

AIR DEFENSE ARTILLERY



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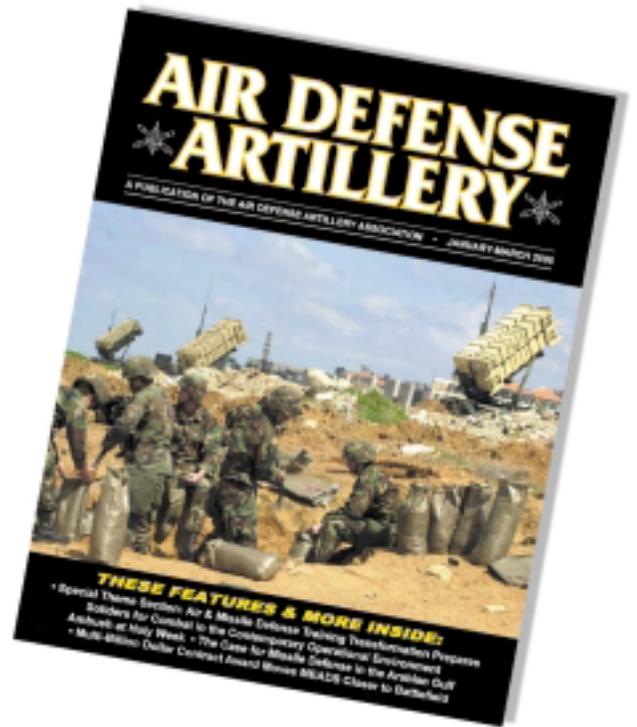
Is it Time for Air Defense Artillery & Field Artillery to Merge?



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- Air Defense Artillery & Field Artillery: Finding Common Ground
- Air & Missile Defense Transformation: Reshaping ADA's Force Structure
 - C-RAM Battery Organizational Structure

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Vignettes chosen for publication appear in *Air Defense Artillery* magazine. They also may be incorporated into the ADA Museum's "A Day in the Life of an ADA Soldier at War" exhibit.

Email vignettes, along with any photos* you may want to submit, to adamag@bliss.army.mil.

* See Digital Photo Shooter's Guide on inside back cover.





ADA MAGAZINE

The Journal of Air Defense Artillery

JANUARY - MARCH • 2006

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ON THE COVER:

A U.S. Soldier guards a 5th Battalion, 7th Air Defense Artillery, Patriot battery deployed in Israel as part of Joint Task Force Cobra. The 69th Air Defense Artillery Brigade task force was created to participate in the Juniper Cobra 2003 training exercise, which concluded as coalition forces assembled for the U.S. led invasion of Iraq. Task Force Cobra remained in Israel during Operation Iraqi Freedom to help defend the country against potential Iraqi ballistic missile attacks. (Photo by SPC Kris Steward)



INTERCEPT POINT

by BG Robert P. Lennox

In November 2005, Base Realignment and Closure (BRAC) Commission recommendations, which include collocating the U.S. Army Air Defense Artillery School and Field Artillery School at Fort Sill, Oklahoma, to create the NetFires Center of Excellence, passed into law. The two service schools are already working together to consolidate some functions, but will continue to operate, at first, as separate entities within the NetFires Center. However, our shared objective is to truly integrate the schools, not just collocate them.

There are no definite plans to merge Air Defense Artillery with Field Artillery; however, the possibility of merging the branches is being discussed and will become a topic of debate in *Air Defense Artillery* and *Field Artillery* magazines. Merging the branches is one of many options I will be discussing with MG David C. Ralston, the Chief of Field Artillery. If branch merger—now or further down the road to transformation—is determined to be in the Army's best interests, that is the course of action we will recommend.

In *Born Fighting: How the Scots-Irish Shaped America*, author James Webb speculates that the reason Americans of Scottish and Irish descent have historically constituted a high percentage of U.S. combat units is that they transferred the traditional "Celtic tie of kinship" from warlike clans to "branches of service" in the U.S. military. Since I am Scots-Irish, tampering with branch loyalty is not something I will undertake lightly, but as we contemplate school integration and the possibility of merging the branches, we must remember that air defenders and field artillerymen share common roots.

