

BOSNIA



**PUSHING AVENGER'S
DEPLOYMENT ENVELOPE**



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Intercept Point



America has asked an awful lot of its soldiers in recent years, and now the realization has dawned that time has come to lighten their load.

The peacetime Army's operating tempo is currently at an all-time high. During FY95, an average of 22,200 soldiers were operationally deployed on any given day. ADA units have been among the busiest. Divisional air defense units deployed to Korea, Haiti and Guantanamo Bay. Our Patriot battalions continued their regular four- to six-month rotations to Southwest Asia since the end of the Gulf War.

In October, I stood on the tarmac of Biggs Army Airfield, Fort Bliss, Texas, and watched soldiers of 3-43 ADA (Patriot), 11th ADA Brigade, say good-bye to their friends and families as they trooped aboard C-5A Galaxies. For the fourth time in five years, they were bound for the now familiar, sun-drenched, scorching deserts of Southwest Asia. They departed, perhaps in sadness, but with the spirit of professionalism that one expects of ADA soldiers.

"I knew when I raised my right hand to come into the Army that deploying would be part of the job," said 1st Lt. Eric D. Knam of C/3-43 ADA. "This is what it is all about."

"First to Fire" soldiers are keeping a stiff upper lip, but an advisory group recently reported to Defense Secretary William Perry that officers and enlisted men and women

throughout the armed services are approaching burnout. Frequent deployments, slower promotions, erosion of benefits, inadequate child care and substandard housing, said the advisory group, are to blame. Fortunately, the Army's Quality of Life Task Force has recently published a sweeping, 117-page report that lists recommendations that, once enacted, would dramatically improve Army lifestyles.

CSM James E. Walthes has claimed recommendations concerning promotions, benefits, child care and housing as topics for his own column (page 8). I would like to address solutions to the challenge of frequent deployments, a problem we have been struggling with for some time.

The solution for theater missile defense (TMD) battalions is more TMD batteries. The Army chief of staff has recently approved a tenth Patriot battalion that is to be brought on line as expeditiously as possible. Future issues of *ADA* magazine will explain the restructuring of our Patriot force in detail.

But the Quality of Life Task Force recommendations would cut all active-duty soldiers, not just Patriot soldiers, some slack. Some recommendations deal with budgetary problems created by the operating tempo, but others affect soldiers in a more direct way:

- Increase the reserve component's role in peacetime deployments and contingency operations.
- Continue to "reinvent" training by capitalizing on computer simulations.
- Hire more contractors to perform maintenance and handle other chores.
- Set one definition of deployment for all services so that every service member gets credit for every day away from home.
- When applicable, use operations as credit for training.

These recommendations will take time to put into effect, but Perry has declared that the report "will not sit on the shelf." Meanwhile, hang in there and maintain the standard. Help is on the way!

ADA 06 . . . out!

Maj. Gen. John Costello
Chief, Air Defense Artillery

In the barracks on the airfields and aboard the ships where the still-shrinking number of U.S. men and women in uniform toil daily, the dark side of defense savings is taking a toll not measured in dollars and cents.

Associated Press

For many soldiers this [increased operating tempo] has meant back-to-back deployments and extended separations from their families. The average American soldier now spends 138 days a year away from home. I emphasize this point because we ask an awful lot of our soldiers and their families. If we want to retain these fine men and women, we must take care of them.

Gen. Dennis J. Reimer
U.S. Army Chief of Staff
October 1995

To do right by soldiers, I must not only recruit high-quality soldiers, train and equip them, I must also sustain the force. Soldiers expect and deserve top-notch training and equipment, and they have it. To show soldiers that they are the most important part of our Army, I must ensure that they enjoy a respectable quality of life as well. The quality of life of our soldiers, civilian employees and family members is an integral part of their sustainment, as it is vitally important to their commitment and to Army readiness.

Togo D. West Jr.
Secretary of the Army
October 1995

FOCUSED DISPATCH

Reshaping Air Defense



Air Defense Battle Lab technicians, left, monitor 2-5 ADA soldiers as they crew a Bradley Stinger Fighting Vehicle-Enhanced reconfigurable simulator during Focused Dispatch.

*by Maj. Curtis D. Weiler
photos by Dennis McElbeen*

Advanced Warfighting Experiment (AWE) Focused Dispatch, an important step in the journey to Force XXI, was conducted in October 1995 as a follow-on to 1994's Desert Hammer 6, National Training Center Rotation 94-07, the first experiment with digitizing a mechanized force. The information, insights and recommendations that have emerged from Focused Dispatch will soon be published as an after-action review that will serve as the baseline for the next round of exercises designed to shape the Army for the 21st century.

The Mounted Battlespace Battle Lab (MBBL), Fort Knox, Ky., lead agency for Desert Hammer 6, also served as the lead agency for Focused Dispatch. The AWE consisted of a series of experiments that began with a constructive simulation, dubbed Janus I, that consisted of computer-based wargames and gaming models. That led to a virtual simulation, which then led to two more constructive simulations titled Janus II and Janus III, and finally to a live/virtual exercise that combined real soldiers and actual equipment with computer simulations.

Simulations such as those employed during Focused Dispatch are the most

common "tools" used to investigate issues in the 1990s. Simulations are categorized as virtual, constructive or live simulations, with the understanding that everything short of actual military operations is simulation.

Virtual simulations — SIMNET, for example — provide the capability to get "man-in-the-loop" at the equipment level. Originally developed as an alternative to unit field training, SIMNET and other virtual simulations also provide low-cost methods of experimenting with new technologies before prototypes are built and field trials begin. Issue proponents seek every possible

opportunity to use virtual simulations in their studies. For example, virtual simulations permitted Theater High-Altitude Area Defense (THAAD) and Bradley Stinger Fighting Vehicle-Enhanced systems to participate in the Roving Sands '95 and Focused Dispatch AWEs.

Constructive simulations — corps battle simulation, Janus, etc. — provide the context for higher-level exercises that are “man-in-the-loop” at the staff and commander echelons. They have become the tool of choice to replace large soldier and equipment deployments. For example, today U.S. Army Europe uses constructive simulations for Reforger exercises instead of deploying several divisions and supporting troops as was done in the past. They are used in similar ways in Korea and other theaters. Constructive simulations are effective in comparison to manpower-intensive exercises such as the 1940s Louisiana Maneuvers or Cold War-era Reforger exercises. Additionally, they provide greater training opportunities for higher commanders and staffs.

Focused Dispatch was designed to examine three primary battlefield operating systems (BOSs): fire support, intelligence and logistics and battle command. During the planning stages, Air Defense Artillery, Aviation and Engineer participation was limited to excursions or vignettes; however, ADA involvement grew in terms of participation and complexity as Focused Dispatch matured. The MBBL hoped to provide several “deliverables” in support of Task Force XXI. These included doctrine, tactics, techniques and procedures for mounted task force units of Task Force XXI, training support packages for digitized organizations and insights and/or recommendations for Task Force XXI organizational experimentation. The MBBL also expected Focused Dispatch to furnish refined digital information requirements and insights necessary to develop Force XXI doctrine, organiza-



Squad leader SSgt. Robert Burks, bottom, and driver Spec. Kenneth Baird, top, simulate BSFV-E action.



Focused Dispatch's BSFV-E gunner Sgt. William Puls at work in the reconfigurable BSFV-E simulator.

tion, training, leader development, materiel and soldiers (DOTLMS).

A memorandum of agreement between the Air Defense Lab, Directorate of Combat Developments, U.S. Army Air Defense Artillery School, Fort Bliss, Texas, and the MBBL assigned Air Defense Artillery responsibility for supporting deliverables. Air Defense Artillery signed on to capture data necessary to resolve four issues: Armywide digitization, forward area air defense (FAAD) command and control (C²) early warning, Bradley Stinger Fighting Vehicle-Enhanced (BSFV-E) DOTLMS enhancements and force protection alerting/warning. These issues served as the foundation for ADA's participation in Focused Dispatch. Army digitization explored Air Defense Artillery's means of gaining and sharing situational awareness with the maneuver force. FAAD C² early warning integrated simulated simplified

handheld terminal units (SHTUs) to support early warning for the task force and C² for the platoon leader. BSFV-E DOTLMS, in tandem with Fort Bliss' newly acquired reconfigurable simulator, provided a manned simulator for action on the virtual battlefield. The force protection alerting/warning issue was an off-line analysis conducted to determine the best means of providing tactical ballistic missile strike warning (see "Pager Warning", page 6) to the task force.

Most of the soldiers who participated in the AWE came from Fort Knox. Task Force 2-33 Armor, comprised of three armor and one mechanized company and slice elements, began training as a unit in January 1995. For Air Defense Artillery, the lock-in of a dedicated exercise force did not occur until Janus III, the last constructive simulation exercise. Prior to Janus III, soldier support came from 1-3 ADA, 4th Infan-

try Division, Fort Carson, Colo., and from 2-6 ADA, 6th ADA Brigade, Fort Bliss. Once U.S. Army Forces Command tagged 2nd Armored Division, Fort Hood, Texas, to support AWE Focused Dispatch, 2-5 ADA provided quality air defenders for Air Defense Artillery's participation in the AWE. Soldier support varied from an ADA platoon leader during Janus III to six soldiers for the live/virtual exercise.

The premier Focused Dispatch event was a live/virtual exercise that set new standards for linking "live" players operating "in the dirt" of the battlefield with "virtual" players "deployed" within computer matrices of the simulated battlefield. The live forces, along with dozens of civilian technicians, used the Western Kentucky Training Area (WKTA) outside of Greenville, Ky. The Task Force Armor command and staff group, along with one company with slice elements of field artillery, engineers, military intelligence and combat service support units, occupied the WKTA maneuver box.

Opposing forces (OPFOR) came from both active and reserve units. Troop D, 10th Cavalry Regiment, served as the OPFOR during the first week of the three-week experiment while the 1st Battalion, 123rd Armor, Kentucky Army National Guard, portrayed the OPFOR during the final two weeks of the exercise.

Virtual players and agencies supporting the virtual link in the exercise were dispersed across the United States. The ADA "punch" for Task Force Armor came from the Air Defense Combat Modeling and Simulation Division, Directorate of Combat Developments, U.S. Army Air Defense Artillery School. Aviation support came from the Aviation Test Bed at Fort Rucker, Ala.

Linking the live force with simulated forces was a challenge that the MBBL began working on nearly a year prior to the exercise. Two AT&T lease lines capable of transmitting 1.54 megabytes per second supported traffic gen-

erated by millions of protocol data units between the WKTA and Fort Knox. The Defense Simulation Internet linked Fort Bliss and Fort Rucker.

As previously mentioned, ADA participation grew in size and complexity as Focused Dispatch matured. During the live-virtual exercise, the Air Defense Combat Modeling and Simulation Division contributed the OPFOR air threat as well as air defense coverage for the Task Force. Air defense support was split between Fort Bliss and Fort Knox. The command and control for the ADA platoon originated from the Mounted Warfighter Test Bed, Fort Leavenworth, Kan., with 1st Lt. Stephen Harold, a gunner/driver from 2-5 ADA, manning an M-2 Bradley simulator. The fighting force of his platoon came from squad leader/track commander SSgt. Robert Burks, gunner Sgt. William Puls, and driver Spec. Kenneth Baird, also of 2-5 ADA, who manned the reconfigurable simulator at Fort Bliss. The remainder of Harold's platoon consisted of modular semi-automated force simulations.

A single-channel ground and airborne radio system (SINCGARS) radio (Model SRM) provided communications among the ADA platoon leader, his squad leader and Task Force 2-33 Armor at the WKTA. Powerful computers portrayed SINCGARS face plates on computer monitors and translated voice data to digital data that was transmitted over a high-speed, fiber-optic T1 line and converted to voice messages at the receiving end.

The platoon leader monitored two voice nets (the task force command and ADA platoon nets) and two digital nets (an SHTU and an intervehicle information system). The squad leader in the reconfigurable simulator monitored the ADA platoon net and a simulated SHTU net.

Fort Bliss and Fort Knox shared the modeling of OPFOR air. Teledyne Brown Engineering used the Extended Air Defense Simulation to portray unmanned aerial vehicles, cruise missiles and

fixed-wing aircraft during the exercise. At Fort Knox, Teledyne Brown provided the ADA platoon leader with a simulated SHTU. At Fort Bliss, Air Defense Lab personnel used modular semi-automated force simulations to model enemy rotary-wing aircraft.

The reconfigurable simulator was modeled, with Texas Instruments support, as a BSFV-E. Its key features were a turret-mounted Stinger pod and built-in SHTU simulator. Slew-to-cue capability and the ability to fire under armor provided positive insights into ADA's ability to support an armored force.

The three-week exercise used the SIMNET movement-to-contact, deliberate attack and defense in sector scenarios. Each event lasted five days. Day One was devoted to planning; preparing the scenario; issuing task force, company and team orders; and conducting rehearsals. Participants practiced executing the scenarios on Days Two, Three and Four. Day Five was the record run. Each day's actions were fully recorded. Data collection sources included computer data loggers, video recorders, research assistants equipped with handheld palm pads and subject-matter experts/exercise facilitators. Members of the ADA data collection team at Fort Bliss consisted of ADA Battle Lab personnel and, at Fort Knox, of a subject-matter expert/exercise facilitator, supplied by the Combined Arms and Tactics Department, U.S. Army Air Defense Artillery School, and a research assistant.

The MBBL turned Focused Dispatch data over to the U.S. Army Training and Doctrine Command (TRADOC) Review and Analysis Center at White Sands Missile Range, N.M. "The experiment isn't over until we take all the data from constructive, virtual and live/virtual experimentation and then put it through computerized analysis at the TRADOC Review and Analysis Center," Col. Pat Ritter, MBBL director, told reporters. The center's job is to assign unclassified vehicle and weapon system characteristics their actual, classified combat

characteristics and, then, determine what impact their processes, techniques and tactics would have in a real battlefield environment. Among other things, the center's work will ensure that the capabilities of ADA weapon systems are portrayed at their full potential in future Force XXI AWEs. The center replaces "training anomalies," such as those produced by the multiple integrated laser engagement system equipment, explained Ritter, and inserts more realistic data. "Then they refight all these fights. That data will come out in a report, and then we will make recommendations."

Air Defense Artillery, along with other BOS elements, worked closely with the MBBL to draft an initial report analyzing Focused Dispatch results that was completed in November. The final report was delivered to the MBBL in December. The MBBL was scheduled to release an after-action review, complete with recommendations, in January. The after-action review will be widely disseminated in Army publications, including upcoming issues of *ADA* magazine.

Focused Dispatch and other AWEs will, in large part, determine the future shape of the Army and Air Defense Artillery. Soldiers who served, often under intense pressure, during Focused Dispatch earned no campaign medals or purple hearts; the only casualties were false organizational assumptions and outdated doctrine, tactics, techniques and procedures. Still, the "First to Fire" branch owes them, and the civilian employees who supported them, a debt of gratitude. Their hard work, skill and dedication have contributed, in no small measure, to Air Defense Artillery's future in the Army of the 21st century.

Maj. Curtis D. Weiler is assigned to the Air Defense Lab, U.S. Army Air Defense Artillery School, Fort Bliss, Texas.

PAGER WARNING Concept Needs GPS Interface

by Maj. Tom Budzyna

The U.S. Army Space Command's Advanced Concepts and Technology Support Office seeks to demonstrate a simple concept — integrating global positioning system (GPS) information with broadcast data as a basis for activating a soldier's pager or receiver. Imagine . . .

A convoy departs to deliver Patriot missiles to an air defense battery outside Kuwait City. Unbeknownst to them, a Scud missile is headed their way. Sensors detect this and broadcast data that defines the Scud's predicted impact area across the entire battlefield. The data reaches a receiver located in the convoy commander's vehicle. The device then uses its GPS location to determine, in real time, if they are in danger. The alarm sounds. A simple graphic display shows the convoy commander that they are inside the impact ellipse, .9 kilometers from ground zero, with two minutes and 12 seconds before impact. The convoy commander directs the dispersion of the vehicles, and the soldiers seek cover. The missile hits nearby, but the application of present-day technology defeats the effect of the Scud. Information is power. The convoy proceeds.

Far-fetched? No way! Miniaturized circuitry and antennae make this appli-

cation exciting and practical for the combat soldier. Tying this concept with the global broadcast system initiatives makes a global paging service a possible and necessary part of the military communications architecture. Army Space Command, the Army's focal point for space support to the warfighter, has investigated the value of pagers and broadcast warning — and advocates a concept that can revolutionize tactical event warning.

During Roving Sands '95, an annual ADA exercise at Fort Bliss, Texas, one experiment used commercial pagers to pass Scud alerts to soldiers. The experiment operated in the Army Theater Missile Defense Element (ATMDE) Force Projection Tactical Operations Center (TOC). The ATMDE Force Projection TOC's mission is to synchronize and integrate the theater missile defense battle. The commercial pagers supported the passive defense (warning) role. Here's how the experiment was set up.

We issued commercial pagers to soldiers located throughout the training area and within range of the commercial pager network. The dispatcher, located in the ATMDE Force Projection TOC, used dispatch software on a laptop computer connected to a phone line. Capabilities in the Force Projection TOC let the dispatcher know when a Scud launch was detected, indicated the projected impact point the instant it was

computed, and the locations of friendly forces.

This awareness and the characteristics of broadcast communications enabled pager warnings to reach the soldier first (before other tactical warning networks), fast (in time for the soldier to react before impact), accurately (only units in the impact area were warned) and reliably (soldiers trusted the pagers). These characteristics make a big difference. Here's why.

