ADA

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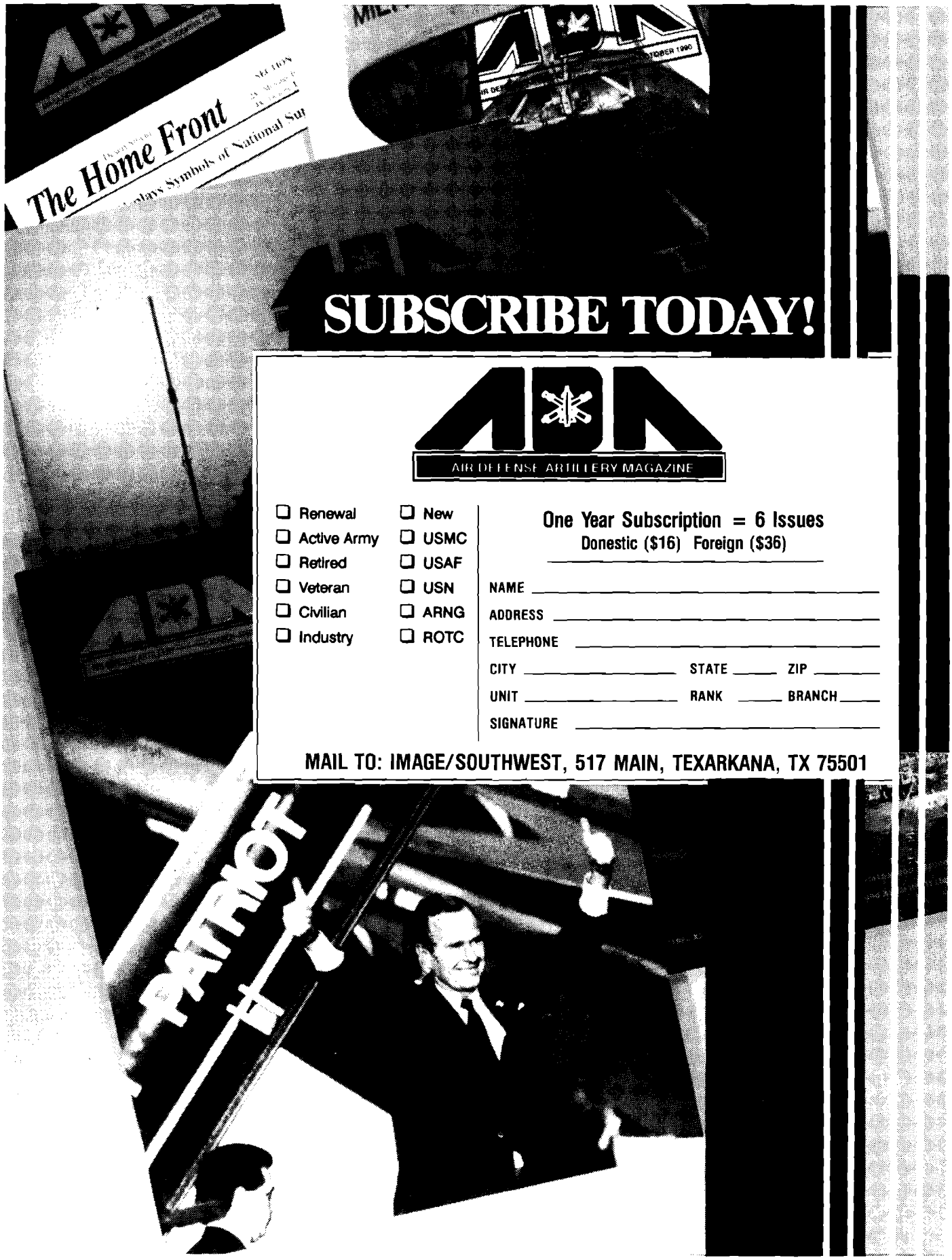
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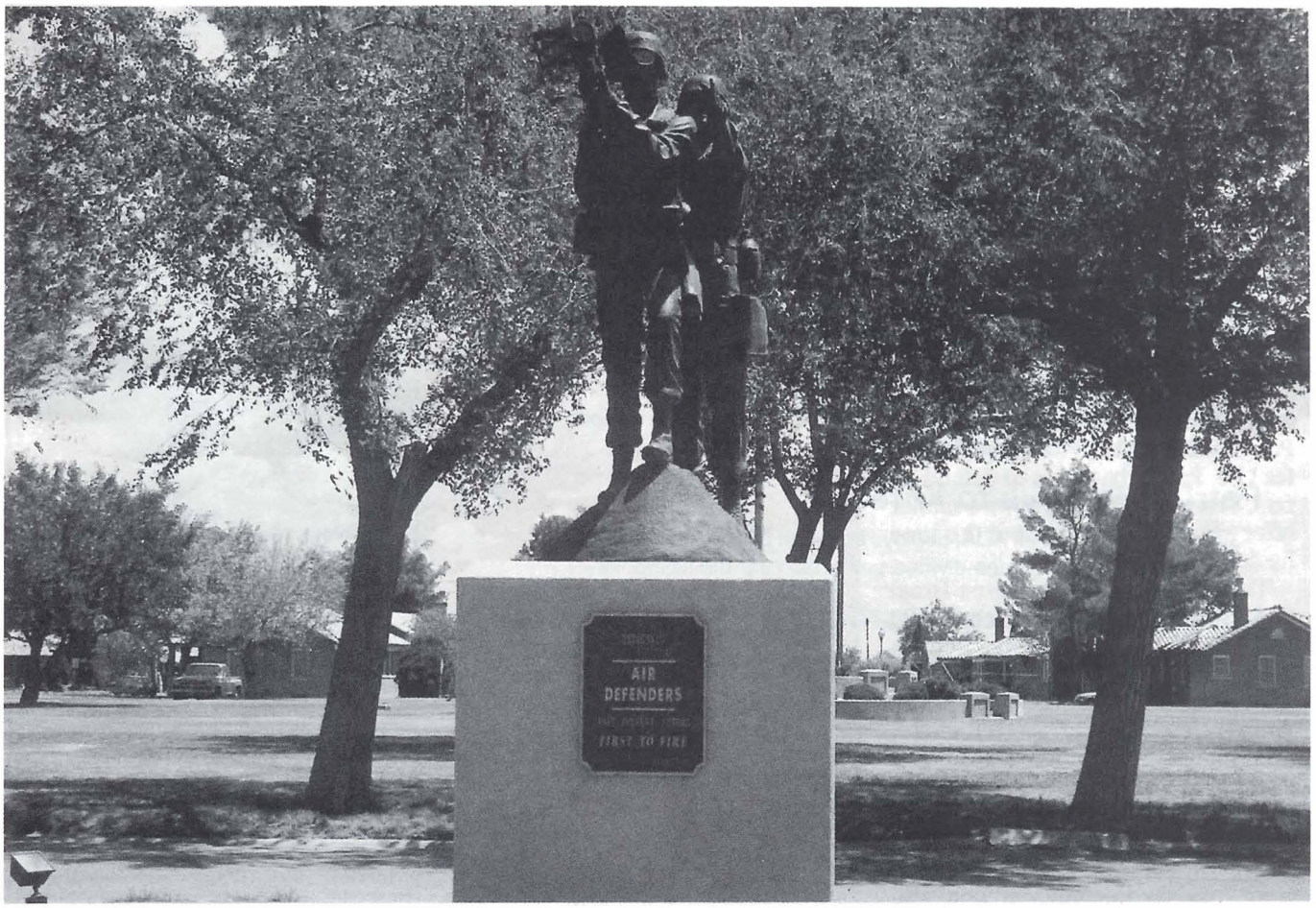

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AIR DEFENSE ARTILLERY JULY-AUGUST 1994

FEATURES

ADA DIGEST

ON THE COVER

Ready for Action! A 2-7 ADA Patriot fire unit recently deployed to South Korea appears courtesy of Combat Camera.

ADA is a professional journal devoted to the advancement of the art and science of air defense artillery in the U.S. Army and is published by Image Southwest of Texarkana, Texas. Articles appearing in *ADA* do not necessarily reflect the opinion of the officers or members of the U.S. Army Air Defense Artillery School, the Department of the Army, or Image Southwest. Except for advertising, this version of *ADA* contains the same editorial information published in PB-44, the official professional development bulletin compiled by the U.S. Army Air Defense Artillery School.

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Terry J. Lewis
Publisher

John M. Case
Production Manager

Mellie Harding
Graphics Design

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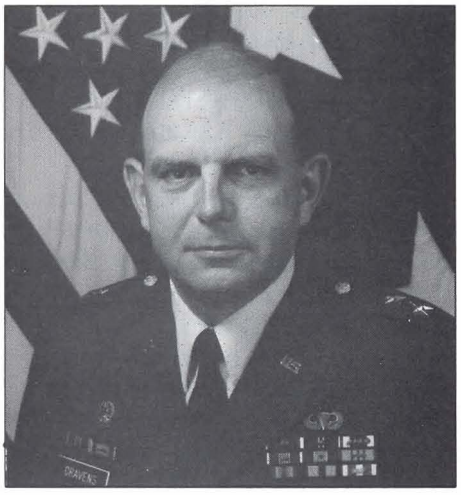
Glynn Leach
Advertising Representative

Intercept Point



Patriot — weapon of war, instrument of diplomacy. During the past three years, we have seen it used in both roles. Its utility was demonstrated in Desert Storm . . . the only missile system in history to kill a tactical ballistic missile (TBM) in conflict. Since Desert Storm, it has had a continuous presence in Southwest Asia (SWA) to deter aggression by Saddam Hussein, and in April of this year was deployed to Korea to demonstrate American resolve in ongoing political discussions with North Korea. These are examples of what is surely to be a continued use of Patriot in war and peace, to protect U.S. and allied forces against a rapidly growing TBM threat.

Patriot's expanding global responsibilities are taxing the capabilities of the relatively small number of active duty batteries. Half of the batteries are deployed in Korea, Southwest Asia and Germany. The remaining are stateside. A long-term commitment in these regions may have potential implications on readiness and morale. We are in the process of assessing the likely impacts. The analysis will highlight potential problems and offer recommendations for resolution.

There is a given set of truths today. They are: worldwide the Patriot force is trained and ready, Patriot soldiers are competent and confident, and if called upon to protect the force, Patriot units will do so. That's a credit to our leaders, our soldiers and our superior technology.

My assertion is substantiated by my recent visits to 2-7 ADA in Korea and 3-43 ADA in SWA. Both battalions were given short notices to deploy almost simultaneously from Fort Bliss to widely separated regions in the world.

2-7 ADA had just returned from a SWA rotation in August 1993. With less than seven months back with families and friends, they were notified that they would deploy to Korea. They could have dwelt on the negative; instead, they did what America's Army does best — they focused on preparing themselves and their equipment for deployment and on ensuring family support programs were in place and functional. The battalion prepared and moved in record time without incident. Upon arrival in Korea, they became operational quickly, settled into less than desirable temporary living accommodations, focused on the positive, and kept their heads high despite adversities. All this was done without fanfare. When I saw them I was impressed with their morale, "can-do" attitude and combat readiness.

The story of 3-43 ADA is similar. They anticipated a rotation to SWA in October 1994 versus April 1994. When given short notice, they too focused on getting prepared to deploy, ensured that family support plans were in effect, and remained positive. When I visited them in Saudi, I saw high morale, exceptional standards and disciplined soldiers. They were all proud and confident. Saddam would be foolish to challenge them.

These short descriptions of 2-7 ADA and 3-43 ADA are indicative of our entire Patriot force as well as ADA units worldwide. Change the ADA unit designation, challenge it with seemingly insurmountable conditions, and the results will be the same.

Hats off to our Patriot soldiers. They, along with our great soldiers throughout ADA, ensure that our branch will be —

First to Fire!

Maj. Gen. James J. Cravens Jr.
Chief, Air Defense Artillery

Seoul is not very far from here. Seoul will turn into a sea of fire.
— Park Young Su,
North Korean delegate,
Panmunjom, March 1994

Here at Osan, soldiers are setting up batteries of Patriot missiles to help keep this crucial airfield operating if the worst comes to pass. The Patriots' arrival was taken as a bad sign by some family members of military personnel here. Some returned to the USA.
— Steve Komarow,
USA Today, April 22, 1994

"If we thought war was imminent, those Patriots would have been loaded onto C-5As in a day."
— U.S. Diplomat

There are 36,000 American combat troops in South Korea, most of them stationed near the border where they would come under fire in the first minutes of any renewed conflict.
— *Los Angeles Times,*
March 20, 1994

North Korea is the strongest conventional military threat that we face anywhere in the world.
— Rep. Gary L. Ackerman
(D-N.Y.)

The biggest challenge when they're gone is trying to be two parents, trying to be stronger for the children and not letting my emotions show as much.
— Victoria Holloway,
wife of 2-7 ADA soldier

PATRIOT DEPLOYS TO KOREA

by Spec. Jeff Adams

A North Korean diplomat warned that the arrival of the 2nd Battalion, 7th Air Defense Artillery, 11th ADA Brigade, in South Korea would "lead inevitably to war." In other respects, soldiers of the Fort Bliss, Texas, Patriot battalion found their orders to deploy a matter of routine.

When one considers that there are only nine active duty Patriot battalions in the U.S. Army and that only Patriot can counter the growing tactical ballistic missile threat, the chances are extremely strong that at one time or another deployment to some hot spot on the globe is imminent.

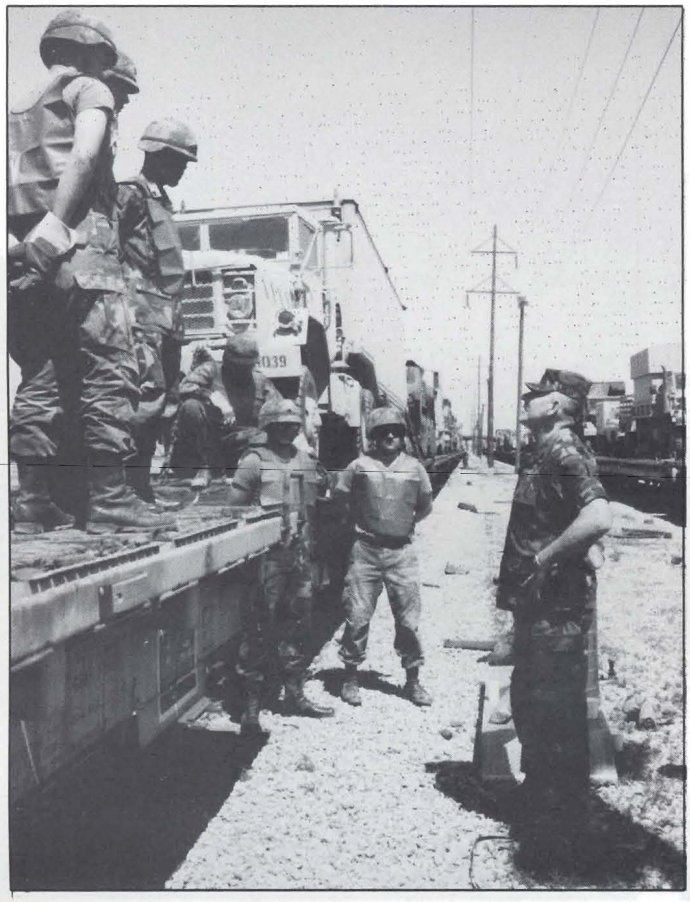
Such was the case for the soldiers of 2-7 ADA.

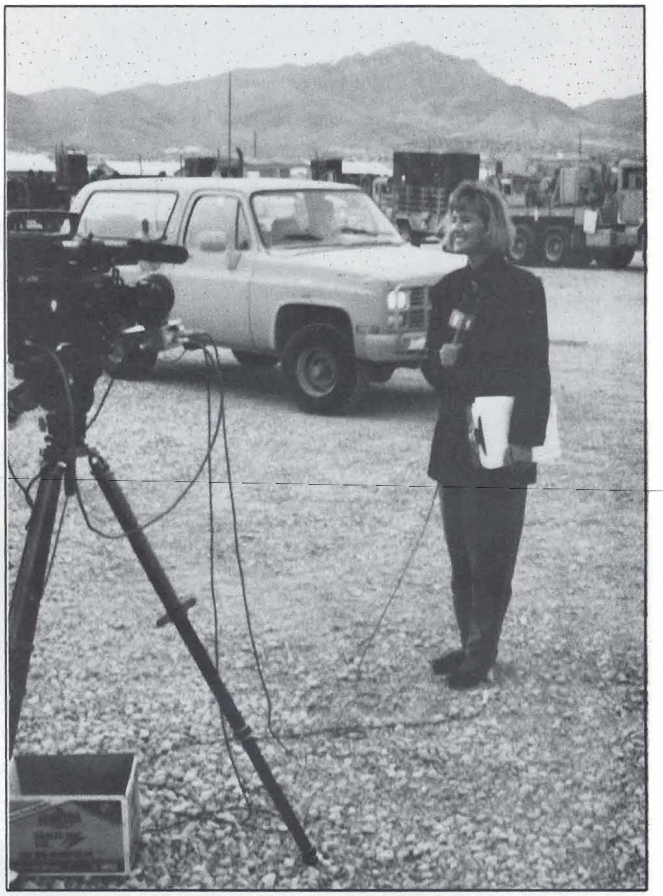
In a statement issued by the Department of Defense on March 21, President Bill Clinton approved the deployment of a battalion of Patriot surface-to-air missile systems to the Republic of Korea (ROK) to defend South Korea and U.S. forces stationed there. The decision to deploy Patriot came in response to a request from Combined Forces Commander Gen. Gary Luck, the U.S. field commander charged with coordinating the combined ROK-U.S. defense of South Korea. Luck asked for Patriot to counter the threat of North Korea's offensive weapons systems after reviewing North Korea's theater ballistic missile capability (the Scud missile).

"The Patriot missiles and associated support equipment are a purely defensive weapon system," the Pentagon said in announcing that 2-7 ADA soldiers — the "Original Scudbusters" of Operation Desert Storm — would join approximately 37,000 U.S. soldiers already stationed in South Korea. "Operation Panther Shield," as the battalion called the mission, was underway.

"Upon receiving the deployment orders, there was a predictable amount of apprehension and anxiety among the soldiers," said 1st Sgt. Charles P. Wolbers, the first sergeant of Provisional

While the diplomats negotiated, 2-7 ADA deployed. The Patriot equipment went by rail and then by sea while the soldiers trailed by airlift. Below and right, the 70th Ordnance Battalion, 11th Air Defense Artillery Brigade, supplies the muscle and sweat as Sergeant Major of the Army Richard A. Kidd and a television news crew look on. (Photos by Spec. Jeff Adams)





Battery, 2-7 ADA, 11th ADA Brigade. "Days after the initial order, the general mood throughout the battalion could best be described as upbeat. This was no drill. This was the type of situation the soldiers had trained for. The soldiers completely understood the importance of the mission at hand, and they were also extremely proud of the role they were going to play. They knew this deployment had gained the attention of the entire global community."

This point was made evident by the enormous media turnout at Fort Bliss during the deploy-

ment operations. Despite the circus-like atmosphere created by the media, the soldiers went about their business, systematically preparing for the upcoming deployment.

Predeployment

First, the soldiers had to prepare their equipment for the deployment. Trucks, communications vans, guided missile transporters and other items of equipment were thoroughly inspected and put on line in 2-7 ADA's motor pools. Deployment planners decided to transport the battalion's fire units and equipment by rail from Fort Bliss to an Oakland, Calif., seaport, and then ship them to their final destination in South Korea. The method of deployment put the likelihood of war in perspective. "If we thought war was imminent, those Patriots would have been loaded onto C-5As in a day," a Pentagon official told *Newsweek*. "No one wants to precipitate a military response. We want to give the North Koreans a little time to think about the consequences of not cooperating with the IAEA [International Atomic Energy Agency]. There's still a chance they will come to their senses."

Soldiers from the 70th Ordnance Battalion, 11th ADA Brigade, and other support units toiled through El Paso's mild spring days, meticulously chaining each piece of equipment down on long strings of rail cars. During the rail-load operation, which lasted three grueling days, their spirits were lifted by a visit from Sergeant Major of the Army Richard A. Kidd.

After the rail-load phase was completed, the equipment rolled to Oakland, where it was emplaced on several ships for the voyage to South Korea. Several soldiers from 2-7 ADA accompanied the equipment for the approximate 40-day journey overseas.

While their equipment was en route to South Korea, the Patriot soldiers made final, personal deployment preparations. This included attending a series of family support group meetings, which 2-7 ADA leaders consider a vital part of any deployment. These meetings gave the soldiers and their spouses a chance to update all of their personal and legal papers, and also addressed family support issues that might arise while the soldiers were deployed.

"Communication is the key for any family support group," said Debbie Christian, 2-7 ADA family support group coordinator. "We are here for the families to reach out to if any problems arise during the deployment. This group is really an extended family for the battalion."

Along with family support meetings, all of the soldiers in the battalion participated in a Prepare for Overseas Movement (POM) board.

The Patriot missile system launcher generator "cranks up" during the simulated "Scud Alert" at Osan Air Base, Korea (top left). At far left, Sgt. Salina T. Harris updates the engagement control station on the progress of the Patriot missile system start-up. Left, Patriot missile launchers of C Battery, 2-7 ADA, stand silent and ready in defense of the skies of the Korean peninsula. (Photos by TSgt. Pete Bradshaw, Combat Camera)

PFC Rick Garza performs the initial power up tests on the Patriot launcher system. (Photo by TSgt. Pete Bradshaw, Combat Camera)

"At this board, the soldiers updated paperwork on their wills, power of attorney statements for their spouses and SGLI [Soldiers Group Life Insurance] benefits," said Wolbers. "The soldiers also updated all of their medical and dental records, received a complete series of immunization shots and participated in a new DNA identification program."

After this, the soldiers still had a while to wait before boarding aircraft that would take them to their ultimate destination.

Waiting It Out

With all of its equipment gone, the battalion continued to conduct training for its soldiers other than the usual garrison training activities.

"The battalion now focused on ground defensive training tactics," said Wolbers. "Even though the soldiers work with air defense weapons systems, it is vital that they work on basic perimeter defensive tactics."

As the days passed, the soldiers requalified on the M-16 rifle range, attended hand-to-hand combat classes, practiced common task training skills and drilled continuously with their nuclear, biological and chemical gear.

During the training interval, senior Army leaders, including the commander of the U.S. Army Training and Doctrine Command, Gen. Frederick M. Franks, and the commander of the U.S. Army Forces Command, Gen. Dennis J. Reimer, underscored the importance attached to 2-7 ADA's deployment by visiting the battalion.

On April 6th, 10 days before the deployment, 2-7 ADA soldiers received a hero's send-off as a large crowd from Fort Bliss and the surrounding El Paso community gathered at Fort Bliss' Noel Parade Field to honor the deploying battalion.

As the soldiers stood at attention, Col. Barry E. Cardwell, 11th ADA Brigade commander, addressed them and those gathered at the ceremony.

"Your deployment is a demonstration of the United States' commitment to the defense of the Republic of South Korea," said Cardwell. "Freedom has called on us once again."

With those words, tears welled up in many of the onlookers' eyes.

Now it was just a matter of days before the soldiers would leave.

Deployment

On April 16, Biggs Army Air Field was abuzz with activity. Hundreds of 2-7 ADA soldiers, with their bags packed and families in tow, arrived at the airfield. A final departure ceremony took place before they boarded the planes that were to take them to South Korea. With precious minutes ticking away, loved ones said their final goodbyes and listened to the 62nd Army Band's music echo throughout the enormous hanger.

After Lt. Col. Mike Christian, 2-7 ADA commander, had cased the battalion colors, the soldiers were called off one by one to board three awaiting planes. In one night, a whole battalion of soldiers was off to Korea.

Hitting the Ground

The soldiers arrived in Korea approximately three days before their equipment. According to Maj. John P. Kashishian, 2-7 ADA battalion executive officer, "As soon as the equipment arrived at the seaport in Korea, it was rolled off the ship and on to awaiting rail cars. From there, the equipment was delivered to three separate areas of operation."

The Republic of South Korean rolled out the red carpet. Alerted by the wail of sirens, South Korean civilians flocked to witness the arrival of 2-7 ADA. A military escort spearheaded by tough ROK soldiers mounted on motorcycles led a procession of buses filled with 2-7 ADA soldiers along avenues and highways lined with spectators. 11th ADA Brigade communications officer Maj. Juan B. Soto, who had deployed with 2-7 ADA to establish an innovative communications network (see "Long Haul Communications Support the Patriot Deployment to Korea, page 9), estimated that 2-7 ADA soldiers reached their destinations in half the time that would have been required for a normal convoy operation.

Some took 2-7 ADA's arrival as an ominous sign. In March, North Korean delegate Park Young Su had warned, "Seoul will turn into a sea of fire." The rising tensions initiated a small exodus of foreign nationals and their dependents from the peninsula. While both sides at the Pamnujom negotiating table continued to talk tough, U.S. military spokesmen downplayed talk about the likelihood of renewed hostilities, pointing out that the situation along the 38th Parallel had been tense for decades. "The peninsula is a powder keg, and loose talk about a sudden U.S. buildup there could just be the lighted match," said a Pentagon official.

The 2-7 ADA soldiers, accustomed since Desert Storm to the media spotlight, spent the three-day interval before the arrival of their equipment adjusting to their new surroundings, fending off reporters and politely but firmly turning away South Korean dignitaries who had a habit of turning up unannounced at the battalion's operation sites. More welcome visitors included Secretary of Defense William Perry, General Luck, and Maj. Gen. James J. Cravens, Chief of Air Defense Artillery,

The soldiers worked at a feverish pace to emplace the weapons systems as they arrived. "There were really no problems with emplacing the systems," said Kashishian. "Our advance party did a terrific job at checking out our sites before we arrived. There were no surprises. This battalion was fully operational within a week.

"We have received tremendous support from the Eighth Army and the 19th TAACOM units. They have provided us with everything that we need and I can't say enough about their great support."

Kashishian says that the soldiers are now performing maintenance checks and making improvements on the sites. "The battalion is not set in its daily routines yet," said Kashishian. "We are fine-tuning our communications and tying down all of the loose ends at this point. We haven't gotten into garrison operations yet."

