

# AIR DEFENSE ARTILLERY



THE JOURNAL OF AIR DEFENSE ARTILLERY • JULY - SEPTEMBER 2006

## Reinventing Advanced Individual Training at Fort Bliss

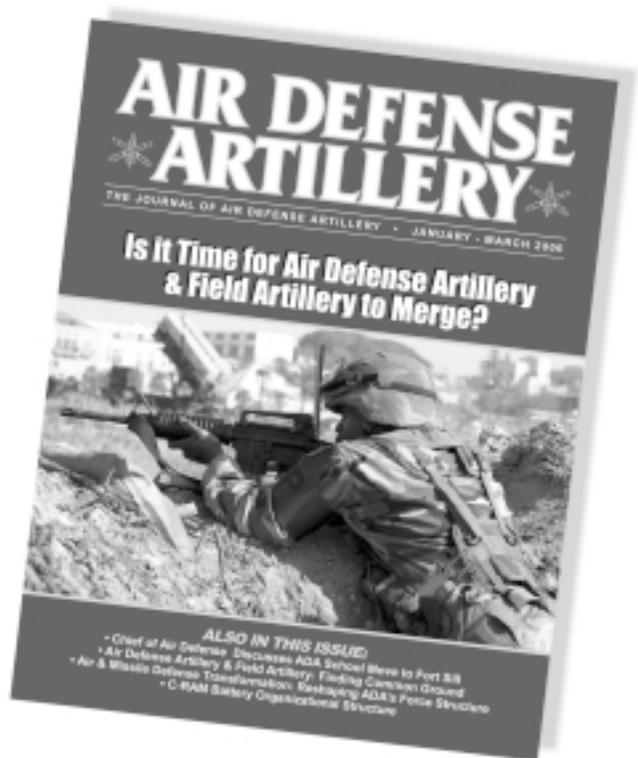
Tougher Than Ever But More Recruits Are Staying the Course



### ***ALSO IN THIS ISSUE:***

- U.S. State Department's Role in Missile Defense
- Protecting the Pacific Skies
- Patriot Engagement Operations Trends
- Fires Center of Excellence Website Premiers
- Will the Second Time Around Work for Air Defense and Field Artillery?

# DO YOU HAVE A WAR STORY?



## **ADA Magazine Needs ADA War Stories!**

*Air Defense Artillery* magazine invites ADA Soldiers who deployed, or are still deployed, for Operation Iraqi Freedom and Operation Enduring Freedom to submit short narrative descriptions, or vignettes, describing a specific event, an ambush, a ballistic missile intercept or humanitarian mission that for them defines their combat experiences.

**Email vignettes, along with any photos you may want to submit, to [adamag@bliss.army.mil](mailto:adamag@bliss.army.mil).**

See *Air Defense Artillery* magazine's **Writer's Guide** at <http://firsttofire.com/adamag/WritersGuide.pdf> and **Digital Photo Shooter's Guide** at <http://firsttofire.com/adamag/Photo%20Specs.pdf>.





# ADA MAGAZINE

The Journal of Air Defense Artillery

JULY - SEPTEMBER • 2006

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**PURPOSE:** The purpose of *Air Defense Artillery* is to transmit news and analyses of ADA developments, changing roles and missions, and evolving tactics, techniques, and procedures while serving as a forum for debate on topics and issues that affect Air Defense Artillery Soldiers.

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### ON THE COVER:

Air Defense Artillery Soldiers practice house-clearing techniques during advanced individual training at Fort Bliss, Texas. (Photos by Sergeant Matthew McRoberts)

### Air Defense Artillery Branch: The Need for Distinction

Talk of merging Air Defense Artillery and Field Artillery into a single branch ignores basic military tenets and does a disservice to both branches. The issue is being viewed through the prism of the Global War on Terrorism and Army Transformation initiatives and does not focus on the potential threat we face.

At the moment we face an enemy that relies on terror to achieve its ends, an enemy that relies on unconventional weapons and tactics to strike at us and our allies. Our enemy has no air power, which seems to make Air Defense Artillery irrelevant for the matter at hand, unless al-Qaeda allies itself with a state interested in using conventional military power on its behalf. If that happens, then we could face an air threat that will distract our Air Force from tactical support of our ground forces, not to mention a ballistic missile threat that only Air Defense Artillery can combat.

Even looking beyond the Global War on Terrorism, our branch will be needed to deal with a world of conventional threats. Our specialized equipment will be vital to provide a shield against increasingly sophisticated air threats that range from tactical surveillance by small drones to ballistic missiles. Since the end of major combat operations, Air Defense Artillery units deployed to Operation Iraqi Freedom and Operation Enduring Freedom typically conduct convoy security operations, but their skills in operating air and missile defense weaponry and sensors will be in high demand from the beginning of any conventional conflict, even if these skills seem unimportant now.

Then there is transformation. There will be a temptation to try to find “dual uses” for our weapons systems to fit some new doctrine of fire support, like equipping Avengers with antitank missiles and Patriot systems with new software and tactical ballistic missiles. However, history tells us that when you try to design a weapon to do two different missions, it can rarely do either mission well. Moreover, if we seek to justify our existence by changing what we do and who we are to better fit some sort of new Army template, we will make the demise of our branch inevitable. Worse, we will accelerate the process by performing missions done by other branches, thus “proving” ourselves redundant.

In my opinion, one of the reasons we are now debating this issue is that Air Defense Artillery has never succeeded in asserting its distinct identity. Much of the doctrinal language remains based in artillery jargon (direct support, battery, fire direction center, etc.), our organization mirrors Field Artillery, and even our colors are identical to Field Artillery. Is it any wonder that policymakers see little or no difference between our two branches?

If, somehow, Air Defense Artillery manages to retain its independence, it should do so aggressively. Its identity should be changed to reflect its twenty-first century military role. “Artillery” should be dropped from the name of the branch altogether, and we should adopt “Aerospace Defense” or “Air and Missile Defense” as our branch designation. The branch insignia should drop the cannons, which no longer reflect the air defense weapon of choice and, indeed, did not when Air Defense Artillery became an independent branch in 1968. Just as Armor ditched its original—and hard-to-recognize—Mk XVIII tank emblem and adopted the WWII-era M26 tank superimposed on a cavalry sword emblem, we should adopt a new emblem. Perhaps crossed Nike missiles, superimposed over surface-to-air missiles (the striking power of the branch) would work. Then again, if we wish to retain some element of our heritage without emphasizing tube artillery, then we could retain the shape of the current emblem and add a lightning bolt (for the electronic component of our mission).

We may very well be placed in a position where we either break with the past or face a future with no Air Defense Artillery.

**Major James Crabtree**

XVII Airborne Corps, Public Affairs Plans  
Fort Bragg, North Carolina

(Major Crabtree is the author of *On Air Defense*, a global history of air and missile defense.)



### Branch Merger Would Signal Death Knell of Air Defense Artillery

I would like to respond to Colonel Mark McDonald’s article, “Is It Time for Air Defense Artillery and Field Artillery to Merge?” which appeared in the January-March issue of *Air Defense Artillery* magazine. I am on active duty at Fort Bliss, Texas, and work at the Air Defense Artillery School’s Directorate of Combat Developments as the Weapons Branch noncommissioned officer in charge. In my twenty years of service, I have served on many different platforms that now are museum pieces, but why should our fine branch become one of those museum pieces? It shouldn’t, and I will explain why throughout this response.

Field Artillery and Air Defense Artillery split in 1968 due to the direction each were taking. Field Artillery dealt with ground “fires” while Air Defense Artillery dealt with the air-breathing aerial threat. With the Vietnam War draining money, materiel, and personnel, Field Artillery’s resources were being overwhelmed by the requirement to sustain two technologically divergent forces. So, Field Artillery and Air Defense Artillery became independent combat arms branches. Today we must ask ourselves if those conflicts that drove the two branches apart have lessened over time. I say the answer is no, they have drifted farther apart. Air Defense Artillery has added theater and strategic ballistic missiles, cruise missiles, and unmanned aerial vehicles to its target list. Our weapon systems have become more technologically advanced, as well as costlier. Just look at the development of the Terminal High-Altitude Area Defense (THAAD) system and the Joint Land-Attack Cruise Missile Elevated Netted Sensor (JLENS) system, both of which require huge chunks of the defense budget. If the two branches were to merge, something would have to give due to budget constraints. This might put the warfighter in a rather bad spot.

In their article “Finding Common Ground: Air Defense Artillery and Field Artillery,” which appeared in the same issue as Colonel McDonald’s article, Colonel Gregory C. Kraak and Colonel Harry L. Cohen state that, “... the branches now find that they have much in common with the potential for even greater commonality in the near future.” I agree that we have a few similarities, but we have a whole lot more differences. Our missions, as well as our systems, are different. Yes, we have Sentinel and Patriot radars, but they cannot do the same job as the Firefinder radar. Yes, we have missiles like the Patriot, but they cannot take out ground targets like the Multiple Launch Rocket System.

The scariest thing I see with the idea of merging the branches is its impact on personnel, enlisted as well as commissioned. Merging the branches will result in a single career management field ultimately leading to combining military occupational specialties. Some will say that this is not possible, but once you merge, who says you cannot merge the jobs? Yes, it would be a big money-saving move, but at what cost to training and proficiency? In the future, Soldiers attending advanced individual training at the Fires Center of Excellence at



Fort Sill, Oklahoma, could receive training in basic artillery skills while receiving specialized military occupational specialty qualification training for the job he or she signed up for, such as Patriot launcher crew member. After advanced individual training, the Soldier would go to a Patriot battery, and a few years later, the Soldier would move to the next duty assignment, where he or she might be assigned to a fires brigade and put into a forward observer's position. The Soldier would be expected to do the job assigned, but by this time, he or she would have lost all the basic artillery skills learned in advanced individual training. The same would be true for all Soldiers moving from any Air Defense Artillery slot to a Field Artillery slot, or vice versa.

In her article "Operation Red Net," which appeared in the April-June issue of *Air Defense Artillery*, Major Christine Gibney proposes making soldiers pentathletes, meaning Soldiers who are able to operate multiple different systems. This would not only put a great deal of stress on Soldiers, but would make them deficient and inefficient in their job performance. Do we really want the old adage—"jack of all trades, but master of none"—to apply to our Soldiers?

It is true that air defenders have been called upon to perform different tasks, such as acting as Infantry or Cavalry. I myself became an Infantry platoon sergeant when my unit, Bravo Battery, 5th Battalion, 5th Air Defense Artillery, 2nd Brigade, 2nd Infantry Division, was task organized to 1st Battalion, 9th Infantry, during our deployment from the Republic of Korea to Iraq. The Army chief of staff has stated that we are all riflemen first. This is true, because we learn to be an infantryman in basic, but you cannot say we are all artillerymen. Major Gibney asserts, "If we can put an infantryman in a tank, it is time to consider putting an air defender in a BFIST-V [Bradley Fire Support Team Vehicle]." This statement just demonstrates that what might work in one instance—an infantryman moving from a Bradley Fighting Vehicle to a BFIST-V—won't work in all situations. At one time Air Defense Artillery had Bradley Linebackers and Bradley Stinger Fighting Vehicles, and Major Gibney's concept might have worked for ADA Soldiers who manned those systems, but these systems are no longer in our inventory. Could you see an air defense tactical operations center operator jumping into the BFIST-V just because, three years ago, he or she attended a two-week course during advanced individual training? It just doesn't cut the mustard.

We as air defenders have a proud history as artillerymen, but we need our distinction. The merging of the two branches would be the death knell for our branch. Once we merge we will have lost our identity, and basically, could be called a failure.

#### ***Sergeant First Class Brad Cooper***

Weapons Branch, Directorate of Combat Developments  
U.S. Army Air Defense Artillery School  
Fort Bliss, Texas

### **Merging Field Artillery and Air Defense Artillery Would Degrade National Security**

As a member of combat antiaircraft and air defense units between 1939 and 1970, and subsequently by reading *Air Defense Artillery* magazine and *ADA Magazine Online*, I know what a great job the Air Defense Artillery branch has done providing the nation with outstanding Army air defense.

The Antiaircraft Service, which gave birth to Air Defense Artillery, split off from the Seacoast Artillery before World War II, developing new air defense weapons systems and forces to meet the threat as the years went by. National Guard batteries were equipped with three-inch mobile antiaircraft artillery (AAA) guns in 1939 and deployed before the Japanese attack on Pearl Harbor in 1941. My battery defended a PBY (flying boat) base in Sitka, Alaska. There the Antiaircraft Service provided us with our first radar.

Camp Davis, North Carolina, home of the Antiaircraft Command and the Army's only Antiaircraft Artillery School, was built early in 1941. During World War II, the Antiaircraft Command trained thousands of officers at the Antiaircraft Artillery School at Camp Davis. The command developed battalions of 90mm AAA guns with radars

and 40mm AAA automatic weapon (AW) guns that served in air defenses around the world, including England during the Battle of Britain. As the United States gained air superiority, some units were disbanded, and the men were used as Infantry replacements.

The Seventh Army had an AAA brigade headquarters and two group headquarters: one for gun battalions and one for AW battalions. In 1944, along the Rhine River south of Strasbourg, Seventh Army .50-caliber automatic weapons platoons lined up on high ground and fired support for the 3rd Infantry attacking the Germans in the Colmar Pocket. They tore the woods and enemy apart. A nearby 90mm AAA gun battery showed me the radar outline of the German railroads across the Rhine on their radarscope. The gun battery also showed me how they could make adjustments and direct their fires at the trains by watching them on their scopes.

By 1951, the branch had established a magnificent training center at Fort Bliss, Texas. Fort Bliss developed air defense missile weapons to counter the low- and high-altitude threats, and package training programs for air defense missile batteries. During the Cold War, Fort Bliss provided package training for all U.S. battalions in the Army Air Defense Command, which provided air defense missile forces for the United States, North Atlantic Treaty Organization, and Japan.

During the Korean War, at the AAA Advanced Officer Course, I received Field Artillery training as part of an effort to merge the assignments of AAA and Field Artillery personnel. Then in Korea, I was assigned to the 64th Field Artillery, 25th Infantry. The battalion commander called me "another damned antiaircraft officer." As I prepared for the assignment, I was highly impressed with the professional skill and training of the battalion fire direction center team in combat and their ability to bring the fires of their own 105mm guns, corps 155mm, and six-inch guns against targets in support of the Infantry. But I saw absolutely no comparison between a Field Artillery fire direction center and an AAA operations center. I went up to the front lines as liaison to the 3rd Battalion, 35th Infantry Regiment. I loved the job and the support of the fire direction center for all sorts of Infantry operations. My success as a Field Artillery liaison officer won me the assignment of battalion liaison officer to the 5th Regimental Combat Team when it replaced the 35th Infantry at the Punchbowl—an honor.

At the onset of the Cold War in the 1950s, Army Air Defense Command developed air defense weapons and deployed AAA guns and, later, surface-to-air missile batteries to defend U.S. cities and key installations against the long-range bomber threat as part of the joint North Atlantic Aerospace Defense Command. In the mid-1970s, the branch briefly deployed the Safeguard missile system, which was designed to counter the ballistic missile threat.

Since the Cold War, a primary threat to our national security is airborne missiles and ballistic missiles with nuclear warheads. The Air Defense Artillery branch, with the support of a developing industry and foreign nations, has been developing weapons and forces to meet that threat. Modern air and missile defense combat is a complex, specialized field, and the Air Defense Artillery is succeeding in a spectacular way. To merge the Air Defense Artillery branch and Field Artillery branch would degrade the air and missile defense and serve as a serious blow to national air defense and security.

#### ***Colonel (Ret.) Wilfred O. Boettiger***

San Diego, California

Note. Colonel Boettiger's memoir, *Antiaircraft Artilleryman: 1939 to 1970*, is online at <http://airdefense.bliss.army.mil/adamag/Boettiger/ANTIAIRCRAFTARTILLERYMAN.HTM>.

**LETTER TO THE EDITOR SUBMISSIONS:** E-mail letters to [adamag@bliss.army.mil](mailto:adamag@bliss.army.mil) or mail them to: COMDT, USAADASCH, ATTN: ATSA-ADA (Magazine), 2 Sheridan Road, Fort Bliss, TX 79916-3802. The editorial office's telephone numbers are DSN 978-5603 or (915) 568-5603.



# INTERCEPT POINT

by Major General Robert P. Lennox

Following the Civil War, those who advocated opening tribal lands that filled most of what today is Oklahoma to white settlement were called “Boomers.” They argued that the tribes had forfeited treaty rights to the land by siding mostly with the Confederacy during the war. The first of a series of “land rushes,” in which white settlers on horseback and in buggies and wagons lined up at the Oklahoma borders to race for the best land, took place in April 1889. Settlers who sneaked across the starting lines early to stake their claims were called “Sooners.” Today, the University of Oklahoma’s fight song, “Boomer Sooner,” celebrates both classes of land grabbers.

The Fires Center of Excellence (CoE) will not be physically established until the Air Defense Artillery (ADA) School relocates to Fort Sill in late FY09. However, many Field Artillery (FA) School and ADA School personnel are becoming “virtual Sooners” due to the ever-increasing digital integration of the two schools as part of the Virtual Fires CoE.

This digital integration, which is being implemented across several DOTML-PF (doctrine, organizations, training, materiel, leadership and personnel and facilities) domains, officially got underway on 1 June 2006 with a ceremony at Fort Sill unveiling the Virtual Fires CoE (see “Fires Center of Excellence Website Premiers,” page 8). On that date, personnel in the ADA and FA Schools officially began a formal virtual collaboration as members of the Fires CoE via the Fires Knowledge Network (FKN). The FKN, a virtual FA community that has been an integral part of the FA branch for more than two years, has been linked to the official ADA School website to create a virtual ADA/FA community available to personnel in both schools for working several key Fires CoE issues. In addition, the FKN serves as a source of information on a wide array of topics for leaders and soldiers of both branches. The FKN will allow the Fires CoE to become partially functional long before construction crews and moving vans complete their work.

At the moment, the ADA portion of FKN is not nearly as robust as the FA portion. However, ADA School personnel are training to use FKN, and the ADA content on the website will grow to rival the FA content.

Meanwhile, we are continuing to conduct regular “summits” and “home-on-home” sessions that allow representatives from the schools to work issues “face to face” and build the camaraderie that has been, and will continue to be, key to the success of the Fires CoE. One example of this success is the Fires CoE organizational architecture that has been approved by U.S. Army Training and Doctrine Command and will soon be presented for Department of the Army approval.