First. During the exercise, warnings were also disseminated using a mobile subscriber equipment "hot loop" and the standard Army command and control system. Questionnaire responses revealed that pager warnings were routinely received first, and units with pagers received warnings nearly simultaneously, no matter where they were.

Fast. According to times recorded during the experiment (and depending on the range of the missile), soldiers had from 30 seconds to four minutes to act before a Scud hit. Passing warning from higher to lower echelons is often why warning arrives late. Broadcast warning to pagers "cut out the middle men" and gave the force valuable time to react.

Accurately. Since all warnings were sent with friendly force location awareness, units who needed warning got it. Needless warnings were avoided. The pager displays a text message with the impact time and location, and the mes-



sage stays there until the soldier decides to delete it.

Reliably. The most favorable questionnaire response was "it worked." Soldiers had confidence in the pagers. When the pager began to beep or vibrate, soldiers knew an event concerning them was in progress. The warning message reached them even where warning sirens were muted by local noise.

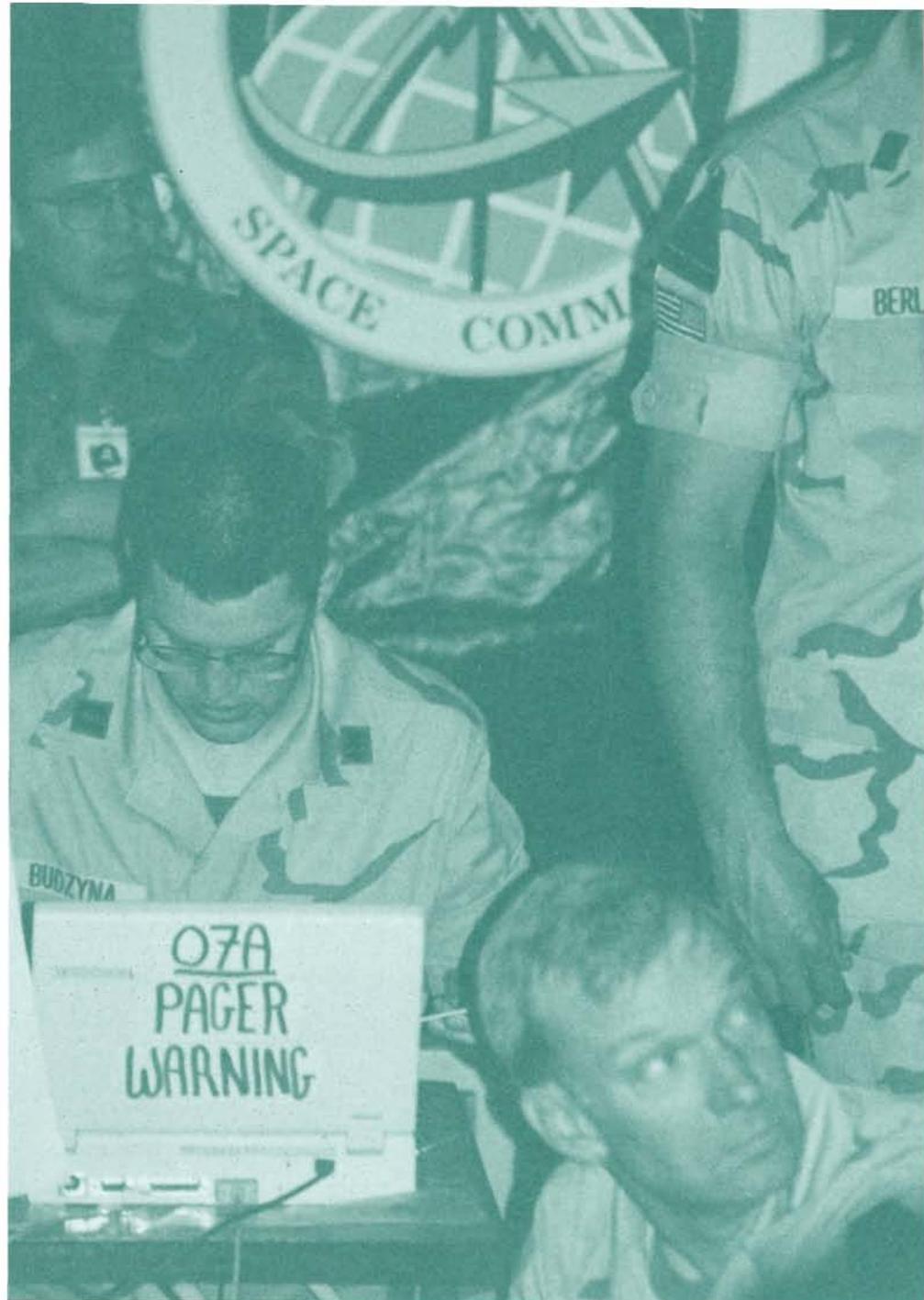
All this was proven with a "man-in-the-loop" using commercial pagers. So where is the revolution?

GPS Enhancement Concept

Exploiting future global broadcast systems and adding GPS processing at the receiver can have a profound impact. Consider this. If a receiver knows its current time and location with GPS, then tagged data sets defining any event in location, altitude or time can be broadcast to and analyzed by the receiver. Many systems send GPS data "up" to support situational awareness. But if you tell a soldier's receiver where a Scud is coming, the soldier will get out of the way! So instead of monitoring where every soldier is on the battlefield, send the data "down" to everybody and let a receiver-processor warn those who need it! After all, the data base to support accurate tactical warning already exists; it's in the hands of the thousands of servicemen and women and systems equipped with GPS receivers.

Potential Applications

Broadcast data need not only address an impact area. During the experiment, the special operations forces liaison officer suggested that launch point data be broadcast to teams in enemy territory to enhance reconnaissance operations. The passive defense officer asserted that broadcasting data that defines the path of a poison gas cloud can enhance warning. The Air Force liaison officer remarked that enemy anti-aircraft unit locations could be broadcast to pilots while in flight to warn if they are in or near deadly airspace. The political value of protecting a civil popu-



lace with GPS precision was also contemplated.

Payoff

The potential commercial application of this concept for a GPS public safety broadcast service can inspire solutions to the technical hurdles associated with this concept. That can result in a big payoff to the warfighter (and the taxpayer!) — inexpensive commercial receivers with a battlefield warning application.

The Roving Sands pager experiment proves that broadcast communications

are the objective for battlefield warning, but integrating GPS data processing at the receiver is the key! It can enhance the situation awareness and the operational tempo. Best of all, it can protect the force with viable tactical warning — first, fast, accurately and reliably!

Maj. Tom Budzyna, an Army Signal officer, earned his BA at the State University of New York at Albany and received his commission from the ROTC program at Rensselaer Polytechnic Institute in Troy, N.Y.



When Pentagon planners set out to create Force XXI, the Army of the 21st century, they realized that quality soldiers, not new weapon systems or new technology, would be the key ingredient. They made recruiting and retaining high quality soldiers a top priority.

The problem was that, in terms of quality of life, the post-Cold War Army in many ways still resembled the “hollow” draftee Army of the 1970s. Today, U.S. soldiers go into battle in sleek attack helicopters and awesome battle tanks, but they too often live in substandard housing. Even Gen. (Ret.) Colin Powell, the retired chairman of the Joint Chiefs of Staff, complains, in his recently published autobiography, that it was not until he moved into general officer quarters at Fort Leavenworth that he was finally able to house his family in a manner he felt “redeemed” himself in his wife’s eyes. The problem, of course, is more acute when it comes to billets for single enlisted soldiers and housing for junior enlisted soldiers with families.

So, when Force XXI architects set budget priorities, they announced their willingness to sacrifice modernization, new weapons programs and even, to an extent, mission capabilities to ensure soldiers a better quality of life. In November 1994, Secretary of Defense William Perry unveiled a six-year, \$2.7 billion quality of life plan. And last October, the Pentagon’s Quality of Life Task Force submitted a report to Perry

filled with recommendations that, when implemented, will complete the transformation of the force from the conscription Army of the 1970s and the post-Cold War Army of the 1990s to the Army of the 21st century.

The task force recommendations may be broken into three categories: Operating Tempo, Housing, and Community and Family services. Maj. Gen. John Costello deals with operating tempo in this issue’s “Intercept Point” column (page 1). I would like to give you the good news about housing and community and family services.

Housing. The Quality of Life Task Force calls for the creation of a military housing authority, a nonprofit corporation that would design and build housing for all the services. It would also increase the basic allowance for quarters to cover 85 percent of actual housing costs instead of the 78 percent it now covers. This would require hundreds of millions of dollars, but the necessary funds were already incorporated in Perry’s six-year plan.

The task force recommendations would also encourage commanders to give priority for on-base housing to soldiers in the toughest straits, E-1s through E-3s with family members. It would place funding for barracks construction into a protected account that could not be tapped to cover operational expenses.

Community/Family Services. The Quality of Life Task Force recognized

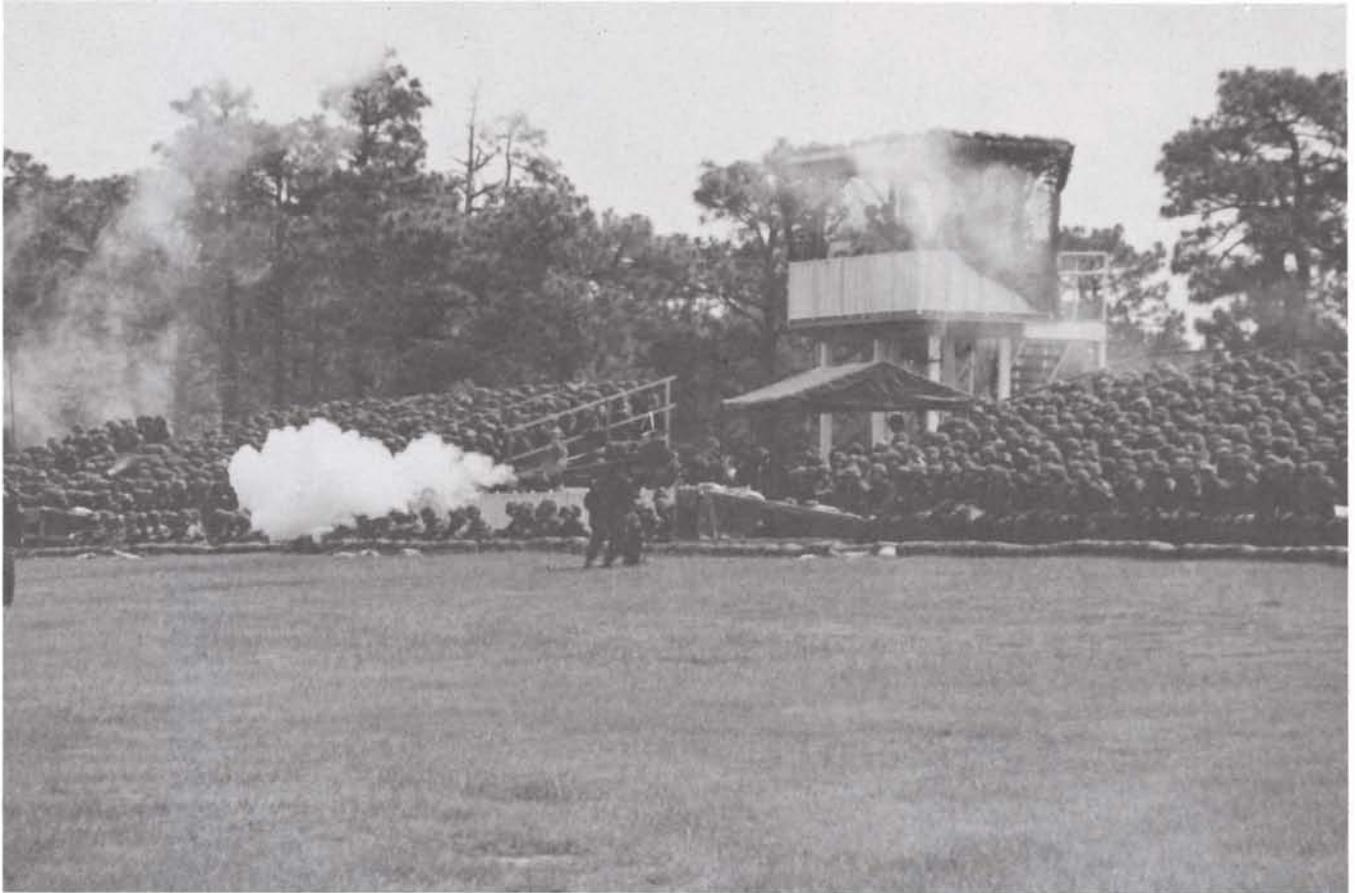
that recruiting and retention will suffer if community and family services are not improved. The task force recommendations are designed to help soldiers deal with problems that affect military families and problems that plague society as a whole.

- Standardize tuition assistance programs so all services get equal benefits.
- Create a Department of Defense personal finance program to help service members manage their money.
- Serve as an advocate for federal impact aid for local school districts.
- Strengthen employment and youth programs.
- Maintain current child care funding and hire more child-care providers.
- Place greater emphasis on spouse and child abuse programs.
- Make sure that women’s, infants’ and children’s food voucher programs are correctly administered overseas.
- Provide for privately owned vehicle storage for soldiers overseas.

We once told soldiers that if the Army had wanted them to have a spouse and family, it would have issued them one. It was one of the reasons we needed the draft. Today, thanks to the quality of life plan, we can, in good faith, tell young soldiers that the Army is a good place to raise a family.

James E. Walthes
Command Sergeant Major

Column Write



INTRO TO ADA 101

First impression = lasting impression

by Capt. Charles C. Heatherly and 1st Lt. Sean Sapone

"The first impression is the lasting impression." This old adage was the driving force behind the FY95 1st Region (ROTC) Air Defense Artillery (ADA) branch display. Each year it seems that the ADA portion of the Reserve Officer Training Corps (ROTC) Advanced Camp shrinks. It was not always like this. Just three years ago, ADA owned an entire day with each cadet company. Called "Air Defense Stakes," each cadet was afforded a full day with air defenders, shooting ADA

guns, engaging in the moving target simulator, practicing crew drills and touring branch displays. But by Advanced Camp '94, branch interface with the cadets had eroded to a 20-minute orientation display. With the downsizing of the Army, it is essential that Air Defense Artillery draws the highest quality officers ROTC has to offer. This need galvanized the ADA portion of ROTC Camp All American '95.

Though spearheaded by A Battery, 3rd Battalion (Airborne), 4th Air Defense

Artillery at Fort Bragg, N.C., this year's display was truly a credit to the branch itself, as people from all corners of the ADA community came together to make it a success. Team Bliss, led by Maj. Richard A. Starkey, Officer Basic Course core chief, provided the backbone of support. Planning began in March 1995 and continued through July 1995 including frequent visits and numerous phone conversations. More than 35 air defense units from both CONUS and OCONUS contributed literature, unit crests, patches,

*Stinger teams bring
battlefield realism to
the cadets at Camp
All American '95.*





stickers and unit coins. Defense contractors like Raytheon and Boeing also sent pamphlets, posters and other items for the cadets to take home. Resources were rallied from every corner of the globe, to include U.S. Army Reserve units, to make this year's 1st Region (ROTC) Advanced Camp ADA display the best ever.

More than 2,400 cadets rotated through the ADA branch orientation display over a two-day period. Each 120-soldier grouping of cadets participated in a 20-minute action-oriented display. Available were all air defense systems in the current Army inventory (Patriot, Bradley Stinger Fighting Vehicle [BSFV], Stinger and Avenger). Specialty items of equipment not generic to all ADA units, such as the Stinger Missile Jump Pack (SMJP), the M-3P .50-caliber machine gun and the airborne Avenger in the demated configuration, were also displayed. Literature was available on many future ADA systems and initiatives. During the orientation, soldiers from C Battery, 1st Battalion, 5th ADA Regiment, Fort

Stewart, Ga., provided the cadets with a combat-speed demonstration of an engagement by a BSFV gun/Stinger team. Reality was added to this drill by the use of Stinger MILES. Raytheon provided a Patriot engagement control station, radar, launcher and missile for the display. Patriot officers 1st Lt. Kim Cho and 2nd Lt. Ken Holland from the 11th ADA Brigade, Fort Bliss, demonstrated the capabilities of the Patriot system using specially designed unclassified training programs. Each cadet had the opportunity to engage air-breathing and ballistic missile threats.

However, the most captivating portion of the Camp All American '95 ADA orientation was the unique and unprecedented forward area air defense live-fire exercise. Combining the equipment and warfighting capabilities of the soldiers from 1-5 and 3-4 ADA, cadets witnessed the employment and destructive power of the Avenger, BSFV and Stinger ADA systems.

On the morning of July 3, 1995, two waves of 1,200 cadets converged at

Fort Bragg's VIP live-fire range. After being seated, all cadets received a concise explanation of each forward area air defense system. This general descriptive overview was quickly followed by the initiation of a realistically tactical scenario. The scenario revolved around the 82nd Airborne Division, augmented with forces from the 24th Mechanized Division, making a forced entry landing against a hostile nation.