Even with all of the activity going on around the sites, the soldiers have had some time to explore their new surroundings. "Most of the soldiers are

(Photo by TSgt. Pete Bradshaw, Combat Camera)

very interested in getting out and seeing the country," said Kashishian. "This mission is totally different from our missions in Southwest Asia, and this is a great opportunity for them."

Capt. Maureen Frickanisce, A Battery, 2-7 ADA, executive officer, said, "The South Koreans have welcomed us here. They understand that we are here to help them."

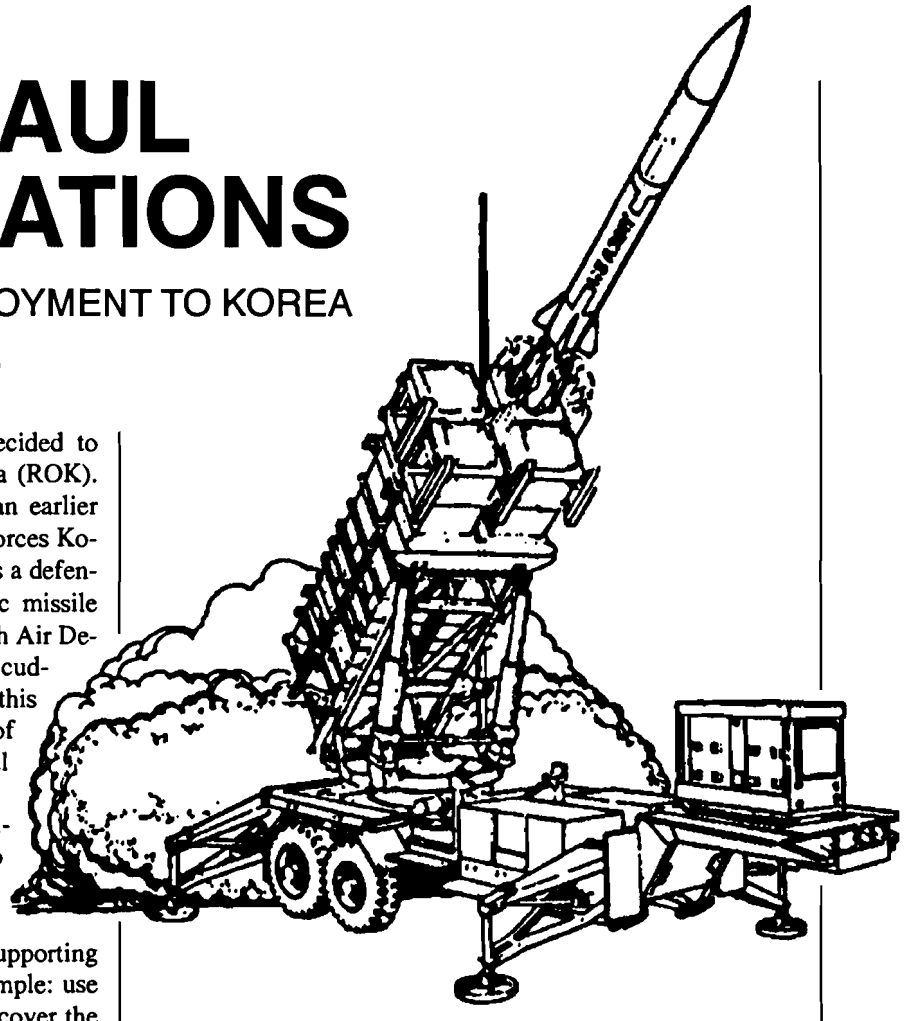
Cardwell summed the mission up by saying, "The soldiers of 2-7 Air Defense Artillery have responded as I would have expected them to respond. They uploaded their equipment and deployed in a totally professional manner. They assumed the mission earlier than anyone expected. They are now defending the assets that they were asked to defend. Seeing this operation take place truly makes it a great day to be a soldier."

Spec. Jeff Adams is the Public Affairs Officer for 11th Air Defense Artillery Brigade, Fort Bliss, Texas. Adams holds a BA in Public Relations from Auburn University, Auburn, Alabama. Adams is currently working on his Master's at Webster University.

LONG-HAUL COMMUNICATIONS

SUPPORT THE PATRIOT DEPLOYMENT TO KOREA

by Maj. Juan B. Soto



On March 21, 1994, President Bill Clinton decided to deploy a Patriot battalion to the Republic of Korea (ROK). This unprecedented decision was in response to an earlier request from Gen. Gary Luck, Commander, U.S. Forces Korea, to permanently deploy Patriot assets to ROK as a defensive measure against the growing tactical ballistic missile threat posed by North Korea. The 2nd Battalion, 7th Air Defense Artillery, 11th ADA Brigade (the "Original Scud-busters" of the Gulf War), was selected to execute this important mission. 2-7 ADA holds the distinction of being the first ADA unit to engage a hostile tactical ballistic missile in flight (Jan. 17, 1991).

The mission required the unit to cover three critical assets spread over a large geographical area. To air defense communicators the challenge was even greater: extend Patriot's network beyond its organic line-of-sight radio range. To communicators supporting other branches or elements, the solution seems simple: use existing satellite and troposcatter radio systems to cover the longer distances. But ADA communicators know better. They know that the time delays induced by satellite communications adversely affect Patriot's multirouting software. They also know that the asynchronous Patriot Digital Link (PADIL) is simply not compatible with the synchronous transmission technique used by the TRC-170 Troposcatter Radio System. To complicate matters a bit more, both the brigade and battalion commander expressed a common interest as a result of security concerns: link all battalion elements without tactically employing any relays or Patriot shelters outside the boundaries of the three critical assets.

2-7 ADA's successful deployment not only marks the first operational stationing of Patriot assets in Korea, it also marks the first time a single information coordination central (ICC) has controlled six engagement control stations (ECSs) positioned well beyond its organic line-of-sight radio range in an operational setting. What follows is an account of how 2-7 ADA successfully met these requirements.

Background

Before covering the non-standard communications network the unit employed, it is important to review the standard communications doctrine used by the Patriot system as well as previous research conducted to extend its range.

Patriot Communications. Patriot communications depend primarily on the installation of four fire control circuits, a communications engineering and troubleshooting circuit, and common user switching trunks (or phones) off an automatic switchboard. Following is a brief description of each circuit.

The PADIL is the highest priority circuit installed within the Patriot system. PADIL is a secure point-to-point asynchronous 32 kilobits-per-second (kb/s) data circuit used to exchange information between the Patriot battalion and its batteries. This circuit terminates in the routing logic/radio interface unit (RLRIU), which in turn hands off PADIL messages to the weapons control computer (WCC) for display on the ICC and ECS scopes. The RLRIU in each Patriot shelter receives, processes and transmits (multiroutes) PADIL messages throughout the network.

Party Line #1 (PL-1) is a secure conferenced analog voice net that allows battalion tactical directors (TDs) to speak to a higher control element and to TDs from other Patriot battalions. The circuit terminates in the headset of the TDs and remains continuously open.

Party Line #2 (PL-2), also a secure conferenced analog voice net, allows the battalion TDs to speak to the tactical control officers (TCOs) of each firing battery. The circuit

terminates in the headset of TDs and TCOs and remains continuously open. A communications panel allows TDs to selectively connect their headset to the desired party line.

Party Line #3 (PL-3) is a secure conferenced analog voice net that allows Patriot communicators (MOS 31M) to monitor and troubleshoot the communications circuits. The circuit terminates in the headset of the Patriot communicator and remains continuously open.

The message pass line (MPL) is a secure conferenced voice circuit used to send airspace and weapons control orders. The MPL can be a dial-up circuit with conferencing capability using tactical phones or a hot loop of analog phones. These phones are normally located at the battalion tactical operations center (BTOC) and at each battery command post (CP).

Common user circuits are tactical voice circuits (phones/fax) that allow subscribers (command and staff) to access the tactical switched network. These tactical phones are located at the BTOC and battery CPs.

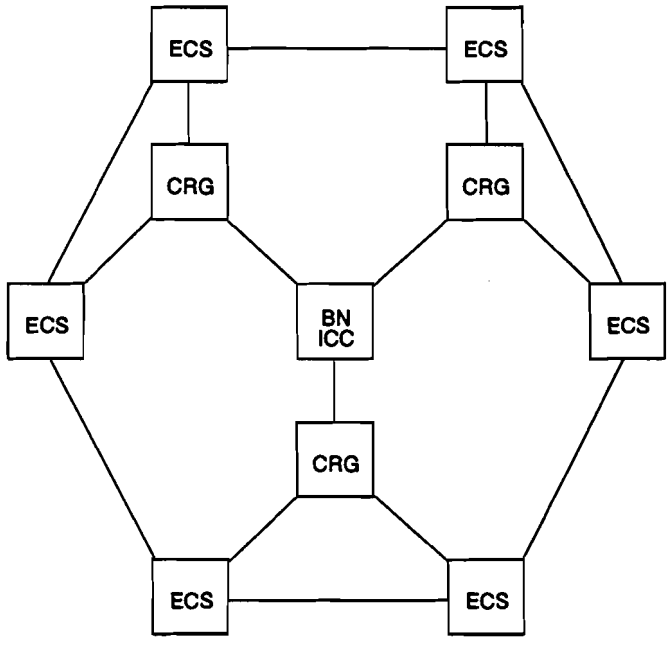
Connectivity within Patriot is established through line-of-sight UHF radio systems. Patriot fire control shelters have three organic multichannel stacks using Band III GRC-103 radios, TD-660 multiplexers, TD-1065 digital data buffers and KG-94/194 trunk encryption devices. A single CV-1548 telephone signal converter allows the shelter to terminate 12 circuits locally. An internal patch panel allows Patriot communicators in each shelter to route all circuits to the various interface devices (RLRIU, wire lines, party lines, etc.). Additionally, the Patriot battalion is complemented with communications relay groups (CRGs), each containing four multichannel stacks similar to those in the ICC and ECS. The CRG allows range extension and multiple links for network robustness. It is important to acknowledge that these assemblages are an integral part of the Patriot weapon system and thus are not included in Training Circular 24-24, *Signal Data References: Communications-Electronics Equipment.*

By having multiple links between shelters (see the typical configuration of a deployed battalion shown at right), PADIL messages are multirouted using flood search techniques. The RLRIU transmits and receives all PADIL messages within each ICC, ECS and CRG and acts as a repeater for PADIL messages addressed to other shelters. The RLRIU validates each message received and determines if the message is a first good message or a duplicate from a previous transmission. The RLRIU processes all first good messages and discards the duplicates. Discarding the duplicates prevents them from being multirouted indefinitely throughout the network. Each RLRIU is capable of handling four data circuits with other Patriot shelters and with a higher control element.

Now that we have reviewed the standard Patriot communications doctrine, let us discuss the previous efforts and up-to-date research to extend Patriot communications beyond its line-of-sight UHF range.

Extending the Range of Patriot. As mentioned earlier, extending Patriot's range through external long-haul transmis-

DEPLOYED PATRIOT BATTALION TYPICAL CONFIGURATION



sion assets has proven to be a difficult challenge. The time delays induced by satellite communications affects the RLRIU's ability to distinguish between a new good message and a duplicate. This causes the RLRIU to process all PADIL messages transmitted over satellite as new messages, thus causing the computer's memory to overload (previous tests conducted in Southwest Asia and at Fort Bliss proved the overload problem). On the other hand, the asynchronous transmission technique Patriot uses is not directly compatible with the synchronous transmission format of the TRC-170 Troposcatter radio system.

To remedy the synchronization problem between Patriot and the TRC-170, Raytheon developed a High Speed Data Interface (HSDI) card that allows synchronization between the 32 kb/s PADIL and the TRC-170. The HSDI card is designed as a drop-in replacement for one of the loop modem (LM) or analog applique unit (AAU) cards in the TD-1235 loop group multiplexer (LGM) in the TRC-170. HSDI card installation takes approximately five minutes and requires no special training or tools. The 11th ADA Brigade successfully field tested the HSDI card during Exercise Roving Sands in May 1993 by passing PADIL between Patriot shelters using three different Tropo links. The Patriot Project Office (PPO) reconfirmed the initial test results during a field test held at Fort Bliss the week prior to 2-7 ADA's deployment.

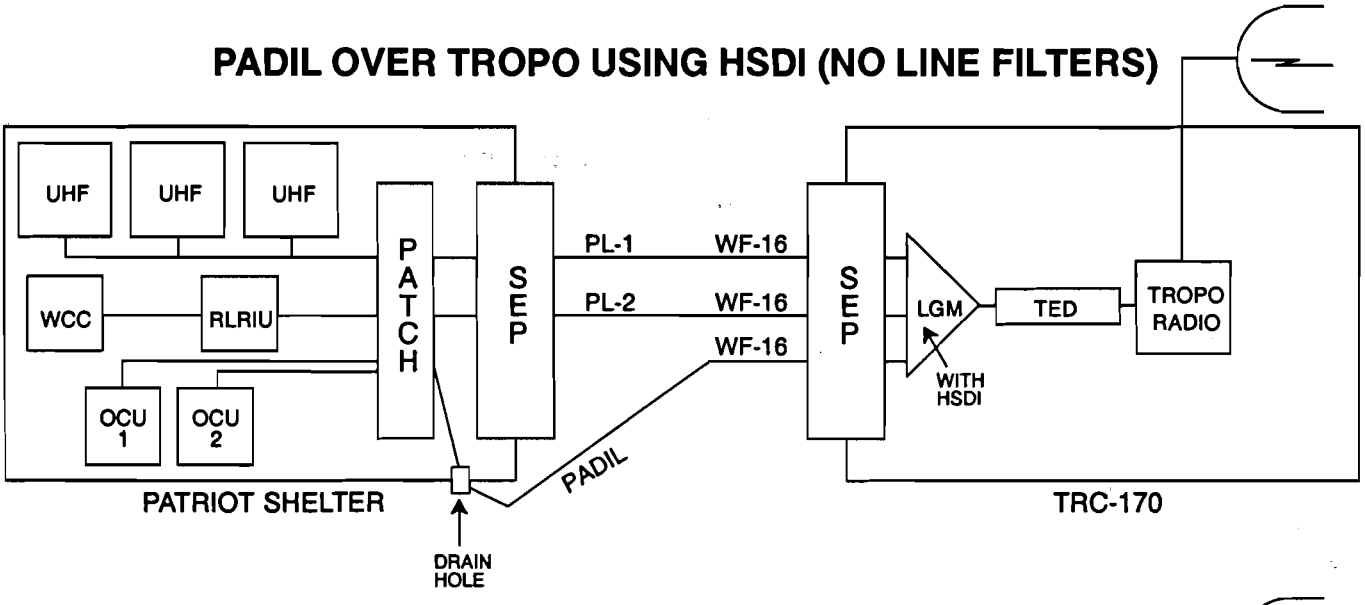
The standard setup during both tests linked the TRC-170 to an ICC or ECS via WF-16 field wire. The evaluators installed three circuits: PADIL, PL-2 and PL-3 with a distant ECS over Tropo. During both tests, the party lines were installed direct-

ly into the signal entry panel (SEP) of the Patriot shelter. The main difference between the two tests concerned the installation of PADIL. During the first test, the PADIL circuit was installed directly into the Patriot shelter's patch panel using a spliced patch cord routed through the shelter's drain hole (see first figure below). The reason for this awkward technique is that the bandwidth of line filters installed in the SEP — analog filters designed more than 20 years ago — is significantly less than the bandwidth required for PADIL. During the second test, Raytheon installed special filter units that allowed the PADIL circuit to be installed directly into the SEP along with the party lines (see second figure below).

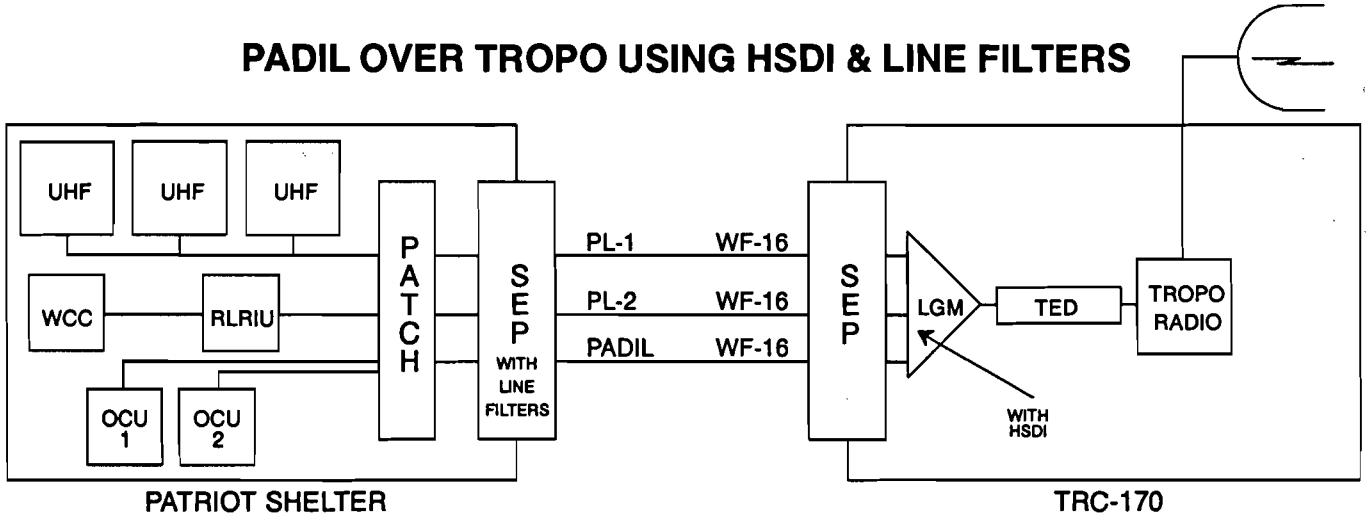
Test results confirmed the reliability of the data passed between the Patriot shelters. The party lines, on the other hand, were initially very noisy. By grounding the TRC-170 and the Patriot shelter to a common ground, we reduced the background noise to a level comparable to normal operations.

During the last two days of the second test, Communications and Electronics Command (CECOM) personnel experimented using a TD-754 cable multiplexer to interface Patriot with the TRC-170. The setup consisted of replacing a GRC-103 radio transmitter in one of the stacks with the TD-754. A special cable allowed the evaluators to extract a multiplexed group out of the Patriot shelter using the antenna connectors under the SEP (see figure at top of next page). The circuits now traveled between vans as part of a multiplexed group over CX11230 cable into a group modem (GM) port in the SEP of the TRC-170 without using the HSDI card. PADIL transmissions over this configuration were reliable and the party lines were very clear. The problem with the TD-754 solution is that it would lose synchronization whenever the Tropo system took propagation hits. This caused the Patriot shelter to lose data until the TD-754 was reset and placed back in system. For this reason, we concluded that the TD-754 solution would be impractical during the conduct of an air battle, although this solution does open the door for use with other group transmission systems like commercial or military terrestrial networks. We were all impressed at the clarity

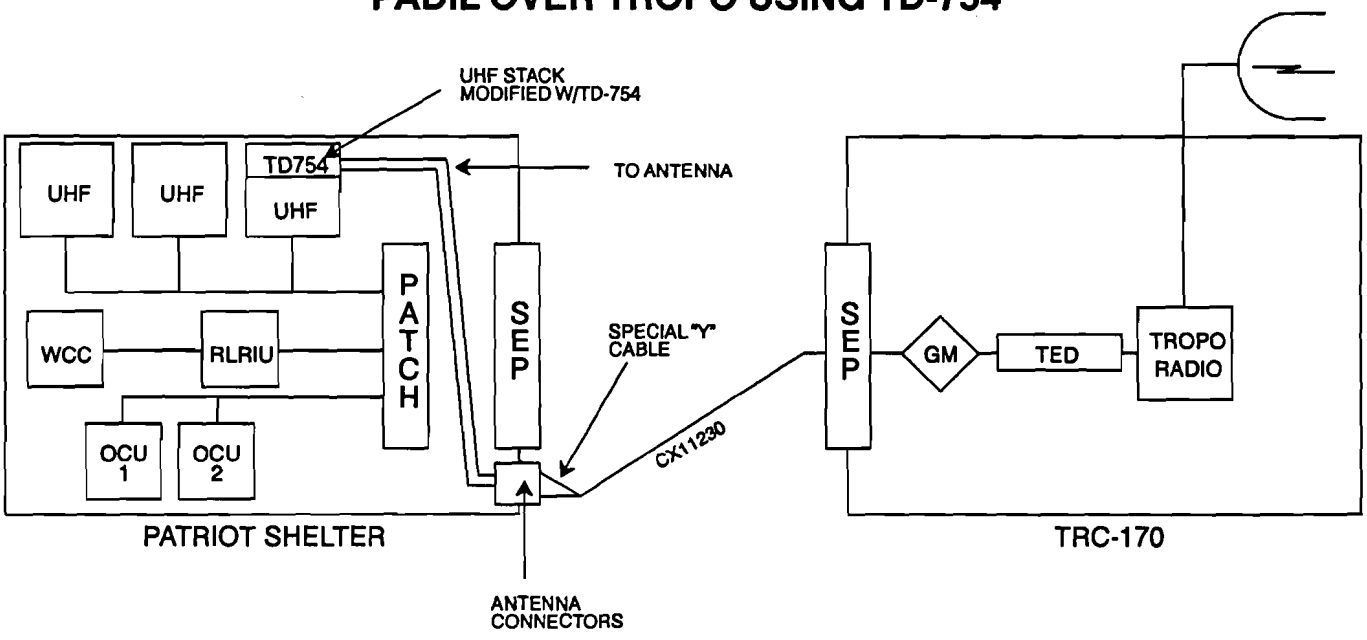
PADIL OVER TROPO USING HSDI (NO LINE FILTERS)



PADIL OVER TROPO USING HSDI & LINE FILTERS



PADIL OVER TROPO USING TD-754



the party lines achieved with the TD-754. The general consensus was that circuits traveled better as a multiplexed group over cable than as individual circuits over field wire. The key task to achieve optimal performance was to use the reliable HSDI card to process PADIL, then multiplex the circuits prior to traveling between shelters.

This brings you up to date with the standard Patriot communications system and with the research conducted prior to 2-7 ADA's deployment to Korea. Now let's move on to the network configuration presently supporting the unit.

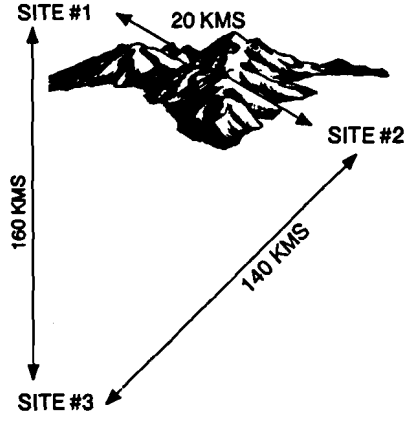
The Plan

Immediately after receiving the order to deploy, the 11th ADA Brigade organized a liaison party to travel to Korea and conduct advanced coordination. We visited each of the sites and researched the existing communications capabilities. The sites formed an elongated triangle with distances ranging from 20 to 160 kilometers between them (see figure at right). We could not connect the sites with standard line-of-sight communications. The distances to Site 3 from each of the other two sites (160 and 140 kilometers) far exceeded the range of the GRC-103 radio, while a mountain range prevented line-of-sight communications between Sites 1 and 2. The Air Force had a fiberoptic cable link between Sites 1 and 2 and an active troposcatter link between Sites 2 and 3. Air Force communications personnel operated a technical control facility in Site 2, which housed a TTC-39 automatic switchboard. From this technical control facility they could provide us with circuit routing and voice switching service. We still needed a link to close the triangle between Sites 1 and 3. In addition to providing redundancy, this link would allow Patriot to multiroute its PADIL messages. The liaison team then requested two TRC-170 teams from Forces Command prior to leaving country. The 11th Signal Brigade provided the additional TRC-170 teams.

The next step was to interface Patriot to the planned network. Shortly after completing the second Tropo-PADIL test, we organized a group of communicators to travel to Korea and assist in the network installation. Upon arrival in country, we linked up with the battalion communicators and with the Air Force tech controller to finalize the communications plan.

Keeping in mind that our goal was to extract a multiplexed group out of the Patriot shelters, we decided to use TD-1234 remote multiplex combiners (RMCs) and TD-1233 remote loop group multiplexers (RLGMs). These boxes are similar in appearance to the air defense interface (ADI) devices used to integrate ADA fire control circuits with mobile subscriber

DISTANCE BETWEEN SITES



equipment (MSE). The RMC combines up to eight 16/32 kb/s circuits into a multiplexed group that travels over CX11230 cable. The RLGM can combine up to four 16/32 kb/s circuits into a multiplexed group (basically half of an RMC).

The plan was to place RMCs or RLGMs at each Patriot shelter, bring the Patriot circuits into it, then send the multiplexed circuits over CX11230 cable directly into a GM port of the TRC-170 (see figure below) or the fiberoptic cable terminal. The RMC/RLGM is similar to the LGM in the TRC-170, thus we could install the HSDI card in the RMC/RLGM and expect the same results we attained in previous tests. Since RMCs and RLGMs are digital pieces of equipment, we could also use them to obtain switched phone service from the TTC-39 switchboard in Site 2 using KY-68 digital secure voice telephones (DSVTs). A base cable system at each site allowed us, in some cases, to bring the DSVTs to the users without using the Patriot communications systems. Whenever the base cable system could not reach out to the subscribers, we sent the phone circuits over the internal UHF systems at each site, using HYP-71 power supplies to power each phone. Battalion connectivity with higher control elements would consist of hard-wiring the ICC with an air force modular control element (MCE) conveniently located within a short distance in the same secure area. The figure on the next page shows the planned network connectivity.

Results

Once the communicators became familiar with the setup and gained knowledge in operating and troubleshooting the new interfaces, the network proved to be very reliable. The end result was reliable PADIL data, clear party lines and secure digital voice switching. Patriot communicators monitored the status of the external transmission systems by looking at the state of the RLRIU ports in the communications link fault data tab displayed on the scopes of the ICC and ECS. We installed the MPLs the same way we did when using MSE, using designated DSVTs in a pre-programmed conference. The network design freed two CRGs that could then be deployed to surveyed backup sites in the event of system outages. The bottom line: the ICC assumed command and control of all six firing batteries two days prior to the commander in chief's deadline.