Our roots go back to 1824 when the Artillery School for Instruction and Practice was first formed. As modern battleships evolved to threaten American ports, the U.S. Artillery formed the Seacoast Artillery Corps to train Soldiers who manned coastal batteries. As the air threat emerged, the Seacoast Artillery gave birth, first, to the Antiaircraft Artillery Service of World War I and, later, the Antiaircraft Artillery of World War II. In August 1944, the Antiaircraft Artillery School moved to Fort Bliss, Texas, but after the war, and the demise of the Seacoast Artillery, the Antiaircraft Artillery was reabsorbed into Artillery. However, in June 1968, while our Duster, Quad .50 and searchlight crews were fighting in Vietnam, Air Defense Artillery was separated from Field Artillery and was recognized as an independent combat arms branch.

The marriage between Air Defense Artillery and Field Artillery was a "much talked about marriage" from the beginning, and when it ended, many marveled that it had lasted for so long. The "divorce" was the occasion for celebration, both at the Air Defense Artillery Center and Field Artillery Center. The primary reason given for the breakup was that irreconcilable differences in technology—surface-to-air missile vs. tube artillery—had driven the two branches apart. Today, the emerging technologies of "netcentric" warfare provide grounds for reconciliation.

Timetables for the ADA School's relocation are still being established, but the "closure date" will rank as a major milestone in ADA history. For Soldiers assigned to the school, the move means a permanent change of station, but the future remains bright for Soldiers confronting the air and missile threat. They will continue to enjoy rewarding careers with abundant assignment and promotion opportunities. However, the move from the Desert Southwest to Oklahoma's prairies threatens to disrupt the careers of our federal civilian employees, whose hard work and dedication help make it possible for ADA Soldiers to accomplish their mission on the battlefield. We are working to determine which regulatory mechanisms should apply to civilian personal reassignments. I am committed to ensuring our federal civilian employees, many of who have spent their entire careers or major portions of their careers at Fort Bliss, are treated fairly during the BRAC process. I am equally committed to ensuring that the move does not interrupt the mission of providing warrior-focused training to Soldiers bound for ADA units engaged in the Global War on Terrorism.

In 1830, Congress passed the Indian Removal Act, which forced American Indian tribes from the Southeastern United States to relocate to the "Indian Nation," which later became Oklahoma. The Cherokee called the heartbreaking journey from their homeland the "Trail of Tears." The ADA School's move to Fort Sill will not be a 21st century "Trails of Tears." The NetFires Center of Excellence will be an exciting and challenging place for ADA Soldiers to serve and ADA civilians to work. Like my Scots-Irish clansmen who transferred their clan allegiances to military branches, air defenders and field artillerymen are kinsmen who come from a common stock of tough warriors. We are proud to be American Soldiers, possessing the warrior spirit and facing today and tomorrow's challenges around the world.

Robert P. Lennox

Robert P. Lennox
BG, USA
Commanding





At left, air defense artillerymen maneuver a Patriot missile launcher into position at Fort Bliss, Texas. At right, field artillerymen wrestle a howitzer into position at Fort Sill, Oklahoma.

NetFires Center of Excellence

Patrecia Slayden Hollis, *Field Artillery* magazine editor-in-chief, interviews BG Robert P. Lennox, Chief of Air Defense Artillery and Commanding General of Fort Bliss, Texas

What do you see as the strengths of the Air Defense Artillery [ADA] and Field Artillery [FA]? Is it time to merge the two branches? If so, why and in what time frame? If not, why not?

Before I answer, I want to say that the Lennoxes already are a NetFires family. My brother and two nephews are field artillerymen, and we work well together. So I think that's a sign for the future.

Strengths of the U.S. Air Defense Artillery? We are the only branch in the world that can execute the ballistic missile fight—use Patriot missiles to shoot down theater ballistic missiles [TBMs]. No other Army in the world has that capability, even those that have the missile systems. So I think we are very good in our lane, which is a defensive lane that enables maneuver commanders to complete their operations.

Field artillerymen also do what they do better than Redlegs in any other Army in the world: influence the battle with cannon, rocket and missile fires and stand arm-in-arm with their maneuver commanders, ensuring success on the battlefield.

So in terms of professionalism, in terms of commitment to doing the right things, I think both branches are world-class. I'm excited about the opportunity to work with Field artillerymen to write new doctrine and develop new concepts.

About merging the two branches into one—from the Army's perspective, there's a lot to be said for merging the two branches. I think that as we move forward in collocating the Air Defense with the Field Artillery at Fort Sill, Oklahoma, as the Netfires Center of Excellence, it will become evident there are benefits to having one branch.