The action begins on a smoke-filled battlefield where early warning tracks can be heard being passed from AWACS through the division early warning net. Immediately the air defense warning and weapons control status is increased to RED TIGHT. As bandit aircraft move into the division area of operation along a suspected air avenue of approach, a platoon leader projects the current aircraft course and orients two Stinger teams. Moments later, two Stinger teams speed up to the bleachers and hastily engage with Stinger MILES directly over the seated cadets' heads as artillery simulators go off in the background.



Following close behind the Stinger teams are two Avenger crews. The initial threat neutralized, the Avengers continue to search and scan for any additional threats.

Spot reports begin to flow over the operations and intelligence net. Individual, then squad, then platoon size enemy ground elements are observed. Suddenly, two Avenger crews encounter large concentrations of enemy group forces. Simultaneously, both Avengers open fire with their M-3P machine guns. In less than 30 seconds, 200 rounds of .50-caliber ammunition are fired into the heart of the enemy forces. Sensing a superior force, the enemy calls for armored reinforcements.

Alerted by the task force intelligence officer of approaching armored forces, the platoon leader issues the order WITHDRAW to both Avenger crews. The systems fall back to alternate positions while being relieved in place by a BSFV crew. Upon acquiring enemy targets, the Bradley fires its 25mm gun, adjusting from target to target across

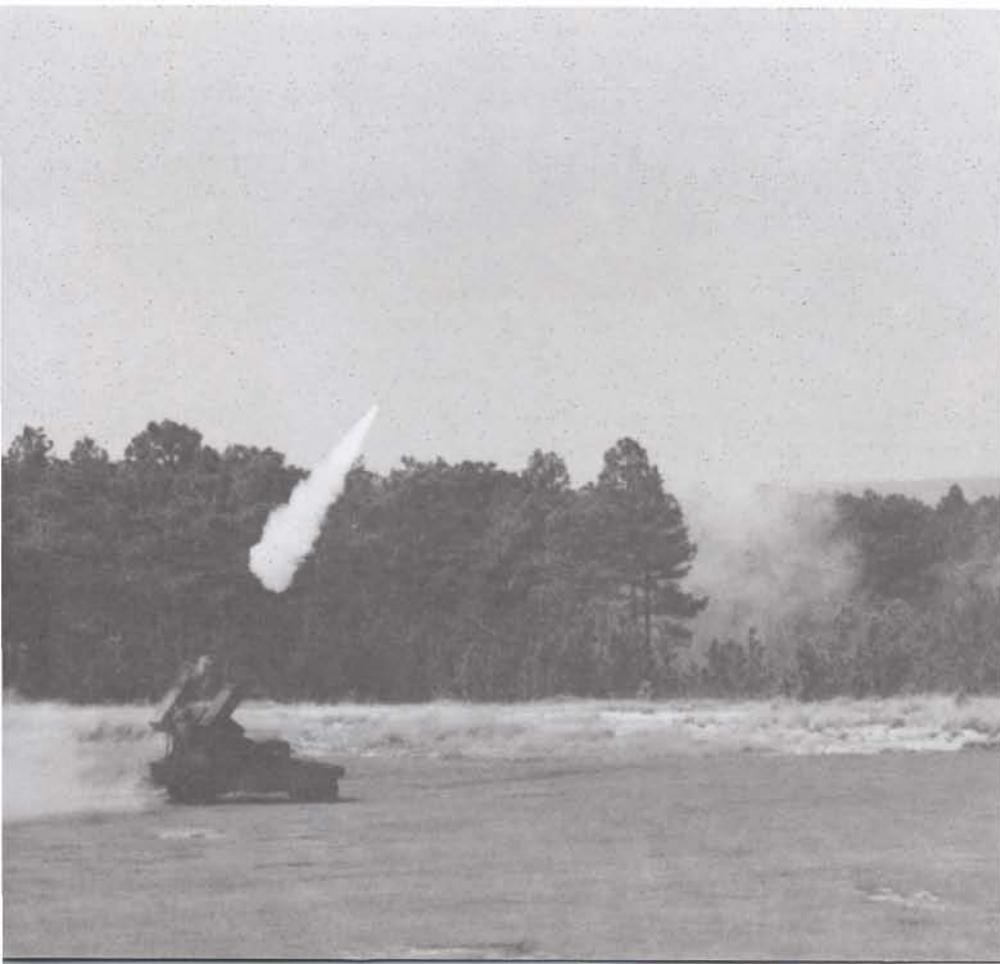
the battlefield. As the BSFV thunders, the cadets cheer with amazement. At this time, the primary purpose of the 25mm gun as an ADA weapon is explained to the cadets. The BSFV crew chief commands CEASE FIRE and the team roars away, only to be alerted of incoming hostile fixed-wing aircraft. The track stops. The ramp falls and out the back shoots a Stinger team. Within seconds the team is in position. The BSFV moves to an overwatch and support position. With a loud boom, a ballistic aerial target is launched from a hidden sight. With an audible swoosh the Stinger leaves the launch tube and begins snaking to, and finally killing, the drone with a bang.

Before SCRUB TRACK can be issued over the division early warning net, another hostile fixed-wing aircraft appears. Repaying the earlier debt of relief against ground forces, an Avenger team speeds out from behind a concealed position. As a BAT launches, the Avenger stops, track and fires, all within seconds. The air threat neutralized, the

enemy can no longer sustain its attack and is forced to withdraw across the international border. The day victorious, the demonstration ends.

This fast-paced, action-oriented live-fire exercise not only motivated the cadets, it also provided a realistic view of possible leadership and tactical challenges a platoon leader might face in a combat environment as part of a combined arms team. Together with the branch orientation, cadets received an outstanding taste of the limitless opportunities that can be afforded to them if branched Air Defense Artillery. Continued similar interface with ROTC cadets will greatly enhance the quality and level of ADA accessions and increase awareness of branch capabilities for all future leaders.

Capt. Charles C. Heatherly and 1st Lt. Sean Sapone are the commander and executive officer, respectively, of A Battery, 3-4 ADA, Fort Bragg, N.C.



Just seconds after a ballistic aerial target launches (left), the Avenger stops, tracks and fires.

ADA DIGEST

COMBAT TRAINING CENTERS



JRTC Trends

Recent rotations at the Joint Readiness Training Center, Fort Polk, La., indicate that additional training emphasis is required to synchronize the ADA battery's plan with that of the supported brigade. During the deliberate planning process, air defense personnel are routinely not present or not integrated during key synchronization events. This lack of integration often results in an incomplete intelligence preparation of the battlefield (IPB), incorrect identification of the brigade commander's air defense priorities, and ineffective task organization.

Integrated IPB

Current trends indicate that units, as a rule, are developing two separate IPB products. The brigade S-2, focusing on the enemy's ground maneuver capabilities and intentions, develops the so-called ground IPB. The air defense officer (ADO), focusing on the enemy's air capabilities and intentions, develops what has traditionally been called the air IPB. These two products are generally developed and disseminated in isolation, with little or no integration or synchronization of effort. The critical point that is often missed is that there is

really only one IPB product. This single product, with an integrated ground and aerial focus, provides the brigade commander and his staff with the total IPB picture and highlights how the enemy will synchronize his air and ground schemes of maneuver. Case in point is a brigade's counter-recon battle where the S-2 paints an excellent picture of the capabilities and intent of the enemy's division or regimental recon elements, but fails to consider the enemy's air recon assets and how these air assets will support the ground recon mission.

Air Defense Priorities

Correct identification of the brigade commander's air defense priorities provides the foundation for developing and executing the air defense plan. These priorities will drive both the task organization and the overall integrated air defense coverage for the brigade's assets. It is the ADO's responsibility to recommend priorities to the brigade commander based on the brigade commander's intent, the scheme of maneuver and the threat. Crucial to correct identification of the priorities is consideration of the factors of criticality, vulnerability, recuperability and threat. Trends have shown that we rarely look at the brigade's assets from the enemy's perspective. A key question is, "What assets of the brigade are the enemy's high payoff targets?" Additionally, it is critical to remember that the air defense priorities will often change based on the elements of mission, enemy, troops, terrain and time available. For example,

while a landing zone or flight landing strip may be the air defense priority for the first phase of a forced entry operation, that priority may shift to the brigade support area or to the brigade tactical operations center as the area of operation matures. Lack of air defense synchronization in the brigade's planning process often results in an air defense plan that does not focus on assets critical to the brigade's success.

Ineffective Task Organization

Task organization of air defense assets is often developed and executed without proper analysis. As a result, units are often placed in a particular command or support relationship role when the mission analysis and ground scheme of maneuver dictate a different role. Task organization of air defense assets must be developed based on the IPB, the air defense estimate, the brigade's scheme of maneuver and the supported commander's air defense priorities. Changes in task organization should be proactively planned for and then directed in operation and fragmentary orders. Integration into the brigade's planning process and a clear understanding of the commander's intent will indicate how the task organization may have to be adjusted to support different phases of a given operation.

Summary

Interaction and integration with the brigade staff is critical during any planning process. The ADO must synchronize his planning efforts with those of the brigade to ensure successful support of the brigade's maneuver plan. A complete and full understanding of the brigade commander's intent and the scheme of maneuver provides the ADO with the required tools to develop a coherent plan, as well as the branches and sequels he may eventually be forced to execute.

MAJ. MIKE HENCHEN



NTC Trends

Recent trends at the National Training Center, Fort Irwin, Calif., indicate that platoon-level operation orders ordinarily lack sufficient detail to effectively focus the platoon or provide key information to allow the platoon leadership to anticipate battlefield conditions. This problem begins during the supported force mission analysis and initial troop-leading procedures and carries through to preparation of the final product. The cause basically stems from a failure on the part of platoon leaders to identify relevant information from the task force or battalion planning process and what level of detail is required to establish an effective air defense plan.

Threat Evaluation and Terrain Analysis

A complete understanding of the enemy's capabilities beyond the standard order of battle and the impact of terrain on the intended air defense plan is essential to the development of an effective operations order, for more reasons than providing the information found in paragraph one. Platoon leaders do not use the information and products available to them from the supported force S-2 on the enemy's ground capabilities and potential timing for employment. This lack of understanding of the overall threat and the potential impact on the platoon's scheme of maneuver takes the initiative from the platoon

leadership, forcing them to react to unforeseen circumstances. The breakdown begins during mission analysis, where the platoon leader will ordinarily begin to assist the S-2 in the intelligence preparation of the battlefield (IPB) process; however, the focus is on the aerial dimension of this process, not on the potential impact of terrain and the enemy's ground capabilities. FMs 17-15 and 71-123 allude to seven forms of contact (direct fire; indirect fire; air; visual; nuclear, biological, chemical; obstacles; electronic warfare) that action drills are created around. One technique is to use these seven forms of contact as a framework to ensure the order addresses all of the enemy's capabilities to influence the fight.

Mission

Platoon leaders continue to have problems grasping the information required to formulate the mission statement. They do not fully address the questions of who, what, where and why, nor do they identify the platoon's task and purpose. As a result, most mission statements are generic in nature or are merely restatements of the higher headquarters mission, and do not clearly identify what the platoon is expected to accomplish.

Execution

Execution paragraphs tend to be very vague, lacking the level of detail required to facilitate successful operations. The greatest weakness is a failure to develop a detailed concept of the operation. Often platoon leaders do not address one or more forms of contact, and they do not identify the required

countermeasure or battle drill. Platoon leaders do not clearly articulate to the platoon how the air defense plan supports the stated air defense priorities, and they do not develop possible contingency plans to ensure coverage of the stated priorities is maintained as losses occur. The failure to adequately analyze the impact of key terrain, such as inner visibility lines, is now reflected in a scheme of maneuver that does not facilitate the observation of assigned air avenues or targeted areas of interest. Other problems within the execution paragraph include the following:

- Overlooking the location, emplacement time and routes through friendly obstacles.
- Not addressing actions on the objective.
- Not identifying fratricide avoidance measures for forward deployed teams.

Support

Support requirements are usually the last items to receive the platoon leader's attention and are often overlooked. Platoon leaders address issues of casualty evacuation, Class III and V resupply, and down-vehicle procedures only in general terms; they do not identify redundant measures. One technique that has met with some success is to have the platoon sergeant prepare this portion of the order. For this to be effective, the platoon sergeant must have a clear understanding of the mission and the tentative air defense plan early in the process to ensure the plan meets the requirements of the operation. It is important to note that this method does not divorce the platoon leader from responsibility for this portion of the order and requires periodic updates between the platoon leader and platoon sergeant to ensure both parties are aware of changes.

CAPT. TAYLOR S. NEELY

4-3 ADA Takes Top Honors

Sgt. John L. Marsh and PFC Ethan Weeks from 4-3 ADA, Kitzingen, Germany, took top honors as the best Stinger team in U.S. Army Europe for 1995. Stinger teams from 4-3 ADA, 5-3 ADA, 1-7 ADA, 5-7 ADA and the Southern European Task Force participated in the five-day annual competition held in Grafenwoehr, Germany. The competition centered around the team concept and included rigorous events such as day and night land navigation, visual aircraft recognition, tracking while in mission-oriented protective posture (MOPP) 4 gear and crew drills.

The final challenge the top 23 teams faced was on the live-fire range in Putlos, Germany. Teams received mission orders and moved to their final destination. During their movement they received local air defense warnings and deployed to engage enemy aircraft (represented by ballistic aerial target simulators). Missions were based on single or multiple engagement and allowed soldiers to compete on their assigned equipment. Of the 23 firers, 22 scored direct hits with the remaining missile impacting within one foot of the target.

5-2 ADA, located in Bamberg, Germany, hosted this year's event and tried to make the competition as realistic as possible. "We wanted to determine the level of training and proficiency of the air defenders in U.S. Army Europe as well as demonstrate what Air Defense Artillery brings to the battlefield," stated Lt. Col. Jerry P. Brown, 5-2 ADA battalion commander.

"The end results speak for themselves. Air defenders in USAREUR are

TOP 23 TEAMS		
Place	Unit	Team Members
1st	4-3 ADA	Sgt. John L. Marsh, PFC Ethan Weeks
2nd	5-3 ADA	Sgt. John Williams, PFC Jason Reck
3rd	4-3 ADA	Spec. Shane Lane, Spec. Fernando Johnson
4th	4-3 ADA	Sgt. Jaime Moreau, PFC Charles Powell
5th	4-3 ADA	Sgt. Daniel Gonzales, PFC Gary Cook
6th	4-3 ADA	Sgt. Freddie Blackmon, PFC Danny Saunders
7th	4-3 ADA	Sgt. Douglas Thacker, PFC Charles York
8th	1-7 ADA	Spec. Ricky Walters, Spec. Kevin O'Shea
9th	4-3 ADA	Sgt. John Caldwell, Spec. Brian Stuart
10th	5-3 ADA	Sgt. Charles Breaux, Spec. Andrew Locke
11th	4-3 ADA	Sgt. Roger Issac, PFC Derrick Kelso
12th	1-7 ADA	Spec. Russell Cheeks, Spec. Robert Newell
13th	6-43 ADA	Sgt. Christopher Smith, PFC Beau Rolle
14th	5-3 ADA	Sgt. Michael Traux, PFC Tejpar Randhawa
15th	5-3 ADA	Sgt. Tracy Newbill, PFC Jeffrey Wenzel
16th	5-3 ADA	Cpl. Scott Skala, Spec. Randall Thomas
17th	4-3 ADA	Sgt. Timothy Jarrell, PFC Melvin Bell
18th	4-3 ADA	Sgt. Larry Walker, PFC Joseph Mulqueen
19th	5-3 ADA	Sgt. Alonzo Kelly, PFC Tyrone Flowers
20th	SETAF	Sgt. Bernabe Quinones, Spec. Robert Beattie
21st	5-3 ADA	Sgt. Alden Giles, PFC Daniel Heurmann
22nd	4-3 ADA	Sgt. Robert Ticer, PFC Thomas Parker
23rd	5-7 ADA	Sgt. James Birkett, Spec. Christopher Spring

the best in the world," stated Brig. Gen. Edward Soriano, 3rd Infantry assistant division commander for maneuver in his closing remarks.

Sgt. John Williams and PFC Jason Reck, second place team from 5-3 ADA, summed up the event. "The competition was tough, realistic and unforgiving."

At the conclusion of the Stinger shootout, 5-2 ADA conducted their annual gunnery with the Avenger system. Their gunnery included night fire, en-

gagement while moving in MOPP 4 equipment and engagement of multiple targets. The newly fielded M-3P .50-caliber machine gun was also used in the engagements. The highlights of the gunnery were the 12th Aviation Brigade's air assault of an Avenger with crew into a secured drop zone and subsequent downing of a hostile aircraft while en route to the Avenger's final objective.

CAPT. WILLIAM RABE

108th News

More than 175 soldiers from the 108th ADA Brigade participated and supported exercise Cooperative Nugget '95 held at the Joint Readiness Training Center and Fort Polk, La.

The exercise involved soldiers from two NATO and 14 other central and eastern European countries to develop combined peacekeeping skills alongside U.S. soldiers. Cooperative Nugget '95 was the first NATO exercise of its kind held in the United States.

Personnel from Headquarters and Headquarters Battery, 108th ADA Brigade and 2-43 ADA provided administrative and logistical support to the Joint Visitors Bureau and the Press Information Center. The centerpiece of the support was the brigade responsibility for all aspects of the bureau's operations and handling of more than 268 visitors to the exercise. In addition, the 208th Signal Company provided communication support to the rotation.

Just a few weeks later elements of the 108th ADA Brigade again played a major role: this time in an important joint exercise conducted throughout the Mississippi gulf coast area.

