus of trained and experienced soldiers.

The midterm (FY 84-89) time frame is based on the timely implementation of near-term initiatives. Doctrine, training, and technology will be the priorities in this phase of the plan. An important issue in doctrine is that it must be timely to support the fielding of new equipment.

As new weapon systems are fielded, there exists a requirement for highly responsive real-time command control, communications, and surveillance systems to optimize weapon capabilities.

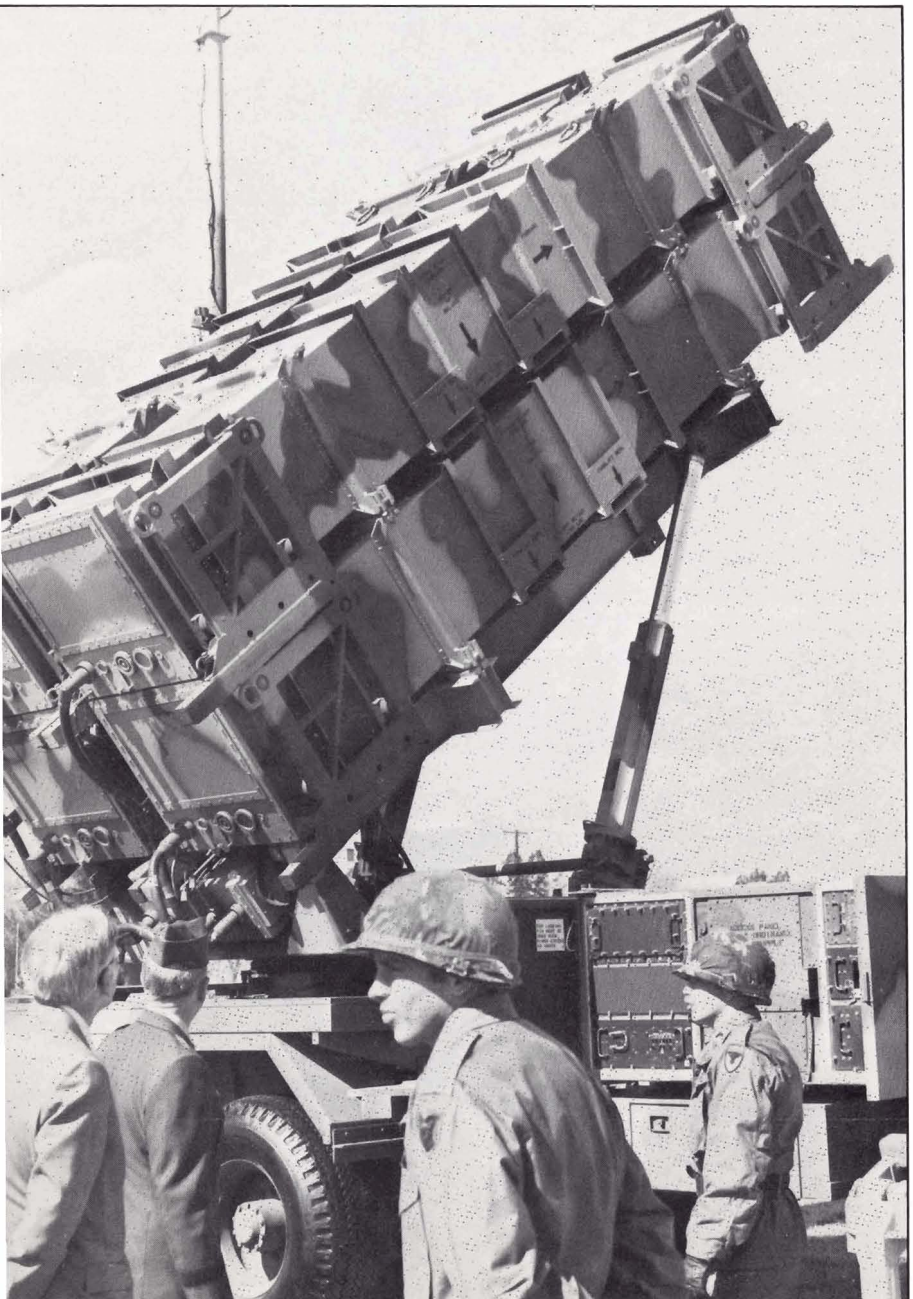
Training base emphasis will be placed on the requirement to support a wide variety of weapon systems during the transition period. Demonstrated high payoff technology will be exploited to insure survivability and mission accomplishment.

The long-term (FY 90 and beyond) programs will be keyed to the development of a technology management architecture. To support this development there must be the completion of the mission area analysis, submission of a comprehensive intelligence request, and reversal of the recent downward trend in advanced technological base funding. In addition to force structure and TDA increases, the plan calls for about $1 billion over the next 10 years.

Discussions and panel briefings presented at the review (in order of discussion) were:

The Threat

This briefing discussed an assessment of capabilities, limitations, and trends of Warsaw Pact forces now and through the 1990s, with emphasis on the hostile



PATRIOT LAUNCHER — The Patriot missile launcher is viewed by General Vessey.

air threat. Included was the threat to the Army in the field in NATO and to rapid deployment forces in contingency operations in the southwest Asia region. A detailed coverage of Soviet operations was presented, including air operations, equipment, and electronic countermeasures equipment. Also discussed was the state of technology.

How We Fight the Air Defense Battle

Areas discussed included both the air defense battle in NATO and as part of a contingency force. Included in the NATO discussion was the manner in which NATO air defense forces, both Air Force and Army, will convert from peace to war. Contingency force issues were discussed, including deployment, employment, and engagement with a rapid deployment joint task force.

Ballistic Missile Defense Program

Issues addressed in this briefing included the defense of land-based ICBM systems such as MX or other hardened targets and a layered defense system. Both systems are geared to draw upon advanced technologies maturing in the 1980s. Also discussed were antitactical ballistic missiles.

Current ADA Program

This briefing provided a discussion of the capabilities and limitations of fielded systems and outlined the Army's objective ADA force and plans for obtaining it. Also spelled out in the presentation was the requirement for a family of air defense weapons. The need for a new SHORAD command control system was addressed along with a program for the system. The impact of emerging rapid deployment force requirements, the ongoing Army 86 studies, and some new technological concepts were spelled out.

Assessment of Current ADA Program

In this briefing, MG John B. Oblinger, Jr., CG, US Army Air Defense Center and Fort Bliss, provided a look at where ADA is headed during the 1980s. A look at the program plan through 1991 was addressed and compared with what is currently fielded in the theater/corps rear and division areas. Budgetary limitations and their effect on future plans were also discussed.

Air Defense Command Control Doctrine

This was a panel discussion that looked at several aspects of command control. Questions raised included, but were not limited to, such issues as:

- Are solid concepts and doctrine established for ADA?
- Do the Army and Air Force agree on the control of ADA weapons?
- Should Hawk and Patriot be organic to corps and/or division?
- What is the real requirement for airspace management, especially over the brigade area, and how should it be accomplished?

NATO Transition Issues

The thrust of this briefing was a look at the major challenges facing NATO

THE THREAT — A 1/5-scale model of a Soviet helicopter was on exhibit during the equipment display.

that stem from the transition to the new ADA systems of the 1980s. Key issues included NATO facilities; force structure; Patriot command control; Patriot/Hawk, Stinger, DIVAD Gun, and Improved Chaparral firing doctrine; software systems support; and systems deployment constraints.

ADA Modernization

Panel discussions centered on the status of personnel, manpower, training, logistics, and operation impacts associated with fielding Stinger, DIVAD Gun, US Roland, and Patriot. Included in the discussions was the issue of transition training strategy and its impact on the operational capability of the deployed ADA force.

Advanced Technology

High energy lasers and missile defense applications as the result of advanced technology were the major items of discussion by this panel. Questions addressed by the panel included:

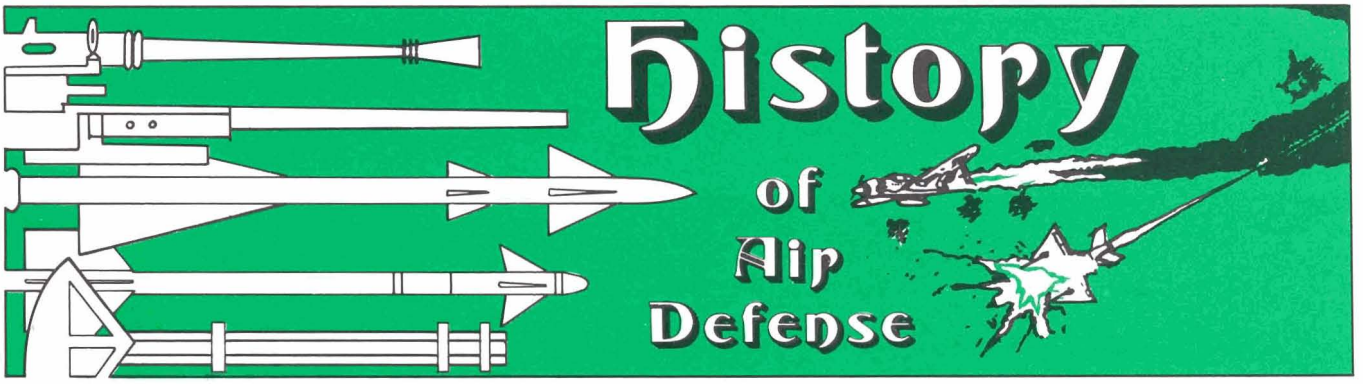
- Which of the advanced technology areas have the greatest potential for ADA applications?
- How should the Army's advanced technology air defense programs be oriented to insure best support of the overall defense effort?
- How should advanced technology be focused to support the needs of the rapid deployment force?

Attendees also viewed an equipment display that included the Patriot, Stinger, and US Roland as well as the current systems — Redeye, Hawk, Chaparral, Vulcan, and Duster. Additionally, Air Defense Threat Systems Simulators of the Soviet SA-8, SA-9, and the ZSU-23-4 were on display. Various contractor displays were on hand indoors throughout the conference, including the competing DIVAD Gun prototypes.

Major General Oblinger described the review as a "winning effort" on the part of Fort Bliss military and civilian personnel. He described the team effort of all personnel involved as "the very best example of everyone working together. Everyone demonstrated a high level of pride. The Air Defense System Program Review has established a standard for future Army reviews."

ROLAND — The US Roland system was prominently displayed at the review.

E.C. (Ed) STARNES *is the Deputy Public Affairs Officer for the US Army Air Defense Center and Fort Bliss, having served as Public Information Officer from 1975 to 1980. A distinguished honor graduate of the Defense Information School, he completed a 2-year internship with the US Army Training and Doctrine Command (TRADOC) Public Affairs Office following service in the Army as a military journalist and editor. He has received four Continental Army Command Copy Desk Awards, two US Army Training and Doctrine Command Copy Desk Awards, and the Army "J" Award for his writing. He also received the Army Keith L. Ware Award (the Army's "Pulitzer Prize") for a special history edition saluting the Nation's Bicentennial. Mr. Starnes is a frequent contributor to AIR DEFENSE Magazine.*



A Brief on US and Japanese Pacific Operations after Pearl Harbor

After the initial Philippine Islands campaign, the Japanese planned to sever US lines of communication with Australia by seizing Port Moresby, the Fiji Islands, Samoa, and New Caledonia. They had already established a formidable base in Rabaul on the island of New Britain. Japan's 6th Air Division and 8th Fleet operated out of this base. The terrain of Rabaul was so rugged that overland movement was impossible without extensive clearing and heavy road construction. The Japanese controlled both the air and sea for a considerable distance outward from Rabaul. With both air and sea supremacy, movement by sea was easy for Japan. Thus in May 1942, they landed at Tulagi across from Guadalcanal and in July easily captured Port Moresby.

The US Joint Chiefs decided to make an all-out effort to protect Hawaii, Midway, New Zealand, and Australia. Troops were rushed to the Pacific to reinforce existing Allied bases and to establish new ones. Shortly afterward, two US and four Australian divisions were dispatched to the area.

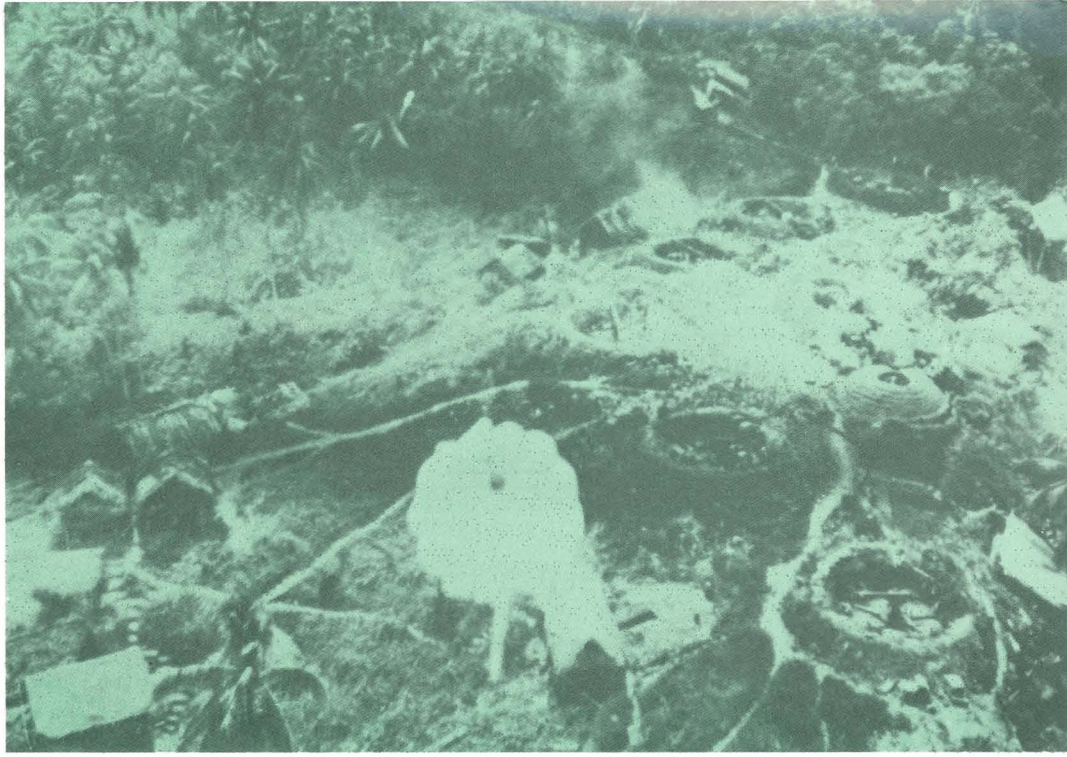
On 7 August 1942, US Marines landed on Guadalcanal in the Solomon Islands. Eighteen days later, a Japanese force landed on the north shore of Milne Bay, New Guinea, east of K.B. Mission, which was defended by American troops. The Japanese landing was repulsed with heavy losses. This was significant because it was the first battle to be lost by the Japanese Army to Allied forces.

Thus far Japan had encountered no aerial opposition. Her air defense was provided by her elite fighter aircraft corps. The Allies, on the other hand, had been extremely limited in all means of waging war. A few bombers started making night raids on Rabaul and other key airfields. However, as more aircraft became available, the volume of raids increased. Meanwhile, the Guadalcanal campaign intensified and Japan tried to reinforce her troops still fighting there. As Allied bombardment of Rabaul increased and Japan found all her airstrips at forward airfields subject to attack, she began giving thought to development of an air defense capability. Rapid buildup of Japan's limited antiaircraft resources followed. Gun and light antiaircraft defenses were increased as Japan channeled a continuous stream of naval fighter aircraft into Rabaul to replace losses. However, eventually enough US air supremacy was attained to permit daytime bomber raids on Rabaul.

Within 6 months, Japanese sea and air lines of communication with Rabaul were severed. That once powerful base was now surrounded by a ring of Allied airfields. The bulk of Japanese first-line pilots located there had been lost and there were no equally trained replacements.

At the conclusion of the campaign in the Solomons area, Japan apparently realized that her continued air supremacy was at least tenuous and probably over. Continued and increasingly heavy air attacks from all Allied sources demonstrated to Japan that her antiaircraft defense was inadequate in quality and quantity.

In response, Japan immediately stepped up production of antiaircraft guns and went into production of a simplified antiaircraft director that could be readily produced under Japan's economic conditions. A new trend in air defense tactics began taking shape as well. The number of heavy antiaircraft guns at major airfields was increased as much as availability permitted. The guns and fire control equipment were heavily revetted and some heavy dual-purpose guns were installed at Rabaul. One innovation used was the deployment of the six guns of their heavy antiaircraft batteries in a semicircle with the apex facing toward the expected approach of the high-level bomber aircraft (fig 1). With all guns oriented parallel, they were able to increase the density of



A typical Japanese AA gun position, at Boram, being attacked by para fragmentation bombs.

Figure 1.

the flak pattern at a position where their angular travel director had the greatest accuracy in prediction. Japan did not have enough time, however, to prepare for the next turn of events.

Instead of proceeding with the reduction of Rabaul, the US inaugurated a new island-hopping program along the northern coast of New Guinea. It was an operation whereby strong Japanese ground forces were bypassed, then cut off by US landings in their rear. At this time, the major elements of the Japanese 18th Army were located in the vicinity of Wewak and Mandang. On 22 April 1944, an Allied landing was made above Wewak at Hollandia. At the same time, an air offensive was launched against the Japanese Army aviation forces in that vicinity. By 6 June their 6th Air Army was destroyed. The Allies now had virtually undisputed air supremacy in New Guinea. On 18 May US troops landed at Wadke Island (180 miles northwest of Hollandia), and on 27 May they landed on Biak Island (325 miles northwest of Hollandia). Large numbers of Japanese ground troops were cut off and isolated. In fact, due to lack of supplies, many died in the jungle.

