AIR DEFENSE
Trends
OCTOBER-DECEMBER 1975
HAWK DECOYS
page 5

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OCTOBER-D

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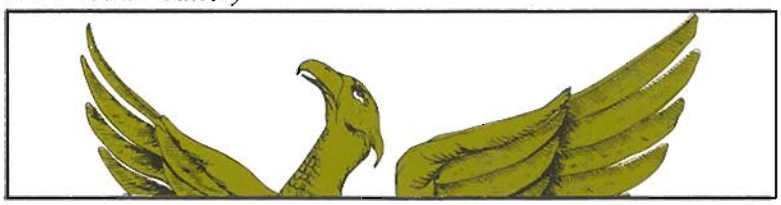

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Our cover illustrates one of the primary purposes of Hawk decoys which is discussed in "Tactics for Employment of Hawk Decoys," page 5. Threat aircraft have been lured into the range of a distant camoufl[illegible] Hawk battery and are being engaged as they attack the decoy Hawk position.

AIR DEFENSE

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CEMBER 1975

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AIR DEFENSE TRENDS is published quarterly by the US Army Air Defense School to keep air defense personnel informed of the latest tactical, doctrinal, and technical developments in air defense worldwide, and to maintain a stimulating and mutually productive dialog between the School and units in the field, with a view toward increased efficiency in all aspects of air defense.

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ENGAGEMENT ZONE

letters to the editor

SASCOM COMMANDERS

Dear Sir:

I noted with interest the article in your July-September 1975 issue entitled "SASCOM DUTY." The first sentence states, "One of the little-known and certainly underpublicized facets of air defense artillery assignment options is duty with the 59th Ordnance Group, Special Ammunition Support Command (SASCOM)."

The true validity of that statement, certainly the "little-known" aspects, was graphically displayed in the list of Senior Air Defense Artillery Commanders on page 47. If you will make a double check on your list, you will determine that you have omitted all of the air defense lieutenant colonels who are currently assigned to battalion-level command in the 59th Ordnance Group, SASCOM. These are: LTC John B. Stone, 570th USA Artillery Group; LTC George R. Perkins, 552d USA Artillery Group; and myself.

MARVIN A. BIHN
LTC, ADA
Cdr, 5th USA Arty Gp

RADAR OPERATORS AND EW

Dear Sir:

The question has arisen, are we training our radar operators sufficiently to accomplish our mission in an electronic warfare environment? Let us consider that question for a moment.

We have the finest equipment possible in the hands of our soldiers, but to use it to its maximum capability, the operator must be fully qualified to operate it.

A well-developed and organized training program is the key. In developing the program we must take numerous items into consideration, items such as personnel assets, equipment availability, training simulator availability, training time availability, etc.

The simulators in air defense are also the finest, but they perform only as well as the preventive maintenance (daily, weekly, and monthly maintenance) is performed.

During a recent seminar conducted for an air defense artillery officers' course, it was noted that our operators were not as proficient as they could be. Many excuses were raised as to why not. Examples were: the simulators did not operate properly, simulators are not available or are inoperative while awaiting parts, they interfere with the equipment alinement, they are too difficult to move from one unit to another, and there is insufficient training time available due to long hours of required status time.

All of the foregoing can be solved with a good, sound, supervised training program. As to the comment pertaining to long hours of status time, what better time is there to train than with all essential personnel available?

Lessons learned in Southeast Asia and the 1973 Mideast conflict paint a vivid picture of how electronic warfare can affect mission accomplishment. Our radar operators must be ready to combat the electronic warfare threat at a moment's notice, and the only solution is hard, assiduous training.

It has been stated at an electronic warfare seminar that the country with the best EW capability could and probably will win the next war.

EDWARD J. ZELLNER
CW3, USA
Technical Writer/Instructor
Electronic Warfare Div, DOI, USAADS

A SYSTEM NAMED???

Dear Sir:

LTC Bearden's article, "A System Named Joe," (TRENDS, April-June 1975) prompts me to write this letter. I refer specifically to his comment that several names have been proposed for SAM-D to enhance its image.

I wonder how many people remember the international contest to name SAM-D that was announced in 1972? Thirty-eight entries were submitted with many being eliminated because of unsuitability and prior selection for use in the Army, Navy, Air Force or as trade names, etc. With the list of names reduced to five, four, then three, the final selection committee made its choice.

What's in a name? A child upon entering this world is given a name and only by law can this name be changed. A weapon system is not very secure in its research and development, engineering development, testing, and procurement stages. If it survives, is produced, and deployed, the system should have a proud name.

Another name contest would be unnecessary for SAM-D. Why? Because the name has been selected. It's just waiting — 3 years so far — for the normal events to be successfully accomplished prior to its dedication, launch, birth, or deployment.

ARES is the name that was selected. In Greek mythology Ares is the God of War. He is typified as most ruthless and fierce in battle. He is personified as a powerfully-built young man, heavily armed, with burning torch and spear, and always ready to do battle. Ares is the son of Zeus and Hera; the brother of Vulcan; half-brother of Hercules, Hermes, and Apollo; uncle of Nike, and nephew of Poseidon. By bringing Ares into the family of Army air defense missiles, he is being given a rightful place alongside his "Air Defense Relatives" and the Greek warrior hero, Ajax.

Of the final four names in the running: Viper, Defender, Argus, and Ares, I think Ares is the proudest.

JUSTIN E. MARTIN
Management Division
General Support Materiel Dept
US Army Air Defense School

FOXBAT!

Dear Sir:

I truly enjoyed LTC Webb's "Foxbat Nine O'Clock!" in the Apr-Jun 75 issue of TRENDS. I recommend that this article be reproduced and given to each of the Vulcan gunner/crewman trainees entering Advanced Individual Training. The reasons are obvious.

My sincere compliments to LTC Webb.

ROBERT J. LANDER
MAJ, GS
USA MILPERCEN
Majors Division

VULCAN

Dear Sir:

I just recently completed participation with the 2d Bn (C/V) (SP), 67th ADA, in my third REFORGER exercise. In each of these exercises, the battalion Vulcan assets have been used in direct support of ground combat forces. The highly mobile, extremely versatile Vulcan can easily maneuver with ground combat forces and has proved to be valuable in both the air defense and ground roles. The versatility of the Vulcan makes its value to maneuvering elements much greater than that of the Chaparral. While its primary mission is air defense, the Vulcan can be used for ground defense and offense at night and in bad weather. The use of the Chaparral is extremely limited in darkness and during bad weather conditions. Ground combat commanders involved in REFORGER in both the US Army and Allied Armies have consistently been much more interested in the Vulcan than the Chaparral.

I feel that MTO&E restructuring of divisional C/V battalions should be considered. The Vulcans should be assigned to the ground combat forces within a division in much the same fashion as the Redeye. The creation of a Vulcan team consisting of four or six weapons under the command of an air defense lieutenant, assigned directly to an infantry, armor, or artillery battalion, would increase tactical proficiency and reduce logistical problems. The Vulcan, working in conjunction with unit Redeye assets, could provide a potent forward area air defense. The high mobility and quick engagement capabilities of Vulcan and Redeye could provide direct support whenever and wherever maneuver elements needed it. I expect that ground force commanders would feel a bit more comfortable if the Vulcans were MTO&E to their organizations.

JAMES L. ELLIOTT
1LT, ADA
Platoon Leader
Btry B, 2d Bn (C/V) (SP), 67th ADA

INTERCEPT POINT

In any future high- or mid-intensity war, Air Defense Artillery (ADA) units will be high on any enemy's priority list for early destruction or neutralization. The outbreak of hostilities will be signaled by massive, coordinated, and determined attacks upon our air defenses. These first engagements between enemy high-performance aircraft and our ADA batteries will, to a great extent, determine the success of the enemy's thrusts. If he can achieve a decisive victory over our air defenses, succeeding waves of his planes will be free to smash our maneuver units, logistics depots, reserve forces, and other critical assets. Army ADA units must survive these attacks to defend critical elements of the combat force.

On the sophisticated, modern battlefields of the future, reliance on top-notch equipment and well-trained troops is not enough. To survive against and ultimately defeat the enemy air threat, ADA units must be proficient in the effective use of countersuppression measures.

ADA commanders cannot wait until the battle begins to practice countersuppression. The techniques of active and passive countermeasures must be learned by aggressive training during peacetime. The habits of countersuppression must become second nature to all air defenders.

To assist the ADA commander in this training, the Air Defense School is producing "How To Fight" manuals for use with our air defense weapons. The keystone of these important publications, FM 44-1, US Army Air Defense Artillery Employment, discusses ADA countersuppression techniques at length. Tactical measures such as camouflage, movement, field fortifications, decoys, and deception are explained. Technical measures, such as control of radar emissions and use of electronic countermeasures are also given. FM 44-1 will be distributed to the field early in 1976. In harmony with this effort, this issue of TRENDS presents two articles which deal with countersuppression. "Tactics for Employment of Hawk Decoys," on page 5 provides a discussion of deception techniques and "The Bushmasters," page 8, describes the latest camouflage developments for Hawk.

FM 44-1 and articles such as these act as a springboard for thought on countersuppression. The innovations possible in countersuppression are limited only by the imagination of the ADA commander and the resources with which he has to work.

When properly performed, countersuppression measures will accomplish two objectives. They will minimize the number of our ADA units that are detected and will minimize the number of our radars at which enemy weapons can shoot. By utilizing a properly designed defense, along with good emission control, camouflage, deception, movement, and digging in, ADA units will survive against ground and air suppression and, at the same time, accomplish their crucial mission.

MAJOR GENERAL CJ Le VAN
Commandant
US Army Air Defense School

Tactics for Employment of HAWK DECOYS

CAPTAIN FRITZ W. LIEBIG, JR.

When a flock of wild ducks zooms in to land near fake ducks floating in the water and suddenly all hell breaks loose from the hunter's guns, those ducks have been entrapped by decoys. The practice of using decoys of various types to bring the unwary into a "kill zone" has prevailed for as long as man has roamed the earth. Cleverly contrived and skillfully employed decoys will probably continue to fool the "victim" for eons to come.

Realizing the value of decoys, and aware that Hawk decoy sites can enhance the survivability of actual sites, the US Army Air Defense School (USAADS) has embarked on a concept evaluation of Improved Hawk (IH) passive decoys.

This article is not a report on USAADS evaluation but rather a discussion on the components and techniques for employment of both active and passive IH decoys.

There are three primary purposes for the employment of active and passive decoys. First, to enhance the survivability of the actual fire units by confusing enemy pilots as to where they should strike.

Second, to cause the enemy to incorrectly assess deployment, number and types of units, and potential effectiveness of friendly air defense. The third purpose is the establishment of a flak trap, which is more in the nature of an offensive maneuver and is designed to lure the enemy into the range of prepositioned, well camouflaged ADA weapons that will engage the aircraft as they attack the decoy position.

The success of a decoy site will vary according to how genuine it appears. Several related factors bear on decoy realism.

- Composition. The composition of a decoy site will vary according to the anticipated observation threat. Since enemy aerial and ground observation efforts will key primarily on distinctive items of equipment, a decoy site should contain launchers with missiles and a radar antenna as a minimum.
- Deployment. Items must be deployed in the same configuration as actual fire units. This requirement dictates that cable distances between items of equipment be accurate.
- Positioning. Decoy sites should be situated on terrain suitable for an actual site. The decoy site must appear as though it is defending something such as a critical asset or a maneuver unit. A site in the middle of nowhere will be ineffective because of the lack of realism.

ESTABLISHING DECOY POSITIONS

One simple and effective way to establish a decoy position is to leave a decoy in its place when an actual unit evacuates the position. This technique adds realism to the position since indicators of an occupied position are already present.

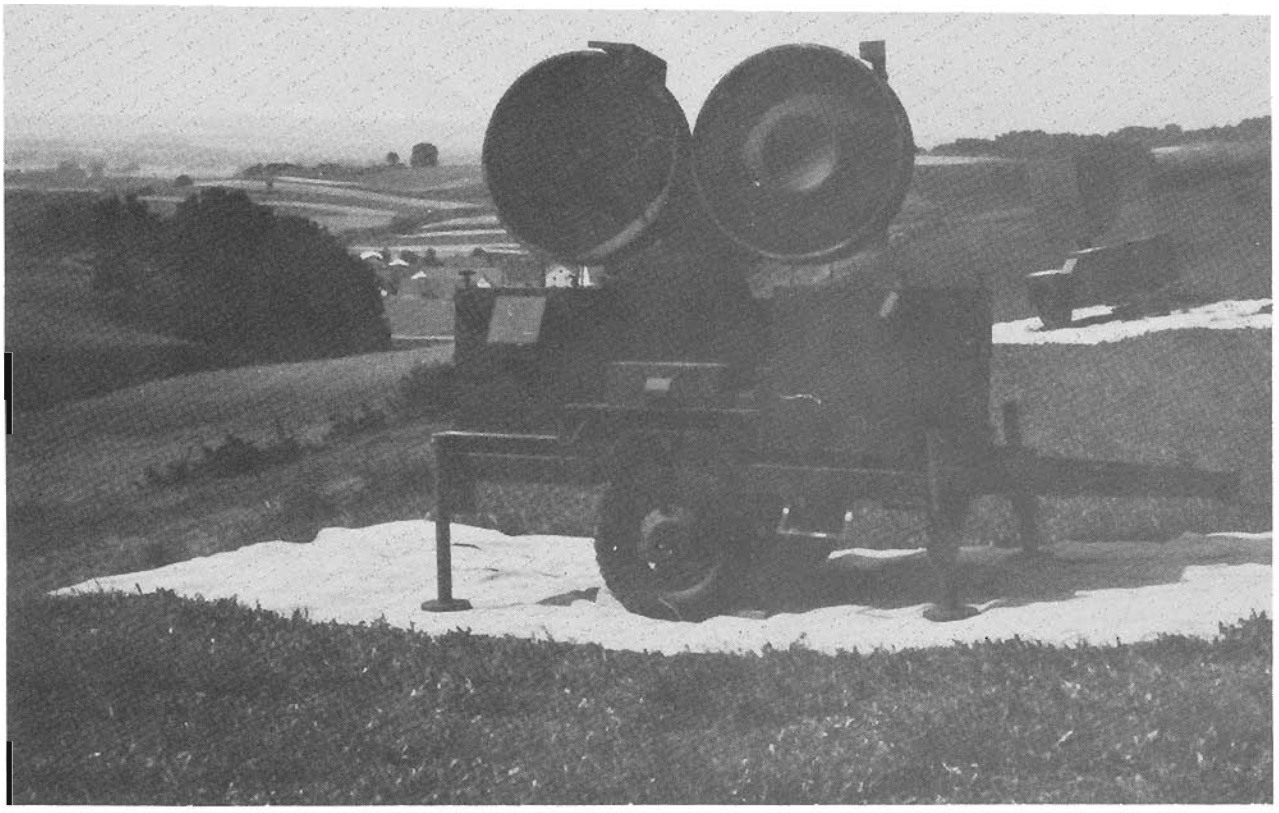
Alternate positions can also be used for decoy sites. When selecting an alternate position, the Hawk unit could move the decoy equipment to the location with the reconnaissance party.

Still another way to employ decoys is in flip-flop positions. This method involves switching actual sites and decoy sites simultaneously.

DETECTABILITY

For a decoy site to be effective it must be detectable. Following are some techniques that can be used to insure detection yet at the same time portray realism to an observer.

Movement will enhance detection, and good sources include radar antenna rotation and smoke from generators. Simulated missile launches through the use of pyrotechnics can also be effective. Making vehicle tracks in and around the site is another way to enhance detectability. Shadows of camouflaged items of



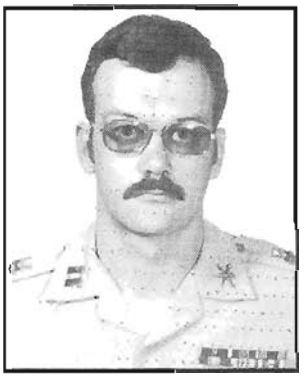
Dummy High Power Illuminator (foreground) and CW Acquisition Radars.

Dummy Range Only Radar shown in a mock assembly area.

equipment that still leave sharp outlines will indicate the presence of man-made equipment. Other considerations include minor breaches of camouflage discipline, sounds that are typical of an actual site, light discipline violations, and litter in the area.

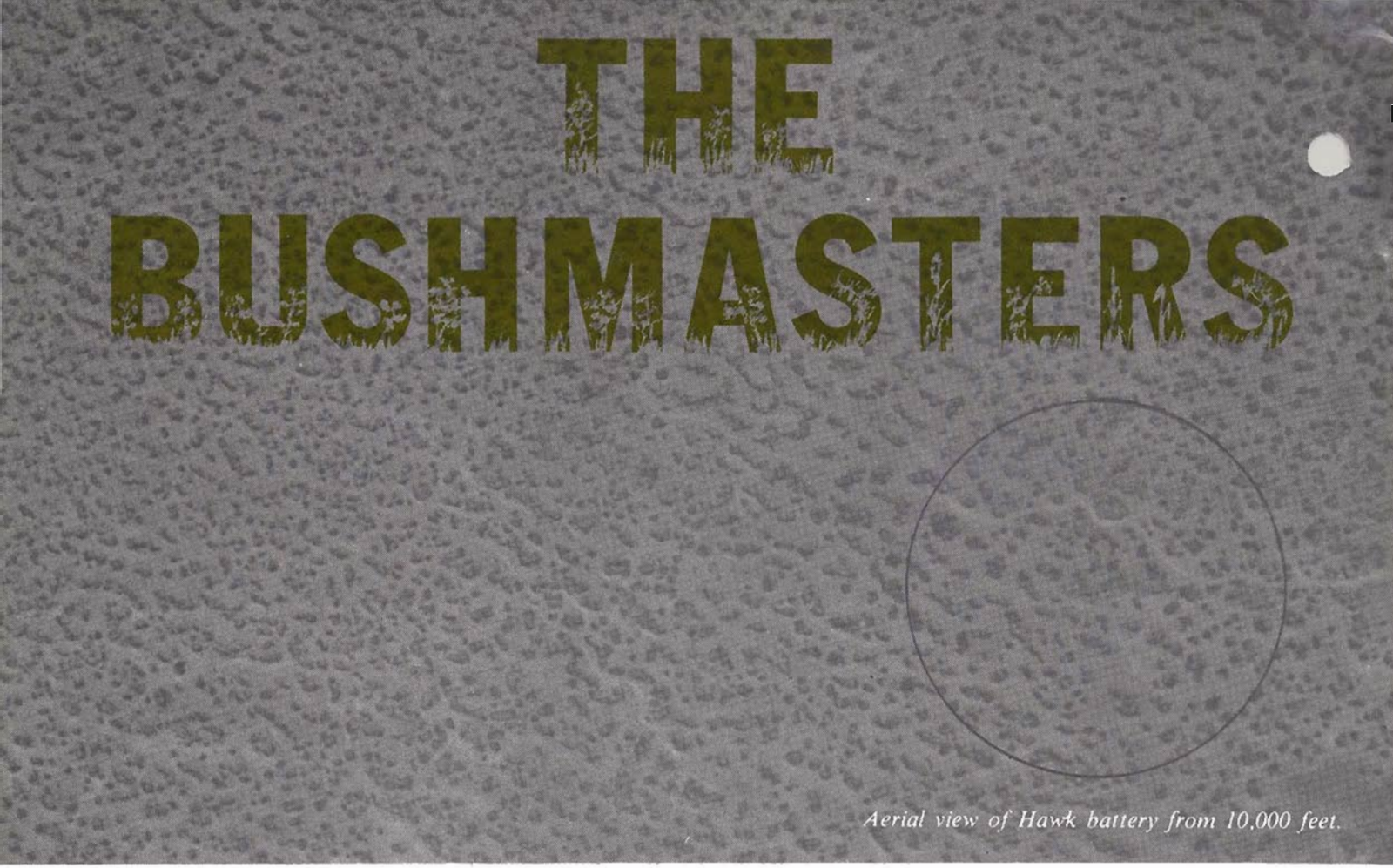
Decoy operations should be under centralized direction of group or higher echelons of air defense command so that policies and procedures can be coordinated with the supported force and standardized for the entire command. Execution of decoy operations should be decentralized, however, to allow battalion and battery commanders maximum flexibility in applying the foregoing techniques to their specific situations.