The All Service Combat Identification Evaluation Team 1995 (ASCIET 95) exercise, designed to improve interservice combat operations and to examine procedures intended to foster improved identification of vehicles and aircraft in a joint combat environment, involved air defense and other assets from the Army, Navy, Air Force and Marines. 108th ADA participated as the primary Army component, with more than 140 soldiers from Headquarters and Headquarters Battery, 108th ADA Brigade; Headquarters and Headquarters Battery, 2-43 ADA (Patriot); C and D Batteries, 2-43 ADA; 555th Maintenance Company; and the 208th Signal Company. 1-5ADA, 24th Infantry Division (Mechanized), Fort Stewart, Ga.,

also participated through deployment of Avenger ADA systems at Camp Shelby, Miss. The Navy had two Aegis cruisers operating in the Gulf of Mexico as exercise participants, and the Air Force operated an airborne warning and control system (AWACS) in the exercise area. The Marine Corps provided a tactical air operations center at Gulfport, Miss., and had Hawk, Avenger and Stinger missile units deployed at Camp Shelby. Air and additional command and control assets were also involved in the exercise, as were a number of developmental systems incorporating the latest in technological developments.

The exercise centered around two daily trials. During the trials, an opposing force of F-16 and F-111 aircraft attacked the joint forces. F-14, F-15 and F-18 aircraft attempted to engage the attacking aircraft, as did 108th ADA Patriot units and the Aegis cruisers. The attacking aircraft, if they survived the initial engagements, continued to Camp Shelby and attempted to engage friendly ground forces while being engaged themselves by forward area air defense systems. The scenario was designed to test joint command and control procedures and provide a challenging combat identification environment.

Each trial lasted about an hour and was followed by a series of after-action reviews. Upon completion of these reviews, a video teleconference linked participants from the various locations. Lessons about joint employment of different weapon systems and combat identification challenges from the trial were reviewed, and results were then incorporated into subsequent trials.

"All of the services are still learning how to work with each other as we continue to emphasize the importance of joint, rather than service-specific, operations and training," said Maj. James Renbarger, 108th ADA Brigade operations officer. "As America's contingency ADA brigade, joint operations are particularly important for us. We are required to be ready to operate around the clock, and must be able to work and communicate with all other units in theater — whether they be from the Army, Navy, Air Force or Marine Corps. This exercise allowed us to become more familiar with how the other services do business, and provided us a superb opportunity to practice and refine the command and control procedures, communications interfaces and other relationships that are absolutely critical to us."

CAPT. TOM EVANS

"It's All Training"

"Dynamite! Dynamite! Two, fixed-wing hostile, grid 5110, heading west!" blares across the battery command and brigade command nets almost simultaneously. Within seconds I catch the glint of sunlight off an A-10 from my position in A-6 as it zooms along the south wall.

"Arrow 03, this is Arrow 06, they are headed right at you, over . . ."

"Arrow 03, this is Arrow 06, over . . ."

"Arrow 03, this is Arrow 06, over . . ."

Dropping to the 3rd Platoon net, I discover that the platoon leader and his Stinger teams are out of action: they've driven into a minefield.

It's Training Day 11 of NTC Rotation 95-07 and Attack Battery just

learned another difficult, but valuable, lesson.

The NTC is the Superbowl to some, and rightly so. But it is more than that. It is a celebration of combined arms training that synchronizes all battlefield operating systems and battlefield effects in a realistic mission, and it's free . . . we all live to fight another day. It's why we joined the Army.

A/1-62 ADA was lucky enough to obtain an unplanned rotation to the NTC with the 3rd Brigade, 4th Infantry Division (Mechanized), even though our unit is organic to the 25th Infantry Division (Light), in Schofield Barracks, Hawaii. 95-07 was a brigade-level rotation from start to finish, and thus allowed the battery to fight as a whole unit all 14 days — an invaluable opportunity for any battery to support an entire brigade comprised of one armor battalion, a mech battalion and a light battalion with the full brigade command and control and combat service support structure. But we were used to a light intensity conflict environment such as the Joint Readiness Training Center — and with only 12 Stinger teams, in unfamiliar terrain, with an unfamiliar unit. So what . . . it's all training!

Because of the situation, from the start the battery had only a limited number of objectives: have a safe rotation, learn as much on Day 14 as on Day 1, and fix one thing each day. We learned a couple of lessons that we felt would be valuable to any ADA battery in just about any training situation or actual combat.

The first and most important lesson was that at the battery level, the battle cannot be won, only lost. The best plan in the world, disseminated with timely troop-leading procedures, does not guarantee victory, it only sets the conditions for victory. We pushed hard on each mission to get the battery operations or fragmentary order out as soon as possible. I carried it forward to the platoon leaders, having leaders come to the com-

mand post for the brief and even, when time was short, delivering the brief over FM. Additionally, we had some sort of rehearsal for every mission. At the battery level, all that any rehearsal assured was that the platoon leaders understood the mission and that the battery commander could troubleshoot any breaks in the plan. Clearly, if battery command and control does not do the right things in a timely fashion, the conditions will be set for failure and the platoons can do nothing to save the day.

Success or failure of each battery mission was directly related to the actions of the platoon leaders and, even more so, the team chiefs, the killers on the forward area air defense battlefield. We found that successful integration at

Without communications throughout the depth and width of the battlefield, situational awareness for all members of a battery suffers.

platoon and lower levels, attention to detail in force protection and situational awareness kept our guys alive and synchronized with the maneuver forces. As a result, they were able to deny the enemy his intent with air.

Some keys to this were learned the hard way, and they are lessons that we had talked about back in Schofield but that did not hit home until we were actually "in the box." Direct, face-to-face coordination, whether it be team chief to tank company commander or platoon leader to battalion S-3, is imperative. A solid frequency plan and maximum monitoring of all nets possible with rapid cross talk prior to, during and even after the mission sets the

stage for good communications. Without communications throughout the depth and width of the battlefield, situational awareness for all members of a battery suffers. We learned that leaders at all levels must continue to work this. It is not easy and Murphy tries to help as much as he can. Over and over the junior NCOs came through, demonstrating incredible initiative and the will to accomplish the mission, proving once again that our branch has a bright future in its junior leadership.

Another, almost daily, lesson was difficulty of battlefield operating systems integration. For us this had an unusual twist. We were supporting a brigade from a different division and of a different type. This is a scenario that is

not all that far-fetched. ADA units often deploy on missions indirectly related to air defense and under unusual circumstances. Somalia, Haiti and Guantanamo Bay are just a few examples. The most critical piece of linking with a supported unit is the process, not the equipment. Anyone who has been in Air Defense Artillery for a couple of years and attended at least one of the Fort Bliss schools knows the basics of coordinating with the supported unit's staff and commander. Each unit is in its own stage of development in this

area. We had an inordinate amount of work because we were working with the 3rd Brigade for the first time . . . but it all traced back to the basics and doctrine. The major lesson learned was perseverance: keep coming back at it over and over again.

The bottom line is that it's our job as air defenders to provide both ADA fires and advice. Our supported units want us to do that. The snags generally fall in two areas: communication and perseverance. Attack Battery was lucky in that the brigade was not only receptive to our ideas and suggestions, they were also extremely happy just to have us there. Still, it was a constant effort to improve daily in this area.

An ADA-specific lesson learned was in the relationship of intelligence preparation of the battlefield, massed fires and the commander's intent. The key here is to isolate those targets the enemy can hit with his air and decide which ones are critical to the success of the brigade. From there you've got to design your defense to mass fires at what we were calling the "ADA decisive points." Some risk must be assumed to do this. For us sometimes the risk seemed very large as we only had 12 manportable air defense teams to fight with, but keen attention to placement and aggressive team chiefs compensated for that. The other piece that leads to successful execution is a commander's intent and mission statement that is specific and really tells the unit where we want to kill the aircraft. Too often, according to the observer-controllers at the NTC, the mission statement and commander's

intent are just verbiage that has little meaning in terms of specifics for fire unit execution. With a little work it's not that difficult to make the mission statement relevant, as long as you work backward from the decisive points of the air battle to define the battery mission and articulate the specifics in the intent.

The key to successful execution was the massing of fires and heavy volumes of fire. This is something that we talk well in academic settings, but when battlefield clutter, attrition during the mission, missile resupply and the fog of war descend on the unit, it becomes difficult. This is the area in which platoon leaders make their money. As long as the platoon leader understands the mission and intent in addition to his supported unit's scheme of maneuver, he will be successful in his defense design. In some ways this takes on an

artificial spin at the NTC. One day we expended more than 60 missiles to destroy six out of eight fixed-wing aircraft . . . a little unrealistic? Yes, of course, but the resulting lesson is really what matters.

These were not the only things that we learned. As with any rotation to a combat training center, leaders and soldiers walk away with a laundry list of fixes. That's the purpose. We highlighted these few because we felt that they were the most critical and can apply to any ADA unit in just about any operational scenario.

CAPT. JEFF PLANTE
1ST LT.(P) ROB POWALSKI
1ST LT. JOHN BONIN
2ND LT. MARVIN KELLEM
2ND LT. GARY EVANS
WO I RON COOKS

WEAPONS DEVELOPMENTS

THAAD Missile Achieves Test Flight Objectives

The Ballistic Missile Defense Organization and the U.S. Army conducted the third flight test of a new theater missile defense interceptor missile at White Sands Missile Range last October. Initial data reviews indicate the Theater High-Altitude Area Defense (THAAD) missile achieved its intended test objectives.

The missile's seeker collected data on the target in the acquisition and track modes while the kill vehicle navigated to the required viewing area close to the target. Events leading up to the seek acquisition of the target also appeared to perform as expected.

Shortly after the target missile was launched, the THAAD battle management command, control, communica-

tions and intelligence (BM/C³I) provided the fire control solution and the THAAD missile was launched. The missile executed an energy management steering maneuver, deployed the flare prior to kill vehicle/booster separation, unshrouded the seeker and navigated to the area of closest approach using in-flight target updates provided by a surrogate radar.

The test also integrated the THAAD BM/C³I mobile elements into the THAAD system and evaluated its ability to provide accurate fire control information to the missile before and during flight. Another major element of the THAAD system, the THAAD ground-based radar, participated but was not used as the primary radar for this test.

THAAD's third flight, originally planned as an intercept mission, was changed shortly after the second flight test to be a seeker characterization mission against a Storm target missile. The mission changed as a result of not being able to collect crucial seeker data on the second flight test due to the early termination of the test. Although a target was used in this third test, an intercept was not an objective and no intercept attempt was made.

This test was the third in a continuing series in the THAAD demonstration/validation program intended to verify the THAAD prototype concept, design and performance.

REDSTONE ROCKET

Blue October

What Microsoft wizard Bill Gates did with Windows, Don Morgan and compatriots from the U.S. Army Space and Strategic Defense Command's Sensors Directorate are doing with Blue October.

Blue October is a user-friendly, high-tech, computer simulation tool designed by SSDC Sensors Directorate engineers to bring emerging sensor technology capabilities to the desktop PC, and to the field of operations for use by our engineers and soldiers. With the click of a button the user can bring up an interceptor or a seeker and integrate them into their program to meet their particular requirements.

Engineering analysis and simulation tools have traditionally been designed to operate on large mainframes — these systems are expensive and not portable.

"Our commander, Lt. Gen. Jay M. Garner, told us to do more with less. Blue October is our response," said Donald Morgan, sensor aerospace engineer in SSDC's Sensors Directorate. "It allows you to do more technical work at a single sitting with a desktop PC than ever before possible."

The advantage of the Blue October program is that more users will have the opportunity to design and analyze weapon system performance at their desks — the users are given the ability to pull up the simulation tool on their PCs and see that they just bought another hundred seconds of battlespace time, or that the radar lost a hundred seconds of battlespace due to the weather.

Blue October is designed so the user can put himself or herself anywhere in a scenario to examine the phenomenology and the physics of a problem at any time. For example, the user can examine the operation of a seeker focal plane, see effects of the environment on seeker performance, and examine the end-game of a missile homing sequence in detail.

"I had to communicate a very complex message in a very simple way, so I built the user a simulation environment that shows him how my technology will help him do his job better," Morgan said.

Blue October creates a means to an end — the means being the desktop PC, the end achieving successful technology transfer.

Where most sophisticated simulation tools, such as those of the Missile Defense Battle Integration Center, concentrate on the many-on-many warfighting simulation, the Blue October precision tool will enable the user to concentrate on the effects of the technology in a one-on-one simulation.

The name Blue October was chosen by taking the word "blue" as a reference to friendly forces and October from the Latin word "octo" meaning eight, referring to the eight functional capabilities modeled in the precision tool set: intercept, threat, surveillance, seeker, signatures, algorithms, environment and control.

Lt. Col. Carl Gee, chief of the Integration Division, Battle Labs Support,

Military Police at Fort McClellan, has shown an interest in using the Blue October program for drug intervention and law enforcement reconnaissance. Gee visited SSDC's Sensors Directorate recently and received a demonstration of the model.

A prototype of Blue October has been developed by an SSDC team augmented by a team of contractors who have developed models for operation and installation on a desktop computer.

The next phase of Blue October will integrate the models to enable them to operate in an interactive mode.

"You have to look to the future to see what we will need five years from now," Morgan said. "Change is by nature something people reject — a lot of people who made buggy whips really hated to see those little motorized cars come along, but that was the future, and programs such as Blue October are our future."

Support from multiple agencies and organizations is required to move Blue October from the developmental stage to its fully integrated, interoperable capabilities; therefore, it is hoped that other Army and government agencies will support this effort.

CONNIE DAVIS

Successful Test Firing

A solid rocket movable nozzle motor test, successfully conducted by the National Missile Defense Program Office at the Redstone Technical Test Center, is paving the way for greater performance and lower cost missile defense interceptors.

As part of the program's exoatmospheric kill vehicle effort, the low-cost, lightweight nozzle was fired on a 600-pound motor and demonstrated several new technologies while also reconfirming older ones. These advances will greatly contribute to the development of affordable ground-based interceptors needed for the future deployment of a national missile defense for the nation.

All nozzle and connection parts were made of lightweight carbon composite materials that gain strength and improve performance when operating at the elevated temperatures of rocket exhausts. The movable nozzle flexseal shims were made by a resin transfer molding process. Weight saved on the booster stages can be applied to greater capability in the payload.

GERDA SHERRILL

Guard Unit Fields Avenger

The U.S. Army's Avenger air defense system was formally presented to the Mississippi National Guard in an Oct. 14 ceremony at E. L. Morgan Field. The Guard's 1-204th ADA became the first National Guard organization in the nation to receive the new system.

Gov. Kirk Fordice and Maj. Gen. James H. Garner, the adjutant general, joined members of the unit from five Mississippi communities for the fielding ceremony. Rep. G. V. (Sonny) Montgomery; Lt. Gen. Edward D. Baca, chief of the National Guard Bureau in Washington; officials of the Boeing Defense & Space Group; and other local, state and national leaders also attended.

The ceremony marked the transition of the local National Guard unit from the 4th Battalion, 114th Field Artillery to 1-204th ADA. The unit is headquartered at Newton, with units in Decatur, Bay Springs, Forest and Morton.

The Avenger is a line-of-sight air defense system that the National Guard Bureau and the Army air defense leadership have recommended for modernizing Army National Guard air defense capabilities. Avenger is a state-of-the-art, highly lethal weapon system designed to meet a critical mission requirement for a lightweight short-range air defense system with shoot-on-the-move capabilities using the Stinger missile.

The system carries eight Stinger missiles ready for rapid firing in two launch pods. Airborne targets are acquired using direct vision with the head-up display optical sight or using the forward looking infrared system.

The Avenger fielding places the Mississippi National Guard at the forefront of the changes underway as the nation's military prepares for its 21st century national defense role.

MISSISSIPPI NATIONAL GUARD PAO



SCHOOL NEWS

Top ADA Instructors Named

Five 6th ADA Brigade instructors earned the titles of Instructor of the Year in their respective divisions at a Hinman Hall, Fort Bliss, Texas, ceremony.

Fort Bliss Commanding General Maj. Gen. John Costello presented Fort Bliss Instructor of the Year awards to: Maj. Richard A. Starkey, Capt. Michael J. Keris, CWO 2 Calvin A. Solomon, SSgt. Anthony L. Wilcox and Jerdan A. Simon. Costello lauded the instructors for their professionalism and zeal for teaching present and future ADA officers, warrant officers and enlisted members, both American and foreign.

The awardees each earned a Fort Bliss Certificate of Achievement, a General of the Army Omar Bradley Chapter of the Association of the United States Army award, an award from the Armed Forces Committee of

the El Paso Chamber of Commerce, and a cash award.

Maj. Richard A. Starkey was named Fort Bliss Field Grade Instructor of the Year for his outstanding performance as an instructor with the Officer Basic Course, Combined Arms and Tactics Department, 4-6 ADA.

Starkey was cited for his charisma and aggressiveness as an officer and his seriousness in training future ADA platoon leaders. A former enlisted soldier, Starkey entered the military in 1980 as a personnel administration specialist, and later earned secondary military occupational specialties as a nuclear, biological and chemical warfare specialist and as an infantryman. He received his commission through the Officer Candidate Course in 1984. He and his wife, Dawn, have two children, Ricky, 11, and Lori, 8.