The Allied landing on Biak Island stung Japan into retaliation. Japanese commanders realized that they were losing control of New Guinea, that they were in danger of losing the Philippines, and that very soon the Japanese homeland would be threatened. They implemented their A-GO plan which resulted in the Battle of the Philippine Sea on 19 and 20 June.

The next Allied stepping stone was Noemfoor Island, followed by others (including the island of Moratai). A major landing operation was then intended for Leyte. The purpose of this operation was to establish airfields from which to support the planned landings and operations on Luzon and the entire Philippine Archipelago.

The Leyte landing was effected on 20 October 1944. The reaction of the Japanese Air Force was aggressive and determined. They launched a coordinated ground-force/paratrooper attack against the airstrips on 6 December 1944. The greatest disruption of United States activities occurred in the San Pablo-Buri strip area where, after about 5 days, the area was cleared of the enemy and normal operations resumed. It is significant that the Japanese failed to attain their objectives. The massive air superiority of the United States forces had overwhelmed the attempts of the Japanese fighters to produce an air defense, and there was essentially no effective Japanese antiaircraft defense.

The decision having been made to land on and recapture Luzon, additional airfields were needed so that land-based US aircraft could provide the necessary cover for operations on Luzon. Thus, on 15 December 1944, landings were made on Mindoro, the necessary airfields were built, and US aircraft brought in.

These landings again produced a violent air reaction by the Japanese. Although occasional Japanese suicidal attacks with aircraft had been noted previously, during this operation such attacks, later to be known as kamikaze attacks, became frequent. This new form of Japanese air defense operations was intensified. As the task force proceeded to the landing site, the cruiser

Nashville and the destroyer Haraden were so severely damaged that they were forced to withdraw and, subsequently, one escort carrier and several other ships and landing craft were damaged. During their airstrikes against the landing forces and as a result of US strikes against airfields on Luzon, the Japanese lost over 400 aircraft. This was accomplished with minor loss of US aircraft. The kamikaze attacks, while causing some ship damage and heavy losses in US personnel, were more costly to the Japanese. The net result was the decimation of Japanese aircraft in the Philippines.

The campaign also had been costly to the US because the Third Fleet, while proceeding to strike northern Luzon airfields, had been devastated by a typhoon on 17-18 December 1944 during which it lost 3 destroyers and some 200 planes, and 28 ships suffered damage. The Japanese also conducted a night naval attack on the landing area with some naval forces brought in from Indo-China. One US liberty ship and one US PT boat were sunk during the attack. However, the American landing operation was successful, and the landing fields were obtained for use in providing air cover during the subsequent landings in the Philippines.

The operations to retake Luzon were preceded by intense air attacks during the period 20-30 December 1944 against Japanese supply ships en route to the island and against Japanese aircraft based on the island. On 3 January 1945, aircraft carriers from the Third US Fleet arrived off the north coast to participate in the isolation of the island and in the destruction of the Japanese air forces based there. When the Japanese employed their vicious kamikaze suicide attacks against both Allied naval forces and the landing force, Third Fleet carrier-based planes and all Fifth Air Force planes were diverted to neutralize all of the Luzon airfields. The Japanese decision to save their dwindling reserve of planes for the defense of Okinawa and the homeland aided the Allies in completing the neutralization of the Japanese airbases and the achievement of air superiority in the Philippines. Ground operations, which began with assault landings on 9 January, were virtually unopposed by Japanese air attacks after 14 January 1945.

The Okinawa campaign was preceded by intense air and naval operations aimed at isolating the island and neutralizing all Japanese air installations within supporting distance of the island. Since Okinawa lay between Formosa and Kyushu, it was necessary to strike airfields on Formosa, Sakishima Islands, and Japan proper. A combined effort was made throughout the month of March 1945 by the US Fifth Air Force in Luzon, the Twentieth Air Force in the Marianas, and air elements of the American and British carrier forces to carry out this neutralization.

As United States air actions increased toward the middle of March, the Japanese reactions became more desperate, particularly in Japan proper and off Okinawa. During its sweep into Japanese waters from 18 to 22 March, Task Force 58 destroyed 528 Japanese planes and 16 surface vessels and hit scores of hangars, factories, docks, and warehouse areas. The attacks effectively delayed the Japanese ability to move planes into Okinawa prior to the assault landings.

During the week preceding the assault landing, Allied naval forces closed on Okinawa to deliver a heavy preassault bombardment of shore targets. In spite of previous actions taken to neutralize Japanese airfields, the Japanese launched some 50 raids and numerous kamikaze attacks against the bombardment force ships.

The Japanese reaction to the assault landings on 1 April began in full force on 6 April when the Japanese launched both sea and air attacks against ships of the landing and support forces and employed increased kamikaze attacks. The Japanese air attacks continued throughout April despite their heavy losses. During the period 26 March to 30 April, the Japanese sank 20 American ships and damaged 157 others — 15 of the sinkings and 90 of the damaged ships resulting from suicide attacks. However, the cost to the Japanese was high, for by 30 April they had lost 1,100 planes to the Allied naval forces, and land-based antiaircraft and tactical air forces had accounted for many more.

The Japanese attacks continued in strength throughout May. Two final kamikaze attacks were made in June which marked the end of the Japanese air counteroffensive. During the operation, the Japanese had launched some 896 air raids at a cost of some 4,000 Japanese planes destroyed, including some 1,900 kamikaze planes. The cost to the United States naval forces included 28 ships sunk and 225 ships damaged. Kamikaze attacks had accounted for 26 of the 28 ships sunk and 164 of the 225 ships damaged.

With ground force operations continuing in the Philippines and Okinawa, air operations were intensified against Japanese shipping and targets within Japan. In August, the dropping of atomic bombs over Hiroshima and Nagasaki proved to be the final blow that convinced the Japanese to surrender.

Organization of the Air Defense Battalion (Heavy Division)

Editor's Note: The strength figures discussed in this article reflect the current status of the Draft Plan TOE as being written by USAADS. They may change as a result of on-going force modernization investigations.

by Staff Sergeant Mark J. Richards

The walls of hallways and offices throughout the air defense community are alive with paintings and posters depicting the opening day of a future war. The sky is filled with threatening aircraft, while down below are the air defenders, maintaining surveillance of the hostile skies and ready to engage the threat.

Appearing more frequently these days in those representations are two new air defense weapon systems, the Division Air Defense (DIVAD) Gun, successor to the 20-mm Vulcan, and the Stinger, man-portable air defense system (MANPADS), successor to the Redeye. Together with an Improved Chaparral missile system, the DIVAD Gun and Stinger will significantly improve the air defense capability of divisional ADA units.

As weapons continue to improve, it has become necessary to revise the organizational structure of Chaparral/Vulcan battalions to use the increased capabilities of the new systems more effectively.

The division air defense battalion, shown at figure 1, is to be organized under Table of Organization and Equipment (TOE) 44-665. (The numbers shown in drawings throughout the article are the respective officer, warrant officer, enlisted, and total strength for either the entire organization or by section.) In contrast to the previous Chaparral/Vulcan battalion (two batteries of 12 Chaparrals each and two batteries of 12 Vulcans each), this battalion is comprised of 36 DIVAD Guns in 3 batteries, 24 Chaparrals in 2 batteries, and a platoon of Stinger assigned to each gun battery and to one of the Chaparral batteries. Stinger platoon organization is shown in figure 2.

Personnel strengths for the headquarters and headquarters battery (HHB) are shown in figure 3.

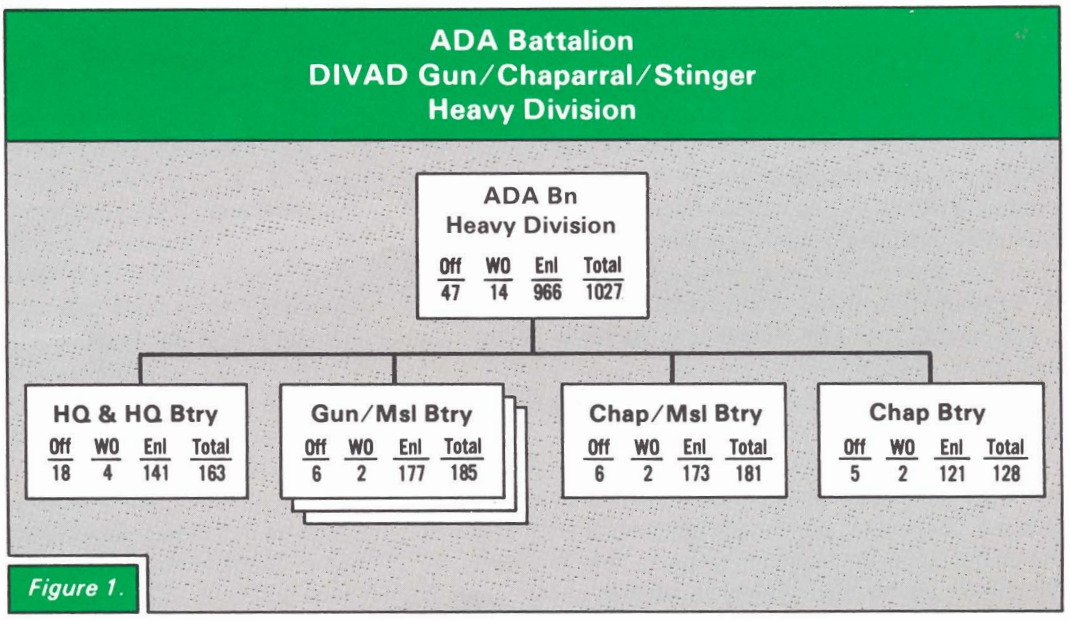


Figure 1.

The HHB functions associated with the Chaparral/Vulcan HHB remain the same. The DIVAD Gun firing battery (fig 4) consists of 185 personnel, a quantity sufficient to provide 24-hour operations, which is consistent with the system's 24-hour capability. Changes in the fire unit organization reflect the need for increased ammunition handling capability, maintenance, and POL supply.

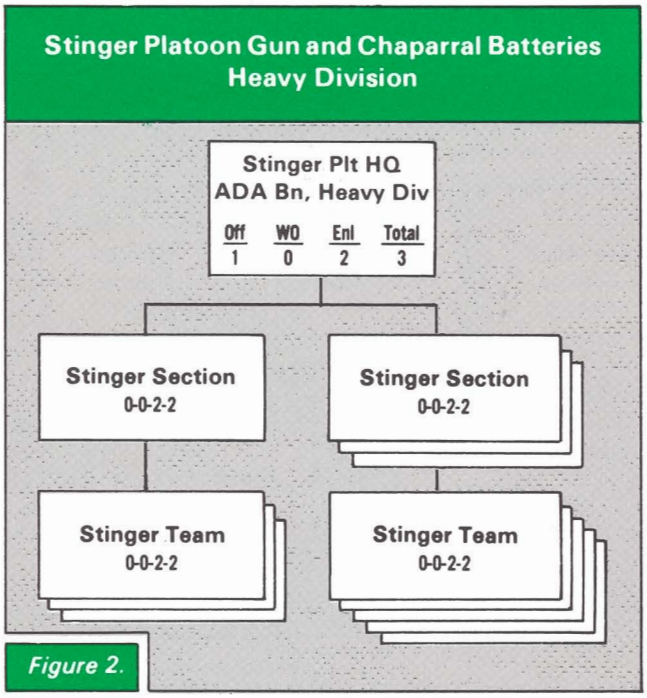


Figure 2.

A significant change in the organization of the short-range air defense (SHORAD) units is the consolidation of MANPADS assets, a move making them organic to the division air defense battalion. This consolidation has given the divisional AD battalion 72 MANPADS teams that were formerly assigned directly to the field artillery and maneuver battalions of the division. This change provides some distinct advantages:

- Assurance to the maneuver battalion commander that consolidation will result in a better trained air defense section. The increased association with other air defenders will allow the MANPADS crewmen to keep up with the current state of the art in air defense.
- Divisional air defense assets will continue to habitually train with manuever elements as part of the combined arms team.
- More responsive and readily available air defense. Consolidation gives the division AD

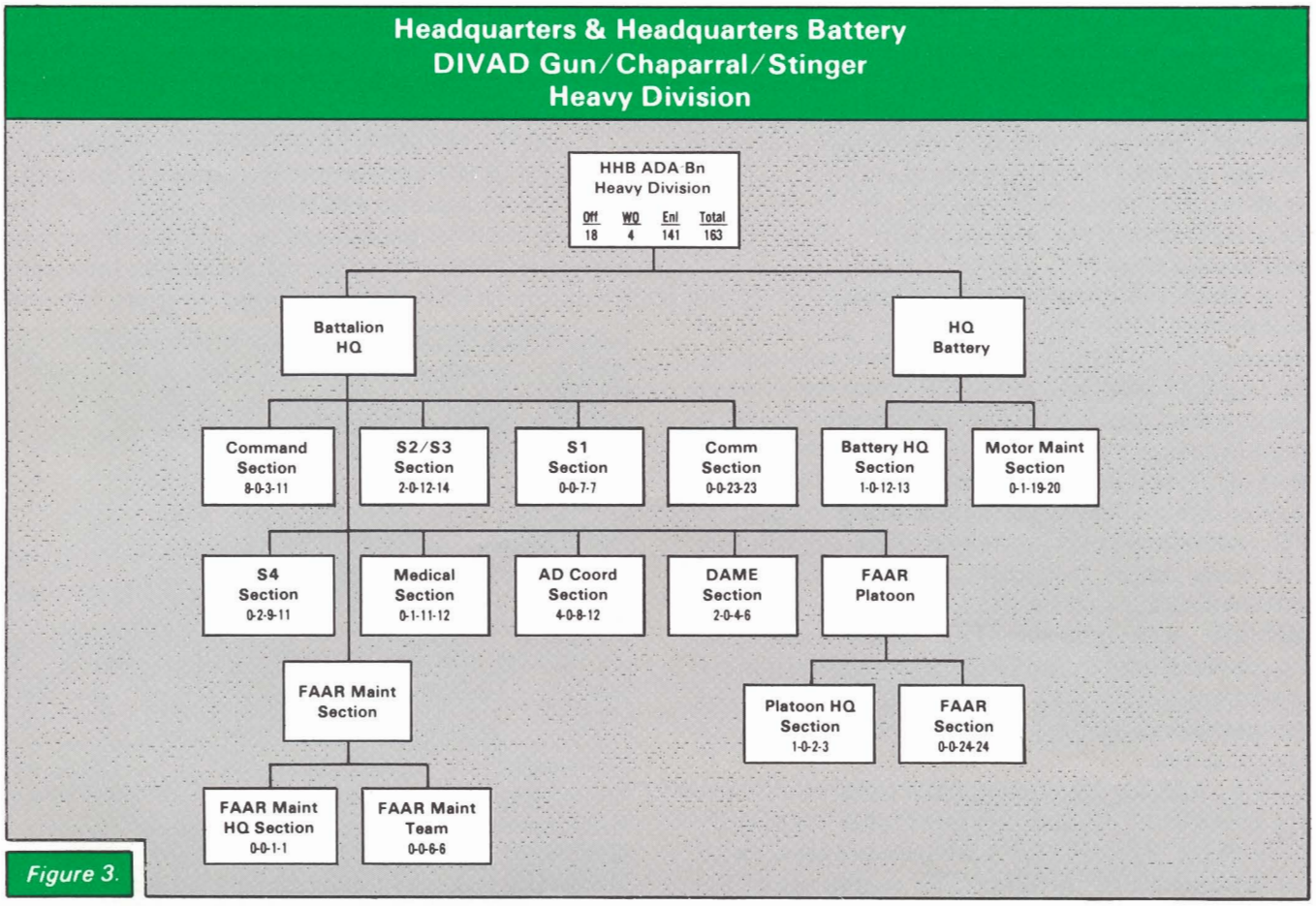


Figure 3.

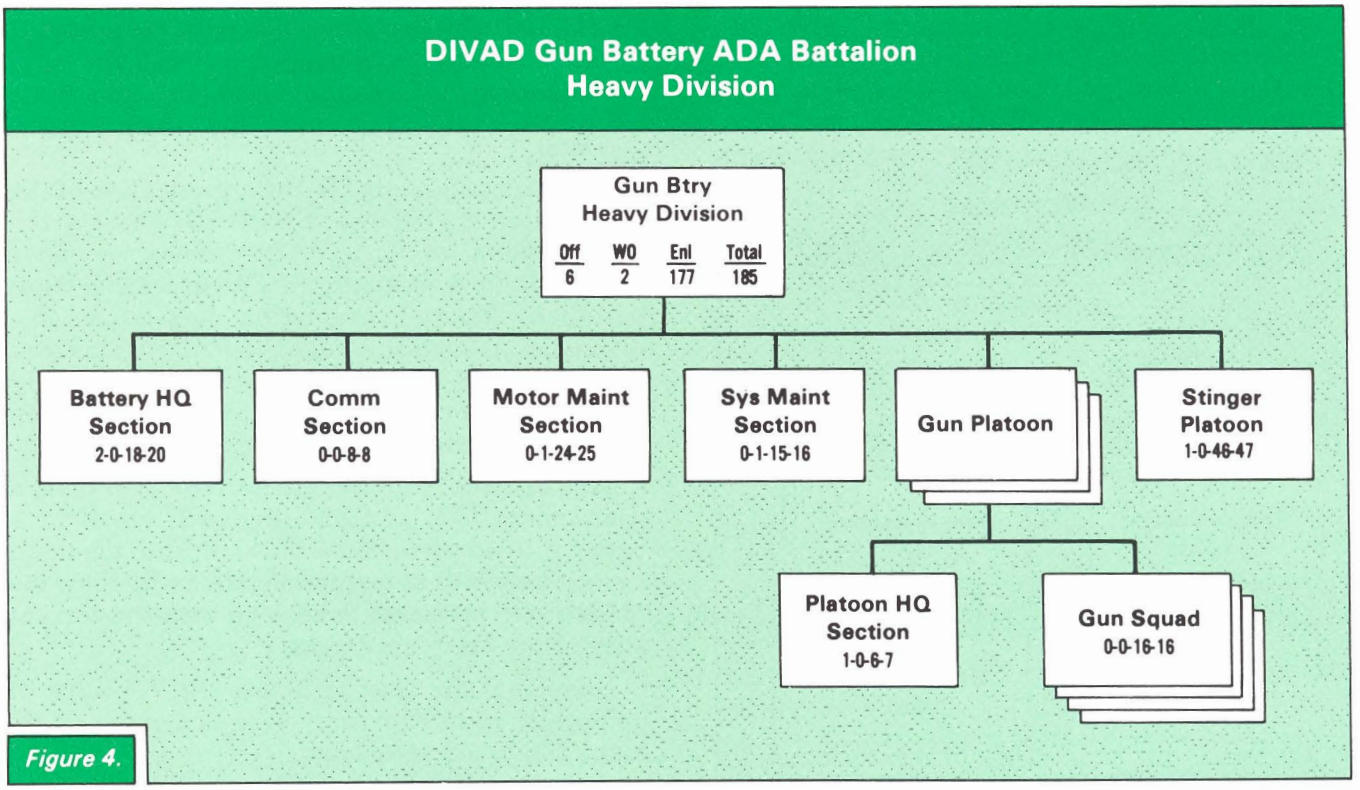


Figure 4.

battalion commander greater flexibility in providing air defense for the division commander's priority assets.