## Fires CoE Architecture

The Fires CoE will have seven center-level primary organizations described as “non-branch specific.” These include the Noncommissioned Officer Academy, Directorate of Training and Doctrine, Directorate of Training and Support, Capabilities Development and Integration Directorate, Joint and Combined Integration Directorate, and Basic Combat Training (Basic Training and Basic Officer Leadership Course II).

The Fort Bliss and Fort Sill Noncommissioned Officer Academies, assigned to the ADA and FA Schools, respectively, will be consolidated into a single **Noncommissioned Officer Academy** under one single sergeant major commandant and staff. This consolidated academy will conduct the Warrior Leader Course for all Fort Sill soldiers and the ADA and FA Basic and Advanced Noncommissioned Officer Courses.

The Fires CoE will have a **Directorate of Training and Support**, an organization that does not currently exist within the ADA School or FA School. This new organization will maintain center-level academic records, serve as the registrar, schedule classes, and train and certify instructors while providing faculty professional development and education. The Directorate of Training and Support will also conduct non-branch-specific leader development and functional training previously performed by the Directorate of Training and Doctrine at the ADA School and by the Quality Assurance Office and 30th FA Regiment at the FA School. Last, the new directorate will manage the Fires CoE Simulation Center and be responsible for the combined International Student Detachment and the Army Security Assistance Training Program through the Security Assistance Training Field Activity at Fort Sill.

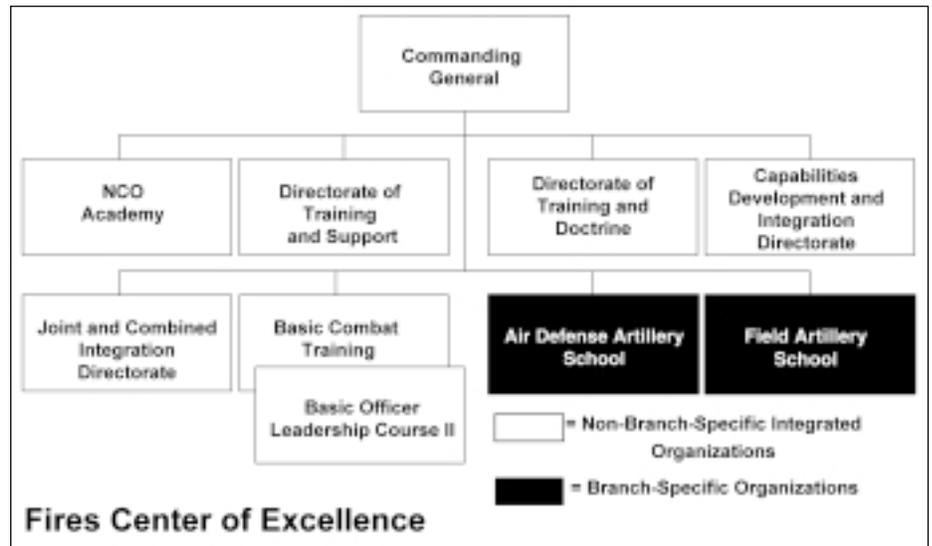
The Fires CoE **Directorate of Training and Doctrine**, comprised of personnel from both schools’ existing Directorates of Training and Doctrine, will focus on the development of ADA and FA doctrine as well as Fires doctrine applicable to, or involving, both the ADA and FA branches. The directorate will also develop training support materials and compile, analyze, and implement lessons learned.

The **Capabilities Development and Integration Directorate** will merge ADA and FA combat developments functions previously performed by the ADA School’s Directorate of Combat Developments and the FA School’s Futures Development and Integration Cell. It will also absorb the U.S. Army Training and Doctrine Command’s capabilities managers, formerly called systems managers, although the exact number of capabilities managers is still



to be determined. The directorate will have three major functional divisions: one devoted to concepts development, one responsible for requirements determination, and one in charge of experimentation. (A Fires Battle Lab may be responsible for experimentation, but whether all Army centers of excellence will have battle labs is still to be determined.) The directorate also will be responsible for the horizontal integration of all ADA and FA systems across DOTML-PF domains.

The Fires Center's **Joint and Combined Integration Directorate**, which had been established at the FA Center, synchronizes joint activities for Fort Sill. The directorate provides joint fires and effects team members the individual, command, and staff skills required for the integration, coordination, and synchronized application of the full range of joint fires and effects. It also serves as an integral hub in the joint command and control arena and is active in the development of joint doctrine and materiel issues. As such, the directorate will be the proponent for the Joint Fires Observer Course, Joint Operational Fires and Effects Course, Joint Theater Missile Defense Course, and all Battlefield Coordination Detachment issues. Even before the FA and AD Schools are physically together, ADA officers and noncommissioned officers will travel to Fort Sill to attend the Joint Operational Fires and Effects Course while their FA counterparts travel to Fort Bliss to attend the Joint Theater Missile Defense Course.



Fort Sill's Field Army Training Center will continue to provide **Basic Combat Training** for soldiers of all MOSs, and **Basic Officer Leadership Course II** training for newly commissioned lieutenants of all branches. Both schools will conduct branch-specific advanced individual training at Fort Sill.

Despite the consolidation of several key school functions at the center level, the ADA School and FA School will continue to exist, essentially as mirror images of each other, within the Fires CoE. Each school will have its own commandant, who will continue to serve as chief of branch. Each school will have its own proponent office and branch historian's office. The schools will continue to have the lead role in initial military training, branch-specific primary military and functional training, and leader development.

For Soldiers and federal civilian employees who make the move from Fort Bliss to Fort Sill, the Fires CoE will be an exciting and rewarding place to work, but the biggest beneficiaries of school collocation and integration will be our primary customers—units in the field. As we explored different constructs for the Fires CoE, searching for ways to leverage its tremendous potentialities, the advantages of collocation and integration became increasingly apparent. The Fires CoE will optimally position ADA and FA for future success.

First to Fire!

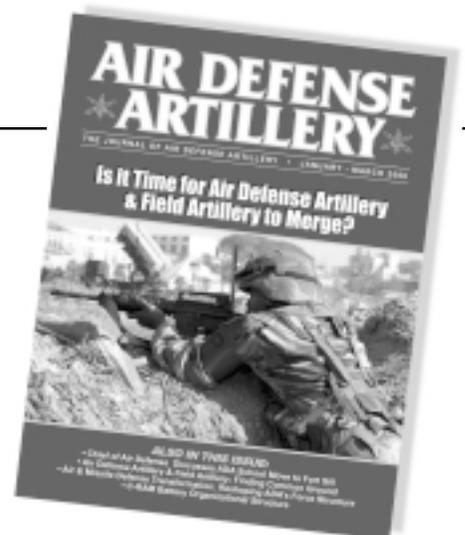
*Robert P. Lennox*

Robert P. Lennox  
MG, USA  
Commanding



## ADA Magazine Online

*Read past issues of Air Defense Artillery in PDF format and stay abreast of breaking air and missile defense news at <http://www.airdefense.bliss.army.mil/adamag>*



# Fires Center of Excellence Website Premier

by J. Michael Gradoz

The Fires Knowledge Network (FKN), accessed through the Army Knowledge Online (AKO), premiered its Fires Center of Excellence website on 1 June 2006 in conjunction with the virtual standup of the Fires Center of Excellence by the chiefs of Field Artillery and Air Defense Artillery. The new FKN website consolidates the Air Defense Artillery School and Field Artillery School websites under the Fires Center of Excellence concept as a preliminary to the Air Defense Artillery School's scheduled move from Fort Bliss, Texas, to Fort Sill, Oklahoma.

Since 2003, FKN has been a robust online knowledge management resource for field artillerymen stationed worldwide, and now those same capabilities are expanding to serve air defenders. The FKN is a collection of technological tools that enable the Air Defense Artillery School and Field Artillery School to connect with Soldiers and units in the field to provide information, solve problems, and share lessons learned. The objective is to enable the creation, capture, and sharing of knowledge to help our warfighters accomplish their missions.

Fort Sill's Knowledge Management Team has incorporated Air Defense Artillery information onto FKN. The FKN currently has more than 49,000 unique members and is visited by an average of more than 3,800 members daily. Users with AKO accounts can tap into the website from any computer that has internet access at any time from anywhere in the world.

The first of its kind on AKO, FKN is part of the Combined Arms Center's Battle Command Knowledge System, Fort Leavenworth, Kansas. The system was formed to guide the Army in developing policy and procedures, and to fully exploit the power of knowledge management in the twenty-first century. The FKN won the 2005 Armywide award for best knowledge management tool.

## FKN Capabilities

The FKN provides Field Artillery and Air Defense Artillery Soldiers a single access point to search for information, communicate with peers through professional forums, and stay abreast of current and future changes, events, and initiatives. It provides a method for Soldiers and leaders to ask subject-matter experts questions or start threaded discussions open to everyone. The FKN allows users access to all school directorates and departments.

At the moment, Field Artillery Soldiers use FKN to access the Field Artillery School, including the Field Artillery Proponent Office, Master Gunner Course, *Field*

*Artillery* magazine, and more than one hundred professional forums. The FKN maintains an official data repository for Field Artillery publications, instructional materials, and other documents that pertain to Field Artillery and the fire-support mission. Currently there are more than twelve thousand Field Artillery-related documents, photos, and video media in the knowledge repository. More than 1.2 million documents have been downloaded by users. Air Defense Artillery FKN resources will grow to match Field Artillery FKN resources.

The FKN serves as the entrance portal to Air Defense Artillery and Field Artillery professional forums. A professional forum is a group of users who share common interests, such as Soldiers in the same military occupational specialty, rank or group of ranks, and types of units. The FKN also gives leaders in both branches the ability to reach the community via email groups consisting of all Field Artillery or all Air Defense Artillery members, just one military occupational specialty, unit of assignment, ranks, and other categories. This allows the user to send the right message to the right group without having to "spam" uninterested audiences.

A leader can upload a document on FKN and send an AKO email to specific audiences. It is not unusual for a command group document to be downloaded more than two thousand times within twenty-four hours of its posting and email notification.

## Setting Up a Forum

Each professional forum is populated and administered by a professional forum administrator. Most administrators can set up their forums following an eight-hour training session. Forum administrators can update their sites from any computer anywhere as long as they can access AKO through the Internet. They do not have to depend on webmasters to post information. If a forum administrator has a problem or question, the Fort Sill Knowledge Management Team is only a phone call away. Administrators and leaders also can track the number of documents downloaded by users, or the number of times their forum has been entered, and provide that information to the command.

## ADA Coming Online in FKN

The Fort Sill Knowledge Management Team will provide the Air Defense Artillery School briefings and background materials on FKN capabilities and the new Fires



Center of Excellence website, as well as train forum administrators. If readers have questions, want to schedule FKN briefings, or discuss training opportunities, they can contact an FKN point of contact.

**Air Defense Artillery School  
Point of Contact**

Angel Quezada, *Chief, Digital Training Access Center*  
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quezadaa@us.army.mil

**Field Artillery Center  
Point of Contact**

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The FKN will become a more robust and multifunctional knowledge management tool as it welcomes Air Defense Artillery into its database and stands up the Fires Center of Excellence website. The Air Defense Artillery School is not scheduled to make its physical move from Fort Bliss to Fort Sill until fiscal year 2009. However, the newly launched Fires Center website creates a virtual Fires Center of Excellence in which the consolidation of shared Air Defense Artillery and Field Artillery functions can begin.



*J. Michael Gradoz is the FKN senior community administrator, Chief Information Officer/G6, Field Artillery Center, Fort Sill, Oklahoma.*

## SCANNING

### **Air Defense Artillery Gets Improved Sentinel Radar Project Manager Would “Stake Life” On Enhanced System**

by Virginia Reza

ThalesRaytheonSystems presented the first improved Sentinel radar to the U.S. Army Air Defense Artillery School during a 25 April 2006 ceremony at Fort Bliss, Texas. The Sentinel is a highly mobile, three-dimensional, phased array, ground-based air defense radar system that operates in the X-band. The radar detects, tracks, identifies, classifies, and reports airborne threats, including helicopters, high-speed attack aircraft, cruise missiles, and unmanned aerial vehicles. The original version of Sentinel had a single traveling wave tube transmitter, which has been replaced with two power amplifier modules. Each module has about the same output as the original transmitter, making the upgraded radar more reliable and easier to maintain with double the power in a compact kit.

The Army awarded two production contracts for Sentinel modernization to ThalesRaytheonSystems in 2003 and 2004 as part of its plan to modernize the entire Sentinel fleet. The Sentinel radar has since gone through extensive field testing to improve its reliability and performance. According to Dr. Jim Beck, senior vice president, Radar Products, ThalesRaytheonSystems, the updated radar features increased detection and acquisition ranges, improved target classification, and better detection against prime targets of interest in both clear and cluttered surroundings.

“What we have here standing before us is a premier air defense system. I’m proud of it. I would stake my life on that system because it’s that good,” said Colonel Edward L. Mullin, the Army’s project manager for Cruise Missile Defense Systems. Colonel Mullin said another important factor is the future support the system will provide to the Surface-Launched Advanced Medium-Range Air-to-Air Missile (SLAMRAAM), which he described as the “first dedicated cruise missile killer on the battlefield.”

The Army expects to field the first SLAMRAAM battalion by 2008. The system, which will gradually replace the Avenger air defense system, is considered crucial to the Army’s efforts to counter the growing cruise missile and unmanned aerial vehicle threat. According to Colonel Mullin, the Sentinel will serve as SLAMRAAM’s eyes on the battlefield. “It’s going to enable us to do things that will change and transform the way we fight,” he said.

During the ceremony, the updated radar was presented to Lieutenant Colonel Mike Carter, commander of the 2nd Battalion, 6th Air Defense Artillery Brigade, which provides training support for the Air Defense Artillery School. The battalion trains Sentinel crews at Fort Bliss’ recently established Improved Sentinel Radar Simulation Lab. Lieutenant Colonel Carter said the new simulation lab is equipped to train up to fifteen Soldiers at one time versus two or three Soldiers at a time on the actual equipment.

“Having the improved Sentinel here means a lot,” said Lieutenant Colonel Carter. “Being the first to receive it means those Soldiers coming into the Army get the latest and greatest training on the latest and greatest equipment.”

*Virginia Reza is a public relations specialist assigned to the Fort Bliss Public Affairs Office.*

*Soldiers from Charlie Battery, 2nd Battalion, 44th Air Defense Artillery, load cargo on their trucks in preparation for an upcoming mission at the Camp Taji Central Receiving and Shipping Point on 11 March 2006.*



# ADA Unit Assumes Operation Iraqi Freedom Transportation Mission

by Staff Sergeant Monika Comeaux

CAMP TAJI, IRAQ—When Air Defense Artillery Soldiers from Fort Campbell, Kentucky, were told that they were deploying to Iraq in lieu of a medium truck company and would have a transportation mission, their first reaction was, “Are they crazy?”

A year later, as Soldiers of Charlie Battery, 2nd Battalion, 44th Air Defense Artillery, 101st Airborne Division, were preparing to redeploy back to the United States, they viewed the mission and their time spent in Iraq in a slightly different light.

“The battery had to go through significant changes to fulfill their new mission,” said Captain Christopher D. Brough, battery commander. Their battalion shifted some personnel around and doubled the number of Soldiers in the battery. They even received some individual augmentees.

The unit received a two-week crash course on the equipment before they arrived in theater. “We took over from a transportation unit,” said Specialist William M. Horgus. He performed duties in his assigned military occupational specialty as an Avenger crew member during his first tour in Iraq, but became a truck driver for his second tour. “It was a little bumpy at the beginning, but it has been a fun deployment ever since,” he said.

The battery arrived at Camp Taji on 12 May 2005, taking possession of 180 pieces of rolling stock. During its year in Iraq, the battery carried out 150 missions, log-

ging almost three-quarters of a million miles. They transported ammunition, vehicles, and 20- and 40-foot containers. During several missions, they even moved Iraqi Army equipment. No matter what the mission, the battery was ready. “They call, we haul,” Captain Brough said proudly.

“It is all about getting the mission completed,” said Staff Sergeant Michael E. McKie-Smith, an automated logistics specialist with C/2-44 ADA, who is one of the battery’s individual augmentees. He was at Fort Bragg, North Carolina, for only four months when he learned he was being deployed with a unit from Fort Campbell. Initially, he was a little skeptical about becoming a truck driver with Soldiers he had never met before. But now, he feels like they are one big family.

“This is one of the best units I have ever been in,” said Staff Sergeant McKie-Smith. “First Platoon, ‘Death Dealers,’ is the cream of the crop. If I could stay with these guys [after redeployment], I would.”

The Soldiers have all learned new skills and will redeploy with a lot of memorable experiences.

“We really explored a lot of Iraq that I didn’t get to see the first time I was over here,” said Specialist Horgus.

Others, like Staff Sergeant Dustin R. Woodcock, also an Avenger crew member, learned how to work and interact with Soldiers in non-combat military occupational specialties, civilians, Sailors, Marines, and Airmen.



*Specialist Kenneth J. Scarlett, an Avenger crew member with Charlie Battery, 2nd Battalion, 44th Air Defense Artillery, secures a cargo strap on a trailer at the Camp Taji Central Receiving and Shipping Point on 11 March 2006.*

“You have to have a lot of patience,” Staff Sergeant Woodcock said. “You have to be versatile with the people you work with.”

Staff Sergeant Woodcock misses all the physical activity associated with the everyday work of an air defense artillery battery. “I miss being able to walk and ruck ... I like to be out there doing some land navigation and training with my Joes,” he said.

Captain Brough misses the upfront combat action he and his Soldiers would have experienced in their traditional role as an Avenger battery. However, he is very pleased with how well they adapted to their new mission.

“I am just filled with pride to be the commander of the Hellfighters,” he said. “It was a mission we did not ask for, that we didn’t know anything about, but in less than 120 days we came together. I wake up every day thanking God that I am a part of this team.”



*Staff Sergeant Monika Comeaux is assigned to the 207th Mobile Public Affairs Detachment.*

# SCANNING

## 1-7 ADA Patriot Fire Units Down Surrogate Cruise Missile Target

A Patriot Guidance Enhanced Missile (GEM) launched by a 1st Battalion, 7th Air Defense Artillery, fire unit downed a surrogate cruise missile target during a second consecutive successful test flight at White Sands Missile Range, New Mexico. The second consecutive successful flight test of the next evolution of the Patriot Advanced Capabilities-2 (PAC-2) GEM missile was the second of four development flight tests conducted by the Patriot Lower Tier Project Office using Raytheon's newly-developed Patriot system post deployment build-6 (PDB-6) software.