Fort Bliss' instructors of the year and their bosses are (left to right): Maj. Richard A. Starkey; Col. Charles W. Hurd, 6th ADA Brigade commander; CWO 2 Calvin A. Solomon; Maj. Gen. John Costello, commanding general, Fort Bliss; Capt. Michael J. Keris; Brig. Gen. Gregory A. Rountree, deputy commanding general, Fort Bliss; SSgt. Anthony L. Wilcox; Jerdan A. Simon; and CSM Daniel L. Lucas, 6th ADA Brigade.

Capt. Michael J. Keris was named Fort Bliss Company Grade Instructor of the Year for his outstanding performance as an instructor with the Officer Advanced Course, Combined Arms and Tactics Department, 4-6 ADA.

Keris was cited for his dedication and commitment to training young officers in the Officer Advanced Course, which includes foreign students. He was recently selected to teach branch-specific training to new majors attending the Command and General Staff College. Keris entered the Army in 1985 and served in Germany; Fort Lewis, Wash.; and Bangor, Maine. Keris said his wife, Karen, played an important part in his success as an ADA officer.

CWO2 Calvin A. Solomon was named Fort Bliss Warrant Officer Instructor of the Year for his outstanding performance as an instructor with the Patriot Officer Training Division, 3-6 ADA.

Solomon was cited for being one of the most experienced and qualified instructors in his unit, in part due to his

five years of Patriot site experience and for his ability in mentoring his students and in communicating with them.

A native of Fairfield, Texas, Solomon joined the Army in 1977 where he was awarded the MOS of Nike-Hercules Electrical-Mechanical Specialist. Solomon later applied for warrant officer in 1989. His first assignment as a warrant officer was in 1990 with 1-43 ADA, 11th ADA Brigade. Solomon is married and has two children.

SSgt. Anthony L. Wilcox was named Fort Bliss NCO Instructor of the Year for his outstanding performance as an instructor with the Stinger/Avenger Course, 2-6 ADA. He was cited for his exceptional technical and tactical proficiency and his exceptional mentoring and counseling skills.

Wilcox is a native of Mobile, Ala. He joined the Army in 1984 and has served in Air Defense Artillery assignments in the United States and Germany, as well as in Southwest Asia as a Stinger section sergeant during Operation Desert Storm.

He also helped field one of the Army's newest air defense systems, the Avenger.

He and his wife, Anita, have three children: Cherlle, 8; Anthony, 7; and Nicole, 6.

Jerdan A. Simon was named the Fort Bliss Department of the Army Civilian Instructor of the Year for his outstanding performance as an instructor with the Stinger/Avenger Course, 2-6 ADA.

Simon has spent most of his adult life in government service. He enlisted in the Army at 17 in 1954 and retired in 1981. Simon is known as an air defense subject-matter expert, having spent 12 of his 30 years in the Army as an instructor on weapon systems such as the dual-gunned 40mm Duster, the Vulcan and Chaparral, as well as the shoulder-fired Redeye and Stinger missile systems. He has been a Stinger instructor since 1987.

He and his wife, Daisy, have three children: Betrice, 25; Tyrone, 23; and Christopher, 19.

MSGT. RICHARD D. GLYNN



COMPETENCE

ADA OBC What Units Can Expect

by Maj. Rick Starkey

The Air Defense Artillery Officer Basic Course prepares newly commissioned officers for the challenges of being a leader within our branch. The course provides the foundation lieutenants need to begin their careers and is intended to send them to their units running — not crawling.

The key words in the previous statement are “the foundation to begin their career.” The learning starts at Fort Bliss, but must continue upon arrival at the unit. The one element of professional development the OBC can’t provide officers is experience.

Less than two years ago, I was commanding a battery and wondering what Fort Bliss was teaching the platoon leaders arriving to the unit. Training assessment, weapons emplacement, property accountability and knowledge of the expectations of a platoon leader were among a few of the many items that seemed to take newly appointed platoon leaders by surprise. To my astonishment upon arrival to teach OBC, most of the areas giving new platoon leaders problems *were* being taught at OBC.

What I didn’t fully understand while I was commanding is that, while lieutenants graduate with a basic knowledge of doctrine and procedure, they don’t know how to put these skills to use (experience). It would be ideal to give each OBC student a platoon of soldiers and equipment to observe their performance under realistic conditions, but resources will never allow this to happen. The current system is valid only if senior leaders understand their role in developing these newly acquired officers. Lieutenants need to be aggressive enough to get involved and ask questions, and senior leaders and commanders must take the time to guide them.

OBC is broken down into two distinct phases: a 10-week common core phase, and a 10-week weapon-specific track phase. The core phase provides an understanding of U.S. Army fundamentals of maintenance, training, logistics, doctrine, threat and other basic warfighting and administrative strategies. The track phase teaches basic ADA technical skills and tactical knowledge, and how to apply these skills according to doctrine. The track phase splits students into small groups according to their specific weapon system — high- to medium-altitude or forward area air defense. The ADA OBC employs the small group instruction technique. The fundamental goal is to create conditions most conducive to learning while affording the student the opportunity to benefit from the instructor’s experiences.

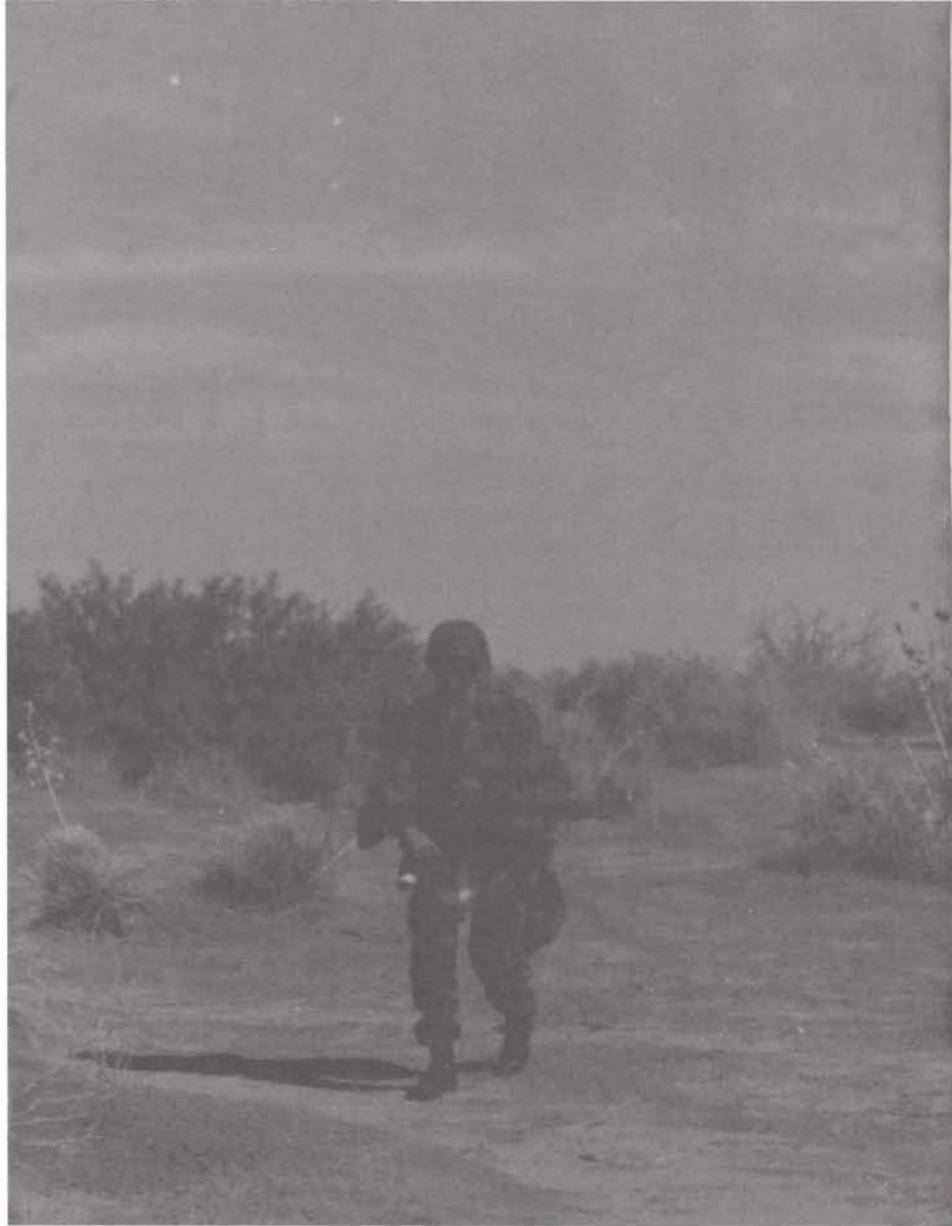
Regardless of what is learned at OBC, an officer who is not committed or aggressive, or who lacks the desire to excel, will never become the platoon leader we all want in our units. Ninety-five percent of the officers make an amazing transformation during our 20-week course from college students to Army officers; the other five percent are separated from the service. We do a good job of eliminating the obvious non-performers, but I also know there are officers graduating that may not perform to their full expectations once they arrive to their unit. The school environment does not provide us the best forum to screen officers.

One of the problems is based on the school environment and not being able to assess leadership in a realistic situation. Another is the U.S. Army’s system of sending commissioned officers to the basic course, making it much tougher to eliminate the moderate performers. Many countries send cadets to OBC, who earn their commission upon completion of OBC. This, in my opinion, is a much better system. The elimination criteria for a cadet and a commissioned officer are vastly different, and would give us much more freedom for

The OBC "core" phase FTX focuses on tactical decision-making and troop-leading procedures. Here, a platoon prepares to assault Objective Sherman.

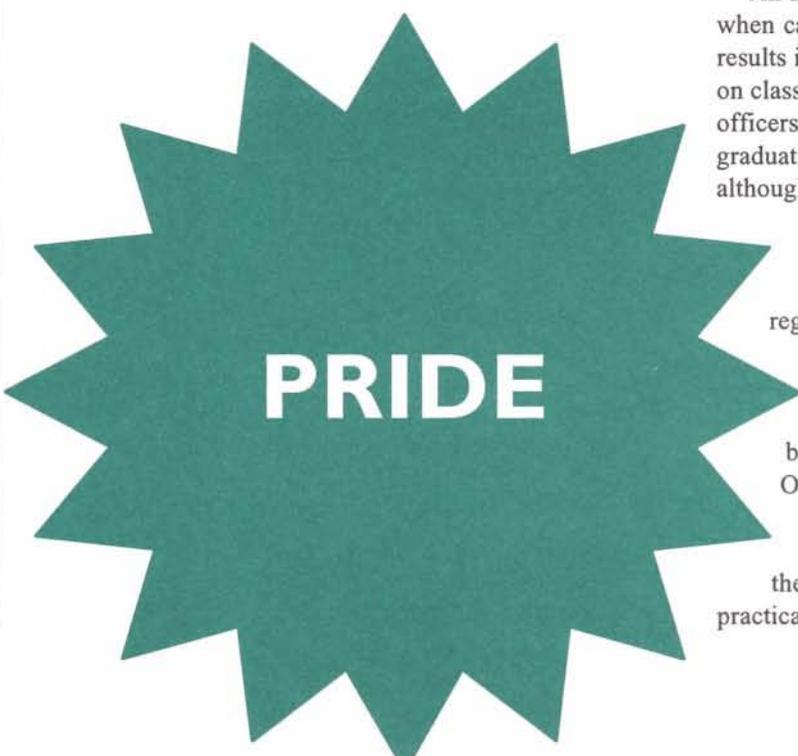
elimination. Adding to this problem is that many commissioning sources are based on quantity, not quality.

The numerous commissioning sources of lieutenants always provide a diverse level of knowledge among students. Most, however, arrive not understanding the level of commitment required to be a quality officer. Nor do they understand the role and importance of ADA on the battlefield. Many have entered the military for a college tuition (acting as the proverbial "dangling carrot"), and are surprised when they hear the term selfless service. This is of course generalizing, but it seems most officers arrive expecting to give the Army a few years service to pay for their education — and nothing more.



Air defense also falls far behind other combat arms branches when cadets or candidates are selecting their branch. This results in the branch receiving less desirable officers (based on class standing). For instance, the majority of West Point officers selecting air defense are in the lower third of the graduating class. This problem also exists in ROTC and OCS, although to a slightly lesser degree. We must do a better job of making ADA a more attractive branch selection, and recruiting and selling the branch.

Every officer willing to put forth effort at OBC, regardless of their ability or previous level of commitment, can expect to transform into a competent leader with the fundamental knowledge to succeed, proud of their branch and the contributions we bring to the fight, and committed to make a difference. Officer competence, pride and commitment exemplify the objective of each instructor at the ADA OBC. In the past year, numerous changes have been made to the course to make instruction and examinations more practical and hands-on oriented. In fact, students that went



PRIDE



COMMITMENT

through the course a year ago would quickly recognize the changes that have been made. Each of the four classes held throughout this year have had significant upgrades in practicality of instruction and information officers are expected and need to know.

Here are a few of the changes made recently at OBC:

- Lessons are more practical exercise oriented (for instance, during the training management lesson lieutenants are expected to prepare training plans based on quarterly training guidance, platoon assessments and upcoming events from the long-range calendar).
- Examinations focus less on memorization — more on learning. While memorization is hard to avoid (after all, doctrine must be taught), lessons now focus more on what a platoon leader needs to know. Previously, lessons focused on everything a manual discussed about a subject. What resulted is what is known as a “brain dump” at the end of an examination. We still have a lot of work to do in this area.
- Forcing pinpoint assignments earlier to increase student interaction with their future unit, get letters out to the battalion commanders and speed up the sponsorship process. There are very few ADA battalions active in finding out what officers are arriving to their unit and aggressively corresponding with the officer. 1-5 AAA and 3-4 ADAR

are extremely active in sponsorship, which gets the officer prepared quickly for their upcoming assignment. There are also a few units that have provided us leader handbooks to provide to students being assigned to their battalion. These are extremely helpful, and increase student knowledge of unit standards and procedures prior to arriving. These books, SOPs, etc. can also speed officer qualification upon assignment.

- Incorporating lessons learned from NTC and JRTC rotations to force officers to understand the role of ADA on the battlefield. These lessons have been incorporated into MAPEXs and the FTX to increase lieutenant productivity in future task force TOCs. You should expect lieutenants to understand the tactical decision-making process, their role in developing the ADA annex, planning early warning and preparation of the OPORD to their soldiers.

- Physical training has always been demanding at OBC, and will continue to be in the future. The APFT and performance during daily physical training is stressed during the course. Student performance improves throughout the course through platoon competitions for the highest scores on the APFT, and adding variety to our five-day program. It is not unusual for students to improve 75 points between their first and last APFT. The bottom line is students do not graduate if they are overweight or cannot pass the APFT. Most lieutenants far exceed this standard upon graduation.

For those with a historical preference, the ADA OBC has a tradition of preparing future leaders for the challenges of the branch. In fact, while many may argue earlier dates, the first



An after-action review at the conclusion of each mission (above) addresses mistakes and corrective actions. The FTX provides an assessment of individual leadership skills and an overview of basic survival skills. The leader's reconnaissance is conducted under the watchful eye of a small group instructor. At right, the Australian exchange instructor provides comments as the platoon leader scans the objective.



basic course of true Air Defense Artillery Officers began in May of 1947. Prior to that date, training was oriented as part of the OCS program and had a Field Artillery focus. The Anti-Aircraft Artillery and Guided Missile Branch of the Artillery School had moved from Camp Davis, N.C., to Fort Bliss, Texas, on Sept. 30, 1944, but had yet to develop a basic course. Our school stayed under the watchful eye of the Field Artillery school commandant until April 13, 1955. It was not until June 20, 1968, through General Order #25, that ADA became its own separate and elite branch. Since 1947, thousands of promising ADA lieutenants (some more promising than others) have graduated from the course to go forth and do great things for their units and the branch.

As lieutenants rotate out to their units from OBC, leader and soldier expectations of their platoon leaders should remain high. While the school does not provide the ideal situation for training a platoon leader, it remains the only

viable option. Commanders and leaders receiving these officers must understand their role in professional development, and be willing to guide the officer until the experience denominator is achieved. We will continue to improve OBC until we have the most suitable product. The goal will continue to be providing the field with competent officers, proud of their branch and its contributions, and committed to making a positive impact on their unit and its soldiers.

Maj. Rick Starkey is an instructor for the Officer Basic Course, Combined Arms and Tactics Department, 4-6 ADA, Fort Bliss, Texas.