Further benefitting the division AD commander is the capability to "marry-up" different weapon systems. He can employ both Chaparral and Stinger or the DIVAD Gun and Stinger in fixed asset or maneuver unit defense simultaneously, thus enhancing the kill capability of all three weapon systems.

In the development of this organization, great pains were taken to provide an organizational document that would provide for a combat-ready unit and not require "quick-fix" changes at some point in the future. In this vein, AM radios for early warning were provided down to the platoon level in the DIVAD Gun/Chaparral units and to section level in Stinger units, thus eliminating the tactical FM radios presently employed. This substitution provides more reliable and interoperable communications (see radio net diagram, figure 5). Mobility was another key consideration as demonstrated by the addition of the high-mobility, multipurpose wheeled vehicle (HMMWV) for the Stinger teams and other sections throughout the organization.

This article has primarily addressed the organization of the division AD battalion resulting from the reorganization and consolidation of MANPADS assets and the introduction of the DIVAD Gun but the organization of Stinger assets within the separate brigades, armored cavalry regiments (ACR), and air cavalry combat brigades (ACCB) also needs to be addressed.

Formerly, the MANPADS teams were scattered throughout the squadrons/battalions. Under the new organization, MANPADS assets become organic to the headquarters and headquarters troops (HHT) or headquarters and headquarters company (HHC) of the regiment/brigade. For the

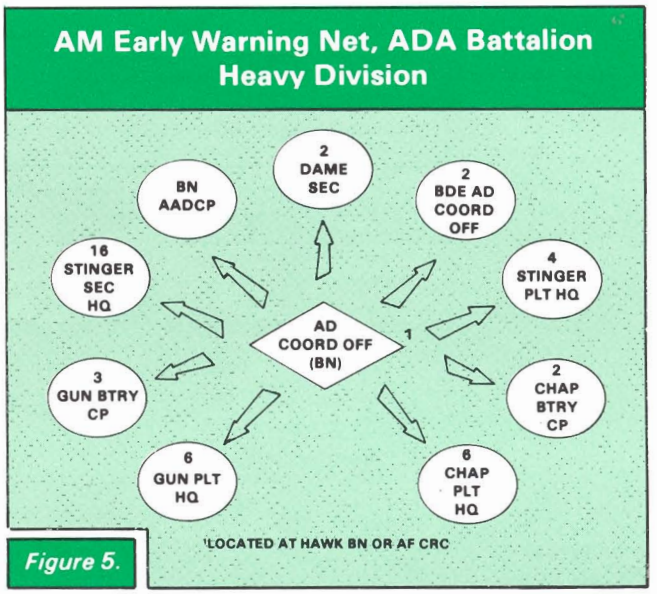


Figure 5.

separate brigade (fig 6), the assets are organized in a platoon structure of 59 men (1 officer, 58 enlisted) and broken down into 5 sections totaling 23 teams. The ACR organization (fig 7) consists of 24 teams under the platoon structure with one less section but with the same number of personnel as the separate brigade. The ACCB has 23 personnel (1 officer and 22 enlisted (fig 8)) organized into 8 teams and the platoon headquarters.

Presently, no forward area alerting radar (FAAR) is organic to the separate brigades and, therefore, no early warning capability is available to the organic Stinger teams. To provide early warning, the separate brigades and ACRs may request FAAR assets by using cellular TOE 44-510H6FB, which will provide three FAARs along with operators and maintenance personnel. This addition will place the MANPADS capability for the separate brigade and ACRs on par with the divisions.

The final question, though, is how much air defense is enough. No amount of coverage is ever thought of as sufficient. Division commanders realize that the AD resources are limited. Department of the Army directs the combat developer to include only the minimum essential personnel and equipment in AD organizations. Nonetheless, with continual improvements made to fielded air defense systems and the development of vastly improved new systems, organization of air defense units will continue to be revised and improved.

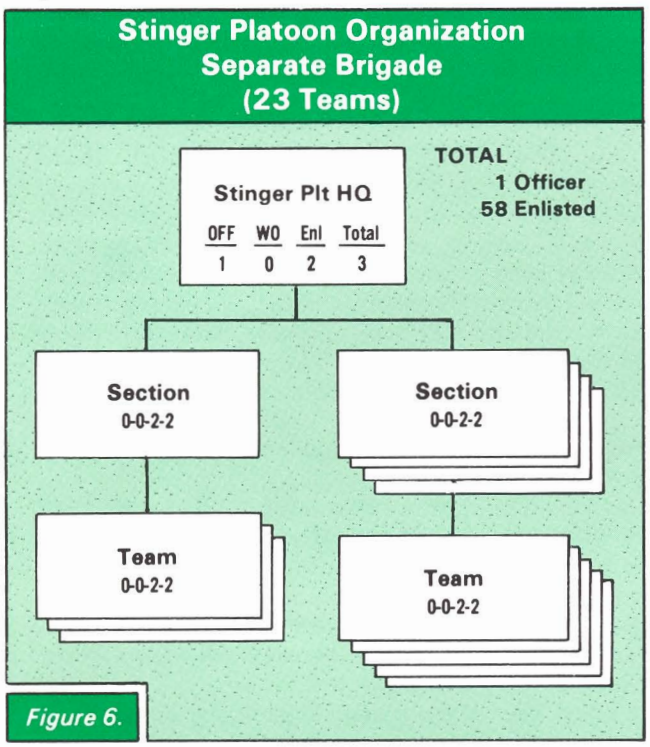


Figure 6.

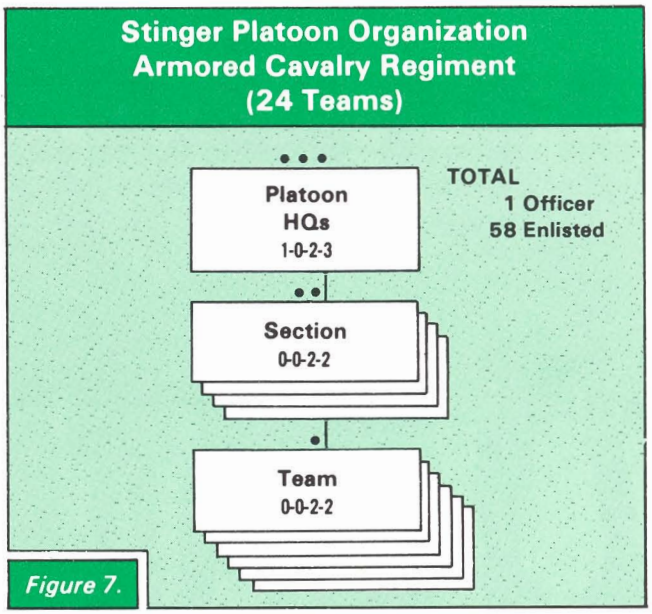


Figure 7.

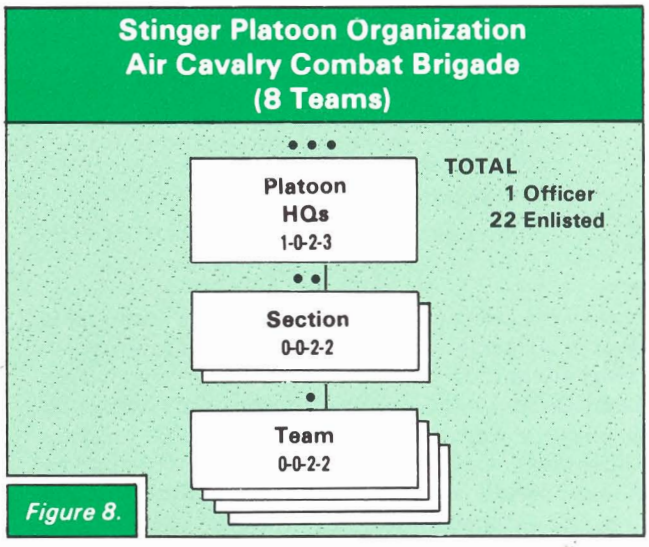


Figure 8.

SERGEANT RICHARDS *is Operations NCO of the Organization Division, Directorate of Combat Developments, United States Army Air Defense School, Fort Bliss, Texas. He attended the University of Wyoming and Los Angeles Community College and is completing work on his Bachelor's Degree in Mass Communications at the University of Texas, El Paso. A graduate of the ADA Operations and Intelligence Assistant Course and the Eighth US Army NCO Academy, and an Honor Graduate of the Defense Information School, he has served as assistant operations sergeant of two Improved Hawk battalions, NCOIC of an Improved Hawk battalion operations center, and as training coordinator in the 4th ADA Training Battalion (FAW) (OSUT).*

"There is a destiny that makes
us brothers;
No one goes his way alone;
All that we send into the lives
of others
comes back into our own."

— Unknown

Human concern for the welfare of fellow humans is evident in all levels of society from the most primitive to the most advanced. It is demonstrated every day within and among families, communities, and even nations. So naturally we expect to see it within the military establishment, and the practice of caring and sharing no doubt prevails at many installations. Surely one of the most extensive and productive is the Life Enrichment Program at Fort Bliss, Texas.

The program has many functions, the most comprehensive of which is the Art of Skilled Helping Workshop. The workshop began as a grassroots movement. A group of commanders' wives at Fort Bliss began reflecting upon how frequently they were being called upon to help and how inadequate they sometimes felt in this helping role. Being wives of commanders, they discovered themselves getting involved as helpers not only with friends, but also more formally with some of the officer and enlisted wives of their brigades, battalions, and batteries. They began asking themselves what they could do and what would be appropriate for them to do. They sought the assistance of Major Jack Bentham, PhD, Chief of Psychology Service at William Beaumont Army Medical Center, and Chaplain (MAJ) Mark Gruebmeyer, Clinical Pastoral Educator at Fort Bliss. Seeds for an Art of Skilled Helping Workshop were sown and the word spread quickly. With the energetic support of Mrs. John B. Oblinger, Jr., wife of the Fort Bliss commander, an 8-week workshop was developed. A possible attendance of 30 was envisioned. But at the first session, more than 70 commanders' wives enrolled. What a surprise! The need was greater than anyone had supposed.

The 2-hour weekly sessions were divided into two parts. The first part introduced the participants to basic helping skills and was led by Dr. Bentham or Chaplain Gruebmeyer. The second part introduced participants to specific resources available to people in the Fort Bliss community and specific ways of helping people. These gatherings were led by persons representing various helping agencies, including Army Community Services, Social Worker Services, Community Mental Health, Protocol, and the Women's Resource Center of El Paso, Texas.

The first session introduced participants to some of the characteristics of helping relationships. These characteristics included mutual respect, warmth, purpose, feeling, and empathy (as distinguished from sympathy). Participants learned how quickly they sometimes tried to jump from the problem or situation presented them to the resolution, thereby skipping over feelings and helpful case history and sometimes imposing a superficial or unhelpful solution. They began to see how important the various steps of the process leading to resolution are. They learned how empathetically listening to problems can be the most important help they can give.

The second hour of the first session was led by CPT Gary Greenfield, PhD, Director of Community Mental Health at Fort Bliss. He introduced the participants to advances within the area of Community Mental Health, in particular emphasizing what participants might contribute in preventing serious problems from developing.

The first hour of the second session, led by Dr. Jack Bentham, covered "How to use who we are to help

others." The layers of relationship, including games and roles, were discussed along with the inner conflict we can feel at times as we become aware of the topdog-underdog parts of ourselves. Beneath it all is the authentic self, the self that can be used in skilled helping.

The second hour was a lively discussion of how to help others who are in over their heads financially, led by Mrs. Polly Loustaunau of Army Community Services (ACS). Participants learned the practical ways ACS helps people manage their finances. Presented like the other topics, little attention was given to history of organization of the service, but rather to the "nuts and bolts" of what ACS does. Budget forms were distributed and concrete examples were given of how financial counseling works. Do you know the current amount that the US Department of Agriculture says is the minimum to spend to feed a child a nutritional diet? None of the participants knew the answer.

The first hour of the third session was titled "Different Strokes for Different Folks." Do we realize that to help people of different type personalities it is well to respond in different ways? How varied is our repertoire of responses? In this session, participants were introduced to eight different personality types and helpful ways of relating to each type. For example, what is most helpful to depressed, passive, and dependent persons? Do you take care of them, or do you encourage them with active and empathic friendliness to be more assertive? Or what are the helpful ways of relating to a compulsive personality? Obviously, no personality type could be gone into in much depth. So the purpose of this session was simply to assure the participants that there are different strokes for different folks in skilled helping relationships.

The second hour of this third session was devoted to questions and answers. Relationships with leaders and other participants had developed, so even personal questions were asked. There was a tendency for this session to become an open "gripe" session, yet the issues of skilled helping remained the primary concern. For example, what help can be given where two officers' wives are continually in conflict so that it impacts upon the unit's effectiveness as hard feelings among the husbands and other wives develop? What is appropriate?

The first hour of the fourth session was titled "How to Listen So Others Will Feel Heard." Beginning with an experimental exercise involving listening to one another, the group members quickly identified what improved their feeling of being heard: eye contact, facial expression, types of verbal responses, body language, attentiveness, nonjudgment, sharing of mutual feelings, and acceptance were all mentioned. The group became its own best resource. Listening with our eyes, ears, and feelings was emphasized — thus listening to the whole person with the whole person.

The second hour of the fourth session emphasized that many off-post community resources help. In our program at Fort Bliss, Mrs. Ailene Jernigan, Director of the Women's Resource Center of El Paso, Texas, provides this information. As a YWCA program, the resource center offers professional and paraprofessional help to women (and men) in the areas of personal counseling, marriage and family counseling, job search, financial counseling, and self-help programs. Paraprofessional volunteers are trained in a skilled helpers workshop much like the one at Fort Bliss. More coordination of the two programs is planned.

Mrs. John B. Oblinger, Jr., front row left, and other members of a wives group enjoy a bit of humor during the serious subject of "Constructive Use of Anger" presented by Dr. (MAJ) Jack Bentham, Chief of Psychology Service at William Beaumont Army Medical Center. The purpose of the talk was to increase awareness and support among his audience regarding the demands a military career places on family members.

The first hour of the fifth session presented "What Body Language Is Saying." Particular attention was paid to the issues of space and to how different sides of the body convey different messages, in addition to how people generally use their eyes, mouths, hands, arms, and legs in forms of expression. Participants were cautioned about how body language may be misleading and must always be verified before concluding what it is saying.

Consideration was also given to the various filters we have that screen out much of what is being said. Encouragement was given for skilled helpers to pay attention to what all their input channels are receiving, thereby once again increasing the likelihood that they will respond with a great flexibility and repertoire of responses.

The second hour was led by Mrs. Kathleen Schooley of the Fort Bliss Protocol Office. Issues of protocol are important in the military, particularly at formal military functions and at international gatherings. Knowing how to avoid embarrassing those present is helpful to oneself and also to others who may be needing this kind of help. This session went beyond military courtesy into the deeper issues of protocol confronting military wives. This session, as with others, was geared toward self-help.

The first hour of the sixth session dealt with the issue of married couples not "living happily ever after." What help can be given? What is appropriate help when confronted with someone suffering from marital stress and turmoil? Our purpose was not to provide a brief course in marriage counseling but rather to offer some basic crisis-intervention techniques as they relate to marital crisis. Emphasis was placed on encouraging others to express their feelings and explore their views of how they thought marriage would or should be. Attention was also given to how various personality types interact, how needs may vary in type and consistency, and how attitudes and goals within the marital relationship may change. Commitment and the virtues of faith, hope, and love were stressed.

Since much preventive help can be given through family education, the second hour of this session, led by Chaplain (LTC) Arnold T. Ellsworth, Director of the Life Enrichment Center at Fort Bliss, dealt with how to improve family living through education. Participants were encouraged to use resources such as marriage encounters and systematic training for effective parenting as help for themselves and others. Some basic principles of family living relating to the importance of self-esteem and communication within the family setting were introduced. The goal was to encourage exploration of both inner and external resources as a means of enhancing life within the family.

The first hour of the seventh session addressed "How to Cope With Anger and Depression." Often

Beverly Marchelos, a social worker at William Beaumont Army Medical Center, discusses the sensitive subject of "Violence in the Family" with a group of Army wives attending the Art of Skilled Helping Workshop. The use of visual aids and audience participation added greatly to the understanding of this timely program.

interrelated, anger and depression were discussed in terms of their dynamics and expression. What is the difference between assertion and aggression? What help can be given to someone experiencing deep guilt? What are the signs of different personality types beginning to go into depression, and how can this process be turned around? What can the nonprofessional skilled helper do? These were some of the specific questions discussed.