The objective of enhancing survivability of ADA units through the use of decoys will be achieved in two ways. First is to install a number of simulated sites that the enemy may decide he needs to suppress. This causes the enemy to commit additional sorties to the air defense suppression mission. Second is to thoroughly camouflage and conceal actual fire units. By observing both of these employment principles we can maximize ADA unit survivability.



Captain Liebig is an OCS graduate. He recently served as an instructor in the Combined Arms and Staff Branch of the Tactics Division, Tactics Department of the US Army Air Defense School. He is currently assigned to a Hawk battalion with 7th Army Training Command in Germany.

THE BUSHMASTERS



Aerial view of Hawk battery from 10,000 feet.

CAPTAIN HENRY A. ZIMON

When it comes to the subject of concealing a missile unit in a tactical environment, the pessimists far outnumber the optimists. The quip, "A camouflaged Hawk battery looks just like a camouflaged Hawk battery," is familiar to all ADA veterans, but a recent exercise conducted by Battery A, 2d Battalion, 55th Air Defense Artillery, at Fort Bliss proved a mobile Hawk battery can be effectively concealed from aerial and ground detection. The circle above indicates the location of a complete Hawk battery (2/55) exercising camouflage discipline as seen from an aircraft flying at 10,000 feet. The exercise demonstrated the latest doctrine and techniques promoted by the US Army Air Defense School to tactical units in the field.

The New Doctrine

Gathered under the title of countersuppression are all those measures an ADA unit can take to avoid detection and subsequent suppressive action by an enemy. The new Field Manual 44-1, Air Defense Artillery Employment, will describe and encourage realistic, rigorous implementation of all means of enhancing ADA survival in battle. The major countersuppression techniques of mobility, concealment, deception, fortification, and radiation control are, for the most part, familiar as individual ADA tactics. Certainly, techniques in mobility and fortification have been practiced by artillery units since their inception.

Newer techniques in deception — electrical and visual — and in radiation control scheduling have been introduced in more recent years. The doctrine of countersuppression has for the first time embraced all the possible tactical and technical measures an ADA unit can implement and has given realistic, flexible guidance on the combined use of these measures to counter the ADA suppressive threat in future conflicts. Recent experience, especially that of the Middle East war, has proved that air defense artillery units will be high on the enemy's priority list for early destruction or neutralization.

Exercise Objectives

In April 1975, the officers and other key personnel of 2/55 were briefed by the Air Defense School's Tactics Department on the latest doctrine of countersuppression. The mixed feelings concerning the feasibility of many of the proposed techniques led to an

exercise specifically designed to test several of the measures included in the doctrine as they would apply to a mobile Hawk battery in the field. The exercise, conducted by Battery A during the period 23-26 June 1975, involved the following objectives, specifically designed to evaluate the School camouflage doctrine:

- Evaluate the concept of totally camouflaging a Hawk battery to include radar antennae and firing launchers.
- Test the feasibility of controlling emissions by keeping the equipment OFF until needed.
- Train personnel in effective camouflage techniques and discipline.
- Realistically evaluate the feasibility and impact of integrating extensive concealment and emission control procedures into current unit plans and SOP's.

Figure 1.

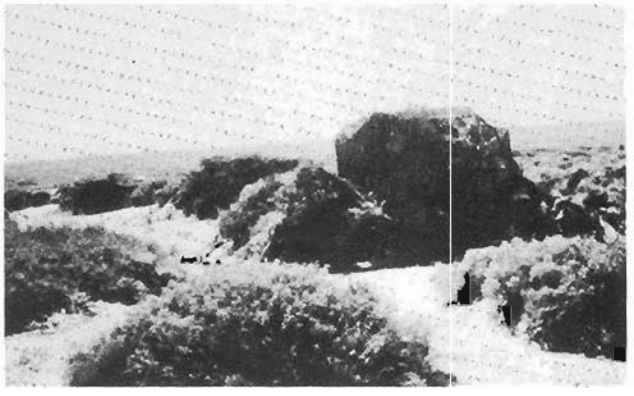


Figure 2.

Preparation and Execution

In addition to tactically march-ordering all TOE equipment, prior preparations included removing vehicle canvas, bows, side-panels, and windows to establish the lowest possible profile before deploying. A camouflage kit, including required nets, poles, ropes, and stakes, was tailored for each item of equipment and was stowed and transported with its associated equipment to the selected location. All equipment was mud-painted with camouflage patterns to aid in shape distortion. The unit's organic scoop-loader accompanied the RSOP party and spent 6-8 hours in preparatory digging-in prior to the main body's arrival.

The entire battery deployed at 0630 on 23 June, moved into the selected area, and was immediately brought to operational status. When work was completed on total concealment, all equipment, except essential communications, was turned off. During the following 3 days, additional training and development of techniques were conducted at the desert location. Crew drills were run from the power OFF condition to determine how quickly the equipment could be cleared of camouflage and prepared to fire. Participants and observers viewed the site from various ground and aerial locations and Air Force visual and photographic reconnaissance missions were flown over the concealed battery.

Observations

It is feasible to totally conceal a Hawk firing battery from visual and electronic detection — even in a difficult desert environment. Airborne observers at 1,000 feet above ground level and ground observers as close as 350 meters had difficulty determining a unit was present at all. Specific items could not be located until observers were within 100 feet and many at even closer distances.

It is also feasible to maintain alert status up to 20 minutes with the unit totally concealed and all equipment except essential communications turned off.

With personnel properly prepositioned, a period of 7 minutes was required to clear the radars and firing launchers, power the equipment, and prepare the system for firing.

Five to six hours (after becoming operational) were spent on the initial concealment effort alone. This seemingly long time is attributed to lack of experience of the unit's personnel in such extensive concealment. Also, the initial attempt actually developed many techniques never used before. Subsequent recamouflagings were accomplished in less than an hour. Two hours is estimated as a reasonable time for a moderately experienced crew to complete total concealment after becoming operational.

The key to concealing the equipment was not in simply covering the items with supported nets but

rather in blending into the surrounding terrain. Of utmost importance were careful positioning of the items near terrain features into which they could be blended (in our case, sand dunes) and applying an abundance of garnishing from surrounding vegetation. Figures 1 and 2 show the Pulse Acquisition Radar during and after camouflage. Figure 3 is the Range Only Radar and Figure 4 is the HIPIR Illuminator after camouflage.

Employed in this exercise were 37 small, 19 medium, and 64 large nets. The general scheme in concealing the Hawk equipment was to camouflage the lower, nonrotating portions of the radars and launchers by forming an apron of smaller nets. During periods of total concealment, large nets were suspended over the upper portion of the equipment in a manner which made quick removal possible. The new lightweight nets are essential to cover radar antennas. Because of their overall superior quality they facilitate and enhance camouflaging of any equipment.

Careful planning of entry routes and concurrent routing of cables save time when vehicle tracks and cables are buried to maximize concealment.

Fabricated poles to support the nets are usable if the natural wood colors are toned-down, but the issued support kits, while expensive, were easier to use and more effective.

Extensive digging to enhance fortification or concealment is less desirable than maximizing use of existing terrain features to create defilade. Digging with organic assets is time consuming and can be counterproductive in that exposed, disturbed earth attracts attention.

The "tell-tale" PAR antenna was distorted by removing one of the end sections before camouflaging. The section was replaced during the camouflage removal crew drill and well within the 7-minute time frame described.

Special care is essential in use of camouflage nets around the HIPIR and ROR feedhorns and waveguides. Although no problems were encountered, a net caught on this equipment could put the radar out of operation.

Manning in a totally concealed configuration should be tailored to keep sufficient personnel prepositioned to remove camouflage and conduct crew drill within the times appropriate to the unit's status.

Distorting equipment positions from standardized "fan-shape" firing section patterns, while still maintaining system capabilities, made visual detection even more difficult.

Enthusiasm and morale of unit personnel skyrocketed as the exercise progressed. The men rapidly became more proficient in the concept and convinced themselves that effective concealment *can* be accomplished.

Summary

The exercise proved conclusively that visual and electronic concealment is realistically attainable. The necessary techniques can be integrated into a unit's plan for countersuppressive actions. Depending upon current DEFREPS or DEFCONS, the battalion headquarters should organize the radiation control schedule so certain units may keep their equipment in standby or off. This action would allow one or more units to move into new locations — ideally during the hours of darkness — and remain hidden from visual, electronic, and even infrared detection until needed. Maintaining one of these hidden units as a "snap-shoot" battery with prepositioned crews ready to clear the equipment and engage on receipt of early warning from another unit is an example of combining countersuppressive measures to enhance survivability and effectiveness. The use of dummy sites is still another option.

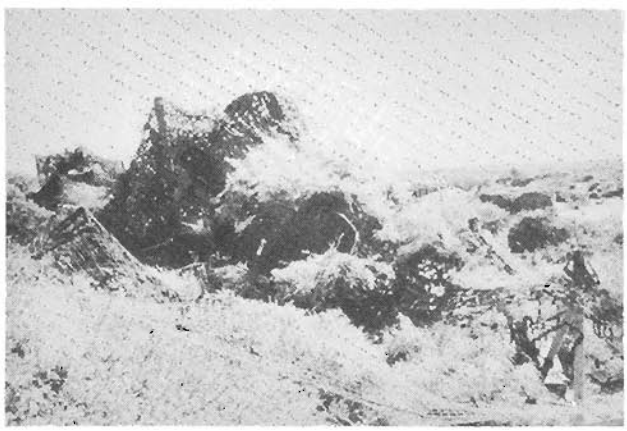


Figure 3.

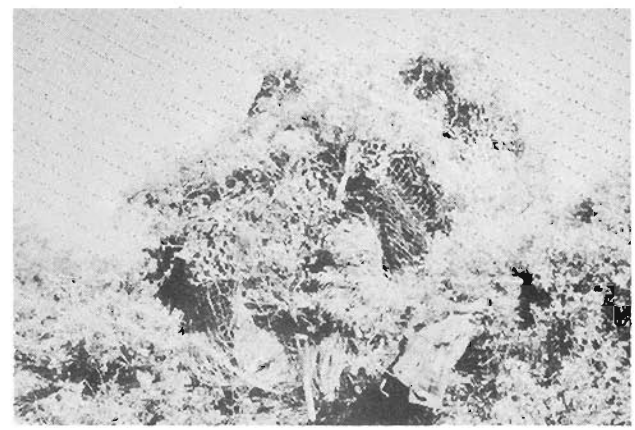
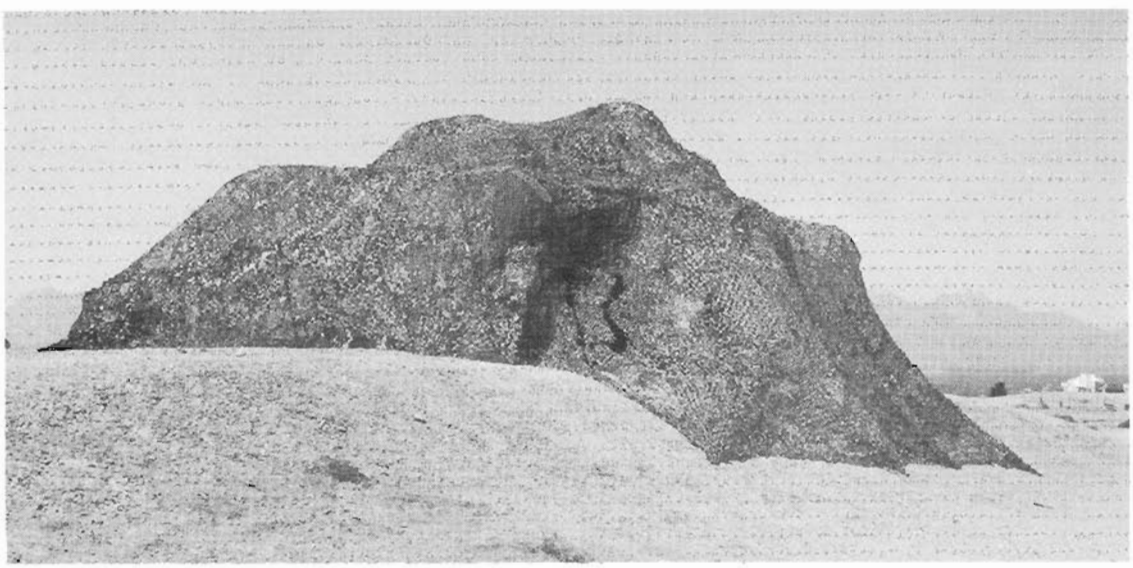


Figure 4.

The greatest benefit realized from the exercise, however, was in dispelling the belief that it is unrealistic or impossible to camouflage missile units. The most difficult hurdle was getting the first item of equipment properly camouflaged. Once that was accomplished and each man in the battery saw and realized the goal, the remainder of the camouflaging went quickly. Then, by allowing the men to observe what they had accomplished from various ground and helicopter positions and on hearing the remarks of visitors and other observers, the unit personnel themselves became convinced that concealment could, in fact, be achieved. More elaborate or technical countersuppressive measures and devices will undoubtedly be introduced in the future.

However, as remarked by LTC James R. Webb, Division Chief in the Tactics Department, USAADS, during his visit to the exercise location, "Perhaps the most important thing is to get back to the pick and shovel methods at hand and get those [countersuppressive] methods immediately available integrated into unit procedures." Particular methods of accomplishing concealment are numerous and leave much to the ingenuity of the unit's personnel. Other units in 2/55 are continuing to implement and experiment with other concealment techniques such as fall-away frames to facilitate placing nets over the radars. We are convinced that training and implementing countersuppression in TOE units should be given high priority by commanders at all levels. Effective, innovative use of all available countersuppression measures is essential to the survivability of Hawk and other air defense units in combat.

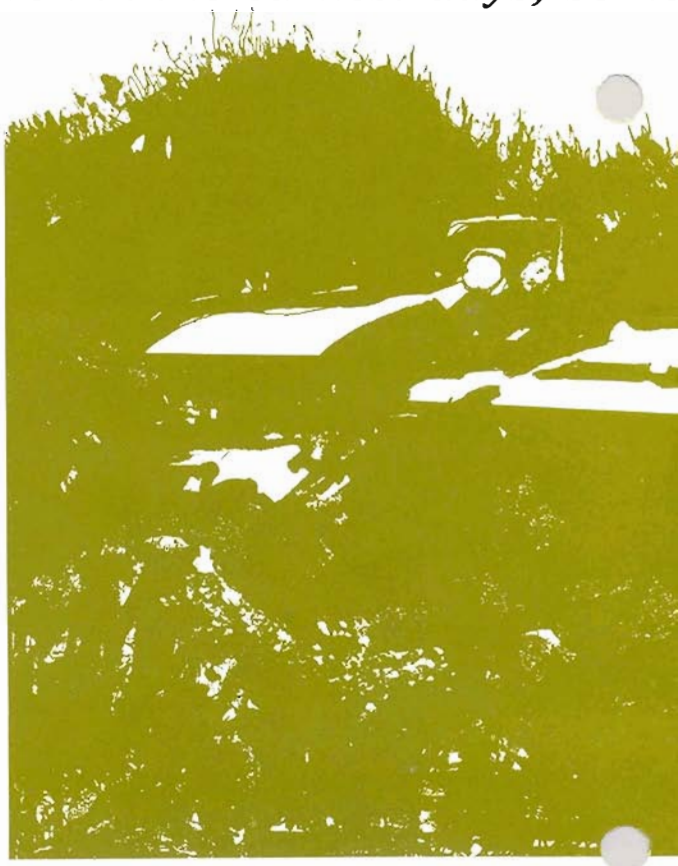


CWAR UNDER NEW LIGHTWEIGHT SCREEN SYSTEM — The net referred to in this article is the Lightweight Camouflage Screening System (LWCSS) being procured to replace the burlap type net. The LWCSS will be a TOE item to ADA units. However, when the radar transparent net is deployed over the CWAR, there is an unacceptable degradation in probability of detection and the support system is inadequate to safely deploy the system over the PAR. USAADS has recommended that AMC initiate an LWCSS improvement program and that all Hawk units be provided information on current employment restrictions.

Captain Zimon is a graduate of the United States Military Academy. He has served with Hawk units at the battery and battalion levels. He is presently commanding Battery A, 2d Battalion (Hawk), 55th Air Defense Artillery, at Fort Bliss, Texas.