OPERATIONS OTHER THAN WAR

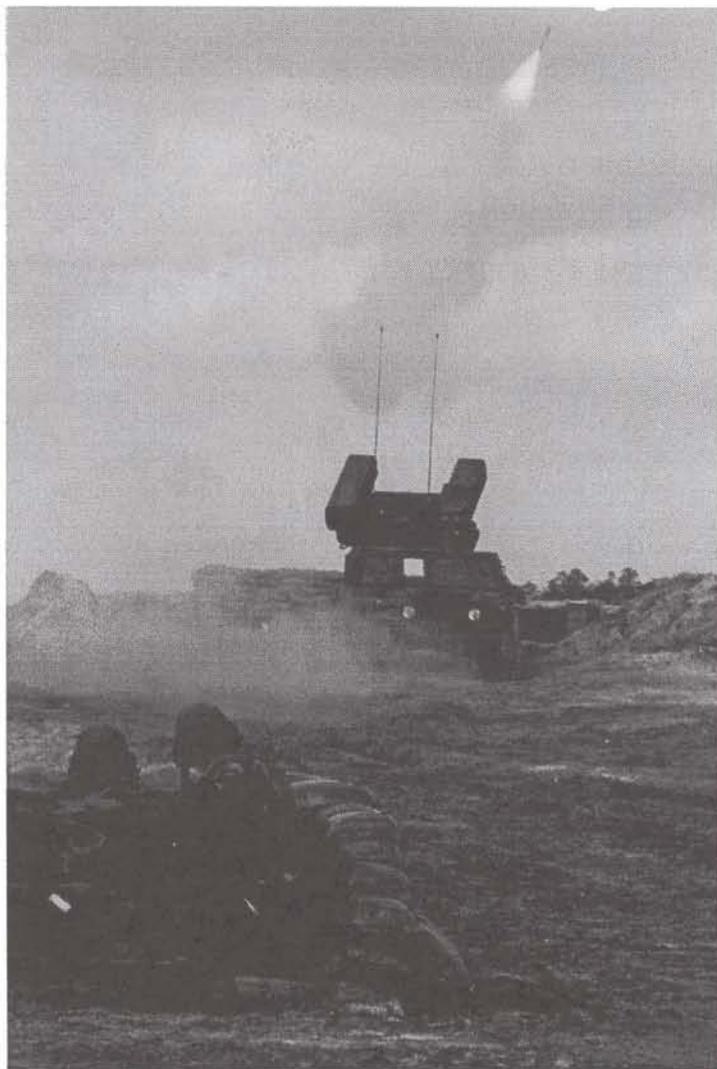
Pushing Avenger's Deployment Envelope

by Capt. Mark D. Emmer

On Nov. 20, 1995, while Serb and Muslim negotiators struggled to hammer out a peace accord, CNN ran a segment on U.S. soldiers selected to spearhead NATO's entry into war-torn Bosnia. Surprisingly, the CNN camera crews focused on an Avenger air defense system, even though U.S. forces bound for Bosnia expected to encounter no air threat.

A colonel explained U.S. forces entering Bosnia would rely on the Avenger forward-looking infrared (FLIR) system to locate snipers lurking in buildings or behind concealment. A film clip demonstrated the ghostly effectiveness of the FLIR, and the colonel pointed out that the Avenger's M-3P .50-caliber machine gun is particularly effective when used with the FLIR. Let this serve as a warning, said the colonel, if snipers threaten the NATO peacekeeping force, Avenger, working in tandem with other members of the combined arms team, will take them out.

As CNN's Avenger segment demonstrated, air defense commanders must consider alternate employment capabilities for our weapon systems if we are to fully realize the branch's potential in operations other than war (OOTW). This article will provide in-



ADA commanders must consider alternate Avenger employment capabilities.

formation on the possible employment of the Avenger system in OOTW environments. It will also outline various types of OOTW missions, based on past military operations, and list Avenger's advantages and disadvantages. Although a number of activities fall under OOTW missions outlined in FM 100-5, Chapter 13, I want to place my primary focus on peacekeeping and enforce-

ment operations and counterinsurgency missions.

Peacekeeping Operations. U.S. forces support diplomatic efforts to maintain the peace in areas of potential conflict. The peacekeeping force deters violent acts by its physical presence at violence-prone locations. It collects information through observation posts, patrols and aerial reconnaissance.

Peace Enforcement. U.S. forces conduct military interventions in support of diplomatic efforts to restore peace between hostile factions. Peace enforcement implies the use of force or the threat of force to coerce hostile factions to cease and desist from violent action.

Counterinsurgency. U.S. military forces assist host nation governments opposing an insurgency. Insurgencies remain edemic throughout the world, from Sri Lanka to Chiapas. Despite the Viet-

nam legacy, the United States has engaged in limited, often clandestine, counterinsurgency operations in Central America in recent years.

We will assume that the hostile air threat in the area of operations is nonexistent or minimal, and that Avenger will be employed in a non-doctrinal role. The Avenger weapon system is mounted on an M-1097

(heavy) high-mobility, multipurpose, wheeled vehicle commonly called the Humvee. It comes with a two-man crew. The Avenger FLIR allows gunners to identify air and ground targets and provides enhanced acquisition capability in various environments, such as night, smoke, rain and haze. A camcorder hookup permits the crew to record anything seen through the FLIR. Avenger's M-3P .50-caliber machine gun has a maximum effective range of 1,500 meters, can fire the upgraded .50-caliber armor-piercing ammunition and, as mentioned above, is very accurate when used with the FLIR. The remote control unit allows the gunner to remotely operate the system from locations up to 50 meters away. The environmental control unit/primary power unit (ECU/PPU) provides heating, cooling and power to the Avenger turret. The system's PPU helps reduce the Avenger's noise signature because it allows the crew to operate the system while the Humvee engine is shut down. The Avenger fire unit has two single-channel ground and airborne radio systems, the SINCGARS, which are mounted in the turret, and one man portable SINCGARS.

Defensive operations include manning observation posts and checkpoints and base camp security. For example, during Operation Able Sentry, which was

designed to prevent the Bosnia conflict from spreading southward into Macedonia, Swedish soldiers established an observation post on a ridgeline overlooking a highway and railroad in the valley below. Their mission was to observe and monitor Serbian and Macedonian patrols and police squads that might violate the border, and to monitor and report the movement of freight trains crossing the border.

They used tripod-mounted binoculars and a tube-launched, optically tracked, wire-guided (TOW) missile sight, the AN/TAS-6, at night. The Swedish troops also conducted dismounted patrols to further demonstrate their presence and monitor movement along the border.

In this scenario, an Avenger team could have been positioned on the ridgeline to provide 24-hour, all-weather surveillance. The Avenger FLIR, like the AN/TAS-6 TOW sight, has excellent range and resolution for long-distance surveillance. It can operate silently off the PPU and, unlike the AN/TAS-6, does not require nitrogen coolant bottles, a dependency that created resupply problems during Able Sentry. Integrated into the overall fire plan, the Avenger's M-3P machine gun would have enhanced observation post security. Multiple communication nets would have allowed the Avenger team to communicate with the dismounted patrols and pass information back to the base camp. The camcorder hookup

would have served as an intelligence collection device, recording movements and documenting border incidents.

Another lesson learned during Operation Able Sentry is that units assigned to observation posts must be constantly vigilant. Commanders must not allow soldiers, lulled by the boredom of observation post duty during peacekeeping operations, to grow complacent. They should periodically rotate crews between observation posts and the base camp.

Temporary checkpoints at border crossings can prevent smuggling of supplies, weapons or insurgents across borders.



Avenger's machine gun is effective when used with its forward-looking infrared system.

They also serve to provide security for ground lines of communications. Emplaced at a checkpoint, an Avenger with its M-3P machine gun would become a deterrent against vehicles attempting to crash through the checkpoint. Rules of engagement would specify whether the Avenger gunner could fire at vehicles that fail to stop. Avenger's Stinger missile pods and .50-caliber machine gun make it a formidable appearing weapon system, particularly in Third World countries where most citizens, in all likelihood, have never seen one. Avenger would provide a visible show of force and, at the same time, provide armed overwatch for checkpoint guards as they search vehicles. In some situations the border area may be too violent for a thin-skinned vehicle, such as the Avenger, and armored vehicles will be required to secure observation posts and checkpoints. In such scenarios, an Avenger may still provide overwatch protection for a base camp and could help repel insurgent attacks. The FLIR/M-3P machine gun combination could provide 24-hour security and could be easily integrated into the base camp fire plan.

The Avenger should be positioned on high ground and oriented on ground avenues of approach to maximize the effective range of its FLIR and M-3P machine gun. Base camp commanders might consider augmenting the Avenger position with a Dragon or TOW launcher to counter armor threats and could also use the Avenger as a quick-reaction reserve asset.

Offensive operations in an OOTW environment can include cordon and search operations in villages or cities, reconnaissance patrols

and convoy security. In the early phases of Operation Restore Democracy, Bradley Fighting Vehicle platoons were often task organized with light infantry companies to establish outer cordon around suspected weapon caches in Port-au-Prince. However, rules of engagement, restrictions on collateral damage and the narrow, crooked streets of Port-au-Prince's slums reduced the Bradleys' effectiveness and mobility.

The Avenger, depending on the intensity of conflict, is often better suited than the Bradley for missions conducted in an urban environment, especially missions that require maneuverability through narrow streets. Wheeled vehicles such as the Avenger inflict less damage on unimproved roads than tracked vehicles, and the

Avenger's M-3P machine gun would minimize collateral damage. However, the Avenger's lack of armor protection makes the Avenger gunner and driver more vulnerable to small arms and sniper fire than Bradley crews.

During Operation Restore Democracy, camcorders helped diffuse unruly crowds and discouraged rioting because Haitians feared government retaliation and were reluctant to be caught on videotape. Camcorders also recorded crowd agitators and other persons of intelligence interest.

Avengers can provide mobile, integrated security, day or night, for convoys or recon patrols. Avenger teams are already trained in these tasks and regularly conduct react-to-contact battle drills.



Avenger has many advantages that are applicable to operations other than war.

Avenger has other advantages that are applicable to OOTW:

- It may be quickly and easily air assaulted beneath a CH-47 onto an observation post.

- In today's global geopolitical environment, image counts. Battle tanks and Bradley Fighting Vehicles rumbling through the streets and countryside of a host nation may present an overly aggressive image. Light, wheeled vehicles such as the Avenger or the Military Police version of the Humvee project an image that frequently may be more politically acceptable to the host nation, the in-

ternational community and the U.S. public.

- The Avenger's FLIR/M-3P machine gun configuration provides an all-weather capable gun system that is highly accurate and produces minimal collateral damage.

- The remote control unit permits the Avenger crew to remotely operate the system from a fighting position that protects the crew.

- The Avenger camcorder serves as a convenient intelligence collection device.



Avenger's remote control unit enhances the Avenger crew's survivability.

Avenger, therefore, brings many advantages to OOTW missions. However, a prudent battery commander must consider the Avenger's disadvantages as well as its advantages:

- The lack of armor protection exposes Avenger crews to hostile fire.

- Although the Avenger can be operated remotely, it is still a high-profile target that is vulnerable to direct and indirect fire. Engineer support, in the form of dozers, should be provided to help crews harden and improve their positions when an Avenger fire unit is placed in a static defense role such as at an observation post, checkpoint or base camp.

- Avenger's M-3P machine gun stores only 280 rounds and can fire its entire load in less than 20 seconds. The machine gun is not designed to place a high volume of fire on multiple targets.

- The Avenger is top heavy and cannot negotiate side slopes greater than 22 degrees. Since the Avenger is much heavier than a standard Humvee, it tends to get stuck easier. The Avenger's size,

weight and height are important factors that must be weighed when commanders consider march routes and employment, especially over rugged terrain.

The Avenger air defense system is a remarkably versatile weapon system, and "First to Fire" soldiers have demonstrated their ability to adapt to a wide variety of missions, but in our eagerness to contribute to the mission, we must be careful not to place Avenger crews at a disadvantage. The Avenger battery commander must conduct a thorough mission analysis and intelligence preparation of the battlefield to determine the best location to employ the Avenger in a non-ADA role.

It is important that commanders planning OOTW missions remember that the Avenger is a light-skinned, high-tech, expensive and irreplaceable air defense system that is not really designed to sustain hostile fires. Although the Avenger does bring additional assets to the OOTW environment, there are other systems in the Army inventory

that are more suitable to suppress hostilities in a violent environment.

OOTW are fraught with ambiguities and peril. In Lebanon and Somalia, where our casualties approximated those of the Gulf War, we learned how quickly peacekeeping and humane operations can turn violent. Third World countries, the most likely locale for many types of OOTW missions, have, over the centuries, served as graveyards for modern armies whose soldiers suffered from the delusion that their superior technology made them invulnerable.

On Nov. 27, President Bill Clinton ad-

ressed the nation. "America cannot — and must not — be the world's policeman," he said. "We cannot do everything, but we must do what we can do. The terrible war in Bosnia is such a case." He added, "Our troops are strong and well-prepared, but no deployment of troops is risk-free, and this one might involve casualties. Anyone who takes on our troops will suffer the consequences. We will fight fire with fire — and then some."

We can depend on Avenger crews bound for Bosnia to demonstrate, once again, that Air Defense Artillery can contribute significantly to OOTW mission accomplishment. But ADA commanders must ensure that the missions assigned Avenger are compatible with the capability of the system and survivability of its crew.

Capt. Mark D. Emmer commands B Battery, 2nd Battalion, 44th Air Defense Artillery, 101st Airborne (Air Assault) Division, Fort Campbell, Ky.

KOREA 1950

The First Air Defense Contingency



A statue of a poncho-clad soldier represents servicemen who endured the bitter cold, harsh conditions and savage fighting of the Korean War.

Thousands of Americans remembered the "Forgotten War" this past summer when U.S. President Bill Clinton and Korean President Kim Young Sam dedicated the Korean War Veterans Memorial in Washington. The memorial features statues of infantrymen trudging wearily up a hill, as if returning from a patrol. There are 14 soldiers, three Marines, one Navy medic and one Air Force forward observer, representing all services that fought in the ground war. More than 2,500 photographic images of the war are etched on a highly polished, 164-foot-long granite wall that serves as a backdrop.

Antiaircraft artillerymen who served in the Korean War are among those honored by the long-delayed Korean War Memorial. Antiaircraft gunners helped defend the desperate perimeter at Pusan against "human wave" assaults, they supported ground attacks on Heartbreak Ridge and blasted Chinese roadblocks out of the path of Marine and Army units during the fighting retreat from the Chosin Reservoir and Yalu River. They seldom engaged enemy aircraft during a war in which the U.S. Air Force quickly established air superiority, but the first unit the Army sent to respond to the North Korean invasion of South Korea was an antiaircraft detachment. It helped cement Air Defense Artillery's reputation as the "First to Fire" branch and set a precedent for today's ADA contingency missions.

When the North Koreans crashed across the 38th Parallel on a Sunday morning in June 1950, Lt. Col. William S. Fultz, who commanded an antiaircraft artillery automatic weapons bat-



A hastily assembled anti-aircraft detachment airlifted from Japan to South Korea's Suwon Airfield mounted the first organized U.S. resistance of the Korean War.

talion stationed as part of the American occupation forces in southern Japan, received an order from the Fifth Air Force Command. Acting on that order, Fultz organized an anti-aircraft detachment for "an air-transported mission." The exact destination and details were guarded in close secrecy. Even so, most of the battalion's officers and enlisted men volunteered. As events developed, this detachment spearheaded the Army combat units committed to action in Korea.

In the meantime, word came that the detachment would man four M-55 quadruple .50-caliber machine guns. Fultz selected three officers and 32 enlisted men for the mission. He exercised care to ensure that all chosen for the mission had at least six months yet to serve in the Far East Command, but soon discovered that two volunteers would have to re-enlist before they could make

the trip. So Sgt. William S. Hasse and PFC Clarence I. Myers stood in full field packs beside the plane that was to carry them to Korea, raised their right hands and were sworn in by Cpt. Harry F. Money, the battalion adjutant, to extend their enlistment.

Finally, on June 29, with details completed and the men, ammunition and equipment aboard, Fultz gave last-minute instructions to the detachment commander, Cpt. Frank J. McCabe, and his assistant, 2nd Lt. Joseph V. Bailey, and the planes rolled down the runway, destination Korea. In a briefing just prior to departure, Maj. Stanley Paction, the battalion executive officer, had told him that the detachment was to establish air defense of an airfield in Korea, but McCabe still didn't know which airfield.

Most of the men slept or dozed as the airships droned steadily over the Sea of

Japan, across the coast of Korea and inland over mountainous terrain toward their destination, the Suwon airfield. Shortly after 0900 hours, the planes touched down. The anti-aircraft artillerymen swung into action so rapidly that many did not have time to remove their "Mae West" life jackets. They unloaded their M-55 quad .50-caliber machine guns from each plane as soon as they rolled to a stop. With the eager assistance of South Korean soldiers, they established primary positions within 10 minutes. Since rice paddies surrounded the field, the positions selected were practically on the runway. Despite the language barrier, the South Koreans pitched in to help the anti-aircraft artillerymen improve their positions.

With the immediate chores of field occupation completed, men of the detachment took time off to survey their

new surroundings, which for the most part could be described as hilly to mountainous terrain with valleys filled with rice paddies. Corridors leading through a ring of hills that surrounded the airstrip provided air avenues of approach. Suwon, the city that gave the airfield its name, lay to the northwest. It looked for the present as if no apparent action was pending. But by 1615 hours, June 29, as the sun dropped behind the hills, the situation drastically changed. In the distance appeared what most of the men at the gun positions first thought were four friendly F-51 Mustangs. "Looking around the town about four miles away we heard an explosion," recounted Sgt. Melvin E. Tyra, "and seconds later we caught it."

McCabe, the detachment commander, said, "The four planes approached the strip from the northwest at about 1,400 feet. They formed with a pair in front followed by the other two in single file and power-glided on our position area in an apparent attempt to destroy planes parked on the runway. They made four passes, dropping three medium-light bombs, and strafed the field at each pass."

One plane dived on Sgt. Sidney T. Holman's section and attacked it by dropping bombs in trail. Observers said that a row of cannon shells tore up the earth on both sides of the gun section. Hasse got a neat crease in his helmet. Pvt. Harland S. Scoville had just pulled the M-55's operating handle when he saw it shot away. A piece of concrete hurled across the runway by an exploding bomb broke PFC Thomas Merante's leg.