The second hour explored the subjects of spouse and child abuse. Led by Mrs. Beverly Marchelos, Military Social Worker at William Beaumont Army Medical Center, this session explored the causes and effects of abuse and what can be done about them. A practical, rather than theoretical, approach was taken to this whole subject as specific cases were shared. Simplistic answers were avoided. The importance of self-esteem and ongoing communication was emphasized.

The eighth and last session introduced, in the first hour, a practical approach to crisis intervention. The second hour dealt with a specific type of crisis and what a skilled helper can do with those suffering this crisis. The crisis intervention process is a highly developed and well-known process among professionals and some paraprofessionals, but not so well known by people like our participants. As more people are trained in this researched process, more will receive helpful crisis intervention. Professionals get involved in only a small number of the more serious situations. Friends get involved frequently; so the goal is to train participants to be skilled helpers with their friends in crises. Participants were taught how to assist others in combating fear, pity, etc.; identify the threat; inventory both inner and external resources; and use existing relationships in helping others cope with crises.

At the close of the eighth session, participants were given an 8-page handout listing some 20 Fort Bliss helping resources that embrace almost 300 available services. Almost everything imaginable in the areas of medical, legal, spiritual, health, safety, and financial help was included.

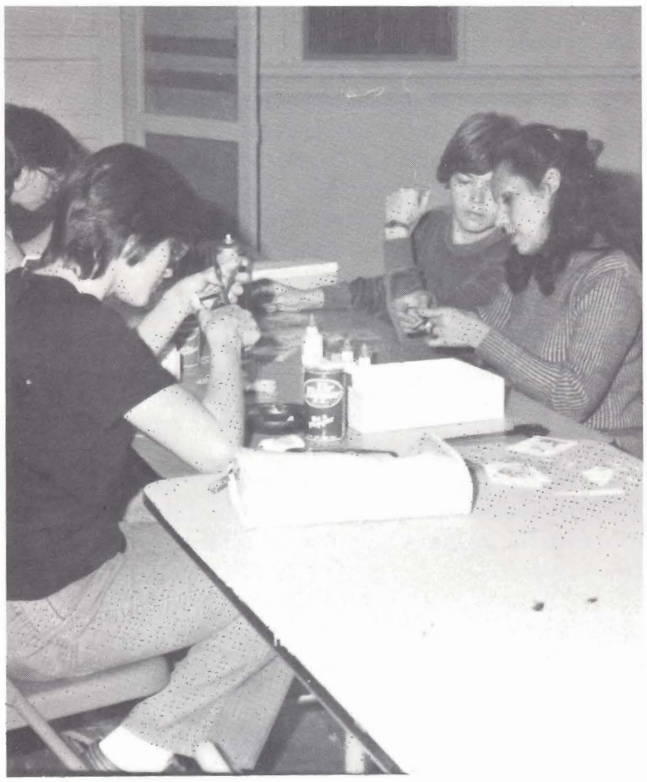
The 8-week workshop was extremely well received at Fort Bliss. Many have asked for a continuation of the skilled helper training in the form of continuing small groups because they want to add greater depth to their experience as skilled helpers. This also enables them to receive some professional supervision as they continue to mature as skilled helpers.

Plans are now underway to expand this workshop to include other groups of wives at Fort Bliss. Some even envision this becoming military education for military supervisors. The need is there. The resources are there. An Art of Skilled Helping Workshop is a possibility at every military installation.

A number of other functions and activities besides the workshop are included in the Fort Bliss Life Enrichment Program for military members of all ranks. The Junior

Beverly Marchelos (center) directs a group of wives through a demonstration during a talk. In keeping with the theme of her subject, "Violence in the Family," Mrs. Marchelos is using audience participation to visually demonstrate the isolation of a battered wife. The ladies moving in a circle represented a person's external system — family, friends, job, church, etc. As the woman is continually subjected to abuse, she eventually loses all external support and, one by one, the ladies leave the circle. Finally, only one is left standing — she has become the isolated, battered wife.

Enlisted Family Center is probably one of the most important. Inaugurated several years ago by the wife of the then commanding general, and supported by the Military Council of Catholic Women and the Protestant Women of the Chapel, the response has been outstanding. Involving wives of soldiers in grades E-1 through E-5, the organization began as a project to make friends, meet the needs of the group, and keep members informed of opportunities available to them.



These young wives are engrossed in arts and crafts activities at the Junior Enlisted Family Center.

The program, under the guidance of Carol Lee, Family Center Director, fills a most desperate need at Fort Bliss by helping young families cope with rising costs and lonely days by offering low-cost activities 5 days a week. Classes are offered ranging from parenting skills to cooking and craft instruction. Free transportation is available for the wives to the center. A variety of tours are regularly scheduled including Juarez, Mexico, local sightseeing, shopping, and cultural attractions. The Sunday before payday, a free noon meal brings in the entire family. An occasional husband and wife activity has been included in the well-rounded program. Free child care is provided while the mothers are attending a planned activity. This serves the double purpose of helping mothers to expand individual skills as well as offering children an opportunity to play together under excellent supervision. The staff has been able to offer referral services for health problems observed among the families and to help find the answers to questions ranging from personal financial problems to information about the local area.

A recent workshop covered topics typical of what these young people want to know and what the Family Center provides. Included under the general heading of "What can a wife do?" were:

The Enlistment Contract — explaining the responsibilities and commitments of both the Army and the soldier, and the consequences of deviating from the contract.

Legal Information — involving how to read and understand leave, pay, and allotment documents.

Housing — encouraging patience with quarters lists and what to do about things that may occur in the neighborhood, such as noise, abused children, altercations, etc.

Transportation — how to get help with travel, moving, and handling the situation when one's husband is away.

Health Care — tips from a patient specialist from the local Army Medical Center.

Seeking Help — general coverage of where to go and whom to call upon, conducted by a Fort Bliss chaplain.

Similar activities are conducted as they relate to E-6 personnel, with this group assuming more responsibility than the junior enlisted group. For example, babysitting and transportation are not furnished. The E-6 group originally met once a week but the frequency quickly expanded to four days a week.

The children of wives attending class at the Junior Enlisted Family Center receive professional care at the nursery, which is part of the Fort Bliss Family Center.

The 11th Air Defense Artillery Brigade has originated a monthly orientation program for its new soldiers that reflects the spirit of life enrichment. Held at the Brigade Chapel, the program opens with a Marty Robbins film on El Paso. COL Joseph W. House, the Brigade Commander, talks about the facilities at Fort Bliss and the many things to see and do in El Paso. His talk is followed by a presentation of more than 100 slides showing many points of interest and listing key personnel at Fort Bliss. The soldiers are encouraged to bring their wives, and a free babysitting service is offered at the Chapel by the wives of the 11th Brigade.

Representatives of the Red Cross, Champus, Education Center, Army Community Services, Junior Enlisted Wives, William Beaumont Army Medical Center, Army Emergency Relief, Dental Care Activities, Finance, and Housing are introduced and have tables set up in the activity room. They provide literature and are available to help with problems or answer questions after the briefing. The chaplains of the brigade are also introduced. The 11th ADA Brigade Chorus closes the program with a selection of three songs including "ADA Cowboy."

Following the 1 hour and 10 minute briefing, coffee, Koolaid, and cookies are served in the activity room, and the soldiers are given the rest of the day off. In a 4-month period, approximately 1,000 soldiers attend this function. It has been most enthusiastically received and comments concerning it have been excellent.

One unit, the 1st Battalion, 55th ADA, has initiated a unit program called Operation Outreach. Here the wives of new Army families are contacted individually to insure they are informed of a contact point for any help they may need if an emergency requires the men of the battalion to be deployed elsewhere. A communication network is to be established whereby battery commanders' wives will have telephone contact with the wives of all unit personnel. Another function of Operation Outreach is to form a group of well-informed wives who can function alone or as part of a group to render family assistance whenever necessary. Plans also call for all battalion wives to participate in Operation Understanding and attend a workshop on the rights of a dependent wife.

Another Fort Bliss program tied in with life enrichment, called Talking Together, is designed to increase communications between couples so that they learn to communicate in a rational way. Thus, they become better able to solve problems that arise out of the family relationship. Classroom instruction from a prepared text is given for 12 hours over a 4-week period to prepare couples to use the methods of communication they have learned. Seven chaplains and their wives are instructors in the course. Each is well qualified and educated in the field. Instructors do not evaluate the performance at these classes; they merely monitor the discussions and offer guidance to the participants. The program has been taught in universities coast to coast using the text "Alive and Aware," and at Fort Bliss the chaplain group extends an open invitation to all couples to profit from this highly professional family service.

Another aspect of the Life Enrichment Program involves getting useful information into the hands of newcomers. This effort is accomplished mainly through handouts. Colonels' wives, upon their arrival, are given a four-page handout by Mrs. Oblinger urging them to get involved in community activities. The areas where help is needed are listed and explained, and there are many —religious pursuits, Girl Scouts, Thrift Shop, Host Family, teaching sports or hobbies — and the list goes on. Anyone can find something to do that will lend fulfillment to one's own life through helping to enrich the lives of others. The Fort Bliss Deputy Commander circulates invitations to newcomers to attend a Community Life Program briefing. Watch future issues of AIR DEFENSE Magazine for a full report on this outstanding program for improving the quality of life in the military community. The sponsoring unit is the Headquarters Command. Student officers arriving for training are invited (along with their spouses) to view three orientation films. These are: "Welcome to Fort Bliss" (synopsis) - 12 minutes, "Welcome to Fort Bliss" - 45 minutes, and "El Paso - City by the Rio Grande" - 15 minutes. The films give broad coverage of their subjects and are highly praised by student families.

It is probably not logical to attempt to attach greater importance to one life enrichment activity than another, but certainly one of the most popular is Operation Understanding, or What Makes Fort Bliss Run. It all begins with a letter to spouses from the commanding general inviting them to participate in the day-long event. The day begins with a welcoming address by the CG followed by a briefing on roles and missions of the US Army Air Defense Center and Fort Bliss and of the US Army Air Defense School. After a protocol briefing, a straight-from-the-shoulder address on The Role of the Military Wife is presented by Mrs. Oblinger. Then comes something different for the participants — a bus ride to McGregor Firing Range, a briefing on range functions, and lunch in the range dining facility. This is followed by a trip to a firing site for the exciting experience of observing actual firing of air defense guns and missiles. The women return home at the end of the day with a much better understanding of what their husbands' jobs at Fort Bliss are all about.

What has been described here is by no means an exhaustive account of what the Life Enrichment Program offers. Our purpose has been to provide a reasonably comprehensive glimpse of what the program is and perhaps stimulate further interest by local people and offer some guidance to others who may want to get a similar program started in their area. Anyone wishing information about these life enrichment activities may contact the Editor, AIR DEFENSE Magazine, who will coordinate the reply.

Commanders are requested to insure that their spouses have an opportunity to read this article.

DEPARTMENT OF THE ARMY

Lineage and Honors

5th AIR DEFENSE ARTILLERY

Constituted 18 June 1861 in the Regular Army as the 5th Regiment of Artillery

Organized 4 July 1861 at Fort Greble, Pennsylvania

Regiment broken up 13 February 1901 and its elements reorganized and redesignated as separate numbered batteries and companies of Artillery Corps

Reconstituted 1 July 1924 in the Regular Army as the 5th Coast Artillery and partially activated with Headquarters at Fort Hamilton, New York

(Batteries A and B activated 1 August 1940 and 15 January 1941, resepectively, at Fort Wadsworth, New York; Battery D activated 15 January 1941 at Fort Hamilton, New York)

Active elements of regiment inactivated 19 April 1944 at Camp Rucker, Alabama

Disbanded 26 June 1944

Regiment (less Headquarters and Headquarters Battery, 3d Battalion and Batteries I and K) reconstituted 28 June 1950 in the Regular Army and elements reorganized and redesignated as follows:

Headquarters and Headquarters Battery, 5th Coast Artillery consolidated with Headquarters and Headquarters Battery, 5th Antiaircraft Artillery Group (active) (see ANNEX 1) and consolidated unit designated as Headquarters and Headquarters Battery, 5th Antiaircraft Artillery Group

2d Battalion consolidated with the 214th Antiaircraft Artillery Gun Battalion (see ANNEX 2) and consolidated unit designated as the 24th Antiaircraft Artillery Battalion

After 28 June 1950, the above units underwent changes as follows:

Headquarters and Headquarters Battery, 5th Antiaircraft Artillery Group redesignated 20 March 1958 as Headquarters and Headquarters Battery, 5th Artillery Group
Inactivated 26 August 1960 at Camp Hanford, Washington

5th AIR DEFENSE ARTILLERY

24th Antiaircraft Artillery Battalion redesignated 13 March 1952 as the 24th Antiaircraft Artillery Gun Battalion
Activated 16 April 1952 in Korea
Inactivated 20 December 1954 in Korea
Redesignated 23 May 1955 as the 24th Antiaircraft Artillery Missile Battalion
Activated 1 June 1955 at Fort Banks, Massachusetts
Inactivated 1 September 1958 at Bedford, Massachusetts

Headquarters and Headquarters Battery, 5th Artillery Group; 24th Antiaircraft Artillery Missile Battalion; 1st Battalion, 5th Coast Artillery; and the 5th Field Artillery Battalion (organized in 1907) consolidated, reorganized and redesignated 26 August 1960 as the 5th Artillery, a parent regiment under the Combat Arms Regimental System

5th Artillery (less former 5th Field Artillery Battalion) reorganized and redesignated 1 September 1971 as the 5th Air Defense Artillery, a parent regiment under the Combat Arms Regimental System (former 5th Field Artillery Battalion concurrently reorganized and redesignated as the 5th Field Artillery--hereafter separate lineage)

* * *

ANNEX 1

Constituted 5 August 1942 in the Army of the United States as Headquarters and Headquarters Battery, 5th Antiaircraft Artillery Automatic Weapons Group

Activated 17 August 1942 at Camp Hulen, Texas

Redesignated 18 February 1944 as Headquarters and Headquarters Battery, 5th Antiaircraft Artillery Group

Inactivated 15 October 1945 at Camp Myles Standish, Massachusetts

Activated 1 August 1946 at Fort Bliss, Texas

ANNEX 2

Constituted 5 May 1942 in the Army of the United States as the 1st Battalion, 504th Coast Artillery (Antiaircraft)

Activated 1 July 1942 at Camp Hulen, Texas

Reorganized and redesignated 20 January 1943 as the 214th Coast Artillery Battalion

Redesignated 13 November 1943 as the 214th Antiaircraft Artillery Gun Battalion

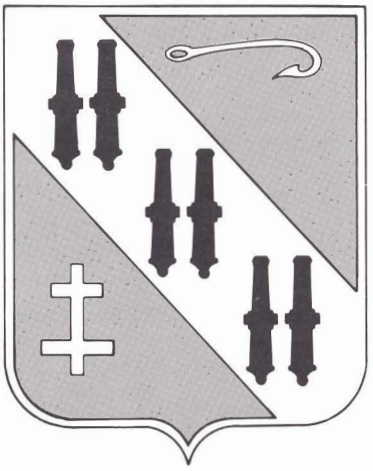
Inactivated 12 February 1946 at Camp Kilmer, New Jersey

* * *

5th AIR DEFENSE ARTILLERY

CAMPAIGN PARTICIPATION CREDIT

Civil War	World War II	Vietnam
Peninsula	Tunisia	Defense
Manassas	Sicily	Counteroffensive
Antietam	Naples-Foggia	Counteroffensive, Phase II
Fredericksburg	Anzio	Counteroffensive, Phase III
Chancellorsville	Rome-Arno	Tet counteroffensive
Gettysburg	Southern France (with arrowhead)	Counteroffensive, Phase IV
Wilderness	Rhineland	Counteroffensive, Phase V
Spotsylvania	Ardennes-Alsace	Counteroffensive, Phase VI
Cold Harbor	Central Europe	Tet 69/Counteroffensive
Petersburg		Summer-fall 1969
Shenandoah	Korean War	Winter-spring 1970
Appomattox	Second Korean winter	
Virginia 1862	Korea, summer-fall 1952	
Virginia 1863	Third Korean winter	
Virginia 1864	Korea, summer 1953	



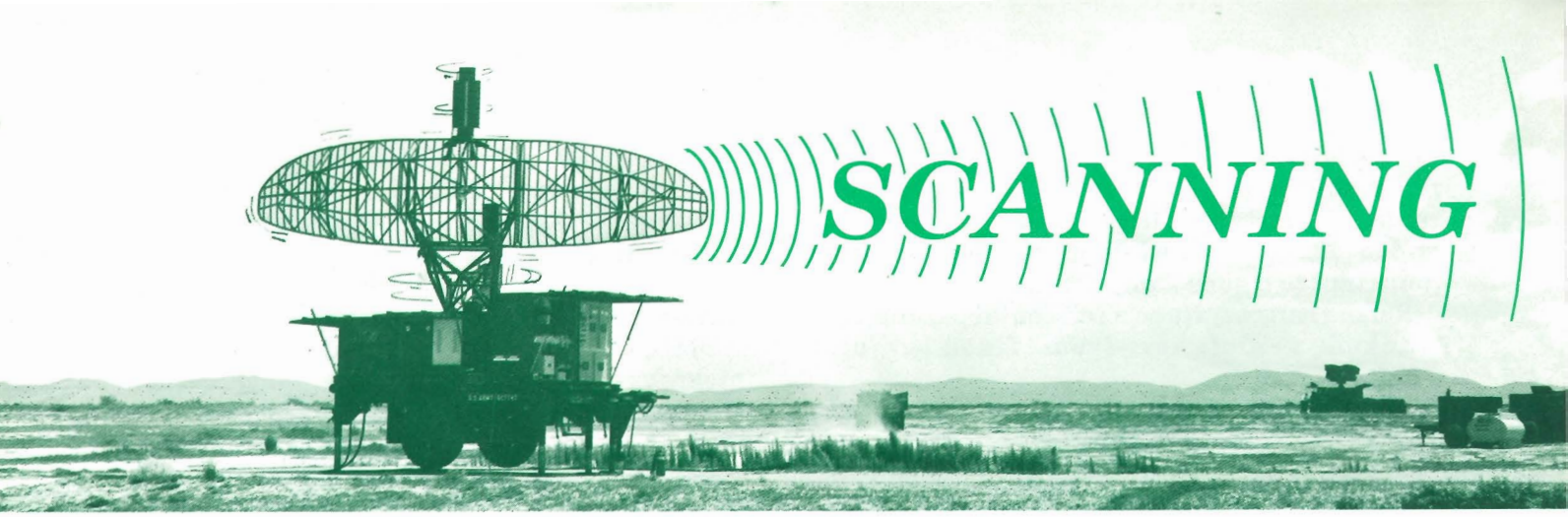
DECORATIONS

Meritorious Unit Commendation, Streamer embroidered VIETNAM 1966-1967

Meritorious Unit Commendation, Streamer embroidered VIETNAM 1967-1968

BY ORDER OF THE SECRETARY OF THE ARMY:

VERNE L. BOWERS
Major General, USA
The Adjutant General



VSTAR

A new medium-range air defense radar can detect low-flying targets in the midst of heavy ground and weather clutter. The system is called the Variable Search and Track Air Defense Radar (VSTAR). VSTAR is based primarily on the AN/TPQ-37 radar, which was developed for the US Army to detect and track artillery rounds. Its antenna rotates once every 3 seconds while a pencil-thin beam scans up and down electronically. The beam is difficult to detect by enemy antiradiation missiles because it has low peak power and low side lobes.

