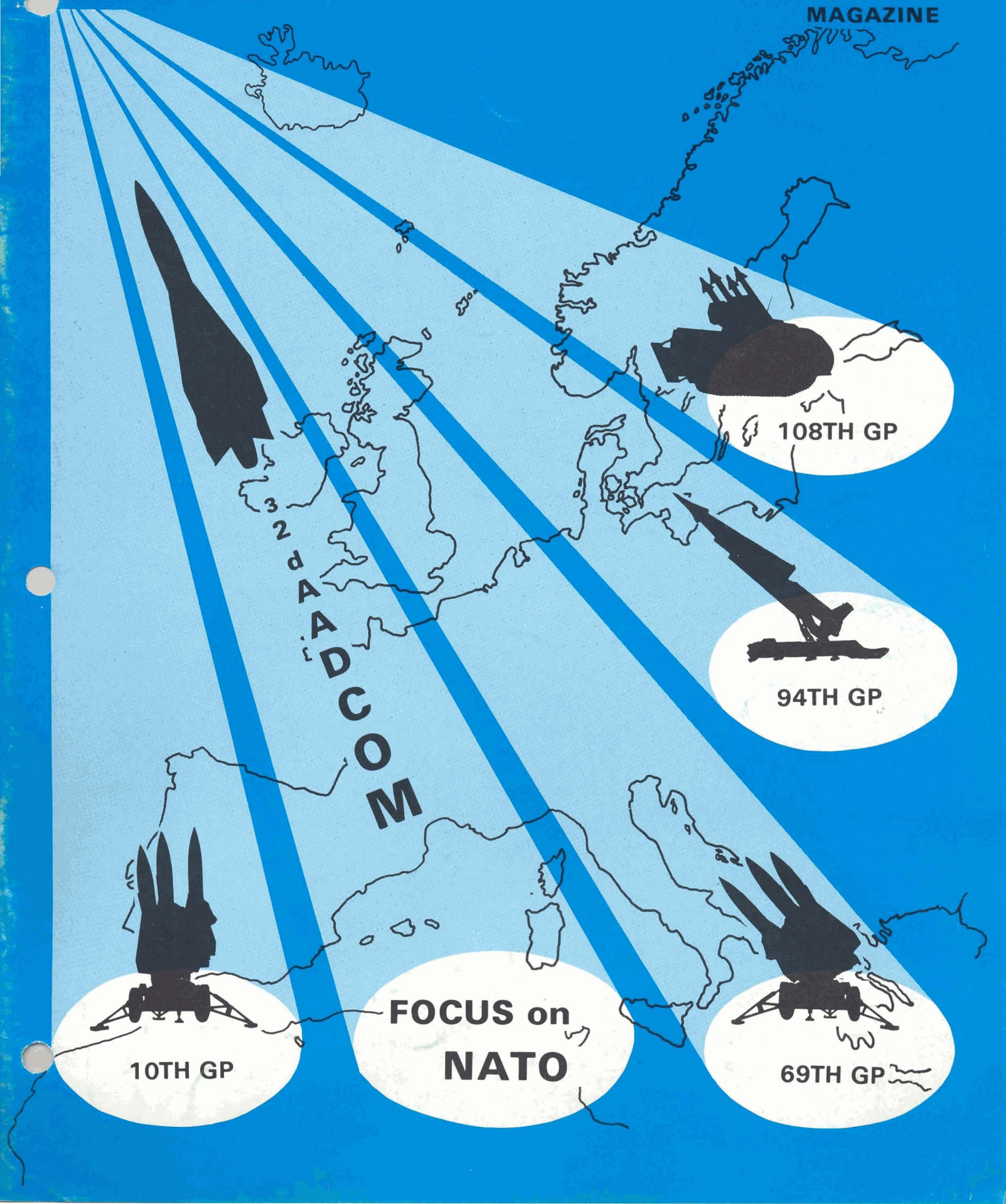
JULY-SEPTEMBER 1979

AIR DEFENSE MAGAZINE



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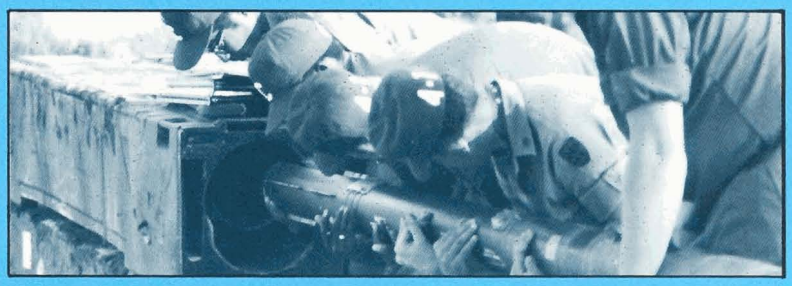
FEATURES



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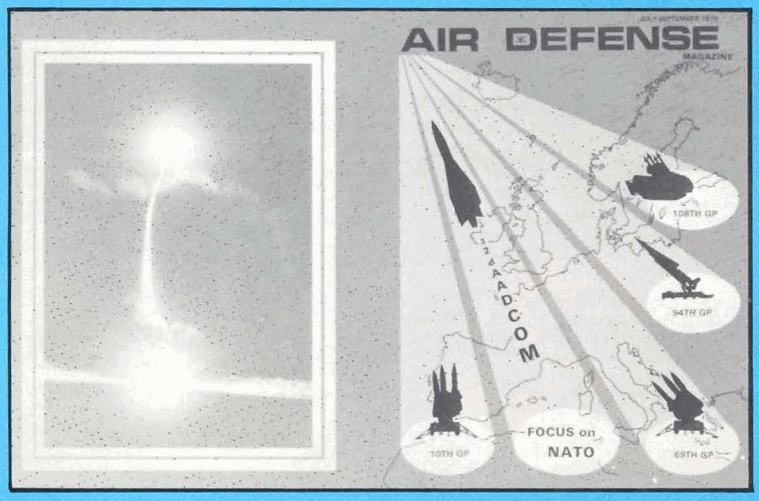

COVER: Our cover depicts the 32d US Army Air Defense Command (AADCOM) in its role of providing air defense for US combat ground forces in the North Atlantic Treaty Organization (NATO) international arena. A feature story on the 32d AADCOM as a vital part of the bulwark poised in Eastern Europe against Communist aggression begins on page 6.

CREDITS (artwork and illustrations) — Ralph Prince, Manuel Martinez, Terry Smith, SP5 Joseph Adams, SP5 Bill Nieschalk, Alfonso Serna, and Marie Seeber.

NSE
MAGAZINE

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AIR DEFENSE Magazine 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.

Distribution will be made only within the School, except for distribution on a gratuitous basis to Army National Guard and USAR schools, Reserve component training and ROTC facilities, and as requested by other service schools, CONUS armies, Active Army units, major oversea commands, and military assistance advisory groups and missions.

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Articles and letters should be addressed to: The Editor, AIR DEFENSE Magazine, USAADS, ATTN: ATSA-TD-LITS, Fort Bliss, Texas 79916.

Use of funds for printing of this publication was approved by Headquarters, Department of the Army, 31 May 1978, in accordance with AR 310-1.

Subscriptions may be obtained through the Custodian, US Army AIR DEFENSE Magazine Fund, USAADS, ATTN: ATSA-TD-LIT, Fort Bliss, Texas 79916. The rate is $4.00 per year. Make checks payable to: Treasury of the United States.

Controlled Circulation postage paid at El Paso, Texas.

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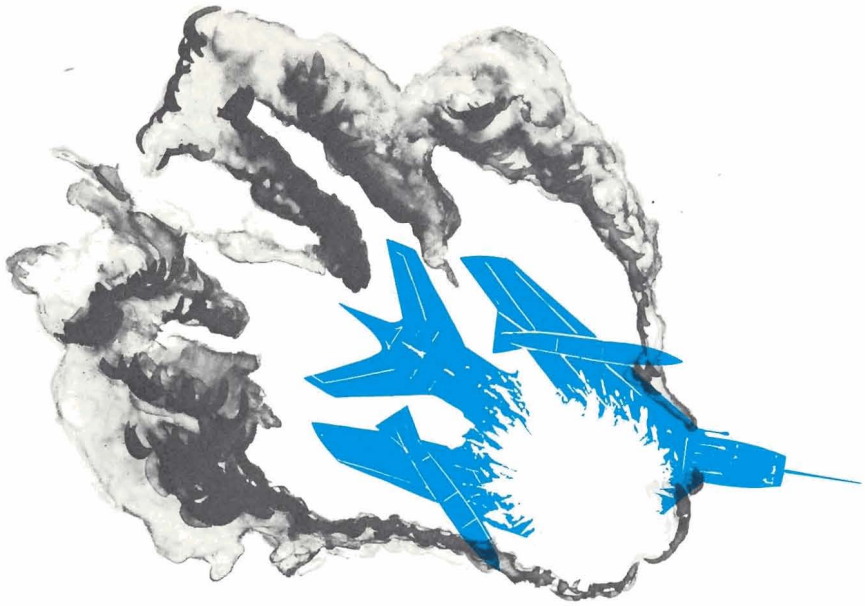


INTERCEPT P

MAJOR GENERAL JOHN J. KOEHLER, JR.

Change is a product of our times. In the US Army and the Air Defense Artillery, the changes in weapon system technologies and training methodologies have been many and positive in their contribution to our effectiveness. This Intercept Point will focus on the reorganization of the US Army Air Defense School (USAADS) to achieve greater use of resources and to provide flexibility in meeting the anticipated changes of the future.

Organizational changes of the USAADS structure I wish to address are:

- Establishment of One Station Unit Training (OSUT) in the 1st Air Defense Artillery Training Brigade.
- Establishment of the Roland/DIVAD/Chaparral/Vulcan Department (formerly Missile Science and Electronics Department).
- Establishment of the Hawk Department (formerly Direct Support Materiel Department).
- Establishment of the Hercules/Patriot Department (formerly General Support Materiel Department).
- Transferring of the Control Systems Division to the Hercules/Patriot Department.

The rationale for these changes included four main reasons and four secondary considerations. The main reasons are:

- Continuity of effort.
- Effective span of control.
- Enhancement of training.
- Functional alinement of resources.

The secondary considerations are:

- Equitable distribution of student load.
- Integrated mix of like weapon systems.
- Minimize additional overhead requirements.
- Take advantage of instructional technologies.

As you can see in the title of each of the newly established academic departments of the Directorate of Training, the emphasis continues to be focused on particular weapon systems. The intent is to retain the specific hardware orientation within each of these departments for each respective weapon system. The Tactics Department will continue to instruct in leadership, management, tactical employment, and associated subjects.

The new systems' introduction (Roland, Stinger, DIVAD Gun, AN/TSQ-73, Patriot) and concurrent product improvement programs for Vulcan, Hawk, and Chaparral indicated that a redistribution of taskings to train and manage these systems was clearly necessary. Further, the training function could be better managed along functional lines rather than the former method of mixing systems (i.e., Hawk, Vulcan, and Chaparral systems were all in the old Direct Support Materiel Department (DSMD)). It was necessary to change the DSMD to the Hawk Department with only Hawk training responsibilities, especially with the new product improvement programs. The establishment of the Roland/DIVAD/Chaparral/Vulcan (RDCV) Department placed all SHORAD training functions under one department. The RDCV Department, formed from the former Missile Science and Electronics Department, retained the basic

electronics or applied electronics fundamentals and digital technology training responsibilities. The new Hercules/Patriot Department picked up the responsibility for training in the Hercules requirements and to "gear up" for the Patriot requirements for the future. In addition, the Control System Division's training responsibilities were transferred to the new Hercules/Patriot Department. The Control Systems Division has instructional responsibility for the command and control system, AN/TSQ-73.

The 1st Air Defense Artillery Brigade conversion to One Station Unit Training on 16 February 1979 provided this aspect of the reorganization with continuity through the 13-week training program for all enlistees. The same cadre trains and leads the new enlistee through the combined basic and advanced individual training programs focused on early introduction to ADA philosophy, terms, organization, and exposure to the equipment. The new trainee is reinforced early in the uniqueness of his chosen MOS as a result of this change over the former separate basic combat training and advanced individual training method. A bonus effect of the OSUT program is that this procedure allows the enlistee in a maintenance MOS to receive operator training and learn first hand from the crewperson's point of view the entire ADA system prior to beginning maintenance training.

The self-paced or performance-paced instruction, as it is now known, offers greater effectiveness to the School as a method of instruction and requires greater proficiency from each student in demonstrating skill on actual equipment. An excellent example is that the applied electronics and digital technology training, both performance-paced courses, can now be taught in functional content with the actual hardware when needed by the student, rather than at the front end of the maintenance courses. This change in training strategy allows for each hardware department to teach applied electronic fundamentals integrated into each specific maintenance course and major end item at the time needed, instead of as a separate annex. This performance-paced approach reinforces the concept of system integrity in training and was a key factor in the reorganization of the academic departments.

The future includes maintaining the training of our soldiers in current systems, while we introduce training programs for our new systems. This will increase our student input by 54 percent (from 6,345 students in FY 79 to 9,784 students in FY 84). These organization changes will allow the School to prepare for and conduct training with the proper degree of emphasis on each ADA system to meet our commitments to the field units.

John J. Koehler Jr

Letters

ON CUSTODIAL COMMAND

Dear Sir:

During one of the social affairs that punctuate the Air Defense Officers' Advanced Course at Fort Bliss, I was conversing with an air defense colonel. When I told him that I had just completed 2 years in command of a custodial detachment in Europe, his response was a painfully common one. He said that it was too bad I'd been stuck with custodial duty and that he hoped I would get a real battery in my next assignment.

The comment further confirmed my conviction that many of us in the air defense community feel that a custodial unit command is not a challenging job and just doesn't compare with the command of a Hawk or C/V battery. I vigorously disagree with the supposition that command of a custodial unit is inherently less demanding, valuable, or satisfying than command of any other air defense unit. To be sure, there are differences among the many types of command jobs available to an air defense captain. In terms of knowledge required, experience gained, and goals accomplished, however, I think a custodial command stands on its own.

Based on my own experience, comparisons made herein are essentially between a CONUS C/V battery (real command category) and a European custodial site. My purpose is certainly not to attempt to degrade the value of a stateside C/V command, but rather to upgrade the perception of the custodial command.

The custodial site commander is charged with a broad range of responsibilities. In effect, as a company grade officer, he is not only a unit commander but serves also as a post commander and community commander as well. He is usually the senior United States representative in a broad area and must maintain close ties with local community leaders. Long distances and poor communications to higher headquarters mean that the site commander is routinely faced with making analyses of complex situations and making potentially far-reaching decisions. There is a vast difference between the C/V commander who decides to call in the local military police in a difficult situation and the custodial site commander who, knowing the MPs are hours away, must decide whether the situation warrants notifying a host nation police force.

The custodial site commander is responsible for the same administration, training, supply functions, and discipline charged to the battery commander. In addition, he is faced with the complexities of an independent postal operation, a small but complete post exchange, a movie theater and, of course, the dining facility. Efficient, responsive functioning of these support facilities is no less vital to mission accomplishment than are training, administration, or supply, and the site commander is the one who has to make it happen.

Mission accomplishment on the site demands extensive daily use of a foreign language in which few, if any, of the unit members have been trained. Military housing is seldom available and most US personnel must live on the local host nation economy. A thorough understanding of local culture and tradition is essential to the site commander when he assumes the role of diplomat and arbiter for the inevitable contract disputes, overdue bills, and other civil matters that are so well known to every commander. Given the small American population in the area and the traditional rural nature of the surrounding community, decisions reached or statements made by the site commander may have a far-reaching effect on local host nation relations and the perceptions of the local populace about the US and the Army. The site commander is after all the senior US representative in the area and in the eyes of many speaks for the United States Government. The C/V battery commander at Fort Carson or Fort Lewis is simply not faced with a similar responsibility.

Headquarters and logistic support centers are often hours away from the site by narrow, winding back roads. A trip to sick call, the reenlistment office, education center, or chaplain is an all-day trip. Transportation is often in the back of a drafty jeep or truck. Custodial duty often demands a commander who is required to be more flexible, knowledgeable, and determined than his counterpart in the C/V battery.

Perhaps the really unique and satisfying aspect of a custodial unit command is the opportunity to work closely with soldiers of an Allied nation, to truly be a part of an international team. The custodial detachment is an integral functioning part of a North Atlantic Treaty Organization (NATO) missile battery. The custodial unit commander's counterpart is usually a lieutenant colonel of the host nation's air force. The two commanders are charged with analyzing the military situation,

formulating joint plans, and carrying out the mission. Seeing the pride and professional competence of our Allies and working closely with them to train and maintain a combat-ready NATO Nike Hercules battery have been the most broadening and satisfying experience I have had. In view of our increasing reliance on our NATO Allies, our ability and willingness to work closely together are becoming ever more vital. So, I think the experience and perspective gained in the course of a tour of duty with a custodial unit must be counted among the most valuable an air defender can hope to gain.

In many ways, a custodial site command is a more rigorous test of professional competence and dedication than are most battery commands. A custodial unit may have fewer people than a C/V or Hawk battery, less equipment, and may not be directly involved in the operation of the latest air defense weapon system, but look again at the unique and invaluable advantages offered by a custodial unit command. Isolated by distance and limited transportation and communications, the site commander is truly the commander in every sense of the word — responsibility for his unit's and his people's well being rests squarely on his shoulders. He is solely responsible for how well his mission is accomplished. We know that leadership is the key to success for any military unit, and a custodial unit emphasizes that fact.

Again, in our "ever-diminishing" world, the ability to communicate with and operate smoothly alongside our Allies continues to be of vital importance. There are few jobs I have encountered in the Army that offer such an opportunity to do just that. The custodial site commander's job is every bit as challenging, fulfilling, and important as any job available to an air defense captain.

I hope my comments will help to change the thinking of some people about the value of a custodial unit assignment.

MICHAEL D. WILCOMB
CPT, ADA

FROM REDEYE MEMBERS

Following are a few typical responses to our request for comments from Redeye people published in the January-March 1979 issue of AIR DEFENSE Magazine. These responses are appreciated and will assist us in knowing where to seek commander's help in getting the magazine down the line. Their requests have been fulfilled where appropriate.

—ED.

Dear Sir:

I am a Redeye Section Leader assigned to Fort Sill, Oklahoma.

Yes, I am receiving the Air Defense Magazine on a regular basis. I enjoyed reading the Air Defense Magazine after duty hours. It is the only Air Defense material I can relate to. The feature, "Stinger — A new Dimension For Air Defnese," (Jan-Mar 79) is so true that it made me wonder why I was assigned at Fort Sill.

1LT LYNN HALL
HHB 3/18 FA
FORT SILL, OKLA. 73503

Dear Sir:

I am PVT-2 Luis A. Cardona and I am a Redeye Gunner, with the CSC 1/66 Armor, 2d AD, at Fort Hood, Texas.

Recently, I read a copy of the Air Defense Magazine for the first time and I liked it a lot. I would like to receive this magazine on a regular basis as I am sure it will help me in my job.

PVT-2 LUIS A. CARDONA
CSC 1/66 ARMOR
2D ARMOR DIV
FORT HOOD, TEXAS 76546

Dear Sir:

I am SGT Jackson, stationed in Berlin and assigned to Combat Support Command, 3rd Battalion, 6th Infantry, and I must answer your question "NO, I do not get to see Air Defense Magazine." I hope that this problem can be corrected some time soon.

SGT PETE J. JACKSON JR.
CSC 3rd BN 6th INF
APO NY 09742

ADA GENERAL OFFICERS

On page 41 of the April-June 1979 issue of AIR DEFENSE Magazine we published what we thought was a complete list of ADA General Officers. We were wrong. Brigadier General James P. Maloney, who is Deputy Director of Combat Support Systems, Office of the Chief of Staff for Research, Development, and Acquisitions, was not included in the list. Our apology to General Maloney.

THE 32D AADCOM AIR DEFENSE IN EUROPE A Cooperative Effort

It's no secret that there is a revolution coming in air defense. One needs only to think of Patriot, Roland, Stinger, or the TSQ-73 to visualize the changes and challenges in store for air defenders in the future. What may not be so apparent, however, is the fact that this revolution is beginning now in Europe, where the 32d Army Air Defense Command is preparing to integrate tomorrow's weapon systems into the international environment of the North Atlantic Treaty Organization.

While leading the air defense revolution of tomorrow, the 32d AADCOM is involved in the real world of day's defense mission in Europe. The command's air defense mission is extensive and demanding. As a vital part of the forces in NATO's central region, the 32d AADCOM is under the operational control of the 4th Allied Tactical Air Force (4ATAF), commanded by a German Lieutenant General. The command performs a wartime mission in peacetime — 24 hours a day, 365 days a year. The demands of the mission are unrelenting and must be accomplished in an international arena.

THE 32D AADCOM TODAY

The 32d AADCOM is a unique command. It is the largest air defense organization ever deployed outside of the United States. Commanded by Major General Charles F. Means, the 32d AADCOM is deployed over some 56,000 square miles in the sou

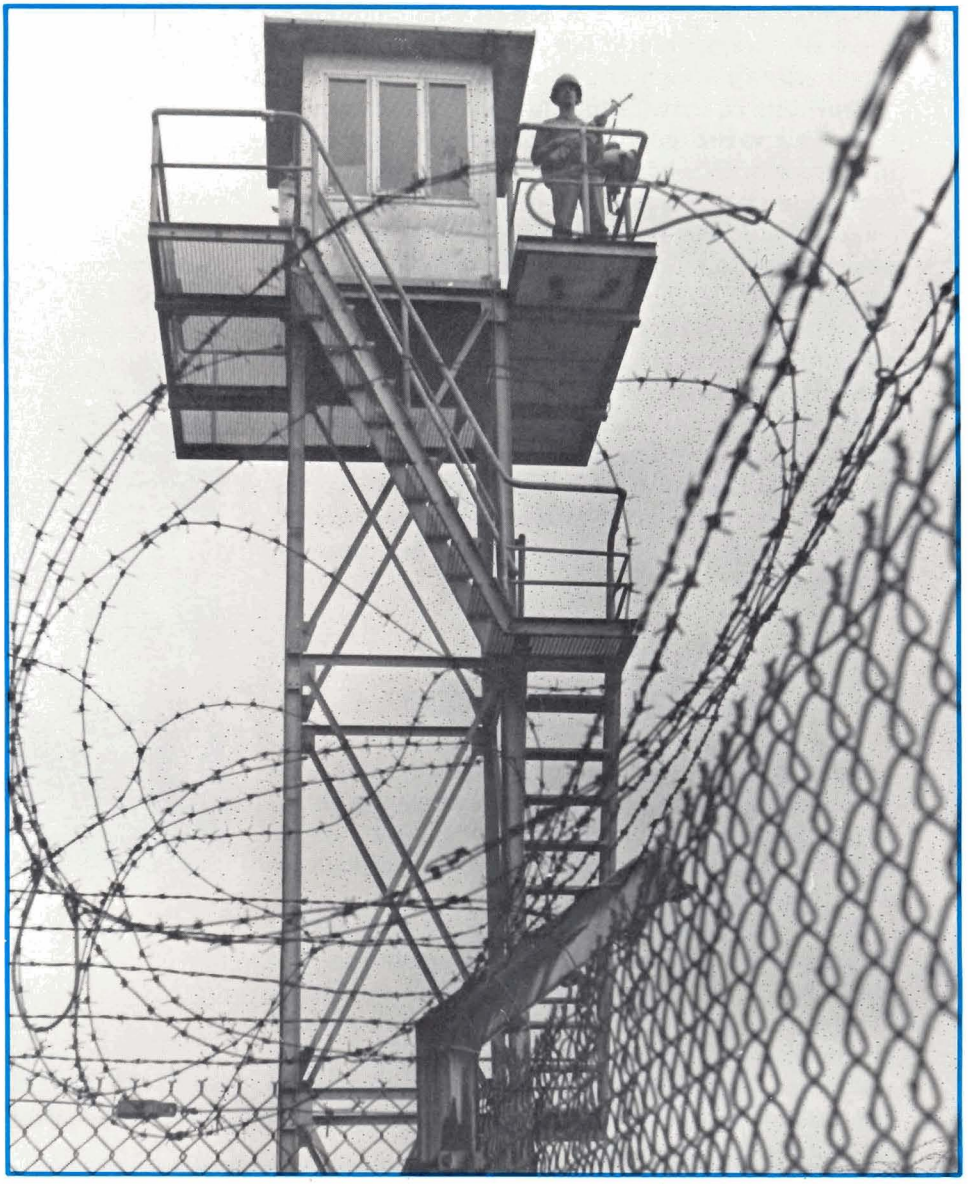
The Demands Of The Mission Are Unrelenting . . . And Must Be Accomplished In An International Arena

central area of the Federal Republic of Germany and has more than 15,000 men and women assigned.

With its headquarters in Darmstadt, 20 miles south of Frankfurt, the 32d AADCOM comprises four air defense artillery groups and a separate air defense signal battalion. Two of the groups, the 10th and 69th Air Defense Artillery Groups, are Improved Hawk organizations of four battalions each. The 10th ADA Group has its headquarters near the command headquarters in Darmstadt and has battalions deployed throughout the US V Corps and German III Corps area of operations. The 69th ADA Group is headquartered in Wurzburg with its battalions deployed in the US VII Corps and German II Corps area.

Both of the Hawk groups have elements deployed along a belt that runs parallel to the East German border from Bad Hersfeld in the north to Regensberg in the south. With this forward deployment of Hawk units in NATO's central region, the 32d AADCOM is a symbol of US resolve to defend freedom right at its frontier.

The remaining two groups have their headquarters in Kaiserslautern. The 94th ADA Group, with the Nike Hercules as its primary weapon system, has four battalions that provide coverage throughout the 32d AADCOM area of responsibility. The 108th ADA Group is a Chaparral-Vulcan organization with three battalions. The 108th is the only Chaparral-Vulcan group in the Army.