FLAK

TIME WAS when the combat pilot could afford to be cavalier about anti-aircraft fire. Tales of derring-do, recounted after the event, tell of World War II bomber pilots weaving through "flak", staring fascinated as the streams of colored tracer leapt up to meet them. Or perhaps because *the stories were related after the event — by the survivors — the image of "devil-may-care" was preserved. ¶ For the truth is that ack-ack has never been a weapon to take for granted. Even in the earliest days, some of the more accomplished aces — Baron von Richtofen among them — fell to ground fire from the Great War's trenches. Then it was a stray bullet from a Mauser or Lee Enfield splintering an oil feed line which forced the luckless pilot into untimely contact with Mother Earth. ¶ Nowadays, in line with the quantum leaps in technology, it is likely that the damage stems from a storm of radar-directed 40mm shells bursting near an attack fighter.*



PACKS

By David Harvey

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The art of anti-aircraft gunnery, at sea or on land, has advanced with the times. While the current talk is of SAM systems, electronic warfare and tactical nuclear weaponry, the development of the humble ground-to-air gun has gone on steadily and undramatically. Now it has its own state of the art, capitalizing on the guidance technology of the missile age, the mobility philosophies of flexible response, and the ever-present need for a really reliable point defense system after the last *Rapier* or *Roland* has left the rails.

The 1973 Arab-Israeli war was a timely reminder to the defense community that power still flows from the barrels of a flak unit. After the smoke of battle had cleared a tacit admission emerged:

Perhaps the SA-2, SA-3, SA-6 and SA-7 systems of the Egyptian Air Force had not been as effective as was first believed. Perhaps it was anti-aircraft fire which blunted the Israeli A-4 pilots' assaults on Egyptian airfields in the Nile Delta. The facts suggest now that the Israeli pilots *were* often knocked from the skies by shells rather than missiles. What they encountered as they ran in with the taps wide open and the bombs and missiles quivering on the racks was a hail of fire put up by the Soviet-built *Shilka/Gun dish* system. Firing four thousand rounds of 23mm projectiles a minute, the ZSU-23-4 "quad" AA system produced a barrage of fire which took many of them by surprise. "Flak" had asserted itself as an important weapon in the modern armory.

The last known success of operational flak — and probably among the least-known isolated AA incident of modern times — provided sound testimony to the concept. It occurred during the Kurdish separatist war, which came to an end only this year. A Soviet Su-7 *Fitter* nosed across the Iraqi border in the Kurdish region, into Iran, trying to sniff out, electronically, the transmitting site of the Free Kurdish radio station. (It was subsequently discovered, after the war, that the station was on Iraqi soil but in those days of fighting it was believed to be in Iran.) Iranian units were on the alert, and when — high in rugged terrain — the Su-7 came round a corner, it fell victim to a low-level Iranian Air Force SAM. Hours passed, and the disconcerted Soviet and Iraqi air-force officials despatched another aircraft to hunt for its lost mate. This time the aircraft drifted unsuspectingly past an Iranian ZSU-23-4 quad-mounted 23mm AA system which had been moved

SYSTEM	COUNTRY	MOUNTING	CONTROL	REMARKS
30mm twin Hispano Suiza	France	SP	Radar	Mounted on AMX 30 and AMX 13.
SAM S530 20mm twin turret				
TG 521 FI	France	SP	Optical	Light system for mounting on AFVs.
20mm twin	France	SP	Optical	Light system for mounting on AFVs.
Rheinmetall 20mm twin.	FRG	Trailer	Optical	Up to 1,000 rounds per min.
Gepard 35mm twin Oerlikon	FRG	SP	Radar	Mounted on a Leopard Tank chassis. Also known as Panzerflak I.
L70 40mm Bofors	Sweden	Trailer	Radar	Supplied to 20 countries.
System 75 40mm Bofors	Sweden	SP	Optical	Now has proximity fuzed ammunition.
57mm M54	Sweden	Trailer	Optical	Long range.
20mm M40-70	Sweden	Trailer	Optical	Light AA gun.
35mm twin Oerlikon	Switzerland	Trailer	Radar	Uses "Super Fledermaus" FC system.
5 PFZ/A/B/C	Switzerland	SP	Radar	Main difference between marks is radar used.
Type 661 30mm Oerlikon	Switzerland	Trailer	Optical	For rapid deployment in field.
Type 10 20mm Oerlikon ILA/5TC	Switzerland	Trailer or hand carried	Optical	Light gun for AA or ground fire.
Type 804 20mm Oerlikon	Switzerland	SP or trailer	Optical	Simple light gun.
Type 661 20mm twin Oerlikon	Switzerland	Trailer	Optical	1,920 rounds per min.
Type 665 20mm triple Oerlikon	Switzerland	Trailer	Optical	2,880 rounds per min.
Falcon 30mm twin Hispano Suiza	Britain	SP	Optical	On an Abbot chassis.
40mm light AA gun	Britain	Trailer	Optical	British version of L70 Bofors
GLADS	USA	SP	Laser	Under study. Will have high rate of fire.
Vulcan 20mm 6 barrelled	USA	SP or trailer	Radar for range only	Mounted on an M113 or trailer. 3,000 rounds per min.
M42 40mm twin	USA	SP	Optical	Obsolescent.
M53/59 30mm twin	Czech.	Trailer	Optical	M53 on an open trailer. M59 on partially closed trailer.
M55 130mm	USSR	Static	Radar	In use in home defense batteries.
N49 100mm	USSR	Trailer	Radar	15-20 rpm. Obsolescent.
M44 85mm	USSR	Trailer	Radar	15-20 rpm.
S60 57mm	USSR	SP or trailer	Radar	Dual capacity AA or ground fire. SP version known as ZSU 57.
23mm ZSU-23-4 AA vehicle	USSR	SP	Radar	4 x 23mm guns all mounted in one vehicle. Each fires 1,000 rpm.
23mm cannon	USSR	Trailer	Optical	2 x 23mm guns mounted on a trailer.
ZPU 4 14.5mm machineguns	USSR	Trailer	Optical	4 x MGs 600 rpm per barrel.

high into the mountain area. The second intruder flew into a sudden box of flak and was also downed. Irony also prevailed: both the aircraft and the AA unit had been made in the USSR.

Three main components are required for a low level air defense system to be effective: warning and target acquisition, the weapons themselves and integration with the rest of the air defense system.

The Egyptian use of their AA capability showed that they had well mastered the Soviet lessons in this respect. The *Gun Dish* broadband radar, linked to the four-barrel rapid-fire guns, had been pre-aligned to their targets by instructions from a network of forward visual observers. While the SA-6 was undoubtedly *intended* to be the first line of defense against the low-riding *Skyhawks*, the Egyptians soon learned that they had better luck with their missiles against the medium-level aircraft giving cover to the *lo-lo* pilots. The incomparable rate of fire and ammunition capacity of the *Shilka* soon showed itself to be a tremendous bonus.

Of course the Egyptian commanders had learned their lessons about air defense in the hard school of the 1967 war. Even so, it's doubtful that many of them would have bet large sums on guns at the start of hostilities. Had they done so, the fact that not a single Egyptian aircraft was destroyed on the ground would have been ample justification for their judgement. In three days the Israeli Air Force had abandoned its attacks on their airfields.

This situation underlined what many believed would transpire as the true role of AA: its complementary relationship to the SAM system.

But SAM systems have obvious drawbacks, particularly for smaller Third World countries. Disadvantages such as expense, complexity, the need for high and sustained levels of training, susceptibility to electronic counter measures; all conspire in favor of the anti-aircraft gun.

One very popular system, which, to quote a well-known journal is by now "seemingly ageless", is the Bofors 40mm anti-aircraft gun. Based on principles established in the 1930s, it has now reached "third generation" level, matching some of the aircraft now in service. Although a less rapid firing piece of machinery than those pumping out 2,000, 3,000 and 4,000 rounds per minute (RPM), it has achieved high popularity and sales throughout the world, both in the ground and naval environment. As a system it is a good example of the steady advance of the state of the art since the hand-operated days of 1939-45. It has, succeedingly, seen the addition of power-operation, and advanced fire-control technology. In its second generation form, the L-70, with two guns and a single set of associated control equipment, is a basic component of anti-aircraft defense in a great many countries, with more than 5,000 thus far produced.

With the speed of combat action tending to increase, the new generation of the system — the L70 BOFI — has been specifically designed to deal with the new order of threat posed by low level attack from sub-sonic and near-sonic aircraft. Increased ammunition capacity, and electronic/optical fire control systems integrated with the gun itself have markedly updated its potential, both in terms of performance and mobility. But the inherent simplicity of the gun concept has been maintained. Consequently the cost of the system — compared to a SAM system — is lower by many orders, as are both the training and maintenance required to operate it.

The fundamental differences between SAMs and AA guns, though, lie not between those of procurement and installation: it is when the shooting starts that the differences are most marked.

As Washington arms consultant Jon Crawford put it: "You're going to think twice about what you shoot at when you have $2,000 worth of missile pointing at the sky. But nobody minds about blasting off a few hundred rounds of AA fire."

In a rapidly changing tank battle, the mobile flak unit can provide an *en route* shield against interdictor aircraft. Without such protection, the freedom of action allowed to the armored units, and hence their credibility as a fighting force, are brought into open question.

And, he might have added, if that flurry of gunfire succeeds in downing a multi-million dollar combat aircraft, the word "cost-effectiveness" takes on a whole new meaning.

Mobility holds an important key to success in today's tactical scenario.

In a rapidly changing tank battle, for instance, the mobile flak unit can provide an *en route* shield against interdictor aircraft. Without such protection the freedom of action allowed to the armored units, and hence their credibility as a fighting force are brought into open question.

The tank is almost defenseless against air attack. Without protection its last resort is to passive counter measures: smoke-laying, or zig-zagging. Without suitable AA defense a mechanized attack or counter-attack runs the risk of being paralyzed. But the difficulties of providing effective protection while *on the move* increase with the range and speed of the movement, particularly across open country.

Of the three methods of providing the necessary protection for such a force (fighter cover, static AA weapons and mobile AA weapons) the latter method provides the best answer.

The debate on what "mix" of SAMs and guns to offer as protection for mechanized army units has continued for some time, with the main problem being to choose between competing systems. As a consequence, different forces have standaridzed on different equipment.

As an example of the type of integrated arrangement possible, the Federal Republic of Germany now has a significant overall low-level AA system for Army self-defense.

This currently comprises 20mm Rh202 cannon units, the *Gepard* anti-aircraft tank with twin Oerlikon 35mm guns, Bofors L70 units (later to be replaced by *Roland* II) and *Redeye* shoulder-fired missiles. By 1980, when the full integration of the *Gepard* and *Roland* system is completed, West Germany will possess what is now widely held to be the ideal capability — at least conceptually — in the AA environment.

Another area where AA can play a vital part in a tactical scenario is the base defense role. At present the general approach to this operation is to use cannon systems — either the ubiquitous L70 or Oerlikon 35mm — sometimes linked to radar, and generally with visual warning posts located at suitable distances. However, in some forces this role is being filled by SAM systems, notably the *Rapier* system, currently in service with the RAF regiment as airfield defense.

While it is never easy, or particularly safe, to predict the precise ebb and flow of battle, it is possible to view the flak unit as providing the "battering ram" in relation to the missile's epee thrust.

The single-shot ack-ack unit has never won prizes for accuracy — basically because of the high maneuverability of the targets in the sights — which is why, from the start, rapid fire, aiming to put a box around the anemy, has been a fundamental design. If there is a trend in AA gun philosophy at the moment, it tends towards the ultimate development of this principle — saturation of the airspace into which the target is either in, or expected to fly. This means a greater reliance on rapid-fire cannon systems such as the Rheinmettal RH 202 or the Vulcan six-barrel 20mm "gatling" gun.

Another development bearing close examination is the work being done to seek a trade-off between greater ammunition effectiveness and accuracy. The idea behind this is to maximize the lethality of the AA round itself, increasing the kill rate by causing it to explode in close proximity to the target.

Bofors, for instance, recently demonstrated a new breed of 40mm ammunition fitted with close proximity fuzing. A combination of electronics and mechanics, it uses Doppler radar techniques to *sense* when it is close to the target before triggering a lethal fragmentation mixture. The company claims that a burst as much as 6.5 meters away from the aircraft can effectively destroy it.

Exact descriptions and definitions of such a capability lie in the realms of mathematics, but it would appear that this type of ammunition, which can be fired from a standard 40mm gun, would substantially reduce the probability of miss error. In a combat environment which currently has attack aircraft flying almost as fast as AA shells, this is no small improvement.

Interestingly, Bofors have also tested this concept against missile targets, and here they claim effectiveness of an explosion as far away from the target as 18 feet or so.

This development could become the third element in an AA "triad", providing a neat compromise between the stringent disciplines associated with SAM weaponry, and the "pot-shot" techniques of the anti-aircraft gun.

It is not difficult to foresee, for instance, what proximity-fuzed ammunition could do to RPVs and stand-off missiles in a battlefield situation. It is also tempting to dwell on the prospect of this type of ammunition finding its way into rapid fire usage, and it is difficult to avoid the conclusion that such a barrage would provide a more or less impenetrable barrier from ground level upwards.

In conclusion, "flak" would appear to be a stern reality in today's battlefield and maritime environment. As the "tyranny of rising costs" forces more compromise in the choice and deployment of air defense equipment, it is not difficult to see an even brighter future for the AA gun — particularly in Third World markets.

It is also sound advice to suggest to battlefield commanders that developments in this field are every bit as worth watching closely as the more convoluted SAM environment. There are a number of Israeli Air Force pilots, for instance, who would be pleased to provide details.

TODAY'S AIR DEFENSE ARTILLERY VOLUNTEER

— *BETTER THAN EVER*

COLONEL DAVID A. HUFNAGEL

A comparison of ADA trainee profiles, initiated by the Commanding General of Fort Bliss and conducted during advanced individual training (AIT) for more than 2 years by The Air Defense Artillery Training Brigade, reveals that practically every positive indicator concerning the background and ability of today's young Air Defense Artilleryman is on the upswing, while the negative indicators of poor morale and discipline have definitely turned downward.

Based on statistical data for some five to six thousand trainees each year, the volunteer who reported for AIT in 1975 was much more mature, better educated, and had a higher mental capacity than his counterpart in 1974. This encouraging trend in the quality of today's ADA soldier is summarized in Figure 1.

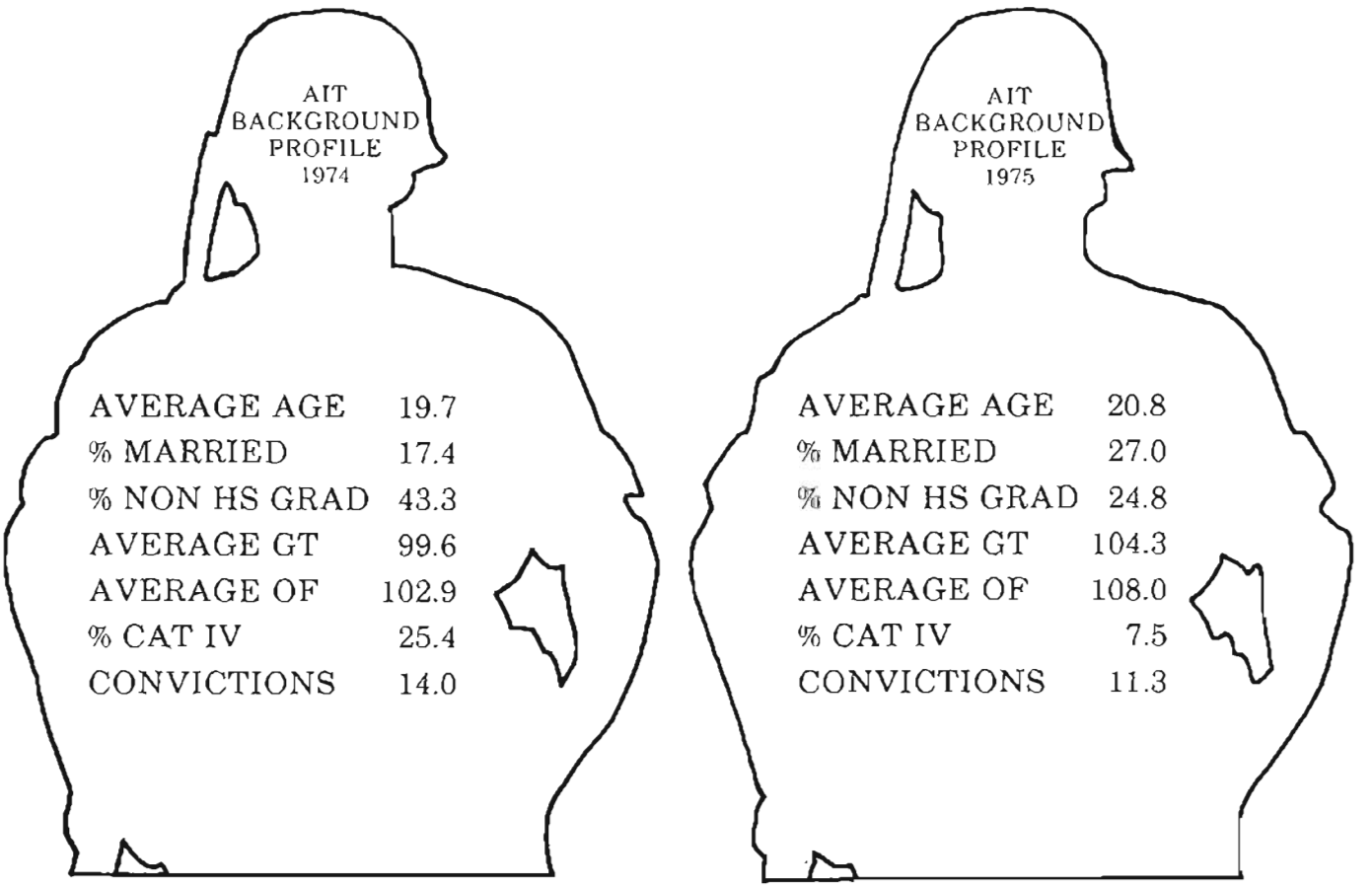

FIGURE 1 -- COMPARISON OF ADA AIT TRAINEE BACKGROUND PROFILES FOR 1974 AND 1975.

Note that, compared to his predecessor in 1974, the typical ADA trainee in 1975 was over a year older, with one-half more married (the rate for a married trainee to become involved in a serious incident was approximately half that for trainees who were single), nearly half as many non-high-school graduates, three-fourths fewer Category IV's (below average percentile category), one-fifth fewer with previous civil convictions (other than traffic violations), and an increase of approximately 5 percent in GT (general technical) and OP (operator) aptitude scores.

There are two important reasons why the percentage of high school graduates is used as a guage in judging the quality of incoming trainees. First, non-high-school graduates generally account for more disciplinary problems (AWOL's, drugs, and courts-martial) and discharges than are proportional to the size of their group. For example, Figure 2 shows that while the non-high-school graduate accounted for about 25 percent of the total ADA trainee input in 1975, he received 33 percent of the discharges and caused 38 percent of the disciplinary problems. This same trend was even more evident in 1974 and may be due in part to a sense of failure which the non-high-school graduate somehow has translated to his Army assignment. As expected, the higher problems and discharge rates noted among non-high-school graduates does not hold true when racial groupings are considered, since the percentage of problem soldiers and trainees discharged by ethnic groups turned out to be nearly proportional to the size of the ethnic group in question. Indeed, it can be said that each ethnic group generally has its fair share of problem soldiers.