NATO NIKE TRAINING CENTER

NATO recently opened a base in the United States, a Nike (Missile) Training Center at Fort Bliss, Texas. The facility, which occupies 8 buildings, will train 265 students a year — soldiers from the NATO nations of Belgium, Federal Republic of Germany, Italy, Greece, the Netherlands, and Turkey. (Fort Bliss is the site of the US Army Air Defense School as well as the German Air Force Air Defense School.)

"The opening of the NATO Nike Training Center marks the first time a major foreign logistics installation has been established in the United States," said General Ehlge Omreng of the NATO Maintenance and Supply Agency.

NATO has allocated $9 million annually for the operation and administration of the school. From 1978-1981 the participating countries will have invested more than $40 million in the training program. The facility is directly linked to the NATO Supply Center in Luxembourg.

The facility is necessary because in 1975 the US Army announced it would gradually phase out the Nike Hercules, high-altitude, air defense missile system, ultimately replacing it with the Patriot.

NIKE HERCULES "FIRST"

During a 7-day field exercise at McGregor Range, soldiers assigned to Battery C, 2d Battalion, 52d Air Defense Artillery, became the first to fire a Nike Hercules missile from a combat field environment.

Troops were deployed in two convoys stretching more than 1½ miles. At the field location, the soldiers from Battery C and the direct support battery spent 4 days making intensive electrical and mechanical checks and adjustments to insure the system was operational. The exercise climaxed with a missile firing and a kill of the simulated enemy aircraft target. The equipment was then torn down, packed, and stored, and the soldiers returned to their parent unit with a first in the history of the Nike Hercules weapon system to their credit.

ROLAND CONTRACTS AWARDED

The Army Missile Command has awarded two contracts totaling more than $225.4 million to Hughes Aircraft and Boeing Aerospace companies for fiscal year 1981 production of the Army's new US Roland air defense missile system.

Hughes and Boeing, associate prime contractors for the weapon system, received more than $112.7 million each for missiles, fire units, and related equipment. Under the fixed price incentive contracts, Hughes will deliver missiles and components while Boeing will deliver fire units and associated equipment.

The Army ordered the short-range, all-weather plane killer into production a year ago. Developed by France and West Germany, Roland is being built in this country under license with Euromissile. Of particular importance to NATO defense, US missiles and the majority of the field replaceable parts will be interchangeable with their European counterparts.

Roland, which will protect troops, airfields, fortifications, supply depots, and other battlefield targets against low-altitude air attack, can detect and identify aircraft while on the move, a feature important to mobile Army units.

Roland can operate as a self-contained unit on a tracked vehicle or from fixed ground emplacements.

SUCCESSFUL ARMY ANTIMISSILE TEST

A test of major components for a second-generation antimissile system has concluded one of the Army's efforts to prove technology for a defense against intercontinental ballistic missiles (ICBMs).

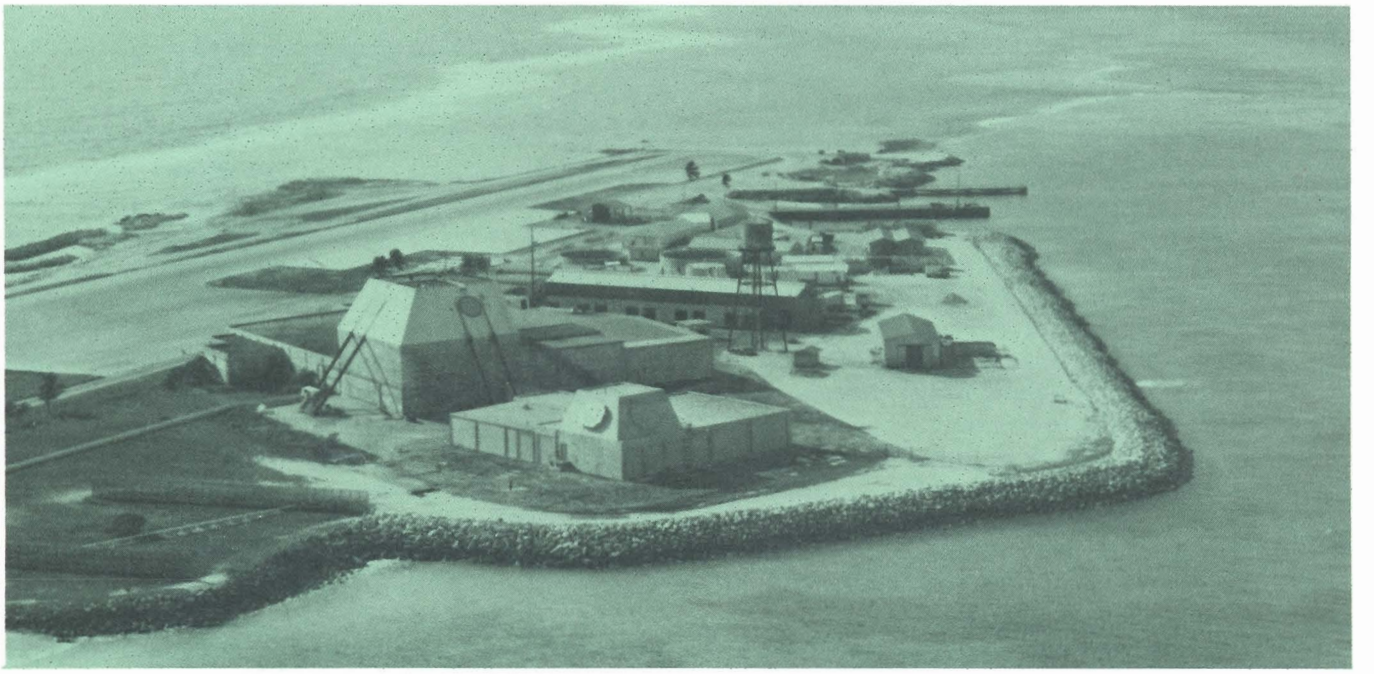
The Systems Technology Test Facility at Kwajalein Missile Range successfully detected and tracked a specially designed ICBM-type target from the time it came within range until it splashed down into the lagoon of Kwajalein Atoll. The target was launched by a Minuteman I booster fired from Vandenberg Air Force Base, California, 5,000 miles away. The test facility consists of a radar and its integrated data processor and enabling software, all housed in the radar building on Meck Island.

This mission marked the end of the Ballistic Missile Defense (BMD) Systems Command's Terminal Defense Validation effort to prove technology related to ICBM defense during the final or "terminal" portion of an ICBM's flight (roughly the last 60 seconds, from about 300,000 feet to impact). It was the 48th in a series of tests that began 3½ years ago. During this time, the test facility experienced a high success rate.

BMD officials are confident that the test program surpassed its objectives. Major General Grayson D. Tate, Jr., the BMD Program Manager, said that the testing "has proven beyond reasonable doubt that we have the technology to build radar and data processing subsystems for an effective terminal defense system capable of countering ICBM warheads even under the most stressing conditions."

Army officials now consider terminal defense technology to be "on the shelf" for future defense of United States strategic ICBM forces. The technology proven during this program also provides a strong basis for possible follow-on defense systems. For example, the Army is proceeding with a preprototype demonstration of technology for a new low-altitude defense system called LoAD. Although it is much smaller and designed to operate at less than 50,000 feet, according to General Tate, "LoAD technology owes much to the Terminal Defense Validation."

The Systems Technology Test Facility is operated by McDonnell Douglas Astronautics Company, the system contractor for the BMD Systems Technology Program.



The Systems Technology Test Facility (foreground) located at Kwajalein Missile Range. The test facility was built by the Ballistic Missile Defense Systems Command to validate technology needed to counter an enemy intercontinental ballistic missile attack. It is considerably smaller, yet more sophisticated, than the earlier SAFEGUARD radar test facility.

COMBINED ARMS CORNER

NATICK TESTS NEW CLOTHING SYSTEM

A new clothing system is being field tested for crewmembers of the new M1 Abrams tank and other ground combat vehicles. Designed by the US Army Natick Research and Development Command, Natick, Massachusetts, it offers protection from flame, shrapnel, and fragmentation, in addition to protection from the elements.

The new clothing system consists of the following items:

- A standard, two-piece set of cotton/wool long underwear for use in the winter and cotton underwear for the summer.
- A ballistic undergarment to protect the upper torso from fragments, small particles, and small caliber, low-velocity bullets.
- A coverall with a removable, two-piece insulated liner.
- A bib overall with insulated liner for added protection against the cold. It is sized for wear over the coverall.
- A jacket with liner.
- An improved helmet which provides for increased bump protection and a 100-percent increase in ballistic protection from fragments.
- Two pairs of boots — one for summer and an insulated version for winter. Both pairs provide toe protection, are designed to be put on quickly, and have a wedge-type heel for better traction on deck surfaces. When worn with the new vinyl overboot, better foot pedal dexterity is provided during winter operations.

- Two pairs of gloves (one summer, one winter) to protect the hands from flame. Thin cowhide leather covers the palms to help retain the wearer's ability to feel when operating the equipment. The winter gloves are insulated.
- A facemask and a hood that covers the head, neck, and shoulders to provide protection from wind and flame. The facemask also provides protection from fragmentation.

The close fit of all components reduces the possibility of snagging while in the vehicle. The uniform can be adjusted to temperature changes by adding or removing the coverall liners, bib overall, and jacket.

An extraction strap is located in the shoulder portion of the coveralls to assist in the removal of an injured crewman. This strap can also be reached through the jacket. Throughout the design process, protection of the individual and interchangeability of the system were stressed.

Except for the underwear and ballistic undergarment, all clothing components are made of Nomex fabrics which have outstanding resistance to flame. The added protection against battlefield threats will result in decreased injuries, which justifies the $1,200 cost to outfit each crewman.

Preliminary reports from test sites at Fort Knox, Kentucky; Fort Drum, New York; and US test troops in Germany indicate the system is meeting all expectations.

M113 NOISE REDUCTION

Research is underway to reduce the track noise of the M113 armored personnel carrier. The noise, produced by the tracks passing over the idler sprocket, the drive sprocket, and the road wheels, can lead to a loss of hearing. It also hampers intercrew communications and makes the vehicle easier to detect by enemy forces.

Initial efforts were concentrated on the idler sprocket, the greatest source of noise. An experimental idler fitted with rubber pads to absorb vibrations reduced the noise generated by the track and idler interaction by 75 percent.

Further efforts to reduce track noise are being directed at the drive sprocket, the second greatest offender. Application of the concept to heavier tracked vehicles, such as tanks, will also be studied.

NIGHT PROWLER

During recent field exercises at Fort Polk, Louisiana, the US Army AH-1S Cobra attack helicopter tested its night vision in simulated combat for the first time. The helicopter's telescopic sight (part of the airborne TOW missile system) was augmented with a forward-looking infrared (FLIR) receiver to provide night vision. While flying missions for the 101st Airborne Division during the exercises, the Cobra effectively monitored the position of opposing armored forces as they maneuvered under the cover of darkness. In one night operation, the copilot/gunner directed friendly forces during an attack that enveloped a large element of the opposition.

The augmented sight, called the FLIR augmented Cobra TOW sight (FACTS), is mounted on the helicopter's chin. It enables the gunner to "see" through darkness, smoke, or haze to accurately fire TOW antitank missiles, rockets, and cannon. The FACTS is produced by Hughes Aircraft under contract to the US Army Night Vision and Electro-Optics Laboratories.

The FACTS system represents a quantum jump in capability for the Army's Cobra helicopter, enabling it to provide around-the-clock combat support.

UK BRIDGE ERECTION BOATS

The United Kingdom combat support boat has been adopted by the US Army for bridge erection operations following 10 months of testing and evaluation. Selected on the basis of its compatibility with the US ribbon bridge, the diesel-powered, aluminum craft is shown in the photograph pushing an interior bay of the ribbon bridge into position. It features a shallow draft, only 22 inches compared to 41 inches for the current US standard 27-foot bridge erection boat it will eventually replace. It is 27-feet long and has a top speed of 25 mph. Like the US model, it can be carried and launched by the ribbon bridge transporter fitted with a cradle. The United Kingdom boat will be delivered to US Army units beginning in November 1981.

XM249 SELECTED

The Department of the Army announced that it has selected one of the four candidate squad automatic weapons to enter the next phase of development. This selection could lead to the purchase of thousands of such weapons in 1982-1983.

The XM249, a weapon submitted by Fabrique Nationale (FN) of Belgium, was selected after a shoot-off competition with the three other candidate weapons. The selection of the XM249 means that a refinement of the FN system will continue for 12 to 15 months before any final procurement decision is made.

If the FN system is finally adopted, the Army plans to produce it in this country through a competitive bidding process.

CHINOOK MODERNIZATION

A $103 million contract has been awarded to the Boeing Vertol Company, Ridley Park, Pennsylvania, by the US Army Aviation Research and Development Command. The contract calls for immediate remanufacture of nine CH-47A model Chinook helicopters to the D model configuration. Initial deliveries are scheduled to begin in May 1982.

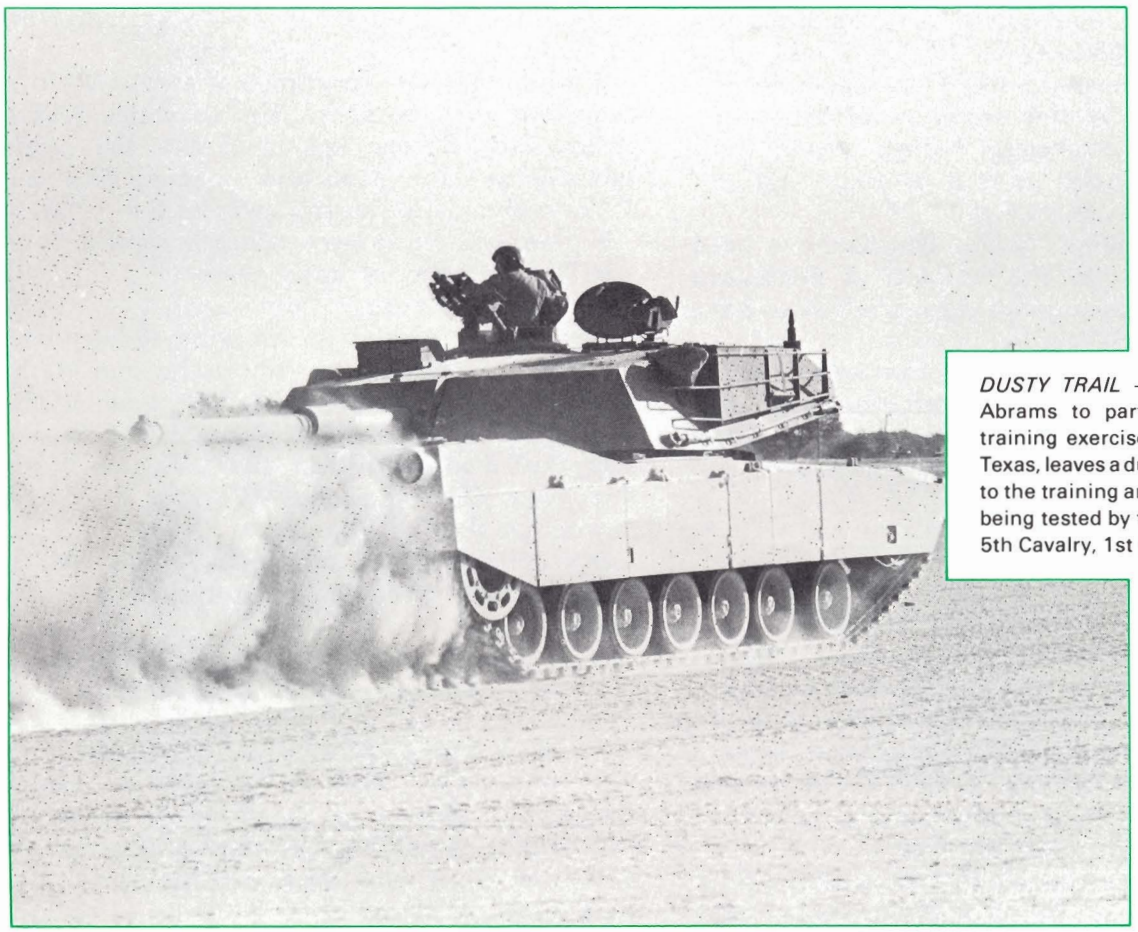
Current plans are for the remanufacture of 436 of the Army's existing fleet of A, B, and C model Chinooks to the new D model. Estimated cost over the next 10 to 12 years is $3.1 billion. The modernization program, which began in 1976, is designed to increase the flexibility of the current medium lift helicopter fleet by lowering the operating costs, extending the fleet's life, and increasing the Chinook's operating capabilities.