Heidelberg — A guard watches intently from one of the guard towers around a 32d AADCOM Nike Hercules missile site.

The 11th Air Defense Signal Battalion is the largest signal battalion in the Active Army. With more signal equipment than that found in several complete infantry divisions, the 11th AD Signal Battalion provides 24-hour communications-electronic support throughout the 32d AADCOM. The battalion has its companies collocated with the ADA group headquarters. The environment in which the members of 32d AADCOM units live and work is as varied as the German countryside where they are located. One Hawk battery in Regensburg, Bavaria, is the only American unit in a city of approximately 100,000 people. Yet, other units are at isolated sites, remote from sites or towns, where the soldiers draw isolation pay. In fact, 32d AADCOM soldiers work at 170 different locations. The military populations at these sites vary, from a low of six persons at some signal sites to a high of 276 soldiers.

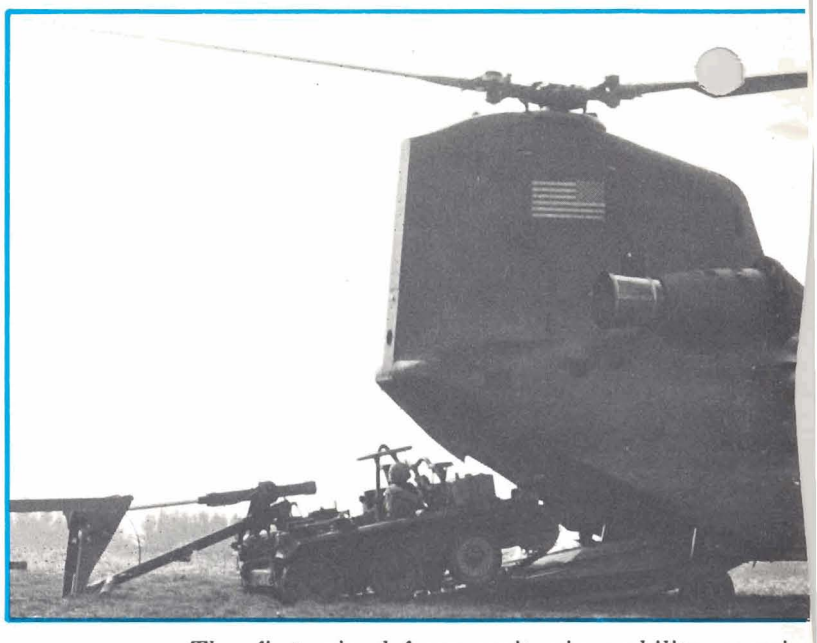
Providing effective leadership at these many sites with their varied population presents air defenders in Europe with exciting opportunities. Each unit, each site is unique and demands imaginative solutions to some of the traditional problems associated with readiness, morale, and discipline. At battery and platoon level, leaders are responding with innovations that range from mission training to off-duty recreation. Support to new leadership initiatives is being provided throughout the chain of command in the 32d AADCOM. Off-site adventure style training, interoperability instruction with NATO Allies, and off-duty tours organized by the unit are examples of activities that have become second nature to the air defense leadership in Europe today.

COMBAT READINESS

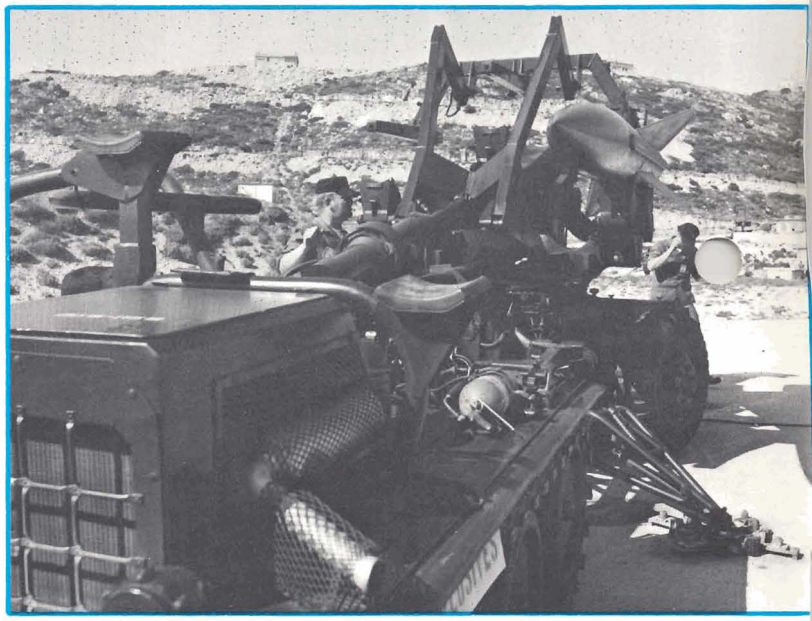
Being prepared for combat. That's what it's all about in the 32d AADCOM. Readiness is the aim of the leadership initiatives briefly mentioned above and, in today's supersonic age, readiness is the core of air defense in NATO.

While performing the mission in the NATO environment, the Hawk and Nike Hercules units of the 32d AADCOM face constant readiness evaluations by teams of U.S. and Allied air defense professionals. The NATO tactical evaluation conducted by Allied Air Forces, Central Europe, is the true measure of the air defense battalion's ability to perform in time of war.

A TAC EVAL, as it is commonly referred to by 32d AADCOM soldiers, assesses the unit's training, organization, and resource management. Units are rated in four major areas: alert posture and reaction,



The first air defense unit air mobility exercise Germany.



Hawk missilemen from the 3rd Battalion, 60th Air Defense Artillery, set up equipment during a recent REFORGER exercise where batteries often found themselves on the move every 8 to 12 hours.

curred during REFORGER maneuvers in southern

t the NAMFI Range in Crete, SSG Earl E. Davis directs the loading of a Hawk missile from the loader to launcher. Davis is a member of A Battery, 6th Battalion, 52d Air Defense Artillery, stationed in Wurzburg, West Germany.

mission effectiveness, support functions, and ability to survive. The NATO TAC EVAL is the only combat readiness test wherein a US Army unit is evaluated by members of Allied counterpart organizations.

TAC EVALs are much more than inspections; they are events -- very intense and extremely challenging. Like all events of this nature, they often result in heroic efforts, inspirational examples and, of course, war stories. In October, 1977, when the 2d Battalion, 57th Air Defense Artillery (IHawk), was undergoing a NATO TAC EVAL, two of the battalion's soldiers talked their way out of hospital beds and reported to their units on crutches. The soldiers were from different batteries and their resolve to contribute to their units, even though they were incapacitated, was credited with inspiring other members of their batteries to excel. The entire battalion had an extremely successful TAC EVAL. Like all units who do well on TAC EVAL, they lived in an envelope of pride.

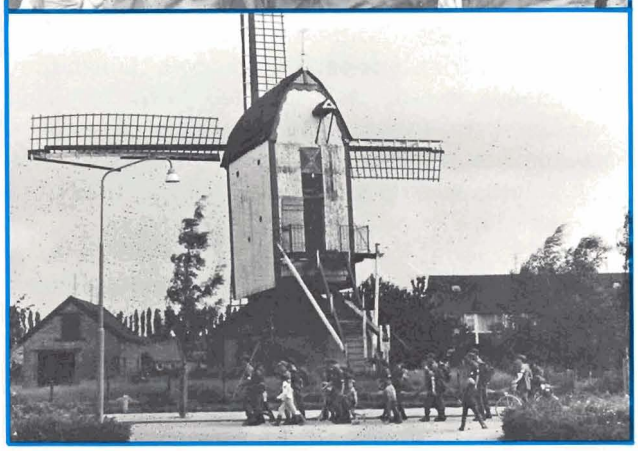
The Chaparral-Vulcan units of the 108th ADA Group monitor the state of their combat readiness through the Army Training and Evaluation Program (ARTEP). From squad level on up through the chain of command, the units undergo a continuous cycle of training and evaluation.

To help maintain their readiness, 32d AADCOM units conduct annual service practice on the Island of Crete in the Mediterranean, where each missile unit fires for score. The ASP scores, along with the results of TAC EVALs, provide the basis for keen competition between the command's units.

Vulcan gunners travel north to the Todendorf Range on the Baltic Sea for their live firing. Competition between Vulcan crews and their units is at a high pitch during all live firing exercises.

Field training exercises provide another means through which 32d AADCOM units receive realistic training. So far this year, the command has participated in REFORGER 79 and the NATO command post exercise, WINTEX. Because of the NATO mission, the command's units participate regularly in exercises sponsored by our Allies. Hawk units have been in British and Danish exercises. In addition, yearly (during the Autumn Forge series of NATO maneuvers), units from the 32d AADCOM participate in Allied exercises.

No discussion of combat readiness in the 32d AADCOM can be complete without mention of the command's military policemen. They are an integral element of the command's readiness, providing physical security for the missile sites. At one time this was an extra duty performed by missile crew members, but tremendous forward strides have been taken in the area of physical security. Today,



32d AADCOM troops march through a Dutch village during annual 100 km international Nijmegen March.

Basic leadership course students from the 69th ADA Group man kayaks during adventure training in the Bavarian Alps.

qualified military policemen guard the missile sites. Increased training in physical security is being incorporated into advanced individual training for military policemen. A new military police organizational structure is being examined, based on 32d AADCOM studies, to optimize the use of military policemen within the command.

THE FUTURE

As was mentioned earlier, an air defense revolution is beginning. Exciting challenges throughout the chain of command are going to call for innovative leadership and imaginative thinking. Today, the entire air defense community is facing transition to a new generation of weapon systems. The men and women of the 32d AADCOM are leading the way in the employment of the new weapon systems in the international arena.

At present, the 32d AADCOM employs the Army's complete arsenal of air defense weapons. Guiding the command in its preparations for the new systems is a Force Modernization Division (FMD), recently established by the Commanding General. Technical, engineer, logistics, and personnel considerations are being examined prior to the introduction of the equipment. All actions are closely coordinated with NATO counterparts. Most importantly, improvements in duty and lifestyle for the soldiers who will operate the new systems are being incorporated into all planning.

The command is now involved in fielding the new AN/TSQ-73 fire distribution system and integrating the concept of its fully automated command and control in the NATO framework. Following close behind is the Improved Hawk Product Improvement Project (PIP), providing major modifications to the information control center, pulse acquisition radar, battery control center, and continuous wave acquisition radar. By January, 1980, the command will be receiving one PIP system per month, looking for a complete update of all systems by December, 1981. Organizational and direct support PIP training will be conducted at one central facility.

With the new systems, the NATO air defense structure will enjoy increased firepower, enhanced target handling capability, and improved command and control procedures. Doctrine may state the way in which these new systems will be deployed in the US Army, but the leadership within the 32d AADCOM will meet the challenge of integrating the doctrine into the NATO environment.

The men and women of the 32d AADCOM are in the first line of defense today and are now extremely instrumental in integrating new systems into a viable air defense force in Europe. Challenges abound. The future is beginning right now in Europe for all of Army Air Defense.

AGES

Realistic Training For Air Defenders

Donald E. Erwin and Earl S. Stein

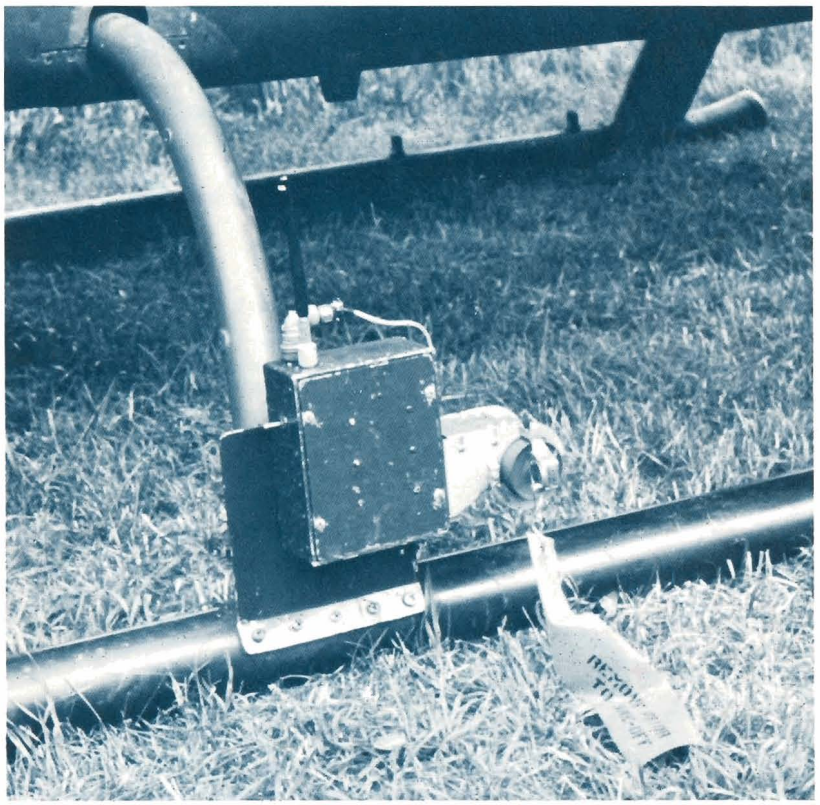
AGES (Air Ground Engagement Simulation) is a new and powerful tactical training system for air defenders and attack and scout helicopters. The ADA combat environment is simulated in realistic, two-sided, free-play field exercises. AGES is the most recent product of a research and development effort that has already yielded engagement simulation training systems for infantry (SCOPES) and combined arms units (REALTRAIN).

The purpose of engagement simulation is to give troops the opportunity to participate in a motivative and challenging training environment in which proficient tactical behaviors can be learned and practiced. The research and development leading to this family of engagement simulation training systems have been carried out by the Army Research Institute for the Behavioral and Social Sciences. This was accomplished in association with the TRADOC System Manager for Tactical Engagement Simulation (TSM-TES), US Army Training Support Center, Fort Eustis, Virginia. The USAADS Directorate of Training Developments has been the primary proponent of AGES along with the Armor Aviation Directorate at Fort Knox, Kentucky.

Engagement simulation training has three important dimensions:

- Weapons effects signature simulation,
- Near real-time casualty assessment in free-play, realistic interactions with an "enemy," and
- After-action reviews.

In AGES, both air defense weapons and attack helicopters are equipped with devices to simulate weapon firing. The simulators on the attack helicopter serve all three elements of the basic armament systems: the 2.75-inch rocket, the 7.62-mm minigun, and the TOW missile. The simulation devices in AGES were designed primarily to realistically disclose positions of camouflaged air defense weapons and unmasked helicopters. Alert helicopter pilots seeking targets will see the brief flash and smoke of a Chaparral launched at one of their colleagues when the AGES simulation is fired. And unless the Chaparral quickly displaces to an alternate location, fire can be brought to bear on the disclosed original position. Similarly, the air defense scanning the horizon may not see the Cobra hovering at tree level 1500 meters away but, if alert, the missileman will see rockets launched and can then bring Vulcan rounds into that location. Authentic position disclosure is important for realistic interactions between air and ground elements. Realistic interaction means air defenders and aviators have to execute the correct tactical behaviors to "kill" and to avoid "being killed." Casualties are assessed via a network of controllers that communicate with a centralized ground control station, consisting of an ADA controller, an aviation controller, and a senior controller. Using an exercise map with marked locations of ground and airborne weapon systems, the controllers in the ground control station process all target acquisition information and assess casualties according to rules. They identify air defense weapons as suppressed (firing suspended) or dead (smoke grenade ignited on the skid of the aircraft by remote radio control).



When an aircraft is "killed," a smoke grenade on the skid of the aircraft is ignited via coded radio signal to give immediate positive feedback to the engaging AD squad.

The acquisition and kill information that comes into the ground control station is used after the exercise by the senior controller to conduct an after-action review. Air defenders and aviators exchange information on what went wrong or right, and why. The senior controller facilitates, but does not control, this review with a chronological list of critical exercise events. From the after-action review, trainees learn why their position was acquired and what caused them to be "killed." They learn what to do in the next exercise where they will have a chance to try out and practice more proficient tactical behaviors. They also have the opportunity to learn from the mistakes and successes of other crews they did not have the opportunity to observe.

The first time that AGES was "off the drawing board and into the field" was at Fort Bliss in 1977. A week of AGES exercises was run in conjunction with a test of laser casualty assessment equipment conducted simultaneously by the Air Defense Board. This first AGES test was designed to evaluate the concept of engagement simulation for short-range air defense squads and rotary wing aviation. Casualty assessment and exercise control procedures, data collection and performance measurement methods, and weapons effects signature simulators were evaluated. The test at Fort Bliss gave Army Research Institute (ARI) scientists and Air Defense School training developers an opportunity to determine what components of the system required refinement.

TEST OF AGES IN USAREUR

A second, more comprehensive test of AGES as a training system was conducted in USAREUR in 1978 by ARI with support from the 8th Infantry Division. The objectives of this test were to:

- Collect tactical performance and attitudinal data on the relative training effectiveness of AGES conventional training for ADA and Army aviation elements.
- Evaluate performance measurement procedures for utilization in ARTEPs.
- Determine the feasibility of integrating AGES and REALTRAIN.

In Europe the test design for ADA was a comparison of tactical proficiency attained with and without AGES training through eight field exercises. For aviation, an assessment of the impact of AGES exercises on Cobra-Scout cooperation and tactical coordination was made. Four Chaparrals, four Vulcans, and four Redeyes constituted the total Air Defense force in the field problems. Two squads of each weapon system were assigned to the AGES training program and two to conventional training. The AGES and conventional squads shared the same scenario, mission orders, and Aggressor, which consisted of three attack Scouts and two Cobra-TOWs. However, the conventionally trained squads did not have signature simulators, real-time casualty assessments, or after-action reviews.

The field exercises were completely free-play and were managed through a control and data collection network manned by enlisted men and junior officers from the ADA and aviation battalions supporting the test. During each of the first 2 weeks, after a day of orientation to AGES, eight engagement simulation exercises were run. A different set of ADA squads started each Monday and remained through the week. Squads were randomly chosen from the battalion and then randomly assigned to either conventional or AGES training. The aviation Aggressor consisted of a pool of approximately 10 aviators that remained with the test for the entire 2-week period.

The important components of the design were the situation and mission order, signature simulation,

casualty assessment, and after-action reviews. These components for AGES and conventional training are briefly described below.

Situation and Mission Order: The ADA battery commander and the aviation team leader were briefed separately using a simulated operations order. The general situation used was that the enemy had attacked across the international border with a large motorized armor force: "It is estimated that the attack is aimed at destroying Allied defenses before reenforcements can be effective. The most likely objective in corp area is the Frankfurt-Wiesbaden complex and crossings over the Rhine River."

Using a map of the exercise area marked with the location of ADA weapons and critical assets, the ground and air exercise controllers follow the paths of Aggressor aircraft and process acquisition and engagement information.

ADA units were given daily mission orders to support the 8th Infantry Division (which was theoretically defending in a sector containing the test site) by providing low- and medium-altitude air defense protection for various designated priority assets throughout the division. Aviation units were given mission orders in which they were instructed to perform zone reconnaissance with specified phase lines in a specific time interval. The battery commander and the aviation team leader had complete freedom in deciding how they would execute their mission order for that day. Apart from phase lines that were necessary for exercise control, and designation of critical assets to be defended by ADA, the test personnel provided no specific tactical input into the situation in which the exercise would develop. This condition allowed unit leaders the opportunity to exercise their own tactical initiative and judgment. It also provided the opportunity for realistic interactions to occur between ADA defending a critical asset and the aviation Aggressor moving through a zone. Both AGES and conventional squads were exposed to the same realistic battle stimuli which emerged from the ongoing tactic action.

Two types of terrain were used during the AGES test. One type of terrain, rolling farmland without many trees, provided clear fields of fire. ADA could easily camouflage in tall, standing grass or bushes. For 2 days, terrain favoring aviation was used in which valleys and patches of forest provided plenty of cover and concealment for helicopters flying NOE.

From the start of activities in the morning or afternoon until the exercise was terminated due to "heavy casualties," the tactical situation and requirement for aviation and ADA were made as realistic as possible.

Signature Simulators: Each Cobra-TOW was equipped with signature simulators for the 2.75-inch rocket launcher, the TOW missile, and the 7.62-mm minigun. The 2.75-inch rocket simulation employed a bank of 19 flash bulbs which were visible at 1500 meters when firing. The TOW simulator used a landing light in an expended TOW tube, while the minigun was replaced by a strobe which flashed at the rate of six times per second when fired. All three simulators were connected to and activated by the normal firing circuits for the weapon systems. Both the Cobra-TOWs and Scouts were equipped with a smoke grenade attached to a skid that could be activated by a radio transmitter on the ground. This device was used to "kill" aircraft after successful engagements by an ADA weapon.

The ADA weapons were also equipped with signature simulators for those groups undergoing AGES training. The conventionally trained squads were not issued any signature simulation devices. The Chaparral and Redeye firing signatures were produced by minismokes wired into the respective firing circuits and a flash device to simulate ignition. The Vulcans were equipped with a wrecker spot light which lighted each time the weapon was fired. The use of weapons effects signature simulators, when firing the weapon, insured that air defenders would expose their positions in training as they would in actual combat.

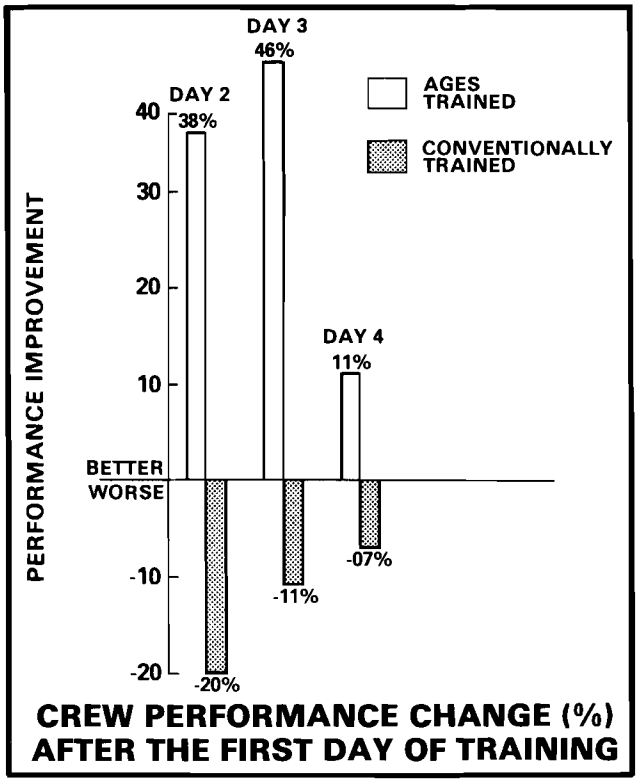


Figure 1

Casualty Assessment: For each AGES exercise, there was a control system for the assessment of casualties and collection of data for after-action reviews. In the ground control station, a ground controller and an air controller worked with a map of the exercise area and had radio communications to the ADA ground controllers and the pilots. For each Chaparral, Vulcan, and Redeye squad receiving AGES training, a controller recorded the time and direction of each acquisition and engagement on a data collection form, and reported this information as it happened to the ground controller. ADA controllers estimated when the target aircraft was in range and determined whether or not the squad achieved a "kill" by using a probabilistic method based upon the characteristics of the weapon systems. If the ground controller received a "kill" message, the aviation controller checked the presence of an aircraft at that location moving in the direction specified by the ADA weapon controller. If an aircraft was verified, the senior controller was informed and he then activated a smoke grenade on the "killed" helicopter. For air-to-ground engagements, it was necessary to have pilots report when they had engaged a target with a particular weapon system. The air controller then used a casualty assessment table and informed the ground controller if a particular squad had been killed or suppressed. If so, the ground controller told the controller with the squad to ignite a smoke grenade and terminate the operation of the crew. Using an exercise map, the ground and air controllers maintained a record of the avenues of approach of the various Cobra/Scout teams and the significant events (acquisitions, engagements, and kills) along those routes. In addition to records from controllers with each squad, the ground and air controllers kept a record of ground and air events that were provided to the senior controller for the after-action review.

Conventionally trained squads as well as AGES squads had controllers since data on tactical proficiency were being collected in addition to acquisition and engagement information. However, conventionally trained squads did not have casualty assessment. Controllers stayed in the background and collected data on tactical behaviors but did not indicate if the squad had been "killed" or suppressed.

After-Action Reviews: After each exercise, both ADA and aviation participants were brought together for an after-action review led by the senior controller. Using the data on significant events gathered during the exercise by the network of controllers, the senior controller reconstructed the exercise and solicited information from both sides concerning what they might have done right or wrong. By fostering a free exchange of information between both sides, the senior controller recognized soldiers for tactical behaviors that were correctly executed, and encouraged discussion of those that were incorrect or ineffective. In subsequent exercises, the participants were able to put the lessons learned to use and exhibit improved performance.

RESULTS OF THE USAREUR TEST

Controllers with both AGES and conventionally trained ADA squads used combination behavior check lists and rating forms that focused their attention on over 50 specific behaviors associated with proficient tactical performance. These behaviors ranged all the way from:

> Planning air defense; e.g., "Did the squad know its tactical mission?" to:
>
> Conduct sustaining operations; e.g., "Did the squad displace to alternate locations after firing?"

The behaviors chosen for these checklists were selected from the appropriate training manuals and circulars for air defense artillery.

Figure 1 shows how much Chaparral and Vulcan squads improved, on the average, in tactical performance relative to the first day of data collection. AGES squads show consistently more proficient execution of tactical behaviors than conventionally trained squads who did not even perform as proficiently on days 2, 3, and 4 as they did on the first day of training.