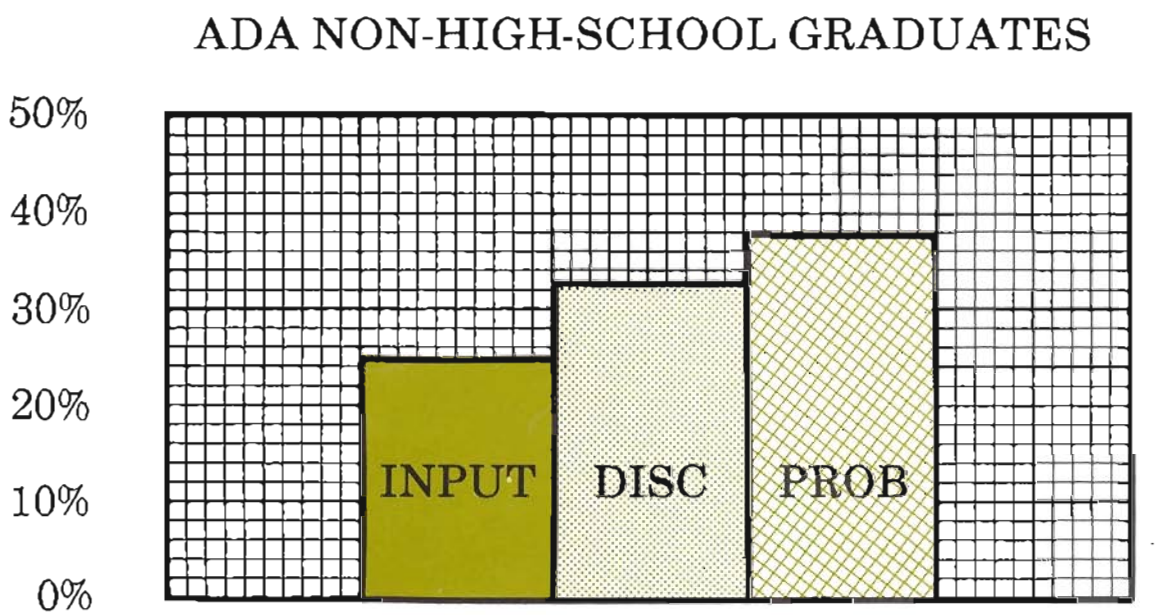

FIGURE 2 -- TOTAL TRAINEE INPUT, DISCHARGES, AND PROBLEMS IN 1975 WITH RESPECT TO ADA NON-HIGH SCHOOL GRADUATES.

High school graduates are desirable from another standpoint in that more of them tend to rank among the top students in any graduating class. For instance, in one training battalion the rate in 1975 was nearly 3 to 1 for a high school graduate (rather than a nongraduate) to be selected as the distinguished graduate of his AIT class. Thus, because of the higher potential of the high school graduate to excel, it is most gratifying to note that the percentage of these graduates going into ADA in 1975 (approximately 75 percent) was somewhat higher than the Army-wide average of nearly 70 percent for the same period.

Another important yardstick for measuring trainee quality is the usual set of indicators for troop morale and discipline.

SERIOUS INCIDENTS	DOWN 30%
AWOL	DOWN 55%
BARRACKS THEFTS	DOWN 31%
DRUGS	DOWN 32%
IG COMPLAINTS	DOWN 45%
CONGRESSIONALS	DOWN 38%
ARTICLE 15'S	DOWN 14%
COURTS-MARTIAL	DOWN 63%

FIGURE 3 -- COMPARISON OF 1975 ADA AIT TRAINEE MORALE AND DISCIPLINARY RATES WITH COMPARABLE 1974 RATES

As Figure 3 indicates, brigade rates for eight important negative indicators of morale decreased noticeably over comparable rates in 1974. In regard to this favorable trend in the conduct and attitude of the soldier, it is important to note that cautious use of the trainee expeditious discharge program (the brigade trainee discharge rate is less than 2 percent of the total AIT population) allowed elimination of the problem soldier before he caused an excessive number of problems and set a bad example for his peers. The practice of promptly eliminating the relatively few substandard individuals who clearly demonstrated they could not soldier despite ample assistance, together with the overall higher quality enlisted man currently reporting for AIT, was a major reason for the 1975 reduction of adverse trainee morale and disciplinary rates. An equally important element has been a dedicated cadre whose genuine concern for the state of training and welfare of every trainee has been outstanding.

In discussions with the young men who have just completed 2 months of intensive AIT and are anxiously heading for their first field assignments, there is no doubt that today's ADA volunteer is a highly responsible and motivated individual who needs only to be pointed in the right direction. Both TDA and TOE professionals in Air Defense Artillery now have an unusual opportunity and challenge in producing a better trained and mentally prepared soldier who should be a definite asset in improving the combat readiness of his tactical unit. Yet the potential of today's young trooper transcends even combat readiness, for by every standard he is a confident individual who can be counted on when the chips are down and the going is rough, and that is the finest safeguard our Army and nation could ever have.

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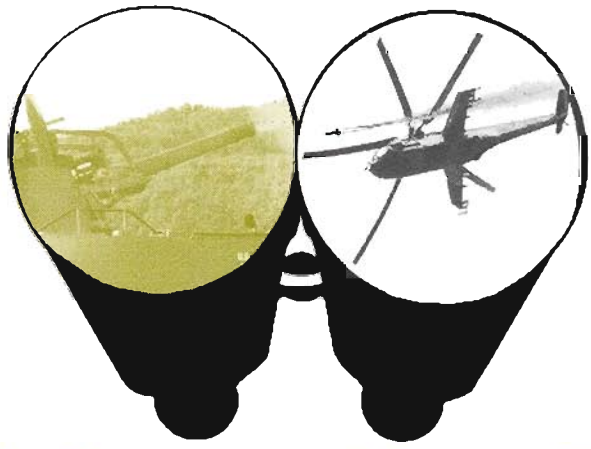

VIEW from the FIELD

VULCAN VERSUS THE HELICOPTER-MOUNTED ANTITANK GUIDED MISSILE

The helicopter-mounted antitank guided missile (ATGM), such as the Soviet Hind-A assault helicopter with the SWATTER missile, constitutes a significant threat to an armored task force. The inherent mobility of the helicopter, combined with the stand-off engagement capability of the ATGM, provides an enemy with the means to rapidly respond and engage an exposed armored force. The helicopter's mobility presents a problem for field artillery fire suppression. The stand-off engagement range (3,500 meters) minimizes the effect of organic automatic and small arms and of Vulcan using standard HEIT-self-destruct ammunition. The problem, therefore, facing the division Chaparral/Vulcan battalion is how best to defend an armored task force when the primary threat is the helicopter-mounted ATGM.

The Vulcan Long-Range Firing Fan (Figure 1) has been developed by the 2d Battalion, 5th ADA to help give Vulcan platoons an effective capability to defend 2d Armored Division task forces against the helicopter-mounted ATGM. The firing fan provides the Vulcan squad with the necessary elevation and azimuth data required to rapidly place effective suppressive fire at ranges up to 4,500 meters using HEI ammunition. The fan is constructed on inexpensive, clear acetate and consists of a reverse plot 6,400 mil azimuth ring with a superimposed range and elevation scale for HEI ammunition.

Two methods are employed in using the firing fan. The first method is used when the Vulcan gunner has line-of-sight with a target or potential target area. The second is used if he does not have this line-of-sight vision.

METHOD 1
LINE-OF-SIGHT ENGAGEMENT

- First, the location of the Vulcan fire unit is determined on a map and the firing fan center cross mark positioned over the point.
- Next, the potential target location is determined on the map.
- The fan is then oriented with the zero mil line passing through the Vulcan and target locations.
- Cannon elevation is then read directly off the transparent elevation scale corresponding with the target range (location).
- The gunner then visually sights on the target, sets cannon elevation using the gunner's quadrant, and is prepared to fire.

METHOD 2
INDIRECT ENGAGEMENT

- First (with the Vulcan in position), the squad leader moves approximately 30 meters away and uses his compass to sight on the Vulcan's cannons to determine magnetic azimuth to the barrels. The gunner sights on the squad leader's hand-held compass using the boresight scope. The back azimuth plus or minus the grid-magnetic angle is then set on the Vulcan azimuth indicator so that the Vulcan azimuth indicator displays *grid* azimuth.
- Next, the location of the Vulcan is determined on a map and the center crossmark placed at that point.
- The potential target location is then determined on the map.
- The fan is oriented with the zero mil line passed through the Vulcan and target locations.
- Cannon elevation is then read directly off the transparent elevation scale corresponding to the target range (location).
- Vulcan cannon azimuth is read directly off the reverse plot azimuth ring by placing any convenient straight edge so that it passes through the Vulcan location and parallel to any north-south grid line.
- The gunner then sets azimuth on the Vulcan azimuth indicator and elevation using the gunner's quadrant and is prepared to fire on the target.

Extended range engagement of helicopters by Vulcan requires planning and coordination with the task force fire support coordinator. The Vulcan platoon leader, as a viable member of the combined arms team's leadership, must make a detailed terrain analysis to determine likely locations for helicopter attack and ambush locations. Target areas are then identified and cleared for Vulcan coverage as appropriate.

In the offense, overwatch positions which cover the bounding elements must be carefully chosen with Vulcan's *forward* to gain line of sight if at all possible. In the defense, time usually permits Vulcans to be positioned behind cover and allows ample time for azimuth and elevation computations for potential areas.

Platoon level fire planning is necessary, especially in the defense, to gain the maximum effect from the

Vulcan firepower. The platoon planning steps are as follows:

- The terrain is analyzed for those potential attack positions that an enemy helicopter might use to pop-up and launch an ATGM.
- Each potential area is numbered and coordinated with the battalion field artillery forward observer.
- The Vulcan long-range firing fan is then used to determine azimuth and elevation for each Vulcan to obtain the desired impact coverage or sheaf. An 18 mil fan is included on the firing fan to assist in fire planning.
- Each potential target area is analyzed and subsequent cannon data computed.
- Vulcan squads maintain range cards with firing data for each numbered target area.
- Each squad is designated one primary target which gives the platoon immediate fire capability on four target areas. The remaining Vulcans shift fire to a hot area as helicopters or ATGM firings are sighted.
- Aerial observers can be used to assist the Vulcan platoon leader in detecting the presence of enemy helicopters.

Effective use of Vulcan in long-range engagement is attained through extensive performance-oriented training in the areas of:

- Map reading.
- Use of the gunner's quadrant.
- Vulcan cannon boresight procedures.
- Use of the Vulcan Long-Range Firing Fan.

Air threat intelligence becomes even more important because it enables timely decisions to be made on organizing the Vulcan units for combat (i.e., HEIT-SD, or HEI ammunition). Redeye should be employed with Vulcan when the platoons are organized to counter the helicopter-ATGM threat, thereby insuring an omni-directional air defense capability against fighter and fighter-bomber aircraft.

Experience gained during development of the firing fan and subsequent training indicate the use of the 18 mil barrel clamp and a 100-round burst gives the most preferred coverage pattern at long ranges. Squad leaders and platoon leaders rapidly develop potential target and allow for the ability to effectively analyze a difference in target and Vulcan elevation to gain the desired coverage.

The 2d Battalion, 5th ADA, has produced an instructional video tape titled, "An Introduction to the Vulcan Long-Range Firing Fan." The tape is designed for performance-oriented training directed towards Vulcan squad and platoon readiness. Units interested in obtaining a copy of the tape should send a blank Sony V-35 Video Tape cartridge to Commander, 2d Battalion, 5th ADA, ATTN: S3, Fort Hood, Texas 76546. The instructional tape, along with an acetate firing fan, will be returned to you.

Training in the 2d Armored Division is based on the philosophy that "the success of all actions in war depends upon the proper selection of means to the end." The Vulcan Long-Range Firing Fan was developed and is being used within the spirit of that philosophy to provide an air defense capability to counter the helicopter-ATGM threat.

VIEW FROM THE AIR DEFENSE SCHOOL

The methodology proposed by this article is an interesting approach to a perplexing problem and is worthy of further exploration and discussion. The threat posed by the helicopter-mounted ATGM is certainly significant, but the capabilities of Vulcan at the stand-off ranges discussed are limited. Gunnery and ballistic considerations (e.g., drift, site, tumbling) would indicate a lack of accuracy at the longer ranges. Vulcan crew training and reaction time are also important considerations in assessing the effectiveness of this concept.

We invite comments from our readers expressing their ideas and experiences that would bear on the concept contained in this article. Address comments to: Editor, Air Defense Trends
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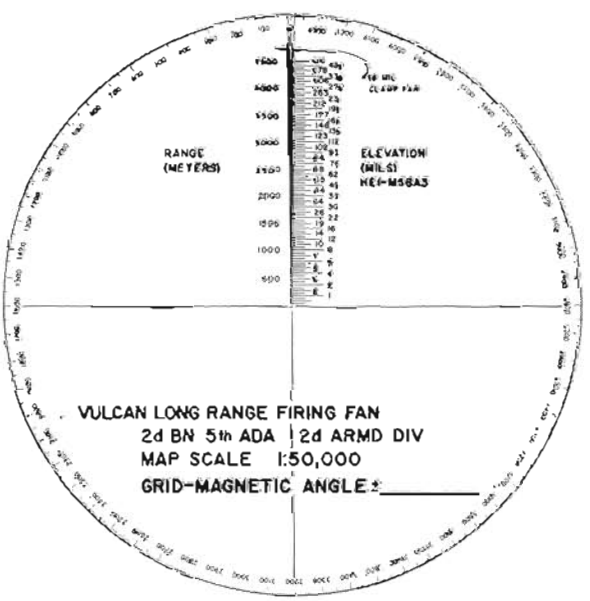


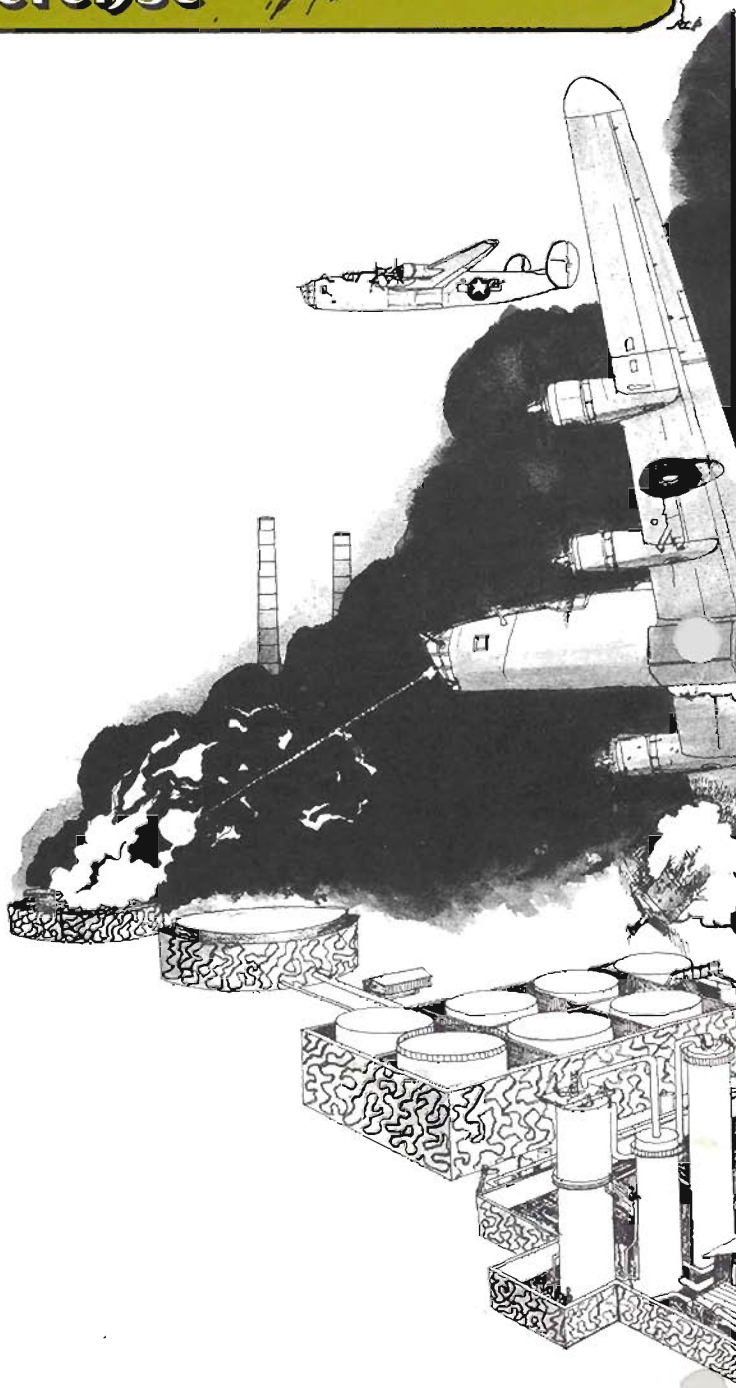
Figure 1.

In this installment we see the devastating effect properly organized antiaircraft defenses with well-trained crews, supported by fighter aircraft, can have on low-level bombing attacks. The action described was over Ploesti, Romania, and involved one of the deepest inland penetrations by US aircraft in World War II.