FLIGHT SIMULATORS DRAW PRAISE

Fort Bragg pilots are more than pleased with the results of the four flight simulators they use to sharpen their flying skills. Fort Bragg's aviation section installed the flight simulators in 1976, and since then more than 77,000 flying hours have been conducted on the simulators.

One major difference between operating a real helicopter and a simulator is cost. A 3-hour flight in a UH-1H helicopter costs $235 compared to $35 in a flight simulator. Operating since 1977, the simulators have saved more than $7 million at Fort Bragg alone.

Another advantage of the simulator is that it can operate in any weather condition, while the helicopter can only fly within certain weather limits. Thus, the flight simulators give more flying time for the pilots and better results for the Army.



DUSTY TRAIL — The first M1 Abrams to participate in field training exercises at Fort Hood, Texas, leaves a dusty trail en route to the training area. The M1s are being tested by the 2d Battalion, 5th Cavalry, 1st Cavalry Division.

BARS to STARS

OPMD UPDATE

PROMOTION BY SPECIALTY

Last fall, Secretary of the Army Clifford L. Alexander, Jr., announced approval of the new promotion by specialty system for early this year. The 1981 lieutenant colonel (AUS) and colonel (AUS) boards that met last March employed this new system in promoting officers managed by the Officer Personnel Management System (OPMS). Instruction to the boards contained the minimum number of promotions needed in each specialty to satisfy projected Army requirements.

Identified as a further refinement, the new system will provide required numbers of officers by grade and specialty in the Army and allow normal advancement in all OPMS specialties.

As approved by the Secretary of the Army, promotion by the specialty system is compatible with the recently passed Defense Officer Personnel Management Act.

Lieutenant colonel (AUS) boards have been given guidance on the number of lieutenant colonels needed in underalined specialties, as have the colonel (AUS) boards.

Promotion to major and lower ranks will not be initially included in this program, nor will Chaplain, Judge Advocate General, or Army Medical Department Branches for 1981.

PROMOTION CHANGES

The Chief of Staff, General Edward C. Meyer, announced plans for faster promotions to major, captain, and first lieutenant through adoption of a modified British regimental system. According to Meyer, the Army is going "to float the promotion point to first lieutenant, captain, and major so that we are able to fill some of our voids."

Normally, second lieutenants serve 2 years for a time-in-service (TIS) promotion point, first lieutenants serve 4 years and captains serve 11 years. As a result of the change, the TIS for advancement to captain is expected to be 3 years and 9 months, while promotion to major could drop to 10 years.

JUNIOR ROTC INSTRUCTOR OPENINGS

Officers (O1 through O6), warrant officers, and noncommissioned officers (E-6 through E-9) who are retiring within 1 year or who have retired within the last 5 years may qualify as instructors in the Army Junior ROTC Program.

The Junior ROTC Program is offered at 670 high schools in the continental United States, and in Puerto Rico, Europe, Guam, Alaska, the Virgin Islands, the Canal Zone, and American Samoa.

The prerequisites for employment are:

- Twenty or more years of active service.
- Not retired more than 5 years.
- A bachelor's degree (minimum).

Information about pay, working hours, and benefits is available by contacting one of the following ROTC region headquarters: ROTC Region One, Fort Bragg, NC 28307; ROTC Region Two, Fort Knox, KY 40121; ROTC Region Three, Fort Riley, KS 66442; or ROTC Region Four, Fort Lewis, WA 98433.

Other information about the Junior ROTC Program may be found in paragraph 6-15, AR 145-2.

PCS NOTIFICATION CHANGE

In accordance with a change in policy, assignment officers at the Military Personnel Center (MILPERCEN), Alexandria, Virginia, are now notifying the unit commanders and supervisors of future reassignments of officers

under their supervision. These commanders and supervisors are given the affected officer's name, social security number, reassignment location, and the MILPERCEN assignment officer's name and telephone number. The appropriate unit official then notifies the affected officer within 3 days, gives counseling regarding the reassignment, and passes along any other relevant information. This change affects all warrant officers and commissioned officers, through the grade of major, stationed in CONUS.

With this new policy, the Army hopes to strengthen unit cohesiveness.

CONCURRENT TRAVEL FOR CW4s

The Commander in Chief, US Army, Europe (CINCUSAREUR), has concurred in concurrent travel for CW4s assigned to Europe, effective as soon as procedures can be implemented. In the past, concurrent travel has been denied senior warrant officers based on the grounds that locations to which CW4s would eventually be assigned could not be determined in advance, making it impractical to designate appropriate quarters for them.

Lieutenant General Yerks, the DCSPER, has taken a personal interest in this issue and has written the major commanders requesting their consideration for this change in policy guaranteeing concurrent travel for CW4s. CINCUSAREUR has agreed to this policy change.

Concurrent travel for CW4s was identified by the Warrant Officers Association to the Chief of Staff of the Army as a major issue which, if approved, would recognize the contribution of senior warrant officers, minimize the family disruptions that normally occur during a PCS, and enhance retention of our most experienced and qualified warrant officers.

VETERANS PREFERENCE RULE CHANGED

In a policy change that became effective 1 October 1980, veterans preference for certain high-ranking military officer retirees has come to an end. Now, retired members of the armed forces who are not disabled veterans and who retired at or above the rank of major or lieutenant commander are no longer eligible for veterans preference in competitive examinations and appointments. However, disabled veterans and veterans who retired below the rank of major or lieutenant commander will continue to receive preference.

The decision to discontinue veterans preference for high-ranking, nondisabled veterans is based on the grounds that they are fully equipped to compete for Federal jobs on an equal footing with the civilian population.

This change is contained in the Civil Service Reform Act of 1978.

COMPANY COMMAND TOURS EXTENDED

Last summer, in an effort to provide unit cohesiveness and stability, command tours were extended for senior field grade officers from 18 to 30 months. Now company command tours have also been extended to 18 months. Previously, the normal tour was 12 months. The new policy will affect CONUS and long-tour areas only. Short-tour commands will not be changed.

Command tours for younger officers can be extended only a certain amount because of numerous demands placed on a developing officer. However, officials feel that the 18-month guideline will do much to satisfy the interests of both the unit and officer involved.

The 18-month command tours have one major exception — a clause allowing for either a 6-month tour extension or reduction when deemed necessary by senior commanders. Some of the factors affecting changes of tour length are:

- Availability of an officer to fill a command position.
- The officer's performance.
- Career development considerations.
- Stability of the unit.

The basic 36-month stabilization period in CONUS and in long-tour areas has not been changed; however, if a company-grade officer has not fulfilled his 18-month command assignment when his station requirement is up, the officer will stay to complete the command tour unless released by his commander.

— *Army Information Radio Service*

ENLISTED CAREER NEWS

SQT CHANGES OUTLINED

Most of the changes announced last year concerning the skill qualification test (SQT) program will begin to affect all soldiers scheduled for testing during FY 81, according to a DA training official.

One of the major changes calls for the annual testing of soldiers in their primary MOS once their SQT dates are set.

Test forms of E-4s and below are sent to the US Army Training Support Center (USATSC), Fort Eustis, Virginia, which scores the tests and prepares the individual soldier's report (ISR). The ISR is then returned to the soldier's unit. A copy of the ISR is kept in the soldier's field file (military personnel records jacket) for use when the soldier competes for promotion to grade E-5. The ISR is not placed in the soldier's official file (official military personnel file) kept at Fort Benjamin Harrison, Indiana.

Test forms of E-5s and above are also sent to USATSC for scoring and preparation of ISRs. In addition, the US Army Enlisted Records Evaluation Center (USAEREC) at Fort Benjamin Harrison gets the scores so that a USAEREC Form 10A can be prepared. These soldiers will continue to receive the ISR and the USAEREC Form 10A which will give the SQT result, the soldier's percentile ranking, and the senior enlisted evaluation report score. Other SQT changes announced in 1979 but which start during the FY 81 testing period include:

- A shorter skill component (SC), previously called the written component. The SC test portion for combat arms soldiers will be 1 hour long, while all other soldiers will have 2-hour tests.
- An improved SC section of the SQT which uses more charts, diagrams, and visual aids for the soldier's use.
- More emphasis on performance using the job-site component, previously referred to as the performance certification component. The SQT job-site component section is like the hands-on component, but does not require the setting up of a formal test site or special training for scorers. It is given to the soldier by the immediate supervisor.

Another change is that soldiers will now be tested at their present skill level only. There will be no questions based on the next higher skill level.

Although E-8s and E-9s have SQT numbering systems assigned, no tests have been fielded for those grades yet.

Results obtained from the SQT program are used by the Army to link training and personnel management decisions affecting soldier's careers.

PROMOTION CERTIFICATES

New Certificates of Promotion are being presented to soldiers promoted in grades E-4 through E-9. The certificates are designed to give added emphasis to promotions and aid the Army's effort to build cohesive and stable units under effective leadership. They spell out to the promoted soldier the importance of carrying out his official duties as one of the Army's enlisted leaders.

Local military personnel offices will prepare the certificates and forward them to the promotion authority for signature and a suitable presentation.

ENLISTMENT/REENLISTMENT BENEFITS

On 1 October 1980 several changes went into effect concerning enlistment and reenlistment benefits.

■ Enlisted soldiers with between 10 and 14 years of service are now receiving reenlistment bonuses if they fall into shortage specialties (Zone C bonus). The reup bonuses have been raised from $15,000 to $20,000.

■ Enlisted personnel in the four lowest pay ranks are eligible for a $30 monthly family separation allowance.

■ Soldiers who enlist or reup during FY 81 will benefit from the Educational Assistance Program — worth up to $1,200 yearly for college-level schooling. The rule of thumb is 1 year of assistance money for each year served, up to 4 years. This program is only a test program for 1 year, and is in addition to existing programs. The soldier may also take lump sum payments at 60 percent of the assistance rates or receive assistance payments as he attends school. A $300 per month subsistence allowance for students is also available.

SOLDIER INSURANCE COVERAGE LIMITED

The Army's Adjutant General's Office reminds soldiers that, by law, they can carry only a total of $20,000 insurance coverage in the Servicemen's Group Life Insurance (SGLI) and Veterans Group Life Insurance (VGLI) programs. It seems that some soldiers who reenter the service retain their VGLI coverage while also getting automatic SGLI for a combined amount exceeding $20,000.

Even though a soldier may be eligible for both programs at the same time, he must choose to be covered by one program for the full amount or he must split his coverage between the two programs in amounts that do not exceed a total of $20,000. Adjutant General officials caution soldiers to consider carefully the premium amounts and the length of coverage time before deciding.

Soldiers who came on active duty prior to 1955 and are covered by the National Service Life Insurance (NSLI) are not affected by the $20,000 coverage limit.

E-7 ZONE

The three top enlisted grades had fewer promotions during October 1980, a reflection of those spaces being near authorized strength for each grade.

The 1981 E-7 zone of consideration will be one of the largest in the history of the 10-year-old centralized system. About 11,750 of a record 42,500 eligible soldiers to be considered will be promoted. The primary zone includes E-6s whose date of rank (DOR) is 30 November 1977 and earlier. In the secondary zone, E-6s with a DOR between 1 December 1977 and 31 January 1979 will be considered.

Promotions should start in May or June 1981.

FIRST SERGEANT COURSE

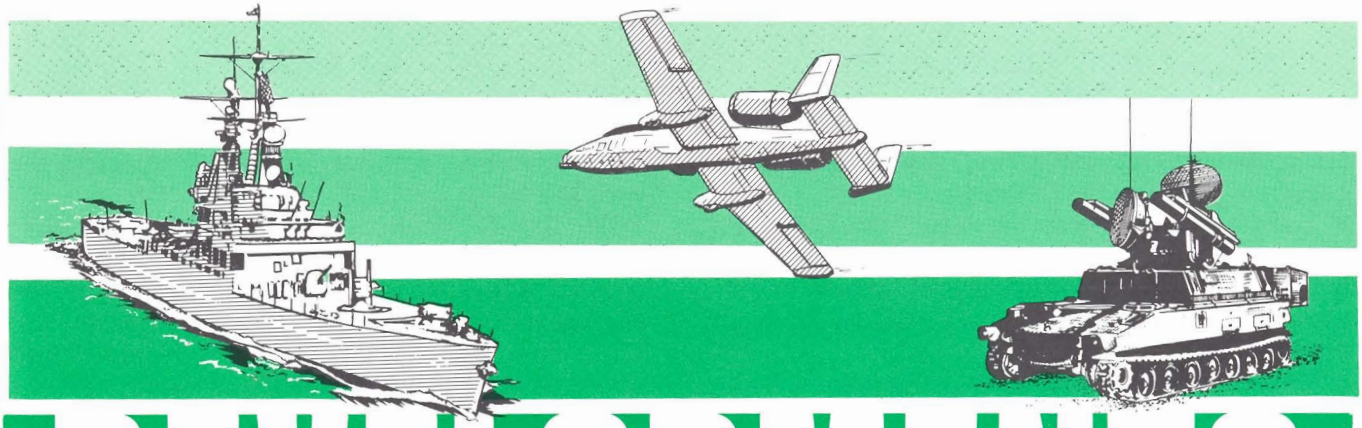
Although the development of a 1SG Course has been held back for years because of shortages of funds, it has always been given a high priority in the enlisted personnel management system. Now the 1SG Course will become a reality.

Approximately 30 students will attend a test version of the course at Fort Bliss, Texas, in April or May to validate the program of instruction being developed. After all the feedback is considered, the first formal 5- to 8-week 1SG class will get underway in October. There will be five classes each year with a total of 300 students attending. These classes will continue until 1985, when an expansion is planned. Although the selection policy is still being developed, it is expected that prospective students will be 1SG designees in the grades of E-7 and E-8 or incumbent 1SGs with less than 12 months on the job.

Pentagon training officials say that the program will be a branch immaterial course, giving senior NCOs general instruction about the duties and responsibilities expected of them as first sergeants.

— Army Information Radio Service

If you are an E-6 or above within 1 year of retiring or are recently retired, this issue's Bars to Stars has an item that may interest you. See Junior ROTC Instructor Openings.



DEVELOPMENTS

SMART WEAPONS

The smart weapons of tomorrow will rely on sophisticated algorithms (sets of mathematical formulas) to pick out their own targets and aim for the most vulnerable spots. One such weapon is the Wasp antiarmor missile being developed for the US Air Force.

These new weapons incorporate densely packaged electronic components and new, low-cost, compact signal processors. The automatic target selection function frees the pilot from time-consuming detection tasks and thereby increases delivery rates. The "fire and forget" capability reduces the need for close approaches to the target, thus decreasing pilot exposure to increasingly lethal enemy defenses.

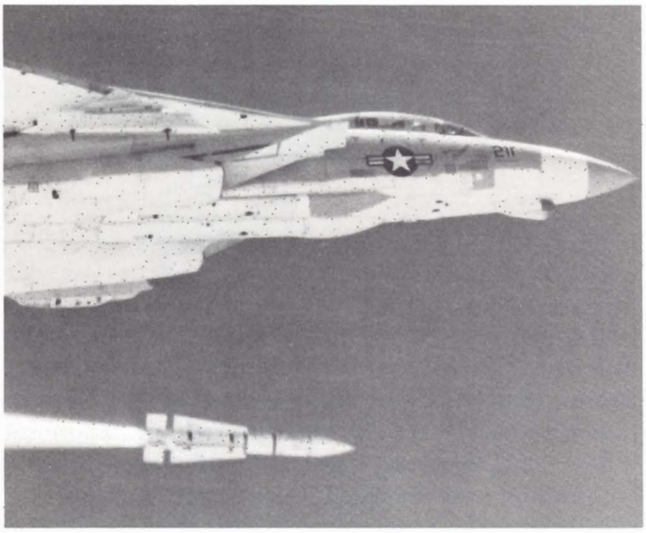
AIR CONTROLLING

US Air Force forward air controllers demonstrate a laser target designator (LTD), a device that enables them to pinpoint targets for aircraft or laser-guided weapons, during tests at Fort Carson, Colorado. The Air Force is conducting a follow-on test and evaluation of the LTD at several military installations. The devices are being used to "hand-off" targets to A-10 and A-7 aircraft equipped with Pave Penny laser spot trackers. The LTD can designate a target more than 6 km away for "hand-off" to a Pave-Penny-equipped aircraft flying more than 20 km from the target. The tests are being conducted with several of the first production LTDs recently delivered by Hughes Aircraft Company under contracts with the US Army Missile Command. These tests, including tactics and doctrine exercises, have been successfully completed for Pave-Penny-equipped A-10s.

Laser Target Designator

THREE FOR THREE

An engineering development model of the improved AIM-54C Phoenix missile is fired from a Navy F-14 at the Pacific Missile Range. The missile, the third to be launched, set a perfect three-for-three score by continuing the string of successful firings in the test program, passing well within the lethal distance of the drone target. The contractor is upgrading the long-range, air-to-air defense missile under contract with the Naval Air Systems Command.