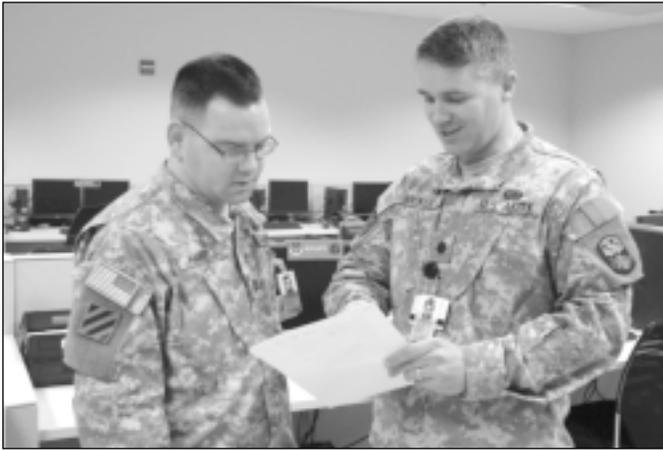
During the May 2006 test, three Patriot Configuration-3 fire units in a battalion configuration using PDB-6 software engaged a surrogate cruise missile flying at a low altitude to simulate an attack on one of the Patriot fire units. A GEM-T missile with improved capabilities was successfully launched and destroyed the target.

The capabilities incorporated into PDB-6 are the next step in the evolving growth for Patriot. This update is composed of user-requested improvements, planned performance improvements, and improvements that had resulted out of lessons learned from Operation Iraqi Freedom.

Patriot Configuration-3 fire units, consisting of the Patriot launchers, engagement control stations, and Patriot radar systems, provided the battle management, command, control, and communications to ensure the Configuration-3 system achieved test objectives. Test data indicated that seamless communication and data transfer between the Patriot radar, engagement control station, and Patriot launcher enabled the Patriot missile to destroy the target. All tactical hardware for the missions was manned and operated by 1-7 ADA Soldiers.

“This flight test builds on the success of the previous PAC-2 test, and the outstanding results validate we're on track to ensure the Patriot system remains an affordable, premier air defense solution for our warfighters,” said Rick Yuse, Raytheon Integrated Defense Systems' Integrated Air Defense vice president. “As in the previous test, this equipment demonstrated the Configuration-3/PDB-6 system's capability to search, detect, track, classify, engage, and eliminate the threat with no-doubt mission assurance.”

Raytheon Integrated Defense Systems is the prime contractor for the Patriot system and the system integrator for the Configuration-3 system that includes the GEM missile. As the system integrator, it ensures that all Patriot system components provide the warfighter a reliable and lethal capability to defeat the threats in current and future combat environments.



*Top Left: Lieutenant Colonel Joseph E. Wicker, right, gives his battle captain, Captain Frederick C. Harrell, guidance after receiving the latest intelligence summary. Top Right: Lieutenant Colonel Kevin Cole, right, coordinates air assets with Captain Frederick C. Harrell in the theater missile defense cell. Bottom Left: Captain Frederick C. Harrell analyzes the tracks of incoming air and missile threats inside the theater missile defense cell. Bottom Right: Staff Sergeant Donald L. Caffee Jr., right, monitors the current air threat alongside Airman First Class Karl S. Kistler.*

## 94th Army Air and Missile Defense Command

# Protecting the Pacific Skies

Story and photos by Major Richard A. Stebbins

Waging war in the twenty-first century focuses on a total military concept as opposed to services working independently on the field of battle. This new way of doing business reflects the move away from corps and divisions to joint and expeditionary forces enabling commanders to use all available assets in our high-tech military. The 94th Army Air and Missile Defense Command (AAMDC) embraces this new approach and uses it to act as a total force multiplier on the battlefield.

As the newest addition to the air and missile defense family, the 94th AAMDC is responsible for theater ballistic missile defense of the entire Asia-Pacific region. Headquartered at Fort Shafter, Hawaii, it is the only AAMDC solely dedicated to covering a single region. The Asia-Pacific region spans almost half the planet. To cover such

a large area, the newly activated command has fully integrated itself at Hickam Air Force Base, Hawaii, by permanently positioning a rapid response cell into the Pacific Air and Space Operations Center (ASOC), previously called the Air Operations Center.

Within two months of its 18 October 2005 activation, the command achieved initial operational capability by participating in its inaugural exercise, Terminal Fury 2006, a command post exercise held both in Hawaii and aboard the USS *Blue Ridge* based at Yokosuka Naval Base, Japan. This critical exercise tested the abilities of the Pacific Command and Joint Task Force 519 to respond quickly to emergencies within the Pacific Command area of responsibility. General (Ret.) Gary Luck, a Joint Forces Command consultant, named the 94th AAMDC “Hero of

the Battle” because the command provided a dedicated capability that had never been seen before.

In its second major exercise, the command worked both jointly and bilaterally with coalition partner Japan. Participating in Yama Sakura 49, an annual exercise that simulates Japanese-U.S. military operations required to defend Japan against a neighboring threat, presented unique challenges inherent to working with another nation. The realistic peacekeeping scenario demonstrated the importance of the 94th AAMDC’s integration into the ASOC.

“Coordination of the bilateral defense issues has been smooth, and operationally, the unit was able to defeat all of the enemy threats it encountered,” said Colonel Kelvin Bright, the 94th AAMDC chief of staff.

### **Integration versus Deconfliction**

The ASOC is an integrated command, control, communications, computer, and intelligence (C<sup>4</sup>I) center operated by the U.S. Air Force with representatives from all services working from one common operating picture. This is imperative because decisions need to be made quickly due to a fluid and constantly changing battlefield. Integrating the 94th AAMDC into the ASOC improved U.S. Pacific Command’s ability to defeat air and missile threats within the region through timely C<sup>4</sup>I between all the services.

The ASOC’s warfighting concept isn’t new, but how the concept applies to warfighting has changed. In the past, waging wars required the deconfliction of the land and airspace other services occupied. This process took hours and wasted valuable time. Today the ASOC takes away the need for deconfliction by integrating all the key players from each service into a single operations node to facilitate better communication. The ASOC identifies the unique aspects each service brings to the table and determines how to use these assets to accomplish the mission within minutes.

“To do this, you must have a smart organization with the right people and assets that can perform analysis, execute the mission, and provide feedback in one location,” said Brigadier General Gregory T. Idhe, the ASOC commander. “It is the right place for the right information.”

A full-time, dedicated AAMDC adds to the ASOC’s uniqueness. This particular working relationship doesn’t exist anywhere else. Soldiers from the 94th AAMDC have offices inside the ASOC and work closely with Airmen on a daily basis, an interaction that strengthens the bond between the services. Personnel get to know each other by working together daily rather than sporadically, a process that increases their effectiveness.

### **Inside the Theater Missile Defense Cell**

Seven 94th AAMDC Soldiers work full time inside the ASOC. They perform intelligence and operations activities essential to theater ballistic missile defense. This manning enables them to perform twenty-four-hour operations when needed. The Air Force welcomed the Army’s

air defenders with open arms. Having the air and missile defense Soldiers there provides a rapid response capability on a continual basis, which did not previously exist.

“It is that interaction, working right there with the guys who make the decisions,” said Lieutenant Colonel Joseph E. Wicker, chief of current operations, when describing the benefit of having a full-time theater ballistic missile defense cell in the ASOC.

When a missile is fired, radar systems pick up the launch and transmit data to the ASOC in the form of tracks. The information sent in these tracks detail the type of missile, origination, trajectory, and possible impact location. Upon notification the theater missile defense cell determines what the threat is and how best to defeat it.

“The chief of combat operations knows what I know,” said Lieutenant Colonel Wicker. “If he doesn’t, it’s a matter of looking over my shoulder and telling him. Sometimes, even though we see the same picture, we don’t always see the same thing. A track may be showing on my computer but not on his. It’s just a matter of telling him which one to put his cursor on, so he will have all the information right there.”

This kind of situational awareness could not happen if the theater missile defense cell were located somewhere else. If there is a question about whether a particular track is hostile or friendly, the cell has a familiar face right there who can alleviate fratricide concerns. They also tell the chief of combat operations where the missiles are headed and what coverage is available, ensuring that no time is wasted in providing protection for key assets.

### **First Line of Defense**

The ability to use multiple services to combat threats is the key to the future of ballistic missile defense. The 94th AAMDC commander is responsible for air, ground, and naval missile defense assets within the Pacific region. By having a dedicated spot within the ASOC, the 94th AAMDC commander can bring all theater ballistic missile defense assets to bear on a situation.

The ASOC can gather vital information about an enemy force, such as size, the movement of critical assets, or whether the enemy is massing in a particular area. The information can then be passed on to the appropriate combatant commander. This allows the combatant commander to use the total force, not just one service, to fight the enemy. The goal is total domination over an opponent.

“I want to win ninety-nine to nothing as opposed to fifty to forty-nine,” said Brigadier General Idhe.

With so much activity happening within a theater, the ability to distinguish between enemy and friendly sorties and missiles is crucial. The ASOC provides a central point for information used in developing the air picture for the proper use of each service’s assets. Based on current doctrine, the 94th AAMDC controls all theater ballistic missile defense assets, no matter what service they belong to or where they are located.

“This works in theory, but the other services are still warming up to the idea,” said Lieutenant Colonel Wicker.

This is the way the system is supposed to work. The 94th AAMDC is responsible for identification and engagement authority within the ASOC. When an airspace control measure is violated and the violator is positively identified as not friendly, all services respond to the 94th AAMDC commander, who determines a course of action. The threat is neutralized in a matter of minutes, using the closest, most effective asset available.

“Each service confirms that they have no friendlies in the area,” said Lieutenant Colonel Wicker. “Then we tell the CCO [Chief of Combat Operations] we are getting threat indicators, and we need to shoot it down.”

### The Pacific Team

Vince Lombardi once said, “Build for your team a feeling of oneness, of dependence on one another, and of strength to be derived by unity.” The 94th AAMDC has successfully demonstrated its capability in two consecutive exercises. The command has also made an impact in both the joint and international arenas by providing that

missing component necessary to defeat present and future threats within the Asia-Pacific region. Under the leadership of Brigadier General John E. Seward, the 94th AAMDC has accomplished much in a very short amount of time. All of this can be summed up into one word: teamwork.

“The synergy 94th AAMDC and its joint partners are building at the Pacific Air and Space Operations Center will maximize the strategic and operational missile defenses of the Pacific theater,” said Brigadier General Seward. “The future TBM [theater ballistic missile] threats in our theater require a joint solution. 94th AAMDC is the Army’s contribution to that cutting edge.”



*Major Richard A. Stebbins is the 94th AAMDC public affairs officer.*

## SCANNING

### Terminal High-Altitude Area Defense System Meets All Flight Test Objectives

Soldiers from the 6th Air Defense Artillery Brigade, Fort Bliss, Texas, participated in an 11 May 2006 test of the Terminal High-Altitude Area Defense (THAAD) ballistic missile defense system at White Sands Missile Range, New Mexico. The THAAD system met all objectives during the test, which involved the launch of the THAAD interceptor missile from its mobile launcher.

THAAD is designed to intercept and destroy short- to medium-range ballistic missiles in the upper regions of the earth’s atmosphere or just above the earth’s atmosphere in the terminal phase of a ballistic missile’s flight during the final minute or so before it strikes its target. The May flight test fully integrated all THAAD components, including the mobile launcher, radar, fire control and communications element, and the interceptor missile. The test used “virtual target” software to evaluate performance. The test also demonstrated interceptor performance, including the booster rocket system and the divert and attitude control system. The divert and attitude system uses small rockets to maneuver THAAD into the path of its target to achieve a hit-to-kill intercept, using only the force of a direct collision to destroy the target missile.

Sergeant Daryl Way and Sergeant Douglas Estes, assigned to the 6th Air Defense Artillery Brigade, operated the THAAD radar, injecting the virtual target information into the system, acquiring and tracking the interceptor, and providing in-flight target updates. Staff Sergeant Charles Negaroge and Specialist Joe Ploof assisted the contractors with the THAAD launcher. Staff Sergeant William Cluney also assisted the contractors with the tactical operations station, which tactically controls the entire THAAD system.

“Our Soldiers have trained diligently with all THAAD personnel to demonstrate this system’s capability,” said Chief Warrant Officer Jerry Tarpley, flight test officer. “On May 11, 2006, another crucial step was taken to get THAAD heading into the right direction toward fielding. We continue to strive to show early Soldier integration is a key part of system implementation as a whole.”

While the previously successful THAAD flight test, conducted 22 November 2005, was focused on interceptor fly-out and controllability, the remainder of the near-term flight test program will provide verification of the integrated THAAD system at increasingly difficult levels, including a target intercept later this year.

The THAAD system uses technologies initially developed in earlier Missile Defense Agency programs and during the program development and risk reduction phase. It is the first missile defense technology with both endoatmospheric and exoatmospheric capabilities.

The THAAD element will provide upper-tier (high-altitude) defense in the terminal segment of the Missile Defense Agency’s integrated Ballistic Missile Defense System, which is designed to provide a layered defense for the U.S. homeland, deployed forces, and allies against ballistic missiles of all ranges, in all phases of flight, including boost, midcourse, and terminal.—*Compiled by Sergeant First Class Robert Greger, U.S. Army Training and Doctrine Command’s System Manager-Upper Tier, Fort Bliss, Texas.*



*Patriot training is vigorous and intensive. During a recent trip to Fort Bliss, Texas, ranges, observer/controllers counted sixteen Patriot batteries, representing all three Fort Bliss Patriot Air Defense Artillery brigades, in the field. (Photo by Catrina Francis).*

# Patriot Engagement Operations Trends

*Patriot Units Have Gotten Better—Much Better—at Air and Missile Defense Warfighting*

by Matthew J. Villa

The Edge Research and Development Company's Air and Missile Defense Training Concept Team, the Coyotes, develops tough, realistic training events for the air and missile defense forces at Fort Bliss, Texas. Serving as observer/controllers for unit exercises and observing trends common to units, we concentrate on developing soldiers, leaders, and units to ensure success on future battlefields. We conduct a wide range of likely tactical and operational scenarios and mission rehearsal exercises. Our focus is on providing a warfighter environment by developing scenarios that support wartime missions. We deploy with units to a field environment, facilitate after-action reviews, provide take-home packets, and develop and forward lessons learned.

During the past year, the Coyotes have conducted training with every Air Defense Artillery brigade on Fort Bliss. This has given us the unique distinction of being the only air and missile defense organization with the ability to identify branch-wide trends through direct observation. The purpose of this article is to offer feedback to Patriot missile units on annual trends our observer/controllers have identified. It is not meant to single out individual units, but rather to identify the many common

areas in which Patriot units are either improving or need improvement. These trends are presented to stimulate discussion, focus training programs, and provide insight to the challenges Air Defense Artillery warfighters are facing.

The bottom line is that, while still facing challenges, Patriot units have gotten better—much better—at air and missile defense warfighting in the past year.

We structure air and missile defense operations training to achieve the following objectives:

- Crews see and gain experience dealing with real air tracks while also analyzing false radar returns such as clutter, false identification returns, and potential spurious tracks.
- Patriot units maintain continuous surface-to-air missile status reporting during air battles, forcing them to deal with real system faults during the air battle.
- All tracks are passed on Link 16 so battery command posts get extensive training.
- Numerous live aircraft are presented to units, including low-level “leaker” scenarios, lame duck return to base scenarios, and blue on red “fur balls” presenting identification challenges.

- Units fight an intense tactical ballistic missile threat with limited Patriot missile counts.

- Air battles are run netted with and without the information and coordination central (ICC), requiring crews to fight in a variety of degraded communications conditions.

Crews must show their proficiency in fighting air battles, controlling hot crews, and conducting maintenance in both controlled and uncontrolled environments. They also must demonstrate proficiency in conducting maintenance with limited time due to an around-the-clock tactical ballistic missile threat. They also have to contend with real-world equipment outages in terms of making “fix-or-fight” assessments and coverage adjustments due to down batteries.

One of the most gratifying trends is the ability of junior leaders to rapidly apply what they have learned. During the course of most exercises, usually five to twelve days in duration, unit learning curves have been steep. This is due to the ability of unit leaders to identify problems and devise solutions, even while continuing high-intensity operations.

First and foremost, our Patriot brigades and battalions are actively training. Anytime we go to the field, we see soldiers training. During a recent trip, we counted sixteen Patriot batteries, representing all three Fort Bliss brigades, in the field.

Battery command post training is skyrocketing. Finding a Link 16 picture in a battery command post is now pretty much the standard. Launcher crews are doing a great job. Surface-to-air missile status reports have improved immensely in terms of accuracy and timeliness. System maintenance has improved as well. Batteries quickly troubleshoot system issues and keep their equipment in the fight. Another very positive trend observed in 2005 was that ICC and engagement control station (ECS) crews are routinely conducting netted air battles. This is an effective way to train, and units are realizing those training impacts. The increased use of the Fort Bliss Drive-Up Simulator Trainer facility is another very positive trend. Units now find it difficult to book time at the facility because of the competition to train there.

From our foxhole, leader and soldier motivation seems very high. They want to do well and respond positively with corrective actions following after-action reviews. The Coyote observer/controller team has identified important trends in the following eight areas of Patriot engagement operations.

- Engagement Operations Integration in the Military Decision-Making Process
- Battery Command Post Operations

- Track Identification
- Engagement Reporting
- ECS Download Reliance
- Maintenance During Sustained Operations
- Netted Air Fight
- Air Defense Artillery Fire Coordination Officer (ADAFCO) Operations

### **Engagement Operations Integration in the Military Decision-Making Process**

Consideration of engagement operations is crucial to the brigade and battalion military decision-making and preparation of orders process. We have seen the very positive trend of defense design becoming the driving force in the planning process. Planners are routinely using their Air and Missile Defense Workstation tactical planner software to do their defense design. This is mainly because of the infusion of Master Gunner Course and Top Gun Course graduates who understand the capabilities of the tactical planner and the necessity of its use in proper planning. The tactical planner is also being taught in the Captains’ Career Course. Most importantly, battalion commanders understand the

tactical planner’s value and have mandated its use.