"One plane crashed beyond the field," said McCabe, "and the second, obviously crippled, was losing altitude as he left the area. I labeled it a probable, and its destruction was confirmed a short time later by South Korean rural police, who reported finding the wreck close to the place where the plane was last seen."

Crews continued to improve gun positions and all was quiet until 2000 hours, when a "dusk patrol" of three North

Korean fighters came over on two strafing passes. The guns went into action again, but no kills were made. The fighters, now more wary of the ack-ack, fired only short bursts and were driven off after two passes. It was growing dark now and guards were established about the field, supplemented by Korean soldiers. The night passed uneventfully, with the gunners getting a badly needed rest between guard tours.

Early on the morning of June 30 another C-47 arrived, carrying six communications men headed by WO Junior

AAA Detachment Suwon, South Korea June 1950

PFC Robert Alaniz, Los Angeles, Calif.
2nd Lt. Joseph V. Bailey, Salt Lake City, Utah
Cpl. James N. Bishop, Cumberland, Md.
Col. Burley T. Blankenship, Richlands, Va.
PFC Henry P. Bond, Brooklyn, N.Y.
PFC James F. Bowman, Knobnoster, Mo.
PFC Herbert L. Bumgarner, Hudson, S.C.
WOJGDarrek M. Clagett, Omaha, Neb.
Cpl. Fred W. Cobb, Leesville, La.
Pvt. Robert L. Davis, Rockville, Md.
Cpl. Richard Drapeau, Meriden, Conn.
Cpl. Ray E. Everts, Yakima, Wash.
Pvt. Harold E. Forsyth, Marysville, Iowa
PFC Donald E. Gentzler, Honolulu, Hawaii
PFC Solomon H. Hall, Glamorgan, Va.
Sgt. William S. Hasse, Grand Junction, Colo.
Sgt. Sidney T. Holman, Negaunee, Mich.
PFC Roger E. Johnson, Jamestown, N.Y.
PFC Robert M. Lutz, Stewartstown, Pa.
PFC Thomas Merante, Hudson, N.Y.
PFC Johnnie McGee, Wytterville, Va.
PFC Frank A. Pierce, Mariner Harbor, N.Y.
Sgt. Walter R. Reavis, Lufkin, Texas
PFC Lawrence E. Rogers, Searcy, Ark.
Pvt. Harland S. Scoville, Mindoro, Wis.
Pvt. Kenneth W. Shields, Dallas, Texas
Cpl. Leslie G. Todd, Minooka, Ill.
Sgt. L. Worrol, Milford, Conn.
Pvt. Charles Vaughn, Clearwater, Fla.

Grade Darrell M. Clagett. They immediately began to establish and improve communications under McCabe's direction. Phones were installed at the guns in place of runners who had previously been employed.

The same morning a C-54 with urgently needed supplies and ammunition developed engine trouble just short of the strip. It circled but decided not to land, returning instead to its base in Japan. The problem of ammunition and food then fell on McCabe's shoulders as he scrounged the area. He secured ammunition from South Koreans and food from nearby units.

Shortly after 1300 hours that afternoon, five airplanes appeared. Three were obviously F-80s, and two several hundred feet below looked like F-51s. "What are they?" Clagett asked McCabe.

McCabe said, "I'm not sure yet."

Clagett continued, "Well, I guess we'll know if they peel off and start shooting."

As he voiced the final word, the two lower planes did just that!

The guns immediately took them under fire, but scored no kills. The planes splattered the area with small 23mm cannon shells, which burst upon impact, spraying pellets. One of these slightly wounded PFC Lawrence E. Rogers. The F-80s gave chase and shot down the two strafers. Most members of the detachment expressed difficulty in distinguishing between North Korean fighters and F-51 Mustangs, and waited until approaching aircraft took hostile action before engaging them.

The afternoon following the attack was quiet. Around 2115 hours, word was received from Advanced Command, General Headquarters, Far Eastern Command, then under command of Brig. Gen. John Church, to prepare to evacuate the airstrip. North Korean armor had punched through the South Korean lines. South Korean and U.N. forces were retreating southward.

Orders were relayed to gun sections to prepare for the movement, and three

trucks were obtained from South Korean personnel to evacuate the detachment to a new location. Guns were rendered inoperable as ordered, and the convoy moved out quietly without lights en route to the south. The convoy had moved some 15 miles down the highway, picking up Korean civilian vehicles, all obviously going the same direction.

Halt was called and McCabe received orders to provide a rear guard action, which called for a 45-minute wait. Once on the move again, mechanical difficulty with the Korean trucks forced the detachment to abandon the three originally procured about 25 miles from its destination. By a system of walking and shuttling, the detachment finally reached its southern destination.

During the stay at the new headquarters location, which lasted until the night of July 2, members of the detachment

worked with other personnel around the area. It was 2000 hours when word was received that the detachment, which had participated in the first organized ground combat action in Korea, was to be airlifted back to Japan for re-equipping and return to action. When they returned to their home station, Fultz and the rest of the battalion welcomed them with a steak dinner with all the trimmings at the service club. Purple Hearts were awarded to McCabe, Bailey, Cpl. Burley T. Blankenship, Merante, PFC Frank A. Pierce and Rogers.

The soldiers who fought in Korea weren't seven feet tall like the statues of the Korean War Memorial; their courage and perseverance against numerically superior forces and harsh environmental conditions merely made them seem seven feet tall. More than 1.5 million Americans left their families, friends and homes to help defend

a determined ally halfway around the world. During the war, more than 54,000 Americans lost their lives, 33,620 in direct combat. Some 103,284 service members were wounded. There were 7,410 American POWs: 4,418 returned, 2,701 died in captivity and 21 refused repatriation. There are still 8,177 American service members unaccounted for. Technically, the Korean War never ended. The signing of the military armistice on July 27, 1953, left North and South Korea on a war footing. Today, more than 37,000 U.S. service members are stationed in South Korea. American units, including 5-5 ADA (B/S/A), which supports the 4th Infantry Division, and the more recently deployed 1-43 ADA (Patriot), which counters North Korea's growing theater ballistic missile capability, continue to play a vital role in maintaining peace along Korea's volatile DMZ.



South Korean President Kim Young Sam and thousands of veterans listened as U.S. President Bill Clinton dedicated the Korean War Veterans Memorial in Washington, D.C.

ROYAL NETHERLANDS ARMED FORCES AIR DEFENSE

by Lt. Col. (Ret.) Cees de Looze

The general rule for air defense operations in all branches of the three services is that each branch is responsible for the immediate protection of its own position and the assigned vital assets. The Royal Netherlands Air Force (RNL AF) adds three missions to this general rule:

- Execute air defense in cluster areas (with multiple vital military and or industrial complexes) with ground-based air defense systems.
- Provide long-range air defense protection of deployed army units with air defense fighters and ground-based air defense systems.
- Provide long-range air defense protection over international coastal waters with air defense fighters.

All air defense fighters and ground-based air defense systems for these purposes are part of NATO's Integrated Air Defense System, and are supported by several ground-based command and control and radar systems and E-3A aircraft to augment the air picture.

In this document I will limit myself to the ground-based air defense systems in use with the services.

History

Since the beginning of the development of ground-based air defense missile systems in the late 1950s, the RNL AF was assigned the task to operate these systems. I think the RNL AF got the task because we were a young element of the forces (just recently sepa-

rated from the Army) and looking for additional tasks to motivate the separation. More importantly, we had the manpower after a reduction in air defense fighter squadrons.

From 1968 to 1974 the RNL AF had two Nike battalions each with four batteries (three of the four had a nuclear capability), three Hawk battalions each with four batteries, and one logistic battalion that supported Nike with 80 percent of its capacity and Hawk with the remaining 20 percent.

The battalions were all located in the northern part of the Federal Republic of Germany and were elements of the NATO Integrated Air Defense organization, operating in both forward (Hawk) and rear (Nike) belts. To make things a little more complicated, one Hawk battalion operated in the German Army Corps area, one in the British Army Corps area, and the third on the boundary line between these two corps. German Hawk battalions were assigned to the Netherlands Army Corps area.

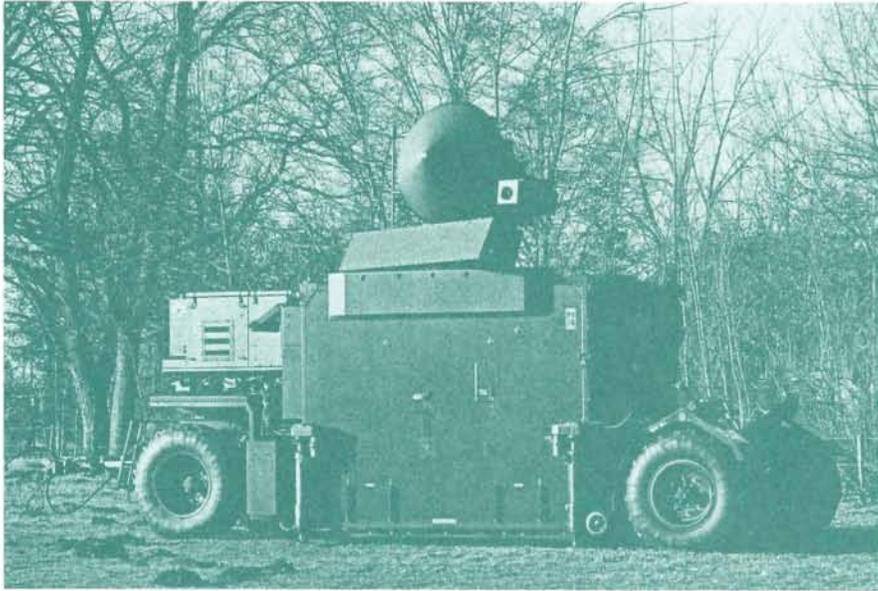
Slowly the Air Force diminished in strength. In 1974, one Hawk battalion withdrew to the Netherlands and reconfigured to eight Hawk assault fire platoons (AFPs) to defend air bases — a reaction to “lessons learned” after the Egyptian/Israeli war! By adding strength and capabilities to the Nike and Hawk battalions, we were able to rid ourselves of the logistics battalion in 1975. We intended to replace Nike with Patriot, but ended up not replacing Nike at all

(the last battery was decommissioned in 1988). Instead, we replaced four Hawk batteries with four Patriot batteries. The first Patriot fire platoon became operational in April 1987, the last in April 1990. The typical Hawk battery configuration (BCC/PAR/ROR) was abandoned in 1986 and replaced by two AFPs. Hawk units in the Federal Republic of Germany and the Netherlands were now identical.

By 1990, we had two battalions of mixed composition. Each battalion had a Patriot information coordination central (ICC) for engagement operations, two Patriot fire platoons and four Hawk AFPs. Both battalions were located in the Federal Republic of Germany. We also had eight Hawk AFPs, 24 Flycatcher systems (each controlling three Bofors 40mm guns around air bases), a control and reporting station and a reporting post in the Netherlands.

Present Situation

After the major changes in the political situation in Europe, the Netherlands government decided to return all forward-deployed NATO troops to the Netherlands and implement a 30-percent reduction in personnel strength of the armed forces. Therefore, in the summer of 1994, one of the two battalions relocated from the Federal Republic of Germany to an inactivated military air base in the Netherlands. The other followed suit, to the same location, in the summer of 1995.



The standard Flycatcher features an I-band search radar with an effective range of 20 kilometers to detect any air target, from high-speed aircraft to slow-moving or hovering helicopters, drones and even terrain-following missiles. The Hawk missile system (right) is now being modified to the Hawk Phase III standard. The RNL AF is the only NATO user to upgrade its Hawk units.

To cut down in strength, the two battalion headquarters and logistic support units have been restructured to one brigade task force, but organized in such a way that it can split into two separate battalions of mixed composition when needed. For the same reason, one Patriot fire platoon and two Hawk AFPs were integrated to form one battery, called a TRIAD (triple air defense) battery. The motive behind this combination is that we are convinced Patriot must have additional protection against the air-breathing threat on the flanks and in the areas where Patriot has only a limited, or no, detection capability. Maximum separation distances between Hawk and Patriot for flank protection vary between five and 15 kilometers and from 10 to 20 kilometers in areas

not covered by Patriot. We must not forget that NATO's strategy for air defense has not changed (yet); the airspace will still be defended by a combination of air defense fighters and ground-based air defense weapons in separately designated areas. The awareness of the tactical ballistic missile (TBM) threat has just been politically accepted as "a NATO threat," but Patriot units are not assigned an exclusive anti-TBM mission. The TRIAD battery can be split into separate entities whenever tactical situations dictate.

Military budgets are shrinking everywhere, as well as in the Netherlands, and everybody wants his share of the peace dividend. One method to survive is to assign troops to the Immediate Reaction Force (IRF) and Rapid Reaction Force (RRF). By rotating these commitments every half year, the RNL AF keeps the total force at strength, trained and ready for deployment. The double capability in relation to the reaction force task is that the manpower requirement is necessary to sustain a reaction force operation abroad. A rotation with professional, fully trained personnel is indispensable. Deployments to Turkey and Israel during Desert Storm, and recent exercises on NATO's north flank (Scotland, Denmark and

Norway) and south flank (Greece, Turkey, France, Spain) show the evidence. In 1995, troops and equipment even deployed to the United States to participate in Roving Sands, the "world's largest" air defense exercise. 1996 commitments include participation in an exercise on the south flank, as well as Exercise Roving Sands. Present RNL AF air defense commitments to the IRF and RRF are to provide one TRIAD (IRF) and two TRIADs in a RRF scenario for the protection of a cluster and asset defense for the protection of vital Air Force assets, primarily the three F-16 squadrons assigned to NATO's reaction forces, with a combination of weapons (Hawk AFPs, Stinger teams and Flycatchers, each controlling three Bofors 40mm guns).

Cluster Defense

The RNL AF Patriot equipment is identical to the U.S. Army version with the exception of communication equipment, trucks and generators. Contracts to acquire the modifications for the first two phases of the Patriot Advanced Capabilities (PAC)-3 program have been signed. The contracts include two battalion tactical operation centers (BTOCs) and Joint Tactical Information Distribution System (JTIDS) terminals for the ICCs to improve force operations and connectivity with U.S. Army command and control systems. Each fire platoon is equipped with five launching stations, 20 missiles and an additional 20 missiles as a reload. The missile types in use are the Standard missile, the Stand-Off Jammer Counter (SOJC) missile and the Anti-Tactical Ballistic-1 missile. The political decision to acquire the modification kits for the final phase of the PAC-3 program is expected in the next few months.

Our Hawk equipment had been built in license by various industries of the NATO countries that operated the Hawk system in the early 1960s, and has continuously been updated. Presently the equipment is being modified to the Hawk Phase III Block 5/6 hardware/

software standard, with modification kits bought directly in the United States. This modernization program began in October 1994 and will be completed late in 1996. The RNL AF is the only user in NATO to upgrade its Hawk units to U.S. Army/Marine Corps standards. Instead of the Northrop video camera, an infrared camera (developed by Krupp-Atlas, Federal Republic of Germany) has been installed on the high-powered illuminator radar (HIPIR), the target tracking radar. Each AFP will be equipped with four launchers, 12 missiles and 18 missiles as a reload. The missile Class V items, such as the warheads and fuzes, will be replaced by more potent ones, which will give Hawk a defense capability against short-range TBMs.

Plans are to operate the Hawk weapon system until the year 2010, assuming that by then a new air-breathing threat and anti-TBM-capable system must have replaced it. The air defense requirements division of the Air Force staff hopes the new system will be a surface-to-air missile system that evolves from Hawk by modular replacement of the present end items. It could well be that a combination of missiles will exist to counter the various threats. Initially, the Hawk missile could be used against the short-range TBM threat and complemented by the Advanced Medium-Range Air-to-Air Missile (AMRAAM), a next generation of "launch-and-leave" guided missiles to combat the other threats, air-breathing threat, cruise missiles and unmanned aerial vehicles (UAVs). At a later point the Hawk missile could be replaced by the Extended Range Interceptor (ERINT) missile planned for use in the Patriot systems. A 360-degree rotating phased-array radar with TBM detection capability should replace the continuous-wave acquisition radar. The platoon command post has to be replaced by a system that can select the optimum missile type according to the threat. Exchange of information on all existing tactical data links in a near-real-time

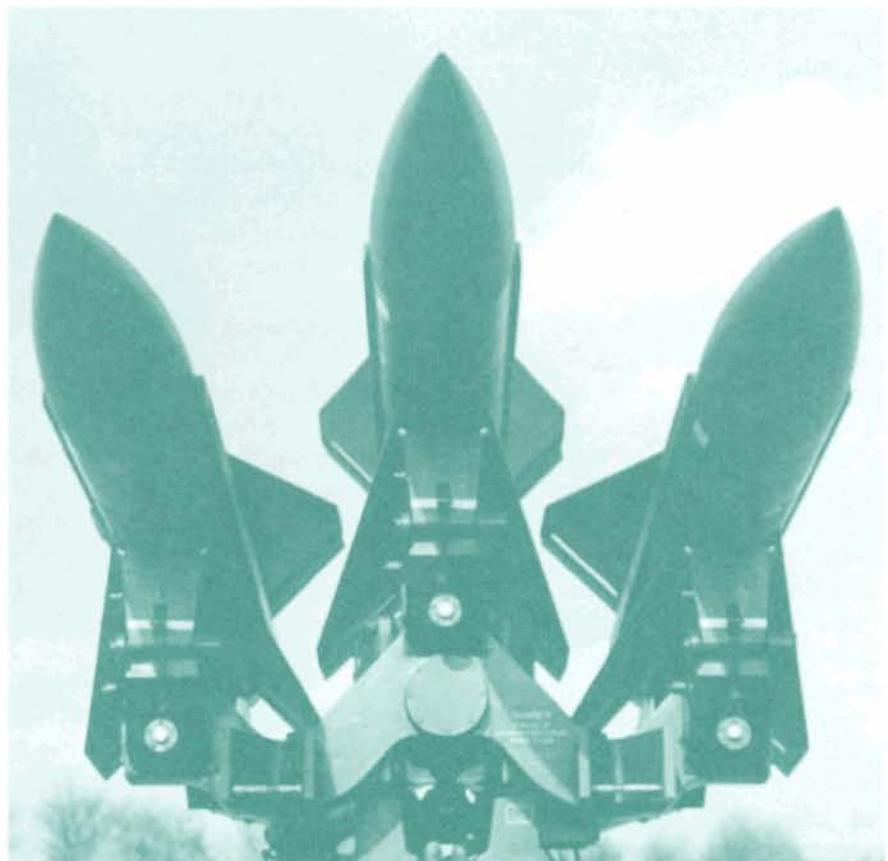
manner to higher echelon units as well as other air defense units in the network is a necessity. However, if the present political situation remains unchanged, I foresee no replacement if another system, other than the modular replacement of Hawk, is chosen, because in the year 2015, the flying part of the RNL AF needs a new fighter to replace its aging F-16 aircraft. Money is scarce and we are being called Air Force, so you can assume where the money will go if a choice is to be made. But, when evaluating the plan, one must conclude that it is not a bad option, because it has the most important ingredients of a good plan. It guarantees a continuously available, actual air defense system for the mid-range. It can finally grow to an up-to-date medium surface-to-air missile system that fulfills all Corps SAM requirements. Most importantly, it seems to be feasible.