If you look at the Combined Arms Support Command, CASCOM [Fort Lee, Virginia], it has been a center of ex-

cellence for as long as I can remember, but Quartermaster, Ordnance and Transportation have retained their branch identities.

Now in the case of the Air Defense and Field Artillery, the "whole may be better than the sum of our individual parts." But, at this point, we don't know if that's the way to go. As General Ralston [MG David C. Ralston, Chief of Field Artillery] and I move forward on establishing the NetFires Center, we'll recommend that ADA and FA become one branch if it makes sense for the Army.

Please explain the overall operations of the Counter-Rocket, Artillery and Mortar [C-RAM] program, including the general responsibilities of FA and ADA and how they are integrated.

I'm excited about C-RAM. Part of the Field Artillery's mission is counterfire. So it's logical that in the last couple of years we've integrated AD and FA capabilities into one unit under one unit commander to conduct C-RAM.

We've integrated the FA sensors—Q-36, Q-37 Firefinders and Lightweight Counter-Mortar Radar, the LCMR, and coupled them with other sensors that can identify an incoming threat with such precision that only a portion of a FOB [forward operating base] needs to be warned to take cover. Everyone else can keep working. Based on the sensor piece alone, the threat of a mortar attack does not paralyze an entire unit or base anymore.

The Air Defense's piece is to clear the airspace. We're tied into the joint air picture, so we know what's flying up there. That is coupled with both AD and FA strike capabilities—striking the threat round in the air, if possible, or counterstriking the threat firing unit, both with munitions or ground forces. Taking out a projectile in the air coming at you, which is what C-RAM's Phalanx gun does, is our forte. [The Land-Based Phalanx Weapon System is the

Army version of the Navy's six-barrel, Phalanx 20mm gun, which is similar to the ADA's Vulcan gun.]

So what we've done is optimize the best of both branches in one program. Together, we are like a boxer, each of us with one hand: the FA throws the punch and the ADA blocks. Those capabilities are now inside one thinking C-RAM team.

If you expand that concept across the battlefield, we could build such a team for the operational and strategic levels of the counter-Scud fight we've been conducting with Patriots and joint fires for years—not just at the tactical level for C-RAM. So C-RAM has got a lot of implications for NetFires. C-RAM is a "seed" that we can grow the two ends of the spectrum into NetFires. For me, that means getting our command and control systems right. I think C-RAM is very relevant and timely.

What is your immediate vision for ADA as part of the Army's NetFires Center of Excellence at Fort Sill? What kinds of synergy and shared functionality do you envision?

Critical for ADA is developing a system of systems capability inside ADA systems. Right now, I can sense a target with the Patriot radar, but I can't pass that to the developmental SLAMRAAM [Surface-Launched Advanced Medium-Range Air-to-Air Missile] to intercept a target. I'm not netted, even internally to ADA systems.

We have a path ahead, what we call "Increment II," to design and procure systems to give us an integrated fire-control capability that will allow us to see with any sensor and strike targets with any platform. And that goes across our weapons systems, from the future JLENS [Joint Land-Attack Cruise Missile Defense Elevated Netted Sensor] to Patriot and SLAMRAAM.

The NetFires Center concept has opened up new doors to us. How do we expand our strike capabilities? How do we ensure we can talk seamlessly from a sensor—for example, JLENS, an elevated system that will be able to sense moving targets and send that data to a shooter—any shooter? How do we build those capabilities into and share information with other Army and joint systems? What is the right command and control solution? That last piece is critical.

General Ralston and I have talked about locking all our smart people in a room to brainstorm where our two branches go from here. I think that establishing the "virtual" NetFires Center of Excellence on 1 June will cause a virtual "walk down the hall with a cup of coffee in hand" to talk about what each branch is doing, how we can operate together and share ideas to make NetFires grow. We will see benefits from and synergies develop as our junior officers and field grades work closely together for the first time.

What are your other priorities for the next five or so years?

Everything we do is joint in Air Defense. Most of our firing is by permission of the joint force air component

commander [JFACC], through his chain of command, through regional and sector air defense commands. So everything we do must be tied into the joint network and joint command and control.

Then we're developing new concepts. For example, C-RAM fills a combat requirement. Another gap for ADA is cruise missile defense. Worldwide, the cruise missile threat is growing exponentially.