Even though tactical planner skills have increased greatly throughout the force, these skills are often centralized in a few main players: the master gunners and top gunners in battalions and brigades. Air defense tactical operations center operators and Signal staff officers generally do not know how to use the tactical planner for Patriot planning. Since some Signal staff officers do not know how to use the tactical planner, communications plans are either developed by the tactical director and/or electronic missile maintenance officer, or the Signal staff officer makes them on paper or maps. Intelligence officers generally do not know what intelligence preparation of the battlefield information should be provided to the air-fight planners working on the tactical planner. As a result, the tactical director and electronic missile maintenance officer essentially have to do their own intelligence preparation of the battlefield, a requirement that greatly slows the planning process. Tab entries, defense design specifics, and understanding of the air rules of engagement constraints generally get left out of the war-gaming step of the military decision-making process. As a result, problems with the plan crop up unexpectedly.

Patriot leaders should focus on the following areas. Tab entries, defense design specifics, and implications of the rules of engagement must be thoroughly war-gamed during the military decision-making process. The com-



*Patriot crews must demonstrate proficiency in fighting air battles, performing hot-crew drills, and conducting maintenance in both controlled and uncontrolled environments. (Photo by Catrina Francis).*

mander and operations officer must be deeply involved in the course of action comparison and approval process. Signal staff officers must be trained on using the tactical planner. Intelligence officers must understand their first responsibility is air intelligence preparation of the battlefield. They must know what intelligence preparation of the battlefield products the air-fight planners need.

### **Battery Command Post Operations**

Battery command posts are starting to support combat operations. Battery command post crew members are significantly more knowledgeable, more experienced, and better trained than they were last year. Battery command post crews have made great strides in accurately tracking the surface-to-air missile tactical order, airspace control order, and surface-to-air missile status report. Use of chat and e-mail via programmer project number (PPN) has likewise improved. This has paid dividends by creating better situational awareness at all levels.

However, problems in some areas remain. While units are establishing Link 16 at the battery level, the links are generally not established quickly. This is due to lack of training in troubleshooting on the part of tactical operations center operators and the lack of command emphasis. Battery command post crews do not consistently train with ECS crews, causing early problems with information flow. After about forty-eight hours of training, information flow improves. Most importantly, battery commanders do not realize they can use their Air and Missile Defense Workstations for tactical planning at the battery level.

Patriot leaders should focus on the following areas. Battery command post crews should train regularly with their ECS crews. Link 16 is as important as, and needs to be given the same priority as, voice communications. Battery commanders must conduct their own tactical planning as part of troop-leading procedures. As part of tactical planning they should understand and verify their portion of the battalion defense design on their Air and Missile Defense Workstations, determine appropriate launching station firing azimuths (primary target line and secondary target line), and allocate missile distribution across their site. Battery commanders should report discrepancies to the battalion and recommend adjustments based on war-gaming, reconnaissance, and actual occupation.

### **Track Identification**

Crews at all levels need to become more proactive in the identification of tracks. Radarscopes are routinely full of unknowns. Operators must understand their responsibility to continually reevaluate these tracks, pending identification from higher headquarters. This lack of track identification detracts from the unit's critical friendly protect function. A positive trend is that identification matrices are usually posted in the van, but crews are not trained in using them and hesitate to change track symbols. Patriot ECS crews generally are overly reliant on the ICC for all

track identification. The absence of Link 16 or unfamiliarity with the Link 16 air picture is most often a factor in this problem.

Patriot leaders should focus on the following areas. Crews must understand the difference between identification authority and execution of the identification matrix as published by the identification authority. They should not accept unknown tracks in their area of operations; instead, they should recommend identifications to the ICC. The ICC crews need to continue training with external Link 16 air pictures to understand how to correlate locally created tracks with tracks already identified by another source.

### **Engagement Reporting**

Tactical ballistic missile engagement reporting is not routinely being taught or trained. As a result, ECS crews find preparing engagement summaries burdensome. They rarely complete the reports fully and correctly because they generally are too overwhelmed with the current fight to accurately report past engagements. Moreover, crews do not understand how to read the tactical ballistic missile engagement report automatic hard copy, so they rely on less-accurate hard copies of track amplification data.

Training needs to be focused in the following areas. Commanders should demand one-hundred-percent accurate reporting. Battery command post and ECS crew members must know how to read the auto hard copy and not use the less-accurate information from the Track Amp Data tab. The ECS crews should provide an immediate SALUTE (size of the activity, activity taking place, location of action, uniform of the intended subject, time of action, equipment that was used) report of an inbound threat and engagement. However, battery command post crews should be responsible for more detailed reports, such as the tactical ballistic missile engagement report required by the tactical standing operating procedure. This will allow ECS crews to focus on the more urgent immediate fight. We have seen that when battery command post crews go to the ECS to get the tactical ballistic missile engagement report auto hard copy and complete the reports in the battery command posts, the reports are sent more quickly and more accurately. Battalion standing operating procedures should establish exactly what information is required in their immediate SALUTE report to facilitate faster, more accurate reporting.

### **Engagement Control Station Download Reliance**

We have seen that Patriot batteries tend to be overly reliant on tabular downloads from the ICC. Often, they have no means to verify the accuracy of data in the download. Much of the information in a download (tabs, defended assets, airspace control order) is not published to the batteries by any formal means (operation order, fragmentary order, airspace control order hard copy, air tasking order). This often causes a delay in mission assumption since batteries have to wait to establish voice communications to receive mission-essential information.

More importantly, batteries have nothing to verify the download against. If an ICC makes a mistake, the batteries have no way of catching the error. Errors are most acutely apparent with defended assets. Tab 70 is usually downloaded with all assets active (Army Tactical Data Link One) and ECS crews do not correct it. While ECS crews are usually familiar with their own defense design, they often have a lack of understanding of the battalion's overall defense design. This can easily be fixed if the crews are briefed by their commanders on the battalion-level operation order and have the Air Defense Artillery Annex in their possession.

The following changes should be implemented. As a rule, Patriot battalions and batteries should publish all mission-essential information in operation orders or fragmentary orders. The battalions must push all necessary information to batteries, either through electronic means (PPN e-mail) or hard copy, including air traffic orders, special instructions, etc. The ECS crews should never have to take the ICC crew's word for anything and should accept a download at face value only as a last resort. Crews should insist on receiving vital information necessary to properly assume their mission.

### Maintenance During Sustained Operations

Units have trouble conducting sustained air battle operations because they train in fights of one-hour Patriot Troop Proficiency Trainer blocks rather than in realistic twenty-four-hour continuous operations. Crew changeover briefings are not being conducted to standard. Crews lack good logs (Department of the Army Form 1594s or computer logs) or reports. Messages are not being kept in hard copy or computer archives. The tactical standing operating procedure gives specific directives in terms of crew changeover, but these directives are almost never observed. The tactical standing operating procedure specifically directs, "Prior to entering the ECS, the oncoming crew will receive a situation update from the commander." It also says that "Hot Crew changeover will occur at the ECS." However, we seldom see these actions occur.

Units also have difficulty managing maintenance at

higher alert states. When maintenance time is granted, crews take too long to execute, and sometimes never perform preventative maintenance checks and services on launchers.

Patriot leaders can address these issues by training for sustained operations. To improve crew changeover, detailed logs must be kept. Commanders must inspect crew changeover checklists, and crews must keep hard or digital copies of any information, reports, or messages they receive. The bottom line is, commanders should ensure their crews follow tactical standing operating procedures for crew changeover during training.

To improve Patriot maintenance over sustained periods, batteries must also recognize the need for and ensure sustained maintenance in combat. Units cannot run their equipment into the ground, even if their maintenance time is limited. Crews must make the most of the limited maintenance blocks allowed. They need to prioritize what needs to be done, get everyone set, and conduct "crew drills" for maintenance. The batteries must develop a plan to conduct other non-priority maintenance while the unit is in the fight. A technique that works is per-

forming preventive maintenance checks and services on launchers as they are being refueled.

### Netted Air Fight

The ICC and ECS crews are no longer training in a vacuum, but are, instead, conducting netted air battles as the training standard. This is greatly improving their air-battle management procedures. Over the past year, we have seen much better asset defense and friendly protection. Better ICC and ECS interaction has proven instrumental in these areas. However, while Link 16 is often operational during netted air-fight training, crews do not realize its importance because Patriot Troop Proficiency Trainer tracks do not go out on Link 16.

Units should continue to train for effective and efficient control over subordinate units through netted air-battle training. As a rule, if an ECS crew is training above Reticule Aim Level-Five (RAL-5), then an ICC crew should be netted in and playing. The next step is that crews need



*Patriot batteries must recognize the need for and ensure sustained maintenance in combat. (Photo by Catrina Francis).*

to train with either Flight Mission Simulation-Digital or Live Air Trainer with Patriot Troop Proficiency Trainer overlays so they can use Link 16.

### **Air Defense Artillery Fire Coordination Officer Operations**

Patriot units have increased integration and operational techniques training for ADAFCOs in the past year. Many ADAFCOs have become proficient due to the increased number of joint training events and the Patriot Top Gun Course. Brigade commanders understand the extremely important role the ADAFCOs play and put qualified individuals in the role. However, the ADAFCOs need to understand that, besides being tactical executers, they have an additional role to play. As the regional or sector air defense commander, they must support development of the air control order, air tasking order, area air defense plan, Operational Tasking Data Link, tactical operations data, Patriot-specific special instructions, and Patriot rules of engagement. The ADAFCOs must have unimpeded, dedicated, and real-time voice communications to the ICC. All ADAFCOs need to be trained in these links, and brigades must provide ADAFCOs with the resources for these links.

Commanders must continue to stress the following areas. First, ADAFCOs must help develop and obtain all important documents and disseminate this information to the ICC. Second, ADAFCOs need to know what

information to present in control reporting center, tactical air operations center, and Airborne Warning and Control System briefs. At a minimum, this consists of Patriot locations, azimuths, and rules of engagement. Third, the ADAFCO must have redundant dedicated voice nets to communicate with the ICC. Often this link is by satellite. The ADAFCOs and ICC crews must continue training in establishing satellite communications. Finally, ICC crews should continue to train with a cell outside of the ICC acting as an ADAFCO.

### **Conclusion**

Patriot units should continue their high level of training and maintain their high level of motivation. Units are learning to capitalize on the capabilities of the tactical planner, Link 16 at the battery, and communications enhancements such as chat and e-mail. Units need to continue training in sustained, around-the-clock operations. Air Defense Artillery Soldiers must remain engaged and adaptable warfighters.



*Matthew Villa (Coyote 27) received his commission from the U.S. Military Academy and served as a Patriot officer for more than six years as a fire control platoon leader and tactical director. He currently serves in the New Mexico National Guard. He is an ECS/ICC observer/controller with the Edge Coyote Observer/Controller Team.*

## SCANNING



### **ADA Command Sergeant Major Retires**

Major General Robert P. Lennox presents an American flag to Command Sergeant Major Stanley L. Davis for thirty-two years of dedicated service during a 14 June 2006 retirement ceremony at Fort Bliss, Texas, as his wife, Theresa Davis, looks on. Command Sergeant Major Robert S. Rodgers will replace Command Sergeant Major Davis as the Fort Bliss command sergeant major and Air Defense Artillery's top noncommissioned officer.

# Reinventing Advanced Individual Training at Fort Bliss

by Lieutenant Colonel Joseph Gaines

As the executive officer of an advanced individual training (AIT) battalion at the Air Defense Artillery School, Fort Bliss, Texas, back in 2002, I clearly remember the numerous chapter packets flowing through my office. At least five to six Soldiers a week were being separated from the Army for misconduct. Each Soldier represented a failure on the part of the individual and, in some cases, our Army. I contemplated what lay ahead for these young men and women and wondered if any of these Soldiers could have been saved.

Fast forward from 2002 to July 2005. Army Accessions Command and AIT as we knew them were changing. Lieutenant General Robert L. Van Antwerp, the commanding general of Accessions Command, conducted a video-conference to address a potential six-thousand-man shortfall in Army recruiting. He asked his commanders to search for ways to reduce attrition in the training base without lowering standards.

With that simple guidance, we set out to change the way we did business in AIT. After nearly a full year of institutional change, the outcome is eighty more Soldiers still in uniform—many of them deployed downrange. How we accomplished this mission is the interesting part of the story.

After receiving the mission to reduce AIT attrition, we began a systematic analysis of why so many Soldiers were not completing AIT. For five years in a row, Fort Bliss had recorded the highest attrition rate—above

nine percent—in the U.S. Army Training and Doctrine Command.

A mythology had arisen to rationalize the failure rate. Some said that Fort Bliss' proximity to the Mexican border, with its narcotics traffic and bars catering to underage drinkers, lured Soldiers into trouble with the law. Others blamed the extended length of Air Defense Artillery military occupational specialty training. Still others said Fort Bliss' easy access to the El Paso International Airport made going absent without leave more inviting. However, the statistics revealed a different set of causes. When we examined chapter statistics, an interesting pattern emerged. Many Soldiers were not completing AIT because

of multiple instances of minor misconduct. Typically, young Soldiers would violate tobacco or cell phone policies. Once they violated these policies and received minor punishment, they began to get into more and more trouble. This snowball effect would frequently lead to separation for "patterns of misconduct."

Lieutenant General Van Antwerp's guidance forced us to rethink how we looked at trainees and cadre. We decided that we would no longer act as a filter to determine which Soldiers were best suited for the Army and which Soldiers the Army could do without. Instead, we would help Soldiers meet the standards. Our drill sergeants would no longer act as barriers; instead, they would act as platoon or squad leaders, pulling Soldiers "over the wall."



*More recruits are staying the course, even though warrior tasks have made advanced individual training at Fort Bliss, Texas, tougher than ever. (Photo by Sergeant Matthew McRoberts).*



**The Plan: An AIT Investment Strategy**

To communicate the way ahead, the Fort Bliss leadership developed a Retention Action Plan. This plan focused on four areas: (1) trainees, (2) drill sergeants, (3) leaders, and (4) outside agencies. It was important for the entire team to buy into the concept for this effort to succeed. The battalion commander, command sergeant major, drill sergeants, and battery commanders sat down and outlined how we were each going to participate in an AIT cultural change. The goal was to create a “second chance mentality” among the leadership. If a Soldier teetered on the threshold of separation, should we still give him/her a second chance? Also, could we save Soldiers by early intervention in the medical process? Were there fundamental changes we could make in the way we operate that could help Soldiers make it through training?

Throughout this process, we stressed that standards could not be lowered for the sake of producing more Soldiers for the Army. The drill sergeant’s job—training Soldiers to standard—would not change. The attrition reduction effort would have to happen at the battery commander/first sergeant level and higher.

At the same time that Lieutenant General Van Antwerp issued his guidance, he also made changes to the policy on cell phone and tobacco use, and on pass privileges. Accessions Command shifted from a time-based system to a performance-based system for granting privileges. The idea was to give Soldiers more responsibility up front and teach them to make good decisions. Today, privileges are in the Soldiers’ hands. For instance, if AIT Soldiers score a minimum of 60/60/60 on their physical test, they are granted all privileges, including tobacco, cell phones, and weekend passes.

Initially, the drill sergeants’ reaction to more privileges was universally negative, and a new mythology arose to explain why attrition rates were falling. The common assertions were: “We’ve gone soft,” “AIT is too easy,” “We’re lowering the standards,” and “It was a lot harder when I went through.” The new mythology, like the old mythology, was based on false premises.

The reality is that Fort Bliss AIT is a lot tougher today than it was three years ago. Thirty-six months ago, AIT was ninety-five percent focused on military occupational specialty qualification training and very little on

FORT BLISS AIT 2002	FORT BLISS AIT 2006
<ul style="list-style-type: none"> <li>• No Weapons Training</li> <li>• Zero Rounds Expended Per Month</li> </ul>	<ul style="list-style-type: none"> <li>• Arms Range, M4 With M68 Sight</li> <li>• 18,000 Rounds Expended Per Month</li> </ul>
<ul style="list-style-type: none"> <li>• 95% Military Occupational Specialty Qualification Training</li> </ul>	<ul style="list-style-type: none"> <li>• 65% Military Occupational Specialty Qualification Training, 35% Warrior Training</li> </ul>
<ul style="list-style-type: none"> <li>• Battle Dress Uniforms</li> <li>• Soft Cap</li> </ul>	<ul style="list-style-type: none"> <li>• Army Combat Uniforms</li> <li>• Individual Body Armor with Small Arms Protective Inserts</li> <li>• Kevlar</li> </ul>
<ul style="list-style-type: none"> <li>• Half Day of Common Task Training</li> <li>• Claymore</li> <li>• First Aid</li> </ul>	<ul style="list-style-type: none"> <li>• 8 Hours Improvised Explosive Device Training</li> <li>• Overnight Forward Operating Base Training</li> <li>• Shoot-House Room Clearing (Mounted Combat in Urban Terrain)</li> <li>• Convoy Live-Fire</li> <li>• Crew-Served Weapons Live-Fire</li> </ul>
<p>Until Sixth Week of AIT</p> <ul style="list-style-type: none"> <li>• No Electronics</li> <li>• No Tobacco</li> <li>• No Overnight Passes</li> </ul>	<p>After Passing Army Physical Fitness Test</p> <ul style="list-style-type: none"> <li>• Use of Electronics Privileges</li> <li>• Tobacco Privileges</li> <li>• Overnight and Weekend Pass Privileges</li> <li>• Opportunity to Participate in Combatives</li> </ul>

warrior tasks. Today the balance is sixty-five percent military occupational specialty qualification training and thirty percent warrior tasks. Soldiers qualify with the M-4 carbine using advanced rifle marksmanship techniques, they conduct overnight training in a forward operating base similar to those in Iraq, they receive eight hours of improvised explosive device training, and they train in full individual body armor with Kevlar. This training and equipment did not exist in Fort Bliss AIT three years ago. Today the Warrior Ethos is an important part of what we do.

**Unintended Consequences**

Of course, this transition was not easy. Initially, the incidents of Soldier misconduct went up as Soldiers were given more freedom and responsibility. However, once Soldiers figured out that all their friends were enjoying weekend passes while they were not, the incidences of misconduct began to drop off. In fact, drill sergeants now had more tools at their disposal to manage Soldiers. In addition to counseling and applying the Uniform Code of Military Justice, commanders, first sergeants, and drill sergeants could now withhold privileges previously earned by Soldiers. We quickly discovered that many Soldiers feared the loss of cell phone, tobacco, or pass privileges far more than a field grade Article 15.

Fort Bliss drill sergeants now have to work harder with each Soldier, and sometimes it can be very frustrating.