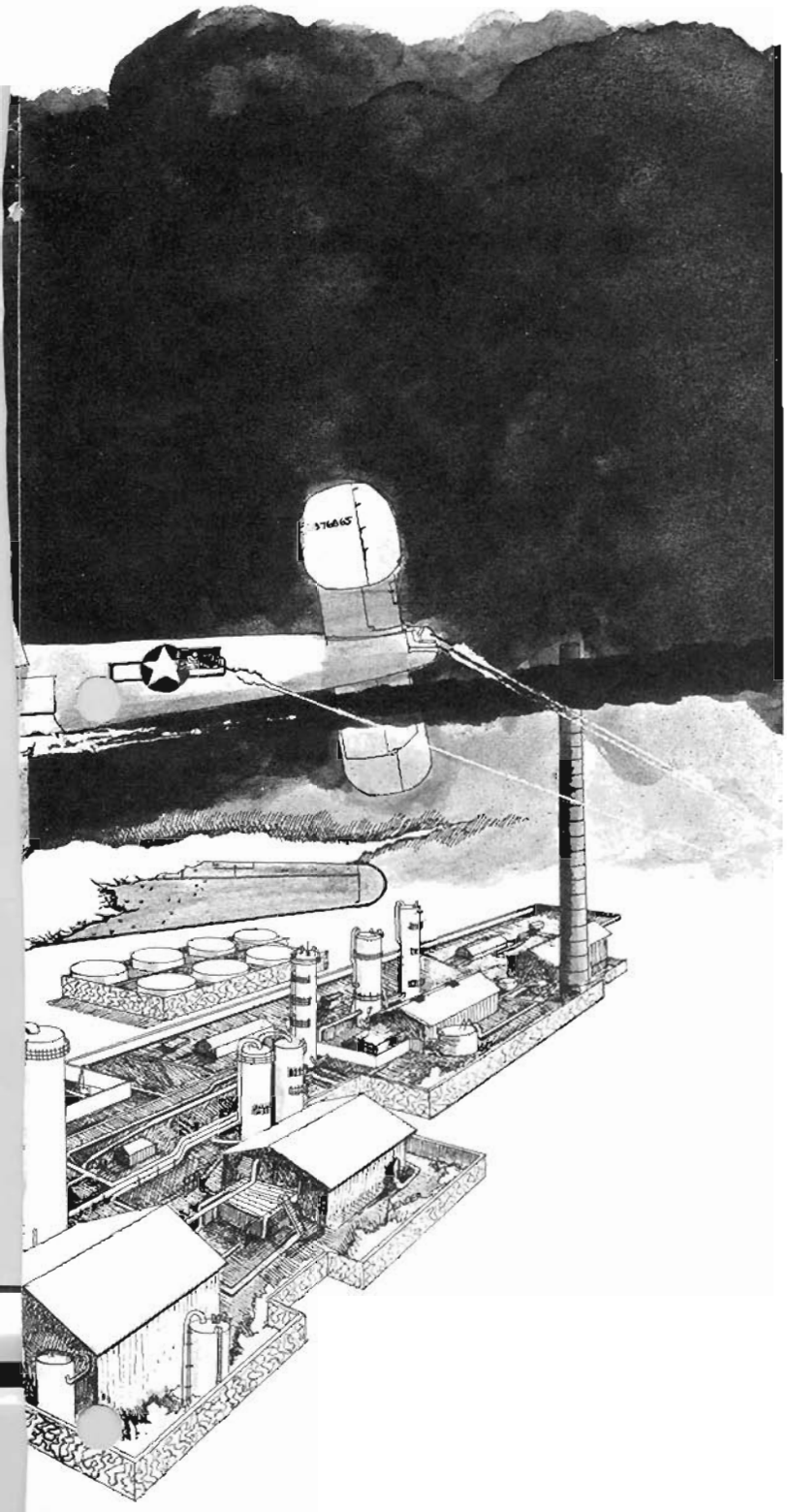
The first attack on Ploesti occurred on 12 June 1942, and, from then until August 1944, over 5,000 sorties were to be flown against the refineries in that area. Selected for discussion is the second raid, by bombers of the Ninth US Air Force, on 1 August 1943. It was a low-altitude attack by B-24's, unescorted, and was initially a ground-to-air battle, with fighters entering into action after the target had been struck.

This action of 1 August was well-conceived and well-planned, and received the approval of General Eisenhower, President Roosevelt, and Prime Minister Churchill. A crippling blow was to be launched to destroy the refineries which produced 10 million tons of oil annually — one third of Germany's high-octane aviation gasoline, panzer fuel, benzine, and lubricants. One-half of the fuel for Rommel's forces in Africa came from Ploesti. The refineries were not conveniently consolidated into a relatively compact target complex as were most bombing targets elsewhere. There were a dozen plants which formed a ring around the city of some 6 miles in diameter; in addition, there were two other important plants, one 18 miles north of Ploesti and one 5 miles to the south. The latter was the most modern high-octane aviation fuel plant in Europe.

There were not enough airplanes available to hit all of the plants, hence, the five most important plants around the city, plus the ones to the north and south, were selected as targets. A round trip of over 2,300 miles faced the bombers, most of it over enemy territory, and it was highly improbable that complete surprise could be achieved. The decision to perform the mission had several factors in its favor.



B-24 Liberator over Ploesti



Refineries — 1 August 1943.

If the Germans learned of the raid, they would expect it to be at the high altitude which the Americans had favored in the past. Minimum exposure to flak would be experienced by the low-level penetration. In addition, enemy fighters would be able to attack the formation only from the horizontal or from above. Bombing would be much more accurate than from the higher altitudes, thus sparing the city and its population, to say nothing of increasing the probability of target destruction. Planes which were hit would stand a better chance of making emergency or crash landings, with a resulting increase in surivivors. The B-24 was not particularly easy to fly at minimum altitudes, but commanders believed that the crews would cope with this difficulty. Gunners in the planes would be afforded the opportunity of shooting back at antiaircraft crews, instead of being only on the receiving end.

Considerable practice was done on low-level flying in England and in the desert. A mock Ploesti was staked out in the desert, where full-scale rehearsals could be accomplished; Liberators sometimes would return to base with the paint scraped off the bottoms of the planes.

"When the offense is quiet, watch out," is an uncredited quote which applies equally to all military operations. So it was for the Ploesti defenses. To amass the required number of aircraft for the raid, it was necessary to curtail drastically the operations of heavy bombers from Africa. This, even as at later dates, alerted the Germans to a subsequent massive Allied bomber effort. The big question was where and when?

The Germans had collected at Ploesti the highest concentration of air defense forces yet seen. Its development was interesting. On 12 June 1942, a force of 12 B-24's had hit Ploesti from Egypt in the first action by American forces over the European Continent. Due to weather, little or no damage was inflicted on the refineries, and there were no losses of aircraft. The German commander of the Ploesti area realized that this was the forerunner of attacks on his area, and the attack gave him a big assist. He wanted the world's heaviest concentration of planes, guns, warning system, and troops.

The Ploesti defense was to be a ring of mobile guns which could be shifted as needed, and was planned to have 250 first-line planes and 75,000 troops. By the end of 1942, the commander had 50,000 German troops and 70,000 Slav prisoners and civilians. As the bomber buildup in Africa was seen, more weapons were called for.

The American intelligence estimate was that there were less than 100 antiaircraft guns at Ploesti, with

probably only half of them manned by Germans. On 1 August, there actually were 237 guns, 80 percent of them manned by Germans who were well-trained, well-led, and well-equipped. In addition, there were 41 barrage balloons and numerous smoke generators. Each heavy gun battery had at least one twin or quad automatic weapon and at least one twin 7.65-mm machinegun for engaging low-altitude targets while the guns were in action against higher targets. A flak train was standing by for movement toward any discovered attack. Allied intelligence concluded that the Ploesti defense was weighted against attacks from the northeast and east, so the attack was to be made from the northwest. The defenses actually were oriented toward attacks from the northwest, west, and southwest.

In the vicinity of the city, or close enough thereto to be used in its defense, there was an inner ring of fighters, about half of them flown by Romanians. Some 143 planes were available: 52 Me-109's, 17 Me-110's, 11 Ju-88's, 23 Ju-87's, and 40 Romanian planes. An outer ring of fighers also was available: there were 20 Me-109's in southwestern Greece on the B-24 withdrawal route; 124 fighters, vintage 1936, manned by Bulgarians near Sofia on the bomber penetration route; and other fighters on Crete.

The warning system was excellent. Visual spotters, radar, radio intercept, spotter planes, and ships all fed information to a center near Ploesti. Three German weathermen had been left behind near Benghazi when Rommel withdrew. These three (who remained undiscovered until 1944) could have relayed raid information in addition to Libyan weather to the German air defense system.

Allied intelligence saw a soft target, lightly defended, and a good chance to achieve tactical surprise. The reverse was true. A ready, willing, and able defense waited for the B-24's.

From the Libyan desert, 178 bombers took off on the mission. For a variety of mechanical reasons, only 164 of them arrived over the target area. The Germans knew of the takeoff shortly after the first planes were airborne. Even though the bombers flew below 4,000 feet altitude across the Mediterranean, their course was plotted and reported until they let down below radar cover after crossing the mountains into the Danube basin.

Defenses were alerted, but the low altitude of the run across the Danube left them in doubt as to the exact location of the attacking forces. That the target was Ploesti was not doubted. Fighters were scrambled, with 52 Me-109's, flown by Germans, patrolling directly over that part of the predicted bomber course which happened to include the bombers' final IP. Others were searching for the bomber stream; one group of fighters spotted the bombers but could not intercept them.

Through a mistake in identifying the IP, the two leading groups of B-24's turned toward the target 20 miles too soon and, as a result, were not seen by patrolling fighters. They eventually realized the mistake and turned to Ploesti, bombing it from an unplanned direction. The timetable had been upset. Remaining attackers had to fly through smoke, flame, balloons, fighters, and friendly bombers to find their targets. Two groups had to fly the length of the waiting flak train which had been moved to the north of the town. The battle was with the antiaircraft over the target complex; fighters generally waited on the outskirts to pick off whatever came through. Gunners in the planes engaged in duels with flak batteries as well as fighters. Some planes, damaged on the bomb run by flak or fighters, did not survive the holocaust through which they had to fly. Others which did survive the terror over the target were met on the way out by more flak and fighters.

Aircraft were scattered all over the sky and the ground. Local fighters chased the bombers as far as their fuel supplies would permit, and the outer ring of fighters also took its toll as the stragglers tried to reach friendly territory or neutral countries.

The price was high:

53 airplanes lost, including 8 interned in Turkey.

23 damaged airplanes landed on Allied fields in Cyprus, Sicily, and Malta.

88 airplanes returned to Benghazi, 55 of which had battle damage.

310 personnel were killed, about 20 percent of those who took off from Libya.

Considering casualties, in addition to those killed and those who were interned, only half of the personnel who started the mission were available. Only 33 B-24's of the original 178 were flyable, an attrition of 82 percent.

Of the bombers lost to known causes, two-thirds were due to antiaircraft, with the barrage balloons accounting for nine aircraft. In a session with German interrogators, one captured airman stated, "They told us before the mission that the flak would never get us if we flew low."

The low-level mission was not a strategic success, although it was more efficient than other types of attack. There was more destruction per ton of bombs on target than any of the high-altitude attacks on Ploesti which followed, but oil production was back to near normal in a few weeks. More guns, radar, and smoke generators joined the city's defenses to become the heaviest concentration of its kind in the world. Some 250 AA guns eventually ringed the city, with 10 percent of them 128-mm guns and 15 percent 105-mm guns.

The Phoenix Battery

LIEUTENANT COLONEL JAMES R. WEBB
US ARMY AIR DEFENSE SCHOOL

LTC McCullough leaned back with a sigh of satisfaction. He had been scrutinizing his operations board with minute attention and after trying to pick out every flaw in the deployment of his Hawk battalion he could not but feel that his dispositions were sound and should accomplish his mission of providing direct support to the division. He had oriented his batteries to protect the maneuver units and important tactical installations and had tried to weight everything toward the FEBA and the left boundary so as to insure AD protection in that area. He had also talked with LTC Pataro who commanded the division's C/V battalion and had been assured that the fires of the battalions complemented each other. "I guess we're as ready as we'll ever be," he thought, and decided to turn things over to his operations officer, Major Cook, while he got a little sleep.

At B Battery, CPT Simons did not share his commander's feeling of confidence. He was tired and uneasy. He wasn't pleased with the position he had been assigned and was concerned about the mission he had to perform. He appreciated the necessity of weighting the Hawk defense toward the boundary the division shared with the airborne division on the left, but was concerned that they had no Hawk units to provide his battery mutual support and that his sister batteries and he could manage only overlapping coverage because of the wide division frontage. A vague, gnawing uneasiness had been with him ever since yesterday when he had reconned the position, and his disquiet hadn't subsided even after his battery had occupied the position and been ready to fire at first light this morning. He had been even more careful than usual to disperse every piece of equipment to its full 114 meters and had taken advantage of every fold in the terrain to camouflage his equipment. When LT Jones with the AFU reported that he was operational at the alternate site 2 km further forward and that he could provide radar coverage into that dead zone in the valley they had been concerned about, CPT Simons should have felt better. But all he did was snarl at LT Montgomery, the XO, to go check on the decoy site personally to insure its camouflage was properly set up. Nor did the clutter diagrams from the battery and the AFU reassure him. Damn it! There were just too many clutter areas around this position. They were only 15 km from the FEBA and every instinct told him an aircraft could be on top of him before he could react. He wished he had one of those nice soft critical assets back in the rear that A and B batteries were defending instead of this Godforsaken boundary practically in the middle of the forward battle area. "It never fails," he thought. "When you have the best battery they always give you the toughest job!"

Muttering worriedly to himself, CPT Simons decided to make one more round of the battery to assure himself that if some aircraft was able to penetrate his detection screen of radars it wouldn't be able to knock out his entire battery with one pass. As he walked, he reviewed all of those survivability laundry lists he had memorized so disparagingly back at Fort Bliss. The battery had taken maximum advantage of all available concealment and camouflage; he had seen to that personally. Cover — there wasn't much but he had at least tried to fortify the critical items like the launcher section junction box, at least one of the acq radars, the BCC, the HIPIR, and two of the three launchers. He made a mental note to check with LTC McCullough to see if he planned to leave them in this position for the full 14 hours if they weren't detected. If it was to be that long, he would move up his scoop loader and dig everything in. In the meantime it would be sandbag-filling time for every man he could shake loose. Electronic deception — about all he could do was alternate his CWAR at his two firing sites and use only the acq radars until he got a positive acquire for the HPIR's. Also, he had to remember to insure that the mechanics pointed the radars to the rear when pulling periodic checks. Dummy and decoy positions — he had them set up and LT Montgomery was checking to see that they were as realistic as possible. Dispersion — that was the key. Make sure there was plenty of distance between the equipment and that everything was laid out in a non-linear configuration. "If they do get through," he thought, "at least they'd better bring a bunch."

The aircraft was a dot in the sky. Its pilot was traveling high and fast, for below him was enemy territory. He was looking for air defense positions but at this altitude the ground below was just a blur. Unfortunately for CPT Simons and his battery, the camera clicking monotonously in the fuselage of the aircraft had much better eyesight. In an instant it caught, observed, and recorded the slight irregularities and undulations in the terrain which the target analyst would later tentatively identify as possible AD fire unit locations. They would locate three but would be unable to tell for sure just which were the actual sites. The enemy commander, in his anxiety to clear this area for close air support strikes to support his planned attack, would direct that a flight of two aircraft recon and attack this area at low level at first light in the morning.

CPT Simons, on the ground below, didn't know his position had been observed. The TCO, LT Askins, had

reported the overflight but it was too high for the battery to engage. Nonetheless, he did follow it until it disappeared off his scope, then reviewed the rules of engagement in his mind, knowing that next time he might have only a few seconds to react, especially with all this darn clutter fouling up his scope. Just as the recon aircraft disappeared from the scope, CPT Simons clambered into the BCC, pausing for a minute behind the assistant TCO to let his eyes accustom themselves to the dim light. He took LT Askins' report, then questioned him closely about his plans for both missile reload and resupply. LT Askins assured him that ready missiles were standing by on the loader-transporter and that he had personnally talked with the battalion S-4 about the ASR CPT Simons wanted increased and the strip map they had sent back to battalion for use by the resupply vehicles. CPT Simons then verified the orientation and alinement, ran a crew drill, called battalion about the projected alert status for the night, told LT Askins to personally insure that all dailies were performed, and left. LT Askins passed CPT Simons' orders on to LT Jones at the AFU and rejoined the assistant TCO, SGT Griffin, at the scope. All was in readiness.

They came out of the sun, low and fast, using their terrain clearance equipment to stay right on the deck.

SGT Griffin was the first to spot them as they came out of a clutter area. LT Askins, after a quick evaluation of their direction, speed and altitude, assigned them to SP4 Smith at the firing console. SGT Griffin notified the AADCP while Smith alerted the launcher sections. They were already at battle stations and were ready even as the illuminator's searching RF beam picked up the intruders and the launchers sprang to life. The two aircraft were headed directly toward them and LT Jones' excited voice came over the radio telling Askins they were only 20k's from the AFU position and that he had a ready-to-fire light. Again mentally analyzing the threat they posed, LT Askins paused only a second before directing Jones to ripple three. There was a pause, then one of the blips on the scope disappeared. Jones' excited voice came on immediately, "We got one! We got one!" he yelled, then abruptly broke off. Askins had only a moment to comprehend before he saw his own ready-to-fire light glow red. Glancing quickly at the scope, he realized that the other aircraft was attacking the AFU position. Quickly he directed Smith to fire, using the shoot-look-shoot method. The fire light went out, then came back on. Smith reported tone burst and the blip on the scope began to veer sharply to the right. Askins had Smith fire again and the other blip disappeared.

By this time both CPT Simons and LTC McCullough were at their command posts, LTC

McCullough in the AADCP and CPT Simons in the BCC. CPT Simons was on the radio trying to raise LT Jones at the AFU. His response was finally answered by LT Jones who reported that his platoon had been hit and he lost the CWAR and one launcher with three missiles. CPT Simons told him to put the HIPIR in the High Box search mode until he could get CWO Kendrich up to look at the CWAR and see if it could be returned to action. As for the launcher, they could operate with two for the present but he told LT Jones to get the launcher that had fired the three missiles reloaded at once. Having accomplished this, CPT Simons reported to LTC McCullough on the engagement and what he was doing to set things in order. LTC McCullough, pleased with the results, told Simons to let him know if he needed support from the DSP and that if necessary he would let him have any float equipment available.

The enemy commander was not so pleased when his aircraft failed to return to base. He immediately ordered another attack, this time consisting of eight aircraft, for he was determined to clear a path for his close air support. The original attack sequence was repeated with four of the attack aircraft getting caught in the flak trap set up by CPT Simons' dummy site. This time, however, the battery minus didn't escape

unscathed, for while CPT Simons was concentrating on the four aircraft attacking the decoy position, the other four aircraft came in over that pesky left flank that Simons had been so worried about and got in close enough to drop their bomb load on the battery before LT Jones could cover the dead zone over the battery. The equipment that Simons had been unable to fortify was knocked out and even the BCC was badly damaged. CPT Simons and the BCC crew staggered from the wreckage looking around dazedly at a scene of utter desolation. Equipment was scattered everywhere. Fires were burning from the direction of the launcher section and the "Mickey Mouse" ears of the HIPIR were lying grotesquely on the ground. Wounded men were staggering toward the aid station in the admin section while mechanics and operators who had escaped either helped them or looked disconsolately at what remained of the battery of which they had been so proud.