One might ask why conventionally trained squads showed a decrease in performance while two AGES squads showed improvement. One could speculate

that this was caused by the frustration and boredom that are generated by "dry firing" at invulnerable aircraft with no possibility of positive feedback. This decrement became less on days 3 and 4, which suggests that perhaps some improvement occurred but never really overcame the initial negative experience. The drop in AGES squad performance from the third to the fourth day might be attributed to the unit having been in the field for the week, and the fourth day occurring on a Friday when personnel were contemplating the weekend.

AGES provided a more efficient training vehicle for the air defenders, and they realized it. When squad leaders and controllers were asked how they would divide their training time between four alternatives, AGES was given the largest portion — on the average, twice as much as live fire.

Referring to figure 2, data collected in the first 2 weeks that described the development of tactical proficiency in ADA personnel indicated that AGES training produced greater positive changes in combat behaviors than a conventional training program. In addition to tactical performance, AGES training was favorably received by exercise participants and positive effects on attitudes and level of enthusiasm for the training were clearly demonstrated. Performance measurement instruments that were developed were capable of showing the growth of tactical proficiency in air defense squads undergoing field exercises. These instruments can eventually be used in portions of ARTEPs where development of squad tactical performance is emphasized.

An evaluation of the concept of integrating AGES with REALTRAIN was made in the third and last week of the AGES test. The scenarios that were used in the first 2 weeks (which consisted of static

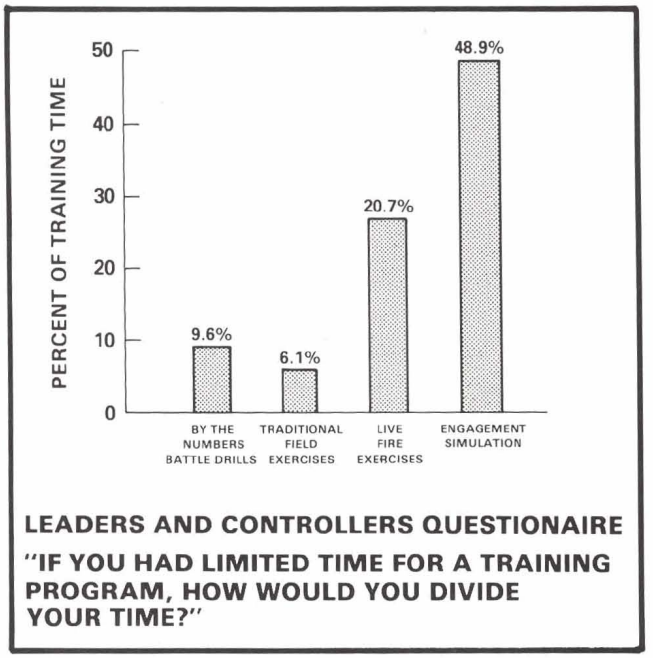


Figure 2

defenses of critical assets) did not provide any ground security problems for air defense squads. This also meant that aviators did not have any moving targets at which to shoot, such as tanks, APCs, and 2½-ton trucks. In existing REALTRAIN exercises, there is no capability for integrating airborne antiarmor weapons. This very realistic and probable threat for armor could be provided for REALTRAIN by using AGES. In the concept evaluation run in the second phase of the AGES test, an effort was made to determine if a control system could be administered that yielded accurate and timely casualty assessment; also, if sufficient data could be collected during the exercise to have an effective after-action review. This was the first time that "three-dimensional" engagement simulation was attempted.

For this series of exercises, ADA units were reinforced by ground elements and given missions to provide protection for a convoy transporting critical materials or personnel just behind front lines. The helicopter forces were augmented by ground forces and given missions to perform zone reconnaissances, and locate and destroy any enemy forces within the zone.

A convoy route, usually 20-30 kilometers in length, was assigned to a convoy commander whose mission was to transport high-value material. The route snaked through woods and occasionally broke out of the woods and along the edge of a clearing. The convoys usually consisted of several

After-action reviews provide soldiers important opportunities to exchange information on how and why they fail and succeed in simulated combat.

trucks and jeeps, three tanks, four Vulcans, an infantry squad, and four Chaparrals and Redeyes that the convoy commander could preposition along the convoy route. The three Scouts and two Cobra-TOWs operating in the area were augmented by an infantry squad, equipped with LAWs and DRAGONs, and two tanks. Although the aviators had a zone recon mission, they had a secondary mission to attack and destroy enemy elements. To facilitate the meeting of the two forces, the test directorate placed the infantry and armor working with the helicopters in a section of the woods along the convoy route. Infantry scouts could then call in the Cobra-TOWs when the convoy was spotted. What usually developed was a series of ambushes with which the convoy commander had to deal.

On each of four days, two convoys were run: one in the morning and another in the afternoon. A different convoy commander was assigned for each exercise. Commanders ranged from the ADA battery commander (0-3) to the test NCOIC (E-7).

All weapon systems were equipped with signature simulators. In addition to AGES equipment for ADA and aviation, all armor and infantry players and vehicles were outfitted with REALTRAIN equipment. That is, infantry was equipped with scopes, numbered helmet covers, and blank ammunition for its M16s. LAW and DRAGON fire was simulated using hand grenade simulators. Tank main gun fire was simulated using the Hoffman device.

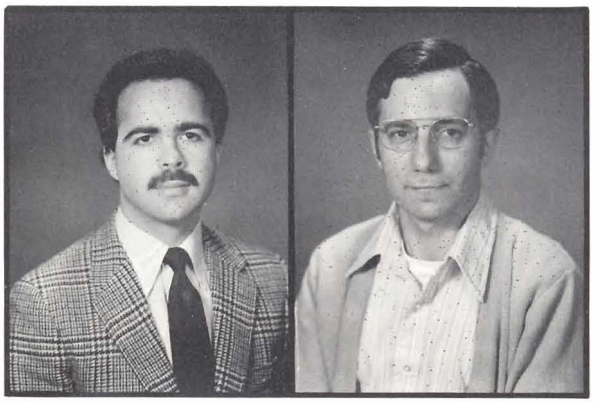
The final phase of the USAREUR test was an attempt to try out the feasibility of integrating AGES and REALTRAIN training into what might be called multidimensional engagement simulation. This would provide ADA crews with experience in defending assets on the move rather than being locked to a specific piece of terrain. Further, it would require attacking aircraft to locate and engage moving targets. Developing an exercise control system and making it work in such a complex environment of moving vehicles and aircraft was a challenge.

The attempt to integrate air defense, armor, antiarmor, and infantry for "three-dimensional" engagement simulation was considered a success by the AGES training system developers. The control system provided accurate casualty assessment and it was possible to compile a list of significant events for comprehensive after-action reviews. There were various minor problems in running an exercise of this magnitude and further refinement in control procedures will be necessary, but the concept of a "total battlefield" approach to simulating combat was shown to be feasible. One young Vulcan platoon leader who had a chance to be a convoy commander said that action during the ambushes " . . . was the nearest thing to combat I've experienced." He described the noise, confusion, and communication breakdown that challenged his ability to lead. It is just this learning environment that the AGES training developers want to achieve to give "soldiers a chance to learn to act and react effectively in combat."

AGES IN FUTURE ADA TRAINING

Soldiers become better air defenders when they are exposed to AGES training. Engagement simulation for air defense has been shown to be a valid and effective training approach. How and when will it be available to the field? The necessary training literature and hardware specifications are being established so that ADA units worldwide can use AGES. The Directorate of Training Developments at the Air Defense School hopes to have AGES available to users in early FY 80. Watch this publication for further information!

Dr. Donald Erwin is a research psychologist at the US Army Research Institute for Behavioral and Social Sciences in Alexandria, Virginia. His published work ranges from basic research on the importance of stereoscopic displays for helicopter simulators to mathematical models of organizational processes in combat units.



Dr. Earl Stein is a research psychologist at the US Army Research Institute for Behavioral and Social Sciences in Alexandria, Virginia. He earned his PhD in psychology from the University of New Hampshire in 1971 and has been involved in applied research and training development in a military setting for 8 years.

Reserve Officer's Training Corps

CHALLENGING DUTY

REWARDING EXPERIENCE

Captain Frank E. Hosek

Army ROTC instructor duty at the University of Houston Instructor Group is interesting and challenging. It is also a rewarding job. I volunteered for ROTC duty in 1977 while stationed at Fort Bliss, Texas. After spending 1 year in South Korea, I reported for duty at the University of Houston and was assigned as the Detachment Adjutant and the Primary Instructor for the Senior Military Science (MS IV) Class. Presently, my assignment is Adjutant and Enrollment Officer and teaching the Freshman (MS I) Class.

When I reported for duty in July 1978, most of the Cadre were at Advanced Camp or on TDY to school, which gave me an excellent opportunity to study the curriculum and become familiar with the program of instruction. The senior ROTC program at the University of Houston is a 4-year program consisting of the basic course, MS I and MS II; and the Advanced Course, MS III and MS IV.

MS I — The student receives instruction in basic leadership and management techniques. He is exposed to the fundamentals of soldiering (marching, saluting, and wearing of the uniform) and gains an appreciation for the customs, courtesies, and traditions of the military service. Skills are developed in basic map reading and land navigation.

MS II — Leadership and management training is expanded with emphasis on junior leaders' qualities and responsibilities. One semester is devoted to the study of military history.

MS III — Advanced techniques of leadership and professional development are presented here. The student also receives instruction on small unit tactics at squad, platoon, and company level. Students are briefed on the different branches of the Army.

MS IV — Leadership and management training is concluded with the use of a management simulation program. The dynamics and firepower of the combined arms team at company level are discussed in detail.

To complement the classroom instruction a student is required to attend a 2-hour lab. Basic-Course students have the option of attending a leadership, marksmanship, ranger, or survival skills lab. Advanced Course students are required to attend the leadership lab.

Leadership Lab — This is our primary lab. Fundamentals of soldiering and leadership techniques are put to practice with emphasis on military skills. Students become familar with FM 22-5 which explains drill procedures for squad, platoon, and company.

Marksmanship Lab — We have both pistol and rifle labs. The student develops an appreciation for these firearms and studies range safety procedures. Integrated act of firing (trigger and breath control, sight alinement and picture, and eye relief) and the basic firing positions are also covered.

Ranger Lab — The students have the opportunity to develop special skills in rappelling, rope bridging, hand-to-hand combat, and water safety.

Survival Lab — Important survival skills are taught in this lab. Identification of edible plant and animal life, trapping, snaring, fishing, and food preparation are all part of the POI. Instruction in methods of traversing hazardous obstacles (mountains, rivers) and cold-weather indoctrination round out the course. Students practice skills learned in this lab during a 5-day survival trip held during the spring break.

ROTC duty is a very fluid assignment. You never get bored from doing the same job every day. We all get involved daily in many ongoing activities. Most of the time is spent working with the students, which includes teaching classes, sponsoring extra-curricular activities, and helping them with personal and University problems. I also work very closely with students in the MS IV Class, assisting them in making branch selections and preparing them for active or Reserve Forces duty.

Another important aspect of the program is the enrollment. Everyone in the detachment shares the responsibility for our enrollment. Instructors are

primarily responsible for retaining students from one semester to the next. Being responsible for our upcoming freshman (MS I) enrollment required spending a lot of time visiting high schools. In conjunction with the University's Admissions Office, I attend night college conducted at local high school facilities and counseled prospective students.

A unique aspect of my duties as the Adjutant is Cadet Administration. The paper drill at an ROTC detachment seems worse than in a line unit. I was surprised by the numerous records kept on cadets and the reports required by higher headquarters. One could easily spend all of one's time collecting data and preparing necessary correspondence for high headquarters. These administrative duties involve a great deal of time and could easily become a full-time job.

The ROTC sponsors several off-duty weekend activities. To expose the students to the social side of military life, we have a Dining-In and Military Ball each year. Several activities center around Junior ROTC High School Units and alumni-sponsored activities. We do some good-will work such as assisting local clubs in helping handicapped children attend our rodeo and stock show each year.

The ROTC sponsors the University of Houston Buffalo Bayou Pathfinders Orienteering Club. Orienteering is a relatively new sport which combines cross-country running with land navigation using a map and a compass. This year Captain Larry T. Wier coaches the Pathfinders, who compete regularly in orienteering meets across the United States. CPT Wier dedicates the majority of his weekends to conducting practice meets for the team or escorting the Pathfinders on scheduled meets.

What happens to the cadre in the summer between semesters? Most of the cadre attend Advanced Camp and hold down various assignments. Last summer the PMS was a battalion executive officer; the Detachment XO was chief of the confidence course committee. The remaining officer who attended camp was head of the squad attack/defense committee. The commandant of cadets (by request) spent the summer as an instructor at Ranger Camp, Fort Benning, Georgia. The enrollment officer was the stay-back officer and took care of activities at the detachment. TDY at camp lasts anywhere from 3 to 6 weeks depending on the duty assigned. The remainder of the summer is spent taking leave, attending seminars at West Point (Leadership — 2 weeks, History — 6 weeks), and preparing for next semester's activities. Last year the detachment sent one officer to the History seminar and I attended the Leadership seminar. This summer I am assigned to the patrolling committee and the PMS will be a company commander. The Detachment XO is going to attend Basic Camp at Fort Knox, Kentucky. The other two officers will be reassigned this summer and will not attend camp.

The past 8 months have been very challenging for me. Based on my experience as a former cadet at Texas A&I University (1967-1971), I viewed ROTC duty as 3 hours of teaching classes each week and 6 weeks of summer camp. My perspective of the job was somewhat incorrect. I was totally unaware of the other activities mentioned above in which cadre get involved. The entire program has changed considerably since my cadet days. I was accustomed to mostly drill and ceremonies during lab periods. Today, we have a leadership lab (mostly military skills training), marksmanship labs, and special labs (ranger, survival skills). The program of instruction has changed from strictly military type subjects to more leadership and management training. I assumed that there would be time to work on obtaining a Masters Degree while assigned to the detachment, but there isn't enough time available to do justice to both the job and degree course requirements. I found that you have to be willing to devote time both on and off duty to have a viable program.

I enjoy ROTC instructor duty with few reservations. The atmosphere at the university is quite different from a line unit. I was a little apprehensive at first, but as I became more involved my time proved well spent and the job rewarding. I am looking forward to continuing an enjoyable tour with the University of Houston ROTC Instructor Group.

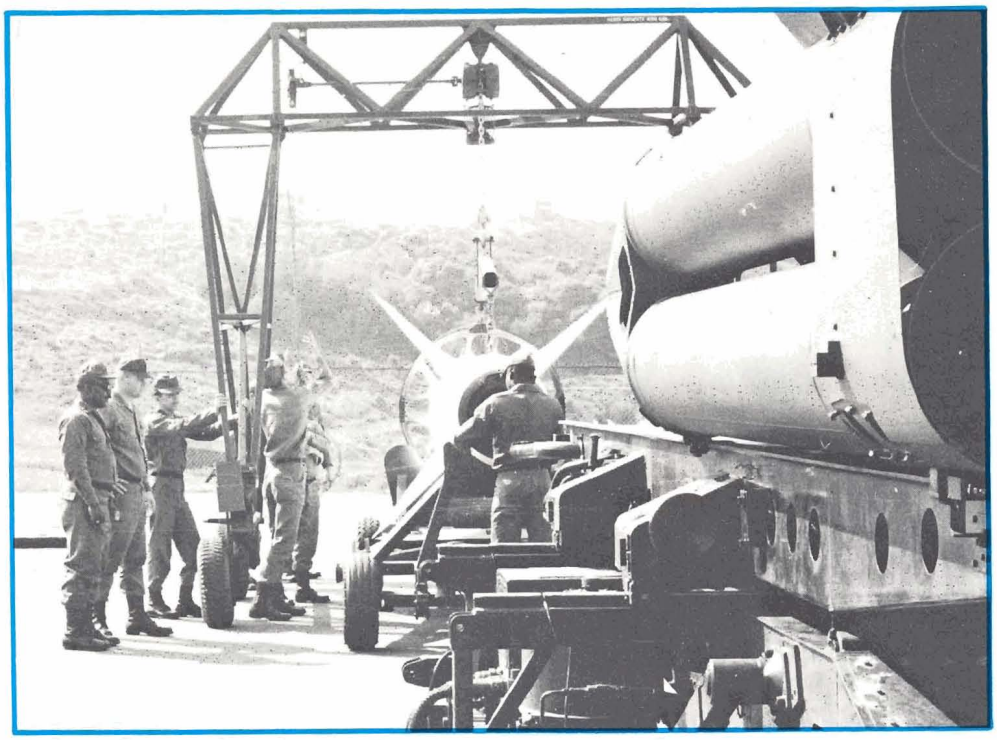
Captain Hosek is a graduate of Texas A&I University. He has served as platoon leader, battery commander, and battalion executive officer of ADA units. His oversea service includes both Germany and Korea.

A NATO ASSIGNMENT

Captain Oscar Mendez

If you are an Air Defender and assigned to Germany, it doesn't necessarily follow that you will be assigned to the 32nd Army Air Defense Command. You could be assigned to the 5th US Army Artillery Group (AD), which is a NATO assignment. What is the 5th US Army Artillery Group (USAAG) (AD)? What is its mission? Where is it located? These are questions that this article will answer.

I recently returned from an assignment with the 5th USAAG and found it to be a unique and most rewarding experience for an Air Defender. The Group is a major subordinate element of the 59th Ordnance Brigade (formerly known as SASCOM). The Brigade itself is directly subordinate to Headquarters, USAREUR, and 7th Army, and is headquartered in Pirmasens. The 5th USAAG is tasked with the critical mission of providing warhead support to all non-US Nike Hercules units in the Federal Republic of Germany. Along with the German Air Force, the Group supports air force elements of the Kingdom of Belgium and The Royal Netherlands (Dutch). The 1,400-strong Group covers a huge area spanning from Frankfurt in the central region to the northern city of Bremerhaven, and reaching from the Rhine River west to the Holland border. The Group Headquarters is located in Bueren, a small community approximately 22 kilometers southwest of Paderborn, the closest major city. The Group consists of nine air defense detachments. The 85th FA Detachment is presently organized under the 5th USAAG; however, because this is not an ADA unit, it will not be discussed in this article. Each detachment is made up of a headquarters section and four teams situated within a 30- to 45-minute drive from the Headquarters. One team is actually collocated with the Headquarters. A recent reorganization has left some detachments with less than four teams. Authorized strength for a team is 29 personnel (3 officers and 26 enlisted), with a detachment usually having from 90 to 120 personnel assigned. For the sake of simplicity, allow me to compare an ADA detachment with a US Nike Hercules battalion, less the hardware, since the system itself belongs to the user or host nation. The battalion commander here is the detachment commander (an ADA captain) who has



The 5th US Artillery Group has the critical mission of providing warhead support to all non-US Nike Hercules units in the Federal Republic of Germany.

four teams (batteries) commanded by lieutenants. Each detachment supports a battalion-size unit of the Allied nations previously mentioned, with a team supporting a battery. This, then creates a unique command relationship whereby the detachment commander's counterpart is either a lieutenant colonel or a colonel, and the team commander's counterpart is often a major or senior captain. Nowhere else in air defense does a young officer find himself in a position requiring greater diplomacy and professional competence than in these positions. For the leader, this assignment presents a tremendous leadership challenge because normal functions of command and control are greatly compounded due to remoteness.

By now you should have a very general, broad overview of the organization and structure of the 5th USAAG. However, I will cover activities at the team level in more detail, since that is where all the action is. Each team is a minimilitary post within itself, having such facilities as a mess hall, a small PX called a site exchange, a lounge/canteen that commonly doubles as the theater, troop billets, and even a housing area. The host nation provides transportation support, as well as medical, logistical, and maintenance support. I might add that while this support generally parallels what we have come to expect from our own service, oftentimes it does not. It has been my experience that the host nation will go to great expense to attend to its American guests. We must bear in mind that these countries are also limited by monetary constraints imposed by their governments; therefore, they cannot always provide to the extent desired.

The most important activity within each team, as it is with Army units worldwide, is peacetime training that will result in a high state of combat readiness. Due to the small size of each unit, all training is highly personalized and tailored to meet the unit's needs. However, training is not limited to unit and individual levels but also includes a good percentage of joint training with the supported nation. Joint training is refreshing and well-received by these units. It helps bolster morale, creates unit esprit, and contributes to attaining interoperability among NATO nations. At the present time throughout USAREUR, interoperability is the name of the game and the 5th USAAG is contributing to achieve this goal. The level of training and preparedness at each team is constantly being evaluated through technical and tactical inspections and exercises. These are conducted by headquarters all through the chain of command. Although a few of these evaluations are designed for the US side only, the majority of them jointly evaluate US/host nation readiness. Throughout the years, the 5th USAAG has compiled a most impressive performance record. This record attests to the high level of training, dedication, and professionalism of the men and women assigned to the group. (Yes! There are women assigned to these remote sites.)

I have briefly discussed the military aspect of the group. Now I would like to address an equally important subject — the community and lifestyle at these isolated locations. First, forget all about those convenient facilities we have grown accustomed to that are found at most large military installations. I refer to such activities as recreation centers, bowling alleys, clubs and cafeterias, PXs and commissaries, service stations, and banking facilities. There is no American television (Armed Forces Network

(AFN)) and some places do not even receive AFN radio. School children are frequently bussed to the nearest school or, in the case of junior and senior high school students, some board out. This information may be a disappointment to some of you; however, it is not intended to discourage anyone from a 5th USAAG assignment. With proper preparation and a positive attitude, any hardship can be endured and even be overcome. The large cities and major military posts are usually within a 2 to 3-hour drive from most sites, and some much closer. Owning a reliable automobile, especially if the family has accompanied you, is a must. If you own a car, plan on shipping it over, otherwise, buy one when you arrive. Also, the household goods weight limitation established by the Joint Travel Regulation (JTR) does not apply to this type assignment, meaning you are entitled to ship your entire weight allowance.

NATO housing areas have been built near each site. Within these sites a certain number of quarters have been set aside for use by US command-sponsored personnel and their families. These quarters are similar to what one could expect at a US installation, and in many cases are better. Waiting lists are usually very short, so in most cases housing is readily available. Quartermaster furniture and appliances are also available through the detachment supply. For noncommand-sponsored personnel who elect to bring their dependents, housing on the German economy is available. Although rates vary from location to location, they are much less in these small towns than one would pay in larger cities such as Frankfurt and Heidelberg. Due to the remote locations, eligible personnel receive additional pay and allowances such as Foreign Duty Pay (FDP), Station Housing Allowance (SHA), and one of the highest Cost of Living Allowance (COLA) indexes in USAREUR. This additional income certainly helps make ends meet at the end of the month.

As you can see, there are obvious and not so obvious advantages and disadvantages to this type assignment but, believe the thousands who have served in this assignment, the good greatly outweighs the bad. One reason for this is the people who work and live in these isolated, often forgotten outposts. Not that they are a special breed or were handpicked for the job, but rather because this unique environment tends to bring everyone in these locations very close together. A spirit of teamwork and friendship prevails not only among the soldiers but also among the American families, members of the supported Allied nation, and members of the German community as well. Each team and community is like one big, happy family where the people get to know and truly look out for each other. In this assignment, one really gets to play the role of "goodwill ambassador" and, unless you plan on leading the life of a hermit, you are bound to have many wonderful and cherished times. You can also develop some lasting friendships.

If your next assignment happens to be to the 5th USAAG, prepare yourself for a challenging and demanding tour of duty — a tour which will reap great personal and professional benefits for you and your family in the years to come.

If you have been assigned to the 5th USAAG (AD) and have not yet heard from your sponsor, do not hesitate to write to the Commander, 5th USA Artillery Group (AD), APO New York 09171, attention the Executive Officer, for officers. For enlisted personnel, write to the Command Sergeant Major. You can also call the Headquarters; however, this could be expensive because the call would have to be commercial (no AUTOVON). The telephone number is Bueren Civilian 02951-2092, Extension 27/28.

In summing up my remarks regarding assignment to the 5th USAAG, for the soldier this represents the unique opportunity to serve alongside his NATO partner in the preservation of world peace. For the family it offers the opportunity to learn first-hand about foreign languages, customs, and traditions. For both family and soldier, it affords the rare opportunity to see and discover the Germany our fellow servicemembers seldom see or learn to appreciate.

Captain Mendez was commissioned in the Infantry in 1973 after having served 5 years in the enlisted ranks. He has served in Germany with the 5th USAAG as Executive Officer of the 43d Arty Det, and on the Group staff as S2 and S1. He has also served in Korea with the 38th ADA Brigade; with the 2d Bn, 65th ADA, in Los Angeles; and with the 2d Bn, 55th ADA, 11th Group, at Fort Bliss. He is presently attending the ADA Officer Advanced Course.

DEPLOYMENT OF IMPROVED HAWK in a TRIAD configuration

Captain Lafayette Trice, Jr.

This article is written to give Improved Hawk TRIAD battery commanders an overview of some of the considerations they should make when they deploy in a TRIAD configuration. The items that are presented for consideration in this article are as follows:

- Repair parts supply.
- Maintenance.
- Fuel support.
- Ration support.
- Battery operations.

A Hawk TRIAD battery consists of three firing platoons: two assault fire platoons (AFP) and a base platoon. All three platoons are capable of delivering the same firepower, although the base platoon does have an additional acquisition radar and a range-only radar that is used in an electronic countermeasure (ECM) environment. The equipment in the base platoon can be employed with either AFP to bring the firepower of two platoons under the direct control of a single tactical control officer (TCO). The equipment of the three platoons cannot be employed together under a single TCO; at least one AFP must always be controlled from a platoon command post. The Hawk TRIAD battery can be deployed in two configurations. The first is a two-position configuration (fig. 1) where one AFP makes up one fire unit and the other AFP combines with the base platoon to make up a second fire unit. The second possible configuration is a three-position deployment (fig. 2) in which each platoon is deployed separately.

The two-position configuration is the method of deployment most familiar to Hawk TRIAD battery commanders, who are probably well aware of its uses and support requirements. However, it has been my observation that deployment in a three-position configuration is not practiced extensively, if at all. For this reason, commanders must be aware of some of the additional considerations for deployment in a three-position configuration (TRIAD).