But eventually, most Soldiers come around. After all, these same Soldiers made it through basic training.

Now we are better preparing Soldiers to make decisions on their own. They learn there are consequences for bad decisions, and they learn this in the training base rather than at their first unit of assignment.

### Health Strategy and the “Can Do” Profile

In addition to increased privileges and improved training, we developed a health strategy focused on reducing injuries during physical fitness training and rehabilitating Soldiers hurt in the training base. At least twenty-five percent of Soldiers reported having been on profile at least once while in basic training. Injuries most commonly occur in the feet, ankles, knees, and legs. The most common cause of injuries is overuse; that is, exercising too much, too often, and with too rapid an increase in the workload. To get at this problem, we implemented the Army Standardized Physical Training Program across all AIT units. The key to the program is well-trained cadre conducting standardized conditioning drills that focus on flexibility and mobility with the proper warm-up and cool-down. We also stood up a separate Fitness Reconditioning Program led by an air defense captain. The unit’s sole responsibility during physical fitness training is to provide supervised specialized workouts for injured Soldiers within the limits of the Soldiers’ profiles. Only five personnel are required to run these physical fitness programs, so costs are minimal. Working closely with our health-care providers, we were able to change our profile system. “Negative profiles” have been replaced by “positive profiles” based on what Soldiers can do rather than their limitations. In a six-month period, we returned seventy-three of ninety injured Soldiers to duty. The formations of injured Soldiers have grown noticeably smaller.

The results of our efforts have been overwhelmingly successful. At Fort Bliss, we reduced attrition from as high as ten percent to less than four percent, the largest decrease in the U.S. Army Training and Doctrine Command. What does that mean to the overall Army? In the past year alone, we have retained eighty Soldiers who, in previous years, would have been separated from the service. In terms of resources, it costs about \$16,000 to recruit a trainee, and by the end of AIT, we have \$57,000

invested in each Soldier. Therefore, the drop in attrition at Fort Bliss has resulted in an overall recruiting and training savings of \$4.6 million annually.

### Not About the Money

We referenced the dollar figure above while briefing a general officer on the turnaround in AIT attrition rates. He commented it’s not about the money, it’s about the people. I couldn’t agree more. The eighty Soldiers we saved have family members who are proud of them. There are eighty young people who have realized their dream of serving in the U.S. Army. They are now productive members of society. One of those Soldiers, Private Krystopher Bodie from El Paso, is serving on-point in Iraq today, conducting three presence patrols a day while manning a .50-caliber machine gun. He recently sent us an e-mail that says it all.

*...I am a gunner, driver, tc [track commander], and I also do dismounted patrols and gate guard. I like going on the missions here, but no one gets a day off here. We go on missions, at least three a day. I like it tho, going on missions, and when I am a gunner with the .50-cal, it's nice. I have a question. If I go to the Soldier of the Month board, do I get any promotion points if I win? I am trying my hardest to get promoted to SPC before I leave here.*

—PV2 Bodie, Krystopher

Will those eighty reclaimed Soldiers succeed in their future assignments? We don’t know, but one thing is certain: Private Bodie is pulling his first tour in Iraq and is looking to the Army for his future. That’s worth something to his family and his buddies—something no one can put a price tag on.



*Lieutenant Colonel Joseph Gaines commands the 1st Battalion, 56th Air Defense Artillery, Fort Bliss, Texas.*

## SCANNING

### ADA Soldiers Killed in Afghanistan

Defense Department officials announced the identities of two Air Defense Artillery Soldiers who died supporting Operation Enduring Freedom. Sergeant Travis A. Vanzoest, 21, of Larimore, North Dakota, and Specialist Curtis R. Mehrer, 21, of Bismarck, North Dakota, were slain 6 June 2006 when their Humvee struck two anti-tank mines during combat operations in Khogyani, Afghanistan. Sergeant First Class Timothy Wicks, 39, of Bismarck, was wounded in the incident and reported in stable condition at Walter Reed Army Medical Center in Washington. The three Soldiers were assigned to the Army National Guard’s 1st Battalion, 188th Air Defense Artillery, Grand Forks, North Dakota.

# U.S. State Department's Role in Missile Defense



*Medium Extended  
Air Defense System*

## ***Because Cold War-Style Deterrence is not Sufficient, Missile Defense is a Reasonable Insurance Policy to Purchase in Today's International Security Environment***

by Paula A. DeSutter

First, you might be asking yourself why the State Department's Assistant Secretary for Verification, Compliance, and Implementation is writing about missile defense. The reason is that, in October 2005, Secretary of State Condoleezza Rice and Under Secretary of State Robert Joseph transferred the missile defense portfolio to my Bureau of Verification, Compliance, and Implementation. I find this to be a rather easy fit, since much of my job and the work of my bureau is seeking to strengthen deterrence and to enforce commitments. Missile defense is a natural fit, in my opinion, because it not only enables us to strengthen deterrence, but also—should deterrence fail—to assertively strengthen it.

Furthermore, you might ask, what's the Department of State's role in missile defense? After all, we don't build or fire defensive missiles (or, for that matter, offensive missiles), and in Washington terms, we're poor as church mice. But we do have an important role to play in this field. Since the United States almost never fights alone, cooperation with allies and coalition partners to develop and deploy missile defenses allows us to make effective use of the technological marvels produced by the Pentagon's Missile Defense Agency. The most advanced of our allies will bring missile defense-related sensors and

interceptors to future combined operations. The use of overseas locations for sensors, ship basing, and, potentially, interceptors is already important to plans for the defense of the U.S. homeland, and will be important for protecting our allies and friends.

Such missile defense cooperation is vital in its own right for the defensive benefits it provides in protecting our populations and territory from attack by rogue states armed with ballistic missiles. But missile defense also is an important nonproliferation tool, because the more defenses spread, the more unrewarding and unattractive it will be for would-be missile proliferators to invest in delivery systems that are unlikely to hit their targets. Missile defenses, in other words, deter missile proliferation. Should deterrence of these programs and their use fail, and if a rogue state should use ballistic missiles—perhaps tipped with chemical, biological, or nuclear weapons—we would view missile defense as the “terminal phase counter-proliferation.”

Let me give you an idea of some of the work the Department of State is doing:

- The president has directed the State Department, along with the Department of Defense, to promote international missile defense cooperation and to negotiate

appropriate arrangements for such missile defense cooperation.

- The Office of Missile Defense and Space Policy represents the Department of State on U.S. interagency delegations to discuss missile defense cooperation with foreign governments worldwide. The Department of State also works closely with the Pentagon on all major international missile defense cooperation efforts. The State Department supports the full range of work within the North Atlantic Treaty Organization (NATO) on bringing missile defense capabilities into the alliance. We have worked with our Defense Department counterparts over the last two years to establish a formal military requirement for missile defense and have supported the creation of a program office for creating the Active Layered Theater Ballistic Missile Defense System.

- In NATO missile defense-related efforts, the State Department represented the United States in the NATO working group that established, for the first time, an assessment of the risk to NATO from the evolving ballistic missile capabilities of rogue states. That assessment will be a key element of NATO decisions on any military requirement for missile defense to protect NATO populations and territory.

- The State Department also engages in public diplomacy overseas to build support for missile defense, delivering speeches on the subject throughout Europe, Asia, and Australia.

- The State Department's Bureau of Political-Military Affairs is charged with controlling the export of defense articles and services covered by the United States Munitions List. The Political-Military Bureau's Directorate of Defense Trade Controls carries out this mission through the international traffic in arms regulations. These regulations are the means by which the State Department implements the Arms Export Control Act.

- The International Security and Nonproliferation Bureau, and in particular its Office of Missile Threat Reduction, reviews export licenses and foreign military sales, including those for missile defense purposes, for nonproliferation concerns and to ensure that any approved exports of equipment and technology are undertaken in keeping with U.S. nonproliferation policy and international commitments, including those under the Missile Technology Control Regime.

- The regional bureaus in the Department of State support U.S. interagency working groups and delegations with critical insights about foreign government positions and the domestic conditions potentially influencing its cooperative missile defense efforts with the United States and, of course, they provide representatives to U.S. delegations as necessary.

- My bureau has an industry outreach effort that periodically talks to industry about missile defense programs and activities, including international missile defense cooperation. We are planning to establish an industry roundtable forum to meet on a quarterly basis with the key missile defense-related companies to

exchange thoughts and ideas on industry problems and obstacles related to international cooperation that the Department of State might be helpful in resolving. At a minimum, we can help in explaining U.S. policy.

## ***... missile defenses function as an insurance policy to defend the United States against ballistic missiles launched against us.***

### **Missile Defense: The Rationale for Cooperation**

The rationale for missile defense cooperation arises naturally from the dramatically changing international security environment. Today, roughly two dozen countries, including some of the world's least responsible states, possess ballistic missiles, and many are attempting to obtain missiles of longer range. Many of these states also have nuclear, biological, and chemical weapons programs. The contemporary and emerging missile threat from hostile states is fundamentally different from Cold War-era threats and, consequently, necessitates a different approach to deterrence and additional tools for defending ourselves. The strategic logic used in deterring the Soviet Union may not be applicable to deterring these post-Cold War threats, thus the United States cannot stay solely dependent upon our capability to deter. Potentially, weapons of mass destruction and ballistic means for their delivery could allow such hostile states to pursue their objectives through force, coercion, and intimidation. Missile defenses are not a replacement for an offensive capability; they constitute an additional and critical dimension of contemporary deterrence, but if deterrence fails, missile defenses function as an insurance policy to defend the United States against ballistic missiles launched against us.

Missile defenses will also help to assure allies and friends about the credibility and reliability of America's commitments, and to dissuade countries from pursuing either the indigenous development or foreign acquisition of ballistic missile technologies or full-up ballistic missiles by undermining their military utility. If allies and friends were vulnerable to a hostile state's threatened use of weapons of mass destruction delivered by ballistic missiles, they might not join coalitions. It is critically important to U.S. foreign policy to assure allies and friends that ballistic missile threats will not deter the United States from fulfilling its security commitments, nor allow aggressors the means to undermine the cohesiveness and political stability of a coalition or alliance. History teaches us that, despite our best efforts, there will be military surprises and failures in diplomacy, intelligence, and deterrence. Missile defenses help provide protection against such possible failures.

As permitted by the Anti-Ballistic Missile Treaty, the United States gave notice in December 2001 of its intention to legally withdraw from that treaty to begin developing

and deploying capabilities to protect the population and territory of our fifty states. The treaty terminated on 13 June 2002. As a result, the United States was criticized heavily by some in the international community, including some allies and friends. Gradually, quite a number of our allies and friends have recognized the threat that, for example, North Korea and Iran pose to international peace and security and are modifying their positions, bringing them closer in line to ours, notwithstanding their earlier criticism.

For example, on 19 January 2006 in Brest, France, French President Jacques Chirac delivered a major speech on French nuclear strategy. The speech noted that missile defense “cannot ... be a substitute for deterrence. But it can supplement it by reducing our vulnerabilities.” This adjustment in France’s position is significant, since previously the threat of nuclear retaliation to aggression had been judged sufficient to deter the full range of threats.

### **Types of Missile Defense Cooperation**

In his National Missile Defense Policy issued on 20 May 2002, President George W. Bush directed that the United States “... structure the missile defense program in a manner that encourages industrial participation by friends and allies, consistent with overall U.S. national security ...” and that “... we will also promote international missile defense cooperation.” Regarding the interrelationship between missile defense cooperation and U.S. export control laws, regulations, and Missile Technology Control Regime obligations, it is U.S. policy to implement our export control laws and regimes in such a manner so as not to impede our cooperation on missile defense with other nations.

*... the magnitude of missile defense cooperation with friends and allies has been, in my opinion, spectacular.*

The United States has a wide range of missile defense-related efforts underway with foreign governments. These include conducting joint missile defense requirements and architecture analyses on a country-by-country basis, joint modeling and simulation exercises, joint research and development projects, co-production, joint testing, joint training and/or interoperability exercises, and foreign military sales, as well as commercial sales to friends and allies. These types of missile defense cooperation are being conducted or discussed with Japan, the United Kingdom, Denmark, Australia, Israel, Italy, Germany, the Netherlands, and Russia, to name just a few. Cooperation can also take the form of “in-kind” contributions, such as offering targets for missile defense testing, as well as offering to provide facilities and/or territory for missile defense purposes. It’s been just four years since the United

States withdrew from the Anti-Ballistic Missile Treaty in June 2002, but the magnitude of missile defense cooperation with friends and allies has been, in my opinion, spectacular.

### **Selected Areas of Missile Defense Cooperation**

I’d like to highlight a few selected areas of international cooperation in the field of missile defense.

**Japan.** In December 2003, Japan formally reached a decision to deploy a multilayered defensive system, which will involve the purchase of the U.S. Navy’s Aegis ballistic missile defense system and the U.S. Army’s Patriot Advanced Capabilities-3 (PAC-3) interceptors as a purely defensive measure to protect the lives and property of citizens of Japan against ballistic missile attacks by rogue states. In addition to deploying PAC-3 interceptors, the Japanese Defense Agency also plans to equip Maritime Self-Defense Forces destroyers with U.S. Navy Standard Missile-3 interceptors.

In the December 2004 Japanese National Defense Program Outline, which is a Quadrennial Defense Review-type of defense policy statement, missile defense was specifically identified as a necessary capability. The statement explicitly identified equipment and technology cooperation with the United States as a means of developing a missile defense capability. In December 2004, Japan and the United States signed a framework memorandum of understanding on missile defense cooperation.

In October 2005, Secretary Rice and Secretary of Defense Donald H. Rumsfeld and their Japanese counterparts released a major report on defense transformation and realignment. The report calls for the deployment of a U.S. forward-deployed X-band transportable radar to Japan. This deployment will complement, not replace, our Aegis long-range surveillance and tracking destroyers already stationed in the Sea of Japan and will provide benefits to both the United States and Japan. We also are exploring other areas for missile defense cooperation, including cooperative development of next generation interceptors. On 8 March 2006, the United States and Japan successfully completed a cooperative flight-test of the Standard Missile-3 with a modified, Japanese-designed, advanced nose cone.

**Australia.** In December 2003, Australia announced its decision to participate in the U.S. missile defense program. Subsequently, the United States and Australia, in July 2004, signed a framework memorandum of understanding on missile defense cooperation, followed by a research and development memorandum of understanding, which was signed in October 2005. Three cooperative projects, involving the over-the-horizon radar, modeling and simulation, and fusion and tracking technologies, are currently under discussion.

On 16 August 2005, Canberra announced that it had chosen the U.S. firm Gibbs and Cox as the preferred designer for the Australian navy’s air-warfare destroyers, a contract worth up to \$6 billion Australian dollars. Three

vessels are currently funded, with the first scheduled to be operational in 2013. Each will be equipped with Aegis sensors and will be interoperable with the military forces of the United States and with those of other future coalition partners. Although Australia may not currently see a ballistic missile threat to its territory, its purpose for pursuing bilateral U.S.-Australia missile defense cooperation is based on maintaining a close alliance with the United States and providing Australian industry with an opportunity for industrial cooperation and technology transfer.

**NATO.** Contractor feasibility studies on active layered theater ballistic missile defense were completed early in 2003, and a missile defense technical blueprint was established that NATO defense ministers approved in June 2004. Since then NATO has committed financial resources to developing and acquiring an operational command and control, planning, and execution capability for the protection of deployed military forces. By 2010, the alliance expects to have the capability to protect deployed military forces against short- and medium-range ballistic missiles.

The NATO heads of state and government at the 2002 Prague Summit agreed to study options for protecting alliance territories and populations against ballistic missile threats of all ranges. NATO commissioned a consortium of defense contractors, led by the United States' Science Applications International Corporation, to conduct the study. In May 2006, the consortium delivered a mostly classified 10,000-word report that warned there is a present and growing threat of long-range missile attack on NATO territories. The report also concluded that territorial missile defense is technically feasible and could provide protection against the full spectrum of missile threats. NATO is currently examining missile defense options presented in the report, which the NATO assistant secretary general for defense investment described as a significant step forward in providing missile defense against missile attacks on NATO territory.

**NATO-Russia.** NATO's cooperative efforts with Russia are being conducted in the Theater Missile Defense Ad Hoc Working Group of the NATO-Russia Council. Work to enable potential joint missile defense operations has included a glossary of missile defense-related terminology in English, French, and Russian and the development of an experimental concept of operations for use in joint crisis response operations. This experimental concept of operations was used in a NATO-Russia Council missile defense-related command post exercise/simulation held in March 2004 at the Joint National Integration Center in Colorado Springs, Colorado. A subsequent NATO-Russia Council command post exercise was completed in the Netherlands in March 2005.

Additionally, the ad hoc working group is currently working on an interoperability study. Interoperability of NATO and Russian missile defense systems in the event our forces are deployed together as part of a coalition operation is a useful goal.

**Russia.** The United States and Russia are continuing to talk about concrete cooperative projects in the field of missile defense, such as cooperation on targets for testing the U.S. Ballistic Missile Defense System and radar data sharing. The United States and Russia conducted a fourth missile defense-related command post exercise simulation in Moscow in April 2005, and the United States has proposed a fifth exercise. The United States and Russia are negotiating a defense technical cooperation agreement, which would facilitate government-to-government, as well as industry-to-industry, missile defense cooperation. The United States government is keeping Moscow informed about U.S. missile defense plans and programs through State Department/Ministry of Foreign Affairs and Defense Department/Ministry of Defense channels.

**Israel.** Through the jointly funded U.S.-Israel Arrow II System Improvement Program, the United States is currently assisting Israel in upgrading the performance of its operational Arrow system to give the system greater capability against longer range threats of greater sophistication. Also, this program is aimed at facilitating interoperability with U.S. systems and will provide for periodic testing of the Arrow II system at a U.S. test range. For example, in July and August 2004, the Israeli Arrow system and its Arrow II interceptors were tested from the Point Magu Sea Range in California. Finally, Boeing is coproducing components of the Arrow II interceptor for Israel.

**Germany, Italy, and the United States.** Germany, Italy, and the United States are jointly pursuing the Medium Extended Air Defense System (MEADS). This research and development project is intended to develop a highly mobile missile defense system for defending against short- to medium-range threats. The system is scheduled to be fielded in 2014 and would be a replacement for Patriot.