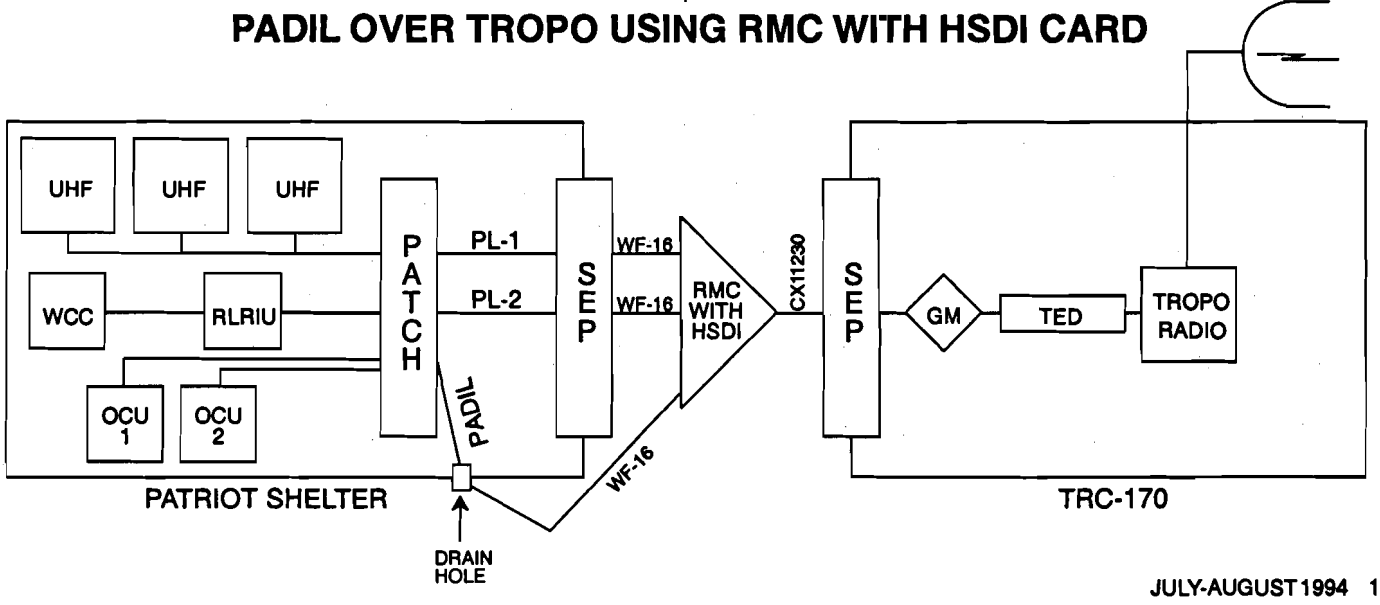
Lessons Learned

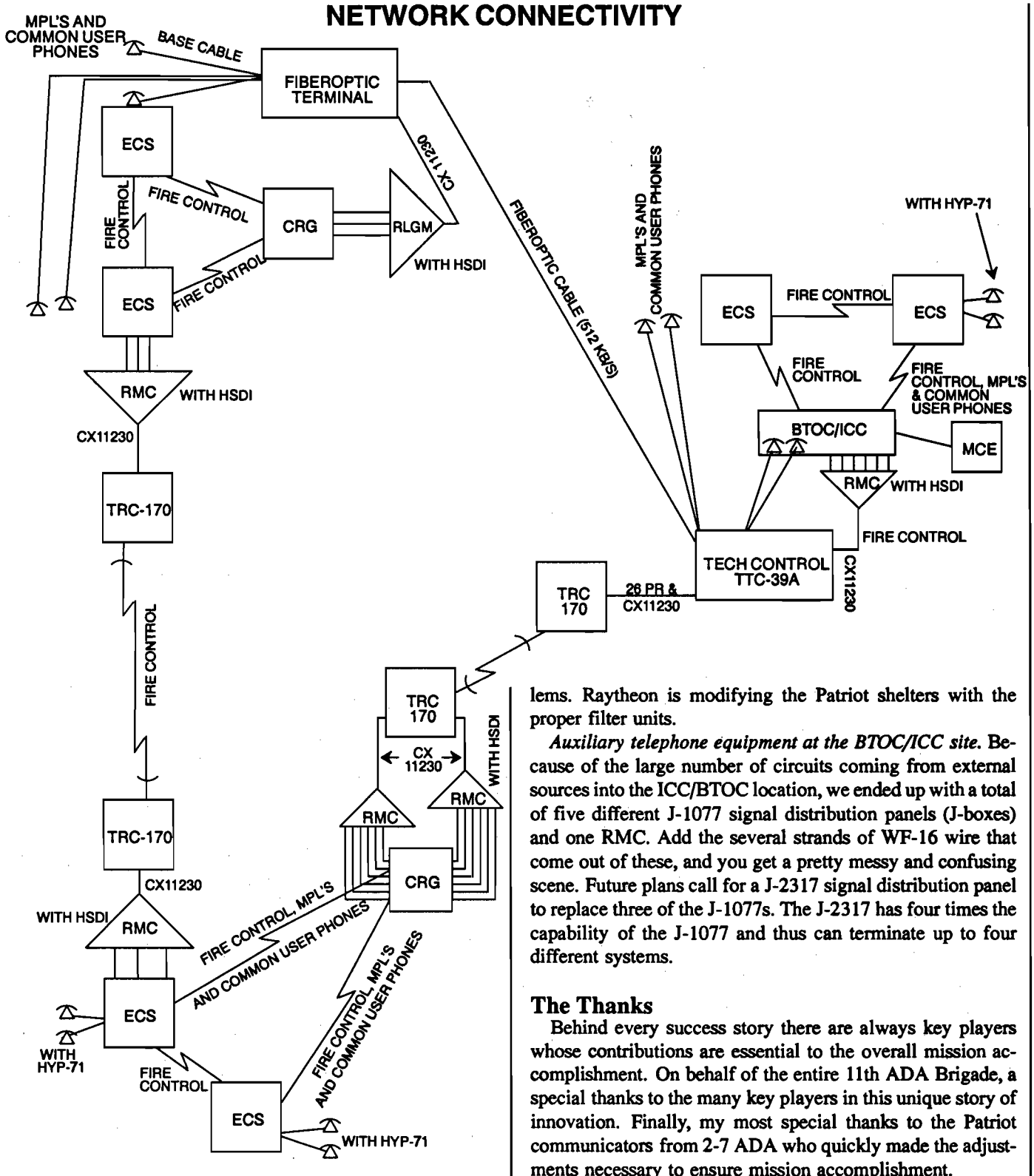
None of the circuits popped in as if by magic. As with any new concept, we suffered many initial growing pains and profited from lessons learned. Here are some of them.

Operation and troubleshooting of the RMC/RLGM. "Appalled" might describe the first reaction of the Patriot communicators when we placed these funny-looking green boxes in their shelters — especially after we made them sign for the very expensive HSDI card! Taking the time to explain to them the overall network and what we were trying to do eliminated some of their initial fears. The fact is that Patriot communicators, unlike TRC-170 operators, do not normally get the chance to interface with joint tactical communication (TRI-TAC) equipment, thus they are unfamiliar with its use and operation. As a result, we initially experienced several outages when the transmission system was operational but nobody was taking responsibility to troubleshoot the RMC/RLGM. Finally we all agreed that the TRC-170 operators (with assistance from the Patriot communicator) would be responsible for connectivity down to the box. As Patriot communicators become more familiar with the RMC/RLGM, there will be less need for the Tropo operators to leave their shelter.

PADIL input into Patriot shelters. PADIL circuits transmitted over Tropo or fiberoptic cable could not be installed directly into the SEP of the Patriot shelters because of the bandwidth limitations covered earlier. To correct this limitation, units need the filters tested during the second PADIL/TRC-170 test. Patriot communicators installed the PADIL

PADIL OVER TROPO USING RMC WITH HSDI CARD





circuit using the spliced patch cord solution used in the first PADIL/TRC-170 test. This solution, although effective, violates shelter integrity and leaves the equipment susceptible to lightning, electromagnetic pulses and grounding fault problems. Raytheon is modifying the Patriot shelters with the proper filter units.

Auxiliary telephone equipment at the BTOC/ICC site. Because of the large number of circuits coming from external sources into the ICC/BTOC location, we ended up with a total of five different J-1077 signal distribution panels (J-boxes) and one RMC. Add the several strands of WF-16 wire that come out of these, and you get a pretty messy and confusing scene. Future plans call for a J-2317 signal distribution panel to replace three of the J-1077s. The J-2317 has four times the capability of the J-1077 and thus can terminate up to four different systems.

The Thanks

Behind every success story there are always key players whose contributions are essential to the overall mission accomplishment. On behalf of the entire 11th ADA Brigade, a special thanks to the many key players in this unique story of innovation. Finally, my most special thanks to the Patriot communicators from 2-7 ADA who quickly made the adjustments necessary to ensure mission accomplishment.

Maj. Juan R. Soto, a Signal officer, has served with the 11th ADA Brigade, Fort Bliss, Texas, for one-and-a-half years.

OLD IRONSIDES & ADA

How the 1st Armored Division integrates this vital BOS

by Maj. Gen. William G. Carter III

The wide range of possible conflicts facing us today requires a versatile force ready to meet diverse challenges. The development of improved weapon systems, innovative technology, well developed doctrine and tactics, and training that integrates the battlefield operating systems (BOSs) as a combined arms team will enable this division to meet the challenge of being prepared any time, anywhere, to fight in a changing world. Although all BOSs are equally important, for *ADA* magazine this month, I want to discuss our divisional air defense battalion as a professional, disciplined and well-trained BOS in the 1st Armored Division. Specifically, the scope of this article will explain several training aspects of how air defense achieves integration within "Old Ironsides."

Total Integration

The 1st Armored Division integrates air defense early in the planning process at all levels of every contingency plan exercise. Close coordination of corps and divisional ADA staffs must occur to permit ADA weapon systems to achieve maximum effectiveness against an enemy air threat. To effectively employ ADA assets, maneuver commanders must understand the enemy air threat to establish specific air defense priorities. This eliminates the tendency to "piecemeal" air defense assets available for a mission.

During the division's recent Battle Command Training Program (BCTP) Warfighter Exercise, the 69th ADA Brigade provided the division outstanding corps ADA support. The brigade staff worked closely with division air defenders to successfully integrate corps and divisional air defense assets, providing protection to maneuver units from the opposing forces air threat. Integration of divisional air defense assets is not enough; we also have to synchronize the entire ADA BOS to support divisional priorities such as protecting the division main effort.

Parallel planning for Warfighter occurred simultaneously with corps, division and battalion ADA planners. A significant effort was made to develop and refine the best possible air defense plan to support my scheme of maneuver. At corps level, the commanders accepted risk. My intent was to have Patriot as far forward as possible, but out of enemy artillery range. Corps ADA assets provided protection to key corps and divisional air defense priorities. At division level, the integration of corps air defense assets allowed our ADA battalion the flexibility to mass and mix divisional ADA weapons systems forward, supporting the division's priorities. The next challenge for the division was to understand and rehearse the plan by maneuver units and BOS elements.

We rehearsed each phase of the plan in detail, allowing the maneuver elements to refine and modify the plan as needed. Including corps ADA planners at all division rehearsals contributed to a total combined ADA BOS effort. The combined ADA effort ensured the air defense plan was integrated to support the division's concept of the operation. The synchronization of the entire ADA BOS into the division plan played an integral role in the success this division had during Warfighter.

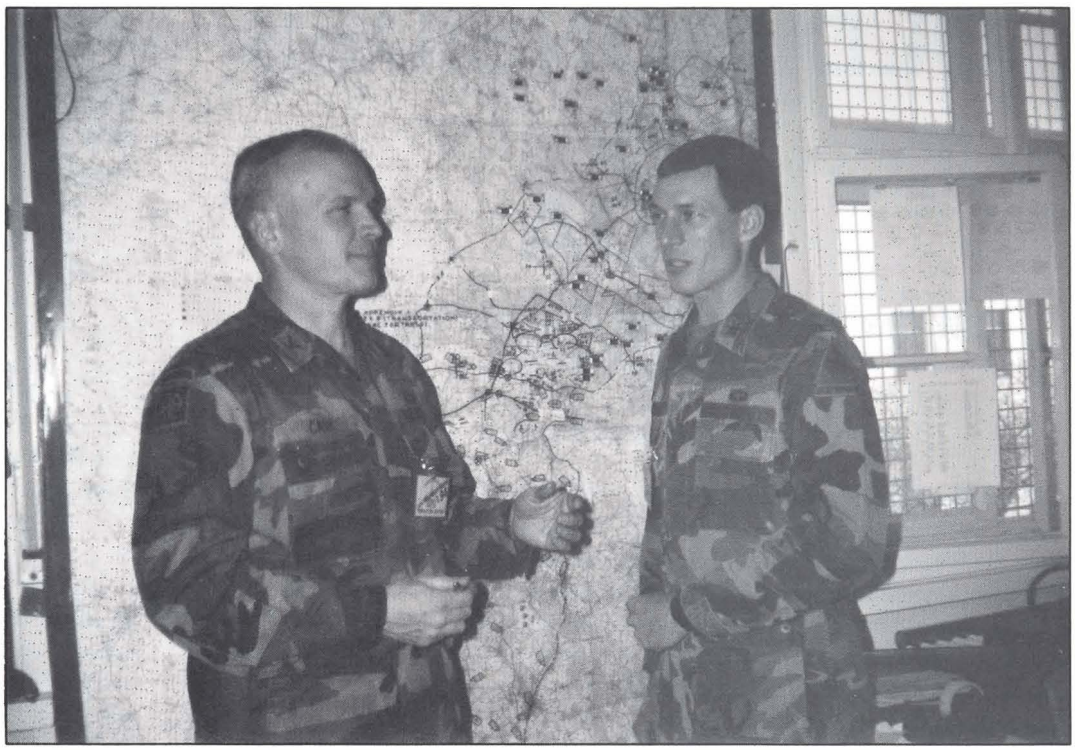
The integration of corps and divisional ADA assets must be carefully planned, rehearsed and synchronized to support the overall concept of operations. Along with this coordinated effort, air defense priorities must be specific and continuously reevaluated and redefined as the division's mission, resources and the focus of enemy air operations shift throughout the battlefield.

The 1st Armored Division was recently critiqued by subject-matter experts from the BCTP, Fort Leavenworth, Kan. Leaders planned and used all BOSs to achieve success as a combined arms team. Therefore, the need to effectively integrate and synchronize all BOSs as combat multipliers is not an option, but a necessity; the effort to integrate the BOS is a critical key in the planning process that we must achieve at all levels to project combat power at the most critical place and time. This will allow our "Iron Soldiers" to win decisively on the next battlefield.

Air Defense Artillery has the responsibility to operate and provide air defense protection in a division area of operation. One of their keys to success is junior air defense leaders being able to operate in a decentralized environment and working closely to support task force and brigade commanders. Thus, the battalion training strategy focuses on the basics. We use FM 25-100, *Training the Force*, and FM 25-101, *Battle Focused Training*, as guidelines, and conduct all training at platoon level, the cornerstone of combat readiness. This concept supports the following objectives:

- Crews that can *shoot* effectively.
- Units that can *maneuver* and *fight*.
- Units that can *sustain* the fight.
- Commanders and staffs that can *employ* these tenets effectively.

To focus on platoon training, the air defense battalion has developed an innovative "platoon certification program" that consists of a qualification phase and a 30-hour external evaluation exercise. During the qualification phase (in garrison) observer-controllers trained by the battalion test soldiers on a combination of maneuver and air defense doctrine, basic soldier skills and battle drills. Once the platoon passes this initial qualification gate, it is ready to focus on collective tasks and to execute an intense 30-hour external evaluation scenario. Platoon external evaluations and lane training are very effective methods to train units on basics, to train junior leaders and to sustain combat readiness.



Integration is more than a concept. C Battery, 5-3 ADA, commander Capt. Todd Puhrmann discusses air defense emplacement with 2nd Brigade Commander Col. Dean Cash during Central Fortress 1993.

Additionally, air defense is a well-recognized BOS in the 1st Armored Division. The division leadership has learned how to effectively integrate air defense as a vital member of the combined arms team. In particular, air defenders have placed emphasis on training brigade and task force commanders in the role of air defense. Air defense plays a significant role at the Combat Maneuver Training Center (CMTC), gunnery exercises and just recently demonstrated how BOS integration contributed significantly to the division's success during Warfighter.

Training Maneuver Commanders

Air defense platoons must be trained to support maneuver units. Equally important, air defense leaders must show maneuver commanders what air defense can bring to the fight. Training programs begin in the Armor and Infantry classrooms, where air defense leaders conduct officer professional development sessions for key leaders of the combined arms team. Again, the focus is on the basics. Division leaders learn doctrinal procedures of how to successfully integrate air defense within the scheme of maneuver. Division leaders train on techniques to maximize air defense capabilities with limited ADA assets. After classroom education, the maneuver commanders only need to be shown the air defense product in action. The next step, ensuring total integration, takes place at the CMTC where soldiers form that special combat relationship, the task force.

Combat Maneuver Training Center

Air defense platoon leaders and battery commanders begin the planning process early and attend the Infantry and Armor task forces' initial planning meetings in garrison. Integration may happen on the battlefield, but must start in garrison if it is to be successful. This "team player" approach in the combined arms team develops credibility early, before the exercise has even begun.

By learning the task force standing operating procedures and getting actively involved in the planning process, a unit earns respect and recognition. With this extra effort, ADA BOS integration becomes more involved in the planning process, and maneuver commanders are more aware of what air defense can contribute to any given mission.

To enhance the CMTC training experience, air defense commanders and primary staff become involved in all training at the CMTC. For example, the battalion commander mentors each platoon leader in the field, closely monitors trends and lessons learned, conducts training assessments and is actively involved in the CMTC after action review process during each rotation. Although the air defense battalion fights as platoons, the CMTC experience is clearly a battalion effort, where

batteries deploy and provide every possible battalion resource to platoons to train effectively and support the maneuver unit with the utmost efficiency. Therefore, one of the most critical learning aspects is the fact that the maneuver commanders observe air defense as a force that comes fit and trained to fight.

Division Early Warning

Division early warning (DEW), another critical and complex task, is also well established in the 1st Armored Division. DEW methodology is doctrinal, using a combination of the Manual Short-Range Air Defense Control System and directed early warning procedures in the division. Simply stated, DEW continues to improve when air defense liaison officers linked directly to Patriot information coordination centrals (ICCs) are fully integrated in corps high- to medium-altitude ADA operations. Additionally, several of the battalion's officers recently completed rotations to Saudi Arabia, where they were trained to provide early warning from airborne warning and control systems (AWACS). They gained a solid knowledge and expertise in early warning and liaison operations from the top down. The battalion's air battle management operations center provides a smooth and rapid communications link to early warning systems down to the maneuver level. The division's ability to successfully orchestrate DEW has been proven in every command post exercise we have conducted. We continue to practice this vital operation, and were the first to successfully employ Patriot in a CMTC scenario that provided effective early warning down to maneuver level. But, once again, the culminating point was the division's success in sending early warning throughout the sector of operations during Warfighter, where commanders at all levels gained trust in, and used, the DEW as a critical source to make tactical decisions.

Gunnery

The division expends considerable effort and resources on battalion-level gunnery training. Gunnery results have also earned ADA the division's respect. The air defense battalion is not satisfied with being just a "slice element," but continues to be a versatile unit that can accomplish many roles. Gunnery is no exception, where 5-3 ADA showed its ability to maneuver and shoot as well as any other member of the combined arms team. For the first time in U.S. Army Europe, 1st Armored Division demonstrated the realistic role of the Bradley Stinger Fighting Vehicle (BSFV). The ADA battalion developed an active Bradley Table XII (see story, page 20) and conducted a live-fire exercise that demonstrated the synergy of firing the TOW, 25mm and the Stinger missile from one BSFV simultaneously while maneuvering in a well-designed course at Putlos, Germany. This dynamic training event boosted the soldiers' morale and, more importantly,

Flames erupt as C Battery, 5-3 ADA, soldiers send a TOW missile downrange.

was a "first-rate" performance that built soldiers' confidence.

Contingency Operations

Old Ironsides has been involved in planning contingency operations in a wide range of theaters. Air defense brings to the fight firepower, flexibility, force protection and its air defense capability. In theaters with minimum or no air capability, the division ADA leadership have proven they can maneuver and employ their Bradleys as an effective fighting force. The Stinger teams provide additional security to combat unexpected enemy aircraft. The Avenger fielding has added a night-capable weapon system to the division's three-dimensional fight. Without negating the primary role of air defense, commanders should not ignore the advantages of a well-disciplined force, ready to fight, capable of handling both a ground and air threat.

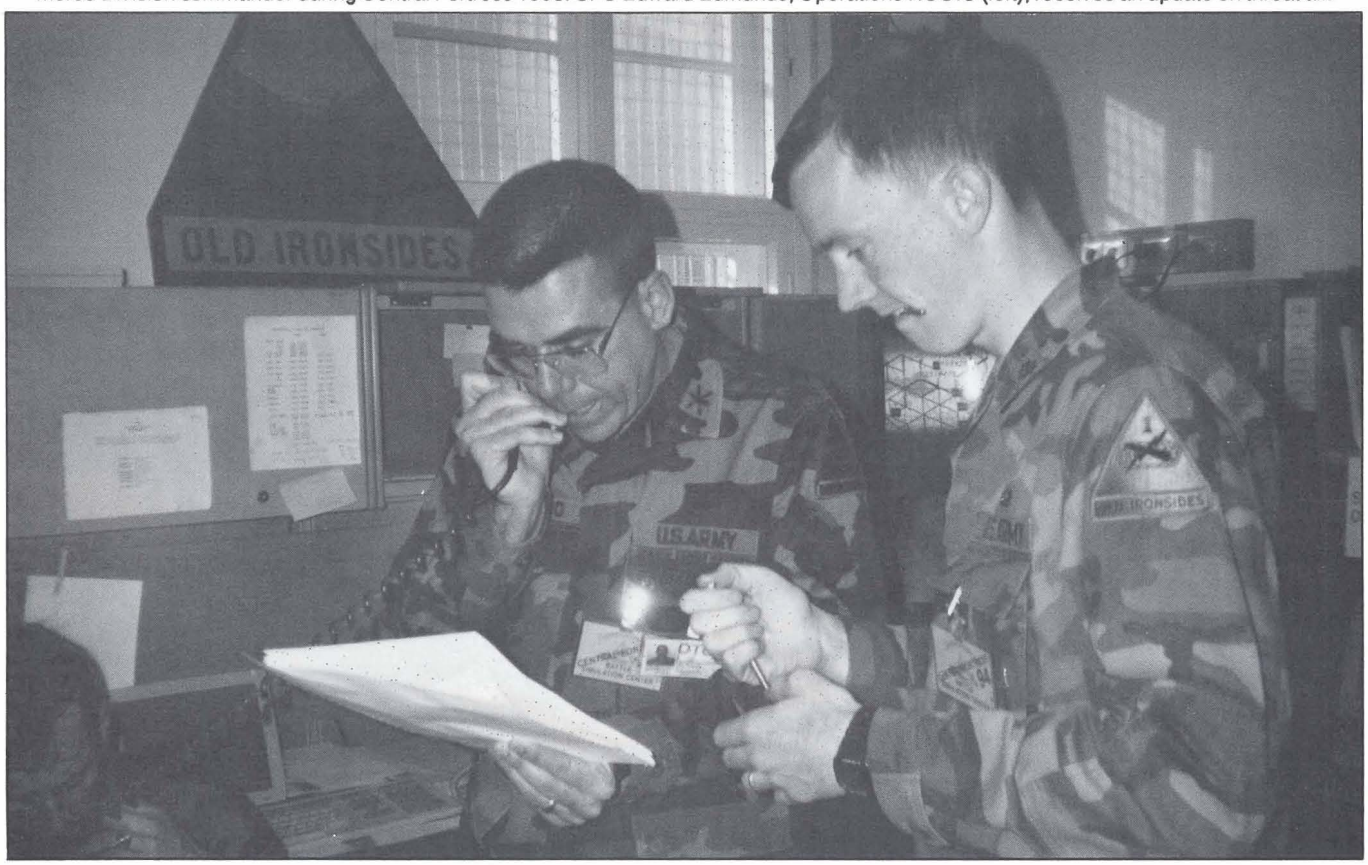
Mission Essential Task List (METL) Methodology

5-3 ADA's METL methodology is easily defined and makes sense. This ensures that units are battle focused and that training is measured by clearly defined standards. All battalion "green tab" leaders collectively participated and developed a new METL framework recently to meet changing mission requirements, such as the division's role in peacekeeping operations. The battalion's new METL framework (top, next page) is a useful tool for leaders to conduct assessments related to measurable standards that are clearly defined to support a "T," "P" or "U" rating. For instance, each essential task is divided into three parts. The upper part or set of standards must be achieved before a "T" rating is attained. The bottom set of measurable standards reflect a "P" rating. If neither standard is attained, then the unit scores a "U" in that particular task. The overall rating shown in the upper left corner reflects the lowest standard elements. Additionally, battle tasks support each essential task. This tool, developed by "green tab" leaders according to FM 25-100, enables them to make more accurate assessments, critical in developing effective training programs. This methodology also ensures that correct standards are developed and integrated to support maneuver tasks that link the ADA BOS with maneuver.

Future Integration

The future for divisional air defense appears even brighter. The Avenger system, with its shoot-on-the-move and remote operations capabilities, adds significantly to the division's ability to project combat power. Until now, our forces have controlled night operations. As other countries' technologies continue to advance, Avenger's night-

Lt. Col. H. A. Graziano, 5-3 ADA commander (center) and Capt. Damon Corbett, 5-3 ADA S-2 (right), send engagement reports to the 1st Armored Division commander during Central Fortress 1993. SFC Edward Edmunds, Operations NCOIC (left), receives an update on threat air.