CPT Simons, a bandage around the cut on his head, now began to earn his pay. Quickly he dispatched LT Askins to take stock of the battery's tactical equipment while he raced to his jeep to contact LT Jones on the battery command net. The news from both was discouraging. The battery had lost its Pulse Acq radar, HIPIR, ROR, one launcher, and a junction box. LT Jones hadn't suffered any significant losses but had been unable to get either the CWAR or the damaged

launcher repaired before the attack. CPT Simons ordered LT Jones to march order the AFU immediately and move to the alternate position they had picked out yesterday. He gave the same order to the main battery, then flipped over to the battalion command net and reported to LTC McCullough. They talked briefly and then LTC McCullough quickly assembled his staff while CPT Simons turned to the herculean task of reassembling his shattered unit.

The enemy aircraft returned to their base jubilantly reporting their success even though it had cost them four more planes. The enemy commander, relieved at the destruction of that troublesome air defense unit, confidently directed the initiation of his close air support strikes at first light in the morning. He then turned his attention to the final organization details of his attack which he would launch as soon as the close air support aircraft knocked out the artillery supporting the maneuver units in the area he had selected to break through.

At dawn the next morning the aircraft, squatting heavily on the runway due to their ordnance loads, ponderously thrust themselves into the air. The pilots were confident in the knowledge that they could overfly the short range weapons protecting the forward elements, then launch their attacks on the artillery positions on which they had been so carefully briefed. They approached that imaginary trace called the FEBA almost brazenly. What had they to fear? They had air superiority and the SHORAD weapons couldn't reach them. It was a milk run. Then suddenly, inexplicably, the missile launch indicators in their cockpits began to blink on and one after another of the planes began to explode in great orange balls of flame. What had happened? They had destroyed the one battery sent forward to counter them. This just couldn't be; they had defeated the battery. It couldn't be firing at them.

But it was. CPT Simons, LTC McCullough, and their officers and men had worked through the night while the enemy celebrated. The main battery and the AFU elements had reassembled at the alternate position where CPT Simons found he now had an IPCP, four launchers, HIPIR, CWAR and a basic load of missiles operational. A call to LTC McCullough assured him that another IPCP, an illuminator radar, and junction box stripped from one of the rear batteries were on their way. He had emplaced his IPCP, CWAR, HIPIR, and two launchers in the alternate position and had LT Montgomery move the other two launchers and 12 missiles to another position which they had picked out on the map. On the way, LT Montgomery and CWO Kendrich policed up serveral undamaged power and data cables from the old battery site and were all set when the convoy from battalion with LTC McCullough himself in the lead pulled in at 0300 with the IPCP and HIPIR. They worked feverishly and had just completed their operational checks when they saw the smoke trail of CPT Simons' first launch sear the sky from the other position.

The enemy commander waiting anxiously at his forward command post pounded the table in rage when the news of the destruction of his attack aircraft reached him. There could no longer be any doubt of the failure of his air interdiction. He reluctantly and with a bitter sense of frustration gave the order to stop the ground attack.

LTC Webb is Tactics Division Chief in the Tactics Department at the US Army Air Defense School. He has served as commander of various air defense units and holds a Masters Degree in Educational Administration. His article, "Foxbat Nine O'Clock," appears in the April-June 1975 issue of ***Air Defense Trends.***

WHAT DO YOU DO NOW,

LIEUTENANT?

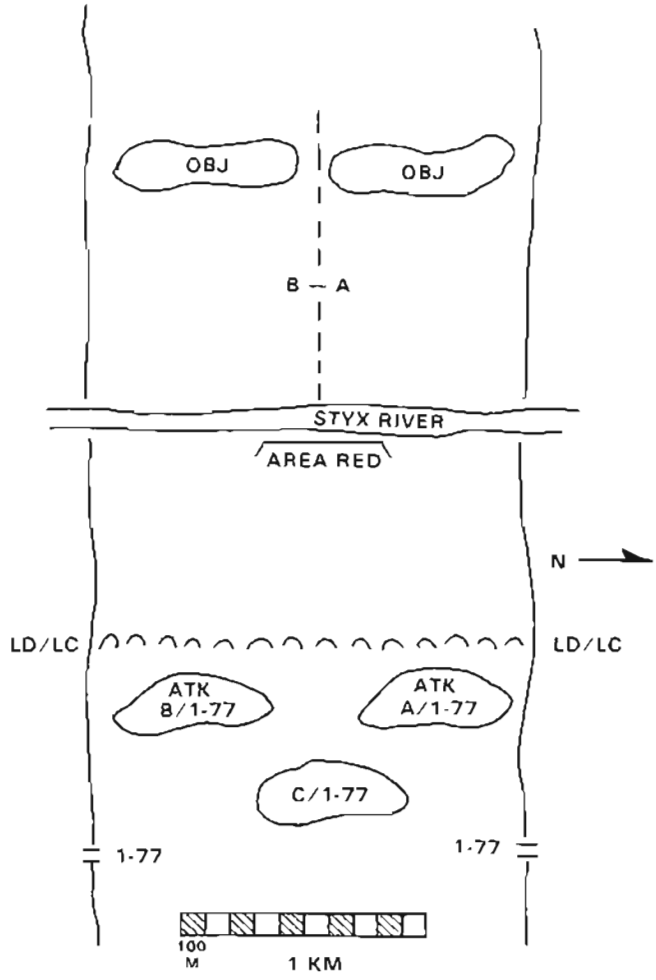
SITUATION

You are the Redeye section leader organic to the 1st Battalion, 7th Infantry, 52d Infantry Division (Mech). For several days, your battalion has been engaged in a continuing offensive operation. The battalion is now closing on the Styx River and has been ordered to push the enemy across the river and continue the offense by performing a hasty river crossing (at BMNT) on 20 December. The battalion assault crossing site will be at Area Red. Necessary fire support and smoke coverage will be provided by division artillery.

Alpha and Bravo Companies will swim the river in the general vicinity of Area Red and maneuver to secure their company objectives. Charlie Company, which is being held in reserve, will follow Bravo Company on call.

A mobile assault bridge (MAB) section of the division engineer battalion's bridge company, will provide a MAB ferry for 3 hours during the crossing operation. The ferry will transport designated critical wheeled vehicles (ammo, POL, maintenance, wreckers, etc.) across the river to continue with the assaulting companies. The other battalion assets will cross the Styx at a brigade crossing site outside the battalion area.

In previous operations of this nature, enemy tactical aircraft have reacted violently by attacking and disrupting river crossings and causing many casualties and losses of equipment. The battalion commander has asked you for recommendations on how your five Redeye teams should be positioned and employed during the coming operation.



PROBLEM

What are your recommendations for employment of your section and what are your actions?

SOLUTION

First, you must consider the factors of METT (mission, enemy, terrain, and troops available).

- Air defense protection must be provided to the assaulting companies in their attack to the river, during the river crossing, and in their continuing assaults to secure company objectives. Air defense coverage must also be extended to Charlie Company, which is being held in reserve in an assembly area, and to the rafting operation in which the battalion's critical wheeled vehicles will be ferried across the river.

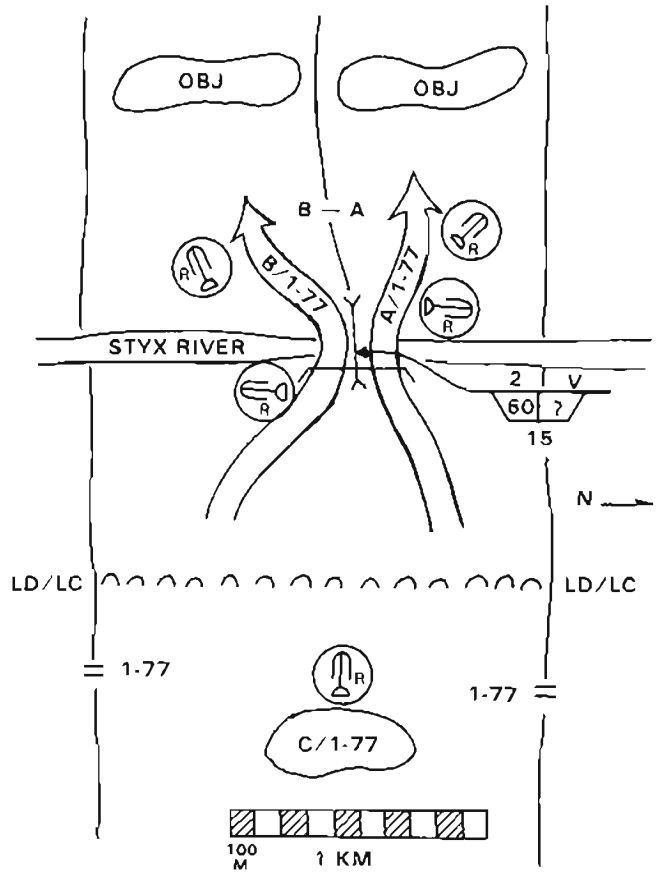
- You check with the S-2 and S-3 Air for intelligence reports concerning the current enemy air threat to the operation.

- You then consider the possible Redeye positions necessary to cover the expected avenues of approach by hostile aircraft. To the north and south along the axis of the river are the primary avenues of approach for enemy tactical air attacks. If an aerial reconnaissance of Area Red is possible, accompany the battalion reconnaissance party or ask them to obtain the information you will need to plan your Redeye positions. Make a detailed map reconnaissance. Consider the weather and smoke coverage and determine how and if they will affect the Redeye teams.

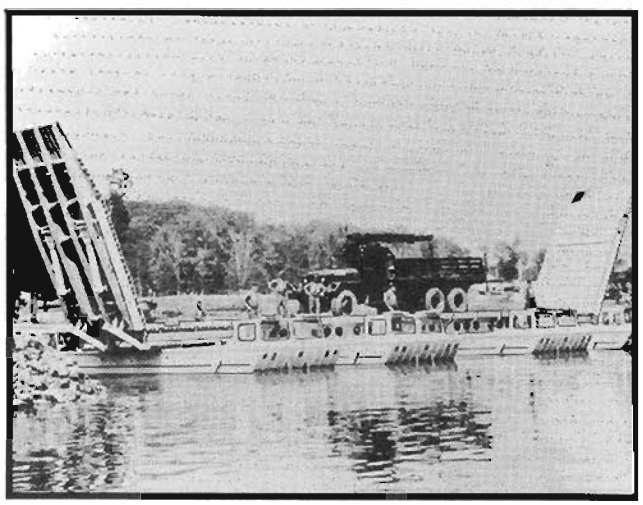
- You also consider the deployment of friendly ADA units and their ADA coverage. Because you are the battalion special staff officer for air defense, you are also responsible for advising the commander on how the battalion should employ active and passive air defense measures.

After considering these factors, you recommend that two Redeye teams accompany each assaulting company in the attack on the river. The fifth team will remain with the reserve company in the assembly area. As the assaulting company APC's begin their swim across the river, three Redeye teams will cross with them. One team will continue with each maneuvering company to the company objectives, while the third team deploys to the north of the far bank crossing site to protect the river crossing and ferrying operations. The fourth team remains on the near bank and establishes its defensive position to the south of the crossing site. The fifth team provides support of the reserve company throughout the operation and moves with it when it is called to follow Bravo Company.

After the 3-hour ferrying operation is completed, the Redeye teams at the river then link up with and continue to provide air defense coverage for the assaulting companies.



ASSAULT STAGE



MOBILE ASSAULT BRIDGE (MAB) FERRY

ENLISTED CAREER NEWS

LTC William D. Merritt
Chief, FA/ADA Branch
Enlisted Personnel Directorate

We, as your Branch representative in the Enlisted Personnel Directorate, are pleased to have the opportunity to contribute to *Air Defense Trends*. The Army's enlisted management policies are changing rapidly. The mission of putting the right soldier in the right place at the right time is a tremendous task. To successfully accomplish this objective requires keeping all soldiers informed concerning on-going activities. We in the Branch will strive to have up-to-date information submitted to keep you informed. Your Branch is dedicated to serving you — the soldier. If you have questions or need information concerning your career, please feel free to write. Correspondence should be addressed to 2461 Eisenhower Ave., Alexandria, Virginia 22331, ATTN: DAPC-EPK-A.

Wm D. Merritt

EPMS OVERVIEW

On 1 October 1975, the Air Defense Artillery Career Management Field (CMF 16) began implementation of the new Enlisted Personnel Management System (EPMS), a system of professional development of every enlisted soldier's career. Overall, EPMS is designed to promote career progression and professionalism throughout the enlisted ranks. To achieve this, training, evaluation, classification, and promotion are being integrated under a single coordinated system. Developed by the Army's Military Personnel Center (MILPERCEN), the Training and Doctrine Command (TRADOC), and the major commands of the Army, EPMS places special emphasis on keeping soldiers proficient in their respective career management fields through both formal and informal training.

OBJECTIVES

The objectives of EPMS are to:

- Provide a logical and visible "road map" guiding soldiers by the most direct route from E-1 to E-9 by redesigning each CMF.
- Eliminate promotion bottlenecks, insuring fair promotion opportunity to all soldiers in the same grade.
- Broaden soldier skills, make assignments more flexible, and provide greater challenge by decreasing the number of MOS through eliminating and combining some at the lower grades while merging others at higher grades.
- Provide continuing training throughout the soldier's career.

EVALUATION — What will happen now?

Under EPMS, there will be changes in the enlisted evaluation system. Skill Qualification Tests (SQT) — so named because they are used principally to determine the skill level at which the soldier is qualified — will replace the MOS tests as we know them today. Where possible, hands-on type tests will be at the lower grades.

SQT's will be administered every year. Soldiers will be tested in their primary MOS every other year. Tests will correspond to the next higher grade. Test scores may be used for two purposes: verification of current skill level or attainment of the next higher skill level.

In general, the evaluation system will work this way: upon promotion to E-4, the soldier becomes subject to testing every other year. If the soldier achieves what will be known as a "minimum passing score" on the SQT, he verifies that he is qualified at the skill level of his current grade. If he attains a "higher passing score," he qualifies for the skill level of the next higher grade. Failure to attain the minimum passing score will result in the soldier's being considered unqualified at his current skill level. In this case, he will be required to take the test again in a year. If he fails again, he will be reclassified.

Even though each soldier is required to take the test only every other year, a soldier who wants to try for a higher score may volunteer to take the test 1 year later.

CLASSIFICATION — What's new or different?

First, there will be a closer relationship between a soldier's grade and skill level (skill level 1/E-1—E-4, skill level 2/E-5, skill level 3/E-6, skill level 4/E-7, and skill level 5/E-8—E-9). There will be training and evaluation requirements for award of each of these skill levels.

Second, beginning with promotion consideration to E-5, each soldier must qualify and be awarded the next higher skill level before being competitive for promotion to the corresponding grade. There will be two ways a soldier can attain the next higher skill level and be eligible to compete for promotion. One method will be a combination of OJT plus a higher passing score on the soldier's SQT. The alternate method is through successful completion of the appropriate NCO course plus a higher passing score on the SQT.

If a soldier is reclassified into a new MOS, he will be automatically awarded the skill level corresponding to his current grade. To keep the new MOS, he will have to achieve a minimum passing score on the SQT not later than the second annual test after reclassification. To become eligible to compete for promotion he must achieve a higher passing score.

PROMOTION UNDER EPMS

The current promotion system will continue under EPMS, that is, promotion to E-3 and E-4 will be locally controlled; E-5 and E-6 will be semicentralized; and E-7 through E-9 will be centralized. In addition to attaining the next higher skill level, soldiers must meet all promotion criteria established under the current system.

EM PROMOTION CHANGES

A new regulation change will allow commanders to remove a soldier from local promotion lists if the soldier through his or her fault fails to take a regular MOS test.

Another change in the reg — AR 600-200 — will allow commanders to remove soldiers who fail to qualify for a security clearance for an adverse reason from local promotion lists.

A major change stops the use of "blood stripes" as a result of reductions from E-5 and E-6. Commanders cannot use promotion capability resulting from such reductions. Instead, the promotion capability will go to the top promotable soldier Army-wide in the same MOS.

Some other AR 600-200 changes effective 1 July 1976 will:

- Require commanders to observe a soldier's performance for at least 6 months before reducing him in rank for inefficiency — 90 days is required now.
- Prohibit promotion consideration of soldiers who are barred from reenlistment.
- Require board action before reducing soldiers in grade E-5 and above for civil convictions.
- Require unit promotion boards to tell a soldier why he wasn't selected for promotion and what he must do to get promoted.
- Permit soldiers who return to active duty from temporary disability retirement to be immediately considered for promotion up to E-5 if they meet time-in-service and time-in-grade criteria.

• Provide for administrative recomputation of administrative promotion points without board action.

In a nutshell, here's how the enlisted promotion selection system still works: promotion selections for soldiers in grades E-6 and below are made by local selection boards. Once on local promotion lists to E-5 and E-6, soldiers must also equal or exceed promotion cut-off scores for their MOS. Cut-off scores are published monthly by MILPERCEN.

Selections for promotion to the top three enlisted ranks are made by centralized DA boards which generally meet at Fort Benjamin Harrison, Indiana.

OVERSEA TOURS

Oversea tours for air defense artillery enlisted personnel are alternated between long- and short-tour areas to the maximum extent possible. The imbalance of authorizations between oversea areas for many of the air defense artillery MOS, however, limits flexibility.

The Enlisted Personnel Directorate (EPD) is often asked, "What can I do to influence my oversea assignment?" There are four actions a soldier can take to make his desires known.

• First, for grades 6, 7, and 8, insure that a current Enlisted Preference Statement, DA Form 2635, is forwarded to HQ, MILPERCEN, ATTN: DAPC-EPC-CA. Make certain block 5a, CONUS/Oversea Assignment Preference, clearly indicates what you want, e.g., a long tour over a short tour. Modify the form if necessary.

• Second, for all grades, insure that your Oversea Area of Preference, block 43, DA Form 2, reflects your current preference. A word of caution: be practical. Don't ask for an area where there are no authorizations for your MOS and grade because you'll be wasting a valuable item of information needed in making your oversea assignment.

• Third, for all grades, submit a volunteer statement IAW Chapter 2, AR 614-30, to the Field Artillery/Air Defense Artillery Branch, EPD, MILPERCEN (DAPC-EPC-CA). Applications will be retained for 7 months unless the applicant is otherwise notified.

• Fourth, for all grades, send a letter to the branch if you feel you have a special situation that cannot be covered by the above procedures.

Remember, the branch needs to know what you want before an assignment is made. Only then can we make every attempt to meet your desires.