**Denmark.** In August 2004, the United States and Denmark, including the Home Rule Government of Greenland, signed agreements that permit upgrades to the U.S. early warning radar at Thule Air Base, Greenland. These upgrades will enhance our capability to detect and defend against ballistic missile attacks launched from the Middle East. A bilateral framework memorandum of understanding to facilitate missile defense cooperation between the United States and Denmark was signed in October 2005. This agreement will allow Danish access to U.S. missile defense technologies and give Danish companies better access to partnerships with U.S. companies in the development of missile defense technologies.

**United Kingdom.** In February 2003, the United Kingdom agreed to the United States' request to upgrade the early warning radar at Fylingdales, United Kingdom, for missile defense purposes. Defense Minister Geoffrey William Hoon and Defense Secretary Rumsfeld signed a framework memorandum of understanding on 12 June 2003, which establishes the basis of the U.S.-U.K. industrial relationship in the field of missile defense.

An annex to the memorandum regarding the Fylingdales radar was signed in December 2003, which

delineates the roles and responsibilities of the United States and United Kingdom for the upgrades. A second annex on bilateral missile defense-related research, development, testing, and evaluation was signed in October 2004. The United States has provided missile defense-related situational awareness displays to the United Kingdom, an arrangement that obviously reflects the closeness of our relationship.

**European Missile Defense Site.** Consistent with the president's direction, the United States has been examining options for enhancing both the defenses of the United States and of our allies and friends by deploying additional missile defense interceptors, sensors, and forward-based radars. One of those options involves fielding a U.S. missile defense interceptor site in Europe.

The United States has conducted exploratory consultations with a number of NATO allies regarding their interest in hosting the deployment of U.S. missile defense assets. No decision has been reached yet. However, we believe that the deployment of limited numbers of missile defense interceptors in Europe would make a significant contribution to the protection of the United States and European NATO allies from a Middle Eastern ballistic missile threat.

## Conclusion

In short, because of the continued proliferation of weapons of mass destruction and their ballistic missile means of delivery, it has become clear that the United States cannot rely solely on diplomacy, deterrence, arms control, and non-proliferation regimes; we can't continue to use twentieth century tools to meet twenty-first century challenges. Given the growing list of bilateral and multilateral missile defense cooperative efforts that are being pursued, it is also clear that our allies and friends are also jettisoning the old Cold War logic that vulnerability is stabilizing. Because Cold War-style deterrence is not sufficient, missile defense is a reasonable insurance policy to purchase in today's international security environment. We must work together to defend not only against today's threats but against increasingly more sophisticated and dangerous future threats.



*Paula A. DeSutter was sworn in as the U.S. Department of State's Assistant Secretary for Verification, Compliance, and Implementation on 14 August 2002.*

# SCANNING

## Missile Defense Test Results in Successful Hit-to-Kill Intercept

A Standard Missile 3 scored a hit-to-kill intercept of a target warhead that had separated from its booster rocket during a pivotal 22 June 2006 test off the coast of Kauai, Hawaii. Hit-to-kill technology uses only the direct collision of the interceptor missile with the target, totally destroying the target using only kinetic energy from the force of the collision. It was the seventh successful intercept test involving the sea-based component of the nation's ballistic missile defense system in eight attempts.

The USS *Shiloh*, an Aegis-class cruiser that had been modified to perform the ballistic missile defense mission, launched the interceptor missiles near midnight from the Pacific Missile Range Facility, Barking Sands, Kauai, Hawaii. The cruiser's Aegis Ballistic Missile Defense 3.6 Weapon System detected and tracked the target and developed a fire control solution. Approximately four minutes later, the USS *Shiloh's* crew fired the missile, and two minutes later the missile successfully intercepted the target warhead outside the earth's atmosphere, more than one hundred miles above the Pacific Ocean and two hundred and fifty miles northwest of Kauai.

This was the USS *Shiloh's* first missile defense test since completing the necessary modifications and upgrades to its SPY-1 radar and advanced communications system to make it capable of serving as a sea-based missile defense platform. It was also the first time the new weapon system configuration, ballistic missile defense 3.6, and a new missile configuration were used during the intercept mission.

Three Aegis destroyers also participated in the flight test. One Aegis destroyer, equipped with a modified version of the Aegis ballistic missile defense weapon system, linked with a land-based missile defense radar to evaluate the ability of the ship's missile defense system to receive and utilize target cueing data via the missile defense system's command, control, battle management, and communications architecture. Stationed off Kauai, two other Aegis destroyers, including one from the Japan Maritime Self-Defense Force, performed long-range surveillance and track exercises. This event marked the first time that an allied military unit participated in a U.S. Aegis missile defense intercept test.



Air Defense Artillery fire units, such as the Patriot battery above, represent the active operational element of theater air and missile defense.

## *Theater Air and Missile Defense*

# Visualizing the Elements and Threat

by Major Kevin F. Ciocca

*For much of the last century, America's defense relied on the Cold War doctrines of deterrence and containment. In some cases, those strategies still apply, but new threats also require new thinking.* – President George W. Bush, West Point, 1 June 2002<sup>1</sup>

Less than one year after the terrorist attacks of 11 September 2001, President Bush used a graduation speech to the West Point class of 2002 to introduce the beginning of a shift in the United States' national security strategy. This needed shift in strategy was an obvious response to the post-Cold War change in the global balance of power and the post-9/11 global security environment. Indeed, as the president noted, "We must take the battle to the enemy, disrupt his plans, and confront the worst threats before they emerge."<sup>2</sup>

This shift in our national security strategy consisted of a transformation from security derived almost exclusively from the defensive elements of deterrence and containment to a comprehensive approach that leveraged the idea that the best defense is a good offense. Despite the bevy of concerns about a new "preemptive" strategy incorporating both defense and offense, *The National Security Strategy of the United States of America* was published on 17 September 2002.<sup>3</sup>

A major component of the national security strategy consists of a section titled "Prevent Our Enemies from Threatening Us, Our Allies, and Our Friends with Weapons Of Mass Destruction."<sup>4</sup> This national security strategy discussion of weapons of mass destruction (WMD) and their associated ballistic missile delivery technology expounds on the ideas articulated by President Bush in

his West Point graduation speech. This national security strategy section on WMD was further refined and published in December of 2002 as a separate publication titled the *National Strategy to Combat Weapons of Mass Destruction*.<sup>5</sup> In fact, it's in this national security strategy document that the president's "new thinking" on denying "the world's most dangerous regimes and terrorists" the use of "the world's most destructive weapons"<sup>6</sup> has been officially laid out.

### A "New" Twenty-First Century Strategy

The premise of this new national security strategy for the twenty-first century rests upon three primary pillars that comprise "the seamless elements of a comprehensive approach."<sup>7</sup> The primary pillars include:

- Counter-proliferation to Combat WMD Use
- Strengthened Nonproliferation to Combat WMD Proliferation
- Consequence Management to Respond to WMD Use<sup>8</sup>

Additionally, the new national security strategy approach to WMD calls for the three pillars to be integrated by "four cross-cutting enabling functions that need to be pursued on a priority basis." These enablers include:

- Improved Intelligence Collection and Analysis
- Research and Development
- Strengthened International Cooperation
- Targeted Strategies Against Proliferation<sup>9</sup>

### Back to the Future

The new, comprehensive national security strategy takes America into the twenty-first century. It is a multi-pillared approach incorporating both defensive and offensive capabilities, all bound together by a set of underlying enablers. However, although this strategy appears to be a logical—and, it is hoped, effective—approach to the complex security problems facing America in the post-Cold War and post-9/11 global security environment, it is by no means a new one!

In fact, while this approach may be new on a national level, this is nothing short of business as usual to air and missile defenders in the Army's Air Defense Artillery branch. Many years before the attacks of 9/11, the Army (and the joint services in general) employed a doctrinal approach to countering theater ballistic missiles that used the primary pillar and underlying enabler methodology. The seamless and comprehensive Air Defense Artillery theater air and missile defense (TAMD) approach taught in our schoolhouses and found in our doctrine, like the national strategy to combat WMD, includes three principal pillars integrated by cross-cutting enablers.

In fact, upon further examination, the new national security strategy counter-proliferation pillar sounds very close to a verbatim restatement of Air Defense Artillery's overall approach to TAMD operations. However, to remain consistent, today's Army air and missile defense doctrine now refers to each TAMD "pillar" as an operational element, which is how they will be referenced throughout the remainder of this article.

### Operational Elements

Specifically stated, the three TAMD operational elements include:

- Passive Defense
- Active Defense
- Attack Operations<sup>10</sup>

Passive defense consists of those measures initiated to reduce vulnerability and to minimize the effects of damage to individuals and infrastructure caused by an air or missile attack.<sup>11</sup> Some passive defense measures include:

- Camouflage, Concealment, and Deception
- Nuclear, Biological, and Chemical Protection
- Early Warning
- Counter-Surveillance
- Recovery and Reconstitution
- Mobility, Dispersal, and Hardening

Active defense operations protect selected assets and forces from attack by destroying threat missile airborne-launch platforms and/or threat aircraft or missiles in flight. An effective active defense should consist of in-depth defense against all airborne threats. This provides multiple opportunities to destroy inbound threats with differing capabilities, increases probability of kill, and denies the enemy the ability to counter the defensive systems.<sup>12</sup>

Attack operations are characterized by offensive actions intended to destroy and disrupt adversary capabilities before, during, and after launch. Attack operations prevent attacks by destroying critical elements such as launch platforms; reconnaissance, surveillance, and target acquisition platforms; command and control nodes; missile stocks; and infrastructure of the overall systems. "Preemption," the preferred method of countering enemy tactical air and missile operations, attacks and destroys or disrupts the enemy's capabilities on the ground before their employment.<sup>13</sup>

### Operational Element Enablers

Like the new WMD national security stratagem, TAMD policy calls for its three operational elements to be integrated by cross-cutting enabling functions. These enablers, command, control, communications, computers and intelligence — sometimes collectively referred to as a fourth operational element — are most commonly discussed in an all-encompassing way using their acronym C<sup>4</sup>I.<sup>14</sup>

Collectively, the TAMD C<sup>4</sup>I enablers link passive defense, active defense, and attack operations to provide timely threat assessment, rapid dissemination of attack warning, mission assignment, targeting data, and battle damage assessment.<sup>15</sup>

Command and control for TAMD operations is the exercise of authority and direction by commanders over their subordinate forces participating in TAMD operations. Command and control involves all the functional processes related to the planning and execution of the TAMD mission.<sup>16</sup>

Communications for TAMD involve receiving and distributing Army TAMD information required by the

command and control functions. It includes communications architectures, data and voice communications, relay devices, input/output data terminals, and data links. It is the communications aspect of TAMDC<sup>4</sup>I that provides the technical capability for Army TAMDC integration.<sup>17</sup>

Computers that support TAMDC operations exist throughout Army TAMDC<sup>4</sup>I to enhance performance and promote standardization, commonality, and modularity. Computers support the rapid fusion of data to meet the short Army TAMDC execution timelines.<sup>18</sup>

Finally, intelligence is vital to the joint/Army TAMDC decision-making cycles and must support friendly assessment, planning, warning, and intelligence preparation of the battlefield functions, as well as engagement decisions and target prioritization of enemy missile systems. The intelligence function focuses on acquiring and making information available to support joint and/or Army TAMDC operations using intelligence systems, capabilities, and organizations within the C<sup>4</sup>I operational elements.<sup>19</sup>

### Success Through Synergy

Given the complex nature of the theater air and missile threat facing us, success in TAMDC operations comes only if we have effectively integrated all of the operational elements in the precise mix and amount at the correct time and location within the battlespace. The synergy we achieve, if this is done properly, results in effective protection of friendly forces and civilians in the specified area of operations. This concept of synergy between the TAMDC operational elements is not new. What is new is a method of graphical visualization of the threat capability and the three primary TAMDC operational elements. Understanding how they interact and complement each other goes far in achieving this desired TAMDC synergy.

### Commanders' Visualization

According to Army doctrine, to visualize means to create and think in mental images. Our doctrine goes on to say that human beings do not normally think in terms of data, or even knowledge; they generally think in terms of ideas or images—mental pictures of a given situation. When it comes to commanders, specifically TAMDC commanders, visualization is the mental process of achieving a clear understanding of the TAMDC force's current state with relation to the enemy.<sup>20</sup> To do this in a TAMDC operation, a commander or his/her staff can leverage C<sup>4</sup>I enablers to obtain information about the current mission, enemy, terrain and weather, troops and support available, time available, and civil considerations (METT-TC) environment and determine enemy threat and operational elements graphics over time. These graphics create a visual image the TAMDC commander can use to achieve situational understanding. With this situational understanding, the commander can determine, among other things, resource allocations, priorities of effort, or operational timelines against the threat to ensure that the fielded TAMDC operational element mix and resources are adequate to defeat one hundred percent of the enemy's threat capability.

### Relevant Facts/Assumptions

What do the operational element contribution and threat graphics look like? How can we adjust the operational element mix to manipulate or shift the graphs in response to the enemy's capability? Obviously, these are the primary questions. However, before we get to the answers, there is one step we need to take first. As with any military discussion, a statement of some relevant facts and assumptions is always appropriate, and this discussion is no different.

- Any meaningful graphical representation of the TAMDC operational elements and threat are impossible without a thorough METT-TC analysis of the specific area of responsibility.

- A comprehensive and effective TAMDC C<sup>4</sup>I system/architecture must be in place to fully achieve the desired synergy of the operational elements.

- The passive defense, active defense, and attack operations contributions to the overall effectiveness of our TAMDC operation can be increased by application of resources (including time).

- The TAMDC passive defense capability will be in place and functional at the earliest phases of any operation. Furthermore, once in place, the contribution of this passive defense capability will remain fairly constant throughout the duration of the operation.

- As a result of the need for specific targeting data, an effective and proactive TAMDC attack operations capability takes time to develop even after the attack operations components have completed integration.

- Once integration is complete, TAMDC active defense systems can immediately begin to provide their maximum level of capability to the overall TAMDC operation. Only with more active defense forces in theater can this relative contribution increase.

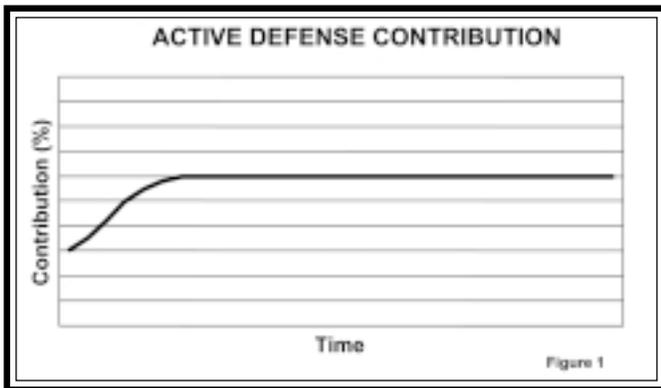
- The enemy gets a vote. The effectiveness of our operational elements or of his air and missile capabilities can be impacted by changes to the enemy's offensive and defensive tactics, techniques, and procedures.

- Once each operational element has completed its integration and subsequently maximized its respective contribution, that maximum level will remain in effect until impacted by the enemy or a change in friendly resources.

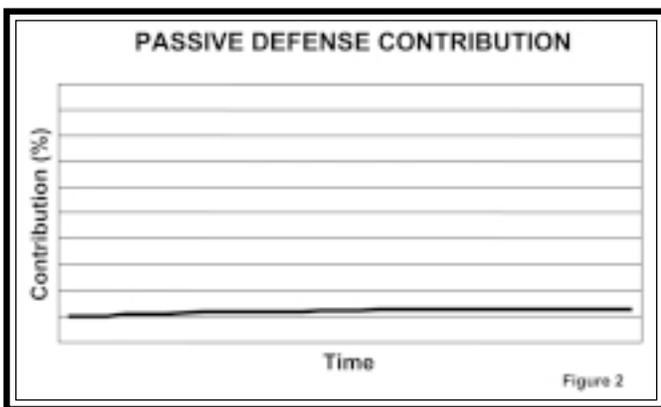
### The Individual Graphs

By combining our TAMDC doctrine, tactics, techniques, and procedures; system capabilities and limitations; and operational experience; along with the relevant facts and assumptions stated above, we can begin to define the individual operational element contributions over time to determine the general shape of each curve. Again, these graphs will only be general in nature to illustrate how the contribution of each TAMDC operational element flows over time. Also, as previously stated, a continuous and detailed METT-TC analysis is required to determine and update the precise threat capabilities and operational element contributions during each phase of a TAMDC operation.

- TAMD active defense operations protect by destroying air and missile threats in flight. One assumption stated that, once integrated, TAMD active defense systems can immediately begin to provide maximum level of capability to the overall operation. This assumption essentially means that the total active defense capability will increase only as additional forces flow into theater and are subsequently integrated. As soon as the flow of TAMD active defense forces into theater stops, we reach our maximum contribution from active defense. As long as these systems don't become resource constrained or destroyed, the total active defense contribution maximum, once achieved, will remain constant. Figure 1 represents the relative graph for the active defense contribution.

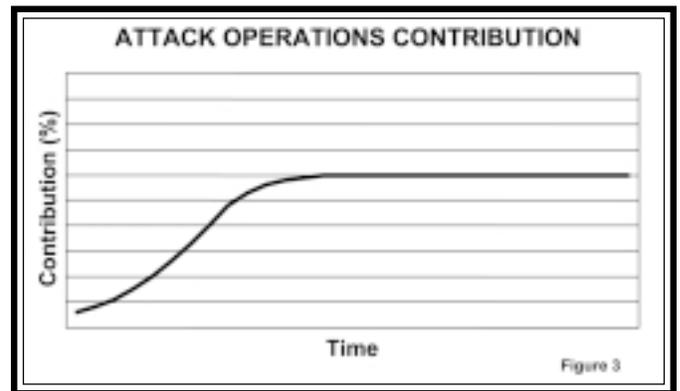


- TAMD passive defense is necessary to provide essential individual and collective protection for friendly forces, population centers, and critical assets. A key assumption stated that the TAMD passive defense capability is in place and functional during the earliest phases of an operation and that this capability remains fairly constant throughout the duration of the operation. Figure 2 represents the relative graph for the passive defense contribution.