Stinger in the cluster concept is being used for self-defense of Patriot and Hawk fire platoons. A Patriot fire pla-

toon has three teams and a Hawk AFP two teams, each with two firing positions deployed in dead spots three to seven kilometers from the fire platoon. Presently only an insecure radio broadcast net exists between the Stinger teams and the fire platoon. However, the delivery of several lightweight mobile radars (tactical defense alerting radar) is expected in 1996. With the modification kits for Hawk Phase III (the RNL AF has the option to use the U.S. Marine Corps capability), all local and remote detected and identified tracks will be provided on a laptop computer to the Stinger operator. Several of the teams will also be equipped with night vision means to improve their overall performance. Beginning in 1996, the Stinger reprogrammable microprocessor (RMP) will gradually replace the basic Stinger.

RNL AF Asset Defense

The RNL AF has three asset defense components (each consisting of two Hawk AFPs, five Flycatcher/Bofors



systems and six Stinger teams each with two firing positions) assigned to the commanders of the three F-16 main operating bases. Primarily these components are dedicated to protect the F-16 forces during reaction force tasks, but they can also be assigned to protect helicopter bases, headquarters or other vital assets during reaction force operations. These components, supplemented with two remaining Hawk AFPs and 10 Flycatcher/Bofors systems, will be spread out over the RNL AF vital assets in case of a main defense force situation.

Flycatcher is a Netherlands development of the Holland Signaal Apparaten (HSA) fabriek. The system has been in use since 1976 and has been recently modernized to extend its lifetime and improved to withstand new attack tactics, including the use of the latest electronic deception techniques. The Flycatcher's pulse doppler search radar operates in the I-band and has a coverage up to 20 kilometers in range and from 15 to 4,500 meters in elevation. A separate track radar operates either in the I-band or Ka-band, depending on an operator or automatic decision. Identification, friend or foe and selective identification feature (SIF) equipment is integrated. Passive tracking with a TV camera is possible and can also assist in recognition of the threat. Guns can be emplaced up to two kilometers from the fire direction center. The ammunition consists of a mix of high-explosive and proximity fuze shells. The range of an antiaircraft system is by nature limited; however, within its range this system is very lethal. The combination of a very short reaction time and the fire-and-forget capability results in a very high saturation level. The U.S. Air Force has thoroughly tested the system in several Red Flag exercises at the Nellis AFB training area.

The Flycatcher has several derivatives:

- Goalkeeper, in combination with the gatling gun, used by the Royal NL Navy and various other navies on-board

ships to combat Exocet-type missile attacks.

- Integrated radar for the twin 35mm (Oerlikon) gun antiaircraft weapon system, an all-weather, armored, self-propelled air defense system based on/in a Leopard tank. This configuration is used by the RNL Army and Federal Republic of Germany Army to protect its maneuver forces.

- Reporter, an area surveillance radar, normally employed in combination with a Flycatcher section to improve the overall coverage.

Hawk AFPs employed to protect the assets will not be modified to the Hawk Phase III Block 5/6 hardware/software standard, but will be replaced by either the French Crotale Nouveau Generation system or by a modular replacement of items of the Hawk system. A near-term solution proposed by Raytheon, Hughes and Norway's Kongsberg is being studied. The introduction of a new fire direction center and the AMRAAM are the main objectives of this system. If this solution is chosen, it will also be the basis of the modernization of the Hawk AFPs now operating in the cluster defense. Limiting the amount of different systems, logistical burden and training should be one of the primary goals, and will improve flexibility, connectivity and interoperability.

RNL Army Asset Defense

The RNL Army has been the hardest-hit organization, and has lost nearly 50 percent of its personnel strength since 1990. After the completion of force reduction measures, the RNL Army will consist of one airmobile brigade and one division, consisting of one light brigade and five mechanized brigades. The airmobile brigade has three air defense batteries, each consisting of nine Stinger teams. The light brigade has one air defense battery with three platoons, and each mechanized brigade has one air defense battery with four platoons. Each of the platoons in the light and

mechanized brigades consists of three all-weather, armored, self-propelled air defense systems based on/in a Leopard tank and three Stinger teams. At the division level, for the defense of critical assets in the rear area, the Army has three air defense batteries with three platoons. Each platoon has three Flycatcher fire direction centers, two Bofors 40mm guns and three Stinger teams. The total RNL Army air defense force will consist of 27 Flycatchers with 54 Bofors 40mm guns; 69 all-weather, armored, self-propelled air defense systems based on/in Leopard tanks; and 123 Stinger teams.

The RNL Army lacks an integrated and secure area air defense command, control, communications and intelligence (C³I) network, but has acquisition plans similar to the RNL AF for radars and C³I equipment for the immediate future. The delivery of several lightweight mobile radars (tactical defense alerting radar) is expected in 1996. Also in 1996, the Stinger RMP will be introduced and gradually replace the basic Stinger.

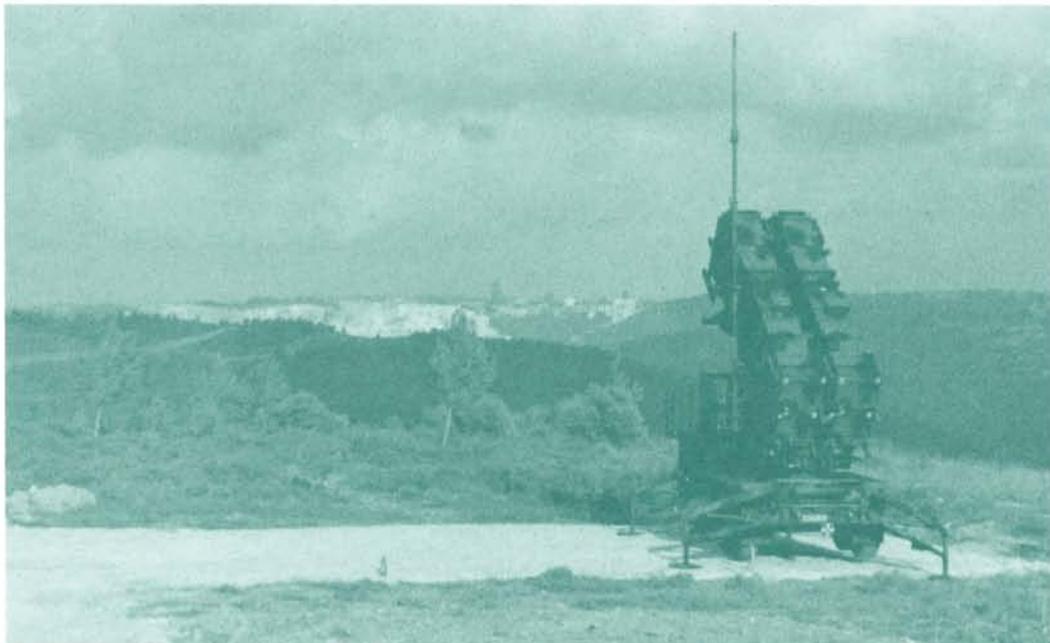
The helicopter wing of the airmobile brigade is an Air Force component. So, Air Force Stinger teams were added to defend the forward area refueling points and locations where major logistic functions are executed. The RNL Army airmobile brigade is assigned to the RRF.

RNL Marine Corps Asset Defense

The RNL Marine Corps protects its force with Stinger teams only, but these teams can also be deployed on-board of ships.

Training

The RNL AF regularly sends military personnel to Fort Bliss, Texas, and Redstone Arsenal, Huntsville, Ala., to learn how to maintain and operate ground-based air defense systems. This began in 1958 with Nike-Ajax courses, followed by Nike-Hercules classes. In 1963 training began for Hawk, and in 1984 for Patriot and Stinger. After each



RNL AF Patriot equipment is identical to the U.S. Army version with the exception of communication equipment, trucks and generators.

fielding the RNL AF decided to set up an operator training school in the Netherlands, but continued to send personnel to Fort Bliss and Redstone for all technical courses. The operator courses are relatively short and uncomplicated, and large groups had to be taught because manning heavily depended on draftees.

However, in 1996 the draft system will not be used anymore and all positions must be filled with career officers, NCOs and personnel that serve only for a limited period of time (two, four, six or eight years). In the coming years the armed forces must learn how to compete with industry for an adequately skilled work force. This need to be competitive might even lead to a more expensive defense. But it is one of the consequences of the end of the Cold War and relaxed readiness requirements in NATO.

Initial training of Flycatcher fire direction center crews, Bofors 40mm gun crews and Stinger crews is done by each service.

Combat Training

This type of training is very expensive and has a very high priority. We

achieve this combat training a variety of ways.

- **Integrated combat training.** These are practical field exercises with national and multinational air support to train both pilots and ground-based air defenders at the same time in an interactive scenario. The complexity varies from one-on-one to complex scenarios similar to those practiced during Flag exercises. Video and data registration allow analyses of operator performance. Face-to-face pilot and air defender debriefings after the daily missions improve mutual trust and confidence.

- **Simulators.** We use embedded trainers of the Patriot and Hawk weapon systems, as well as the Patriot conduct-of-fire trainer, Hawk advanced training simulators and Flycatcher video simulators. We also have moving target simulators and the troop proficiency trainer for Stinger team training.

- **Life-fire exercises.** These exercises are conducted at the national firing range in den Helder, NATO's firing installation on the Greek island of Crete, and at the U.S. Army's McGregor Range and White Sands Missile Range, N.M.

Conclusion

Although the RNL armed forces were forced to reduce overall personnel strength, they survived with a potent, modern combination of ground-based air defense systems. This was achieved by eliminating unnecessary levels of control, centralizing training, integrating various different depots, delegating authority to installation commanders and privatizing tasks. Plans for future improvements and modernizations are being prepared. The forces are ready to be tasked for any NATO or U.N. mission in any location of the world with any combination of partners.

Lt. Col. (Ret.) Cees de Looze was assigned as the RNL AF air defense liaison officer to the U.S. Army Air Defense Artillery School and Fort Bliss, Texas, from July 1990 through June 1995.

ADA Association

by Maj. Gen. (Ret.) John B. Oblinger



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Chief, Museums Division

Mr. David A. Ross
Curator, ADA Museum

As we enter 1996, your ADA Association continues to lead the way to Force XXI by sponsoring and supporting projects vital to our branch, its people and its institutions. The purpose of this article is to highlight new and continuing association activities and initiatives.

The ADA Regimental Hallway window project has been highly successful. The stained-glass windows with their colorful regimental emblems are turning the U.S. Army Air Defense Artillery Center headquarters building at Fort Bliss, Texas, into the "cathedral" of air defense. The north end of the building's first floor was completed when the 3rd ADA regimental window was unveiled in June 1995. Two "First to Fire" capstone windows donated by eight former U.S. Army Air Defense Artillery School commandants were unveiled in August. Donors have made firm commitments to finance windows necessary to complete the south hallway on the first floor, and we are making progress toward completing the second floor stained-glass window display.

During 1995, the ADA Association continued to sponsor various programs to recognize those who exemplify excellence in various endeavors by presenting them awards such as the Order of Saint Barbara, the Molly Pitcher Award, and the NCO of the Year and Soldier of the Year Awards. The association presented appreciation and recognition plaques to 18 new corporate members at an August reception held at Fort Bliss' Pace Hall.

The association also continues to make building a new home for the ADA Museum its top priority. Maj. Gen. John Costello, the new chief of Air Defense Artillery, solidly and enthusiastically endorses the project. He has hosted several events at his quarters to enlist El Paso, Texas, civic leaders in the campaign and inform them about fund-raising events. For example, in November, the Fort Bliss Bowling Center, the Department of Defense's largest bowling complex, hosted a 12-hour Bowl-a-Thon.

Association president and chairman of the ADA Museum Capital Campaign, Brig. Gen.

(Ret.) Ernie Roberts, has had a billboard erected just east of the existing Fort Bliss Replica Museum to mark the site of the new museum facility. As mentioned in the previous issue of ADA magazine, Bettie Beckworth, a professional grant application writer, now fills the newly created position of executive director of development. She has multiplied our grant application efforts and symbolizes the association's commitment to working "smarter" as well as harder to more fully develop our support base in the civic, charitable and domestic and foreign defense contractor sectors.

Contributions to the ADA Museum Capital Campaign, the association's top priority, fall into two categories. The first category is major contributions from foundations, industry, government and major individual contributions, both foreign and domestic. The second category includes contributions from units, active or retired soldiers and friends of Air Defense Artillery. Contributions had mounted to \$173,000 in professional services and materials while cash donations had reached \$62,000 at the beginning of October. We need an influx of major contributions to meet our goal of breaking ground for the new museum in less than two years and will continue to rely on the contributions of ADA units and association members to provide the operational and support funds necessary to sustain the ADA museum into the future.

Our newly appointed Naming Opportunities and Recognition Subcommittee has prepared a plan that outlines how major and minor individual donors will be recognized for their contributions. All contributors (individuals, units, corporations, grants and foundations) will be recognized and permanently memorialized. Major rooms, exhibit halls and other areas of the new facility will be named for donors in the million- and multi-thousand dollar categories. Other contributors will find their names permanently inscribed on a memorial "namesake wall" or on "donation bricks" set into the

building's structure. We will present more details about the recognition plan in future issues.

It is vitally important that ADA unit commanders and individual soldiers honor the commitment that the chief of Air Defense Artillery has made to the ADA Museum Capital Campaign and to the overall enhancement of the ADA Association. Our expectation is that all ADA units and association chapters will establish and aggressively promote annual fund-raising events. Most units should be able to schedule one fund-raising event each quarter. Most units are already sponsoring car washes, bake sales and raffles. During the Force XXI Protection Symposium in June, we received the first \$100 installment of a \$500 unit commitment from Lt. Col. David Casmus, commander of the 2nd Battalion, 44th Air Defense Artillery. We also received \$383, the proceeds of a Saint Barbara's Day fundraiser, from the Fort Hood ADA Association. Since June, we have received contributions of \$300 from 2nd Platoon, ADA Officer Basic Course (OBC) Class 3-95; \$250 from 5th Platoon, ADA OBC Class 3-95; and \$304 from 1st Platoon, ADA OBC Class 3-95.

Individual soldier and unit contributions are vital because they finance fund-raising initiatives targeted at major contributors.

As reported to you in the 1995 ADA Yearbook, the Sun Country Combined Federal Campaign (CFC) now lists the ADA Association in its catalog under the numerical designation of 3424. El Paso area contributors can earmark their tax-deductible CFC contributions for the association by designating 3424 on their payroll deduction form.

It's only natural that ADA soldiers stationed far away from Fort Bliss ask why they should contribute. The answer is that the new ADA Museum will serve as a "shrine" for all ADA soldiers past, present and future. It will serve as a source of inspiration for ADA soldiers who pass through initial entry and advanced training at Fort Bliss and the U.S. Army Air Defense Artillery School on their way to ADA units around the world. The ADA Association and the ADA Museum build professionalism, branch pride and esprit, the ingredients that sustain ADA soldiers in peacetime and on the battlefield.

The Air Defense Artillery Museum Gift Shop Volunteers contribute their time and talents to support the ADA Association's efforts in meeting the branch's goals. The following persons staff the Gift Shop.

June Johnston
Volunteer Coordinator
Reta McDavid
Evelyn Matiply
Stacy Lambert
John Rushing
Dixie Oxley
Kathy Walthes
Candy Clifford
Alina Hurd
Teresa Daniels
Laurel Morrow
Deborah Wasson



Rusty Frazier, gift shop manager, and Col. (Ret.) John S. Rushing, volunteer, provide visitors to the ADA Museum an opportunity to take home a memento of their visit while helping the ADA Association support the building fund.