COMMANDER'S ASSESSMENT		DRAFT BN MISSION ESSENTIAL TASK	BATTLE TASK
P		**MOVE**	EXTERNAL AIR ORDER OF BATTLE ANALYSIS EXTERNAL EARLY WARNING PLAN AND EMPLOY HIMAD
	T	**STANDARDS**	INTERNAL PERFORM 3D IPB PLAN AND COORD AD FOR OFFENSIVE OPS PERFORM AIRSPACE MGMT RECEIVE, PROCESS AND TRANSMIT EW PLAN AIR DEFENSE
		Cdr's synchronized air defense plan distributed two levels down in 1/5 - 4/5 time frame.	BATTERY DEVELOP AD PRIORITIES APPLY IPB PROVIDE AD FOR HASTY ATTACK PROVIDE EW ON SUPPORTED UNIT NET PROVIDE A2C2 INPUT PROVIDE AD FOR DELIBERATE ATTACK PREPARE FOR OPS IN NBC ENVIRONMENT CONDUCT REHEARSALS
		S-2 IDs chokepoints, likely threat COAs and enemy air avenues, obstacles and LZs prior to LD.	
		ADA maintains 2/3 air defense coverage forward of maneuver units.	
		Provide EW to supported maneuver unit down to company level.	
	P	**STANDARDS**	PLATOON AND SECTION ISSUE ORDERS APPLY IPB DIRECT EARLY WARNING COMMAND AND CONTROL CONDUCT NBC OPERATIONS CONDUCT REHEARSALS
		Cdr's synchronized air defense plan distributed two levels down in 1/3 - 2/3 time frame.	
		S-2 IDs likely enemy air avenues and LZs prior to LD.	
		ADA maintains 1/3 air defense coverage forward of maneuver units.	
		Provide EW to task force level.	
			BATTLE DRILLS ENGAGE AC FROM MOUNTED OR DISMOUNTED POSITION HANGFIRE, MISFIRE AND DUD PROCEDURES RECONFIGURE BASIC LOAD PREP FOR MARCH ORDER CONDUCT AMMO UPLOAD ENGAGE GROUND TARGETS

fire capability will become indispensable. We also need to field ground-based sensors to tie our early warning capability to all battlefield elements. Finally, the ability to launch a Stinger from mounted pods via SVML, or the Standard Vehicle Mounted Launcher for Bradleys, would provide additional flexibility, protection to our ADA crews and, ultimately, better protection for the force. To maintain an effective force in the future, these improvements are necessary to America's "Tank Division."

Conclusion

As we continue to train and maintain standards with fewer resources, our senior Army leaders must effectively integrate all BOSs and continuously train as a combined arms team. This has become a reality as division leaders incorporate all BOSs whenever possible in all collective training. In this division, the ADA BOS is vital to the success of the combined arms team.

Air Defense Artillery trains as hard as any maneuver branch. The platoon training approach has paid dividends by developing well-trained, disciplined air defense units eager to support the maneuver commanders. By training in garrison, educating maneuver commanders, training at CMTC and integrating the entire ADA BOS, the air defense battalion is meeting all challenges. Air defense units are prepared, well-trained and disciplined — ready for any mission. This commander would not want to deploy anywhere or anytime without this vital BOS. In summary, 5-3 ADA is integrated, well-respected and truly a member of the "Old Ironsides" combined arms team.

Maj. Gen. William G. Carter III was commissioned an Infantry second lieutenant in 1965. He holds a Bachelor's Degree in Business Administration (University of Tampa) and a Master's of Science in Public Administration (University of Shippensburg). He is a graduate of Officer Candidate School, Airborne School, Officers Advanced Course, Command and General Staff College and Army War College, and has served as a company, battalion and brigade commander. In 1989 he was appointed assistant division commander (maneuver), 1st Infantry Division (Mech). In 1991 he assumed command of the NTC, and in 1993 he assumed command of the 1st Armored Division.

AIR DEFENDERS PROVE BSFV'S SYNERGY

Photo by SFC Joseph A. Strunz

The smell of cordite still lingered on the range as the Bradley leapt across the dunes toward the shore of the Baltic Sea. Targets for TOW and 25mm weapon systems were still smoking as Stinger crews dismounted the Bradley Stinger Fighting Vehicle (BSFV). In a scenario as well-choreographed as a Broadway musical, remote control planes and ballistic aerial targets were destroyed simultaneously, as port weapons were also brought to bear. One team, four weapon systems and a display of power that would not soon be forgotten.

Soldiers of the 5th Battalion, 3rd Air Defense Artillery, 1st Armored Division, recently planned and executed a new gunnery standard for air defenders. On the sandy beaches of Wargrien Kaserne, Putlos, Germany, 5-3 ADA clearly demonstrated the BSFV's combat synergy by firing the BSFV's TOW, 25mm and Stinger weapon systems simultaneously in a realistic live-fire engagement scenario. This article will outline how 5-3 ADA master gunners developed and designed in detail an active Bradley Table (BT) XII.

Concept

The objective was to train and qualify BSFV crews by following a training strategy firmly rooted in principles found in FMs 25-100 (*Training the Force*) and 25-101 (*Battle Focused Training*). The leader must ensure training is realistic, well resourced and challenging — training that allows soldiers to experience the real capabilities or the synergy of both the Bradley and Stinger missile. Most importantly, an active BT XII shows ADA soldiers how MOS 14R and MOS 14S are equally important when integrated properly on the battlefield.

Plan

Our master gunners were the critical assets necessary to develop a plan that would fuse so many dangerous parts into a cohesive whole. The process they used followed a step-by-step process, including the home station preparation and preliminary gunnery (according to FM 23-1, *Bradley Fighting Vehicle Gunnery*, and ARTEP 44-177-14-MTP) below:

- Bradley gunnery skills test.
- Bradley Tables I-IV.
- Bradley Crew Proficiency Course.
- TOW qualification.
- Battle drills.
- UCOFT with a reticle aim level $\geq$ 24 (verified by the master gunner).
- Stinger Top Gun competition.

Resources

Adequate resources are critical when conducting any realistic training event, and the training at Putlos was no exception. With superb coordination efforts, 1st Armored Division and U.S. Army Europe provided the battalion with —

- 13 Stinger missiles,
- 12 TOW missiles,
- 21 ballistic aerial targets,
- 10,625 rounds of 25mm ammunition,
- 8,350 rounds of 7.62 ammunition,
- 5,250 rounds of 5.62 ammunition,
- two OH-58Cs to spot ballistic aerial targets on the East Sea,
- a contracted German boat to recover downed targets off the East Sea,
- two Explosive Ordnance Disposal specialists,
- division maintenances support and
- division and U.S. Army Europe transportation assets to move munitions from the home station in Wackernheim to Putlos.

Scenario

The plan was two-fold. First, the scenario would be realistic and challenging with a primary focus on aerial gunnery. Second, the scenario would mirror critical tasks from BT VIII so BSFV crews could sustain or improve their gunnery skills. The battalion master gunners were the planners and were also in charge of all Bradley ranges. In this operation, the live-fire scenario included the six tasks that are described below and also graphically depicted on the following two pages.

Engagement 1 (TOW engagement). A gunner engaged an enemy tank at 1,800 meters.

Engagement 2 (multiple aerial targets). After the TOW engagement, the BSFV crew maneuvered downrange and were given early warning of approaching enemy aircraft in their sector. The Bradley commander, on command, initiated a battle drill and the Stinger team dismounted. A Stinger subject-matter expert evaluated the Stinger team's actions during the dismount and engagement procedures. Simultaneously, the Bradley, with its main gun, engaged a mock Su-25. The Stinger team, just yards from the Bradley, used a tracking head trainer (THT) and engaged another pop-up Su-25 target.

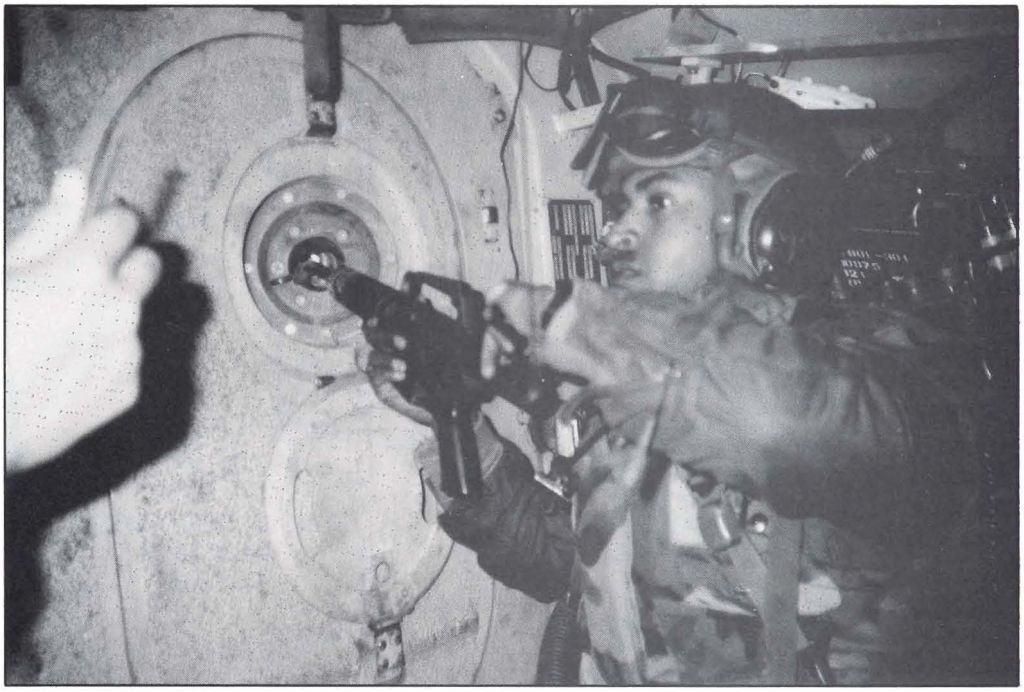


Photo by SFC Joseph A. Strunz

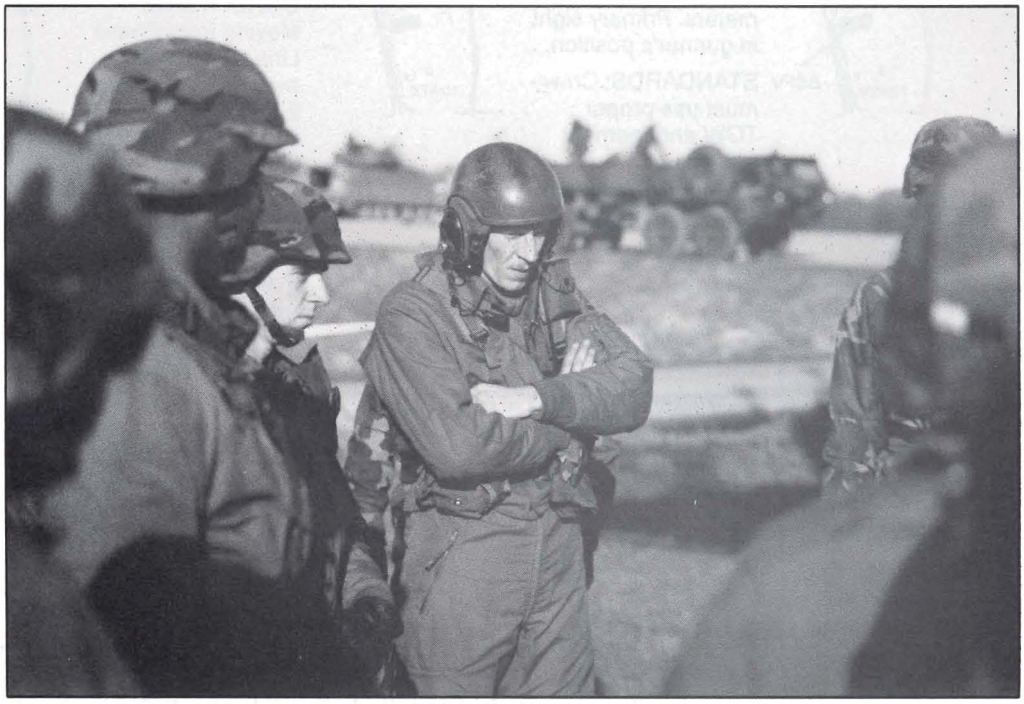
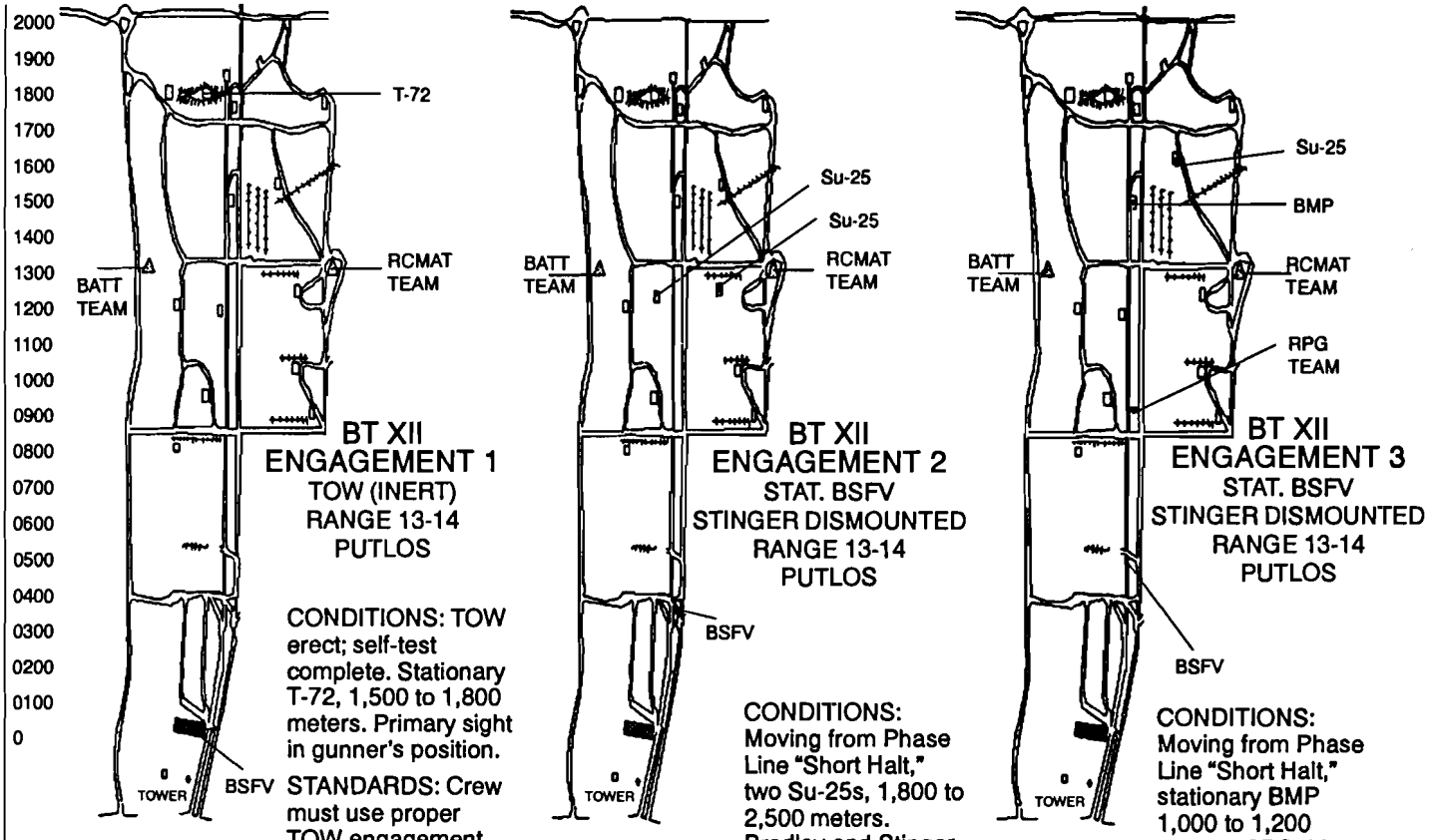


Photo by SSgt. Carl Johnson

Above, BSFV crew member Sgt. Randall Canada, Stinger team chief, of B Battery, 5-3 ADA, clears his M-231 5.56mm port fire weapon after engaging enemy dismounted troops through a port hole. Below, BSFV crews from A Battery, 5-3 ADA, receive an after action review briefing from the master gunner.

Engagement 3 (multiple ground engagements). On command, the Stinger team mounted the BSFV, and the crew continued to maneuver down the course road. Again, early warning was given and monitored. Once the aircraft was within sector, the BSFV stopped. Before the Stinger team dismounted, the Bradley successfully engaged an RPG-16 team to protect the Stinger team from direct fire. After the Bradley destroyed the RPG-16 team, the Stinger team was directed to dismount and be evaluated. During the dismount, a full frontal BMP appeared and the Bradley, using the auxiliary sight, engaged the immediate ground threat with the 25mm.



BT XII ENGAGEMENT 1

TOW (INERT)
RANGE 13-14
PUTLOS

CONDITIONS: TOW erect; self-test complete. Stationary T-72, 1,500 to 1,800 meters. Primary sight in gunner's position.

STANDARDS: Crew must use proper TOW engagement techniques. Engagement scored as a hit or miss.

BT XII ENGAGEMENT 2

STAT. BSFV
STINGER DISMOUNTED
RANGE 13-14
PUTLOS

CONDITIONS: Moving from Phase Line "Short Halt," two Su-25s, 1,800 to 2,500 meters. Bradley and Stinger engagement. THT-20 rounds TPT.

STANDARDS: Score with Stinger evaluation sheet. Hit with a minimum of five rounds TPT, score using Matrix 6.

BT XII ENGAGEMENT 3

STAT. BSFV
STINGER DISMOUNTED
RANGE 13-14
PUTLOS

CONDITIONS: Moving from Phase Line "Short Halt," stationary BMP 1,000 to 1,200 meters, RPG-16 team 400 to 600 meters, aux sight in gunner's position. Su-25, 1,800 to 2,500 meters. Bradley and Stinger engagement, 50 rounds 7.62, eight rounds AP, Stinger THT.

STANDARDS: Hit BMP with a minimum of three rounds, score using Matrix 4. Score Stinger with Stinger evaluation sheet.

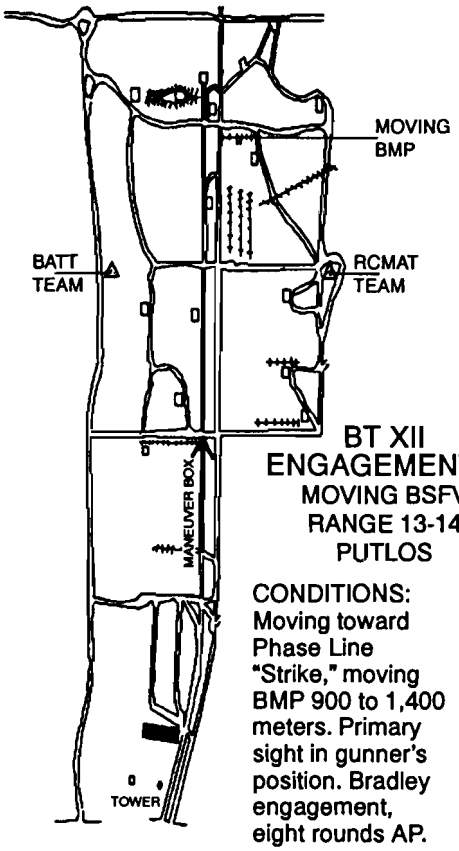
MATRIX 1

TIME (SECS)	POINTS					
	COLUMN A AUX SIGHT /NBC		COLUMN B AUX SIGHT /NBC		COLUMN C AUX SIGHT /NBC	
10	50					
11	44					
12	38					
13	32					
14	26					
15	20	50	50			
16	14	44	44			
17	8	38	38			
18	2	32	32			
19	0	26	26	50	50	
20		20	20	44	44	
21		14	14	38	38	
22		8	8	32	32	
23		2	2	26	26	
24		0	0	20	20	50
25				14	14	44
26				8	8	38
27				2	2	32
28				0	0	26
29						20
30						14
31						8
32						2
33						0
34						

LEGEND

- PERSONNEL TARGETS
- MOVING TARGETS
- FIRING AREA
- BORESIGHT PANEL
- FORTIFIED BUNKER

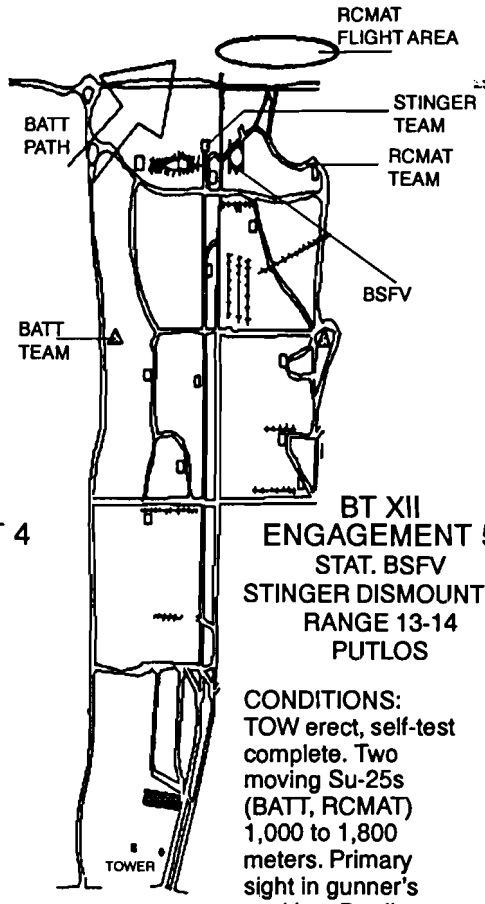
* NOTE: Ranges (top left) apply to all diagrams.



BT XII ENGAGEMENT 4
MOVING BSFV
RANGE 13-14
PUTLOS

CONDITIONS: Moving toward Phase Line "Strike," moving BMP 900 to 1,400 meters. Primary sight in gunner's position. Bradley engagement, eight rounds AP.

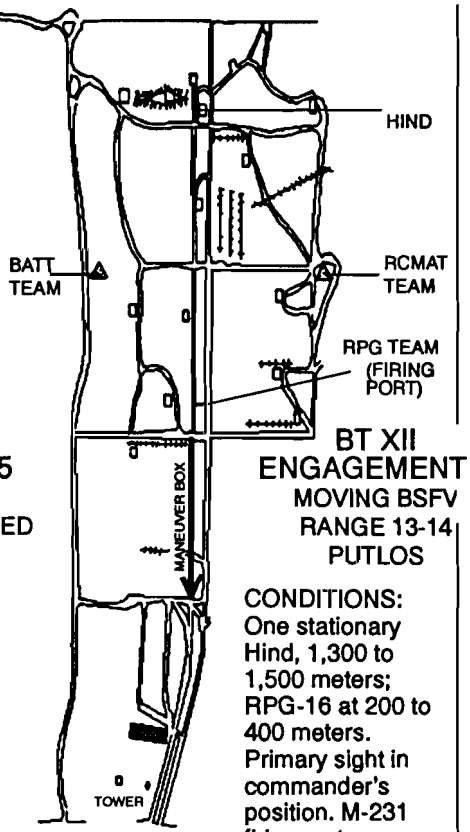
STANDARDS: Hit BMP with a minimum of three rounds. Score using Matrix 4.



BT XII ENGAGEMENT 5
STAT. BSFV
STINGER DISMOUNTED
RANGE 13-14
PUTLOS

CONDITIONS: TOW erect, self-test complete. Two moving Su-25s (BATT, RCMAT) 1,000 to 1,800 meters. Primary sight in gunner's position. Bradley and Stinger engagement. Twenty rounds AP, Stinger.

STANDARDS: Hit Su-25 with a minimum of five rounds 25mm, score using Matrix 6. Hit Su-25 with Stinger, score using Stinger evaluation sheet.



BT XII ENGAGEMENT 6
MOVING BSFV
RANGE 13-14
PUTLOS

CONDITIONS: One stationary Hind, 1,300 to 1,500 meters; RPG-16 at 200 to 400 meters. Primary sight in commander's position. M-231 firing port weapon, Bradley engagement, 20 rounds AP, 30 rounds 5.56mm.

STANDARDS: Hit Hind with a minimum of five rounds. Score using Matrix 1. Firing port weapon - familiarization only.

MATRIX 4

TIME (SECS)	POINTS			
	KILL 1 TARGET	KILL 2 TARGETS	KILL 1 TARGET	KILL 2 TARGETS
30	50	100	50	100
31	44	94	44	94
32	38	88	38	88
33	32	82	32	82
34	26	76	26	76
35	20	70	20	70
36	14	64	14	64
37	8	58	8	58
38	2	52	2	52
39	0	46	0	46
40		40		40
41		34		34
42		28		26
43		22		22
44		16		16
45		10		10
46		4		4
47		0		0
48				
49				
50				
51				
52				

MATRIX 6

TIME (SECS)	POINTS	
	KILL	AUX SIGHT NBC
26	50	
27	44	
28	38	
29	32	
30	26	
31	20	50
32	14	44
33	8	38
34	2	32
35	0	26
36		20
37		14
38		8
39		2
40		0

Photo by Joseph A. Strunz

5-3 ADA's top Stinger team, Sgt. James Smith (team chief) and Spec. Derick Gordon (gunner), both from D Battery, engage a ballistic aerial target during the active BT XII Gunnery.

Engagement 4 (ground engagement). The Stinger team mounted the BSFV and continued to move forward in sector. While moving 30 kilometers per hour, the crew engaged a moving BMP.

Engagement 5 (multiple aerial engagement). Again, the BSFV crew received early warning and dismounted their Stinger team with a live missile which had been carried in the Stinger rack. The BSFV then pulled off into a fortified position. The radio controlled miniature aerial target (RCMAT) crew, on command, launched the RCMAT and flew the aircraft in front of the BSFV. Immediately, the ballistic aerial target crew launched their target. The Bradley crew engaged the RCMAT with the 25mm. As the target raced upward, and while the Bradley shot the 25mm tracers that clearly mark the superb accuracy and lethality of the gun, the Stinger team engaged the ballistic aerial target with its four rocket motors propelling the missile upward at 386 knots. Under cover of smoke and dust, BSFV crews successfully destroyed the RCMAT and the aerial target, all in a few short seconds. On command, the Stinger team mounted the BSFV.