Because cruise missiles come in very low, they are hard to detect or strike until they are close to our Soldiers, systems or other national assets we're trying to defend. How do we "buy back" that battlespace and hit them at longer ranges? JLENS and SLAMRAAM will give us the ability to attack incoming cruise missiles at much greater ranges.

Another material priority for the ADA is MEADS, the Medium Extended Air Defense System we are building with the Italians and Germans. But we need MEADS capabilities now. So, we are accelerating MEADS technologies as they become available and putting them into Patriot. In effect, we are morphing Patriot into MEADS over the next several years.

In terms of organizational priorities, we are transforming the ADA force, building air and missile defense [AMD] battalions. We're building these modular composite battalions with Patriots and Avengers to allow commanders at all levels to fight those systems.

Could we send a Patriot-Avenger battalion to work with a Fires Brigade? Absolutely. What's the right command and control system for that to happen? Could the FA have a fires capability that works with the Air Defense brigade? Absolutely. These are some of the areas we need to explore as part of the NetFires Center.

When ADA physically moves to Fort Sill in the next couple of years, my goal is to integrate the schools, not just collocate them. For example, we need battle labs next to battle labs and combat developments next to combat developments, so we can grow them together very rapidly.

If there is value added in integrating some aspects of the schools before we actually move to Fort Sill, then we need to make it happen. If it doesn't make sense to integrate something, then we won't do it. We owe it to the Army to get it right.

Field artillerymen are performing a variety of nontraditional missions in Afghanistan and Iraq. What nontraditional missions have air defenders performed in the Global War on Terrorism?

Our nontraditional missions are similar to some of the FA's. We have a gun-truck battalion deployed in Iraq now, 2-44 ADA [2nd Battalion, 44th Air Defense Artillery] in the 101st Airborne Division. It provides convoy escorts. Last year, 4-5 ADA defended and cleared the route from Baghdad International Airport to the Green Zone.

Also like the FA, we've had some circumstances where our air defenders have had to conduct traditional missions simultaneously with the nontraditional missions, such as



manage airspace or monitor our elevated sensor in Iraq. Our air defenders had to adapt back and forth very rapidly. We're incredibly proud of our officers, NCOs and Soldiers for getting the job done—whatever job was demanded of them. I think that's a common theme across both branches.

How does ADA leverage fires during joint AMD operations?

Our 32nd AAMDC, which stands for the 32nd Army Air and Missile Defense Command, conducts joint AMD. Each theatre has an AAMDC, which is commanded by a brigadier general who is dual-hatted as the air defense commander for the joint force land component commander [JFLCC] and also works for the JFACC (joint force air component commander).

The JFACC has an ISR (intelligence, surveillance and reconnaissance) team that searches for Scuds. Integrated with the ISR team in the combined air operations center [CAOC], AAMDC personnel take the lead on the Scud missile searches. When the team finds a target, it nominates the Scud for execution through the regular air operations center processes with the BCD (battlefield coordination detachment) involved in the decision as to which Army or joint fires asset will strike the target. So we work hand-in-hand with Field Artillerymen in the BCD to bring fires to bear on the Scuds.

At the tactical level, we work C-RAM; at the theater level, we work targeting for joint air-missile defense. It's up to us to integrate these two ends of the spectrum into what will become the NetFires concept. There has been some discussion about integrating FA and ADA personnel on the ISR team in the CAOC and in the BCD to enhance the linkage and improve the organizations as part of NetFires.

What are the most significant changes in ADA as part of the Army's transformation?

As mentioned earlier, the composite Patriot-Avenger battalion is one of our biggest changes. We have taken all our SHORAD [short-range air defense] battalions out of the divisions and are forming these composite AMD battalions that, today, have four Patriot batteries and a large Avenger battery. Tomorrow, SLAMRAAM will replace Avenger, giving us the ability to conduct TBM defense and cruise missile defense in one package. So based on the threat, we will be able to provide the warfighter a modular package capable of deploying as a battalion or as part of an AMD brigade.

We've stood up two composite battalions already: 1-44 ADA at Fort Bliss and 1-43 ADA in Korea. Our plan is to stand up a total of five battalions in the next two years.