The complicating factors of TRIAD deployment are that fire units are in three different locations, they may move simultaneously or at different times, and the tactical situation may force the distance between firing platoons to be as much as 40 kilometers. For ease of support, the distance between platoons should be kept within 10 kilometers, depending on terrain limitations, but, because of mission considerations, firing platoons may be deployed up to 40 kilometers apart and still be able to maintain overlapping fire.

My remarks in this article are based on several field exercise rehearsals for TRIAD deployment and then a 10-day air defense tactical exercise in West Germany involving four other NATO countries. My unit deployed in both the two-position and the TRIAD configurations. Following are some of the additional factors a commander must consider when deploying in a TRIAD configuration.

My first consideration is maintenance supply — repair parts. The problem, which is generally the same for both Hawk system and motor maintenance, is that usually there are not enough spare parts to be divided among all three firing units. This is

especially true in the case of Hawk system parts, where the authorization for many items is often greater than the quantity on hand. This challenge forces a decision: Which platoon gets the spare parts and which platoon goes without? One way to approach the problem is to anticipate which platoon will need the part first and send that particular part with that unit. For example, if the continuous wave acquisition radar (CWAR) in the base platoon is nonoperational and awaiting a part from support, it might be prudent to send most of the CWAR repair parts with the assault platoons. A second example is when equipment is deteriorating but is not yet at the point where a scarce repair part must be installed. A commander may want to send the part with the deteriorating equipment rather than hold it in his centralized prescribed load list (PLL). Much of the PLL can be divided up in this manner. The remaining parts that are not expected to be needed soon and critical parts that all platoons have an equal demand on should be kept with the large parts storage trailer normally located with the base platoon. The reason is that the base platoon may not move as frequently as the assault platoons and usually has more vehicles to support delivery of parts to the assault platoons when the parts are needed. An accurate status of part location can speed movement of a critical part to another fire unit if needed.

Battalion commanders may want to consider allowing their deployed platoons to requisition parts and direct-exchange broken parts without going through the battery PLLs. For part control, the battery PLL must be kept informed of such transactions.

The second consideration is maintenance. To perform maintenance that becomes necessary through equipment breakdown, the commander must divide assets among the three firing platoons. Some problems encountered are: the use of the battery's one wrecker, a shortage of Hawk warrant officers to coordinate maintenace between three platoons, a PLL split three ways, and only one radio repairman and motor sergeant. In addition, both the system and the motor section test equipment and tools must be shared between the three platoons. The ability to "system-check" parts is also diminished because many of the parts are spread between the three platoons.

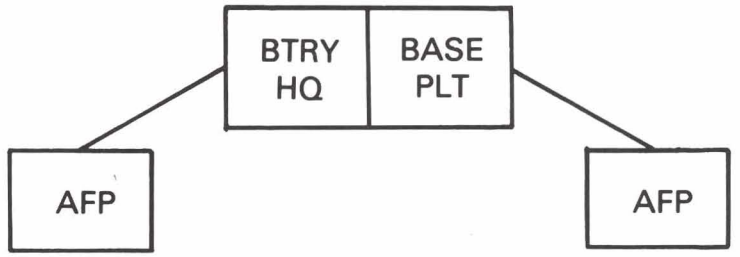


Figure 2. Three-position configuration (TRIAD).

There are probably several ways to confront this situation, but the important point is that a great deal of coordination must take place to optimize the maintenance effort, for without maintenance the units cannot move or perform their missions. One solution that worked for me was to divide the maintenance personnel (according to MOS) evenly between the three firing platoons, with the highest ranking individual in each maintenance MOS in the base platoon. The warrant officers and central PLL effort were also located in the base platoon. A dedicated communication channel was then provided so the warrant officers, key maintenance personnel, and PLL clerks could monitor the maintenance and supply effort at each platoon. Dedicated transportation was also provided to give maintenance support to the platoons any time it was needed. If a maintenance problem could not be resolved via the communications link, a unit contact team from the base platoon with the appropriate personnel, test equipment, manuals, parts, and suggestions from DSP could be sent to the platoon needing assistance. I found this approach to maintenance to be very effective.

The third consideration is fuel support. A TRIAD battery is authorized two tank and pump vehicles plus two tank trailers. The commander will have to develop a comprehensive plan for internal fuel support. The plan must allow for fuel pickup at the issue points, refueling of vehicles after a firing

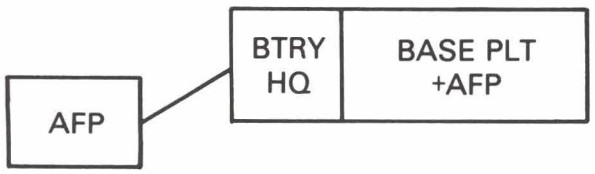


Figure 1. Two-position configuration.

platoon has moved, and a schedule for refueling diesel and gasoline generators at each platoon location. The situation is further complicated by fire units in three locations, movement at different times, distance to the fuel issue point, and the distance between the fire units.

The fourth consideration is ration support. The problem once again is that there is only one mess section and three separate firing platoons located some distance apart. This problem could be alleviated by serving C-rations every day at each meal; however, this could adversely affect morale, particularly during inclement weather. There is not enough field mess equipment authorized in a Hawk TRIAD battery to allow each platoon to have its own equipment, and the ration issue point will normally want to issue to the battery as a whole.

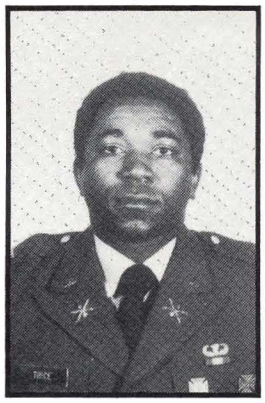
The commander must insure that a schedule is coordinated between the mess section and the platoons so that rations are picked up at the issue point and dining hours are staggered so that all three platoons get hot meals. If all platoons cannot receive a hot meal, the hot meals should be rotated so that each platoon will get at least one a day, tactical operations permitting. Insulated food containers can be used to transport meals to the firing platoons. There are enough immersion units in a TRIAD battery to allow each platoon to have hot water for heating C-rations and for hygiene.

The last consideration, but equally important, is battery operation. The separate platoons must be operated as if they were batteries, and the battery headquarters section must function, in part, as if it were a battalion headquarters. The headquarters section must also act as a distribution point to its platoons to provide critical Hawk parts, maintenance expertise, and test equipment. The same is true for motor maintenance.

I have found that the best way to insure effective command is to first establish a good command post, a "nerve center" for all battery operations. Second, train the platoon leaders and platoon sergeants in all facets of platoon operations and many facets of battery operations. In short, the platoon leaders must be able to operate and make decisions in an autonomous situation. Third, make sure the battery headquarters section contains an element from each of the battery operations (supply, mess, communications, maintenance, CBR, etc.). The primary purpose of each element is to be responsive to its particular endeavor. Their secondary purpose is to keep the commander informed on the accurate status of their efforts. This battery headquarters section is normally deployed with the base platoon but could be deployed with either of the other two platoons if necessary. Forth, personally monitor the status of vehicles, fuel, Hawk equipment and repair parts, and personnel. The last item is to check communications to see whether necessary radio, wire, or messenger communication are available. When a loss of communications occurs, rehearsed plans and procedures provide continuity until communications are reestablished. I found these to be the most important items affecting the ability of the battery to perform its mission.

In summary, when a Hawk battery deploys in a TRIAD configuration, separation and distance are big factors that cause problems for the battery commander. The firing platoons may be deployed in three separate locations up to 40 kilometers apart. This results in spreading limited assets over a large area, both geographically and operationally. I have tried to give commanders of TRIAD batteries some insight into additional aspects they should consider when contemplating deployment in a TRIAD configuration over extended periods of time. I believe that the keys to success are:

- Determine those areas that are critical to the mission and will be most affected by separation and distance.
- Advance planning to take these considerations into account.
- Rehearsal of TRIAD deployment to check plans and insure that all officers and key non-commissioned officers are familiar with unit operations.



Captain Trice is a Distinguished Military Graduate of Oregon State University where he earned both a Bachelor and Masters Degree in Business Administration. He served in Europe from 1974 to 1978. Having completed the ADA Officer Advanced Course at the US Army Air Defense School, he is presently assigned to the XVIII Airborne Corps, Fort Bragg, North Carolina.

JOINT TRAINING

An Investment In The Future

First Lieutenant William F. Fellows

The life of a young American soldier assigned to a Nike Hercules custodial unit in northern Germany is not an easy one. The problems of isolation, limited personnel, and the highly demanding duty have recently been compounded by the sharp decline in the purchasing power of the American dollar.

Words such as "Exclusion Area," "Limited Area," "Two-Man Rule," "Access Area," and "Clear Zone" indicate to the newly assigned soldier that his world is a very rigidly defined one. This is the world of the custodial soldier.

I became increasingly aware of this problem and its impact on troop performance as the Team Commander of a custodial site in northern Germany from 1975 to September 1978. There had to be a way to accomplish the mission while allowing the men an opportunity to participate in meaningful training and off-duty extracurricular activities. This challenge fell squarely on my shoulders. I was the public relations man when the soldiers had neither the words nor the weight; also the coordinator when logistics to support the activity were not available. I was the programer to insure that those men who were watching fence lines, while the rest of the men were competing in athletic events, received an equal chance to compete. Joint training became an important part of the educational process and a tremendous bargain when used to supplement the skill qualification training program or to simply reinforce basic soldier skills.

The foundation for a solid joint training program was easily constructed. I had to make a concerted effort to contact as many adjacent units, American and host nation, within my area of operations as possible. We got to know their key personnel and informed them that we were interested in creating an integrated training program. Normally, the German soldiers were as interested and as curious about our equipment and training methods as we were of theirs, and both groups relished the chance for competition.

With emphasis on the new interoperability concept, it became necessary that all US personnel within US Army Europe (USAREUR) become knowledgeable and proficient with the weapons and equipment of their host nation. This concept afforded us the incentive to exchange information and the opportunity for each individual to qualify with the German rifle, pistol, and machinegun.

Rappelling at Dunsen, Germany.

Rafting on the Wesen River.

Naturally, they were interested in an equal exchange of knowledge which inevitably led to competitive range firing and the exchange of marksmanship qualification badges.

An event needing very little logistical support was that of distance marching. Upon arrival in Germany, you will find that walking is a national pastime and that the German people are extremely proficient at it. Distance marching is an integral part of the Bundeswehr training program, and rightfully so. A wide range of training opportunities appeared in conjunction with distance marching such as the development of basic map reading skills, compass use and orienteering. In June of this year, I was approached by the Commander of the 312th Panzer Grenadiers. Their annual 100-km field exercise would be held in August and they requested that members of the American custodial contingent accompany them on the 4-day exercise. Helicopter transportation was provided to Saurland, German radios were distributed to each of the 12 squads, food was distributed and hidden at predesignated points in the mountains, and ground rules for the exercise were clearly laid out. There was to be no marching on roads, entering villages or cities was forbidden, and each squad had to reach predesignated points on a daily basis where food would be distributed and medical care made available. Travel during the day was discouraged due to Aggressor activity along the 100-km route. If caught, the entire squad would be taken 10-km to the rear of the point of capture and released. The exercise was coordinated with the usual German precision and at 0300 on a Sunday morning, our 6-man American contingent, accompanied by approximately 120 German soldiers, began the 100-km march. Four days later we emerged from the mountains, a tired, sore, yet respectable second place of the 12 starting squads. The training benefit was unquestionable, the competition enjoyable, and the comradery developed between the American and German participants, unforgettable.

Practicing for the big event.

A welcome break during a distance march.

Those American members of the custodial team not able to participate, either by choice or by position on the duty roster, were given priority on the next schedule of events — those of rappelling and rafting. The art of rappelling is mastered only through practice on vertical exposures, but where were we to find a vertical rock face in the flat, marshy exposure of northern Germany? A 40-meter fire tower on the kaserne of the 5th US Field Artillery Detachment was just what the doctor ordered. Ropes, D-rings, and engineer gloves were ordered and classes on safety, rappelling, and belaying began. Those individuals with an organic fear of heights were soon descending the 40-meter tower with proficiency and confidence; confidence not only in themselves, but in their team members and trainers.

The numerous inland waterways and canals of northern Germany afford many opportunities to foster river crossing skills and water safety practices. Rafting proved a perfect means to incorporate technical proficiency with physical stamina; therefore, competitive exercises were held in the village of Achim where the Weser River narrowed to a 100-meter distance. Team work is the answer in rafting and, while left is left and right is right in any language, confusion does arise, and a 100-meter sprint in a 10-man raft can turn out to be an exhausting experience.

It was vital to recognize the importance of family interaction with the well being of the soldiers assigned to remote areas. Activities such as the formation of a German-American Club opened the door for cultural exchange while fostering good relations with the supporting community. Dependent orientation tours of working areas were conducive to a better understanding by wives and families of just what Dad did all day (and night). Specialty nights or "Super Suppers" sponsored by the unit provided families and girl friends with an enjoyable night out while presenting a taste of home for the minority members of the unit. Another available option was to contact the public affairs office or travel bureau and request that a representative pay your unit a visit to brief the soldiers on local points of interest and historical landmarks.

At the end of a good exercise.

For me to present a cure-all laundry list of methods to remedy the ills of the isolated unit would be a waste of your time and mine. I have only suggested a few methods which I employed to supplement my unit's training and recreation program in hope that some of these methods are adaptable to your particular location and mission. I also recognize the fact that there are as many ways of building esprit and morale as there are holes in your mosquito net, and that your geographical location, mission, personnel, and equipment will mold your decision. Do your unit, yourselves and, above all, your men a favor by implementing imaginative training and recreation programs. Challenge yourselves to make the time available now and have confidence that the time invested will be returned with compounded interest.

Lieutenant Fellows served in Vietnam in 1972 and 1973. In 1974 he attended Officer Candidate School. Since earning his commission, he completed the ADA Officer Basic Course; served a tour of duty at Fort Bliss, Texas; and a tour in Germany. Having recently graudated from the ADA Officer Advanced Course, he is currently enrolled in the college degree completion program at Fort Bliss.

Employment Chaparra No

First Lieutenant

With the current interest of the air defense world oriented toward the development of new weapon systems, particularly Roland and the DIVAD Gun, a potentially disturbing problem presents itself. What if enemy forces decide not to wait until the mid-1980s to initiate an attack against us? Would our present SHORAD systems be able to accomplish their mission in the face of an air attack by a sophisticated hostile force? While anxiously awaiting the arrival of Roland and DIVAD Gun, the 3d Battalion, 61st ADA (C/V), has addressed this problem and developed a realistic, fully integrated plan for low-altitude air defense (LAAD) of a divisional-size unit should it be attacked today. The purpose of this article is to discuss the employment concepts and operational methods developed by this Chaparral/Vulcan Battalion, organic to the 3d Armored Division, which have proved effective in the challenging European environment.

The basic air defense priorities that have been established by the 3d Armored Division for the 3d Battalion, 61st ADA, are the three maneuver brigades of the division and the division rear area, with a priority to the Division Support Command (DISCOM). The battalion has developed an operational air defense plan to support these priorities which emphasizes mix and early engagement, while at the same time fully integrating the SHORAD weapons into the combined arms team.

The initial phase in development of the air defense plan is appropriate combat tailoring of the battalion to meet the situation. The battalion task organizes for combat with three composite batteries (two Vulcan platoons and one Chaparral platoon) and one pure Chaparral battery. In addition to the cross attachment of platoons, which takes place on order of the battalion commander, two of the eight forward area alerting radars (FAAR) are attached to each firing battery, to be positioned by the individual battery commander in support of brigade forces. Task organization complete, the three composite batteries are placed in direct support (DS) of the three maneuver brigades, while the pure Chaparral battery provides general support (GS) for the division rear area and DISCOM. The battalion is now prepared to provide the air defense support necessary for the division, emphasizing a capitalization on weapon system strengths and minimization of weaknesses. Vulcan, strongest against the helicopter threat and head-on ground attack targets, is employed well forward to defend maneuver elements on the FEBA (each Vulcan platoon is placed in direct support of a maneuver battalion). Chaparrals of the composite battery are employed in general support of the brigades to provide a defense in depth. Chaparrals of the pure battery are employed in support of the relatively static assets of the rear area, yet are readily available for reinforcing missions if the situation dictates the need.

While the 3/61 air defense plan portrays a simplistic appearance, its development has taken a long and sometimes complex path to the present form. A major prerequisite of the plan is the integration of the composite batteries into the maneuver elements of the division to establish each battery as a viable member of the combined arms team. This integration has been accomplished through habitual association of the composite battery with the appropriate brigade in field exercises, maneuver ARTEP evaluations at major training areas and, most recently, during REFORGER 1978 exercise Certain Shield. The 3d Armored Division participated in this FTX as the main Orange Force. Certain Shield was the culminating point in development of the composite battery plan. It provided a large scale test under the most realistic simulated combat conditions possible. It also presented "real world" problems for the battalion that could not be developed at a major training area. This resulted from the complexity of logistical support for a divisional Chaparral/Vulcan battalion spread throughout the entire division area. Essential supplies, as well as maintenance support, were provided by the maneuver brigades and supporting forward area support teams (FAST), a direct result of the matured relationship between the batteries and their supported elements. These well-established relationships are a major strength of the air defense plan and a perfect illustration of combined arms in operation. While liaison between all batteries and their supported units is excellent, the relationship between the 2d Brigade and Battery B set a precedent, with the battery TOC as an organic member of the brigade tactical command post during all operations. Exercise Certain Shield tested the tactical flexibility of the air defense plan as subsequent platoon and FAAR attachments and detachments were executed throughout the FTX

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alter P. Schaefer

based on the tactical situation scenario. This potential nightmare for commanders again proved to be a major strength to the composite battery-oriented battalion, as all reorganizations took place smoothly and effectively, a direct result of the inherent flexibility gained from the composite task organization. The conclusions drawn from exercise Certain Shield indicate that the air defense plan can be employed successfully from a tactical standpoint while revealing its logistical feasibility as well.

The 3/61 air defense plan is effective in the placement of weapons on the battlefield; however, the battalion's steps toward combat readiness do not stop with the plan. The battalion conducts continuous active training to insure that weapons, once they are in position, are able to destroy hostile aircraft. Vulcan live fire exercises are conducted twice yearly at Todendorf Range Camp, along the Baltic Sea in northern West Germany. In the exercises, they engaged target sleeves towed by the OV-10 Bronco and target torpedos towed by the G-91 Fiat. In addition to firing from a stationary position, the battalion has used the recently reopened Range Golf, which is a move-shoot-move range. Range Golf provides the most realistic and challenging training possible for Vulcaneers, training necessary for fire units that are employed on the FEBA. The Vulcans have also exercised their ground firing capability in limited amounts at Wildflecken Training Area. They also set a USAREUR first by firing in the ground role at Putlos Range, a component of the Todendorf complex. Putlos has proved particularly beneficial because it contains a move-shoot-move range (Range Togo) similar to Range Golf for ground firing. This range will be used by the battalion as often as possible in future firing cycles. The climax of Chaparral training is the annual live-fire exercise at the NATO Missile Firing Installation (NAMFI) on the Island of Crete. During the 1978 Chaparral firing, 3/61 fired the best in USAREUR, scoring 12-for-12 kills. Crew drill proficiency is a key ingredient of the live-fire exercises for both the Vulcan and Chaparral systems. During the summer Vulcan firing (qualification ASP), all Vulcan crews are evaluated on the combat proficiency of their crew drills, with the most weighted portion being effective engagement of an aerial target. During ASP 1978, 23 of the 24 Vulcan crews were rated combat ready, with the remaining crew achieving a combat-ready rating after the evaluation. In 1978 all 24 Chaparral crews were rated combat ready.

The battalion further keeps its tactical proficiency high through engaging in short warning alert tests (SWAT). SWAT evaluates a platoon or squad on its ability to load and displace without prior notice, select a proper tactical position at a given location, and correctly prepare the weapon system for action.

The battalion is consistently on the move and constantly searching for methods of improvement. One of those identified methods is a move toward permanent task organization for combat. Although a complicated process, steps have already been taken to implement the action by the end of this year. A second method includes an ongoing analysis of a proposal for Redeye improvement, where Vulcan platoon leaders in support of a maneuver battalion maintain operational control of the maneuver battalion's organic Redeye section. These steps as well as others aimed at increased combat readiness, are further assurance that the air threat will be met successfully by the 3d Battalion, 61st ADA.

This article provides a brief look at what we believe is an outstanding Chaparral/Vulcan battalion that, through its employment concepts, is prepared to provide air defense support for the 3d Armored Division today.

Lieutenant Schaefer graduated from the United States Military Academy in 1975 and has since served as a FAAR platoon leader, executive officer, and commander, all in the 3d Battalion, 61st Air Defense Artillery. He is currently enrolled in the Air Defense Artillery Officer's Advanced Course at Fort Bliss, Texas.

EDUCATIONAL

INTRODUCTION

This article is an account of course development activities at the US Army Air Defense School (USAADS) that lead to the production of an educational television film (telelesson) for a specific training purpose (objective).

The School has the capability to provide quality educational television training lessons on a broad range of military topics, equipment, tactics, crew drill, and unit employment. With educational TV training lessons, maximum use of motion can be emphasized: a great improvement over slide presentations.

The development of an educational television lesson starts with you, the field unit commander, platoon leader, noncommissioned officer, and operator. You must recognize that a need exists for a training film or an educational television lesson to meet a training requirement at the unit, for the purpose of the educational television program is to serve you and your unit.

The Department of the Army requirements for educational television topics are reviewed annually. At this review, your unit input is examined for need and validity of the requirement. The requirement, if approved, begins a process of development that includes the identification of the purpose, scope, cost, and resource availability to prepare the script based on clearly defined tasks or training objectives. The key to this effort is the concept of recording movement or motion to gain the maximum advantages of TV.

The first step in the actual production of a telelesson involves the identification of a training task or tasks that will be more effectively presented in an audiovisual manner than by any other means. This article sequentially addresses the process and considerations that are the basis of the selection of a training task for television production (telelesson).

Within the Army the use of the various audiovisual media has been practiced for many years, but the mainstay of the education system has been the use of instructors in the authority and dispenser of knowledge roles. When dealing with complete job and task analyses of the components of a specific vocation (e.g., radar mechanics), it is more cost effective to produce a criterion-referenced program of instruction using audiovisual media. The use of television is just one of these media options.

The Army has been directed to follow the Instructional Systems Development (ISD) Procedures in the US Army Training and Doctrine Command Pamphlet 350-30. These procedures outline a closed-loop, systems engineering type of curriculum process that includes job analysis, task analysis, course design, course development, implementation, and evaluation. The ISD process lends itself to a media selection procedure that provides for the concrete and logical selection of a specific medium for use as the educational medium. This article presents background and other relevant material to assist in the understanding of all components of this procedure. A brief description of the organizational structure is provided as an overview. A detailed examination of basic principles of learning as applied to the use of television is emphasized. Very little is presented concerning the physiological aspects of the visual literacy except that sight and hearing abilities are prerequisites. It has been established, on the basis of the nerve pathways available to vision, that 38 percent of the nerve signals reaching the brain come from the eyes (7:60-67). This is a significant fact that must be exploited.

What The Camera Sees. . . . .

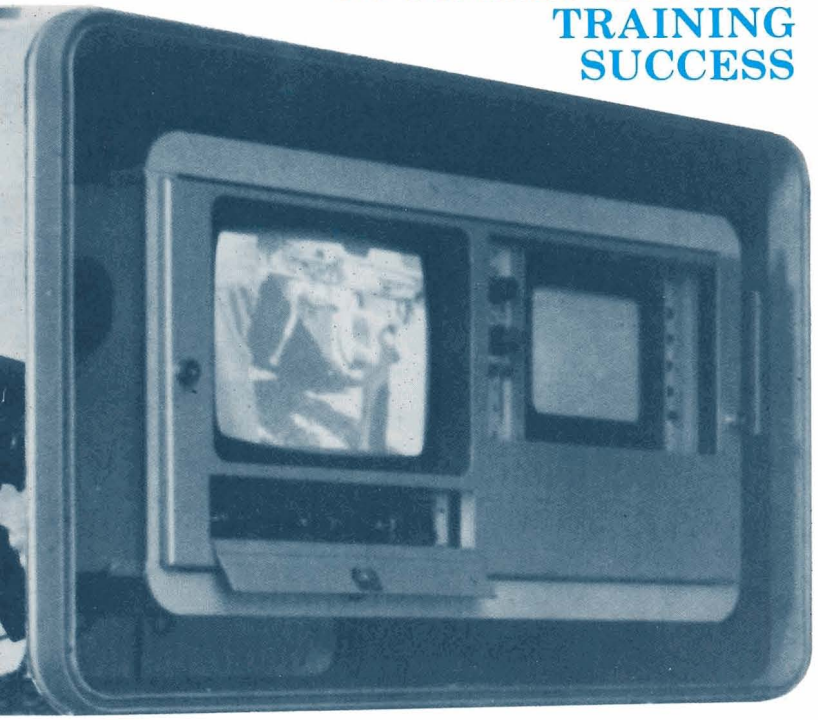
OVERVIEW

The Directorate of Training Developments, USAADS, is charged with the job analysis, task analysis, course design, and course development process for the creation of new courses of instruction. The audiovisual production support is provided to the School by the Fort Bliss Training Aids Support Center (TASC). The TASC has an element, the

LIEUTENANT COLONEL

TELEVISION

YOUR MEDIUM FOR TRAINING SUCCESS



. . . . . .*The Student Gets*

Educational Television Branch, that is responsible for technical and production support for television programs at Fort Bliss. The functions and missions of this branch are contained in USAADS Pamphlet 108-7. Currently, three types of use are authorized by the pamphlet: training aid in lesson presentation, mass training, and information and transmission of training films (11:3). The selection of a task or cluster of tasks for presentation by television is based on the characteristics of the task (movement, motion, and sequence of events) and the cost effectiveness of TV as related to the density of the student population to receive the proposed TV program (telelesson) (10:46-63). The lack of training equipment to teach the task and the need for emphasis on sequential movement, coupled with a projected, high-student density, could generally dictate the use of television. Certainly, more than the foregoing considerations are taken into account before selecting television as the medium for education purposes for a given task. The following comments are intended to provide the necessary clarity concerning the variables.