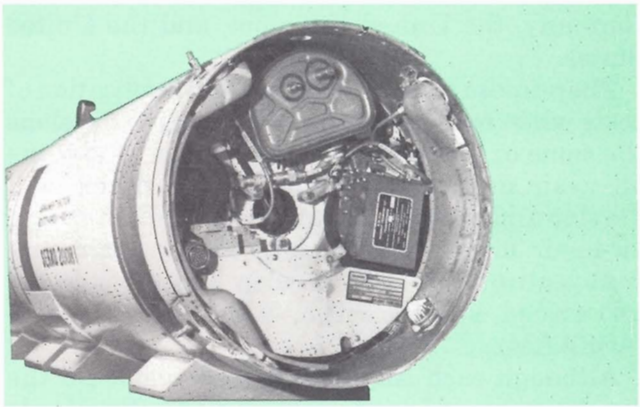
NAVY/MARINE AIRCRAFT RADAR

The radar system designed for the US Navy and Marine Corps F/A-18 (Hornet) aircraft has passed an intense 100.5-flight-hour reliability demonstration without a single failure. The AN/APG-65 radar, developed and built by Hughes Aircraft Company's Radar Systems Group under contract to McDonnell Douglas Corporation, was tested during the F/A-18's recent 2-week, 50-flight reliability demonstration at the Naval Air Test Center, Patuxent River, Maryland. The radar's reliability performance during the tests showed that the company is well on the way toward achieving its production guarantee of 106 hours mean-time-between-failures for the radar.

The Navy reported that the tests demonstrated that the Hornet's overall reliability rate is more than three times that of the two combat aircraft it is scheduled to replace. The Navy and Marines plan to replace F-4 Phantom fighters and A-7 Corsair II light attack aircraft with the Hornet. The F/A-18 also has been ordered for the Canadian Forces Air Command and is being evaluated by other Allies of the United States.

PIGGYBACK MONITOR

The US Navy can now obtain vital missile system performance data during operational readiness exercise launches of AIM-54A Phoenix missiles with a miniaturized telemetry unit. The new unit weighs 12 pounds and occupies only 460 of the 24,000 cubic inches in the 1,000-pound missile. It fits into a small, unused area in the warhead section inside the radar-guided missile, enabling the Navy to obtain telemetry data from launched Phoenix missiles under realistic combat situations. Because of its size, the previous Phoenix telemetry unit had to be fitted in place of the warhead, along with sufficient ballast to equal the weight of the warhead. The new unit is supplied in kit form to enable easy installation and use at any Navy facility equipped with necessary telemetry receiving equipment. The kit is being modified for the improved AIM-54C Phoenix missile currently in development. The Phoenix is the primary long-range, air-to-air armament of the Navy's F-14 Tomcat fighter.



NEW MARINE CORPS WEAPON

The Marine Corps is seriously considering procurement of the MK19 40-mm machinegun developed by the Naval Ordnance Station in Louisville, Kentucky. Demonstrated recently in Quantico, Virginia, the new vehicle/ground-mounted weapon fires a stream of 40-mm rounds at high velocity and is considered very effective against light armored vehicles. It can also be used to breach walls or engage dismounted infantry and similar targets. A tentative plan calls for putting 12 of the new weapons in each infantry battalion — 8 per weapons company and 4 per headquarters and service company. Such an allocation would greatly increase the firepower of the battalion. If the plan is approved, it is estimated that the weapons could be operational in the Fleet Marine Force by late 1983.

INTELLIGENCEWATCH

MISSILE DEVELOPMENT CONTROL

A memorandum of understanding (MOU) for the development and production of air-to-air missiles was signed recently by the Federal Republic of Germany, the United Kingdom, and the United States.

The purpose of an MOU is to avoid duplication of costs when more than one Allied nation develops the same or a similar weapon system. Under the air-to-air missile MOU, the United States will develop and produce the advanced medium-range, air-to-air missile (AMRAAM) and the agreeing European nations will develop and produce the advanced short-range, air-to-air missile (ASRAAM).

Although each Ally will be responsible for the development and production of a specific missile system, the countries on both sides of the Atlantic will eventually produce both systems. Developing contractors will license coproduction rights to their counterparts overseas. In other words, the US AMRAAM contractor will license European firms to produce the AMRAAM and the European ASRAAM contractor will do the same in the US.

The MOU is part of the family of weapons concept. It is a program designed to achieve international defense cooperation among the Allied nations. It offers many advantages. Estimated savings to the US alone from elimination of duplicative development costs are at least $200 million. In addition, the standardization of air-to-air missiles will facilitate cross-servicing of armaments within the European theater, enhancing interoperability and reducing logistics costs.

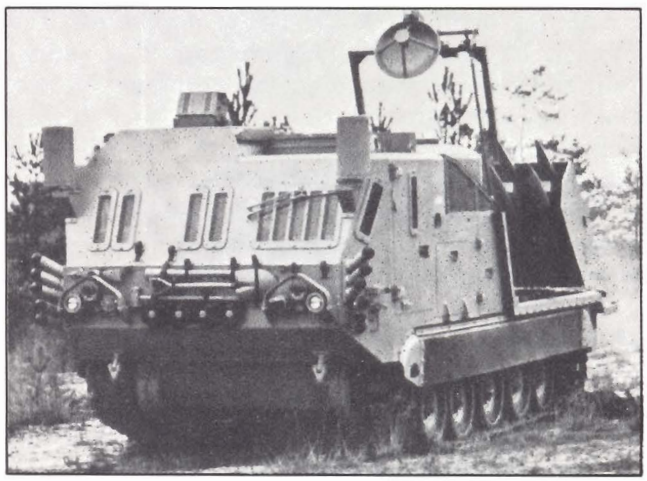
Other weapon systems are being considered for this family of weapons concept.

FULLY ARMORED RAPIER SYSTEM

Currently, the British Army does not have a fully armored antiaircraft vehicle. To fill this void, it is considering an armored version of the Rapier missile system to be used against low-flying threat aircraft. This adaptation of the Rapier missile system would be relatively inexpensive when compared to the cost of developing a completely new armored antiaircraft weapon.

The British Army uses the unarmored Rapier system on a two-wheeled trailer pulled by a ¾-ton Land Rover. Each Rapier launcher has a pulse doppler acquisition radar, an IFF, and a computer. At night and in poor weather conditions a target tracking radar is used instead of the optical sight.

The prototype of the fully armored Rapier system is based on the US M113 armored personnel carrier. The crew compartment and the launcher are armor protected. For flexibility and ease of maintenance, the missile unit is in pallet form and can be removed from the vehicle. A crew



of five is required for fair-weather engagements and seven for all-weather conditions.

The tracking radar is independent from the launch vehicle and is also based on the US M113 vehicle.

— *Soldat Und Technik*

NEW ECCM POD

The Italian Air Force has received a new electronic counter-countermeasure (ECCM) pod through Aermacchi, an Italian aircraft manufacturer. The new device will improve the effectiveness of the Aermacchi M.B.339 basic and advanced trainer/ground attack aircraft. Pilots of this aircraft will also receive cost effective training in the use of ECCM techniques.

The ECCM pod has two modes. In the automatic mode, the device's forward- and rear-looking antennas recognize and identify hostile radar signals. The pilot gets appropriate indications, and a jamming signal is automatically selected and radiated. In the manual mode, the pilot gets the same indications, but he manually sets the countermeasures.

Power to operate the pod is generated from the aircraft's turbine generator.

— *Soldat Und Technik*

JAPAN EXTENDS SERVICE LIFE OF F-14EJ

With the price tag of fighter aircraft rising substantially each year, Japan's Air Self Defense Force has decided on a plan to save $4 billion in aircraft replacement costs while continuing to meet the air threat of the future. It is a plan to extend the service life of 140 McDonnell Douglas/Mitsubishi F-14EJ aircraft through the year 2000.

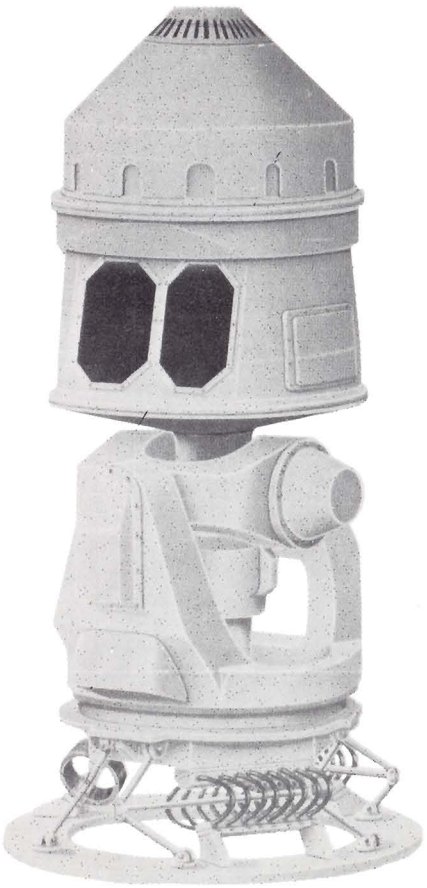
An initial budget request of $3.2 million for FY 81 will allow Japan to begin the alterations. The plan calls for the retrofit of radar fire control with look-down capability, the installation of new leading edge slats for improved maneuverability, and the possible use of the improved AIM-7F Sparrow missile.

Presently, the F-14EJ has a 3,000-hour service life. By equipping one in six aircraft with sensors to measure dynamic loads and by reinforcing as necessary, that service life is expected to be extended to 5,000 hours.

IRSCAN

An infrared scanner called IRSCAN has been introduced in the Netherlands. It operates on the thermal-imaging principle that enables fully passive operation. The advantages of this principle are that it allows both day and night operation, is undetectable, and is less vulnerable to electronic countermeasures.

IRSCAN works in various wavelengths to permit operation in a wide variety of atmospheric conditions. Special filtering and correlation techniques give the system a highly reliable and accurate target detection and tracking performance. Automatically tracked targets can be designated to other systems for 3-dimensional tracking and data handling.



The main features of IRSCAN are:

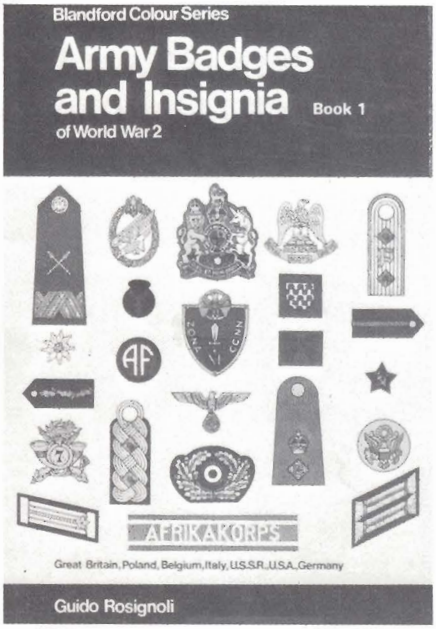
- Omnidirectional surveillance up to 40° elevation.
- Automatic target detection and tracking.
- Dual wavelength capability.
- Selectable scan patterns.
- Lightweight and compact.
- Roll and pitch stabilized.

The system will undergo extensive testing with the Royal Netherlands Navy.

— *Signaal Flash*

Treasures of Information

ARMY BADGES AND INSIGNIA
Of World War 2,
by Guido Rosignoli.
Blandford Color Series, Sterling Publishing Company, Inc., Two Park Avenue, New York, 1979. 228 pages, $8.95.



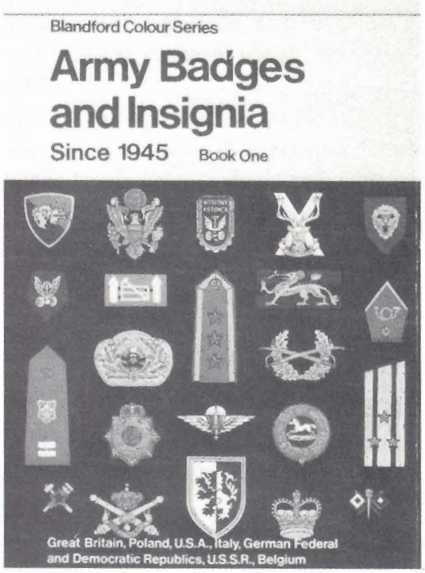
The flood of publications in recent years about military uniforms and weapons of all the great wars indicates there is a growing interest in the military. World War II is a particularly popular subject. Therefore, it is fitting that *Army Badges and Insignia of World War 2* has been published. This full color book depicts for the first time the fabulous array of badges of some of the principal armies that fought in World War II.

More than 2,000 badges and insignia are included in this volume: the cap badges of the historic regiments of world renown in the campaigns; the flashes of the Fascist militia; and the rank badges of the Italian, Belgian, and Polish armies as they were in 1939 before Germany invaded. Principal units from the United States are also given comprehensive coverage. But perhaps the most interesting feature of this book is the section on badges, ranks, and insignia of the land forces of the USSR. It is the first coverage of its kind in the English language.

The author was born in a border town in northeast Italy. As World War II ended, Mr. Rosignoli was just old enough to witness the devastation and consequences of the conflict. Even after the war concluded, border disputes were commonplace, with tanks thundering through the streets near his home. Incredibly, it was out of the fighting and destruction that Mr. Rosignoli developed his intense interest in military badges. He still collects them. They are a reminder to him of those who suffered and died for their countries.

Army Badges and Insignia of World War 2 includes historical introductions to the Army of each country dealt with. The text is detailed; the illustrations meticulous. It is a useful book to military enthusiasts everywhere.

ARMY BADGES AND INSIGNIA
Since 1945,
by Guido Rosignoli.
Blandford Color Series, Sterling Publishing Company, Inc., Two Park Avenue, New York, 1979. 218 pages, $8.95.



Army Badges and Insignia Since 1945 is a companion volume to *Army Badges of World War 2*. It covers the armies of Great Britain, Poland, the United States of America, Italy, the German Federal and Democratic Republics, the USSR, and Belgium, in the period from 1945 to the present. It presents a similarly unique assemblage of badges and insignia — more than 2,000 of them, nearly all illustrated in full color.

The meticulously accurate drawings are the product of painstaking research with embassies and in private collections. The accompanying text adds to the information contained in the illustrations, gives notes on how the badges and insignia were worn, and relates the military history of the armies whose badges are depicted.

It will be an invaluable reference book for the constantly increasing number of people interested in military history, military uniforms, and war-gaming.

Battle in Belgium

BATTLE OF THE BULGE, 1944,
by Napier Crookenden.
Charles Scribner's Sons, New York, 1980. 158 pages, $17.50.

If a picture tells a thousand words, then Lieutenant General Sir Napier Crookenden's picture-laden book has volumes to say. This retired British Army officer, a veteran of World War II, has combined a wealth of vivid photographs with accurate, detailed descriptions to produce an authoritative account of the last major German counteroffensive of World War II.

Sir Crookenden has spiced his text with interesting biographical material. He describes the Sixth SS Panzer Army Commander, Sepp Dietrich, in this way: ". . .(Dietrich) had marched with Hitler in the original Nazi putsch of 1923 and before that had been a sergeant in World War I. . .He had fought in Greece, Russia, and Normandy; was a brave and tenacious leader at division and corps levels; and had wide experience with tanks in battle. His Sixth SS Panzer Army was now given the priority on the right flank in Hitler's grandiose plans. . ."

Besides describing key Allied and German leaders, the author provides background information on the weapons involved. The tactical aspect of employing the weapons is also given proper attention. Air defenders will appreciate the fact that Sir Crookenden has not forgotten their specialized weaponry. The author notes, "Both sides used much the same antiaircraft guns — 88-mm and 90-mm heavy antiaircraft guns, 40-mm Bofors and 20-mm Oerlikons, but only the Americans were equipped with the Quad .50s."

German and Allied strategists and troop movements are gradually unveiled as the story develops. The author has provided situation maps to help the reader along. Skirmishes are described in detail, including poignant accounts of the massacre of Allied troops and innocent civilians by ruthless German officers and soldiers. The author has extended these accounts to cover the Dachau trials and, in the case of SS LTC Jochen Peiper, to his eventual assassination.

Sir Crookenden has done a masterful job of conveying the feeling and atmosphere of the historic Belgian battleground of December 1944 and January 1945. He has gone to great lengths to select photographs and illustrations that adequately capture the mood and sentiment of this period. The careful research and individual soldier experiences make the book interesting and authentic. Sir Crookenden's work is sure to bring back a few memories to European-experienced World War II veterans.

Legendary Westerner

PAT GARRETT,
by Leon C. Metz.
University of Oklahoma Press, 1980. 328 pages, $14.95.

The author, who is archivist of the University of Texas Library at El Paso, Texas, traveled extensively to interview Garrett's family and friends during exhaustive research on Garrett's life. The result is this book, which has a new interpretation of the man, including many rare and previously unpublished photographs of him and his associates.

Pat Garrett was more than just a famous western sheriff, more than the slayer of the legendary Billy the Kid. Although on occasion his gun was for hire and he was sometimes known to protect special interests, more often than not Pat Garrett reflected the good, honest, and honorable qualities that went to make up the lawman of the Old West.

Garrett is best remembered for his successful efforts to end the career of Billy; but, as Metz amply demonstrates, Garrett's career by no means ended on that hot evening in July 1881, at Fort Sumner, New Mexico. Within days Garrett had established a reputation as an implacable foe of western criminals, a reputation that was to follow (and sometimes haunt) him for the rest of his life. He was an important figure in the frontier politics of Texas and New Mexico, and he rubbed shoulders with the great and the near great of the region.

Through this story of Patrick Floyd Jarvis Garrett, the panorama of the Southwest unfolds; its dreams, courage, explorations, mistakes, violence, conquests, and, ultimately, its emergence as a settled society. No other character in southwestern history is more closely identified with the land and the people of America's last frontier. And few stories about characters of the Old West are as skillfully and interestingly woven as this one.

Flying Marines

HISTORY OF MARINE CORPS AVIATION IN WORLD WAR II,
by Robert Sherrod.
Presidio Press, San Rafael, California, 1980. 496 pages, $16.95.

Originally published in 1952 by the Association of the United States Army, *History of Marine Corps Aviation in World War II* was reprinted in 1980. Additions to the original text include a foreword by current US Marine Corps Commandant General Robert H. Barrow, supplements on corrections to the original text, and a detailed supplement on what happened to Marine Corps aces after World War II.