Early in OIF [Operation Iraqi Freedom], we still were organized as SHORAD and HIMAD [high-to-medium air defense] battalions. But we didn't have the command and control systems to work across the two types of units. SHORAD and HIMAD had distinct cultures that supported different levels. The short-range SHORAD units supported

divisions while the HIMAD Patriot Air Defenders supported corps and theater commands. So now we have the shorter and longer range capabilities internal to the same unit.

Today, we're training officers in the combined skills needed for both systems and are planning to realign our enlisted MOSs [military occupational specialties] to ensure leaders and Soldiers can move from one system to the other within the same unit. Right now, we have MOSs for SHORAD and MOSs for HIMAD.

We are looking at three MOSs: launcher, sensor, and command and control. The vision is to have one set of launcher experts for SLAMRAAM, Patriot or THAAD, the latter our future Terminal High-Altitude Area Defense system; one set of sensor experts on the Sentinel radar at the short range to our Patriot sensor, JLENS, MEADS sensors, and to our THAAD sensor; and command and control that spans these systems as well. This realignment of MOSs will give us more flexibility to assign people. Ultimately, it will reduce the number of ADA MOSs.

Also, we are standing up air defense airspace management [ADAM] cells in the modular BCTs [brigade combat teams] and divisions. The cells analyze the fight from the perspective of the third dimension, and for the brigade and division commanders, they provide airspace situational awareness and manage the commanders' airspace.

Right now, the ADAM cell is not in the BCT's FEC [fires and effects cell] or the division's JFEC [joint FEC]. In the BCTs, they work in the S3 shops, and in the divisions, they work in the TACs [tactical command posts]. Could the FEC or JFEC be the place for the ADAM cell in the future? Maybe.

What message would you like to send field and air defense artillerymen stationed around the world?

Historically, we're out of the same branch, the Artillery, because the Army needed people smart enough to compute mathematical solutions for a variety of targets and firing assets in multiple dimensions. At the same time, the artilleryman had to be pretty tough to handle powder bags and shells and wrestle the guns into positions to engage the enemy. So, from our common stock of smart, tough warriors, we've got a great future ahead of us.

The NetFires Center of Excellence will be an exciting place to be.



BG Robert P. Lennox is the chief of Air Defense Artillery and commanding general of Fort Bliss, Texas, where he also served as deputy commanding general in an earlier tour. His was previously deputy commanding general and chief of staff of the Army Accessions Command, Training and Doctrine Command, Fort Monroe, Virginia. BG Lennox has been nominated for promotion to major general.

Note: This article appears in the January-February 2006 issue of Field Artillery magazine and is published here with the magazine's permission.



At left, air defense artillerymen perform maintenance checks on a Patriot missile launcher. At right, field artillerymen crew a Multiple Launch Rocket System.

Is It Time for Air Defense Artillery and Field Artillery to Merge?

by COL Mark McDonald, FA

Is it time for Air Defense Artillery and Field Artillery to merge? This is the question that's constantly being asked at all echelons. Why would such a question even be posed? After all, Field Artillery is all about force application and Air Defense Artillery is all about force protection—we all know these branches' operating systems are fundamentally dissimilar. Because of the differences in our branches, many think there is no question that the branches must stay separate, that the argument made in 1968 to split the branches still must be valid.

If you believe what I just stated, then stop reading this article, because you will not agree with the information that follows. If, however, you believe that our senior leaders have rationale behind their key decisions, you may want to read on.

BRAC and Our Leaders—Directives and Intentions

A recent Base Realignment and Closure (BRAC) Commission decision is causing us to collocate two great branches. The decision is to locate the two branches at Fort Sill, Oklahoma, the current home of the Field Artillery, but it easily could have been Fort Bliss, Texas, the current home of Air Defense Artillery.

The real question is, "What were the BRAC Commission's intentions in that decision?" If you think the BRAC Commission's directive for Air Defense Artillery to move to Fort Sill was simply to relocate similar functions, then, once again, you can stop reading.

Looking at the BRAC decisions with an eye toward other efforts ongoing in our Army may lead to a different conclusion. In reading the overall BRAC language carefully, the commission is not only directing the Army to move functions among our posts, camps and stations, but

also to collocate similar functions to form centers of excellence (CoEs). The Army will have CoEs for Maneuver at Fort Benning, Georgia; Networked Fires, or NetFires, at Fort Sill; Maneuver Support at Fort Leonard Wood, Missouri; and Combined Arms Service Support Command, Virginia. To assume that all the branches associated with these CoEs will continue to exist forever as separate branches simply does not pass the common sense test.