Engagement 6 (nuclear, biological and chemical engagement). The crew received notification of a chemical warning, donned the appropriate chemical protective clothing and installed their M-231 firing port weapons. Once the Bradley commander reported "set," the crew was directed that their gunner's control hand station was inoperable and to withdraw in sector. While moving, the crew was evaluated on their ability to engage an RPG-16 team with the firing port weapon and on a Bradley commander's engagement in MOPP 4 using 25mm.

The total possible score each team could earn in this scenario was 500 points.

Rehearsal

To paraphrase the Duke of Wellington, no time is ever wasted on rehearsals. Preparation and rehearsals are always a key ingredient to 5-3 ADA's success. Because of the dynamics of so many moving factors in this range, safety was the primary concern. To minimize unnecessary risks and to increase soldiers' learning and performance levels, the master gunners conducted several detailed rehearsals prior to the Putlos live-fire exercise. At a minimum, the following rehearsals should be planned and conducted with all BSFV crews:

- Classroom scenario briefs (clearly define the standards).
- Sand table or rock drills.
- Range walk.

Execution

The excellent coordination and synchronization effort with external agencies enabled the "I Strike" soldier to successfully demonstrate the synergy of the 25mm, TOW and Stinger in a synchronized engagement. As a result, the BSFV concept provides strength and flexibility to the combined arms team, and safeguards the Stinger teams carried onto the battlefield. Our soldiers performed superbly as the battalion earned a distinguished 934 battalion score.

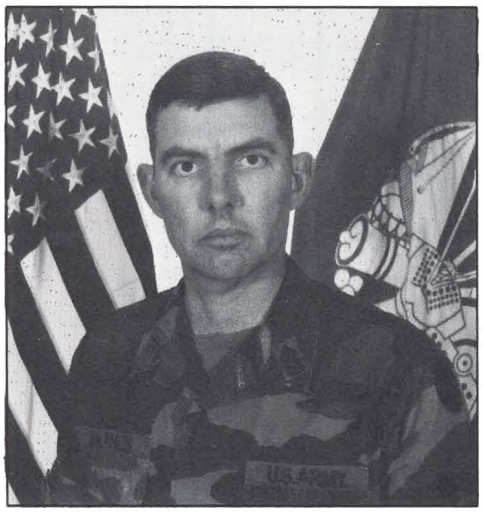
After Action Reviews

Master gunners conducted after action reviews with each BSFV crew immediately after they completed their qualification exercise on Range 13-14 (Putlos). Immediate feedback to the crews was essential, and the after action review process could only be conducted by a battalion master gunner.

Conclusion

In addition to conducting realistic and meaningful training, the Active BT XII boosted self-confidence and morale. As each Bradley roared down the course, both the German Bundeswher and our soldiers cheered. For the first time, soldiers personally witnessed BSFV fire and maneuver. Our Stinger teams now have a realistic understanding of how the Bradley is designed to protect the Stinger team while in support of a task force (maneuver elements) of the combined arms team. "This Bradley Stinger concept increases the maneuverability and the survivability of the Stinger teams," said SFC Tommy L. Hicks, a platoon sergeant with D Battery. SSgt. Murphy A. Matthew added, "I now realize how important it is that the Bradley must clear the ground threat before my Stinger team dismounts and engages hostile aircraft." 5-3 ADA soldiers now understand the synergy of the BSFV.

Column Write



During my recent visits to ADA units in Europe, I noticed several problems that can severely impact the welfare of our soldiers. These areas of concern are not confined to our soldiers in European units, but affect ADA soldiers throughout the branch.

The first problem concerns MOS 14SY2 and 14RY2 soldiers. I found that units are not following through with Standard Installation Division Personnel (SIDPERS) transactions when these soldiers complete new equipment or transition training. A SIDPERS transaction is necessary to update the personnel data base. Only through SIDPERS transactions will the soldier's current training status show on the data base, and only an up-to-date data base will allow our ADA career managers at PERSCOM to redistribute and manage the branch inventory. Current records on the data base also affect individual promotion opportunities, so it's imperative that units submit these transactions on time.

My next area of concern is a branch mindset that we're filling MOS 16S slots with MOS 14S soldiers. MOS 16S is gone! I understand the confusion — commanders are looking at a modified table of organization and equipment (MTOE) that shows MOS 16S authorizations, but those same commanders don't have any MOS 16S bodies to fill the slots. The simple explanation is that while the branch worked quickly to convert MOS 16S soldiers to MOS 14S (assigning a Y2 ASI to soldiers as yet untrained), the paper mill works somewhat slower. Don't expect to see updated MTOEs until 1995. Until then, fill that 16S authorization with a 14S soldier, and know that you've got the right soldier for the right job.

A third problem, a problem I find personally troubling, is that senior NCOs are not counseling younger soldiers on career progression. As senior NCOs, you must guide these younger soldiers along the career development path, and assist them in hitting the proper gates at the proper times. Samples of the NCO Career Development Models for CMFs 14 and 23 follow on the next two pages. Distribute copies of these career development models to your soldiers, and encourage them to see an education counselor for assistance in completing recommended courses and achieving their goals. Be a mentor, be a leader, and guide these soldiers along the path to a great career.

On a more positive note, problems were not all I encountered on my travels. I received several positive comments about the MOS 14S and 14R soldiers coming out of the ADA schoolhouse. Commanders are very pleased with the quality soldiers they're getting in their units. One comment I'd like to share with you is that "ADA soldiers stand head and shoulders above other career management field soldiers coming out of AIT." My congratulations to all ADA trainers, especially to 2-6 ADA, on a job well done.

There is no finer tribute than the respect of ones peers, and ADA soldiers have proven themselves worthy of respect from their combat arms brethren. Keep up the good work!

CSM James E. Walthes
Command Sergeant Major

*14D
Hawk Missile System Crewmember

14J
Early Warning System Operator

14R
Line-of-Sight Forward Heavy Crewmember

14S
Avenger Crewmember

16T
Patriot Missile Crewmember

16Z
Air Defense Artillery Senior Sergeant

*23R
Hawk Missile System Mechanic

24T
Patriot Operator and System Mechanic

25L
AN/TSQ-73 Air Defense Artillery Command and Control System Operator/Maintainer

*Hawk's removal from the active component will remove MOSs 14D and 23R from this list.

NCO CAREER DEVELOPMENT MODEL

TITLE OF CAREER MANAGEMENT FIELD: AIR DEFENSE ARTILLERY

CMF NUMBER: 14

THE FOLLOWING ARE ONLY RECOMMENDATIONS: It may not be feasible to complete all recommended courses since assignments may preclude off-duty education. Alternate methods of achieving CMF course recommendations are possible (examinations, correspondence courses, and ACE-recommended credits). See an education counselor for assistance in completing recommended course/goal.

DEVELOPMENTAL ASSIGNMENTS

RANKS, SKILL LEVELS & DUTY ASSIGNMENTS	PVT PFC SPC/CPL SKILL LEVEL 10	SGT SKILL LEVEL 20	SSG SKILL LEVEL 30	SFC SKILL LEVEL 40	MSG SGM/CSM SKILL LEVEL 50
	TEAM LEADER →	RECRUITER/RENTENTION /DRILL SERGEANT →			FIRST SERGEANT →
		SQUAD LEADER →	OPS/INTEL SERGEANT →		
			PLATOON SERGEANT →		

INSTITUTIONAL TRAINING

INSTITUTIONAL TRAINING	BCT AIT	PLDC	BNCOC	ANCOC	RECOMMEND BATTLE STAFF NCO COURSE	SERGEANTS MAJOR COURSE	CSM (D)

SELF-DEVELOPMENT

RECOMMENDED NCOES-RELATED COURSES

PRIOR TO PLDC:
1. English Composition
2. Basic Mathematics
3. Computer Literacy
4. Map Reading (IS-0781)
5. Time Management (LC)

Recommended Reading Standard: 10
Achieve Writing Standard*

PRIOR TO BNCOC:
1. Communication Skills
2. Personnel Supervision
3. Behavioral Science
4. Public Speaking
5. Effective Writing (IS-1400)
Personnel Mgt (AG-0010)
7. PLL & TAMMS (AR-0606 & MM-3601)

Recommended Reading Standard: 11
Achieve Writing Standard*

PRIOR TO ANCOC:
1. Principles of Management
2. Organizational Behavior
3. Information Mgt Systems
4. PLL & TAMMS (AR-0606 & MM-3601)
5. Land Navigation I (IN-1022)
6. Land Navigation II (IN-1023)

Recommended Reading Standard: 12
Achieve Writing Standard*

PRIOR TO SMC:
1. Research Techniques (Statistics)
2. Human Resource Management

Recommended Reading Standard: 12
Achieve Writing Standard*

RECOMMENDED CMF-RELATED COURSES AND ACTIVITIES

SKILL LEVEL 10
1. Begin Reading from Attached List

SKILL LEVEL 20
1. Records Management (ACCP)
2. Stress Management
Prepare for SDT

SKILL LEVEL 30
1. Prepare for SDT
2. Intro to Philosophical Thinking
3. Methods of Instruction
4. Contemporary Problems
5. College Math
6. Behavioral Science

SKILL LEVEL 40
1. Prepare for SDT
2. Problem Solving
3. Leadership & Management
4. International Relations
5. Recommend the following ACCP for SL-40 and prior to BS NCO/1SG Crs:
   - ADA Sr SGT Crs (16Z)
   - Situation Maps (IT-0588)
   - Overlays (FA-8015)

SKILL LEVEL 50

RECOMMENDED CMF-RELATED CERTIFICATION OR DEGREE GOAL

AA/AS IN: Liberal Arts or Management

BY THE 16TH YEAR OF SERVICE

NOTE

* See DA Pam 600-67. The Army Writing Standard is writing that can be understood in a single, rapid reading, and is generally free of errors in grammar, mechanics, and usage.

LEGEND

ACCP — Army Correspondence Course Program
CYBIS — Network Computer Instruction (Where Available)
LC — Course found in Learning Cent

APPROVED BY: Commandant, U.S. Army Air Defense Artillery School

DATE: 24 October 1991

UPDATED: 15 November 1993

NCO CAREER DEVELOPMENT MODEL

TITLE OF CAREER MANAGEMENT FIELD: AIR DEFENSE SYSTEM MAINTENANCE

CMF NUMBER: 23

THE FOLLOWING ARE ONLY RECOMMENDATIONS: It may not be feasible to complete all recommended courses since assignments may preclude off-duty education. Alternate methods of achieving CMF course recommendations are possible (examinations, correspondence courses, and ACE-recommended credits). See an education counselor for assistance in completing recommended course/goal.

DEVELOPMENTAL ASSIGNMENTS

RANKS, SKILL LEVELS & DUTY ASSIGNMENTS	PVT PFC SPC/CPL SKILL LEVEL 10	SGT SKILL LEVEL 20	SSG SKILL LEVEL 30	SFC SKILL LEVEL 40	MSG SGM/CSM SKILL LEVEL 50
	TEAM LEADER →	RECRUITER/RENTENTION /DRILL SERGEANT →			FIRST SERGEANT →
		SQUAD LEADER →	OPS/INTEL SERGEANT →		
			PLATOON SERGEANT →		

INSTITUTIONAL TRAINING

INSTITUTIONAL TRAINING	BCT / AIT	PLDC	BNCOC	ANCOC	RECOMMEND BATTLE STAFF NCO COURSE	SERGEANTS MAJOR COURSE	CSM (D)

SELF-DEVELOPMENT

RECOMMENDED NCOES-RELATED COURSES

PRIOR TO PLDC:
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2. Basic Mathematics
3. Computer Literacy
4. Map Reading (IS-0781)
5. Time Management (LC)

Recommended Reading Standard: 10
Achieve Writing Standard*

PRIOR TO BNCOC:
1. Communication Skills
2. Personnel Supervision
3. Behavioral Science
4. Public Speaking
5. Prep to Writing (IS-1402)
6. Effective Writing (IS-1400)
7. PLL & TAMMS (AR-0606 & MM-3601)

Recommended Reading Standard: 11
Achieve Writing Standard*

PRIOR TO ANCOC:
1. Principles of Management
2. Organizational Behavior
3. Information Mgt Systems
4. Electronic Principles
5. Land Navigation I (IN-1022)
6. Land Navigation II (IN-1023)

Recommended Reading Standard: 12
Achieve Writing Standard*

PRIOR TO SMC:
1. Research Techniques (Statistics)
2. Human Resource Management

Recommended Reading Standard: 12
Achieve Writing Standard*

RECOMMENDED CMF-RELATED COURSES AND ACTIVITIES

SKILL LEVEL 10
1. Quality Control
2. College Math
3. Begin Reading from Attached Sheet

SKILL LEVEL 20
1. Records Management (ACCP)
2. Stress Management

Prepare for SDT

SKILL LEVEL 30
1. Intro to Philosophical Thinking
2. Methods of Instruction
3. Contemporary Problems
4. Behavioral Science

Prepare for SDT

SKILL LEVEL 40
1. Problem Solving
2. Maintenance Management
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4. Leadership & Management
5. Recommend the following for SL-40 and prior to BS NCO/1SG Crs:
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   - Situation Maps (IT-0588)
   - Overlays (FA-8015)

Prepare for SDT

SKILL LEVEL 50

RECOMMENDED CMF-RELATED CERTIFICATION OR DEGREE GOAL

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BY THE 16TH YEAR OF SERVICE

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LEGEND

ACCP — Army Correspondence Course Program
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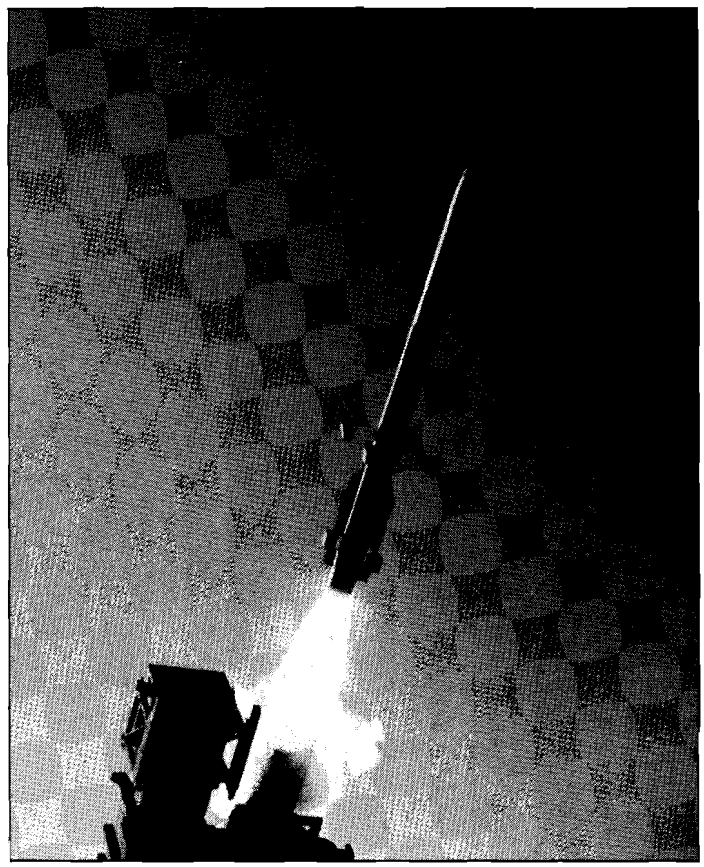
LC — Course found in Learning Cent

APPROVED BY: Commandant, U.S. Army Air Defense Artillery School

DATE: 24 October 1991

UPDATED: 15 November 1993

ARMY PICKS ERINT



U.S. Army photo

Loral Vought's Extended Range Interceptor Missile will increase the Patriot air defense system's range, accuracy and lethality.

In May, the Department of Defense Acquisition Board formally approved the U.S. Army Systems Acquisition Review Council's selection of Loral Vought's Extended Range Interceptor (ERINT) missile to meet the requirements of the Patriot Advanced Capability (PAC-3) improvement program. Work on the other contender for the PAC-3 missile requirement, Raytheon's Multimode Missile, will continue under a reduced effort as a risk mitigation program.

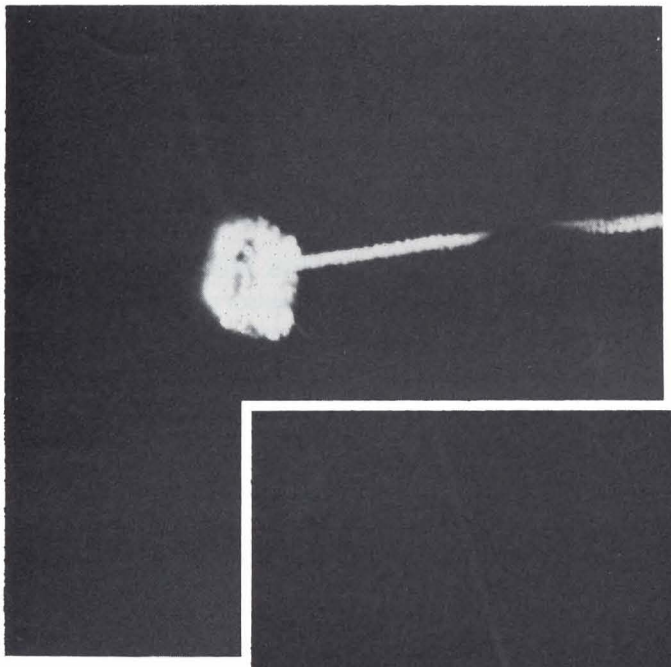
Raytheon retains its status as the prime contractor for Patriot, with responsibility for total system integration, and will continue to supply PAC-2 Patriot missiles that will be employed in tandem with the new ERINT missiles. The Army expects to begin fielding ERINT, assuming follow-on test and operational evaluations are successful, to Patriot battalions in 1998.

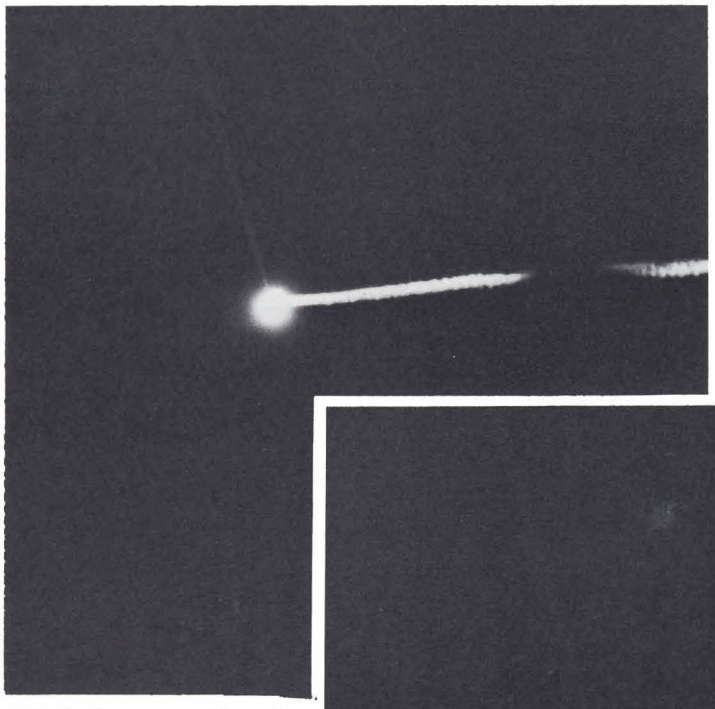
The ERINT is a high-velocity, hit-to-kill, surface-to-air missile capable of intercepting and destroying aircraft as well as tactical ballistic missiles. As part of preplanned upgrades the Army is making to the entire Patriot system, ERINT advantages include increased range, accuracy and lethality. With a few modifications, the ERINT canister is compatible with the current Patriot launcher, but each canister holds four of the smaller ERINT missiles instead of one Patriot missile, thus quadrupling firepower without increasing force structure. In the future, some Patriot launchers within a battery or battalion will hold four canisters, each containing four ERINT missiles, for a total of 16 ready-to-fire missiles, while the remaining launchers will have four PAC-2 Patriot missiles loaded.

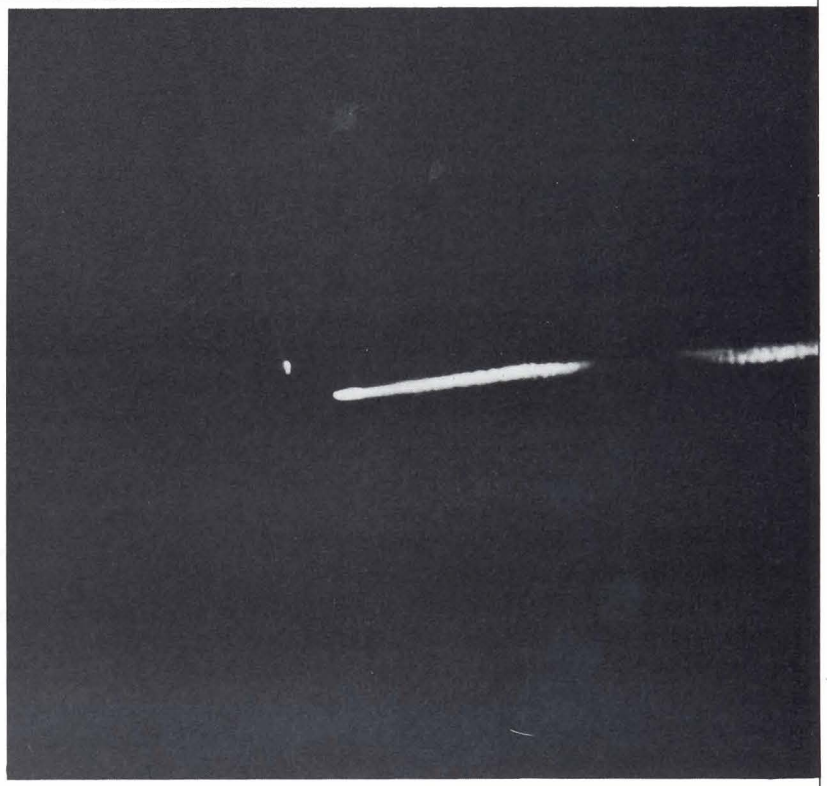
The ERINT missile's advanced on-board active seeker provides greater lethality against tactical ballistic missiles than PAC-2 missiles. The seeker is geared to acquire targets with low-radar cross sections at increased ranges.

At the moment, Patriot, which demonstrated its effectiveness against Iraqi Scuds during the Gulf War, is the only line of defense against tactical ballistic missiles. Theater missile defense developments underway before Operation Desert Storm gained significant momentum as a result of Iraq's use of Scud missiles and the threat of unconventional warheads. In his January 1991 State of the Union address, President George Bush announced that the Strategic Defense Initiative program would be refocused on providing a missile defense to protect the continental United States, its forces deployed abroad and friends and allies against accidental, unauthorized or limited ballistic missile attack. Congress supported this proclamation by mandating deployment goals for both national and theater missile defense in the Missile Defense Act of 1991.

Around the turn of the century, Patriot air defense fire units armed with ERINT and PAC-2 missiles will form the lower tier of a two-tiered, "leak-proof" theater ballistic missile defense. The Theater High-Altitude Area Defense (THAAD) system, which is being developed to intercept tactical ballistic missiles at longer ranges and at higher altitudes than the Patriot air defense system, will serve as the upper tier of theater tactical ballistic missile defense. This system







of systems approach is designed to meet the national commitment to theater missile defense in a timely and highly cost-effective manner. These upgrades will improve the Patriot battery's integration into the ADA command, control, communications and intelligence network and provide the battery and battalion with an integral data recording playback mission analysis and training capability.

In addition to ERINT, the PAC-3 upgrades will be accomplished through three configuration programs. Each configuration, consisting of integrated hardware and software enhancements, will be fielded as a package. The implementation schedule calls for testing of Configuration 2 in 1995. Configuration 3 tests (which include ERINT) are scheduled for 1997. The Army hopes to achieve full PAC-3 capabilities between 1998 and 2000.

The U.S. Army Strategic Defense Command and Strategic Defense Initiative Organization conducted the first ERINT test firing on June 26, 1992, at White Sands Missile Range, N.M. The Army named ERINT the winner of the PAC-3 missile competition in a press release dated Feb. 16, 1994, one day after an ERINT missile hit a target ballistic missile re-entry vehicle, armed with a simulated chemical warhead, in a test at White Sands. The target was the re-entry vehicle of a special launch vehicle that serves as a realistic surrogate of a variety of theater ballistic missiles. The test was the third in a series of tests in which ERINT engaged a variety of target types. The fourth test was an ERINT engagement, a June 2, 1994 direct hit on an MQM-107 air-breathing target

As a result of Department of Defense changes in services roles and missions, the Air Force has been assigned the primary mission against the manned fixed-wing threat, while the Army has primary responsibility to counter the threat from tactical ballistic missiles, air-to-surface missiles and other unmanned aerial vehicles. The Army has responded to this change by upgrading Patriot to counter the tactical ballistic missile threat while retaining the capability to engage leaking manned fixed-wing and unmanned aerial threats. The Army is developing future ADA systems, such as THAAD, to counter only the tactical ballistic missile threat.

The national and theater ballistic missile defense foundation has been laid by solid combat and materiel developer relationships within the Army and as well as the close ties the Army has developed with other services, government agencies and industry.

ADA DIGEST

COMBAT TRAINING CENTERS

NTC TRENDS

Soldiers from C Battery, 1-5 ADA, recently set a number of "firsts" at the National Training Center (NTC) during Rotation 94-04, "Desert Hammer IV." Rotation 94-07, also known as the "Digital Rotation," marked the first appearance of forward area air defense (FAAD) command, control and intelligence (C^2I) at the NTC. Air defenders deployed with a ground-based sensor radar, the battery command post command and control node and a Bradley Stinger Fighting Vehicle (BSFV) platoon equipped with simplified hand-held terminal units. In addition to the FAAD C^2I system, the unit also used the Enhanced Position Location Reporting System to track and report on both the ground and air battles.