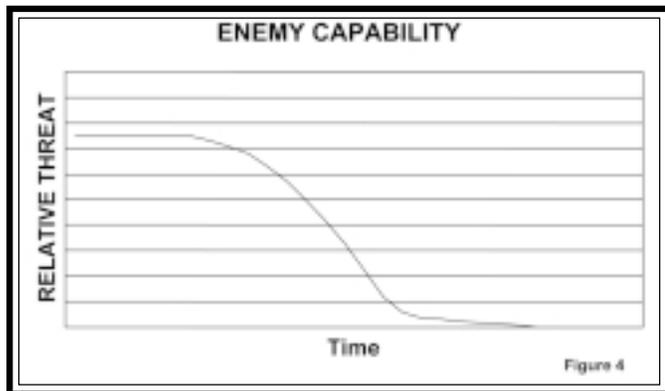
- The graph for TAMD lethal and non-lethal attack operations looks very similar to that of active defense. In both cases, they increase in percentage of contribution over time until they have maximized their capability. However, while the increase for active defense is a function of quantity of the active defense forces, the attack operations capability is a function of both forces and target data available in theater. Said another way, even after all of the

attack operations forces are integrated into the theater, if the level of targeted intelligence is insufficient, attack operations systems will not maximize their capability. In their paper, *An Intelligent Approach to Theater Ballistic Missile Attack Operations*, Lieutenant Colonel Rocky Farry and Major Bill Treu correctly note that attack operations, “especially preplanned strikes, are heavily dependent on intelligence reconnaissance and analysis for success.”<sup>21</sup> All of this requires extensive use of scarce intelligence, surveillance, and reconnaissance resources to obtain the “actionable intelligence” that Lieutenant Colonel Farry and Major Treu say is required to carry out attack operations. They go on to say “as was seen in the Gulf War, when engaged in an actual shooting war, competition for available reconnaissance assets increases dramatically and, thereby, reduces the availability of a large amount of imagery for the theater missile defense task.”<sup>22</sup> These competing priorities delay even further the maximization of the in-theater attack operations capability. Figure 3 represents the relative graph for the attack operations contribution.



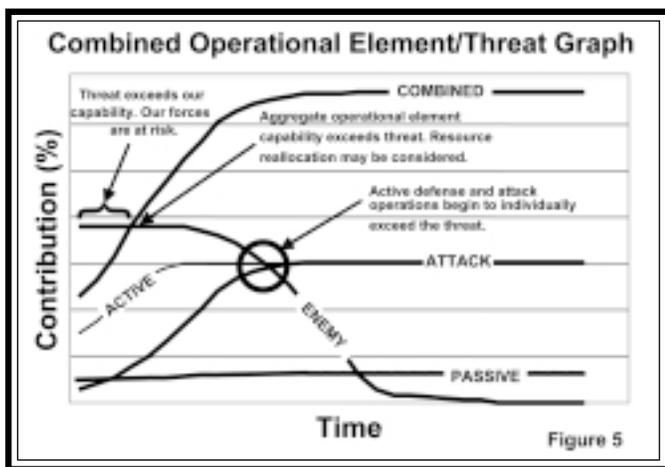
- When evaluating the threat capability graph (Figure 4) it is important to understand that this graph measures the total capability that resides with the threat's air and missile forces. It measures what the enemy can do, not necessarily what he will do with his forces. It is important to recognize that a full threat TAMD intelligence preparation of the battlespace is still needed to determine what the most likely and most dangerous courses of action are for the enemy. In fact, it might be of value to graphically represent both of these enemy courses of action to better assist the commander in his visualization. Threat modeling is defined in Field Manual 3-01.16, *Theater Ballistic Missile Intelligence Preparation of the Battlespace*. This doctrinal publication states quite clearly that “...evaluating an adversary involves creating models and identifying capabilities.” In this case, enemy models depict how theater missile forces prefer to conduct operations under ideal conditions. They are based on the enemy's normal or doctrinal organization, equipment, doctrine, and tactics, techniques, and procedures while including both graphical depictions and text descriptions. It is interesting to note that the enemy's capability may not immediately decrease despite the initial success of our TAMD efforts. This is

due in part to the fact that the “critical path” that allows the enemy to maintain a certain level of operational capability may have sufficient “slack” built into it that allows the threat level to remain constant for quite some time after the capabilities of our TAMD operations elements are brought to bear. It is only after the slack has been squeezed from the enemy’s critical path that we begin to see a decrease in the relative threat of the enemy. The threat rate of decrease is a function of the effectiveness of the enemy’s available resources and, of course, the effectiveness of our lethal and non-lethal attack operations capabilities. Figure 4 represents the relative graph of the enemy’s capability.



### Shifting the Curves

When we combine the operational element graphs with the enemy capability graph, we see how our TAMD posture stacks up. From this aggregate graph (see Figure 5), we can visualize our overall TAMD capability and identify risks or shortfalls that require modifications to our current TAMD structure.



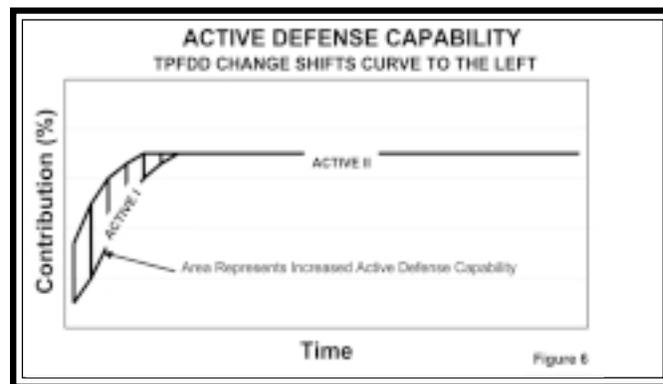
The composite graph immediately identifies the most important element of this notional TAMD structure, the area of risk. Risk in this scenario presents itself when the enemy can overmatch the TAMD system. It is important to note that risk can never be completely eliminated for the commander. No system, no matter how good, represents a “silver bullet” with a one-hundred-percent probability of kill. However, we are trying to visually present

risks so the commander can decide how best to mitigate risks, and if necessary, where and when to assume risks.

Given the initial composite graph, there are several ways commanders can “shift” the operational element curves to address shortfalls. Examples listed below are but a few ways for the purpose of illustration. Undoubtedly, countless others can and must be identified and tailored to a specific METT-TC environment as part of the detailed staff analysis and decision-making process. Also, an obvious product of any continuous intelligence estimate process is the identification of any detectable shift in the enemy’s order of battle; employment tactics, techniques, and procedures; or terrain and weather that could result in a curve shift by detracting from a friendly operational element capability or enhancing the threat capability.

### Examples

When developing the time-phased force deployment data, commanders can assign active defense forces and/or systems higher prioritization for deployment and subsequent in-theater integration. As stated previously, these forces are one-hundred-percent capable once integrated, and this technique will effectively shift the active defense curve to the left, making the maximum capability available sooner. (See Figure 6.)



When developing the required forces to support TAMD operations, commanders can increase the number of active defense systems that will ultimately deploy into the theater. This technique may not result in an immediate effect, but it will result in a longer-term maximum overall contribution from the active defense operational element. (See Figure 7.)

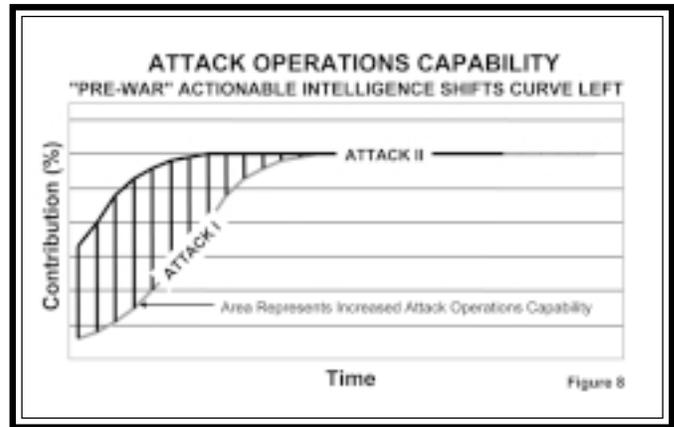
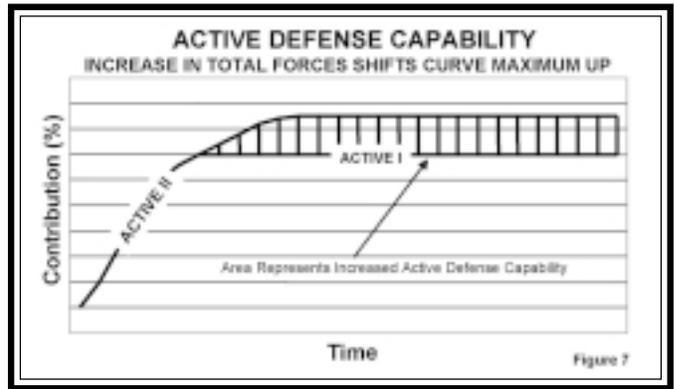
As referenced earlier, Lieutenant Colonel Farry and Major Treu conducted a great analysis of techniques that can enhance the attack operation’s operational element. They state that an effective method of overcoming increases in sensor and analytical workloads when a conflict begins is to prepare much of the initial intelligence work that will support attack operations well in advance of the conflict’s beginning.<sup>23</sup> Using our graphical methodology, we can see the result of conducting pre-war intelligence, surveillance, reconnaissance, and targeting analysis. This technique makes a greater amount of actionable intelligence available as soon as hostilities are

declared and, to an extent, eliminates the delay in initiating effective attack operations. (See Figure 8.)

### Conclusion

The graphical techniques discussed above are offered in this document as a means to help the TAMD commander to visualize the relationships between the TAMD operational elements and the enemy. However, to maximize the utility of such a graphical methodology, a few operational imperatives must again be stressed. First, the only meaningful way to approximate these graphs is through a detailed and continuous METT-TC analysis of the specific area of responsibility. There is no substitute for comprehensive staff analysis. Second, for any TAMD system to achieve synergy among the operational elements and maximize its potential capability against the threat, a comprehensive and effective TAMDC<sup>4</sup>I system/architecture must be in place. TAMDC<sup>4</sup>I is the glue that holds operational elements together. Finally, remember, the enemy gets a vote. The effectiveness of our operational elements or of the enemy's air and missile capabilities can and will be impacted by changes the enemy makes as the battle progresses.

It is hoped that these graphical techniques can create a visual image to help TAMD commanders achieve situational understanding and, ultimately, serve as an effective decision-making and risk-management tool.



Major Kevin Ciocca is the executive officer of the 1st Battalion, 1st Air Defense Artillery, 31st Air Defense Artillery Brigade, Fort Bliss, Texas.

<sup>1</sup>President George W. Bush, Speech to the USMA Graduating Class, West Point, N.Y., 1 June 2002.

<sup>2</sup>Ibid.

<sup>3</sup>The National Security Strategy of the United States of America, Washington, D.C., September 2002.

<sup>4</sup>Ibid.

<sup>5</sup>The National Strategy to Combat Weapons of Mass Destruction, Washington, D.C., December 2002.

<sup>6</sup>Ibid.

<sup>7</sup>Ibid.

<sup>8</sup>Ibid.

<sup>9</sup>Ibid.

<sup>10</sup>U.S. Army Field Manual 3-01.94, Army Air and Missile Defense Command Operations, Washington, D.C., April 2005.

<sup>11</sup>U.S. Army Field Manual 100-12, Army Theater Missile Defense Operations, Washington, D.C., March 2000.

<sup>12</sup>U.S. Army Field Manual 3-01.16, Multi-Service Tactics, Techniques, and Procedures for Theater Missile Defense Intelligence Preparation of the Battlespace, Washington, D.C., March 2002.

<sup>13</sup>Ibid.

<sup>14</sup>U.S. Army Field Manual 100-12, Army Theater Missile Defense Operations, Washington, D.C., March 2000.

<sup>15</sup>Ibid.

<sup>16</sup>Ibid.

<sup>17</sup>Ibid.

<sup>18</sup>Ibid.

<sup>19</sup>U.S. Army Field Manual 6-0, Mission Command: Command and Control of Army Forces, Washington D.C., August 2003.

<sup>20</sup>Lieutenant Colonel Rocky Farry and Major Bill Treu, An Intelligent Approach to Theater Ballistic Missile Attack Operations, Air & Space Power Chronicles - Chronicles Online Journal.

<sup>21</sup>Ibid.

<sup>22</sup>Ibid.

<sup>23</sup>Ibid.

# SCANNING

## Lightning Strike Kills 2-1 ADA Soldier

Private First Class Jesus A. Najera of Buckeye, Arizona, was killed 10 June 2006 when lightning struck him during a training exercise at Gwangju Air Base, Republic of Korea. He was a Patriot crew member assigned to the 2nd Battalion, 1st Air Defense Artillery, 35th Air Defense Artillery Brigade.



The Army issued General Order No. 25, which separated Air Defense Artillery and Field Artillery, in June 1968, while Soldiers of both branches were engaged in some of the Vietnam War's most savage fighting. At left, an M-42 Duster air defense track bypasses a bridge too flimsy to bear its weight. At right, a 105mm howitzer battery awaits a fire mission on Firebase Ripcord.

# Will the Second Time Around Work for Air Defense Artillery and Field Artillery?

*Torn Asunder by a 1968 Divorce, Air Defense Artillery and Field Artillery Contemplate Reconciliation*

by Blair Case

*"It was a much talked about marriage from the very start. The two partners, it was said, had little in common. The similarity of materiel, which in the beginning had represented the greatest bond between the two arms, had evolved along such diverse paths that it had become impossible to discern a fragment of commonality. So when the union was dissolved, the wonder was not so much that it had ended, but that it had lasted as long as it did.*

—U.S. Armed Forces Journal

The U.S. Army Air Defense Artillery School, in compliance with Base Realignment and Closure (BRAC) Commission recommendations, is moving from Fort Bliss, Texas, to Fort Sill, Oklahoma, where it will be collocated and partially integrated with the U.S. Army Field Artillery School to form the new Fires Center of Excellence. The controversy surrounding the relocation has been heightened by suggestions that the collocation of schools be accompanied by a reunification of the Air Defense Artillery and Field Artillery branches back into a single combat arms branch.

"One day, in the not so distant future, we [Air Defense Artillery and Field Artillery] will be one branch," prophesied Colonel Mark McDonald in an article titled "Is It Time for Air Defense Artillery and Field Artillery to

Merge?" The article, which appeared in the January-March 2006 issue of *Air Defense Artillery* magazine and in the January-February 2006 issue of *Field Artillery* magazine, carried considerable weight because its author, at the time, was assistant commandant of the Field Artillery School and deputy commanding general of Fort Sill, Oklahoma.

"I urge you to take off your branch cap, put on your thinking cap and start the debate," Colonel McDonald wrote. "I challenge you to write thought-provoking articles to appear in both the *Air Defense Artillery* and *Field Artillery* magazines. If we explore all possible synergies and potential pitfalls, our ultimate merger can only be the better for it. And, so will the Army."

Reaction to Colonel McDonald's article at the Air Defense Artillery School, where the perception is that the BRAC move will be more an integration than a collocation of schools and that a subsequent branch merger is more a probability than a possibility, was subdued. But some of the school's federal civilian employees—many of them retired military—experienced a sense of *deja vu*. They remembered a time nearly four decades ago when Air Defense Artillery and Field Artillery were one branch entwined in a marriage on the rocks. They wondered, like many couples considering reconciliation after a stormy divorce, "Will the second time be the charm?"

## The Day the Branches Split

On 14 June 1968, when the Department of the Army issued General Order No. 25 separating Air Defense Artillery from Field Artillery, a parade was scheduled at the U.S. Army Artillery School at Fort Sill. The parade's purpose was to celebrate the creation of a new combat arms branch, but some soldiers who had chosen Air Defense Artillery thought the "Redlegs" seemed to be celebrating their departure a bit too much.

"All units at Fort Sill participated, including the battery that I commanded," recalls Colonel (Ret.) Roy W. Tate, who was later to become the deputy assistant commandant of the U.S. Army Air Defense Artillery School at Fort Bliss, Texas. "The review was conducted with much pomp and enthusiasm. The soldiers, who had been prompted beforehand, cheered loudly when it was announced that Field Artillery was now a separate branch that no longer included Air Defense Artillery.

"Following the review, officers were invited to a special ceremony. A large replica of the Artillery insignia had been erected near the Officer's Club. After the officers had gathered around, the missile was launched from the insignia and went

rocketing away. All the officers (except me) took off their insignia, replaced them with those without missiles and retired to the Fiddler's Green for refreshments and loud celebration.

"Afterward," Tate continued, "some of the officers noticed that I continued to wear what was now Air Defense Artillery brass, and there was considerable controversy as to whether or not I remained fit for command. Fortunately, this was resolved in my favor, but I felt more comfortable when I was reassigned to Fort Bliss a few months later."

The parade at Fort Sill marked the end of a rocky twenty-two-year marriage between Coast Artillery (which included Antiaircraft Artillery as well as Seacoast Artillery) and Field Artillery. The Army announced its decision to merge the Field Artillery School at Fort Sill, the Seacoast Artillery School at Fort Scott, Calif., and the Antiaircraft Artillery School at Fort Bliss, in the fall of 1946. The decision grew out of a March 1946 conference at Fort Sill. Representatives from the War Department; General Staff; Army Air Force; Navy; Marine Corps; Headquarters, Army Ground Forces; and all Army ground forces components attended the conference. Their most

controversial proposal was to consolidate Coast Artillery and Field Artillery into one branch.

The Army had originally split Artillery into Coast Artillery and Field Artillery in 1907 because Field Artillery could follow other combat arms into the field while Coast Artillery was anchored to its seacoast fortifications. However, this argument no longer held true in 1946. Coast Artillery, its seacoast defense mission usurped by air power, was headed toward oblivion, but its antiaircraft arm, in response to the ascendancy of air power, had

evolved, gradually at first and then with growing urgency as the United States entered World War II, into a highly mobile force.

Antiaircraft units, many of them equipped with self-propelled guns, followed American infantry and armor across Europe; dispersing, as required, to cover scattered headquarters and swiftly advancing spearheads; and converging, when necessary, to provide massed antiaircraft fire at decisive points of attack. The "Triple A" units frequently augmented Field Artillery by delivering direct fire against enemy counterattacks and fortified defensive positions.

With the postwar demobilization underway,

the 1946 conferees judged that combining Coast Artillery with Field Artillery would conserve scarce manpower, provide more flexibility in officer assignments and improve morale and promotion potential, but intra-service rivalries also played a decisive role. Army representatives who attended the conference saw consolidation as a way of rescuing Antiaircraft Artillery from the clutches of the Army Air Force.