With so many branches serving in these CoEs, it is logical that reducing the number of branches would increase the Army's efficiency. Right now the Army resources and manages overhead for 19 branches, each one with an office in Human Resources Command and many with separate offices within the Army staff to integrate their organizations and material. This is overhead our Army likely will not be able to continue to afford.

CoE Synergies

Let's first assume our leadership expects us to gain synergies by establishing these CoEs. In "Finding Common Ground" on page 8, co-authors COL Greg Kraak (FA) and COL Harry Cohen (ADA) assert that the two branches already share a great deal of "common ground." The article discusses the possibility of establishing units with capabilities to fire both ADA and FA weapons. We also are in the process of forming intercept batteries that likely will have FA (13 series) and ADA (14 series) Soldiers manning systems within the same unit.

If we are already so close to integrating our units and Soldier skills, why does it scare us so to imagine that our branches may become one?

The U.S. Army Training and Doctrine Command (TRADOC) model for a CoE—for all CoEs, not just the



NetFires CoE—combines like functions under the center's control. Futures, Combat Developments and Doctrine don't fall under a specific-branch school, but will be combined under the CoE commander. Likewise, all common training will be consolidated at the center level. This training includes Basic Combat Training, NCO Academy, International Student Detachment, Basic Officer Leader's Course (BOLC) II (the replacement for the Officer's Basic Course) and the Captain's Career Course.

What will remain under branch control will be branch-specific training only. For Field Artillery, that will include Advanced Individual Training, Basic Officers Leader's Course III, Basic NCO Course, Advanced NCO Course and portions of the Captain's Career Course. The Air Defense Artillery will have similar courses. So in the simplest of terms, our branches' training is already merging—with only specific courses for specific weapons systems remaining separate.

One area that is not weapons-specific and that would be shared by both Air Defense Artillery and Field Artillery as a merged branch is effects coordination. This could become the "crown jewel" for all Soldiers and leaders in a new and combined branch. Consider, for example, that an officer in our new branch could first be trained as a leader, second as an effects coordinator and lastly as specialist in a delivery system or several closely related systems. These multi-capable officers then would be qualified to serve in all our maneuver formations as effects coordinators as well as serve on their weapons systems.

This model is similar to the way artillerymen in both branches are tracked today. Currently, most officers serve their first assignments based on weapons-specific training received in their Officer Basic Course. If they are to go to a unit with a different system after the Captain's Career Course, they may require weapons-specific training before this new assignment. The same would be true of the entire "Artillery" branch—officers, NCOs and Soldiers would receive weapons-specific training as they needed it.

This approach would create a "level playing field" for all artillerymen, formerly Field or Air Defense, by providing maximum opportunities to serve in maneuver formations while still having opportunities to serve in weapons-specific assignments. When our future combat systems come on board and networked fires are realized fully, it may be feasible for a unit to have multiple ADA and FA attack systems collocated or possibly have multiple capabilities integrated into the same platform.

Combining our branches will only pave the way for such multi-disciplined Soldiers and leaders in lethal formations. Having officers trained on several systems and competent in effects coordination would allow them to gain the joint and combined arms experience that is so critical in preparation for command at all levels.

Okay, so when do we merge the two branches? I am not sure exactly when, but I am sure of one thing. We can take "the bull by the horns" and move out on a plan to merge the two schools and branches or we can wait until

we are directed from above to implement what is clearly the Army's vision for transformation—then "play catch up." As for me, I would rather set the conditions for the success of our branches and start moving out.

If you have read this far, I congratulate you.

The possibilities I present in this article are simple and may be flawed to some degree. However, the bottom line is ultimately the same whether we implement now or later: one day, in the not so distant future, we will be one branch.

I urge you to take off your branch cap, put on your thinking cap and start the debate. 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.



COL Mark McDonald is the assistant commandant of the U.S. Army Field Artillery School and deputy commanding general of Fort Sill, Oklahoma. In his previous assignment, he served as the chief of staff of the Field Artillery Center, Fort Sill. Prior to coming to Fort Sill, he was the executive officer to the Army G3 at the Pentagon. He commanded the 82d Airborne Division Artillery, Fort Bragg, North Carolina. He also was a division chief in the Deputy Chief of Staff for Operations and Plans, also at the Pentagon, and deployed to the Stabilization Force in Bosnia for six months. He commanded the 3rd Battalion, 321st Field Artillery, part of the 18th Field Artillery Brigade, XVIII Airborne Corps, also at Fort Bragg, and two batteries in the 82nd Airborne Division. He is a graduate of the Army War College, Carlisle Barracks, Pennsylvania, and holds a Master of Military Arts and Science from the Command and Staff College, Fort Leavenworth, Kansas.