Initial observations showed the FAAD C^2I system significantly enhanced air defense operations. Early warning and situational awareness improved dramatically. Track information from the division early warning net and ground-based sensor transmitted over FM voice, FAAD C^2I and the Enhanced Position Location Reporting System, combined with well-trained crews, proved to be a lethal combination. Air defenders were ready and waiting when enemy air attacked. The most dramatic demonstration of the system's capabilities was watching Stinger teams turn away from the expected direction of attack and face the rear, waiting with missiles ready to engage enemy air as it entered the brigade's sector from the rear. This combination of well-trained and motivated air defenders with FAAD C^2I set a new NTC record for aircraft killed. In one battle, the battery achieved a 95 percent kill rate (50 percent is the norm).

FAAD C^2I wasn't the only first. C/1-5 ADA also conducted the first successful Stinger and Avenger live-fire during the NTC's live-fire battle. The unit scored three-for-three direct hits. This was not a range, but rather a live tactical scenario that included the full combined arms team. The firings included a shoulder-fired Stinger team in MOPP IV, a BSFV Stinger team and a night Avenger fire.

Soldiers of C/1-5 ADA proved that the First to Fire branch is a lethal and capable member of the combined arms team.

Positive Trends

Recent rotations have shown that ADA sensor teams (ADA scouts) function well when used by the ADA commander to provide warning of air attacks. When the ADA liaison officer develops the aerial portion of the intelligence preparation of the battlefield, he identifies the critical times and locations where enemy air is expected. He can then develop named areas of interest for the ADA sensor team to observe. Mission planning is then up to the sensor platoon leader or the battery commander. This process has yielded a high level of success and survivability.

Conversely, when brigade S-2s and S-3s have taken over the tasking and mission planning, we have seen low success and survivability rates. The problem is that the S-2s and S-3s tend to think in terms of ground — not aerial — intelligence preparation of the battlefield. They also want to maximize the number of "eyes" looking at their named areas of interest, which are always ground-related. They have shown a tendency to package ADA sensor teams with other sensors (such as GSRs and COLTs) and send them out to the same OP. The rationale of the package is security and redundancy, but this package often results in a compromise — the ADA sensor is not looking at the most critical aerial named areas of interest.

The units that have had good success coordinate the use of the team with the S-2 and S-3, but the mission planning is done by the ADA unit. ADA sensor teams have shown a remarkable ability to use operations security to position themselves, survive and report on enemy activity.

We have also seen improvement in the ability of Stinger section sergeants to perform as ADA liaison officers in task force tactical operations centers during battles. While we still have a long way to go, more and more NCOs are able to function in the task force tactical operations center. The improvement appears to be the result of home station training with task force command post and field training exercises, where the ⇨

NCOs are used with the ADA platoon leader as liaison officers. Units that did not include task force command post exercises or field training exercises as part of their pre-NTC train-up, and units that only included the platoon leader, had poor results from the NCO liaison officer. The NCO's primary function is to pass air attack early warning to the task force and ADA status.

Negative Trends

Several areas that need positive emphasis cropped up this quarter. Often, maneuver commanders and S-3s will dictate positioning of ADA assets — over the advice of the direct support (DS) ADA platoon leader — with adverse results. This occurs most often in Infantry task forces. Armor task forces tend to rely on the ADA platoon leader for the development of the ADA plan.

Often the ADA battery commander will develop an integrated air defense plan using both DS and general support (GS) ADA. Typically this includes GS Avengers to overwatch the task force rear. The intent is to allow the DS platoon leader to push his ADA forward to obtain mass and early engagement while the task force rear is covered by GS Avengers. Sometimes a DS platoon leader will try to mass on the most likely air avenue of approach and accept risk elsewhere, knowing that some GS assets will provide coverage.

Too often the task force commander or S-3 will insist on placing a Stinger team with each company or team, the tactical operations center and the trains. This deal-the-cards approach results in ADA piecemealing, less ADA coverage where the air threat is greatest and more ADA coverage where it is not needed. When this happens it is due to a combination of three factors. First, the commander or S-3 does not understand the air threat and current ADA doctrine. Second, the ADA officer (ADO) is unable to clearly articulate the soundness or logic of his plan and the disadvantages of piecemealing. Last, the commander or S-3 lacks confidence in the ADO.

ADA units tend to start rotations with non-integrated, uncoordinated ADA plans. Each task force and each ADA platoon, DS or GS, are treated as totally separate elements. The synchronization of GS and DS ADA into an integrated plan normally does not occur until mid-rotation. The uncoordinated plans often result in ADA fire units occupying positions in the same area but unknown to each other. The key to good integration appears to be a sound and early commander's intent linked to a good rehearsal (FM or sand table) attended by all key leaders.

Not a single ADA unit has used or understood the concept of a state of alert or state of readiness. This lack of understanding doctrine has reduced the credibility of the air defense and local air defense warning systems. Typically, a unit will template an enemy air assault window, for example, between 1600 and 1900 hours. The brigade order and critical events list will then state that, during this window, the air defense warning will be red. The air defense warning and local air defense warning system indicate the presence or absence of enemy aircraft in a defined area. They are based on actual near-real-time enemy air activity, not templated or forecasted activity. Yet ADA units routinely use these warnings as a means to raise readiness, and they have trained maneuver units to use them in the same way. Too often the unit will go to air defense warning red because they don't want to be "caught with their pants down," and then nothing happens. Unfortunately, too many units have cried wolf too often for too long. It is no mystery why units no longer react to air defense warning red/dynamite. ADA units need to use states of alert and readiness in lieu of air defense warnings and local air defense warnings if we are to make the air defense warning system credible.

MAJ. DALE EIKMEIER

ADA AT THE JRTC

Recent developments have greatly enhanced ADA units' operations and training during their Joint Readiness Training Center (JRTC) deployments.

We have added HMMWVs equipped with Stinger rack assemblies to the pre-positioned fleet, and these trucks are available in sufficient quantities to fill the ADA battery to the maximum number of Stinger systems authorized per rotation (specified in U.S. Forces Command Regulation 350-50-2). Having these trucks at the JRTC will greatly reduce the cost per rotation and eliminate the wear and tear on each unit's tactical fleet. Now, the only rolling stock an ADA battery must deploy from home station is the Avenger; all others are available and units should draw them from the pre-positioned fleet. The battery commander ➪

must maintain close contact with the supported brigade S-4 and specify his unit's specific truck requirements during the pre-deployment planning process to ensure his unit's needs are met.

Photo by SFC Eugene O'Neill

ADA training has also significantly improved with the acquisition of Chaparral MILES kits, which have been modified for use on the Avenger system. This kit (successfully used on the past two rotations) enables the Avenger team to conduct MILES-on-MILES engagements. Combined, the MILES kit and the firing engagement replication device provide the Avenger team a realistic surface-to-air engagement. As with any modification to an existing system, improvements and refinements are continual. This interim system has already demonstrated its value to air defenders, and we will modify it as necessary until the Avenger MILES is fielded.

Photo by SFC Eugene O'Neill

Failure to conceal the Avenger and to improve the position (top photo) directly contributed to this gunner's early demise, while another Avenger gunner (bottom photo) used the natural cover to improve his team's and system's survivability.

The Avenger recently made its first appearance at the JRTC. With only two rotations, trends have not yet emerged; however, we have made several observations.

The Avenger remote control unit and the computer display terminal both emit light that is easily observable during the hours of darkness. An enemy equipped with night vision goggles has an even greater ability to detect the Avenger team — and detection severely reduces a team's chances for survival. Clearly, team survivability depends upon emplacing the remote control unit in a fighting position with overhead cover when in a deliberate position. In a hasty position, simply covering the canopy on the turret with the blast deflector shield or a poncho will eliminate the light. This technique then requires the team chief to orient the gunner to the target using the clock method. The team chief should make a final check using night vision goggles to ensure no light is visible.

Avenger teams, when faced with 24-hour continuous operations, simply could not perform this mission after extended operations and quickly became sleep deprived. Opposing ground forces routinely destroyed the teams, usually after both crew members fell asleep. The commander's decision to conduct 24-hour operations should be made only after a thorough intelligence preparation of the battlefield (IPB) has been conducted in conjunction with the S-2, and must be based upon the threat's capabilities. If the threat dictates the requirement to provide 24-hour air defense protection, then the commander must use states of readiness and air defense warnings to rotate Avenger teams. Maxi- ⇨

mizing the positioning of Stinger teams at the Avenger night defensive positions is a technique to preserve the force. The additional manpower provides improved security, promotes mission accomplishment and offers a realistic possibility of implementing a sleep plan.

Avenger teams have routinely experienced system power failures that have required them to operate in a degraded mode by converting to the shoulder-fired Stinger team configuration. The power failures have routinely occurred when the team allows the system power, as displayed on the computer display terminal, to fall below 90 percent. When the prime mover is equipped with a 100-amp alternator, attempting to recharge the system (depending on how far the system power has fallen) often causes the alternator to fail. Conversely, those prime movers equipped with the 200-amp alternator kit, combined with a responsive team that constantly monitors the computer display terminal and recharges the system when required, offers the best solution. If the 200-amp alternator kit is unavailable, ensure that an ample supply of 100-amp alternators are on hand in the primary load list.

During the past quarter, we have noted positive improvements in the air defense officer's (ADO's) ability to visualize the battlefield through the development of the aerial IPB. ADOs have made significant improvements in aerial IPB development and in plotting aircraft track information. Units still need to emphasize integrating the aerial IPB with the S-2-prepared ground IPB. Integration and synchronization of these two products will further improve the likelihood of placing ADA fire units and fires at the critical time and place on the battlefield. Continued emphasis at the battalion task force (platoon leader) level will ensure that refinement of the battery aerial IPB (macro level) is accomplished for the supported unit's AO.

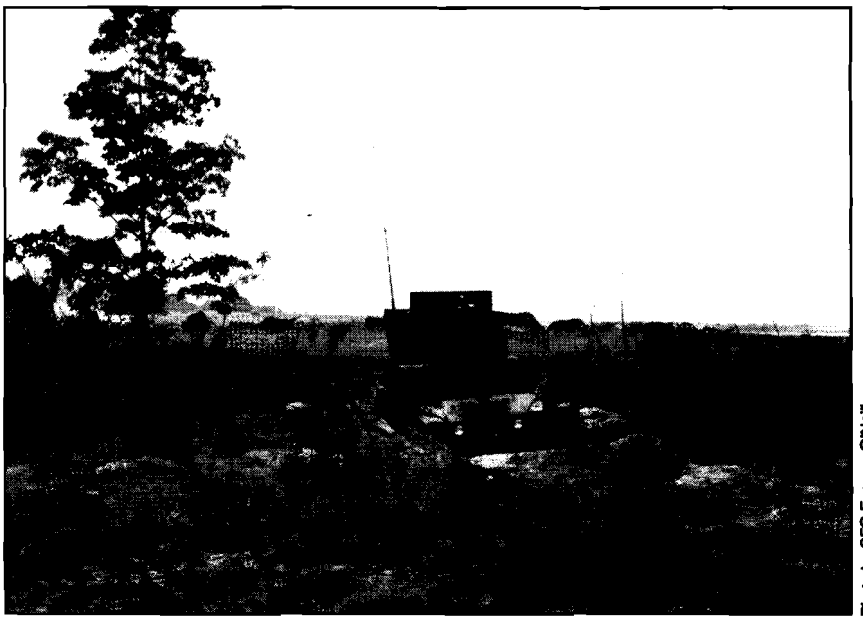


Photo by SFC Eugene O'Neill

This Avenger crew improved its chances of survival by obtaining engineer support to conceal the weapon system.

We have seen tremendous improvement in the area of Class V resupply of ADA munitions. Establishing a liaison presence (the battery first sergeant is most effective) at the forward support battalion (FSB) or ammunition transfer point (ATP) has resulted in Stinger teams and Avenger fire units always having rounds on hand. ADO emphasis is still required to ensure that he articulates his intent for resupply to his representative at the FSB or ATP. This helps ensure that the sections and teams expected to receive the most air activity are resupplied accordingly.

While the Class V ADA resupply issue has been greatly improved, greater emphasis is needed on receiving and issuing small arms ammunition and Claymores to the battery personnel.

We've seen progress in the area of combined arms for air defense, but units have yet to emphasize the need to mass volumes of fire at the predicted aerial intercept point. Directed early warning remains extremely important to a successful engagement. Those units that have received timely early warning have been highly successful in destroying enemy aircraft.

Other areas that need emphasis are ADA survivability; early warning; command, control and communications; and passive air defense.

Survivability

Avenger and Stinger teams have consistently experienced a high casualty rate. Contributing to this trend is the team chief's unwillingness to perform deliberate emplacement procedures upon the occupation of a new position. Hasty emplacement, defined as "only a temporary position used for short periods of time," unfortunately has become the ⇨

norm. Designating and improving alternate positions, which would be occupied after an engagement, would enhance system survivability. But this never occurs. Poor situational awareness has also been a contributing factor to ADA fire unit losses — in some cases, ADA fire units have exceeded a 100-percent loss rate during the deployment.

ADA fire units must assume that they will occupy their assigned position for a long period of time and, as a result, should perform deliberate position emplacement procedures. They should routinely avoid the concept of hasty emplacement, which should be the exception rather than the rule. Fire units must designate, improve and occupy alternate positions after conducting engagements. FM 44-16 (*Platoon Combat Operations - Chaparral, Vulcan and Stinger*), FM 44-18-1 (*Stinger Team Operations*) and FM 44-31 (*Tactics, Techniques and Procedures for Avenger Squad Operations*) provide proven procedures and techniques that, if used correctly, will enhance unit survivability.

Early Warning

Timely air defense warnings, weapons control status changes and early warning information routinely do not reach all ADA fire units. Directed early warning provides redundancy and another source of early warning for the ADA fire units. However, directed early warning should not serve as the primary source of early warning information the ADA fire units receive. ADA fire units that rely solely upon directed early warning ultimately receive untimely, third-generation (division ADO to battery to platoon to fire unit) information. This information has resulted in fire units conducting engagements on outgoing aircraft that have already expended their munitions on ground targets. Directed early warning procedures from the brigade tactical operations center (TOC) to the battalion TOC have greatly improved; however, directed early warning information from the battalion TOC to the subordinate companies requires greater emphasis. Routinely, if directed early warning is even attempted at the battalion TOC, it usually does not provide timely or complete enough information necessary to counter the threat.

Units must conduct a complete predeployment precombat inspection (PCI) to ensure that all communications equipment is on hand and functional. The PCI must include a check to ensure sufficient ➪

WEAPON SYSTEMS

VULCAN TRAINING ENDS AT FORT BLISS

Photo by Tom Cooper

The graduation of Class 1-94 not only ended Vulcan training at Fort Bliss, Texas, it also marked the end of another important chapter in the branch's history. From 1968 until the Avenger's arrival on the scene, the Vulcan served as Air Defense Artillery's only multipurpose weapon system. The Vulcan's ranges of 1,200 meters in the air defense role, 2,700 meters in the ground defense role and 4,500 meters as an indirect fire weapon ensured its combat successes in Vietnam, Panama and Operation Desert Storm.

At the height of its fielding, the Vulcan could be found in 22 active component ADA battalions, one National Guard battalion and in 1-56 ADA and 2-6 ADA, training battalions at the U.S. Army ADA School. 1-62 ADA, Schofield Barracks, Hawaii, will have towed Vulcans until January 1995, while 2-3 ADA at Fort Riley, Kan., will retain both self-propelled and towed Vulcans until this October.

TOM COOPER

batteries are on hand. A final PCI, a communications exercise, will validate that all user's equipment is functional.

Command, Control and Communications

Clearly, reliable communications is necessary to exercise positive command and control. Failure to deploy communications equipment, equipment failures, improper use of equipment and a lack of operator knowledge have greatly reduced command and control within ADA units at all levels. The inability to effectively communicate significantly degrades the ADA unit's overall effectiveness and reduces the ADO's ability to stay abreast of developments on the battlefield. The inability to battletrack nullifies the ADO's ability to influence the battle.

A thorough predeployment PCI, combined with a communications exercise, should greatly improve communications reliability. At the team level, communications equipment must be employed as specified in ARTEP 44-117-11 Drill, ARTEP 44-117-21 Drill and unit standing operating procedures.

Passive Air Defense

Maneuver units continue to sustain avoidable losses by failing to take passive air defense measures. These measures are a significant combat multiplier. An enemy unable to visually detect a target will bomb or strafe blindly, greatly reducing his probability of success. Commanders at all levels must be familiar with passive air defense techniques, continually emphasize them and aggressively fix deficiencies as they occur.

MAJ. JAMES R. OMAN

NATIONAL GUARD

BREEZING PALMETTOS '94

When a Hawk, Patriot or Chaparral missile slams into a ballistic aerial target and the sky explodes with flames during live-fire exercises, air defenders know the value of good training.

Well-prepared ADA units are also training and learning the importance of less dramatic aspects of ADA operations for survival on future battlefields.

The Florida National Guard's 164th ADA Brigade is stressing high-tech training that incorporates complex problems of communications and coordination between units from different services, between active and reserve components, and between U.S. and multinational forces.

Bringing together these elements for effective air battle management training was the goal of a recent exercise the 164th ADA Brigade hosted that incorporated a unique blend of active and reserve component players for unprecedented realism.

"If we go to war on Monday, this is who we'll be working for and this is how we're going to fight," Brig. Gen. John Bridges told members of his brigade prior to the exercise dubbed Breezing Palmettos '94.

During the two-day command post exercise, a simulated computer air battle scenario was generated at Shaw Air Force Base, S.C., relayed via tactical military satellite networks from the 224th Joint Communications Control Squadron, Georgia Air National Guard, to the 290th Joint Communications Control Squadron, Florida Air National Guard, and then to Orlando, Fla., where the 164th ADA Brigade received the information and managed the air battle exactly as they would in war.

The key component of the exercise was joint service participation from active duty U.S. Air Force and Air National Guard units from Florida and Georgia, and active Army units, Army Reserve units and Army National Guard elements from Florida, Alabama, South Carolina and Texas.

The Florida Guard's 53rd Signal Brigade provided key communication links and switching architecture to support the exercise.

Observers and participants from 11th ADA Brigade at Fort Bliss, Texas, the Third Army (Army Central Command) from Fort McPherson, Ga., and the U.S. Army Advisory Element, 41st Tactical Group (U.S. Air Force) from Hulbert Field, Fla., also took part in the training exercise.

The exercise's air battle scenario (scripted from data tapes logged during Operation Desert Storm) replicated an air war over Saudi Arabia. Adding to the realism was participation from the U.S. Air Force 726th Air Control Squadron and the 11th ADA Brigade, units that were actually part of the air war during Operation Desert Storm.

"This was truly a joint, total force effort," Bridges said. "Without the support and participation of the 726th U.S. Air Force and of the 11th ADA Brigade, this readiness level could not have been reached. We employed an actual wartime command and control architecture with tactical communications and electronic systems."

The training helped all participants realize that, in controlling an air battle, it doesn't matter how well you do your job if you can't quickly and accurately coordinate with other elements that may be using different equipment and different techniques. Sometimes you also have to overcome language barriers, Bridges said.

Spec. William Arman (left) and Sgt. Timothy Hall of Headquarters Battery, 2-265 ADA, follow events in the computer-simulated air war during Exercise Breezing Palmettos '94.

"The purpose of the exercise was to put together the elements and challenges that an ADA brigade would face on the modern battlefield," he said. "We not only put together the technical sides of air defense, we also integrated all weapons systems top to bottom, Stinger to Patriot, in an operation echelons above corps."

The brigade reduced overall costs by conducting the exercise during a normal training weekend and by setting up all the necessary equipment, including tactical satellite dishes, in a field next to the brigade armory. The entire exercise cost less than $6,000 in additional support dollars.

Putting together the complex exercise was an ambitious goal for the 164th ADA Brigade — the Florida Guard's youngest brigade at only five years old. Although the brigade has already proven itself in two state activations for natural emergencies, leaders have realized a need for intense training to prepare the brigade for its federal mission of coordinating and controlling subordinate ADA battalions and other units at echelon above corps level.

To accomplish this, brigade leaders recently took on a rigorous training schedule. Twice last year the brigade traveled to Darmstadt, Germany, to participate in multinational NATO ADA exercises hosted by the U.S. Army's 32nd Army Air Defense Command.

During these exercises the 164th ADA Brigade and other stateside active and National Guard ADA units learned how their units would fit into multinational ADA plans. They also got a chance to work hand-in-hand with allied NATO air defenders in realistic command and control structures.

The 164th ADA Brigade returned from Darmstadt to begin

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putting together Breezing Palmettos '94, which Bridges called the most complex exercise of its kind ever conducted by a National Guard ADA headquarters in the United States.

"This exercise validated my assessment that the brigade is at a readiness level where we can now work on the smaller pieces rather than the big," Bridges said. "All systems from theater to fire unit level have been integrated. I feel we're at the highest readiness level we've ever reached."

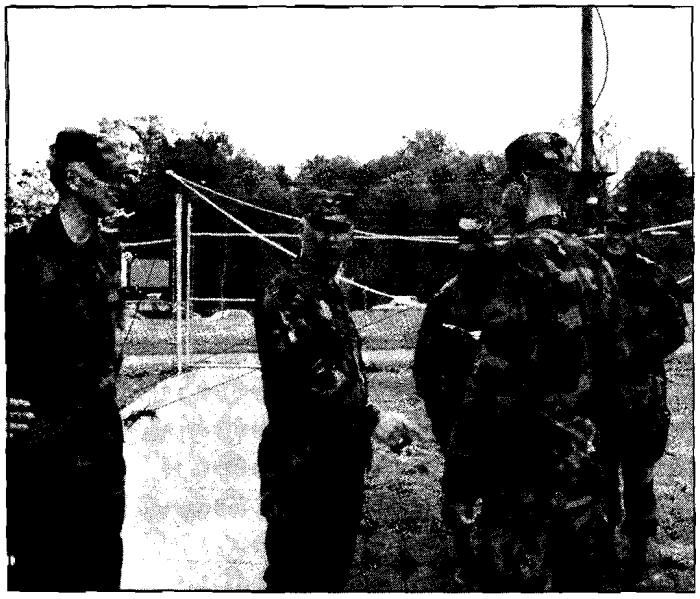
Thirteen general officers, including Chief of ADA Maj. Gen. James J. Cravens Jr., attended the training. Cravens commented on how far the brigade has come in five short years.

"I remember when this brigade was crawling," Cravens said. "Today it's walking, getting ready to gallop."

1ST LT. JOHN DAIGLE JR.

SFC Raymond Oliver (far left), 164th ADA Brigade NBC NCO, supervises two of his soldiers tracking troop movement during Breezing Palmettos '94.

TOP ARNG GENERAL VISITS UPSTATE AIR DEFENDERS



National Guard ADA units in South Carolina were honored by a visit from Maj. Gen. John R. D'Araujo Jr., director of the Army National Guard from Washington, D.C. As director, D'Araujo formulates, develops and coordinates all programs, policies and plans affecting the Army National Guard and its more than 440,000 citizen soldiers.

D'Araujo often visits Guard units to spend time with soldiers. Spending time with the men and women in the field is a time to become current on interests of the National Guard. D'Araujo first spent time with various unit commanders before walking around to observe training and talk with the soldiers.

Lt. Col. Tommy Thompson, 263rd ADA Brigade operations officer, stated, "It was evident that Major General D'Araujo came to hear what the soldiers had to say. He appeared eager to listen to ideas, and he was definitely a soldiers' soldier." Brigade commander Brig. Gen. Hoyt Thompson added, "We are extremely pleased and grateful to Major General D'Araujo for visiting us in upstate South Carolina to see the hard work and progress of our outstanding unit members."

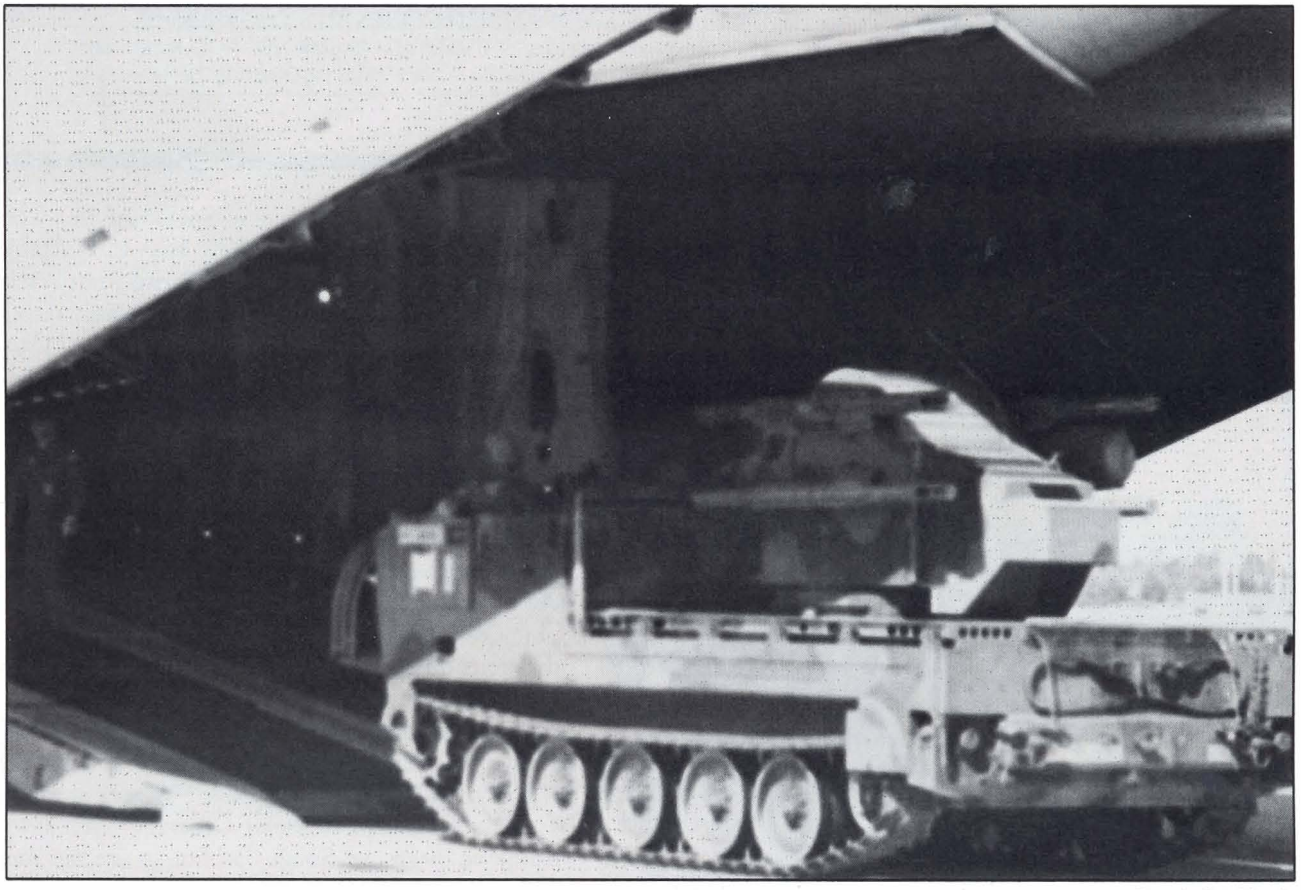
ANDY ALTIZER

JOINT EXERCISES

EXERCISE CASCADE VALLEY

As the phone lines began to ring in the 35th ADA Brigade Headquarters at Fort Lewis, Wash., months of close-hold planning ended and the execution phase of Exercise Cascade Valley, the rapid deployment of key elements of I Corps, began. 35th ADA Brigade received a mission to rapidly deploy a composite air defense task force to support combat operations in a notional country called Washingtonia.