VARIABLES

The necessity to take advantage of known variables in human behavior as related to visual literacy is the key to the successful telelesson. The variables addressed here are primary variables to visual learning. Motivation to learn, or drive, is the first variable. Next is the recognition that a response to the learning situation is sought with a clear understanding that visual skills as a variable can be accomplished only by the eye with its ability to discern color. Finally, a thinking pattern is needed to relate all the variables to a visual learning experience.

Closely related to these variables are what Miller and Dollard (6:11-14) present as essential factors of learning theory for the design of audiovisual aids. They are: drive, cue, response, and reward. As viewed by a course developer, the student learns because the student wants something (drive), sees something (cue), does something (response), and gets something (reward). This is a brief description of the stimuli-response theory of learning and reinforcement. The film (TV) medium does provide for satisfying the four factors (4:5-6).

Drives. A psychological analysis of audiovisual training indicates that the learning situation is divided into two categories of drives: extrinsic and intrinsic. An extrinsic drive includes those motivations that are independent of the film (telelesson) itself, yet influence the behavior of the trainee during its presentation, such as promotion probability (an eventual reward). An intrinsic drive includes those motivations that are evoked by the telelesson, such as an arising sense of personal satisfaction (another reward). Of the two categories, the use of a planned question sheet to reinforce the extrinsic drive is provided to each student to stimulate learning. The telelesson can evoke response, but no research has been established to clarify the effects of intrinsic motivation.

Cues. The use of the cue is a means of improving learning because of discrete control of the images and sound in the telelesson. The use of overt responses using the telelesson will improve learning (based on experiments).

Responses. The responses that are made in a telelesson training situation are normally verbal, written, or perceptual. The telelesson can be used to order the cues and to indicate correct (overt) responses through the use of the split screen. A task that is either cognitive or verbal in content can be taught by a telelesson if overt participation is provided to the student. Problem-solving and troubleshooting techniques meet this requirement. Extrinsic motivation can be enhanced if the course developer and film (TV) production personnel know and understand visual literacy. A visually literate

[CHARD B. WESSLING, JR.

person can discriminate and interpret the visible action, objects, and/or symbols (natural or manmade), that he encounters in his environment. Through the creative use of these competencies, he is able to communicate with others. Through the appreciative use of these competencies, he is able to comprehend and enjoy the masterwork of visual communication (12:6-8).

VISUAL SKILLS

Visual literacy encompasses many visual skills. A partial list of these skills is included in this article. Visual literacy is an undeveloped human capability because we were all channeled to word literacy over visual literacy early in our education. Sensitivity to visual literacy requires development of this skill in application as well as "fine tuning" in receptivity. "Fine tuning" in visual discrimination is required and must be integrated into the present and future use of telelessons for training.

In a society where an average of 15,000 hours of television time is logged over the life of a single youth, versus 12,000 hours of classroom instruction, the use of television for training may be a viable solution to many training problems.

Eye's Role. We cannot ignore the eye's role in the visual literacy equation. Eye movement, fixations, and scanning action have been under research for several years. This research concludes that within the frame image, new data were viewed over old data up to the introduction of three different objects into the frame. The use of movement in the frame image, using a slow-moving object, indicates that 39 percent of eye markers followed the movement, 31 percent concentrated on the foreground, 20 percent focused the stationary objects in the frame, and 13 percent were random. Auditory cues to direct visual compliance received only 20 percent response by the viewer (1:101-106). This unsatisfactory condition can be overcome by use of the split frame, simultaneous introduction of a new object into the frame, or use of the close-up to amplify.

Color. Color affects our mental, physical, and emotional reactions. Color is also personal in meaning and interpretation and is bound to the culture. Color can amplify size and space, when properly used, so it is important to use the right color to emphasize a point. Generally, colors evoked emotional effects as follows (5:137-142):

Red — Excites	Blue — Cool and Calm
Peach — Appetizes	Black — Melancholy
Orange — Activates	White — Neutral
Green — Refreshes	Purple — Austere
Yellow — Cheers	

THINKING PATTERN

The course developer and scriptwriter must think visually in the development of the telelesson. Only when the course developer and scriptwriter are aware of visual patterns can they say something visually. The attempt to say it visually begins to activate their mental warehouses of visual images that are stored away. The writer becomes conscious of visual thinking, and this pattern is a sequence of disciplined tasks — mental, visual, oral, and written. Visual thinking can be enhanced by this process of transition (2:237-239):

1. Conceiving the idea — descriptive words.
2. Picturing the idea — mental pictures.
3. Oral description of the idea.
4. Written description of the idea.
5. Sketch of the idea or footage of idea.
6. Study of the visual achieved.
7. Verbal expression of the visual achieved.
8. Written expression of the visual achieved.
9. Group critique of visual created.

The scriptwriter must think visually

In this manner, the course developer moves toward a more explicit system of learning, using the fundamental principles of unit and organization. The ability to scan visually heightens visual literacy in line, pattern, form, color, and subject-matter recognition. Visual literacy is impossible to cultivate or transmit without some measure of verbal proficiency. The emphasis is to optimize both visual and verbal proficiency in the presentation of a telelesson. This will expand, contract, stop, advance, or suspend time in the presentation of a training task to gain the maximum advantage to the viewer in learning. Of course, the bonus effect is the logical use of motion to help the viewer make the transition from what it is he is viewing to what it does or how it works in a sequence of action. The concept or task under consideration becomes a concrete presentation of people, places, things,

activities, and tasks that can be understood because you see, hear, and experience through more than one sense.

COURSE DEVELOPMENT

Course development begins after the job and tasks of training are identified, the entry behavior is described and, finally, the tasks and learning elements are sequenced and structured. The course development phase includes specification of the learning event, specification of the instructional management plan and delivery system, selecting materials, development of instruction, and validation of the telelesson.

n the development of the telelesson.

The course developer creates the terminal learning objective for the selected task. He also develops the supporting learning elements for each terminal learning objective. These objectives are conceptualized visually and written on the telelesson script in terms of video and audio presentations by the scriptwriter. The technical adviser and subject matter experts are then selected. The completed script is analyzed for logistic requirements and visual literacy adequacy. Next, the cast or instructor is selected. In some cases, the course developer or technical adviser performs as the instructor. A rehearsal is conducted to iron out technical difficulties. After the telelesson is video-taped and edited by the technical adviser, the telelesson is validated. Prior to the validation, a group of subject matter experts views the film for technical accuracy. The validation involves two groups of three to five students to determine whether the training goals of the telelesson are achieved. The script will sequence the points to be learned over the entire length of the telelesson to obtain emphasis and balance. The telelesson checklist must therefore be sequenced in the same manner. It provides the viewer a focus of attention throughout the lesson, especially in dynamic subjects such as tactical employment of equipment. The telelesson is then approved for use within the School and for export to the field.

As you can see, the development of the educational television training lesson is a detailed process focused on the need of the student; you, the commander; and your soldiers. This article does not address in detail the coordination required at local and higher levels to insure that the telelesson meets TRADOC guidelines in terms of technical accuracy and tactical employment. Neither does it cover the technical expertise provided by the Audiovisual Branch of the Course Development Division of USAADS or the Education Television Branch of TASC, which is a Center production asset for training developments. The need to task individuals and units to perform the idea is not that easy to accomplish with competing requirements for personnel and equipment. Yet, all these actions are accomplished to give you the best telelessons available to enhance individual and unit proficiency on the battlefield.

In this article, I have attempted to alert in the reader the realization that educational television efforts are based on proved concepts of learning theory and take advantage of the visual literacy abilities we all possess. Keep the education television tapes in mind for your training program. Do not overlook this highly valuable resource for developing your unit proficiency.

A HIERARCHY OF VISUAL SKILLS

Distinguish light from dark.

Recognize differences in brightness.

Recognize differences and similarities in shape.

Recongize differences and similarities in size.

Distinguish hues from greys.

Recognize differences and similarities in hue.

Recognize differences and similarities in saturation.

Perceive distance, height, and depth.

Recognize differences and similarities in distance, height, and depth.

Perceive movement.

Recognize differences and similarities in rates of movement.

Recognize a whole shape even when partially occluded.

"Read" simple body language and make simple body language utterances.

Recognize groups of objects commonly seen together.

"Read" a spatial arrangment of objects commonly seen together.

Setting up to roll the camera.

Group objects related by process commonly seen together.

Group objects related by process though not necessarily seen together.

"Read" a sequence of objects and/or body language arranged in chronological order and related by process.

Compose an utterance as above.

"Read" a sequence of objects and/or body language arranged in an idealized order to represent elements of a process or a genotype, etc.

Compose an utterance as above.

"Read" a sequence of objects and/or body language arranged in cogent order.

Compose an utterance as above.

"Read" a sequence of objects and/or body language arranged in "original" yet "significance" order.

Compose an utterance as above.

"Read" a sequence of objects and/or body language arranged in order so as to communicate an intended idea about a process.

Compose a utterance as above.

"Read" a sequence of objects and/or body language arranged to communicate intended nonphysical concepts.

Compose an utterance as above.

"Read" a sequence of objects and/or body language arranged to transmit a fictional narrative.

Compose an utterance as above.

"Read" a sequence of objects and/or body language arranged to create a desired emotional reaction.

Compose an utterance as above.

"Read" a sequence of objects and/or body language arranged to express, so that others may understand it, a personal emotion.

Compose an utterance as above.

What you see here is a hierarchy of visual skills. It is my crude attempt to hypothesize on the basis of theory and current knowledge what a reasonable course of development might be.

If visual literacy exists, what would the characteristics be of a visually literate person? Drawing on the verbal parallel, I think it would be reasonable to say that the following would be desirable attributes and skills:

Read visuals with skill.

Write with visuals, expressing oneself effectively.

Know the grammar and syntaxes of visual language and be able to apply them.

Be familiar with the tools of visual literacy and their use.

Appreciate the masterworks of visual literacy.

Be able to translate from visual language to verbal language and vice versa.

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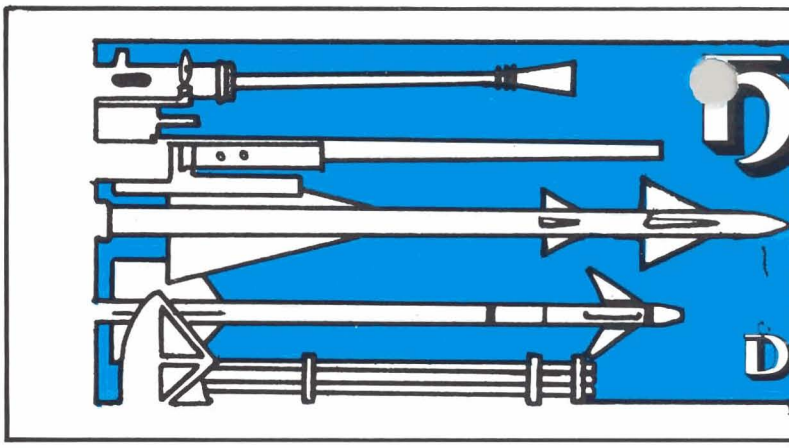
Editor's Note: In this installment, we discuss United States antiaircraft tactics and techniques applied in the Pacific during World War II.

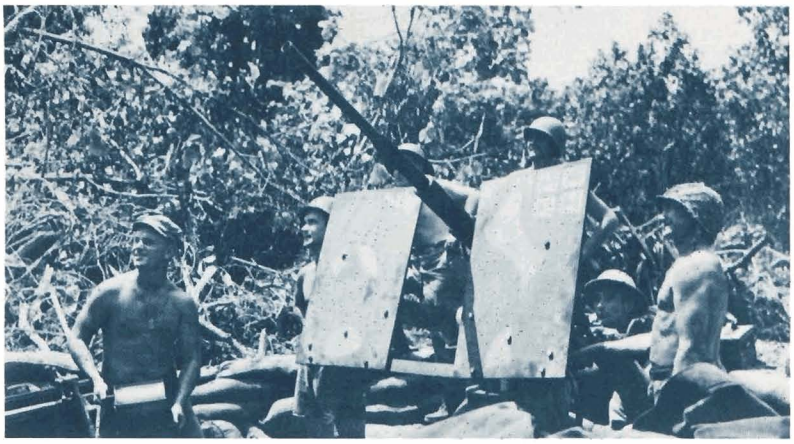
United States antiaircraft units in the Pacific at the start of the war had only interim period equipment, the 3-inch AA gun M2 or M4, caliber .50 machineguns, and searchlights equipped with sound locators. The first units going out after Pearl Harbor were provided with mechanical time fuzes for the 3-inch gun, a few SCR-268s, and the 37-mm gun. A number of 37-mm guns were retained and used after the arrival of the 40-mm Bofors gun. This was followed by equipment using dual- and quadruple-caliber .50 machineguns on a turret mount. In 1944, the new gun-laying radar, the SCR-584, and the M9 director reached the combat area. With this equipment, the antiaircraft part of the air defense in the Pacific was consummated. It is significant that after air supremacy was attained by our forces, the United States air defense problems produced by the Japanese operations diminished radically until the advent of Kamikaze attacks at a later stage of the war in the Pacific produced a serious new air defense problem.

In early December 1941, there were 62 United States antiaircraft batteries in the Pacific, consisting of 8,432 men. This force consisted of guns, automatic weapons, and searchlight units. By the end of 1943, the antiaircraft force consisted of 187 batteries with 26,990 men, and even this number was not sufficient to meet the tactical requirements without frequent shifts and readjustments. Antiaircraft units were attached to tactical commands for operational control, and this wide dispersion of antiaircraft units caused complications in the administration, supply, and training of the units and led to the establishment of a separate antiaircraft command.



The 14th Antiaircraft Command was activated by authority of the War Department on 15 November 1943. The mission of this command was to provide centralized control of administration, supply, and replacements; to give the technical training necessary to assure combat efficiency of antiaircraft units; and to make available units of the required types and in the required numbers to meet theater tactical needs. Except when attached for operational control to tactical commands, the units were under direct control of the 14th Antiaircraft Command and, in each case, control reverted to this command upon completion by a unit of an assigned combat mission.

The Antiaircraft Artillery Intelligence Service (AAAIS) and the antiaircraft operations room (AAOR), as set up and operated in the Pacific, followed basic War Department doctrine but were characterized by some deviation from normal procedure. Conditions imposed by amphibious warfare, jungle and mountain hazards to



37-mm AA gun.

Multiple caliber .50 machinegun Model 51.

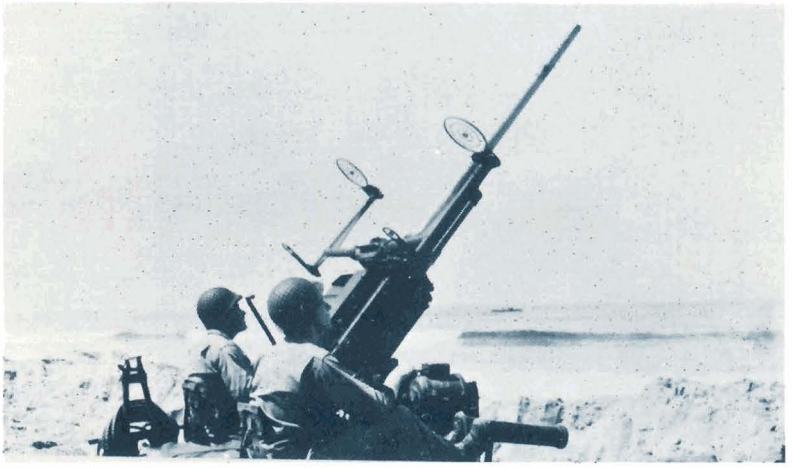
communications, and the lack of early radar warning dictated the variations.

Terrain in the Southwest Pacific Area made it difficult for the AAAIS to place dependence upon radar detection stations, and it was necessary to maintain a comprehensive network of visual observation posts and to enlist the cooperation and aid of the antiaircraft units in the defense area. Except for certain installations in the Hawaiian Islands, Australia, and on Luzon in 1945, there were no elaborate AAORs in the Pacific. This was due to the nature of island warfare which required paramount emphasis to be placed upon speed of installation, simplicity of control, flexibility, and maneuverability. Three factors determined the physical location of an AAOR; communication facilities, permanence of the installation, and local security. Communications played a particularly important role. In amphibious assault landings, it was standard operating practice to install an AAOR in a vehicle so that it could go ashore with the first antiaircraft troops and take a position where communications were most favorable. In the interest of efficiency, it became the practice for the AAOR and the Fighter Control Center to land simultaneously and establish adjacent installations which could be consolidated readily to form an operations room.

The AAOR depended primarily on the AAAIS for information, but also received information either direct or by relays from the Air Force Control Centers, Navy Combat Intelligence Center (CIC), other antiaircraft operations rooms, civilian spotters, and line troops.

Fire control was necessary, not only to make it possible to engage the maximum number of targets during attack, but also to assure safety of friendly aircraft. The accepted practice in the Pacific theater placed the power of control in the local fighter controller. SOPs, fixing primary and secondary sectors of responsibility and establishing firm instructions, were issued by the antiaircraft commanders to subordinate units. At times in emergency situations, it was necessary for the unit commander to exercise immediate fire control, directing his unit to engage certain targets or take other action indicated by the current situation.

Complete cooperation of ground, air, and naval forces was essential to the success of joint amphibious operations. During the early stages of an action, the task force commander afloat was charged with the direction of defense measures. This was accomplished by establishing a CIC afloat to effect control and issue fire directions. To provide the CIC with necessary information, radars and observers were placed aboard small craft and deployed to give all-around coverage.

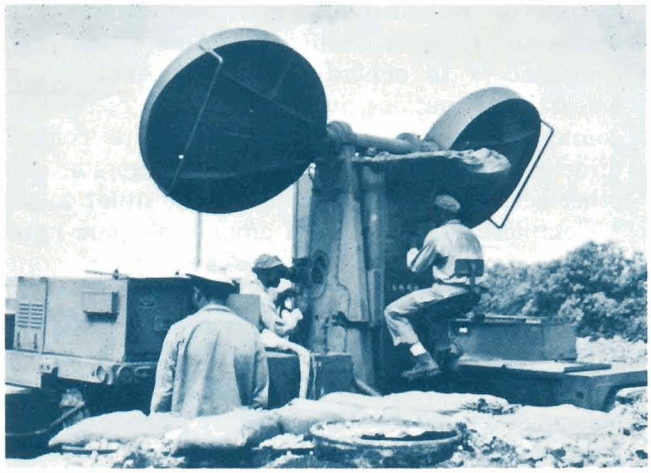


Improvised AA automatic weapon using a 20-mm gun from a Japanese plane.

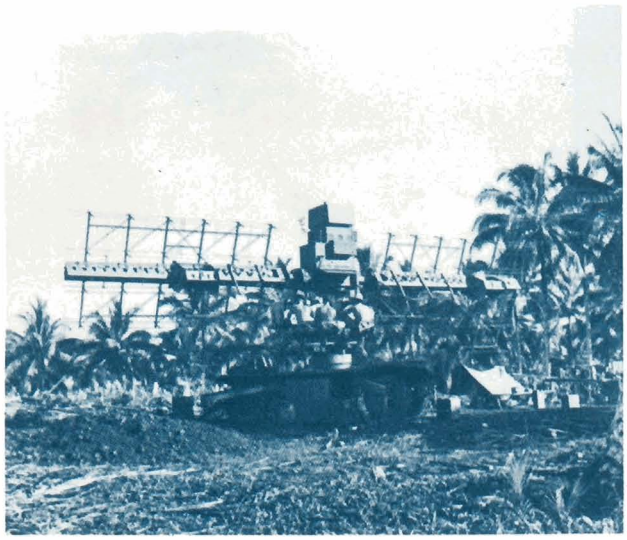
As Army antiaircraft units went ashore, they set up communications and monitored the CIC warning circuits. Battalion and group AAORs relayed the information picked up in this manner to all interested fire units, together with any data received from visual observers stationed around the perimeter. Later, as they became operational, antiaircraft radar units reported to the AAORs which relayed this additional information to the fighter controller, to fire units, and to the CIC, where applicable.

Air defense control did not pass from Navy to Army until land-based planes took over fighter cover responsibility. Even then, close liaison with the Navy was maintained to expedite exchange of intelligence.

Installed fire control equipment (less SCR-268 radar) of a 90-mm antiaircraft gun battery.



Mickey Mouse radar type height-finder used in lieu of stereoscopic height-finder to provide an accurate altitude.



SCR-268 radar in operation.

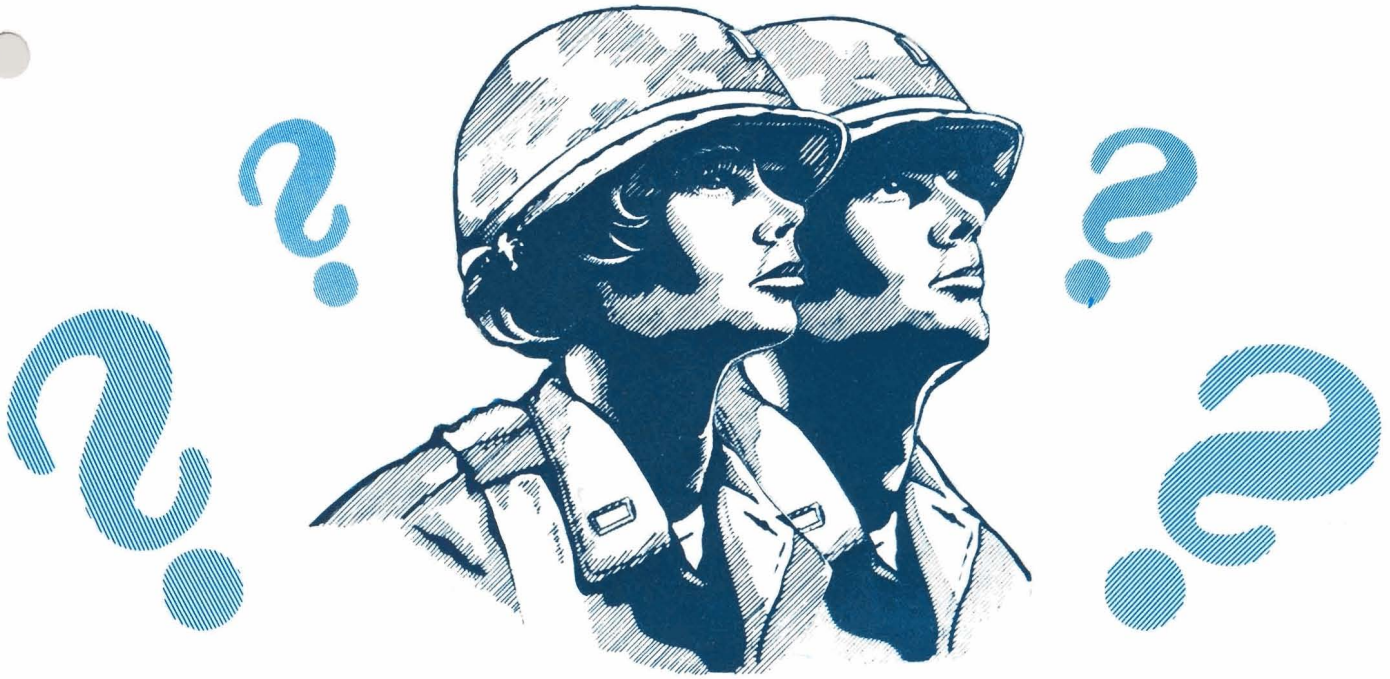
The organization for combat operations required the antiaircraft force to be tailored for each combat mission. Units were assigned to various commands during the war and operated under various procedures. For example, the antiaircraft force on Leyte consisted of one brigade, two groups, one operations detachment, five automatic weapons battalions, three gun battalions, and two searchlight battalions. This force, attached to the Sixth Army and landed with the X and XIV Corps, was to be united as soon as feasible into a combined antiaircraft defense controlled by the 32d Antiaircraft Artillery Brigade.

The antiaircraft force for the defense of Morotai was landed in the first wave and consisted of three automatic weapons battalions, two gun battalions, one searchlight battalion (less 1 battery), and two Coast Artillery surface warning platoons.

During the Leyte campaign, some confusion was experienced in the use of fire control terminology. The Navy and troops from the Pacific Ocean Area used one set of terms to designate state of alert and control of fire, while in the Southwest Pacific Area another set of terms was used. Pacific Ocean Area terms were used initially when the Navy controlled the operation, and the terms were changed when the Fighter Command took over the Leyte air defense. The control of complex antiaircraft defenses required instant communications as well as definite operations plans.

Throughout the war in the Pacific, radio communications were subject to reduced efficiency due to atmospheric conditions. Wire was installed as soon as possible to provide adequate communications.

WHAT DO YOU DO NOW,



LIEUTENANT?

Prepared by Tactics Department, USAADS

Major Charles C. Walden

SITUATION:

First Lieutenant Jones is Assistant Operations Officer, 2d Battalion, 444th Air Defense Artillery (Hawk) (TRIAD). He has been tasked by Lieutenant Colonel Thomas, the Battalion Commander, to instruct the battalion's officers on the role of Hawk in direct support (DS) of a division. Following an initial instructional period, Lieutenant Jones organizes his notes for a final presentation within 7 days, in accordance with the battalion commander's guidance.