ENLISTED OMPF's

MILPERCEN is again reminding commanders, personnel officers and soldiers in general of the problem of missing or inaccurate information in enlisted official military personnel files (OPMF). A soldier's OMPF is a major factor when DA selection boards consider individuals for military and civilian schooling and promotion. Accurate efficiency reports and up-to-date photographs are of the utmost importance because they show both the soldier's ability and potential as well as his physical bearing and appearance. Commanders, personnel officers, and specialists should refer to AR 640-10 for items that should be included, if available, in every soldier's OMPF. Individuals should also refer to this regulation to double check that everything they think should be in their file is actually there.

CONCURRENT TRAVEL EASED

Concurrent travel approval for Army personnel and their families will be easier to obtain as a result of a recent policy change. Now, concurrent travel is encouraged and approved when Government quarters or suitable economy quarters will be available within 30 days after arrival of a member and his dependents in an oversea area. Formerly, the policy required that quarters be available on arrival.

Another major change allows for deferred travel approval when Government or suitable economy quarters will be available 31 to 140 days after the arrival of the member in the oversea command. Upon approval of deferred travel, dependents of families residing in Government quarters will be permitted to remain in quarters at the old duty station for up to 140 days after the member's departure or 60 days after his oversea reporting data if TDY en route is directed.

Dependents of members attending service schools will be permitted to remain in Government quarters at the discretion of the school commandant based on the availability of quarters required for incoming students.

Should unaccompanied Army personnel arrive in the oversea command and be unable to obtain suitable quarters, or elect to have dependents remain in CONUS, they will be given the opportunity to change their initial tour election from "with dependents" to an "all other" tour.

SCHOOLING FOR CLUB MANAGEMENT

Due to a worldwide shortage of club management personnel, MILPERCEN is soliciting applications from soldiers in grades E-6 and E-7 for attendance at the Club Management Course given at Fort Lee, Virginia. Selected individuals will attend the 7-week course on TDY and will be awarded a new primary MOS of 00J50 upon completion. Course graduates will be assigned within their new PMOS according to their personal preferences and the needs of the Army.

Applications should be submitted on a DA Form 2496, "Disposition Form," and forwarded to the individual's commander for recommendation.

BARS TO STARS
OPD UPDATE

SPECIALTY SKILLS

The Officer's Personnel Management System (OPMS) has moved from its planning stage to a fully operational system for the management of officer professional development and utilization. The designation of two specialties for all lieutenant colonels, majors, and captains with over 7 years active federal commissioned service was completed by 17 July 1975. By 30 July, all captains and lieutenants with less than 7 years' service had been designated a basic entry specialty. Through Project EASI (Expanded Use of Additional Skill Identifier), the Army's officer personnel requirements have been defined in terms of specialty skills. For the first time the Army has common definitions for job requirements and officer qualifications in terms of skills. This accomplishment permits personnel managers to evaluate specialty overages and shortfalls and to manage toward the future rather than in response to the past. Starting 1 November 1975 officers will be requisitioned and assigned by specialty and grade rather than branch and grade.

SPECIALTY TRANSFER REQUEST

Requests for specialty transfer by field grade officers from over-alined to under-alined specialties can occur now and are encouraged. Conversely, transfer requests from under-alined to over-alined specialties are discouraged. The moratorium on company grade transfers will remain in effect. Proper alinements in terms of numbers of skills and utilization opportunities within and between specialties is the primary goal of the specialty designation process. The tables below show under-alined and over-alined specialties for field grade officers as of 15 October 1975.

Under-Alined Specialties

(Shortage of Officers Designated these Specialties)

LTCS	MAJORS
21 Engineer	21 Engineer
27 C-E Engineer	27 C-E Engineer
31 Law Enforcement	31 Law Enforcement
37 Cryptology	37 Cryptology
44 Finance	44 Finance
49 ORSA	52 Atomic Energy
53 ADP	93 Logistics Services Management
93 Logistics Services Management	95 Transportation Management

Over-Alined Specialties

(Excess Number of Officers Designated these Specialties)

LTCS	MAJORS
36 Counterintelligence	28 Audio-Visual
54 Operations and Force Development	36 Counterintelligence
	42 Personnel Administration
	77 Tank and Ground Mobility Materiel Management

If you fall into one of the over-alined specialties, don't panic because the situation is manageable under OPMS with the exception of operations and force development. This specialty at the grade of LTC is clearly the most over-alined specialty. Operations and force development has 636 positions at the grade of LTC and is projected in 1981 to have 269 positions at the grade of COL. These positions have 1,873 LTC's alined against them. Through the use of a computerized simulation model of the officer assignment and promotion systems, OPD predicts that approximately 500 of these LTC's will not have an opportunity to serve in the specialty at the grade of LTC. Furthermore, this population of 1,873 LTC's is anticipated to produce an average of 90 COL's who also will not have an opportunity to serve in this specialty. For these reasons, LTC's in this specialty who possess logistics aptitudes are encouraged to request transfer to a LOG specialty to enhance the utilization of skills in two specialties. These conditions exist only at the current serving grade of LTC. If you are a LTC in the Operations and Force Development specialty, it would be in the best interest of all concerned for you to assess your capabilities, qualities, and attributes for another specialty. Get in touch with your primary specialty manager in your grade division for assistance and guidance.

Terminology

The terms "primary specialty" and "alternate specialty" are in need of explanation. There is a tendency to consider the primary specialty as the more important of the officer's two specialties. This is not necessarily the case. For most officers, the primary specialty is the one which received initial emphasis during the company grade period. At the field grade level, utilization in the officer's primary specialty will depend on the combination of job opportunities in both the officer's primary and alternate specialties. Field grade combat arms officers can anticipate that they will spend the majority of their time in their alternate specialty because of the relatively low number of Army requirements for combat arms specialties at the field grade level. Therefore, principal utilization can be expected to be in their alternate specialty.

Aviation Specialty

Aviation has become a separately managed advanced entry specialty. This new concept is keyed to meeting field grade aviator requirements. Prior to flight school, prospective aviators will be trained and assigned based upon their basic entry specialty. Officers from Infantry, Armor, Field Artillery, Air Defense Artillery, Engineer, Signal Corps, Transportation Corps, and Military Intelligence Branches may apply to enter flight school between their 24th and 60th month of active commissioned service. Officers participating in basic entry specialty aviation materiel management will attend flight school subsequent to completion of the Transportation Officers Basic Course. Development of the aviation specialty has not affected the medical service corps program which will continue to be managed by The Surgeon General.

CENTRALIZED COMMAND SELECTION SYSTEM

The Army's centralized command selection system is designed to select those officers best qualified to command designated units/organizations at brigade and battalion level. To date, approximately 525 colonels and 700 lieutenant colonels have been selected by HQDA command selection boards to fill a variety of designated command and management positions. Pertinent statistics concerning the LTC's and MAJ's(P) selected for 683 battalion level command positions by the last board are:

Number Eligible	5,631
Number Submitted to Phase II Selection Board	2,386
Number Rank Ordered	1,311
Number of Principals	683
Number of LTC's	390 (57.7%)
Number of Promotable MAJ's	293 (42.3%)
Number of OTRA Officers	8 (1.2%)
Number of Non-CGSC Level Graduates	20 (2.9%)
Number of Officers Non-select to COL (AUS)	4 (0.6%)

The board to select LTC's and MAJ's(P) to commence their command assignments between 1 October 1976 and 30 September 1977 is expected to meet in January 1976 with results anticipated for publication in May 1976.

CIVIL SCHOOLING

Fully Funded Advance Civil Schooling

Selection for graduate study is designed to meet specific Army requirements and must be in a predetermined shortage specialty. Prerequisites for selection are an outstanding performance record, attendance at the advanced course, and full qualifications in the primary specialty. Officers selected study for a period of up to 18 months and are required to serve a 3-year utilization tour, normally immediately after graduation. Applications should be made under the provisions of AR 621-1, 6 May 1974. Applications are accepted any time and will remain active until the individual is selected or found ineligible.

SENIOR ADA COMMANDERS UPDATE

LTC Donald R. Park 3d Battalion, 59th ADA (Hawk)	LTC Robert D. LaTour 2d Battalion, 71st ADA (Hawk)	LTC Phillip B. Chesher 4th Battalion, 62d ADA
LTC Harry J. Hubbard II 1st Battalion, 59th ADA (C/V)	LTC Joseph Stone 2d Battalion, 61st ADA (C/V)	LTC William I. Barrett 1st Battalion, 43d ADA (Herc)
LTC Harlan R. Pierce 2d Battalion, 44th ADA (Herc)	LTC John W. Moore 3d Battalion, 6th ADA	LTC Richard F. McCrary 1st Battalion, 62d ADA (C/V)
LTC Marvin A. Bihn 5th USA Artillery Group	LTC John B. Stone 570th USA Artillery Group	LTC George R. Perkins 552d USA Artillery Group

Advanced Degree Program for ROTC Instructor Duty (ADPRID)

The Combat Arms Division has openings for officers to enter graduate school for the purpose of obtaining a masters degree and remaining at the same institution to serve a 3-year tour as an ROTC instructor. In cases where a university does not have a masters program, the graduate degree will be pursued elsewhere. Officers must study in a predetermined shortage discipline. Applications should be submitted under the provisions of AR 621-101, 1 May 1974. Direct assignments to ROTC duty not requiring a masters degree are also available.

Degree Completion Programs (DCP) (Bootstrap)

The partially funded degree completion program is the only program whereby an officer can receive full-time civilian schooling to complete an undergraduate degree. Prerequisites for selection are attendance at the advanced course and a record that will support retention and promotion. Only individuals who can complete their degree in 18 months and who are available for assignment will be selected. Considering the demand for the program, the limited number of schooling spaces available necessitates that priority be given to those officers who require the least amount of time to complete the degree requirement. Applications should be made under the provisions of Chapter 8, AR 621-1, 6 May 1974.

Warrant Officer Undergraduate Degree Completion Program

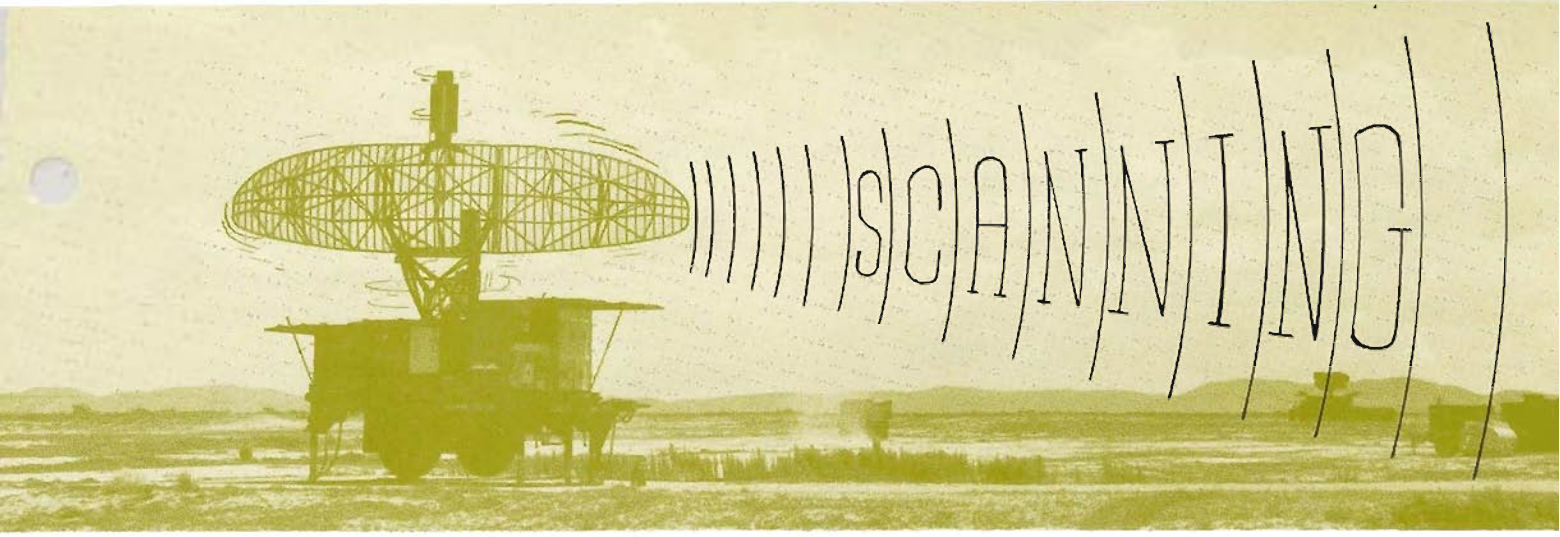
This program allows a maximum of 18 months on-campus study in an MOS-related discipline to obtain an associate degree. Normally, the associate degree should be completed by the 15th year of service; however, the program will permit attendance by RA warrant officers through the end of their 23d year of service and other than RA warrant officers by their 17th year of service, providing the incurred service obligation could be completed by the 20th year of service.

CODE-A-PHONE

Company Grade Combat Arms Division has recently installed a 24-hour CODE-A-PHONE system. The system allows an officer to call, state his problem into a recorder any time, day or night. Each morning the CODE-A-PHONE tape is read and necessary action taken. The phone numbers are (AC 202) 328-8111 or AUTOVON 221-8111.

ADA POINTS OF CONTACT

Warrant Officers Division	
Chief, COL Robert M. Joyce	221-7831
ADA assignments, CW4 James D. Vaughn	221-7837
Chief, Professional Development, MAJ F. Vollrath	221-7844
Chief, Personnel Actions, CPT J. Coverstone	221-7845
Company Grade Combat Arms Division	
Chief, COL Elliot P. Snydor, Jr.	221-7813
Chief, ADA Branch, LTC Nathan A. Offield	221-0115/0117
LT assignments, LTC Nathan A. Offield	221-0115/0117
CPT assignments, MAJ Dennis J. Spiegel	221-0115/0117
Civil Schools, CPT Gregory L. Sharp	221-7820
Military Schools, MAJ Daryl B. Matthews	221-7818
Personnel Actions — LT — CPT Peter Krafinski, Jr.	221-0700
— CPT — MAJ Claude Ellis, Jr.	221-0701
Majors Division	
Chief, COL Benjamin E. Doty	221-8117
ADA assignments, MAJ Robert J. Lander	221-0686/0687
Chief, Professional Development/Personnel Actions Branch, LTC William Northquest	221-8104
Civil Schools, Mrs. Agnes Burns	221-8119
Combat Arms Team, MAJ William Warnock	221-8108
Personnel Actions, MAJ Garrett Marcinkowski	221-8119
MAJ L. Sam Thompson	221-8122
Lieutenant Colonels Division	
Chief, COL George C. Hoffmaster, Jr.	221-7890
ADA assignments, LTC Kenneth G. Jensen	221-9529
Chief, Professional Development, LTC Paul R. Gleave	221-0752/0753
Chief, Personnel Actions, Mr. Frank E. Knight	221-7893
Colonels Division	
Chief, Lewis B. Tixier	221-7860
ADA assignments, LTC Joseph D. Ryan	221-7863
Chief, Personnel Support and Action Branch, Mrs. Maxine M. Arnett	221-7880



AIR DEFENSE PROGRAM REVIEW

The 1975 biennial Air Defense Program Review was held at the US Army Air Defense Center and Fort Bliss 20-21 August. GEN Walter T. Kerwin, Vice Chief of Staff of the Army and GEN W. E. DePuy, Commander of the US Army Training and Doctrine Command were senior representatives among an impressive list of high-ranking military and civilian officials attending the 2-day meeting. MG CJ Le Van, Commander of the US Army Air Defense Center and Fort Bliss, hosted the meeting. Inspecting and reviewing US Army air defense systems and evaluating the potential threat along with Generals Kerwin and DePuy were 37 other general officers and 6 top-ranking civilians.

The agenda for the review included the following list of topics:

- Air Defense Overview.
- Red Air Threat To The Army In The Field.
- Product Improvement Programs (Operational Requirements, Chaparral, Improved Hawk).
- Manportable AD Systems (Required Operational Capability, Stinger Program, Stinger Alternate).
- SHORAD Systems (Operational Capability, DIVAD Gun, ROLAND Missile System).

- SAM-D (Required Operational Capability, Program Status).
- AN/TSQ-73 (Required Operational Capability, Program Status).
- Advanced AD Technology (Missile Technology, Gun Technology, HELTADS).
- AD Training Developments.
- AD Funding.
- AD Personnel Status.
- Force Structure Analysis.
- AD Materiel 1975-1985.
- AD Summary

ROLAND TESTING BEGINS

The European-developed Roland short-range air defense missile system is presently undergoing testing at White Sands Missile Range, NM. The testing is a cooperative venture among Germany, France, and the United States. The cooperative test program is designed to provide additional test data of interest to Germany and France and provide the US with data which can be used to reduce DT/OT II test requirements for the US Roland system. Roland was selected earlier this year to meet the Army's requirement for an all-weather, short-range, air defense missile system. In addition, this cooperative effort is giving US soldiers early hands-on experience with the system.

The first US firing test was conducted on 18 November 1975 with a German crew at the controls. The US crew conducted its first firing on 22 November 1975. Both firings resulted in the successful engagement of a jet drone target. Firings will continue throughout

the remainder of this year. Some of these firings are designed to evaluate the system's adverse weather capability.

Roland consists of a search radar, a tracking radar, and two launcher arms mounted on a turret atop a single vehicle. Its fire control unit features a computer and associated displays and control equipment for both the commander and gunner. Each Roland fire unit will carry 10 missiles, two ready for instant launch and eight additional rounds carried in two magazines on each side of the system. Reloading is automatic.

The US Roland will be built by Hughes Aircraft Company and Boeing Aerospace Company, and it will be mounted on a standard US vehicle.

NEW IH TRAINING DETACHMENT

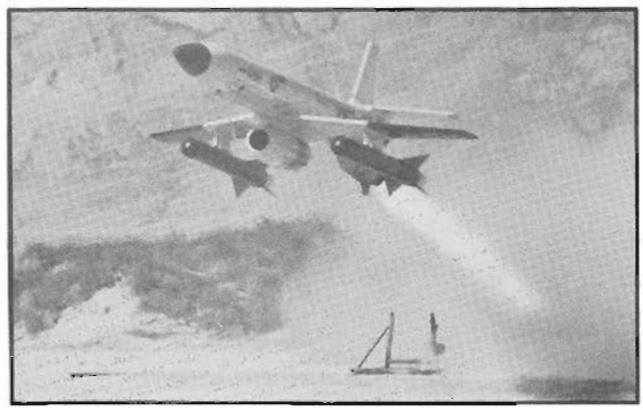
A recent Activation Ceremony established the Improved Hawk Training Detachment (Eighth US Army). Commanded by Major Ray T. Smith, the new detachment is attached to and supported by the Fifth Battalion, 57th Air Defense Artillery, The School Brigade, Fort Bliss, Texas. It consists of 19 people who have the responsibility to provide command, administrative, and logistical support to the eight Improved Hawk battery packages coming from Korea for training. They will be assisted in their training mission by a seven-man battalion control element from the battalion being trained.