Planning for this deployment exercise began early. Several units of the Air Mobility Command were to receive operational readiness evaluations and inspections. To enhance the realism of these evaluations, the Air Force contacted I Corps to coordinate for units to participate in the operational readiness evaluations and inspections process. The personnel and equipment would provide operational loads to the evaluated units. The Air Force wanted to prepare, load and fly these units to a remote air base, simulating contingency operations in an immature theater similar to the Southwest Asia theater at the beginning of Desert Shield. The Air Force would provide up to 28 sorties of C-5 Galaxy strategic lift aircraft to transport the units. 35th ADA Brigade provided the corps an excellent troop and vehicle density to satisfy the Air Force's operational needs. 35th ADA Brigade, meanwhile, received a requirement to plan and prepare to execute several flexible deterrence options. Flexible deterrence options involve the strategic movement of Patriot units to support worldwide contingency operations.



A 3-2 ADA Chaparral rolls onto an Air Mobility Command C-5 Galaxy prior to flying to Dugway Proving Grounds, Utah.

Photo by Sgt. Albrecht

Twenty C-5 aircraft sorties presented the brigade the opportunity to exercise and validate one of the options.

Initial planning for this exercise was close-hold, meaning that only limited personnel would have knowledge of the dates and the mission. In the 35th ADA Brigade, only the brigade commander, deputy commanding officer, brigade S-3, S-4 and signal officer knew of the alert date and concept of operation. Upon receipt of an exercise intelligence summary generated by corps, the brigade issued a warning order to 3-2 ADA (Chaparral) and 4-7 ADA (Patriot). The battalions began a mission analysis process and planning for possible worldwide deployment. The Air Force chose Michaels Army Airfield at Dugway Proving Grounds (DPG), Utah, as the remote air base to deploy the brigade's units. A large runway and tactical training areas made DPG an excellent choice. The brigade close-hold planning cell conducted two separate training area reconnaissances to DPG. They coordinated for all logistical support that the brigade would need while deployed to the DPG and inspected the airfield's facilities and the training areas.

The timing of the deployment exercise coincided with a previously planned joint service training exercise (JSTE). U.S. Army Forces Command directs JSTEs that involve units from all branches of the service. The simultaneous execution of these missions seemed possible, and the JSTE Korean-based scenario offered the brigade a realistic air defense planning opportunity. The key to all JSTEs is a communications network that links units from around the country into a centralized control reporting center. To execute the JSTE from Dugway, the brigade required a tropospheric scatter radio system node.

Photo by Sgt. Albrecht

Equipment from 35th ADA Brigade undergoes a thorough preparation process at the Fort Lewis scale house before being loaded on Air Force aircraft.

The Air Force's 729th Air Control Squadron provided this communications support to the brigade. JSTE planners conducted several planning conferences, including one video teleconference, to ensure that the simultaneous execution of the JSTE and deployment to DPG would not cause a conflict.

The execution of Cascade Valley presented 35th ADA Brigade with realistic and challenging deployment training. I Corps conducted an evaluated emergency deployment readiness exercise of the brigade. Evaluators from I Corps watched and evaluated the brigade's ability to conduct a mission analysis ⇨

Photo by Sgt. Spann

A Patriot launcher from A Battery, 4-7 ADA, prepares to engage hostile targets while deployed to Dugway Proving Grounds.

and issue an order, and the subordinate battalion's ability to execute that order. Headquarters and Headquarters Battery, 35th ADA Brigade, 3-2 ADA and 4-7 ADA received evaluations on their alert and recall procedures, equipment preparation and ability to begin deployment within 48 hours of alert notification. A Battery, 4-7 ADA, with 3rd Platoon, C Battery, 3-2 ADA, attached and a battalion C^2 element, received the mission to conduct rapid deployment by air to Dugway. The 35th ADA Brigade fire direction center and the brigade jump tactical operations center (TOC) also deployed to DPG to execute the JSTE, interface with 4-7 ADA and coordinate with DPG agencies. Within 48 hours of receiving the alert notification, elements of the brigade began to load equipment into C-5s. Within 96 hours of receiving alert notification, 95 tactical vehicles, 200 personnel and numerous pallets were prepped, processed, loaded and flown to DPG.

Upon arrival at DPG, all units deployed and tactically emplaced to provide air defense to Michaels Army Airfield. 4-7 ADA (-) emplaced and established ultra-high frequency (UHF) communications with the brigade fire direction center. The Chaparrals from 3/C/3-2 ADA deployed to provide air defense of the dead space around the radar of A/4-7 ADA. 35th ADA Brigade set up and operated the jump TOC. The deployment allowed the brigade to exercise its new and refined jump TOC equipment and procedures. After four hectic days of deployment, the brigade settled into sustainment operations and prepared to execute the JSTE.

As the JSTE began, the 35th ADA Brigade fire direction center linked into the control reporting center located at Hill Air Force Base, Utah. 4-7 ADA and 7-200 ADA (Hawk) of the New Mexico Army National Guard, task organized under 35th ADA Brigade, reported to the brigade through its TSQ-73 Missile Minder. The exercise involved communications checks, data fidelity drills and a simulated air battle. The exercise was a huge success. It was also the first time a unit had participated in a JSTE while also conducting a contingency-based deployment training exercise. For these reasons, the brigade received a high ➪

priority of support from the Forces Command J-3.

Deployment operations began after the JSTE. Again, the brigade completed the complicated task of loading vehicles, prepping equipment for air loading and meeting the Air Force's stringent movement requirements. No external post organizations supported the movement. The soldiers of 35th ADA Brigade worked constantly to meet the air movement schedule.

35th ADA Brigade learned many important lessons during Cascade Valley. Units must adopt a mindset to maintain and prepare equipment for immediate deployment by land, sea or air. All units down to battery level must train and qualify personnel in hazardous cargo transportation procedures, airload planning and general movement procedures. All services must establish common movement standards and maintain close liaison. Rapid deployment is not new to the Army, but the shift from forward deployed units to rapidly deployable forces now means that all units must understand and execute rapid deployment to support worldwide contingency operations. 35th ADA Brigade executed a no-notice deployment and put maximum firepower where the commander wanted it because it trains hard on deployment skills and maintains its combat readiness.

CAPT. ANDREW V. COCHRAN

EXERCISE CENTRAL SHIELD

The 32nd Army Air Defense Command (AADCOM) recently conducted its largest-ever command post computer-assisted exercise: Central Shield. Dubbed MOAADE, "the mother of all air defense exercises," Central Shield spanned two continents, involved seven major ADA headquarters and tested the total Army concept of integrating Army National Guard personnel into an active force unit. It also pro- ⇨

Photo by Sgt. Spann

A 3-2 ADA Chaparral conducts an emplacement crew drill in preparation for combat operations.

vided units the opportunity to train with our allied counterparts within the new NATO command and control architecture. But most importantly, it evaluated the AADCOM's roles and mission in the Army's future force structure.

32nd AADCOM sponsored the exercise and hosted the 111th ADA Brigade (New Mexico Army National Guard), 164th ADA Brigade (Florida Army National Guard) and the 263rd ADA Brigade (South Carolina Army National Guard) at the Darmstadt Air Defense Training Center. The 69th ADA Brigade (Giebelstadt) and 94th ADA Brigade (Kaiserslautern) participated from their home stations via mobile subscriber equipment and tactical satellite. The 11th ADA Brigade (Fort Bliss, Texas) and subordinate units played from McGregor Range, N.M., via distributed communications networks.

Brig. Gen. Joseph Garrett, 32nd AADCOM's commander, established three primary objectives for this exercise: train the *new* 32nd AADCOM and brigade staffs, integrate the 263rd ADA Brigade into the 32nd AADCOM staff, and train participating air defense elements in NATO integrated air defense operations.

The exercise centered on 32nd AADCOM's battle simulation center. The center provided the computer workstations to run the corps battle simulation wargame used to drive the exercise. The wargame was a north-south conflict simulating a real-world scenario.

The AADCOM tactical operations center was deployed and manned by a completely new G-staff working with the latest NATO doctrine. In addition, the 111th and 164th ADA Brigades were furnished with five-ton expando and M-109 vans to perform their missions. The battle staffs focused on multinational contingency planning, staff coordination and command relationships.

Twenty-five soldiers from the 263rd ADA Brigade served on the AADCOM's G-staff or as exercise controllers during the exercise. This was a successful test of the TAA 01 reserve augmentation concept proposed for 32nd AADCOM's future stateside stationing. Brig. Gen. Hoyt Thompson, commander of the 263rd ADA Brigade, stated that "this was a tremendous opportunity to test the Total Army concept. My people and I have learned a lot from this training and I look forward to doing more exercises like this in the future."

Participating ADA brigades and various support units were "replicated" by shifts of soldiers manning response cells in the battle simulation center on a 24-hour schedule. Included were allied military personnel from Allied Forces Central Europe, the German Air Force's 2nd SAM Division, the Royal Netherlands Air Force (Dutch) Ministry of Defense, a team from the NATO Combined Area Operations Centers 3 and 4, and representatives from the U.S. Air Force Europe and the Warrior Preparation Center. Teams from V Corps, 21st TAACOM and representatives from 1st Personnel Command and the 7th Medical Command also participated.

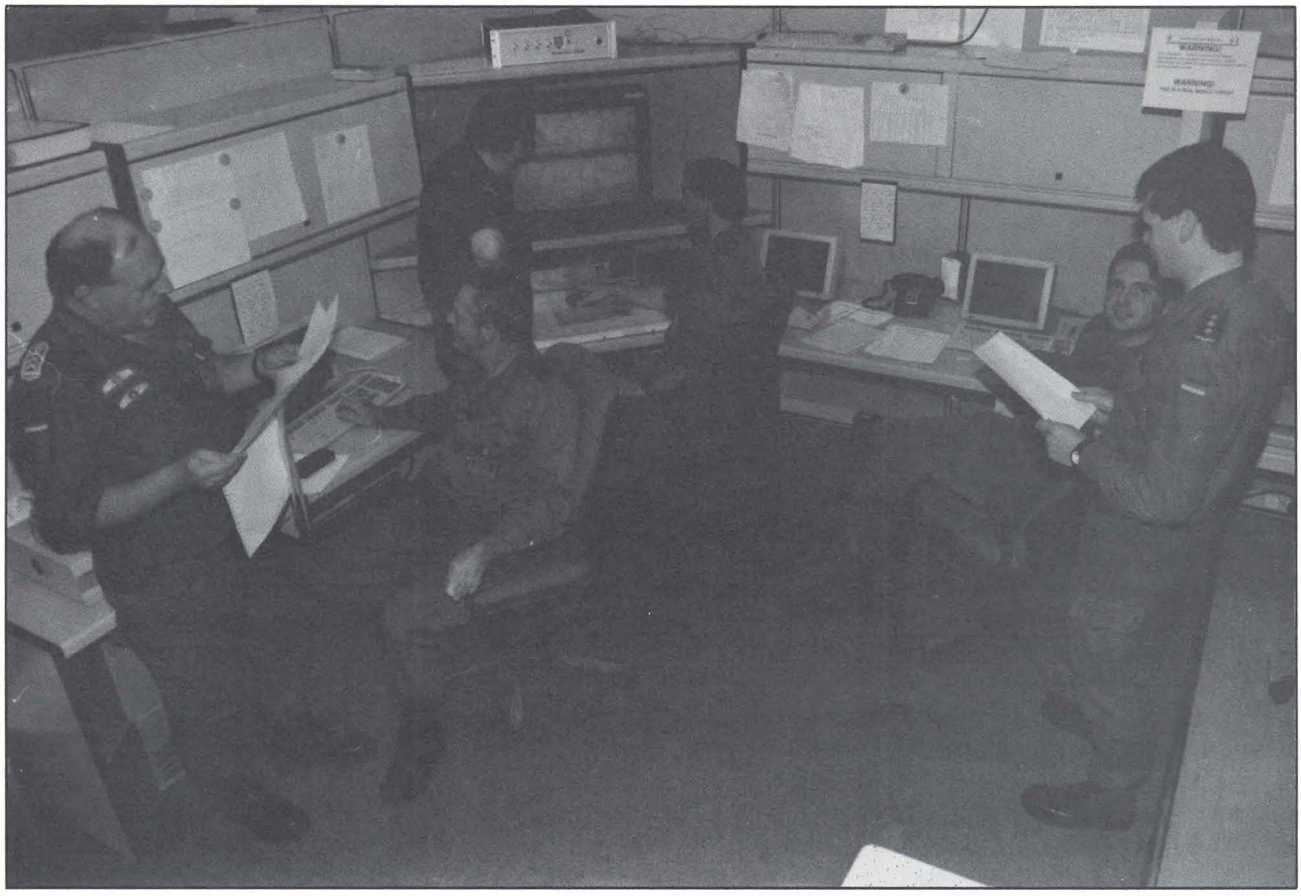
Central Shield required wartime support from an echelon above corps signal brigade. With the inactivation of the 11th AD Signal Battalion in October 1992, the 32nd AADCOM has no communications assets to support the headquarters. The 32nd AADCOM G-6 met air defense user's communications requirements at the tactical operations center and in the battle simulation center by integrating the capabilities of several signal players. The 7th, 11th and 22nd Signal Brigades participated while the 413th and 286th Signal Companies directly supported the 94th and the 11th ADA Brigades respectively. The 7th Signal Brigade provided the echelon above corps support.

This was a communications and computer-intensive exercise. All general staffs were connected into a tactical communications network and the Defense Switched Network. 7th Signal deployed an AN/TTC-39D switching node center, tactical satellite terminals and signal personnel to augment a collective system control center. The brigade also installed a network management computer that continually provided real-time monitoring and visibility of communications links. The integrated communications support and the outstanding cooperation between all signal players assisted in the successful accomplishment of Central Shield.

32nd AADCOM installed a tactical local area network during the field exercise to facilitate information dissemination and distribution. Using notebook computers and a common suite of software at the field site, the general staff maintained information systems available to them in garrison; e.g., report writing and E-mail. The field local area network server consisted of a 486.

Communications also played an invaluable role. The 7th Signal Brigade, 11th Signal Brigade and the 22nd Signal Brigade all provided outstanding communications support by linking the AADCOM to the states and two dispersed ADA brigades, encountering no outages during the entire exercise. This was another example of new post-drawdown forces testing new missions for the first time.

Central Shield was a success in many ways. All U.S. forward- ➪



German and Czech Republic soldiers review plans at the battle simulation center during Exercise Central Shield in Darmstadt, Germany.

Photo by Spec. Rusty Qualls

deployed and echelon above corps ADA and National Guard brigade headquarters participated in the exercise. The 11th ADA Brigade, playing in its first-ever computer-assisted exercise, demonstrated the AADCOM's ability to integrate and train with ADA units in future exercises from their home stations.

In addition to meeting all training objectives, some useful insights were drawn during the course of the exercise. Chief of these was the absolute necessity for all battle staffs to be highly trained in command relationships and proper reporting procedures. This is critical to make the complex air defense battlefield operating system fully responsive to the air and ground commanders' campaigns and plans. "The complexity of involving the ARNG units, the 11th and 69th ADA Brigades, and our allies proved a significant challenge in determining how we operate in a NATO environment. This was a training issue that improved as the exercise progressed," said Lt. Col. Robert Gregg, 32nd AADCOM G-3.

Central Shield proved that good planning and coordination can overcome both distance and training constraints. The National Guard brigades had limited training time available, and the 11th ADA Brigade remained at Fort Bliss throughout the exercise. While we discovered timing errors, the basic goals and operating plan for the exercise were finalized far enough in advance to allow resources to be programmed. Using modern communications and judicious allocation of resources, the commander can "mass" his forces into a computer and create a training opportunity unimaginable just a few years ago.

Central Shield demonstrated the air defense community's resolve for preparedness in an ever-changing world. The lessons learned will make us better prepared for tomorrow's contingency missions. Can Exercise Global Shield be very far in the future? A wise air defender might well consider this article to be a warning order!

A GREAT UNIT INACTIVATES

3-2 ADA's inactivation is a model for other units facing future drawdowns

by Maj. Steve Sboto, 1st Lt. Corwin Hee and 1st Lt. Greg Morello

Proactive planning, astute public relations, positive command and control and basic Army operational procedures transformed the dreaded inactivation task into an exciting and challenging mission. 3rd Battalion, 2nd Air Defense Artillery, the last active duty Chaparral unit, created a textbook air defense success story. With little notice, it shifted its wartime focus to execute an inactivation on a compressed timescale.

As divisions and non-divisional units draw down, organic ADA units will follow suit. They will face what is perhaps the most difficult mission any peacetime organization experiences — the unit inactivation. Wrestling with this multifaceted task invokes deep frustration. The unknown factors common to this operation defy all conventional training. Our experiences center on the life of a unit, not its symbolic death. How can you dissolve a battalion in an efficient, orderly manner? How do you maintain morale and take care of soldiers throughout this process? No definitive manual or agency exists. The onus rests on overburdened unit leaders who must gain immediate expertise in all aspects of the battle at hand. 3-2 ADA attacked the problem with the same planning and execution techniques that powered the battalion to success in each of its previous missions.

Proactive Planning

Lt. Col. Wilton Ham, 3-2 ADA's battalion commander, took charge in July 1993. The busy days leading into August contained a host of missions, taskings and field problems. Combat readiness occupied the unit's day-to-day focus. Although the inactivation end date (E-date) of Sept. 15, 1994, lay well into the distant future, Ham realized that this upcoming mission would soon assume primary importance. He directed his battalion staff to formulate a concept plan and an operations plan for the inactivation.

The staff immediately researched all available literature on the subject. This yielded a few short magazine articles. A Fort Leavenworth Center for Army Lessons Learned booklet outlined general inactivation actions occurring along either a 360-day or 180-day timeline. This useful first step energized our thought processes. The staff then conducted a battle staff drill. Col. J. W. Jeffrey Jr., our brigade commander, authorized a 180-day plan. Using a standard operations-type synchronization matrix, we charted the period from March 15 through Sept. 15, 1994. Instead of using battlefield operating systems, the "X" side of the matrix listed every area requiring planning and execution. Some of the major divisions included personnel, modified table of organization and equipment (MTOE) property, training, furniture, real property, installation property, Chaparrals, wheels, tracks, communications, distractions, etc. This tedious drill outlined the major tasks or actions. It also provided a rough estimate of when they should occur to meet our E-date. The staff then used a personal computer to create a critical plan method model of the entire process. By connecting all the necessary tasks (calculating earliest start and latest finish times), we "wargamed" the process. We created charts to organize all tasks in chronological order. This pinpointed the most critical tasks, and we focused our efforts on those areas. Further brainstorming identified every unit, agency, office or person involved in the process. These key points of contact would later play a crucial role. This groundwork yielded our concept plan. As a feasibility check, we then "staffed" our strategy among our supporting agencies and units. Their feedback led to further revisions.

Diversifying Ownership

Inactivation requires teamwork. No unit can complete this process without outside help. Early on, we realized success required the direct involvement of more than 20 major players external to our planning. We succeeded in persuading the key organizations to "buy into" our plan and our methods of operation. Not only did this simplify the process, it also allowed us to implement the commander's philosophy of "working friendly" with our support agencies. These amicable relationships contributed immensely to our logistical achievements. They also reduced our "centers of gravity" throughout the operation.

On-the-Shelf Operations Plan

Once we understood the necessary tasks, resources at hand, operational environment and the roles of all internal and external players, we synthesized a comprehensive operations plan. Five paragraphs and 15 annexes detailed the "how to's" for each separate operation. This document served as a blueprint for our battery commanders. It expressed the commander's intent for

every area and clearly defined the level of decentralization for specific missions. By attributing roles and responsibilities before beginning the process, we minimized potential conflicts. This freed the commanders and staff to concentrate on their own tasks. Our early research paid enormous dividends. We returned to our training with a comprehensive, viable inactivation plan waiting for implementation.

Flexibility and Versatility

3-2 ADA deployed from Fort Lewis Oct. 12, 1993, for its last major field training and live-fire exercise at Yakima Training Center. Training lasted nearly four weeks. The battalion conducted extensive air defense training and evaluations at the battery, platoon and squad levels. We participated in a brigade-level field training exercise, qualified all soldiers on individual and crew-served weapons, and completed the last active duty Chaparral live-fire exercise. Following redeployment on Nov. 9 (without loss, breakdowns or injury along a 300-mile round trip), the battalion shifted gears and focused on its brigade command inspection the following week. The results confirmed 3-2 ADA's excellent reputation. All areas rated either excellent or satisfactory. Just before a well-deserved holiday season, the battalion received new orders. Fiscal requirements within I Corps combined with other factors to force acceleration of the timetable. Not only did the commanding general approve of a new E-date of July 20, 1994, he also directed that 3-2 ADA turn in all MTOE property by Feb. 28.

Responsiveness and Effectiveness

Ham realized the enormity of this task soon after he received his new orders. He had only 54 available working days (many during the Christmas and New Year holiday period) to turn in or transfer over 300 LINs and 6,456 property book items to Army standards. This monumental undertaking included 36 Chaparrals, 98 wheeled vehicles and 16 tracked vehicles. He still had other active missions. 3-2 ADA received several taskings, including sole responsibility for Fourth ROTC Region's Ranger Challenge competition. Early in September, the corps' top logisticians projected that complete turn-in would require at least 180 days. Despite this earlier assessment, Ham vowed 3-2 ADA would meet the commanding general's goal of Feb. 28. He assembled his staff and quickly mapped out a new long-range inactivation calendar to reflect advanced timelines for property and personnel disposition. He gave his commander's intent and clearly defined the end state of the mission. For management purposes, he divided the mission into functional areas. The battalion executive officer (XO) and battery commanders controlled MTOE property. The adjutant and the command sergeant major (CSM) administered personnel. While the battery commanders organized CTA, furniture and installation property, the CSM and the S-4 handled real property. Since none of the tasks changed, our operations plan still contained valid information. The staff and commanders simply compressed the original timeline and used the plan as an operations order.

MTOE Property — Priority Number 1

To facilitate the mass movement of equipment in a compressed period, property turn-ins received top priority. The XO coordinated with all external units and agencies to maximize the outflow of equipment. The S-4 shop served as a central clearinghouse for transfer and turn-in documentation. Battery commanders prepared their equipment to TM 10/20 standards, transferring or turning in the equipment as soon as proper documentation arrived. This kept the chain of command intact and improved our efficiency.

Pacing Items — Teamwork with MICOM

The first reaction to any inactivation order, especially in a successful unit, is disbelief. An efficient retrograde of the unit's primary weapons system — 36 Chaparral fire units — quickly subdued most mental resistance to that fact. 3-2 ADA began coordination with U.S. Army Missile Command (MICOM) representatives as early as October. This enabled the battalion to understand the turn-in process and complete all planning necessary for final execution. Armed with the Material Retrograde Agreement signed by MICOM and Ham, we planned the detailed layout, inventory and rail-load of all equipment. Based on previous Chaparral battalion inactivations, MICOM originally projected a four-week operation. However, outstanding preparation by our maintenance and supply sections enabled MICOM to wrap up the retrograde in just two weeks. Their representatives later commented that 3-2 ADA possessed the best maintained Chaparral systems of any active or reserve unit.

Moving Mountains of Property

After filling authorized shortages within 35th ADA Brigade, the search for authorized "buyers" for our property unearthed unexpected difficulties. Certain units requested property without possessing official authorization for those items. To minimize confusion, the corps Material Management Center (MMC) retained overall responsibility for authorizing property movement across the corps. Unfortunately, severe personnel shortages and data base inaccuracies hampered the MMC's effectiveness. Recognizing this key link in the process, 3-2 ADA drew up master lists of its remaining property. To facilitate the rapid movement of property out of the battalion, the XO acted as liaison with the MMC. He provided daily updates with current information to the MMC personnel responsible for lateral transfer and turn-in directives. He also sought authorized "buyers" and relentlessly pursued the generation of all transfer directives. The command group, battery commanders and S-4

continuously contacted potential customers. 3-2 ADA also advertised in the daily bulletin. Unit logistics and property book officers across the corps sent wish lists and compared their needs with 3-2 ADA's property book. Using our own data base, we furnished the MMC with a listing of bona fide shortages in other units and shortly thereafter picked up customized lateral transfer directives. This quick turnaround enabled our battery commanders to work continuously on a steady flow of property transfers, thus maximizing unit productivity.

Command and Control

The XO, as chief of staff, coordinated the movement of several thousand MTOE items. As the transfer directives multiplied, he developed a simple, effective tool. Data base spreadsheets in a matrix format tracked each LIN, nomenclature, quantity, gaining unit, losing unit, directive control number and transfer document number. As the unit received each directive, he updated the matrices. He distributed hard copies to all concerned parties at least weekly. The XO also received daily updates from the battery commanders. These matrices served as the road map for movement of all MTOE property.