SOLUTION:

Lieutenant Jones decides to highlight the following points during his presentation:

- ADA Command and Control
- Battalion Movement
- Integration and Coordination with Other ADA Units.
- Combat Service Support

Major Axelrod, the S3, and Major Payne, the XO, previewed Lieutenant Jones' proposed presentation:

1. ADA Command and Control.

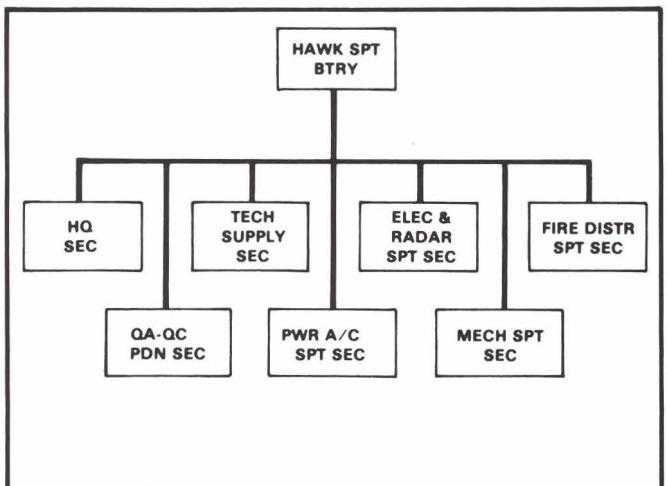
The tactical mission of direct support for the Hawk battalion establishes the command relationships and coordinating links necessary to insure integration of air defense with maneuver elements. This mission does not violate the control authority of the region AD commander.

a. The region AD commander may delegate the authority to assign targets and order engagement to the Hawk battalion. However, he retains control by prescribing the exact conditions under which this authority may be used. It is reasonable to expect the region AD commander to delegate authority under one or more of the following conditions:

— Communications degraded.
— Large number of hostile aircraft.
— Low-altitude threat.

The latter condition will normally be cause for delegation of engagement authority to the Hawk battalion, battery, and/or platoon during wartime. During the delegation of authority, higher echelons monitor Hawk unit actions to insure engagement of the most threatening aircraft and to prevent engagement of friendly aircraft. Engagements by Hawk units will be guided by the tactical standing operating procedures (TSOP). These TSOP address hostile criteria, firing commands, weapons engagement zones, safe passage, restricted and hostile fire areas, firing techniques, and measures to prepare or build-up Hawk units for combat. These measures are defense readiness conditions, air defense warnings, states of alert, and weapons alert designators.

b. Liaison and coordination are established with the supported division. The Hawk battalion sends a liaison officer to the division tactical operations center (DTOC) to work closely with Chaparral/Vulcan (C/V) and aviation personnel in the division airspace management element



THE HAWK SUPPORT BATTERY

(DAME). Additionally, the C/V battalion locates an air defense coordination section at the Hawk battalion operations center (BOC) to collect and transmit time-sensitive air defense information. The battalion normally assumes the division area as its sector of fire; however, when batteries or platoons operate in brigade areas, the Hawk battalion may have to coordinate with the brigades for movement and positioning. As part of coordinating with the supported division, the C/V battalion commander remains the division air defense (AD) officer and principal adviser to the division commander on AD matters.

c. The direct support Hawk battalion remains under the AD rules of engagement and weapon control orders established by the AD group or regional AD headquarters. However, the division commander may impose a more restrictive weapons control status; less restrictive changes require region commander approval.

2. Battalion Movement.

Subsequent to occupation of initial positions, the Hawk battalion will move to support changes to the scheme of maneuver and to enhance its survivability as noted. To insure continuous AD coverage during these moves, the battalion moves by echelon by having fire units displace either by battery or by platoon, depending on the tactical situation. (See accompanying figures.) The BOC also moves by echelon to maintain a continuous control capability.

a. To facilitate command, control, communications, and logistics, the distances between the battery and its separately deployed platoons should be minimized. A separation of 1 or 2 kilometers is normal but distances should not exceed 10 kilometers.

b. To aid countersuppression efforts and have maximum firepower available during periods of the greatest threat, movement is conducted at night and during other periods of reduced visibility, when possible.

c. Alternate positions should be selected for occupation if primary positions are threatened. The batteries and platoons should be able to perform their missions from the alternate positions.

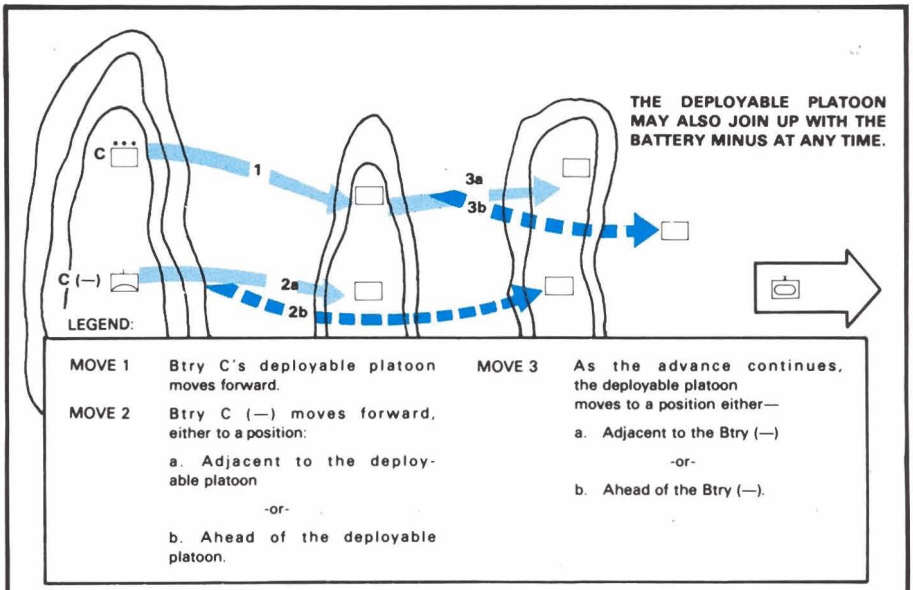
d. Supplementary positions should be identified for occupation upon changes to the scheme of maneuver or tactical situation.

e. Defenses are continually planned, analyzed, and adjusted to support the tactical situation using basically the same considerations as in designing the initial defenses; e.g., employment guidelines and position requirements.

3. Integration and Coordination with Other ADA Units.

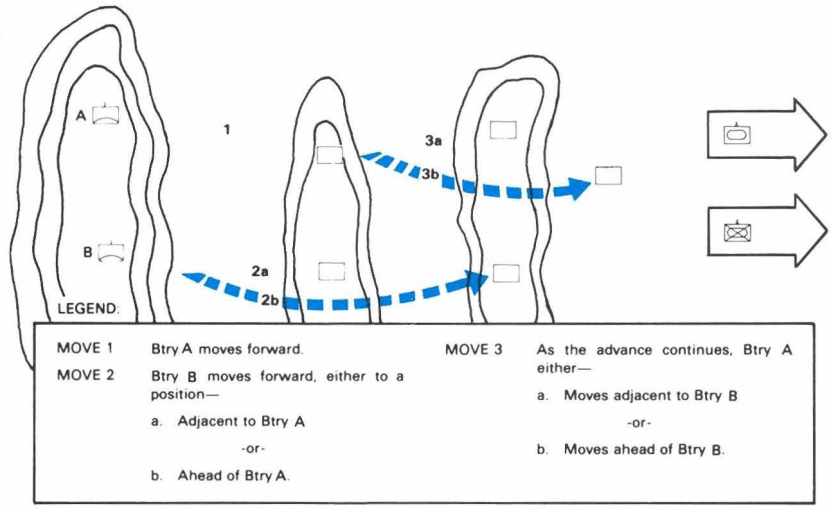
a. The Hawk commander works closely with the C/V commander. Thus, he can capitalize on the differences in Hawk and C/V range and altitude capabilities, mobility, and method of employment. In this manner, he provides the best possible AD cover for the ground commander and complicates the enemy's attack options.

b. The DS Hawk battalion is also part of a defense larger than that of the supported division. In this regard, the headquarters assigning the DS



DISPLACEMENT BY PLATOON

mission will normally specify the threat against which the defense should be planned. The DS Hawk battalion normally assumes the division area as its sector of fire. Air defense planners insure that the battalion fires and the fires of other DS Hawk battalions, general support battalions (protecting rear area critical assets), Air Force assets, and other AD units are integrated into the battle for air superiority over the larger area.



DISPLACEMENT BY BATTERY

4. Combat Service Support.

a. The Hawk support battery, organic to the Hawk battalion, provides DS maintenance for the Hawk system and fire distribution equipment. Siting requirements for this battery when Hawk is in a DS role do not change significantly from normal siting requirements for the support battery. (See FM 44-90.)

b. Special ammunition supply points (SASP) assigned to the corps support command (COSCOM) provide missile resupply using supply point distribution. Since this distribution system requires the unit to pick up its missiles, the following must also be considered.

(1) Reorder after expenditure of a specified number of missiles as established by standing operating procedures.

(2) Turn-around time influences reorder time and will be influenced by available roads, transportation, safety, and security requirements, and distance to the supporting SASP.

(3) The available supply rate (ASR) established by the corps commander.

(4) The availability and condition of main supply routes (MSR). Support personnel must be familiar with these routes.

(5) Transport equipment must be maintained in a state of readiness in accordance with SASP operating regulations.

(6) Support personnel to pick-up missiles should be dispatched as part of a convoy rather than individually, especially in a combat environment.

c. Other combat service support is provided through the Hawk battalion headquarters by COSCOM support units. However, if lines of communications and supply extend over long distances, the supported division may be required to provide DS of fast-moving items such as subsistence, clothing, tentage, and petroleum, oil, and lubricants (POL).

Majors Axelrod and Payne assured the battalion commander that Lieutenant Jones' presentation was as superb as his initial effort. Thus, Colonel Thomas approved the instruction without further rehearsal for presentation at his next officers' call in 2 days.

After the instruction, the battalion commander decided that Lieutenant Jones' knowledge of Hawk's DS role was so outstanding that Jones was the logical choice to be the battalion's liaison officer at the DTOC. Lieutenant Jones welcomed the challenge to apply the expertise he had so painstakingly acquired over the past few months.

Major Walden, a graduate of Ripon College with a Master of Arts Degree in Psychology from the University of Texas at El Paso, has authored this, his second article for AIR DEFENSE Magazine. He is currently serving as a senior instructor in the Air Defense Tactics Branch, Tactics Department, US Army Air Defense School.

AIRCRAFT RECOGNITION QUIZ

Can you identify these aircraft?
(Answers on page 61.)

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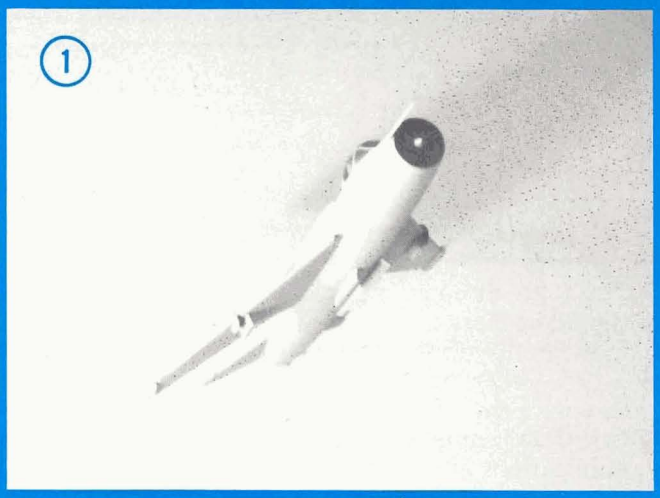

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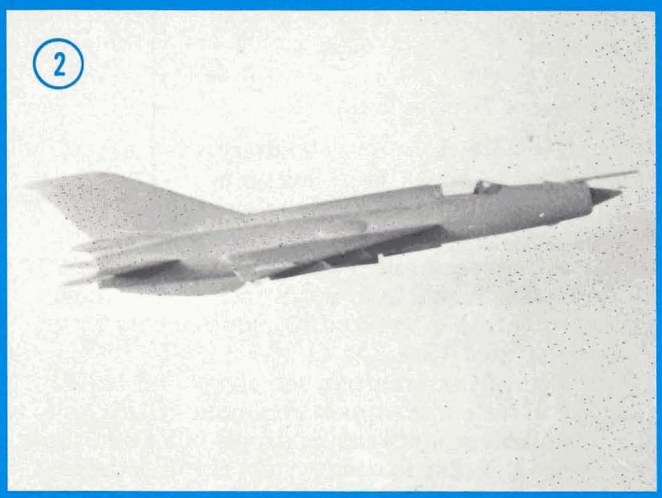

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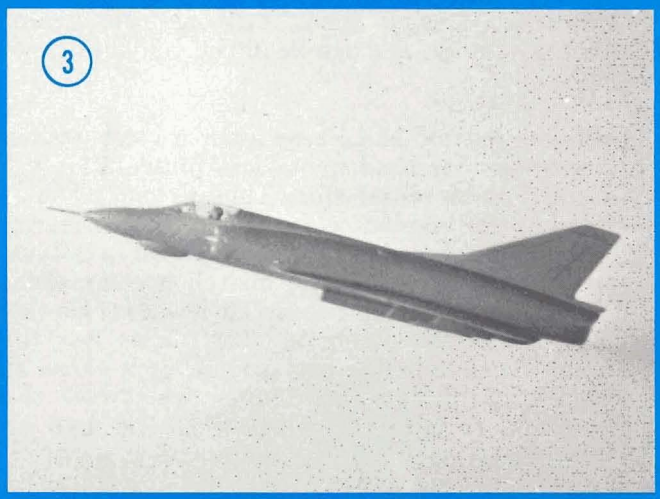

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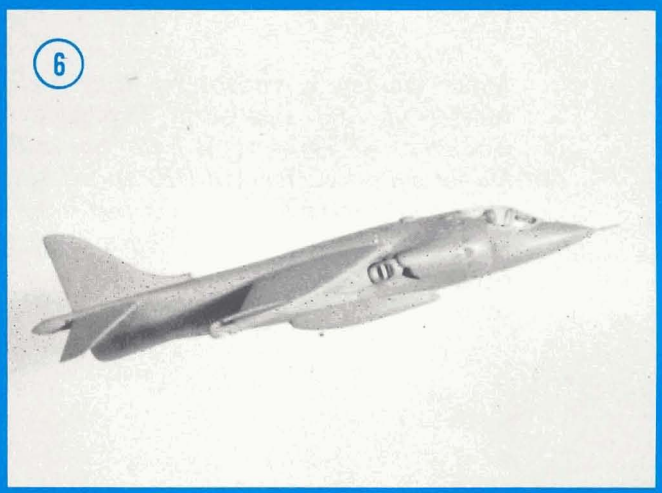
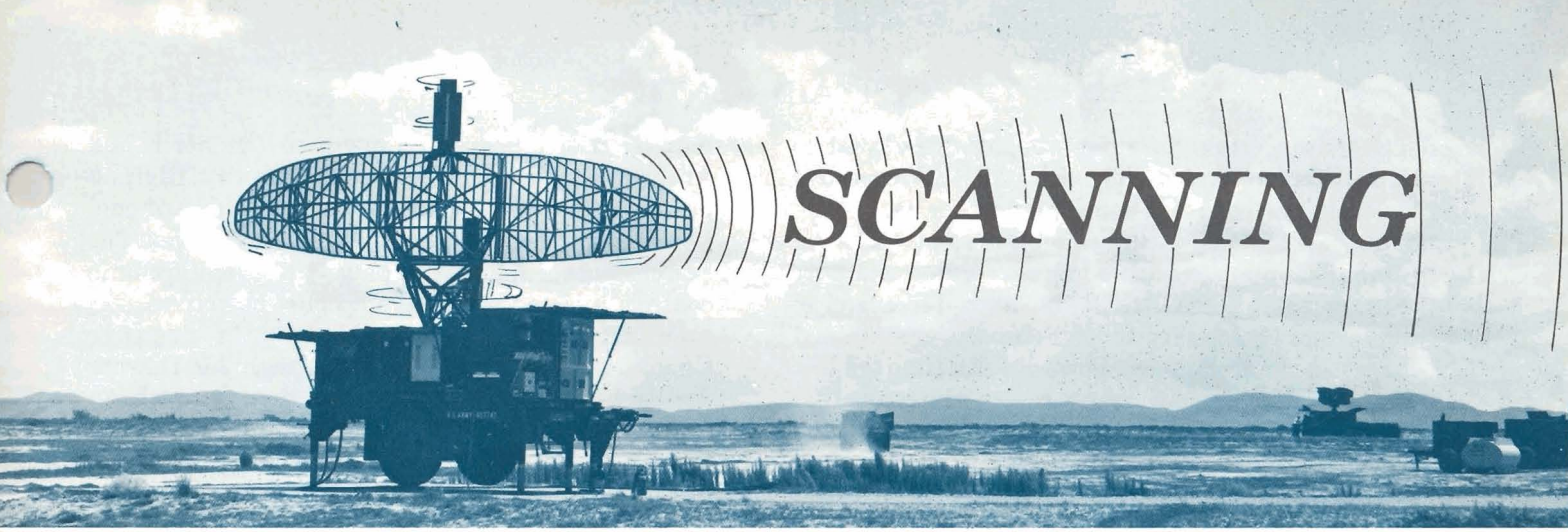




ANOTHER CHAPTER IN ADA HISTORY

Another chapter of air defense history is scheduled to close this year. According to a realinement announced in March by the Department of the Army, the 31st Air Defense Artillery Brigade, headquartered at Homestead Air Force Base, Florida, will be inactivated and its subordinate battalions restationed.

Specifically, the Brigade's Nike Hercules Battalion, the 2d of the 52d ADA, will move to McGregor Range, New Mexico, while the 1st Battalion (IHawk), 65th ADA, will relocate to Fort Bliss, Texas. The Brigade's other IHawk Battalion, the 3d of the 68th ADA, will go to Fort Bragg, North Carolina. The Brigade Headquarters and Headquarters Battery will be inactivated.

Secretary of Defense Harold Brown has approved the actions, contained in a now declassified study, for implementation in Fiscal Year 1979. The actions will end 17 years of round-the-clock, surface-to-air missile protection for the Miami-Homestead and Key West defenses.

Air defense artillery first came to Florida during the 1962 Cuban Missile Crisis when President Kennedy ordered three battalions into the area. The 13th Artillery Group, which commanded the units at that time, became part of the Army Air Defense Command (ARADCOM).

In a 1970 reorganization, the 31st Air Defense Artillery Brigade was reactivated and took command of the battalions, replacing the 13th Group. The 31st Brigade was no stranger to Florida, having been originally formed at Key West prior to World War I as the 31st Heavy Artillery Brigade of the Coast Artillery Corps.

During that same reorganization, brigade units received a second mission — to deploy anywhere in the world on short notice as part of the US Strategic Army Forces (STRAF). It is this mission that each of the units will retain after the current realinement.

When ARADCOM was inactivated in 1974, the Brigade was assigned to the US Army Forces Command (FORSCOM). Operational control of the Brigade's day-to-day air defense mission passed to the 20th region of the North American Air Defense Command (NORAD). The Brigade became the only Army unit in the continental United States with an active air defense mission and, coupled with the STRAF mission, the only ADA unit with a dual responsibility.

The now declassified study, on which the realinement decision was based, shows that basically there is no attack scenario in which 31st Brigade units, as now deployed, could make a significant contribution to national defense. So, the units will take their radars off their towers, close their fixed sites, relocate as directed, and put the emphasis where it's needed — on short-notice, worldwide deployment.

Although the 31st Air Defense Artillery brigade will retire its colors, its place in ADA history has been assured by past performance. Its place in the future will be assured by three subordinate battalions that will continue to be — "Ready and Vigilant."

TRAINING LITERATURE

ST 44-169, Hawk Tactical Air Movement, has been distributed to all Hawk battalions. ST 44-169 replaces TC 44-90, which was deleted from the Army-wide training literature program by HQ TRADOC. All Hawk units are urged to initiate training in tactical air movement using the guidance in ST 44-169. If additional supplies of ST 44-169 are needed, they can be obtained by sending a written request to Comdt. USAADS, ATTN: ATSA-TD-CDE, P.O. Box 5300, Fort Bliss, Texas 79916.

Exercise Certain Sentinel brought a new twist to REFORGER 79 play. The REFORGER exercises have always been a testing ground for validating deployment plans, airlift capabilities, new tactics, combat support, and combat service support requirements. REFORGER 79, a winter exercise, conducted 13 January to 17 February, maintained the testing ground image; however, this time the test was accomplished in the most severe winter weather the Republic of Germany had seen in over 30 years. Participants in REFORGER 79 were introduced to a new airspace management plan and experienced new airspace control measures conducted by the Central Army Group (CENTAG).

One of the major objectives of REFORGER 79 was to involve as many headquarters and Reserve units in a REFORGER mission as possible. In keeping with this objective, a 25-man element from Headquarters, 11th Air Defense Artillery Group, Fort Bliss, Texas, deployed to Europe and augmented the 69th Air Defense Artillery Group. Valuable lessons were learned during the exercise. The CONUS and USAREUR air defense staffs had many valuable opportunities for interoperations and operated as an effective combat team.

In preparation for deployment, the 11th Air Defense Artillery Group established a 25-hour program of instruction covering pertinent USAREUR plans, orders, and SOPs. Special classes on cold weather operations, including treatment of cold weather injuries, were conducted. Approximately 50 percent of the personnel designated to deploy in REFORGER 79 had experience in European field-type exercises. This proved to be invaluable because they played a key role in assisting those who were deploying to Europe for the first time.

Once in West Germany, the 69th Air Defense Artillery Group Staff assisted its counterparts in local operations and requirements. The Augmentation Element, integrated with the Group Staff, and the two subordinate IHawk Battalions participated in the exercise. Five days after arrival, augmentation force personnel accompanied their assigned sections to various field locations in preparation for the start of the exercise. Members of the Augmentation Force were viable players and participated in operations, intelligence, communications, administration, and logistical functions throughout the exercise. Predeployment training at home stations and in-depth orientations by the 69th Air Defense Artillery Group Staff were most valuable. This training, with 50 percent of the Augmentation Element already experienced in European operations, was a key factor in the success of the interoperability operations between CONUS and USAREUR staffs.

Actual exercise play (Certain Sentinel) began on 30 January 1979. The maneuver boundaries were between the cities of Bamberg to the north and Ansbach to the south. The 1st Infantry Division portrayed the friendly forces while the 1st Armored Division represented the Orange (enemy) forces. The exercise was primarily free play with several scenario controls injected to achieve specific objectives.

In addition to the Division's organic Chaparral/Vulcan battalions, the 69th Air Defense Artillery Group supported each division with an Improved Hawk battalion. The Group Headquarters was collocated with corps tactical operation center (CTOC) and performed as players and controllers. Improved Hawk battalions were deployed with their respective forces, although they remained under the operational control of COM-4ATAF for the duration of the exercise. Air defense highlights during the exercise consisted of defense of the assembly areas, river-crossing operations, high-density airspace control zones, and implementation of the airspace control plan.

Airspace management during the exercise was a major consideration as COM-4ATAF's new airspace control plan was implemented. The plan introduced new control measures and coordinating altitudes that enhanced both air and ground operations. The airspace control measures included weapon free zones (WFZ), restricted operations zones (ROZ), high-density airspace control zones (HIDACZ), and low-level transit routes (LLTR). All control measures were used extensively with the exception of LLTRs, which were not used because of airspace restrictions imposed by the German government. The coordinating altitudes were strictly adhered to by both Army and Air Force aircraft. The HIDACZs varied in size (20-40 km) and were used to give the maneuver commander total control of the airspace in his area of operation for a specified time frame. The maneuver commander could control the use of airspace during this period; however, he was also responsible for his own air defense coverage. The ROZs were used primarily for SHORAD point defenses. The control reporting posts (CRPs) plotted all HIDACZs, ROZs, and WFZs as they monitored the airspace to insure that friendly aircraft did not enter the above zones without prior coordination with the proper controlling authority. The weapons control status in HIDACZs varied from weapons free to weapons hold.

The 69th ADA Group's airspace management element (AME), representing the group commander, provided advice to the corps commander and his staff on air defense matters. The AME was also an integral part of corps airspace management element (CAME). The CAME, in close coordination with the division airspace management element (DAME), played a key role in the airspace management effort. The CAME and DAME, with sole user communications circuits, easily coordinated the divisions and corps airspace requirements. The

airspace management coordination chain was as effective as expected. The DAME and CAME advised the commanders on the various control measures needed to enhance the air defense mission without hampering friendly air support.

The coordination and cooperation among the IHawk battalions and Chaparral/Vulcan (C/V) battalion were superb. The Hawk battalions provided one scope in their AN/TSQ-38 van for the C/V battalion liaison element for early warning information. With the AME as a part of the CAME at the CTOC and a Hawk liaison team at the DAME, coupled with the C/V liaison element at the Hawk battalion operations center (BOC), the air defense coordination loop was complete. The above concept of coordination was especially beneficial in verifying information and providing backup communications.

Valuable lessons were learned by personnel that participated in exercise Certain Sentinel. Following are a just a few reported by the 11th ADA Group Augmentation Force.

- A radar emission control plan is required at the battery level to enhance survivability.
- Every effort must be made to gain and maintain current information on the enemy's situation and friendly force's intentions.
- All sites selected for occupation should be physically reconnoitered to determine expected problem areas.
- Gaining access to key terrain and emplacing equipment under severe weather conditions are time consuming.
- Access to the selected sites should be considered along with air defense coverage and communications requirements.
- UHF equipment provides much flexibility to the unit in the communications area; however, the unit must plan for and train on FM and AM equipment to maintain continuity during UHF outages.
- Hawk fire unit moves should be anticipated and programed based on the air and ground situations.
- All units must keep current information on the locations and effective periods of operations for all combat service support elements.

ROLAND DEVELOPMENT FIRINGS

The final phase of US Roland development firings was concluded recently. Eight of the last nine firings were successes in the tests of the European-designed air defense system that began in February last year. The compressed final sequence was completed in a little over 2 weeks with three shots in 3 consecutive days in one instance and another three in only 2 days, including one night mission.