Army Air Force Commander General Henry "Hap" Arnold had first advocated turning Antiaircraft Artillery over to the Army Air Force in 1943. During the North African Campaign, inexperienced U.S. antiaircraft crews shot up a number of friendly planes, and Arnold saw placing Antiaircraft Artillery under Army Air Force control as the only solution to the fratricide problem. Now the Army Air Force was about to become a separate service and wanted to take Antiaircraft Artillery with it as it left the Army.

However, the Army was not about to relinquish Antiaircraft Artillery to the Air Force without a fight. During the war, ground commanders discovered there wasn't enough antiaircraft artillery to go around when they needed it, as during the North African Campaign when German

GENERAL ORDERS

HEADQUARTERS  
DEPARTMENT OF THE ARMY  
WASHINGTON, D.C., 14 June 1968

No. 25

### AIR DEFENSE ARTILLERY BRANCH

*Effective 20 June 1968*, pursuant to the authority contained in Title 10, United States Code, Section 3063(a) (13), Air Defense Artillery is established as a basic branch of the Army.

By order of the Secretary of the Army:

HAROLD K. JOHNSON  
General, United States Army  
*Chief of Staff*

Official:

KENNETH G. WICKHAM  
Major General, United States Army,  
*The Adjutant General.*

aircraft had mercilessly bombed and strafed U.S. formations. Later in the war, when the Allied air forces had established air superiority, they learned that anti-aircraft units could be easily converted to field artillery units. They envisioned the same thing happening in the next war and saw merging Coast Artillery, along with its anti-aircraft artillery force, into Field Artillery as a way of saving a valuable asset.

Therefore, when Chief of Staff General Dwight D. Eisenhower issued a cost-cutting decree in August 1946, the Army moved to integrate the two branches. In January 1947, War Department General Order No. 11 redesignated the Field Artillery School as the Artillery School (it was later to become the Artillery and Missile School) with the Anti-aircraft Artillery School and Seacoast Artillery School as adjuncts. Three years later, in 1950, Congress passed the Army Reorganization Act to consolidate Field Artillery and Coast Artillery into one branch.

The Artillery School revamped its curriculum in the fall of 1947 to include common instruction on all artillery weapons. The problem was that Anti-aircraft Artillery's automatic weapons and "Ack-Ack" guns had little in common with weapons employed by the Seacoast and Field Artilleries, and their successors were to have even less. The air threat was growing more sophisticated, and more sophisticated technology, surface-to-air missiles along with their complex target acquisition and guidance systems, was required to counter it.

The Army closed the Seacoast Artillery School in 1950 and disbanded Seacoast Artillery units or converted them to Field or Anti-aircraft Artillery that same year. Thereafter, only Field and Anti-aircraft Artillery (called Air Defense Artillery after 1957) existed as part of the Army's artillery, but it was still a case of "mixing apples and oranges."

Because of the growing divergence of techniques, tactics, doctrine, equipment, and materiel for the two artilleries, the Continental Army Command outlined a plan in 1955 to develop basic courses in Field Artillery and Anti-aircraft Artillery for new officers. Integrated basic and advanced officer courses, which had been initiated in 1947, had failed to provide officers with adequate preparation to serve effectively in either artillery. With support from the Army's assistant chief of staff for training, the Continental Army Command created basic courses for the two artilleries in 1957, but reintegrated basic officer training from 1958 through 1961 because of the lack of officers and money. In the meantime, the Continental Army Command retained the integrated artillery advanced course for officers with five to eight years of experience because of pressure to maintain flexibility in officer assignments.

Soldiers faced with the dubious challenge of mastering both air defense and tube artillery soon began to see the establishment of a separate air defense branch as a natural and logical step. Tube artillery required officers experienced in the employment of howitzers and cannons, while Air Defense Artillery required officers skilled in the highly technical and demanding environment of missile science. The consolidated officer basic course was pro-

ducing, instead, officers who were particularly well versed in neither.

The pressure to end integrated training and form Field Artillery and Air Defense Artillery as two distinct combat arms continued to mount. The Continental Army Command reintroduced separate basic officer courses in 1962 after reviewing a report from the Army Officer Education Review Board of 1958 that identified the need for specialized training for new officers. Since the Army wanted flexibility to shift experienced artillery officers easily between Field and Air Defense Artillery units, the command retained the integrated advanced course. As a part of the advanced course, student officers received instruction at both the Artillery and Guided Missile School and the Air Defense School.

Vietnam emphasized the need for separation by taxing the Artillery and Guided Missile School's ability to crank out officers for the firebases of Southeast Asia while concurrently maintaining "free world" air defense artillery employment. At the direction of the commanding general, Continental Army Command, the Artillery and Guided Missile School and the Air Defense School explored the desirability of dividing the artillery into two branches. Officer personnel policies and their effect upon artillery combat operations in Vietnam, as well as the responsiveness of the artillery officer corps to meet future military requirements, were explored and evaluated.

The Army recognized that a growing division of doctrine, mission, training, equipment, and techniques were evolving within the Artillery Branch as a result of the scientific advances within the military. This diversion of interest required a manpower pool with specialized characteristics. The Army concluded that two career branches could provide an improved response for the existing dual mission of the Artillery Branch and could better meet the anticipated professional requirements of future weapon systems while saving men and money.

In line with this, the authors of the *Artillery Branch Study* of 1966 concluded that integrated training "spawned mediocrity." The report cited "strong comments from commanders against assigning air defense officers to Field Artillery units in Vietnam since they have considerable difficulty in fulfilling Field Artillery officer responsibilities." There were incidents in which air defense officers assigned to Field Artillery fire direction centers were involved in friendly fire incidents and evidence that Field Artillery officers assigned to air defense units were slow to master the intricacies of air defense systems.

A major problem was that the one-year tour of duty in Vietnam left little time for on-the-job training. Field Artillery commanders in Vietnam complained that they did not have the time to train an air defense artilleryman to be competent in Field Artillery. "A Field Artillery outfit in combat can absorb only a limited number of officers who do not have a thorough knowledge of what it takes to get cannonballs on the target," said one Field Artillery commander. "The truth of this comment is amplified by the one-year tour here in Vietnam. There is little or no fat in

the TOEs [table(s) of organization and equipment]; everyone has a job to do and there is little room for inexperienced understudies.” Another Field Artillery officer complained that one air defense major he assigned as a Field Artillery battalion executive officer “took the attitude that he was qualified for a far more sophisticated weapon system, and it was beneath him to dirty his hands with popguns, and furthermore, he did not know a thing about Field Artillery and wondered how he could be expected to learn all this new stuff in just thirteen months.”

But air defense commanders expressed an equally dim view of branch integration, with its requisite for cross-training and cross-assignments, and argued that they also needed “officers who could hit the ground running.” “The assignment to this command of an officer whose training and experience are limited to Field Artillery does affect the operational efficiency of the unit to which he is assigned,” observed the commander of U.S. Army Air Defense Command.

“The limited introduction to air defense materiel, tactics, and techniques of operation presented to this officer during the Artillery Career Course does not provide him with sufficient knowledge or background to become an effective member of the team,” another air defense unit commander stated. “Detailed knowledge of his weapons is essential for any unit commander. In the case of an air defense battery commander, the complexity and sophistication of his materiel is such that it cannot be mastered quickly and easily.”

However, anyone reading the *Artillery Branch Study* of 1966 cannot help but be struck by the perception that its authors, judging by the preponderance of data they devoted to career issues, seem to have viewed branch integration’s adverse effects on officer efficiency ratings and selection for promotion as a more compelling argument for separation than integration’s impact on unit readiness. By mid-1966, it was clear to the chief of the Artillery Branch, and just about everybody else, that all was not well with the career progression of artillery officers. On all the barometers of career success, including promotion lists and selection to senior service colleges, Artillery officers showed a lack of competitiveness with their contemporaries from Infantry and Armor by placing third. Reflecting this concern, the 1966 study devoted an entire chapter to an exploration of comments on officer efficiency reports. “His present limitation is his lack of technical experience with Field Artillery,” decreed one Field Artillery rater. “The exacting requirements and scope of work imposed on a U.S. Army Air Defense Command battalion,” wrote an air defense commander, “requires maximum continuing effort and production by assigned personnel and does not permit time for a slow progressive assumption of responsibilities, especially by an officer of his grade [captain] and term of service.”

“The *Artillery Branch Study* of 1966 contains some arguments for separating Field Artillery and Air Defense Artillery that are based on doctrinal considerations,” said Lieutenant Colonel Thomas E. Christianson, then the U.S.

Army Air Defense Artillery command historian. “However, the tone of the report suggests that the desire to make Field Artillery and Air Defense Artillery officers more competitive with their contemporaries was paramount in the decision to separate Field Artillery and Air Defense Artillery.”

Labeling the years of integration as detrimental to both Field and Air Defense Artillery, the authors of the study called for the forming two separate branches. Having built up a head of steam, the move toward separation gained impetus. In 1967, the Department of the Army decided to separate the advanced courses for Air Defense and Field Artillery. This decision was followed by the final decision to separate the branches and, in June 1968, Department of the Army General Order No. 25 made the separation effective.

The immediate problem facing the Army was to identify which officers were to be in Air Defense Artillery and which in Field Artillery. The Artillery Branch Career Management Office conducted a comprehensive survey of officers’ files, in the process considering personal preferences. Each of the 25,000 files and the officers they represented were individually classified as either Air Defense Artillery or Field Artillery.

Meanwhile, a separate office was established for the career management of Air Defense Artillery officers below the grade of colonel within the Officer Personnel Directorate, Office of Personnel Operations, Department of the Army. Colonel Joseph C. Fimiani was selected to head the newly established office and manage the records of 7,000 officers and warrant officers when it opened for business on 1 December 1968. The Enlisted Personnel Directorate, Office of Personnel Operations, Department of the Army, continued to guide the careers of noncommissioned officers and enlisted soldiers assigned to the new branch.

Many talented and visionary officers with a grasp of, or at least an intuition for, the evolving nature of warfare immediately volunteered for the new branch. “I chose Air Defense Artillery,” said Tate, “because my experience was all ADA, to include just having completed a tour in Vietnam with Hawk. Also, my father was Coast Artillery and the AAA connection had interested me in the business. Air Defense Artillery was, and is, more progressive, interesting, and dynamic than Field Artillery.”

Air Defense Artillery was somewhat at a disadvantage in rallying officers to its banner. The branch’s main drawback was that the handwriting was already on the wall for the Army Air Defense Command, headquartered at Ent Air Force Base in Colorado Springs, Colorado. The command had led an uneasy existence since its creation in 1950, then and always under the operational control of the Air Force. Its organizational pride was high during the 1950s when Americans nervously scanned the skies for Soviet bombers, dug bomb shelters and relied on the Nike missile sites that encircled the nation’s major cities to save them from nuclear disaster. Then intercontinental ballistic missiles, which the Nike missile system could not

counter, replaced long-range bombers as the chief threat to the continental United States, and the U.S. Army Air Defense Command's days were numbered.

In 1974, the command was dissolved, leaving but one Nike site in all of the continental United States. At least eight colonel and six general officer slots were gone forever. Upon the demise of the ARADCOM and the separation of the branch, many career artillerymen, worried about future promotional opportunities, besieged the Military Personnel Center with petitions opting for Field Artillery.

Another trouble area surfaced when it was discovered that, in their efforts to promote their own branch, Field Artillery officers in positions to influence future lieutenants frequently badmouthed Air Defense Artillery. For example, tactical officers at Fort Sill's Robinson Barracks, then home of the Artillery Officer Candidate School, told members of Field Artillery Officer Candidate School Class 1-69 they were special because they were the first class to pin on the crossed cannons instead of the crossed cannons and missile insignia that now belonged solely to Air Defense Artillery. The implication was that the new branch was a haven for noncombatants, and that candidates who put Air Defense Artillery on their personal preference sheets for future assignments were looking for a way out of Vietnam.

Most air defense assets, it is true, remained in Germany, Korea, or the United States, but Hawk batteries were deployed in Vietnam. And news that they were noncombatants would have come as a shock to the M42 Duster and quad .50-caliber machine gun crews who were continuously and often heroically engaged with the enemy in some of the war's most savage fighting. But the stigma, however unfairly applied, plagued the new branch for nearly two decades, handicapping it in the intra-service recruiting wars until a renaissance of high-tech ADA weapons, changing threat scenarios, and the "Scudbusters" of Operation Desert Storm gave the branch an altogether different image.

The commandant of the Air Defense Artillery School, Major General George V. Underwood, went so far as to write a personal letter to all commissioned officers in air defense assignments, prophesying a bright future for the Air Defense Artillery and pleading with them to stay where they were. This had some effect, but in the end, the assignments desks had to categorically reject bids to go Field Artillery from officers with appreciable Air Defense Artillery experience. Otherwise, there would not have been sufficient talent to man the new branch.

None of this dampened the enthusiasm of the soldiers who were determined to build their careers in Air Defense Artillery. "New and eager, proud and proficient, the new Air Defense Artillery Branch comes into the Army as a combat arm with more than 7,000 officers and warrant officers on its rolls," wrote Lieutenant Colonel Federick C. Dahlquist and Major David G. Sanford in an article they prepared while assigned to the Air Defense Artillery Branch, Office of Personnel Operations. "With a link to its Coast Artillery heritage, the new branch will continue

to perform its ever-alert mission of first-line defense of the nation at home and abroad.

"Today the Air Defense Artillery Branch can look to the career development of its officers with a great deal of anticipation and enthusiasm," they added. "The branch can concentrate more objectively on a balanced career for its officers, knowing that its prime responsibilities lie in one path, that of missile and radar electronics.

"Today's challenge is the continued employment of Nike Hercules and Hawk weapons in CONUS [continental United States] and in other critical defenses throughout the free world, the combat usage of the twin 40mm, self-propelled gun M42 in Vietnam, and the deployment of Chaparral and Vulcan weapon systems," they continued. "Sentinel and SAMD [Patriot] are tomorrow's challenge. The quality and quantity of effort that will be demanded by these latest weapon systems are but a continuation of the demand for high quality and outstanding leadership demanded of air defense artillerymen in the past.

"The future, then, is unlimited for the Air Defense Artillery Branch," Lieutenant Colonel Dahlquist and Major Sanford concluded. "Its personnel can walk tall with the knowledge that their branch will lead the way in the field of missile for the Army, and that they are members of an elite group."

In retrospect, one wonders if the optimism of soldiers who rejoiced in the birth of Air Defense Artillery would have burned as brightly had they a fuller knowledge of the trials and tribulations that lay immediately ahead: disillusionment and abandonment in Vietnam, the "hollow" Army of the 1970s, the task of building the all-volunteer force, and the challenge of reshaping and rearming Air Defense Artillery to meet the ever-evolving threat. However, events, including the missile engagements of Operation Desert Storm and Operation Iraqi Freedom, were to prove that their confidence in themselves and the branch was well placed.



Blair Case is the Editor-in-Chief of *Air Defense Artillery* magazine.

## SCANNING

### Boeing Awarded Contract to Build Avengers for Egypt

Boeing has signed a foreign military sales agreement with the U.S. Army to deliver Avenger short-range air defense fire units to Egypt. The Egyptian order will allow Boeing to restart the Avenger production line, which has been dormant since 2004. Having an active production line ensures Boeing's ability to respond quickly with an affordable short-range air defense solution for both domestic and international customers.

# Air Defense Artillery Magazine Digital Photo Shooter's Guide



In recent years, ADA Soldiers armed with digital cameras have produced a tremendous archive of photos, many of them terrific action shots of ADA Soldiers engaged in the Global War on Terrorism. Unfortunately, too many ADA photographers “conserve ammo” by shooting at low resolution. This tactic permits them to squeeze more digital images onto a memory card or memory stick, but produces low-resolution images. These low-resolution images are easy to email or post on a website, but they won't work in print publications like *Air Defense Artillery* magazine.

## Selecting Image Quality

Most digital cameras give you two or three choices equivalent to “Good, Better, and Best or Low, Medium, and High.” We can work with most digital images shot at Better or Medium, provided the camera is at least a 3.1 megabyte camera, but we can't enlarge them to fill more than one column. We have to run them small. Digital photos taken at the Best or Highest resolution setting gives us more layout and design options.

## Selecting Image Size

Some digital cameras permit you to adjust image resolution by selecting image sizes. For example, a low-resolution 640 x 480 image has 307,200 pixels. A single image takes up about a megabyte of storage space. We can use 640 x 480 images—if that's the best you've got—but we have to run them small. Selecting an image resolution of 1024 x 768 produces 2.5-megabyte images that give us more layout and design options. Even larger images work better.

## RAW Mode

Some cameras allow you to select a mode that doesn't compress the image at all. This mode will give you the highest quality but stores the fewest images because the files are so large. Some cameras also offer a RAW mode that stores data off the image sensor without processing it. This keeps the file size smaller and speeds up the time between photos. The RAW file is processed into a full-color image only after it's transferred to the computer.

## Don't Embed Photos in PowerPoint or Microsoft Word Documents

Embedding photos in PowerPoint or Microsoft Word Documents reduces resolution and makes the images hard to work with. Send images to us as individual TIFF or JPEG files.

## Sending Your Photos to Air Defense Artillery

The best way to send your photos to Air Defense Artillery, provided there's time, is by downloading them to a floppy disc or burning them to a CD-ROM and mailing them to us (ADA Magazine, ATSA-ADA, 2 Sheridan Road, Fort Bliss, TX 79916-3802). You can also email photos to us (adamag@bliss.army.mil), but if the image files are big files, it's best to email them one at a time.

## Always Send Captions

Send a caption with each photo that describes the action shown in the photo and lists the date, location, unit, and the rank and full name of every Soldier in the photo. Number the photos and attach a file with captions with numbers that correspond to the photos. Include the full name of the photographer so we can give the photographer a photo credit line.

## What to Shoot

As a rule, take photos of ADA Soldiers at work or in action on their weapon systems or equipment. Don't send us group photos or posed shots of Soldiers smiling at the camera.

## Film

We can't process negatives or slides, but we still welcome prints; it's just been years since we've seen any.

**Questions:** If you have questions call us at DSN 978-5603 or (915) 568-5603.

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## **Winning Logo!**

Angel Quezada, Chief, Digital Training Access Center, U.S. Army Air Defense Artillery School, Fort Bliss, Texas, submitted the winning design in the Fires Center of Excellence logo contest.

The chiefs of Air Defense Artillery and Field Artillery selected the winning logo from among more than 100 entries.

Read past issues of *Air Defense Artillery* magazine online! Go to <http://airdefense.bliss.army.mil/adamag>