Creative Options

After exhausting all other avenues of property transfer within the corps, we expanded our search to include regional Army National Guard units. This proved an extremely successful venture. Direct coordination with the Washington and Oregon Guard units identified many MTOE shortages — new homes for 3-2 ADA's residual property.

The Other Logistical Challenge

As with any inactivation, once the unit exhausts the lateral transfer route it must turn in all remaining property through quartermaster channels. This task never evolved beyond a frustrating bureaucratic nightmare. The equipment first undergoes technical inspection at the direct support maintenance units. Once the equipment returns from this time-consuming process, the unit corrects all deficiencies and installs all missing parts. Assuming the support agencies are at full strength and that all equipment receives the required appointments whenever necessary, there are technical inspections and, of course, re-inspections. If it passes all inspections, the equipment receives a final quality assurance inspection. If approved, the quartermaster unit cheerfully accepts it.

3-2 ADA avoided many of the pitfalls associated with this ponderous operation. Close contact with influential members of the key support agencies, combined with our outstanding equipment maintenance program, minimized the obstacles. Despite these efforts, an unforeseen hurdle appeared. Personnel shortages hobbled the supporting quartermaster company that services all I Corps units.

Initially, they could not support the density of equipment turn-ins scheduled for the battalion. We met with the Quartermaster leadership and discussed the con- straints. We then provided a dedicated squad of talented NCOs and soldiers to work on 3-2 ADA's equipment. This arrangement guaranteed the battalion two turn-in "windows" per week. We quickly pushed large amounts of property through the supply system.

Going, Going, Gone

By Feb. 28, 1994, after only 54 available working days, 3-2 ADA turned in or transferred more than 6,100 items (95 percent of its MTOE property), including 36 Chaparrals, 97 percent of its wheeled fleet and 88 percent of its tracked fleet. The remaining items awaited direct support or other maintenance, parts or turn-in dates. Although this astonishing feat cost only $5,000 in Classes 2, 4 and 9, our personnel enjoyed the greatest savings. 3-2 ADA accomplished this mission without working its soldiers weekends, holidays or overtime. In fact, normal duty hours prevailed throughout the process. By laterally transferring as many pieces of equipment as possible, we met our battalion commander's intent. Our active pursuit delivered 81 percent of our rolling stock to units with bona fide shortages. We also shielded the soldiers from most of the burdensome "do loops" involved in the vehicle inspection and turn-in process. Strong maintenance programs permitted the orderly transfer of all vehicles at 10/20 standards with properly documented shortage annexes. Our rapid progress allowed the battalion to focus its remaining time on its most important asset — its soldiers.

A Soldier-Oriented Plan

Moving troops required vastly different tactics than those used to move property. Each soldier and each family has special needs. Ham established the same high standards for speed and efficiency in personnel management throughout inactivation. He insisted that the staff and commanders carefully balance our soldiers' well-being with any mission requirements. We still attempted to "work friendly" and convince our supporting agencies and units to accept our plans. We also added a flexible, personalized plan focused on soldier care and soldier concerns.

The CSM and adjutant spearheaded the development and execution of the personnel plan. The battalion commander laid out general guidelines. Each soldier would leave the battalion fully deployable with updated training records and a completed NCO or officer evaluation report in hand. All deserving soldiers would receive an award or a letter of continuity. Of course, the implied task list proved a bit more extensive. Every air defense soldier required a new MOS and assignment. All low-density MOS soldiers (mechanics, supply, cooks, etc.) needed a new home on Fort Lewis. As we developed the plan, the wide-ranging scope of the mission emerged.

We identified three key objectives critical to success. We arranged assistance from external agencies. We also redesigned our internal PAC processes to meet the new workload. Finally, we designed an information system to tie it all together.

Our toughest personnel task involved the reclassification and training of 200 Chaparral crew members. 3-2 ADA, as mentioned earlier, was the last Chaparral missile battalion in the active Army. About a year earlier, 35th ADA Brigade's Hawk battalion inactivated. They enlisted a team of experts from DA, an Enlisted Personnel Management Team, to help in the reclassification process. Such personal service enjoyed obvious advantages: no paperwork shuffle across the country, individual questions answered quickly and accurately, reduced chance for processing errors or misunderstandings, and a "human" element to each packet of papers — a face attached to every name. The battalion commander and CSM negotiated two visits for the team (paid out of battalion funds). Each visit served a different function. In October, the DA team addressed the soldiers' initial issues and presented an overview of opportunities in Air Defense Artillery and the Army. A follow-up visit in January finalized paperwork for MOS and assignment choices.

The soldiers displayed genuine interest during the October visit. It dispelled many rumors concerning the reclassification process. Initially, many soldiers believed they could choose almost any new MOS. They soon discovered that the needs of the Army and, more specifically, the ADA branch, dictated their reclassification. Between visits, the battalion PAC constructed a reclassification packet for every ADA soldier. Each packet contained a DA Form 4187 with three MOS and three assignment choices, a retainment worksheet and the soldier's 2-1 and 2A information sheets. The PAC also pre-screened all records. The PAC supervisor, personnel services NCO and re-enlistment NCOs interviewed every soldier over a three-day period to ensure they qualified for their requested MOSs. Each soldier left with a basic working knowledge of the process and their options. The DA team returned in January to find the paperwork virtually completed.

During the January visit, soldiers discussed their final choices for MOS and assignment preferences. They also explained any special requirements or considerations for themselves or their families and signed their forms. When the team returned to Washington, D.C., they held every ADA soldier's preferences in hand. More importantly, they understood the problems and needs of individual soldiers.

Over the next three months, the adjutant contacted the DA team almost every day. He rapidly delivered information on assignments and MOS schools to the soldiers. While problems did surface, the process continued smoothly thanks to the preparation, screening and personal interviews. Nearly all correspondence occurred over the phone and by fax, eliminating the delay associated with mailing hard copies of information and records. Within 60 days, 95 percent of the air defenders knew their next duty station, their new MOS and the school date for their training.

Knowing when the soldiers were leaving was only half the battle. Soldiers could begin to clear post with a memorandum from their battery commanders, but many important agencies (e.g., housing, finance, etc.) refused to outprocess soldiers who didn't have "orders in hand." Early class dates for many of our soldiers left us no margin for error. We could not afford to wait for soldiers to receive orders through the normal consolidated assignment process cycle without risking course dates. Again, personal contact with key players in the process supplied a solution. Our CSM met with the levy section on post. They agreed to process orders using a faxed copy of soldiers' reclassification notices. In return, we provided a clerk to work at their shop during the day, processing orders only for our soldiers. This cooperative effort cut processing time immensely, provided positive control of the process and allowed us to react quickly to changes.

With so many soldiers leaving so soon, the adjutant spoke with representatives from the Fort Lewis Transportation Office and the Housing Office. He arranged for on-site briefings at our headquarters. In many cases, these briefings eliminated the need for personal appointments and thus reduced the workload for these agencies. The representatives gathered vital information necessary to manage 3-2 ADA's departure in an orderly fashion (e.g., scheduling household goods pickups and projecting quarters availability). We maintained points of contact at each agency and helped them improve their effectiveness. This paid dividends later when we ran into short suspenses and soldiers with special cases.

Internal Changes

All internal efforts to execute personnel actions successfully centered on the PAC. It prepared packets for reclassification, processed awards and NCO Evaluation Reports for each departing soldier, conducted outprocessing briefings, obtained orders and continued to perform normal personnel functions daily (finance, promotions, data base updates, etc.). We first decided to increase the number of personnel in the PAC to handle the increased workload. The PAC supervisor, however, wisely warned against such a plan. Instead, we enlisted the help of the batteries to smooth the work flow over several months. For example, we did not link awards and efficiency ratings to departure dates. Instead, the batteries prepared the necessary paperwork for each soldier as early as January. Once soldiers received their orders, the unit turned in completed copies to the PAC. This allowed a few highly skilled clerks to process administrative actions effectively and efficiently. Automation (a forms generation program and computer awards templates) allowed PAC personnel to process, store and recall awards and NCO Evaluation Reports as

needed, instead of facing a processing rush at the end of inactivation. We added and lost clerks along the way, but an average of 10 soldiers — most of them converted air defenders — handled all the administrative actions for a 410-man Chaparral battalion.

Keeping Track

The personnel information generated during the mission grew exponentially throughout the inactivation. We wanted to maintain positive control of each soldier. To ensure proper tracking and completion of every action, we required a powerful data base solution. Clearly, we could not use the SIDPERS system. The adjutant designed a detailed data base accounting and reporting system using Microsoft Excel for Windows. It tracked MOS choices, assignment preferences, reclassification status and the receipt of orders. The system provided flexible query capabilities and automated reporting. A minimum initial effort paid off handsomely. The system quickly expanded to include 20 different reports. The data base allowed the adjutant to project strengths, provide customized reports to the batteries, keep soldiers informed of the latest information and provide the command group with the information necessary to make informed decisions. As the E-date approached, the system helped commanders "manage by exception." For example, it allowed them to extract reports on soldiers without reassignment instructions or orders and focus attention on these problems.

Pack Up Your Troubles

Soldier care involves excruciating details. While these often hold secondary importance to commanders, they loom large in the lives of individual troops. During a previous unit's after action review, single soldiers blamed poor morale on frequent internal moves within the battalion. A few unfortunate souls moved four or five times during a six-month span before finally transferring out of the unit. The battalion commander directed that no soldier would move more than once internally. The first sergeants and the CSM hammered out a consolidated battalion movement plan. Schematic drawings on computer software outlined exactly who occupied each room and a scheduled departure date. This greatly reduced soldier movement.

Rumor Control

Inactivation missions breed doubt and fear. Soldiers worry constantly about their next job or duty assignment or whether they will remain in the Army. All this uncertainty undermines morale and erodes the cohesion of any unit. Timely, truthful information counteracts this attack. We designed multiple information systems to get current data to a maximum number of soldiers. Ham held monthly payday meetings for the battalion. We organized family support group events after hours in the dining facility. Newsletters and bulletin boards boasted the latest facts. Information officers and NCOs collected concerns for soldiers and their families. The command addressed every question in a continuing battle against rumors and misinformation.

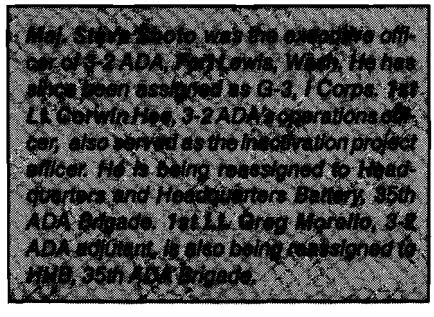
Morale

Our battalion commander kept emphasizing the importance of maintaining an upbeat, positive attitude. We spent much of our time cultivating a sense of pride and professionalism in the unit. Morale activities such as field trips, parties and organized sports competitions helped ease the frustrations of the arduous workload. This campaign, combined with the efforts of each soldier in the battalion, earned the battalion an unparalleled reputation throughout I Corps as a unit that could achieve any mission set before it. We received several by-name requests for taskings during our inactivation sequence. Our unit achieved one of the lowest rates of blotters and disciplinary actions of any unit at Fort Lewis. In addition, our battalion led the brigade and I Corps in retention for two straight quarters during the height of our inactivation.

Results

As of April 15, 1994, all 197 ADA soldiers had received their new MOSs and were preparing to move to their schools for training. In the final months, our greatest personnel challenge required us to find innovative ways to keep soldiers focused, busy and individually qualified in basic combat readiness skills. Three major factors contributed to our success. We maintained constant, cooperative interaction with external agencies, especially DA. We also staffed our PAC with a few "professionals" rather than a large number of unskilled "worker bees." Finally, our commanders committed themselves to putting soldier care first.

In the constant flux of the postmodern world, change remains the only certainty. Despite worldwide tensions it seems the public will persist in demands for further reduction of our armed forces. We should not ask whether continued losses are necessary, but rather which unit will make the next sacrifice. Inactivations, always difficult and thankless tasks, may soon become as common as field problems. This strenuous mission challenges even the most dedicated individuals as they wade through bureaucracy and disinterest. This exercise calls for thorough planning and aggressive execution of a well-designed operation. Failure could crush the life out of many troops. Success earns everyone an unmatched sense of accomplishment. Brave performance of this arduous assignment will preserve the spirit of our Army as we build the quality force of the future.



Maj. Steve Shoto was the executive officer of 3-2 ADA, Fort Lewis, Wash. He has since been assigned as G-3, I Corps. 1st Lt. Gerwin Hee, 3-2 ADA's operations officer, also served as the inactivation project officer. He is being reassigned to Headquarters and Headquarters Battery, 35th ADA Brigade. 1st Lt. Greg Mariello, 3-2 ADA adjutant, is also being reassigned to HHB, 35th ADA Brigade.

ADA ASSOCIATION

Association selects new council members

ADA Association members elected a new slate of officers during the 1994 ADA Commanders Conference, June 13-16 at Fort Bliss, Texas. Council members, headed by Brig. Gen. (Ret.) Ernst E. Roberts, president, and Col. Charles W. Hurd Jr., executive director, are listed in the box inset below. Hurd replaces Col. Dennis Morreale as commander of the 6th ADA Brigade, Fort Bliss, Texas, as well as association executive director.

ADA Association Council

Brig. Gen. (Ret.) Ernst E. Roberts
President

Col. Charles W. Hurd Jr.
Executive Director

Col. (Ret) Michael DiGennaro
Lt. Col. Steven Baldwin
Lt. Col. Michael Wilson
Capt. Eric Metzer
CWO 4 (Ret.) Sam Pignatella
CSM Mark Avery
Mr. Pete Olson
Mr. James Moye
Board Members

Edith Fanning
Secretary

ADA Association
P. O. Box 6101
Fort Bliss, TX 79906

The election of new officers was just one of the highlights of the Commanders' Conference. The ADA Association, as always, hosted Order of Saint Barbara activities at the ADA Banquet at the Fort Bliss Officers Club on the second night of the conference. During the banquet, the association inducted new members into the Ancient Order of St. Barbara, the Honorable Order of St. Barbara and the Order of Molly Pitcher.

Undersecretary of Army Joe Reeder, who accepted the association's invitation to serve as the banquet's guest speaker, drew a roar of applause for his strong support of Air Defense Artillery.

"Today and tomorrow, no one else can answer our national command authority's 911 call for missile protection, no one except our air defenders," he said. ". . . [air defense] modernization is critical to our national security. Just today, we took a great step forward with the ground-based sensor, which moves us from binocular technology to the digital battlefield of the 21st century.

"Many believe the greatest threat on future battlefields to our soldiers and allies is not an enemy soldier or enemy tank or helicopter or plane, rather it's an enemy missile. It's a tactical ballistic missile or cruise missile carrying anything from conventional munitions to chemical or biological agents," he continued. "These are the 'poor man's nukes' that we must protect America's sons and daughters against. They are the low-dollar [weapons] in the hands of a Kim Il Sung, or Kim Il Sung's exports to Mohmar Khadafi or Saddam Hussein. And that's why we in Washington lobby and are fighting hard for every modernization dollar that we can lay our hands on to back the Corps SAM and ERINT.

"If we fail as a nation to modernize our air defense systems, we risk lives and we mortgage the future," he added. "We cannot do this and we will not do this."

New Corporate Members

The ADA Association encourages all ADA industrial partners to join as corporate or business members. The association recently welcomed two new corporate members.

Loral Vought
Dallas, Texas

United Defense
Lawton, Oklahoma

The association sponsored many activities during the 1994 Commanders' Conference, including the creation of 500 limited edition prints of "Easy Red," artwork commemorating Air Defense Artillery's participation on Omaha Beach, June 6, 1944. Retired Maj. Gen. Jack Rogers spoke to D-Day and other World War II veterans and active duty soldiers during a commemoration ceremony at Memorial Circle, Fort Bliss, Texas:

It's easy for me in this year of the 50th anniversary of the invasion to focus on that part of my life when men's clothing seemed to come in but a single color — olive drab — when canvas leggings were mandatory fashion accessories and SOS was the breakfast of champions. Those were dangerous years. There were forces loose in the world intent upon the utter destruction of the United States. To defend itself, this nation had to rebuild the armed forces it had so shamefully neglected during the interwar years.

To do so it drew upon the most unlikely resource imaginable: incredibly young men, drafted at 18, the bulk of whom had never seen a soldier in the flesh, and certainly none of whom in his boyhood dreams had pictured himself in a steel pot, an OD shirt and canvas leggings. No allowances were made for their youth. After Pearl Harbor, enlistments were open-ended: the duration and six months. So were overseas tours. Once in the theater of operations, there were three ways out: in a mattress cover, aboard a hospital ship, or win the war.

Further, they were saddled with the responsibility for life-and-death decisions of a sort not normally expected of teenagers. As an example, in the antiaircraft artillery automatic weapons battalion, with a front-line infantry division, the vital functions of target acquisition, target identification and the decision to fire were made respectively by the ears, the eyes and the 19-year-old brain of whichever PFC happened to be in the turret of the Quad .50 at the moment.

Now, how did this unlikely lot turn out? I will defer to the opinion of a man far better equipped than I to judge: Major General Hobart "Hap" Gay. General Gay was a first-class, professional soldier, as you might expect of a man who had been first the chief of staff and later deputy commander of General George Patton's Third United States Army. He was a man of unshakable integrity, blunt honesty and incisive common sense.

One day he and I were seated together at lunch and we got onto the subject of the infamous wool knit cap, naturally OD in color. It was intended to be worn under the helmet, and some idiot in the War Department's Office of Unenforceable Orders had decreed that it could only be worn so. The moment the helmet came off the soldier was required to remove the cap instantly.

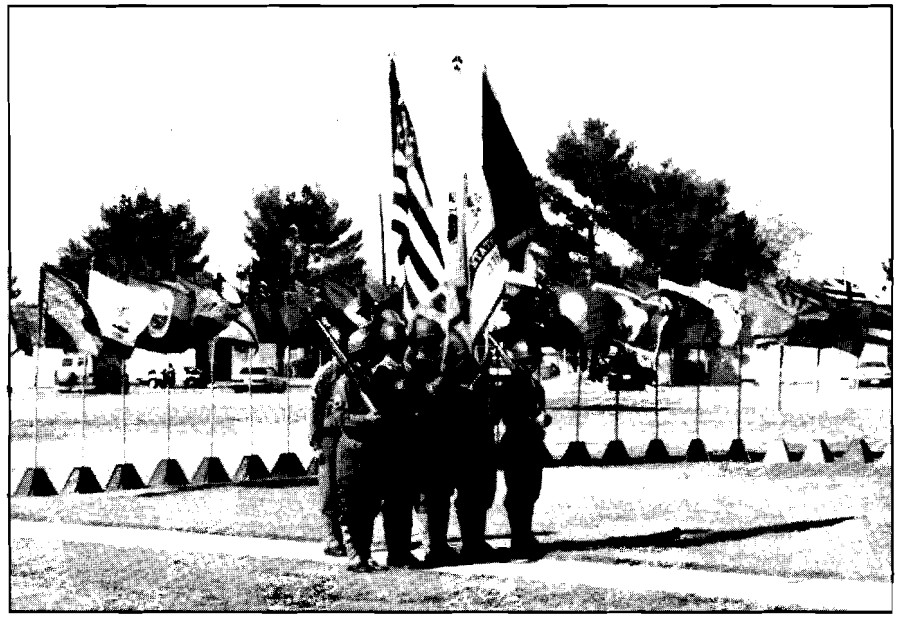
Well, you can imagine the results. If you issue to a United States soldier an item of clothing that is clearly marked in large letters "Not To Be Worn As An Outer Garment," he takes this as a challenge -- especially if his head is cold -- and he not only wears it thus, he does so as ostentatiously as possible.

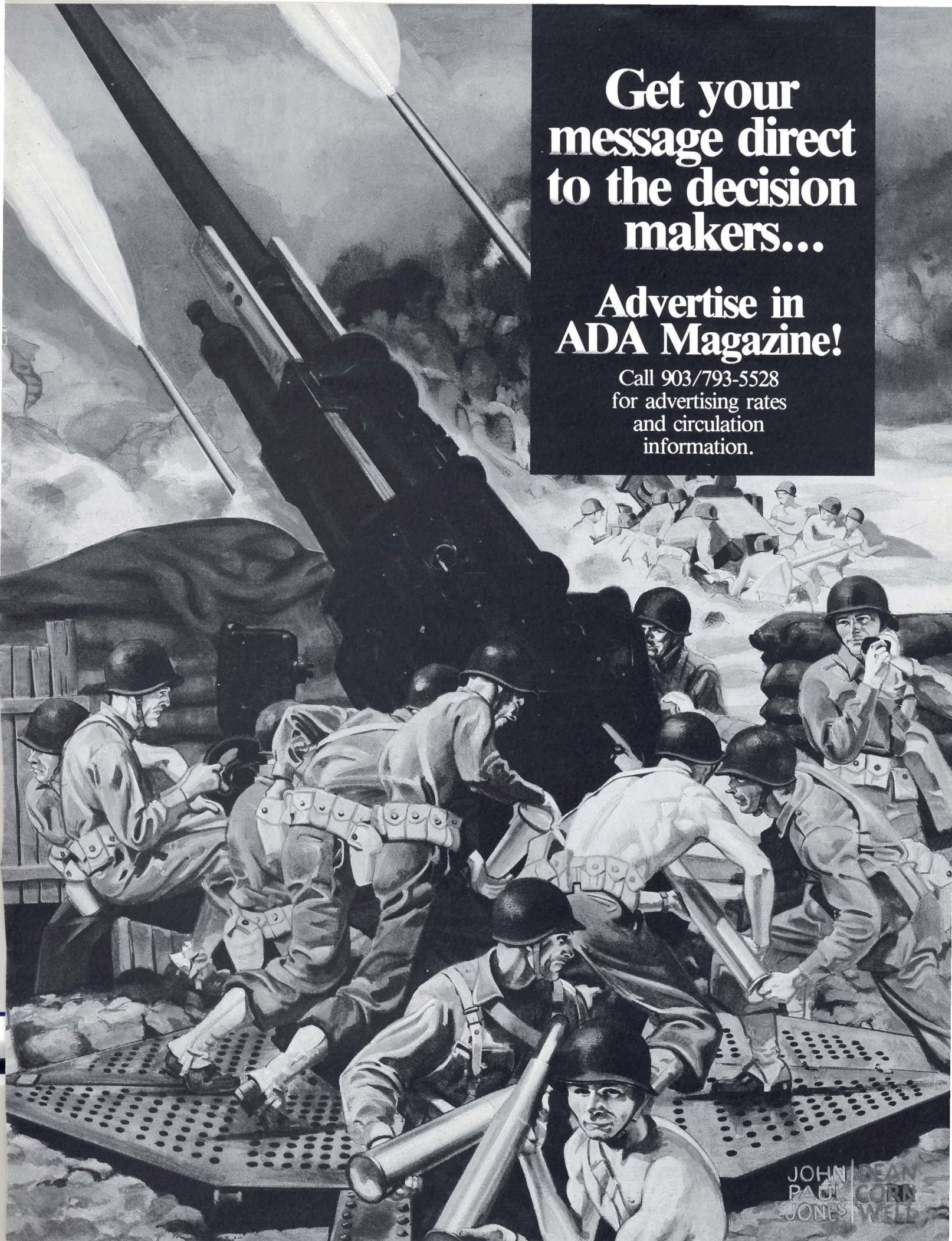
General Gay chuckled at this thought for a few moments, and then he sobered and said, "Well they weren't much for spit and polish, but that was the best, the most professional Army the United States has ever fielded."

With due respect to succeeding generations, I concur completely with General Gay's assessment, as I think the remaining World War II veterans in the audience will. However, knowing of the very fierce unit loyalties that grew up in those days, I fear that I might cause a sort of geriatric riot were I to identify the best traditions and the best battalion in, as General Gay put it, "that best damn Army." So I should be very, very careful not to mention that they were 79th Infantry Division, 463rd Antiaircraft Artillery Automatic Weapons Battalion.

In closing, let me say that I have four grandchildren, and I pray that none of them ever hears an incoming round. But if they do, if they must fight, I hope that they are privileged to do so in the company of soldiers as good as those men in the OD shirts and canvas leggings.

Thank you.

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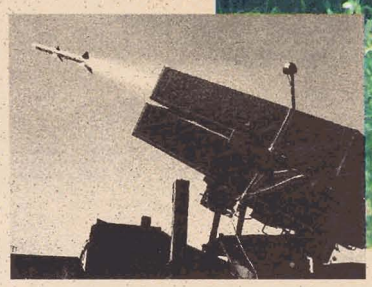
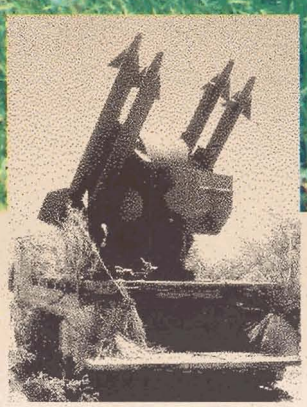
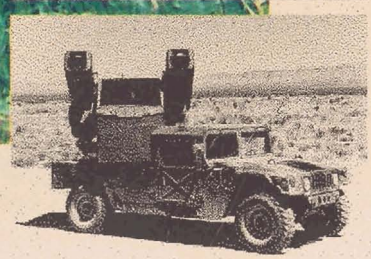
The U.S. Army's newest battlefield radar, the AN/MPQ-64 Ground Based Sensor, provided targeting information in recent exercises to weapon systems that shot down two unmanned helicopters and a one-half scale unmanned aerial vehicle. The AN/MPQ-64 Ground Based Sensor, developed and produced by Hughes Aircraft Company, provided three-dimensional acquisition, tracking and engagement data on highly lethal battlefield targets to the Bradley Stinger Fighting Vehicle, Roadrunner (Chapparral), Avenger and Stinger Manpads weapon systems. The reaction time against hovering helicopters was so short that, at times, the radar acquired the helicopter and provided cueing data prior to unmask.

AN/MPQ-64







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