All nine missiles were fired without warheads in the rigorous final phase that included shots of missiles that had been cooled to below freezing temperatures to simulate operations in extreme cold environments. Two of the nine were aimed at high "G," maneuvering, aerial drone targets and both passed close enough to destroy them, if there had been a warhead. Another four were fired at drone aircraft with radar or infrared countermeasures operating in an attempt to fool the missile's guidance system. Three of these were successful, and the one failure was caused by a problem unrelated to the countermeasures. The other three were programed shots in which the missiles were guided successfully along a predetermined trajectory.

The final phase verified corrections to problems which the test program had earlier revealed in the missile and the fire unit which contains the launcher, tracking sensors, and guidance equipment for the all-weather, short-range guided missile system. The only failure in the last nine shots occurred because of a random malfunction in the track radar hardware which is not indicative of any fundamental design problem.

Among the improvements verified in the final nine shots were changes to the sustainer rocket engine to improve speed of ignition, particularly at cold temperatures; encapsulation of the missile's autopilot in a plastic foam material to overcome a humidity problem that affected guidance accuracy; and changes in the fire unit's guidance command system to improve the quality of the signal transmitted to the missile after launch.

There was a total of 72 US-built missiles fired during the technology transfer fabrication and test contract phase. Of these, 65 were fired from fire units made in the US and there were 46 successes. Not counting five launches which were declared "no test" because of test procedure problems, this is a success ratio of 77 percent. Four of the failures met a significant portion of mission objectives.

The Army Systems Acquisition Review Council recommended to the Department of Defense that the US Roland go into production. The Defense Systems Acquisition Review Council is scheduled to consider the recommendation and an affirmative decision by them could lead to an initial production contract by mid-summer.

ENLISTED CAREER NEWS

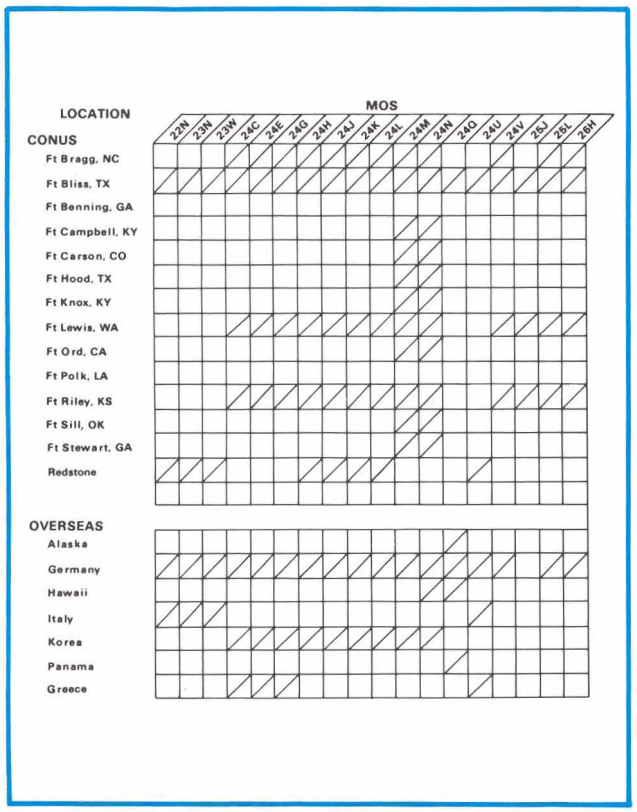
STATION SELECTION

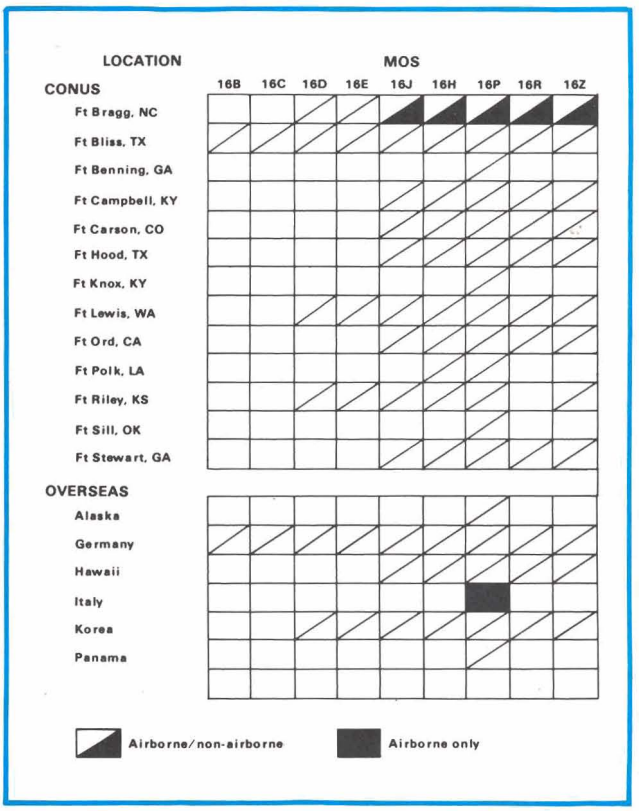
Some soldiers in Career Management Fields 16 and 23 must change their CONUS and oversea areas of preference due to the recent base realinement and drawdown program.

The areas where Air Defense Artillery soldiers can be assigned will be reduced by the closing of the 31st Air Defense Artillery Brigade located at Homestead and Key West, Florida, and the inactivation of the 1st Battalion, 43d Air Defense Artillery, Fort Richardson, Alaska.

ADA soldiers who had asked to be assigned to these places should ensure they select a new assignment preference. Item 43 of their DA Form 2 should be changed to report an area where their MOS is authorized. A DA Form 2635 (Enlisted Preference Statement) should also be prepared and forwarded through the MILPO.

The Enlisted Preference Statement is often called a "dream sheet." It will be just that if soldiers don't select stations where their MOS is authorized. A guide where CMF 16 and 23 are authorized in significant numbers is published below. Areas not listed may have limited requirements.





EDUCATION ASSISTANCE

The Veterans' Education Assistance Program (VEAP) will be increased $2,000 for a limited number of enlistees who meet specific criteria. The increase will affect the 2-year enlistment option, now being tested, and longer term enlistments for selected hard-to-fill skills. Both options are designed to make enlistment for the combat arms and combat-related skills more attractive to the kinds of young men and women who, in prior years, enlisted to take advantage of the G.I. Bill that was discontinued 31 December 1976. Under the basic Veterans' Education Assistance Program, the Government contributes $2 to the Soldier's Educational Fund for every $1 the individual contributes. To be eligible for the basic program, soldiers must contribute between $50 and $75 per month for 12 or more consecutive months. The Government currently contributes $2,000 more than its normal VEAP contribution as an added incentive in the 2-year enlistment test. As part of the 2-year enlistment test, certain 3- and 4-year enlistees receive an additional $3,000 and $4,000 VEAP contribution, respectively. The change will increase Government incentive contributions by $2,000 for qualified applicants from a portion of those geographic areas in which the enhanced benefits are currently being offered. The purpose of this increase is to determine the comparative attractiveness of educational benefit at various monetary levels. When the Government increases the additional education benefit in the 2-year option to $4,000, soldiers may accumulate up to $9,400 in their educational funds during the 2 years of active duty. Soldiers qualifying for 3- and 4-year enhanced educational options will be able to accumulate up to $13,100 and $14,100, respectively, during their active duty terms. Individuals have 10 years from the time of separation from active duty to use the fund. To be eligible for the increased educational benefits under the enhanced educational enlistment options, the applicant must:

- Enlist in one of the specified geographic recruiting areas.
- Have no prior military service.
- Be a high school diploma graduate.
- Score in the upper mental categories (I-IIIA) on the Army's enlistment examination.
- Enlist for an assignment location determined by the Army, with the greater number of enlistees being assigned to Europe.
- Enlist in a combat or combat-related military occupational specialty as determined by Army needs.

During 1979, the 2-year enlistment option will be available to approximately 12,500 applicants. After the results of these recruiting efforts are evaluated, recommendations will be made to Congress to continue, discontinue, or modify the options.

The following questions and answers are provided for use in response to query:

Q. How much will this program change cost?

A. Funds already programed for VEAP support should be adequate to cover the increased Government contribution because fewer enlistees than expected are participating in VEAP. The original program cost will be negligible in that recruitment will be for normal requirements that would have been filled by longer-term enlistees. If the program is continued beyond the initial 1-year test and the annual recruitment remains at 11,500 soldiers for European assignments, the steady state annual cost is estimated at about $60 million. However, this figure must be tempered by the fact that it includes a shorter tour length for soldiers in Europe and increases the flow of trained personnel into the individual ready reserve. Approximately 1,000 soldiers will be permitted to enlist for CONUS assignments.

Q. How will this program change affect the situation in Europe?

A. Generals Haig and Blanchard have requested shorter tour lengths for soldiers in Europe. The current long oversea assignment for young enlisted men and women is a cause of concern for Army planners. The 2-year enlistment option will reduce the tour lengths of some first-term enlistees in Europe and allow an evaluation of the effect shorter tours will have on unit readiness, discipline, and morale. The added VEAP benefit will enhance the effects of the original program.

Q. How is this program being evaluated?

A. The Department of Defense is using an evaluation plan to determine if a shorter term enlistment coupled with an enhanced educational benefit will attract more applicants from the upper mental categories for the Army. During the initial test year, the 2-year enlistment option is not being offered to applicants in a small number of geographic areas (control areas) within the United States. In certain areas in which the option is offered, there are variations of the option not available in other similar areas. This plan permits Office of the Secretary of Defense evaluators to

gather definitive information regarding the comparative effectiveness of the various incentives.

Q. Isn't the primary purpose of this program to boost combat arms enlistments?

A. No. It has two primary purposes: To raise the mental level of enlistees and to fill combat arms slots, especially for Europe. Additionally, the 2-year enlistment option will serve several other purposes:

- It will enhance recruitment of high school diploma graduates for the combat arms. Soldiers who score higher on the entrance examination have demonstrated a propensity for completing training and their initial terms of service at a much higher rate than those making the lower scores.
- It will facilitate evaluation of shorter tour lengths in Europe as requested by Generals Haig and Blanchard.
- It will increase the flow of trained personnel to the individual ready reserve at an earlier date and for a longer period of time than can be expected from 3- and 4-year enlistees.

Q. How long have we had VEAP?

A. The Veterans' Educational Assistance Program was established 1 January 1977. It replaced the G.I. Bill which terminated 31 December 1976.

Q. If I miss a monthly payment, what then?

A. The Veterans' Education Assistance Program (VEAP) is a great way to save for college on a monthly basis; however, soldiers may stop contributing to VEAP temporarily if some sudden need arises, and they won't lose their entitlement as long as they don't ask for a refund.

Q. How many individuals have enrolled in the past year?

A. As of 31 March 1979 there are 62,629 enrolled.

Q. Which district recruiting commands (DRC) are not offering the 2-year enlistment/VEAP kicker options and why?

A. Little Rock, Arkansas; Milwaukee, Wisconsin; Raleigh, North Carolina; Seattle, Washington; Concord, New Hampshire; Houston, Texas; Albany, New York; and Omaha, Nebraska, comprise the eight DRC control group which will not offer any new enlistment options during the test period. These eight DRCs serve as the control group which is necessary in any test design. The remaining 49 DRCs are divided into groups of 29, 5, 5, 5, and 5 DRCs. Each will offer various combinations of options in representing cross sections of the country. DRCs in each group were selected based on a number of demographic and marketing considerations to insure the validity of the test results.

Q. Where will the increased VEAP enlistments be offered?

A. In recruiting areas served by armed forces examining and entrance stations located in Los Angeles, California; New Haven, Connecticut; Boise, Idaho; Chicago, Illinois; Boston, Massachusetts; Newark, New Jersey; Fort Hamilton, New York; Salt Lake City, Utah; Beckley, West Virginia; and Portland, Oregon.

Q. Why is the Army increasing its contribution to the soldier's VEAP account?

A. The Department of Defense must report to Congress the effectiveness of the current VEAP as an enlistment incentive. The increased costs of college education have depreciated the value of the basic VEAP. The 2-year option test, with its enhanced educational benefits, is an ideal vehicle for determining the level at which monetary assistance for post-service education is appealing to prospective recruits and cost effective for the services.

Q. How did the Army select the areas in which the enhancement would be increased?

A. Areas with similar populations and recruiting histories were either selected for or excluded from the increased enhancement option. A comparison of the changes in recruiting patterns in areas with similar histories will facilitate evaluating the attractiveness of incentive increases.

Media inquiries that cannot be answered within the context of above should be referred to OCPA, HQDA, SAPA-PP. Action officer is LTC Pittgers/Major Smith, AVN 227-5081. POC for press queries is Major Cook, AVN 227-7592.

HOUSING RULE CHANGE

Soldiers may now wait until they arrive at their next duty station before applying for family housing. According to a change to AR 210-50, soldiers now have up to 30 days after arrival to apply for housing. Their eligibility date for placement on the waiting list will be the date of departure from the old station. After 30 days, however, the date of application becomes the eligibility date. In the past, soldiers had to apply for housing before leaving their old station to be placed on the list based on the date of departure, according to officials.

Soldiers should still apply in advance, but the application will be voided if they don't report to the housing office within 30 days after arrival.

Soldiers who returned within the last 6 months from "dependent restricted" assignments and who applied for housing within 30 days after reporting to the new station, will accrue up to 14 months priority, according to officials.

BARS to STARS

OPMD UPDATE

NEW ACCESSION — INITIAL ASSIGNMENT

Prior to departure from Fort Bliss, Texas, all Officer Basic Course students receive an informative 2-hour briefing from MILPERCEN's Air Defense Artillery Branch, Company Grade Combat Arms Division, Officer Personnel Management Directorate. The purpose of the briefing is to welcome the officers and their spouses to the Air Defense Artillery Branch and provide them with an informal presentation concerning the responsibilities of the Air Defense Artillery Branch, its function within MILPERCEN, and also to give newly assigned officers an insight into the Officer Personnel Management System (OPMS) and a basic knowledge of assignment functions.

The most frequently asked question during this briefing is, "How was my initial assignment made?" This article will provide an explanation of how new accessions are assigned and take you through such an assignment process.

Each attendee at the Officer Basic Course is managed by a file containing DA Form 4255-R, Request for Initial Assignment Instructions, and in some cases DA Form 483, Officer Assignment Preference Statement. From these documents, the assignment officer compiles an assignment worksheet or "slate." For the sake of simplicity, the "slate" begins as an alphabetical listing of each officer's name, his social security number, source of commission, service obligation, and whether or not he is willing to extend his obligation in order to complete an oversea tour. It also includes officer's assignment preferences, training desired, and any other additional personal information that the assignment officer should take into consideration when making the initial assignment. Once the "slate" has been completed, the assignment process begins.

All oversea requisitions must be filled first since they receive first priority in the assignment process. The assignment officer considers all of the information on his "slate" and selects officers to fill the available oversea accompanied and unaccompanied tour requisitions. The assignment officer begins by reviewing the first choice column of the "slate" in an attempt to meet all oversea requirements with officers who indicate that desire for their initial assignment. As the assignment officer matches an officer with an open requisition, he prepares a Request for Orders (RFO) on that individual. The RFO is exactly what it says, a request to publish orders for each officer to get him from his home-of-record to the Officer Basic Course, other training enroute and, eventually, to his first duty assignment. Because of the number of oversea requirements that is normally available, the assignment officer usually is able to give all first-choice oversea officers their preferences and, occasionally, goes into the second or even third choice columns to fill remaining oversea requirements. As each assignment is made and the RFO completed, the requisition identification number is placed below the officer's name and the report date, weapons option training, and any additional training requested are added to the "slate." The weapons option training that an officer attends is a function of the requisition number he has been placed against, and is the means by which the field commander can insure that replacement personnel are properly trained before they arrive. Additional training, such as airborne and ranger training, is a function of the availability of school quotas and course schedule dates.

After all oversea requisitions are filled, the same procedure is used to assign the remaining officers to the Continental United States (CONUS). Officers are once again selected randomly by order of preference to fill valid requisitions throughout CONUS. As the requisitions at each major installation are completely filled, that preference is scratched from the preference of each remaining officer, and the assignment officer must then assign remaining officers to installations that have a valid

requirement for Air Defense Artillery lieutenants. Army requirements are the driving factor and in some cases lieutenants are assigned to installations in a lower priority order of preference because of the needs of the service.

During the time from the preparation of the initial RFO to the actual class start date, the "slate" may change as cadets fail to graduate, become disenrolled, graduate early, or are rebranched. The assignment officer then has the task of reviewing and revising some assignments, diverting officers to meet urgent higher priority requisitions, and even realining some officers into one of their higher order preferences.

It should be noted that the Air Defense Artillery Branch makes assignments only to the major commands at each installation and does not assign officers to specific units. For example, officers desiring to be assigned to the ADA Battalion at Fort Bragg, North Carolina, receive assignment instructions to the XVIII Airborne Corps Replacement Detachment at Fort Bragg, North Carolina, for further assignment as directed. Officers desiring a specific unit in Europe will receive assignment instructions to the 21st Replacement Battalion in Frankfurt, Germany, and may write the Company Grade Management Officer in Europe to express their unit preferences. Similarly, officers assigned to Korea will receive assignment instructions to the Replacement Regulating Detachment, Korea. Initial contact in most cases is established through a sponsor designated by the ultimate unit of assignment. Again, it is important that each officer understand that to be assigned to any installation, the assignment officer must have a valid requisition for an Air Defense Artillery lieutenant in that command or installation.

Provided below are some helpful hints in completing Request for Initial Assignment Instructions or Officer Preference Statement:

■ Be realistic and request areas where air defense units are located. (See AIR DEFENSE Magazine, July-September 1978.)

■ Language school can only be provided for officers on an oversea requisition requiring language skills.

■ List a home address and phone number where your assignment officer can reach you after graduation.

■ Become familiar with the prerequisites for Airborne, Ranger, and Aviation Schools before requesting such training.

■ List any personal considerations concerning your dependents of which your assignment officer should be aware such as:

— Special education requirements.
— Handicap/therapy needs.
— Medical assistance required.

■ If you are married to another service member, be sure to provide your spouse's name, SSAN, branch, and current duty assignment.

OFFICER EDUCATION

Changes in the Army Officer Education and Training System were announced by the Chief of Staff of the Army recently. The changes are to be implemented over the next 10 years and will affect all levels from precommissioning programs through field grade officer schooling.

Some of the key changes approved by the Chief of Staff include:

■ Improved precommissioning assessments of cadets and officer candidates in medical, physical fitness, motivation, and leadership areas.

■ Better screening of applicants for contract status at some 276 ROTC detachments.

■ Testing alternatives to the current 4-year ROTC program.

■ Developing military qualification standards (MQS) for each officer entry level specialty. These MQS will provide the basis for early career development of officers both in school and unit environments.

■ Changing the lengths and compositions of the existing officer basic and advanced courses based on further training analysis.

■ Creation of a 9-week Combined Arms and Service Staff School at Fort Leavenworth, Kansas. This school will provide staff training to all officers soon after they are selected for promotion to major.

The new system will not change the current selection process or selection rate for the Command and General Staff College at Fort Leavenworth. Army officers will also continue to be sent to other service colleges, foreign staff colleges, and the Armed Forces Staff College at about the current rates.

The announced changes are the result of a study directed by the Chief of Staff which began in August 1977. The need for improved officer education and training is based on an assessment of our potential enemies. The difference between victory and defeat on today's potential battlefields will likely lie in the difference between the quality of our leadership and that of the enemy, DA officials commented.

The changes are to be implemented according to a deliberate phasing plan. This plan will be developed as the results of the job analysis studies are obtained.

COMBINED ARMS CORNER

TSARCOM REPORT

An intense flame thrusts from a graceful shape that rises majestically from the launch pad. Thousands of miles away lights flash, tapes spin as computers perform the tracking and measure the reliability of the launched missile. Beyond these two major systems, most people are only hazily aware that the two systems are dependent on electrical power generating and environmental control equipment to include air conditioners and heaters.

Between the pushing of the buttons on the complex missile and computer systems lie perhaps the most anonymous parts of these intricate apparatus — the generators and environmental control equipment that are managed by the US Army Troop Support and Aviation Materiel Readiness Command (TSARCOM). The military services have developed air defense systems that have increased demands for electrical power and environmental control equipment beyond that envisioned in the routine day-to-day operations.

Today's power requirements for military services range from compact portable generator sets, required to run small personnel detection devices, to huge multikilowatt plants required to light and operate air bases, missile sites, ports, and base camps. As greater quantities of power-consuming material and increasingly sophisticated weapon systems have entered the inventory, the power requirements have not only skyrocketed, but also have magnified our dependency on reliable mobile electric power sources.

The same sophisticated weapon systems require extensive environmental control units (ECU) to insure proper temperature and humidity controls. A variety of ECUs, with various electrical characteristics, is required to meet heating and cooling capacity and system power compatibility.

The Army currently furnishes support to 20 major weapon systems, including the Patriot, Roland, and Pershing II missile systems, TACFIRE artillery system, Satellite Communications Agency; also, advanced attack helicopters and Cobra helicopters, M60 tank system and computer systems to name a few. Support for individual troop requirements is also performed.

To furnish support to the worldwide users presently requires approximately 111,000 individual generator sets. The US DOD standardized generator is in great demand for Foreign Military Sales (FMS) customers. In the past 2 years approximately 7,100 sets have been sold through FMS channels. Our program for generators from a dollar point of view varies from $20 to $60 million a year. From a quantity point of view, it varies from 2,000 to 6,350 new units per year. From a size set point of view, the variance ranges from a half kw through 750 kw in both 60 Hz and 400 Hz output.

Worldwide distribution of ECUs totals around 25,000. Additional requirements exist for approximately 7,500 units ranging from 6,000 BTU to 60,000 BTU, 60 Hz to 400 Hz. This equates to programs of approximately $10 million per year.

The planning for the future military needs includes the replacement of conventional reciprocating engine-driven generators. Undoubtedly, some of these will be turbine-driven sets, newer aircraft support generators, and the Silent Lightweight Electrical Energy Plant.

The Army is continually searching for a significant breakthrough which will provide the military services an improved power source. This is a generator set which will run a year with only minimal maintenance — one that is quiet — will operate on common fuels — and which can be procured at a reasonable price in quantity from several producers. To reach this objective is the TSARCOM goal.

The future ECU equipment is being designed around the total environmental control system (TECS) concept. Three TECSs will replace 23 current ECU configurations to enable better standardization of equipment and related support. In addition, these new systems will provide cooling, heating, and dehumidification with reheat, operate on multiple input power and be field convertible for use in vertical, horizontal, or split configuration.

Logistics meetings are conducted with representatives from Department of the Army, US

Army Materiel Development and Readiness Command, US Army Training and Doctrine Command, US Army Troop Support and Aviation Materiel Readiness Command, Major Readiness/Development Commands, and Project/Product Managers. Major issues being addressed include development of Basis of Issue for Requirement Operational Capability (ROC) document for the TECS and possible use of commercial air conditioning equipment, with minor modifications, for selected mobile Army applications.

GUARDSMEN GARNER AWARDS

An Air National Guard individual and several Oregon Air Guard units have recently been selected "top" in their fields, according to Guard and Air Force officials.

Selected from a field of 1,500 company grade officers, Captain Steven L. Peterson, 244th Combat Communications Squadron, Portland, was chosen one of ten in the nation to receive the Air Force's 1978 communication-electronics professional achievement award. The award identifies the recipient as the best at meeting the communication-electronics needs of the U.S. Air Force. One of his notable accomplishments was to set up a unit training program, modifying the Air Force's job training plan to fit the unit's needs at the local level. His program has since been adopted by other states.

Sharing the Air Force's outstanding unit award to the 154th Tactical Control Group, Buckley Field, Colorado, are two member Oregon Air Guard units — the 153d Tactical Air Control Center Squadron and the 116th Tactical Control Flight, Kingsley Field, Klamath Falls.

Another Oregon Air Guard unit, the 123d Weather Flight, located at the Portland Air Base and commanded by Lieutenant Colonel Roger Becker, was named the Oregon Air Guard outstanding unit for 1978. The unit also won the 1978 Major General John W. Collens award as the best weather flight in the nation — the first time a weather flight not attached to an active duty base has been selected for the honor.

ACCESSION TO FLIGHT SCHOOL

A recent Army Chief of Staff decision on commissioned aviator career management made SC-15 a combat arms specialty and entry specialty. As a result, a shift in accessions to flight school over the next 3 fiscal years will take place.

The increasing tactical need for integration of our air and ground forces, which brought about these changes, also makes it imperative that we design our training to afford all combat arms officers, regardless of branch, the opportunity to become fully knowledgeable and able to operate in a combat arms team in which aviation is an integral part. The decision on aviation career management means that new aviators have the benefit of the 2-5 years of unit experience that their predecessors had. Therefore, training must be adjusted. We possess mechanism in-being to address these challenges in a timely and efficient manner. As a result of RETO, all TRADOC schools have recently started, or are about to start, analyzing officer specialties. This analysis will give each school a timely opportunity to bring aviation employment, doctrine, and tactics into the officer basic and advanced courses. In much the same manner and with the same emphasis as other branch employment, doctrine and tactics are now being taught in those courses.

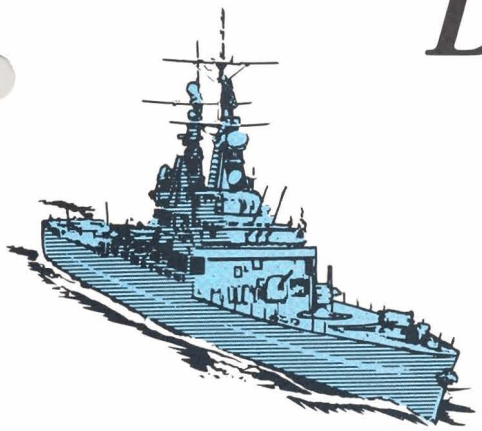
Fort Rucker, as the Army aviation integrator, will monitor the analysis of aviation subjects at the other proponent schools, and based on the results thereof will develop standard aviation training packages for use in the combat arms schools. Although these packages will be used as a basis for aviation instruction at all schools, they will not prevent the schools from adding training needed to emphasize those areas for which the school is proponent.