After an introductory look at the prewar development and growth of Marine aviation, Robert Sherrod provides an in-depth look into Marine aviation and its growth during the second World War. From the first disastrous blow upon Pearl Harbor and the Marine Air Station at Ewa, Hawaii, to the end of the Pacific campaign, Mr. Sherrod's detailed analysis of each battle stands out dramatically. The war in the Pacific is shown to be a highly

contested battle where victory and defeat are determined by quirks of fate and heroic actions, and where seemingly insignificant decisions become paramount.

The two perspectives of battle, Japanese and American, are considered, and Mr. Sherrod is straightforward in his analyses of both claims and actual losses. In any war, claims often exceed actual damage inflicted. The author spent considerable time in researching United States and Japanese war records, plus conducting personal interviews with many of the participants of the engagements to insure that an accurate picture is given.

The book is a chronological study of Marine aviation development and employment throughout the Pacific campaign. The development of close air support for ground forces, initially employed on New Georgia, gave insight into the complex coordination required between air and ground forces to provide effective support. This coordination requirement eventually led to the use of colored smoke for target marking and the development of better air/ground radios. Aviation personnel in the air liaison teams with ground units were predecessors of today's forward air control/tactical air control teams.

Though the book is meticulous, and in some spots technical, it provides an excellent description of combat operations and lessons learned. For the reader seeking detailed answers to difficult questions, Robert Sherrod's book is an excellent source of information —problems and solutions are clearly presented. In addition to the outstanding narrative on the history of Marine aviation during the war, he provides a glimpse of some of the harsher aspects of war and the manner in which some men, good and bad, handle the pressures of combat.

The book contains pages of photographs and numerous illustrations and graphs. Nine appendices provide additional information concerning other related areas such as combat losses, unit histories, and unit awards.

This book is highly recommended for serious readers and career military personnel seeking more than a superficial history of combat operations in the Pacific campaign of World War II.

CPT J.E. RYAN, USMC

ADDITIONAL SELECTIONS:

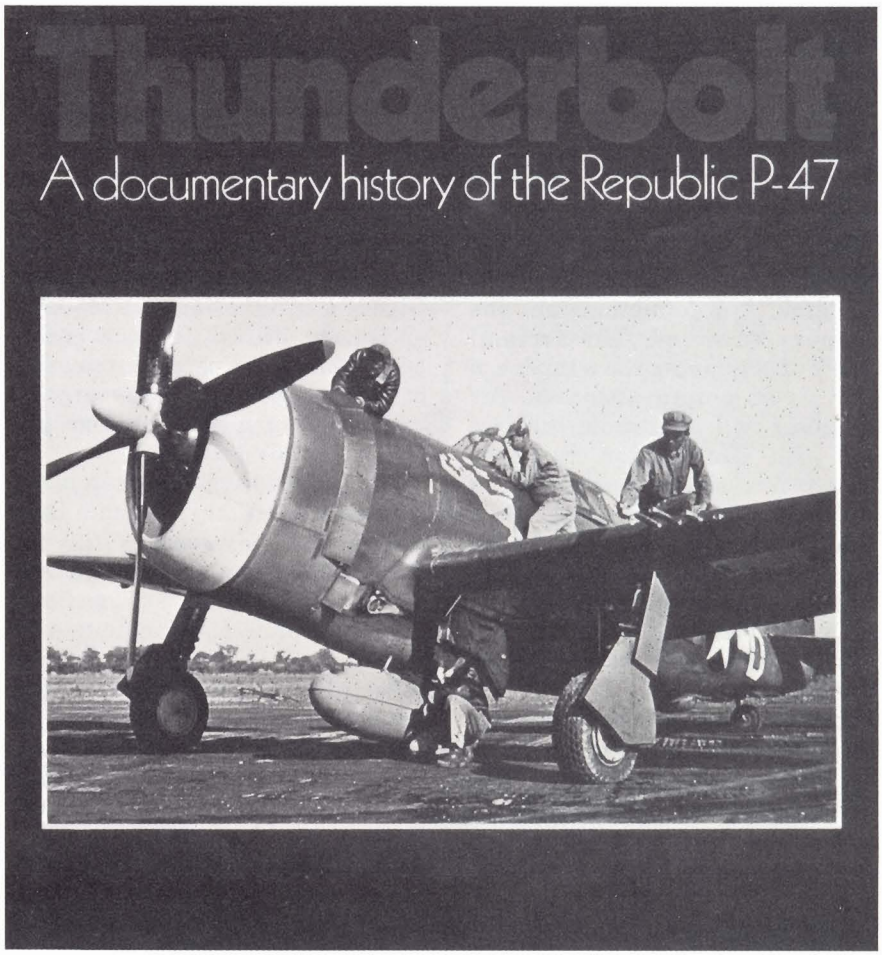
Listed below are brief descriptions of three books with special appeal to those interested in military weaponry.

THUNDERBOLT — A Documentary History of the Republic P-47, by Roger Freeman.
Charles Scribner's Sons, New York, 1980. 151 pages, $14.95.

One of the most famous single-seat warplanes of World War II, built in larger numbers than any other American fighter, the Republic P-47 was the heaviest single-engine fighter to reach large-scale service. That the two top US fighter pilots of the war in Europe flew Thunderbolts bears testimony to its success in combat.

This book tells the technical and dramatic story of the Thunderbolt, explaining its development, tactical employment as an escort fighter, and its adaptation to the role in which it excelled — ground attack. In addition to the narrative history, the book includes details of service use by Allied air forces, accounts by pilots who flew these fighters in different theaters of war, and technical data on all Thunderbolt models.

Illustrated with more than 100 photographs, this book also features detailed plans of P-47s based on manufacturers' statistics and actual aircraft measurements.

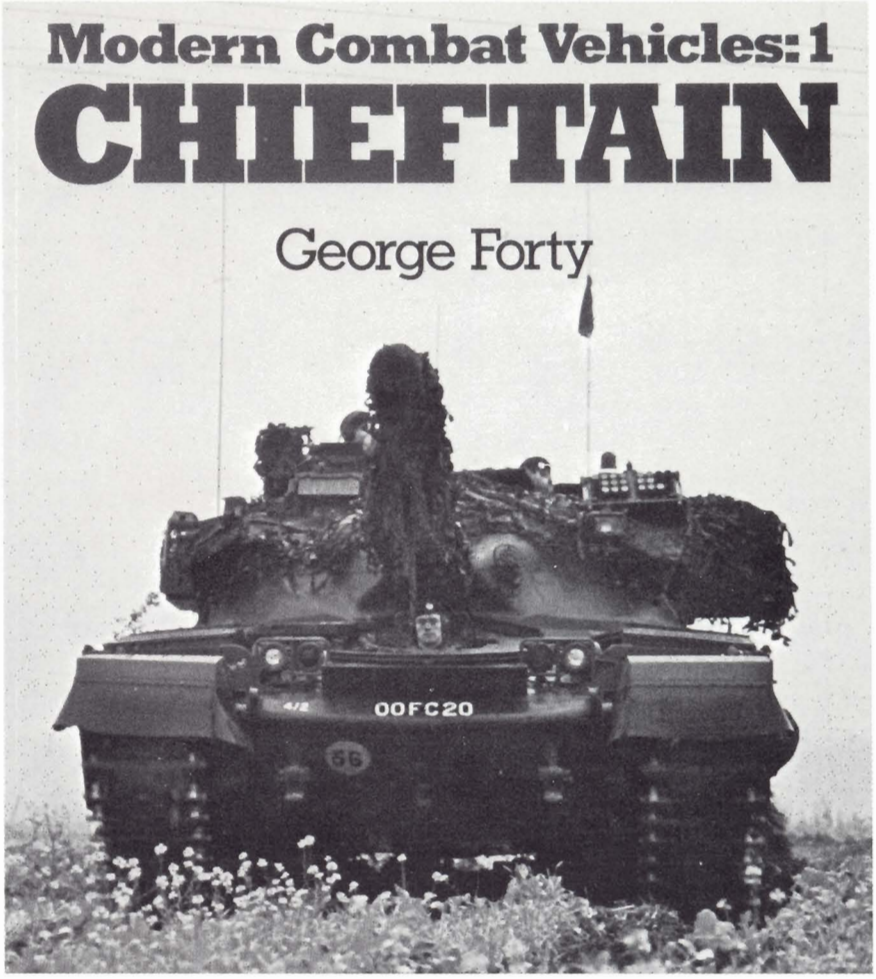


THE AVENGER AT WAR,
by Barrett Tillman.
Charles Scribner's Sons, New York, 1980. 128 pages, $17.50.

The Avenger was supremely adaptable — able to carry bombs, torpedoes, rockets, and depth charges, and able to function as a dive bomber, torpedo bomber, day bomber, night bomber, and even as an interceptor. It had a great range capability, and above all it was rugged (able to suffer damage and still get home). Avengers were found from Midway to Guadalcanal, Saigon to Tokyo, and Morocco to Normandy, and they helped destroy 60 Japanese warships.

The Avenger's greatest contribution was its role in defeating the U-boat wolfpacks. While other aircraft played prominent parts in the antisubmarine campaigns, none of them flew with such a variety of purpose — detecting, stalking, and killing U-boats day and night — as did the Avenger.

Avenger at War portrays this adaptable aircraft in all its guises and under all its flags with more than 150 action photographs and a wealth of personal experiences and eyewitness accounts of Avenger fighting.



Avengers in flight formation.

CHIEFTAIN,
by George Forty.
Charles Scribner's Sons, New York, 1980. 128 pages, $14.95.

George Forty closely examines the conceptual basis for the Chieftain, with a penetrating analysis of its evolution and development. He includes an informative account of design research studies and traces the Chieftain's service from its introduction 10 years ago to the present.

With detailed sections on the basic components — armament, armor, and engine — and with sections on variants and training programs, as well as more than 130 photographs (including 8 pages in full color) and numerous line drawings, *Chieftain* gives a complete picture of one of the foremost armored fighting vehicles in the world.

AIR DEFENSE
JULY - SEPTEMBER 1977
MAGAZINE
ROKAADCOM
UIJONGBU
SEOUL
SHI-HUNG-NI
OSAN
38TH ADA BDE
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PALGONG-SAN
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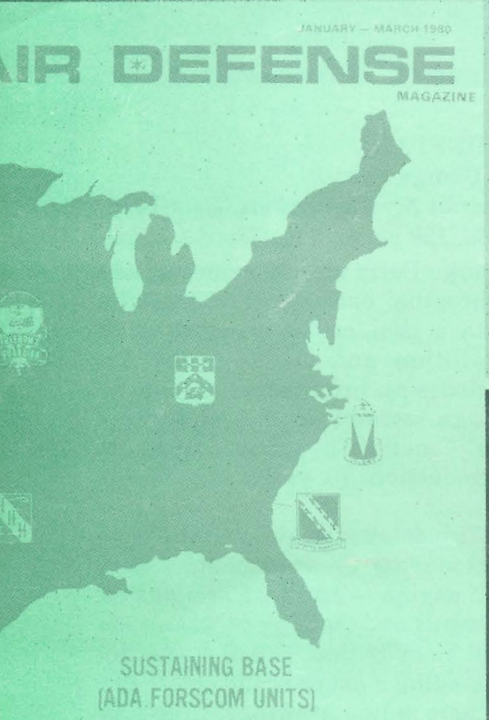
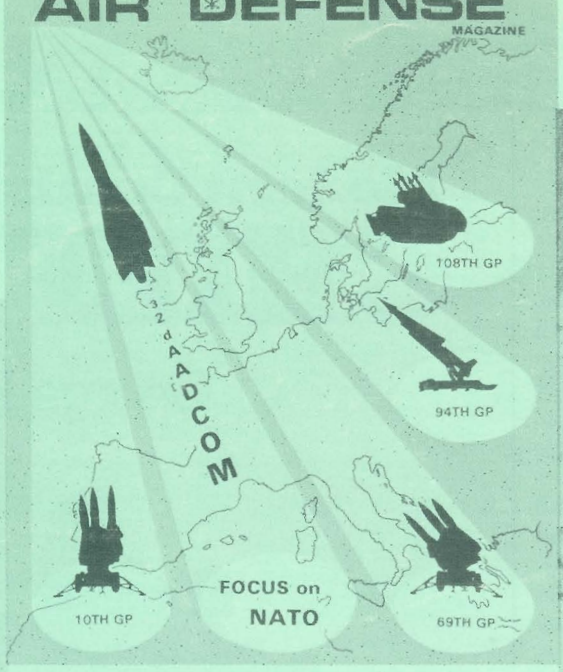

JANUARY — MARCH 1980
AIR DEFENSE
MAGAZINE
SUSTAINING BASE
(ADA FORSCOM UNITS)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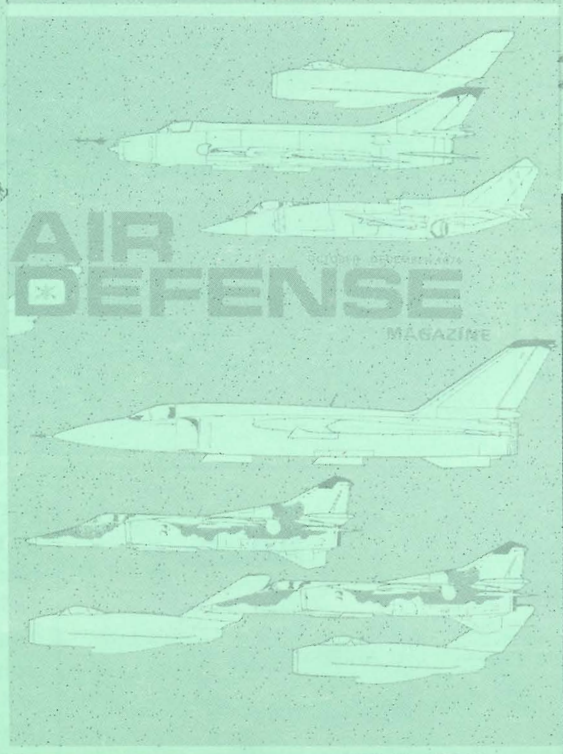
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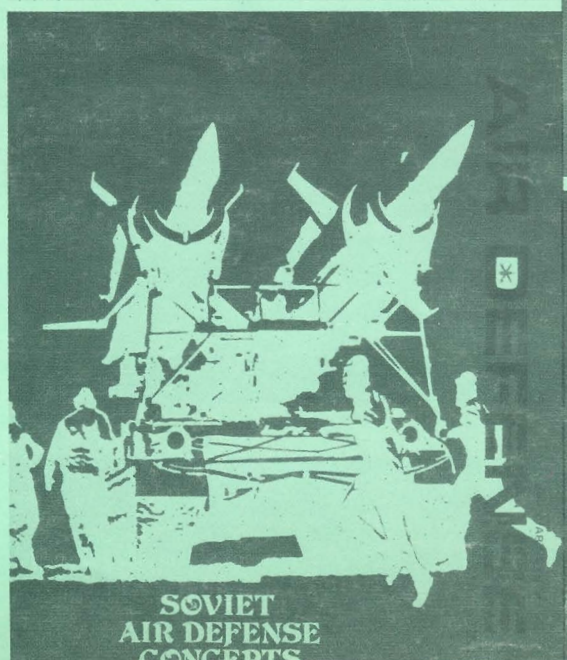
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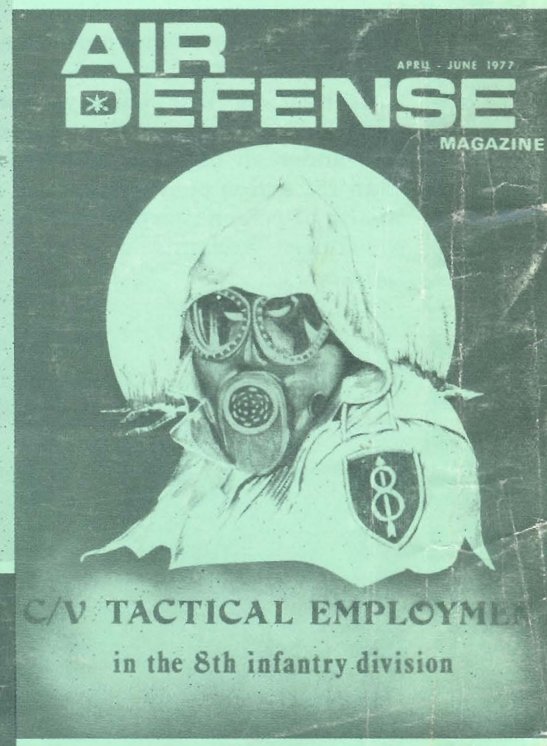
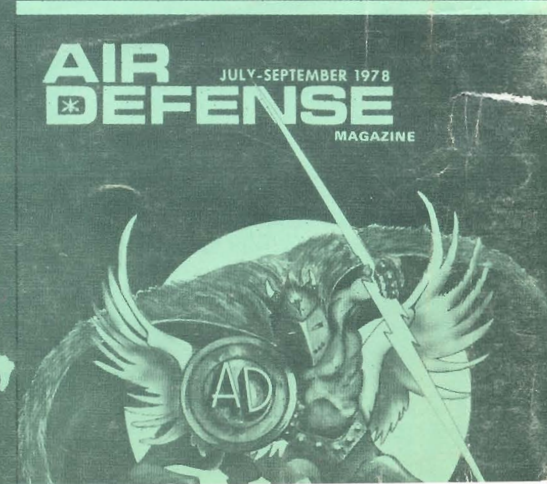
CONCEPTS

AIR DEFENSE
OCTOBER-DECEMBER 1978
MAGAZINE


AIR DEFENSE
APRIL - JUNE 1977
MAGAZINE
C/V TACTICAL EMPLOYMEN
in the 8th infantry division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JULY-SEPTEMBER 1978
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