Two Improved Hawk systems will be used to train two battery packages in each 8-week training cycle. Each training cycle consists of intensive training in battery maintenance procedures, crew drills, combat readiness evaluations, and a field training exercise. The culmination of each cycle will be an annual service practice including firing an Improved Hawk missile. The 32-man battery packages include battery officers, warrant officers, Hawk mechanics, fire control operators, and launcher crewmen, a strong nucleus for training the remainder of battery personnel on the Improved Hawk system when the packages return to Korea and integrate with their units. The training will cover an 18-month time span.

DRAGON WAGON

The US Army Air Defense Board is conducting a feasibility test of mobility improvements to the Hawk system. One aspect of the test involves the Dragon Wagon shown above transporting the improved high-power illuminator radar and a launcher with three missiles.

VARIABLE SPEED TRAINING TARGETS



The Army Missile Command (MICOM) has awarded a limited production contract to Beech Aircraft Corporation for 62 MQM-107, Variable Speed Training Targets (VSTT) and associated equipment. The fixed price contract calls for initial production and DT III Production Validation Testing of target vehicles, ground support equipment, initial repair parts, documentation, and such ancillary equipment as tow targets and banners.

The MQM-107 (VSTT), which can operate at altitudes ranging from 300 to 40,000 feet, is also capable of speeds varying from 250 to 500 knots. It is capable of towing currently existing standard US Army AD training targets. The MQM-107 is anticipated for use in evaluating new lots of production missiles. The MICOM Targets Special Items Management Office has program responsibility for the VSTT program.

3D OF 61ST SCORES HIGH

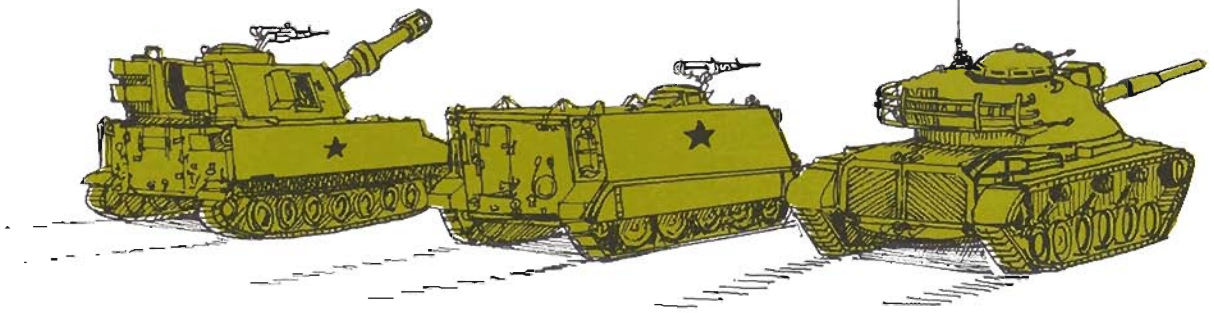
In a brilliant display of firepower and combat capability, the men of Chaparral Batteries C and D, 3d Bn, 61st ADA, 3d Armored Division, recently completed their annual testing at Chania, Greece. The missilemen of both batteries spent 5 days at the NATO Missile Firing Installation (NAMFI), on the island of Crete, where they were hosted by the Greek Army.

The men proved that they are the best Chaparralmen among USAREUR division-size units, and they stand an extremely good chance to rack up top position USAREUR-wide as well.

With a 75 percent new force this year, the skilled Air Defense Artillerymen annihilated all but 3 of their 24 targets with a final score of 89.1 percent.

This marked improvement over last year's testing, according to Battalion Commander LTC Wallace Arnold, is credited to a concentrated training effort. He said, "Our approach this year was to combine tactical and technical training. With a well-organized preparation program, we brought the crews along to a progressively high peak."

Combined Arms Corner



CLIG-UP

A 155-mm cannon-launched guided projectile, CLGP , pronounced "clig-up," passed a major developmental milestone in a recent demonstration. A CLGP hit a target tank 8 kilometers away while being directed to the mark by a laser beam from a small, remotely piloted vehicle (RPV). It was the first attempt to use a remote controlled airborne designator to provide the laser spot on which the guided projectile homes.

CLGP is a cannon shell that homes in on a target that has been illuminated by a laser designator.

In the demonstration the RPV flew at 1,500 feet, at a speed of 50 knots, and located the target M-48 tank with its TV camera. Technicians monitoring the aircraft at a ground station 4 kilometers away projected the RPV's laser beam on the target and then signaled the artillery to fire.

Army officials say a successful RPV system would increase the effectiveness of the guided artillery round significantly.

DRAGON

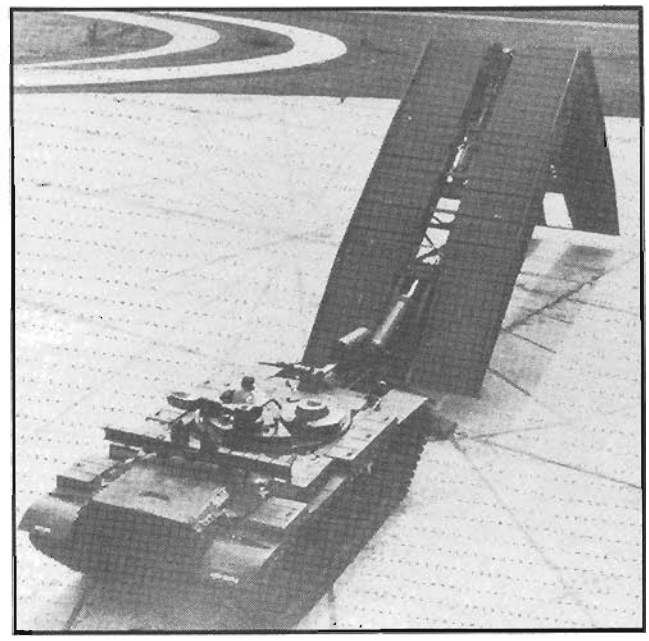
MICOM test engineers fired two Dragon rounds this summer to successfully conclude the first production acceptance tests.

Production acceptance tests enable the Army to evaluate the reliability and accuracy of Dragon rounds before buying them. Under the program, the Government will take a random sampling of Dragon rounds off the production line for testing before Army evaluation at Redstone. If tests are successful, the Army buys that particular lot of rounds. If they fail, the Army isn't obligated to buy until the company produces workable rounds.

Weighing about 31 pounds, Dragon is completely manportable but powerful enough to destroy any known enemy armor or field fortifications. It is replacing the 90-mm recoilless rifle.

MORTAR LOCATING RADAR

The US Army's new mortar locating radar (MLR) can track the point of origin of enemy mortar fire. The MLR is a quickly deployable system suited to action in the forward edge of the battle area. The system has exceeded all expectations in tests thus far.



Shown undergoing testing is the first production model of the Armored Vehicle Launched Bridge (AVLB). Mounted on an M60A1 tank chassis, it can be launched in less than 2 minutes.

MODIFIED ARMORED PERSONNEL CARRIER

A modified version of an M-113 Armored Personnel Carrier (APC), developed by a Fort Hood unit, will be reviewed by a research and development center at Fort Benning.

The center will view a video-tape presentation of the vehicle's alterations to look for characteristics of the modified APC for possible use in other vehicles.

Racks were welded on each side of the APC to facilitate exterior storage of supplies and allow more interior storage of supplies and more interior space for additional ammunition. Due to the extra space, the vehicle will also be able to carry weapons it would not normally carry.

Both the APC's ammunition load for the M-60 and .50 caliber machineguns will be increased, the 7.62-mm for the M-60 from 1,320 rounds to 8,400 rounds, and the .50 caliber from 1,995 rounds to 3,570.

The additional space will also increase the APC's basic load of 7.62-mm ammunition for M-16 rifles from 3,100 rounds to 5,050 and will enable the vehicle to carry 144 40-mm grenades instead of the usual 60, and 24 fragmentation grenades instead of 20.

Added to the demonstration vehicle, which the APC would not normally carry, are four Claymore mines, 12 pounds of TNT/C4, 10 M-21 anti-tank mines, three Dragon missiles, and five LAW packs.

The combat weight of the vehicle increases from 24,238 pounds to 26,722 pounds due to the holding capacity of the storage racks.

NEW COMBAT RATION

The replacement for the standard Army individual combat meal will be phased into the supply system during Fiscal Year 1977.

The new individual ready-to-eat meal (MRI) combines lighter weight with greater convenience and acceptability to make it a major improvement of the combat meal.

All components are flexibly packaged. The pouches are easier to stow than the present round cans of the individual combat meal (MCI) for they fit easily into a soldier's pack or pocket. Also, the pouches weigh less than the cans — a total meal weighs approximately 1.3 pounds, which is 27 percent less than the MCI.

Each item can be eaten as is or heated. This includes the meats, cakes, vegetables, and fruits (which are heat-processed in the pouches) and the rectangular-shaped freeze-dried fruit blocks, meat, and potato patties.

Developments

THE A-10

The Air Force's new close air support aircraft, the A-10, is now undergoing extensive flight and weapon system testing. It is the first aircraft specifically developed for the close air support mission.

The highly maneuverable and deadly plane is built around a powerful 30-mm, Gatling-type cannon that has proved to be highly effective against tanks and other battlefield vehicles. Its firing rate of up to 4,000 rounds per minute makes it one of the most destructive guns in existence.

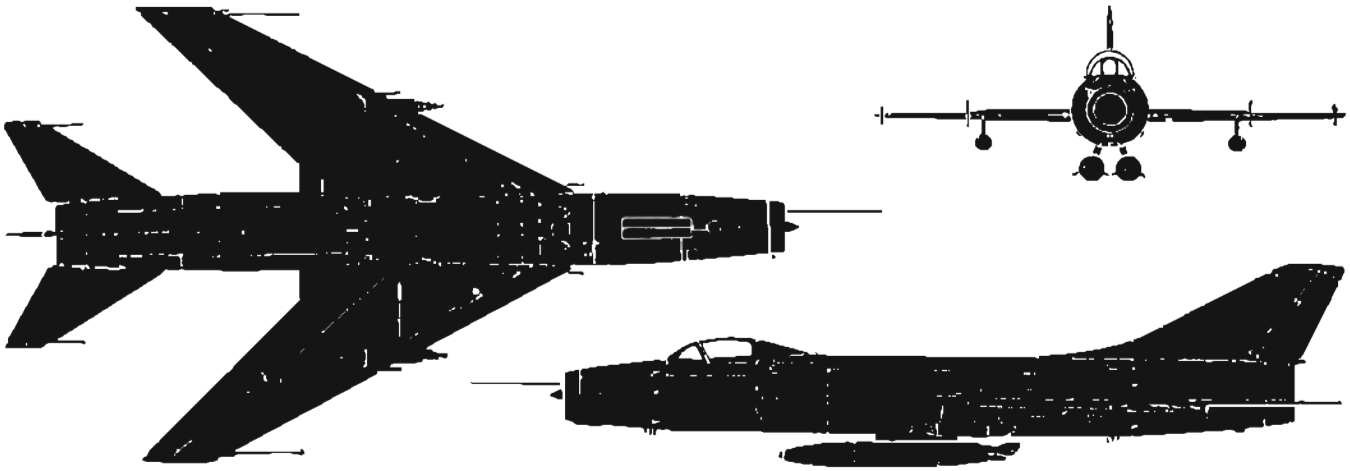
Along with 1,350 30mm cannon rounds, the A-10 can carry a maximum ordnance load of 16,000 pounds. Underwing stores include an impressive array of weapons: general purpose bombs, fire bombs, laser-guided bombs, TV-guided bombs, smoke bombs, cannister munitions, Maverick and Rockeye missiles, and rockets. This tremendous armament capacity, together with its unique ability to loiter for hours within the proximate battle area, makes the A-10 extremely responsive to the immediate needs of the ground forces.

USS NIMITZ

— US Navy

Displacing 91,400 tons at full load, the USS Nimitz is the world's largest warship. She is over 1,000 feet long, has a complement of 5,700, and carries 3 surface-to-air missile systems and approximately 100 aircraft. With a speed over 30 knots, the vessel can operate 13 years without refueling.

THERE IS MORE TO AIR DEFENSE THAN JUST BLACK AND WHITE...



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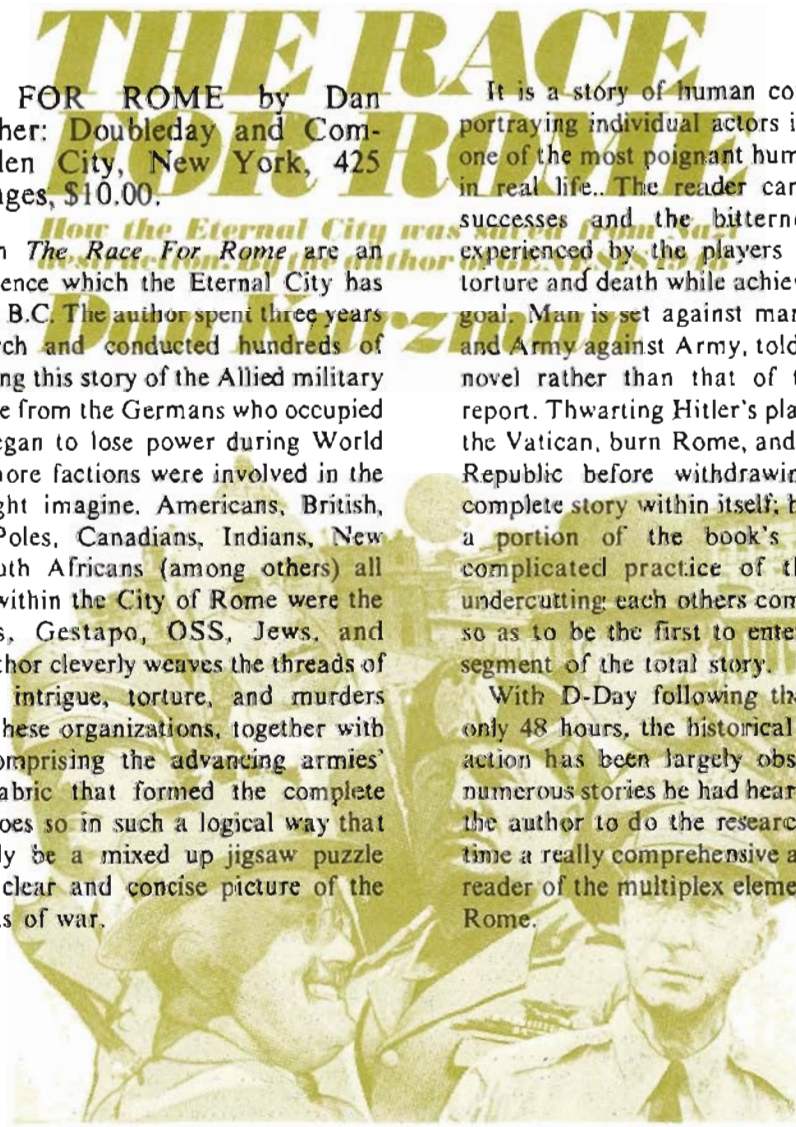
Book Review



THE RACE FOR ROME by Dan Kurzman. Publisher: Doubleday and Company, Inc., Garden City, New York, 425 pages, $10.00.

Events revealed in *The Race For Rome* are an extension of the violence which the Eternal City has experienced since 500 B.C. The author spent three years in exhaustive research and conducted hundreds of interviews before telling this story of the Allied military action to retake Rome from the Germans who occupied it when Mussolini began to lose power during World War II. But many more factions were involved in the action than one might imagine. Americans, British, Germans, French, Poles, Canadians, Indians, New Zealanders, and South Africans (among others) all were involved. And within the City of Rome were the Partisans, Fascists, Gestapo, OSS, Jews, and Communists. The author cleverly weaves the threads of treachery, brutality, intrigue, torture, and murders peculiar to most of these organizations, together with collective threads comprising the advancing armies' strategy, into the fabric that formed the complete operation. And he does so in such a logical way that what would normally be a mixed up jigsaw puzzle actually becomes a clear and concise picture of the multitudenous aspects of war.

It is a story of human courage and frailty, vividly portraying individual actors in their individual roles in one of the most poignant human dramas ever acted out in real life. The reader can readily feel the joy of successes and the bitterness of disappointments experienced by the players as they strive to escape torture and death while achieving a military or political goal. Man is set against man, faction against faction, and Army against Army, told in the style of an exciting novel rather than that of the typically dry factual report. Thwarting Hitler's plan to kidnap the Pope, loot the Vatican, burn Rome, and then set up a Communist Republic before withdrawing German troops is a complete story within itself; however, it comprises only a portion of the book's contents. Likewise, the complicated practice of the Allied commanders' undercutting each others combat plans and maneuvers so as to be the first to enter Rome, makes up but a segment of the total story.

With D-Day following the liberation of Rome by only 48 hours, the historical importance of the Rome action has been largely obscured. This fact and the numerous stories he had heard over the years prompted the author to do the research and reveal for the first time a really comprehensive account to fully inform the reader of the multiplex elements at play in the race for Rome.

The Editor Comments

Have you noticed the scarcity of articles by enlisted men in Air Defense Trends? In the past twenty issues there were probably less than a half-dozen.

This obviously doesn't represent the involvement of noncommissioned officers and other enlisted men in ADA. The guy that "lives with the equipment" has to be a good source of ideas on how to make it work better. Everyone develops special skills and methods of operation connected with his job, so there is a lot he can talk about. We wonder, then, why we hear so little from the enlisted man. Perhaps we haven't been offering enough encouragement or guidance. So, taking a step in the right direction, we submit this special request to all Air Defense Artillery enlisted personnel: Take a moment during your busy day to jot down a few notes that briefly describe any ideas you think might be of value. Do the same with any individual practices you may be exercising on the job that are not spelled out in the manual.

You don't have to have the style of William Shakespeare — the TRENDS staff will be glad to help put your thoughts in publication format for the benefit of the air defense community. If you prefer writing, then send in an article stating your views or describing what you and your unit are doing that you think would be helpful to others.

We seriously feel that to be completely representative and fully accomplish its mission, TRENDS must be publishing valuable insights and ideas from professional ADA noncommissioned officers and other enlisted soldiers.

W.E.S.

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