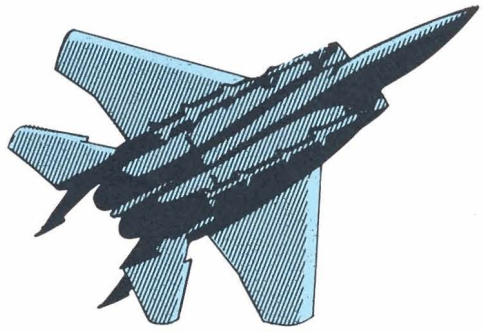
XM-1 TANKS

First production deliveries of the Army's new XM-1 tank are scheduled to begin in February 1980. The Secretary of Defense recently announced initial production of 110 XM-1 tanks this year, but only 110 next year if field testing does not demonstrate adequate reliability by that time.

The XM-1 represents a significant improvement in tank technology — better survivability, mobility, and firepower. However, it is emphasized that the priority for continued testing and engineering modifications to reach needed reliability as soon as possible will be continued. Subsequent production levels will depend on progress in demonstrating that reliability.

DEVELOPMENTS





NEW TEST AND EXPERIMENTATION CONCEPT

A concept for realinement of TRADOC test and experimentation activities has been approved by the Commander, TRADOC. The concept was presented to center commanders during the DIV 85 meeting at Fort Lee and approved by the Vice Chief of Staff Army during a review of Army testing. The concept involves the establishment of the TRADOC Test and Experimentation Command (TCTEC) at Fort Ord, California, and the disestablishment of the Combat Development Experimental Command (CDEC) at Fort Ord. The TRADOC Combined Arms Test Activity (TCATA) at Fort Hood, Texas, would be disestablished except for a small test cell which would continue to oversee operational and force development test evaluation tests. Resources from these test and experimentation activities would be combined at Fort Ord to form TCTEC. The Experimental Support Command (ESC) located at Fort Hunter-Ligett, California, would remain basically intact and would continue to support TCTEC. The Test and Evaluation Directorate at HQ TRADOC would be reduced in scope to a small cell of personnel to provide interface between Cdr, TRADOC, and Cdr, TCTEC. To implement, the following actions must be accomplished:

- A TDA prepared for the TRADOC Test and Experimentation Command (TCTEC), the Combined Arms Test Activity, and the Experimentation Activity.
- A case study justification folder (CSJF) prepared IAW AR 5-10.
- A plan prepared for phasing the responsibilities of the Test and Evaluation Directorate, DCSCD, TCATA, and CDEC to TCTEC and the movement of these elements.
- An analysis made of current TCATA and CDEC commercial contracts to determine levels of effort required at both locations.
- The development of specific procedures for operations among TCTEC, the test boards, and the integrating centers.

Commander, TCATA, will be proponent for the new organization. As proponent, Commander, TCATA, will have tasking authority for the preparation and coordination of organizational matters with respect to the organizing, planning, and programing for TCTEC. Mission functions now assigned to TCATA, CDEC, and functional test boards will remain unchanged.

The concise special planning group at HQ TRADOC will have direct responsibility for the case study and justification folder and will be provided necessary study information as outlined in AR 5-10.

This new concept for tests and evaluations will affect all involved in test and evaluation functions, such as the US Army Air Defense Board.

The foregoing concept is currently under study and is expected to be ready for DA staffing by 15 November 1979.

AN/TPQ-37

Hughes Aircraft Company will build 22 Firefinder artillery-locating radar systems designed to pinpoint the position of enemy artillery weapons and return the fire within seconds.

Called the AN/TPQ-37, the system detects any projectile rising through the sector and tracks its distance, direction, and height. In effect, it scrutinizes the enemy's battle area with a beam that scans so rapidly that it forms a sensitive "blanket" across the area. Hundreds of "phase shifters" steer the antenna beams which spot instantly any incoming projectile or even many projectiles at the same time.

The new radar mobile system can be erected in 30 minutes and march ordered within 15 minutes. A complete Firefinder system for an Army division consists of two TPQ-37s for locating artillery and three smaller built TPQ-36s for locating mortars.

XV-15 AIRCRAFT

Bell Helicopter Textron's XV-15 tilt rotor research Aircraft No. 2 is shown making its first hover flight.

Another plateau was reached in Bell Helicopter Textron's tilt rotor research program when the second XV-15 aircraft made its first flight in helicopter mode at the company's Arlington, Texas Flight Research Center. This aircraft is scheduled to make the full conversion to the airplane mode later this year.

During the 30-minute initial flight of Aircraft No. 2, the XV-15 made a series of takeoffs and landings and hovered at altitudes of up to 100 feet above ground level. It flew forward at speeds up to 44 knots and attained 12 knots in sideward flight. The next phase of the program calls for 50 hours of flight tests, including the establishment of a safe operating envelope and evaluation of the aircraft's performance, dynamic stability, and handling qualities.

Conversion from helicopter to airplane mode will be accomplished during a series of flight tests in which the nacelles are tilted gradually. A demonstration flight at a cruising speed of 300 mph will also be included in the program.

When the first in-flight XV-15 conversion from helicopter to airplane mode is accomplished, it will mark a major milestone in Bell's program with NASA and the US Army Research & Technology Laboratories. The contract designated Bell to design, manufacture, and test two VTOL aircraft.

Prior to its first hover flight, Aircraft No. 2 accumulated approximately 40 hours of ground run tests.

Aircraft No. 1, which made its initial hover flight on May 3, 1977, completed 6 weeks of successful wind tunnel tests in June 1978.

Extensive wind tunnel tests were conducted at the NASA Ames Research Center, Moffett Field, Calif. One-and-a-half weeks were devoted to rotor tests, which included operations as a helicopter to 123 knots and as an airplane to speeds of 180 knots.

The tilt rotor is expected to combine the best features of helicopters and conventional airplanes for fast point-to-point transportation. Research on the tilt rotor concept began in 1953 when Bell received a joint Air Force/Army contract to build the XV-3 convertiplane. This early model proved the feasibility of the concept and operated in both hover and forward flight modes with easy conversion.

MICNS

A contract for close to $15 million was awarded by the Army Electronics Research and Development Command (ERADCOM) to Harris Corp., Melborne, Florida, for research and development of a Modular Intergrated Communications and Navigation System (MICNS). The contract is for a 4-year period; the initial amount obligated was $8,960,000.

MICNS is envisioned as a data link common to the Army's Standoff Target Acquisition System and Army Remotely Piloted Vehicles. MICNS will also be used by the Air Force in the video portion of an antijam joint services weapon data link.

LASER LOCATOR DESIGNATOR

The new laser device that will enable the US Army's combat troops to mark enemy targets for laser-guided missiles, bombs, and artillery shells has entered production (AD Mag, Oct-Dec 78, p 55). The device, called a ground laser locator designator (GLLD), is a precision laser rangefinder and target designator designed for use by forward observer teams. It spots targets for laser-homing missiles such as Hellfire and the laser-guided artillery shell, Copperhead.

GLLD directs an invisible beam of coded laser pulses at any target the operator can see. These pulses are reflected from the target like a beacon and can easily be detected by special sensors in aircraft or laser-homing missiles or projectiles. The wavelength and periodic pulsation of the laser beam allow the laser-homing weapons and aircraft sensors to differentiate between the correct target and others designated by different GLLD units in the same battlefield area.

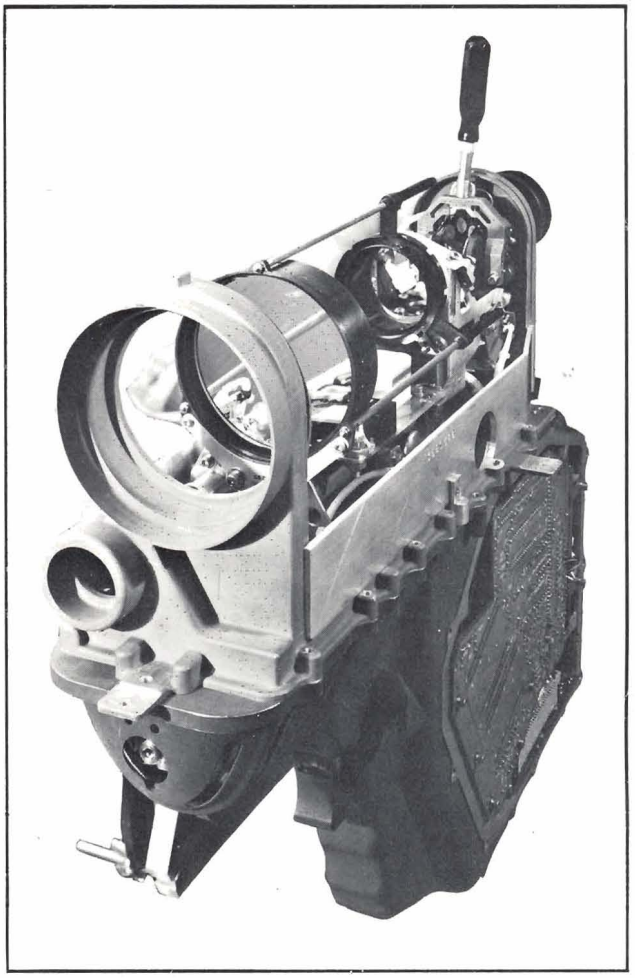
GLLD is one of the most sophisticated optical devices ever produced, according to contract officials. They say that it is designed to endure extreme shock, rough field handling, and still maintain its precise optical alinement.

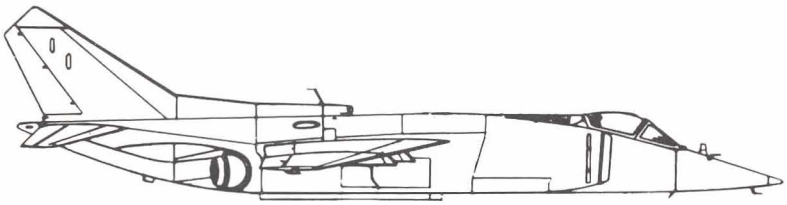
Last year GLLD passed the Army's extensive field test and evaluation, and it also has been successfully tested under arctic conditions. This has resulted in GLLD being type classified as an Army Standard Device, designated the AN/TVQ-2.

GLLD is currently being used to support the Army's operational tests of Copperhead and development tests of Hellfire. GLLD may also be used to pinpoint the range and bearing of fixed or moving targets for conventional artillery. The man-portable device, mounted on an adjustable tripod, combines high-power optics with a viscous fluid damper tracking unit, providing the capability to work against rapidly moving distant targets.

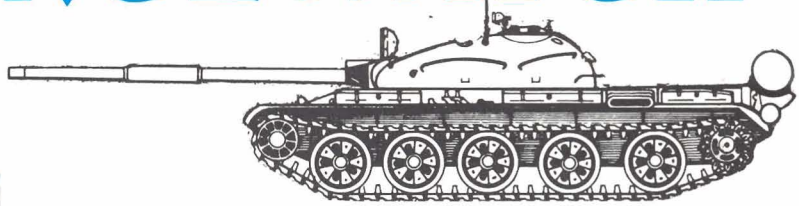
LASER OPTICS

The first engineering development model of a new laser device that will enable US Marines to pinpoint targets with devastating precision, both for conventional artillery and for laser-guided weapons was recently unveiled by Hughes. The new device is called Modular Universal Lasar Equipment (MULE) (AD Magazine, Oct-Dec 78, p. 52). The man-portable, tripod-mounted MULE provides accurate range information and will designate targets for all laser-guided weapons now operational or under development. Hughes is constructing 10 engineering development models under a contract managed for the Marine Corps by the US Army Missile Research and Development Command. Following delivery late this year, the MULE systems will undergo 6 months of operational test and evaluation prior to a production decision.





INTELLIGENCEWATCH



SOUTH KOREA MISSILES

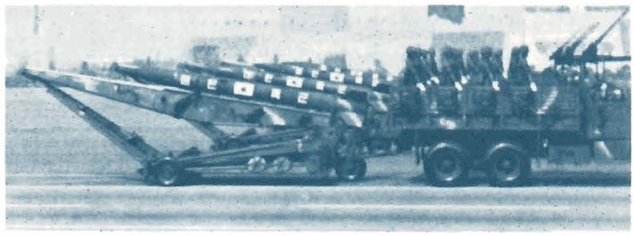


Figure 1

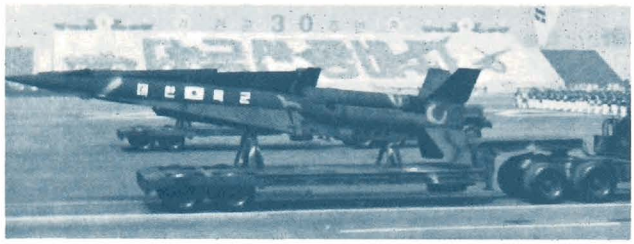


Figure 2

At a military parade in Seoul, three Korean-developed and produced artillery missile systems were displayed for the first time. In the presence of high-ranking foreign military guests, a multimissile launch system with 28 launching tubes was displayed and also two surface-to-surface missiles presumably capable of carrying atomic warheads. The smaller of the two, called an intermediate range missile in the Korean press, resembles a shortened version of Honest John and is launched from a trailer-mounted launcher which serves as transport and launch vehicle (fig 1). The missile has a maximum range of 35 km.

A larger missile, called long range, resembles the Nike Hercules in measurements and configuration. It is transported on a flatbed trailer (fig 2). Presumed range is 150-200 km since, according to Korean newspaper commentaries, the North Korean capital Pyong-yang is in its range.

The new weapon systems are to be produced in series in the near future. They are to strengthen the effectiveness of the South Korean Army and to act as deterents against an attack by North Korea after the withdrawal of US troops.

— *Soldot und Technik*

SOVIET SA-9/GASKIN

The Soviet missile system SA-9/GASKIN was introduced into the Jugoslav Army in late 1977. The system, with its BRDM-2 carrier, had previously been supplied to Lybia and Syria. In the Soviet and Polish Armies, the SA-9/GASKIN is used in connection with the AA tank ZSU-23/4 as the main air defense weapon in the field at regimental level. The tank and motorized infantry regiment's anti-aircraft company is equipped with four SA-9s and four ZSU-23/4s, which complement each other. The SA-9 system is effective against low-flying targets. Its effective range is 4 km against incoming aircraft and 1 km against outgoing targets.

— *Soldat und Technik*

JAPAN TESTS AH-1S

A Bell AH-1S antiarmor helicopter has been shipped to Japan for ground run and flight evaluation tests by the Japanese Defense Agency. The aircraft, which incorporates the TOW missile system, will be evaluated for potential multiunit procurement by the Ground Self-Defense Force.

A second AH-1S helicopter is scheduled to be delivered early in 1980. The aircraft were ordered through Mitsui and Company, a Bell Helicopter Textron licensee.

Following preliminary tests, plans call for the first AH-1S to be turned over to the Defense Agency in June 1980 for full-scale operational tests.

The AH-1S is the US Army's most modern anti-armor helicopter. In addition to the TOW missile system, this improved version of the Huey Cobra uses an upgraded Lycoming T53-L-703 engine rated at 1,825 SHP and an uprated drive train with 1,290 SP intermediate power. Other improvements include a flat plat canopy for reduction of sun glint and a cockpit design optimized for nap-of-the earth flight.

We thank Gustav Hebrok for the German to English translations of material from Soldat und Technik.

ROMMEL IN NORMANDY, *by Friedrich Ruge, Presidio Press, San Rafael, CA, and London, England, 1979. 266 pages, $12.95.*

Reviewed by
Major Charles Ray

Author Ruge's account of the events on Germany's "western front" in 1943, until Rommel's death in October 1944, is a large rambling book. It is filled with side trips to literary destinations that neither add to the information the reader seeks nor help the smooth flow of the book. The book comes to a complete stop while the author describes some event, scene, or person that obviously impressed him at the time.

The book reads somewhat like a personal diary, devoting much space to Ruge's (a high ranking naval officer on Rommel's staff) journeys and conversations with a variety of officials and old acquaintances. It would have been appropriately titled, "With Rommel."

These things do not, however, detract greatly from the value of the book to historians and military professionals.

When it does talk about Rommel, it gives some insights into the personal life of a remarkable military leader. It also makes clear the reasons for his success — and subsequent failure. High-lighted by implication and by direct statement is that military operations must have unity of command and that there must be complete delineated lines of coordination and control and effective teamwork among different services and units if they are to be successful.

There have been a number of books written about the Normandy Invasion from the Allied viewpoint or by German authors that are available in translation. This particular book does not rate as a masterpiece on the subject; however, it provides unique insight into a great military leader and specific details concerning German reactions to news of the Normandy Invasion. It also covers the invasion itself, thus making it a really valuable research tool.

THE F-14 TOMCAT, *by Bert Kinzey, Detail and Scale, El Paso, TX, 1979. 48 pages, $4.50*

In this, the latest issue of Detail and Scale Series III, Bert Kinzey has added a new twist: spectacular color photographs of the Navy's most colorful aircraft. Special consideration was given to clarity, depicting long hours of well-spent time into the research and building of this aircraft.

Each of the 48 pages is filled with meaningful information or pictures/drawings in 1/72 scale. The color pictures will help the modeler add the "zip" that only color schemes can give model aircraft. Kinzey has included a feature on the F-14's weapon systems with diagrams of the attack capability for the enthusiast. A reference of other material to aid the modeler and aviation enthusiast is also included. On the whole, in his description of the F-14 Tomcat (probably the best air superiority fighter in the world), Mr. Kinzey has been quite successful.

Detail and Scale has also published books on the F-15 Eagle and MiG-17 Fresco.

MESSERSCHMITT Bf 109 AT WAR, *by Andre Van Ishoven, Charles Scribner's Sons, New York, 1978. 160 pages, $12.50.*

Matched in the early stages of World War II only by the Spitfire, the Messerschmitt Bf 109 was undoubtedly one of the greatest combat aircraft of all time. It first flew in 1935, then followed the familiar pattern of civil prototype, record breaker, Spanish Civil War combat train of development common to so many other German aircraft of the period. It was the dominant fighter in the Luftwaffe until 1941, and it served on all war fronts and with the air forces of Bulgaria, Hungary, and Rumania among others. From the early and highly successful Me 109E-Emil, the design was developed during the war and its armament was steadily improved. It remained a formidable opponent for the Allied air forces until the end of the war in Europe in 1945, and it then went on to serve in the Spanish Air Force

no longer save any of the victims. But it can serve as a warning for the future."

F-86 SABRE. *by Maurice Allward, Charles Scribner's Sons, 1978. 128 pages. $9.95.*

The first reaction one might have when seeing this book is, "Oh well, another Sabre book." Indeed the F-86 has been written about by many authors. The airplane is considered a classic, and its exploits in Korea make interesting reading — and writing.

But only a quick thumb-through of this book will show that this indeed is not just another Sabre book. To be sure, many facts contained in the book can be found elsewhere, but what makes this book exceptional is the way such an extensive amount of data on the aircraft is arranged and presented. Facts such as technical data, war record, production runs and variants, modifications and improvements, and foreign use of the aircraft are all covered in a logical and meaningful presentation. Before the release of this book, a researcher would have to look through several publications to find everything presented here. So by "putting it all together" in one package, Mr. Allward has done the aviation enthusiast a great service

The text is supplemented with numerous photographs in both color and black and white. Drawings, maps, tables, and appendices are also used to aid the reader in gaining a better understanding of what is presented. This all adds greatly to the appeal of the book and to its value as a reference.

Unlike many books of this nature, this publication is not a dry presentation of facts and dates. Rather, Mr. Allward has skillfully written the book to be very interesting and enjoyable as well as informative. The actual development of the aircraft, its operational history, and its armament are all covered in detail as would be expected. But the author does not stop there; a chapter on what it was like to fly the Sabre is included, and another chapter on a recent restoration of a Sabre from a junk yard to flying status adds to the appeal this book will have for all who enjoy aviation.

F-86 SABRE is highly recommended. In this reviewer's opinion, it is undoubtedly one of the best books of its kind anywhere. It is an absolute must in any collection on the F-86.

ADDITIONAL SELECTIONS: *An English translation of ABSTRACTS ON STRATEGY, by Ruben A. Ramirez Mitchell, Maipu 262, 1084 Buenos Aires, Argentina,* has been released. It contains 300 pages of abstracts from leading Military Magazines the world over.

ANSWERS TO AIRCRAFT ID QUIZ

Photo 1: Su-7B FITTER A. For years this aircraft has been the backbone of the Soviet Tactical Air Forces. It is now being replaced in the Soviet Union by newer aircraft such as the MiG-27 FLOGGER D and the Su-20 FITTER C. However, it is still widely used in the Soviet Union and several other countries.

Photo 2: MiG-21 FISHBED J. The FISHBED series of aircraft has been produced in greater numbers than any other fighter aircraft. The latest generation of FISHBED, e.g., the FISHBED J, has twice the ordnance carrying capability and much greater range than earlier versions of this aircraft.

Photo 3. Mirage III. This aircraft is built in France and has been exported to several other countries. The Mirage V is quite similar in appearance.

Photo 4: MRCA Tornado. MRCA stands for Multirole combat aircraft. It is a new aircraft being developed by Great Britain, Germany, and Italy. It has variable geometry (movable) wings and can carry a wide variety of ordnance under its fuselage and wings.

Photo 5: Mi-4 HOUND. This is a medium Soviet helicopter that is in extensive use among Warsaw Pact Nations. It can carry troops and can be used as an armed helicopter gunship.

Photo 6: AV-8A Harrier. The AV-8A is a British-developed aircraft currently used by Britain, the US Marine Corps, and Spain. It is capable of taking off and landing vertically, and it can hover like a helicopter.

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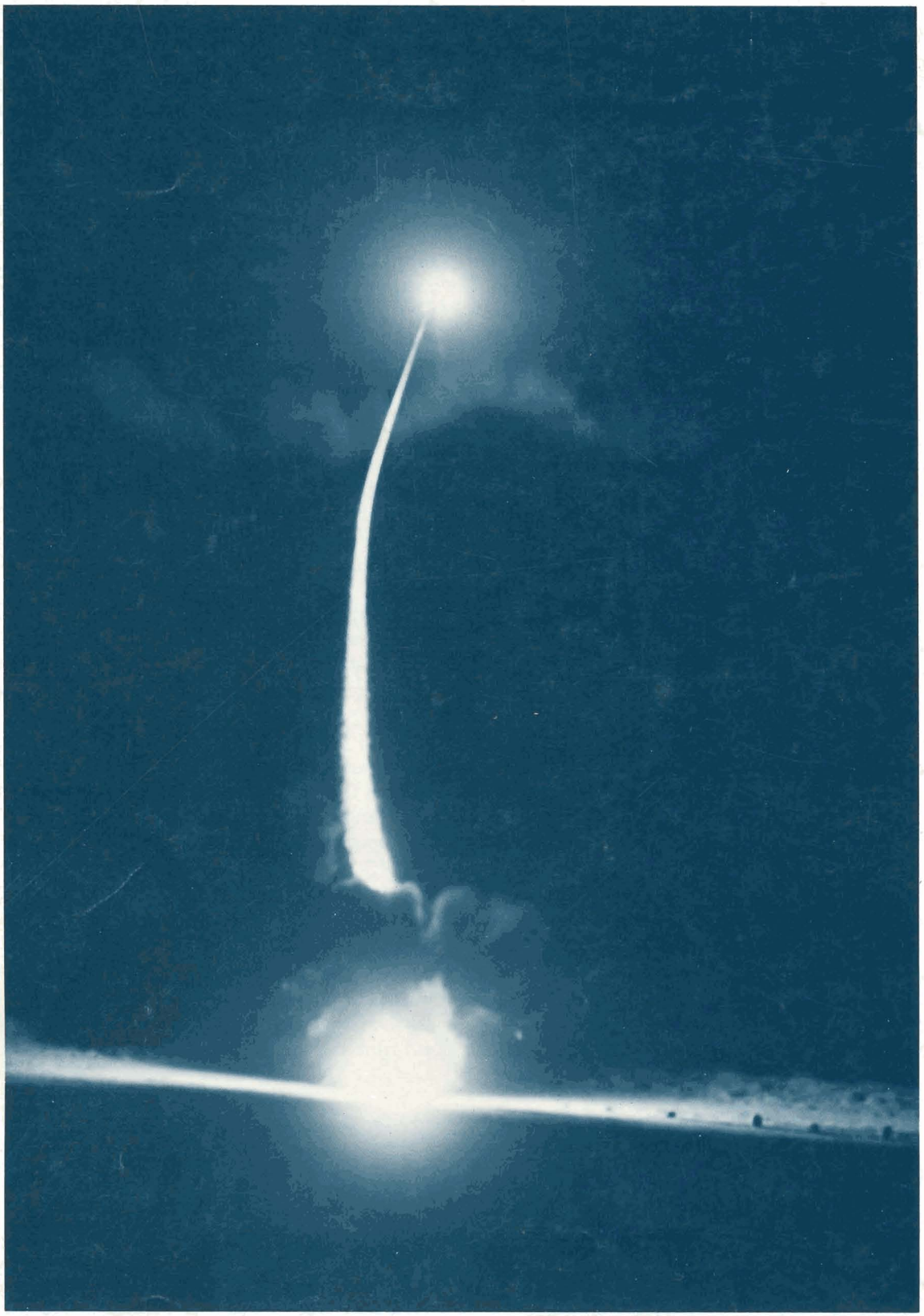
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