SCANNING

Army Awards \$1.3 Billion JLENS Contract

Joint Land Attack Cruise Missile Defense Elevated Netted Sensor (JLENS) Will Provide Over the Horizon Detection and Tracking of Incoming Cruise Missiles.

In November 2005, the U.S. Army awarded Raytheon Company a \$1.3 billion contract modification for system development and demonstration of the JLENS system. The system provides over-the-horizon detection and tracking of incoming cruise missiles with sufficient warning to enable air defense systems to engage and defeat the threat. The system also provides elevated communications capabilities and supports situational awareness for the battlefield commander. Each JLENS consists of a long-range surveillance radar and a high-performance fire control radar, each integrated in a large aerostat connected via tether to a ground-based processing station. System testing is scheduled to begin in 2009, with program completion in 2011.

Finding Common Ground

Air Defense Artillery & Field Artillery

By COL Gregory C. Kraak, FA, and COL Harry L. Cohen, AD

In June 2004, the Chairman of the Joint Chiefs of Staff received an urgent memorandum from the commander of U.S. Central Command requesting an immediate capability to counter the growing threat to U.S. forces from insurgent rockets and mortars. Along with improvised explosive devices, these simple but effective weapons were the number one killers of U.S. servicemembers deployed to Iraq. Unfortunately, although this particular threat had been a concern for years, there was no capability in the inventory to combat it.

The Army immediately turned to the Air Defense Artillery Center at Fort Bliss, Texas, and the Field Artillery Center at Fort Sill, Oklahoma, for answers, and the two centers formed a combined Tiger Team

to explore possible technical solutions. During weeks of intense experimentation and analysis, the "heavy hitters" of the defense industry offered several prototype systems for consideration with the three top candidates invited to a "shoot-off" at Yuma Proving Ground, Arizona. When the smoke cleared, a system combining Field Artillery's Lightweight Counter-Mortar Radar and Q-36 Firefinder radar, Air Defense Artillery's Sentinel radar and Forward Area Air Defense Command and Control system, and the Land-Based Phalanx Weapon System, a trailer-mounted reconfiguration of the U.S. Navy's Phalanx gun system, came out on top. This system of systems demonstrated the capability to detect and intercept incoming rocket and mortar rounds. (See the concept diagram at Figure 1.) An immediate production and fielding schedule was implemented, and the first two counter-rocket, artillery and mortar (C-RAM) systems deployed to Iraq in August 2005.

As C-RAM interceptors were produced, the Tiger Team developed the basic doctrine on how to fight, using this new capability. The objective was to create an organizational structure using existing systems with little or no additional hardware or personnel requirements. (See

"C-RAM Battery", page 19.)

The team also developed tactics, techniques and procedures that allow operators to leverage system subcomponents and other relevant capabilities located at the defended asset to accomplish the tasks of shape, sense, warn, intercept, respond, protect and integrate command and control.

These efforts produced a capability in theater that already has proven its value by saving Soldiers' lives and taking the fight to those who seek to use rockets and mortars against our forces. But is this the end of the story or just the beginning? As valuable as it might be, is C-RAM just a response to an immediate operational need or does it portend a fundamental shift in

the relationship between the two branches that joined to create it?

This article's intent is to explore commonalities and potential areas of synergies between Air Defense Artillery and Field Artillery working within the emerging concept of joint networked effects (JNE) that is enhancing the modular force's ability to operate at will on future battlefields. It also looks at other opportunities, beyond C-RAM, for the two branches to explore. This is a look into the future, unfettered by the branches' existing structures.

Potential Areas of Synergy

The branches were combined until 20 June 1968 when the Army established Air Defense Artillery as a basic branch. The branches' paths diverged somewhat during the past three-plus decades with Air Defense Artillery focusing on protection and Field Artillery focusing on supporting fires. Despite these apparent dissimilarities, the branches now find that they have much in common with the potential for even greater commonality in the near future.

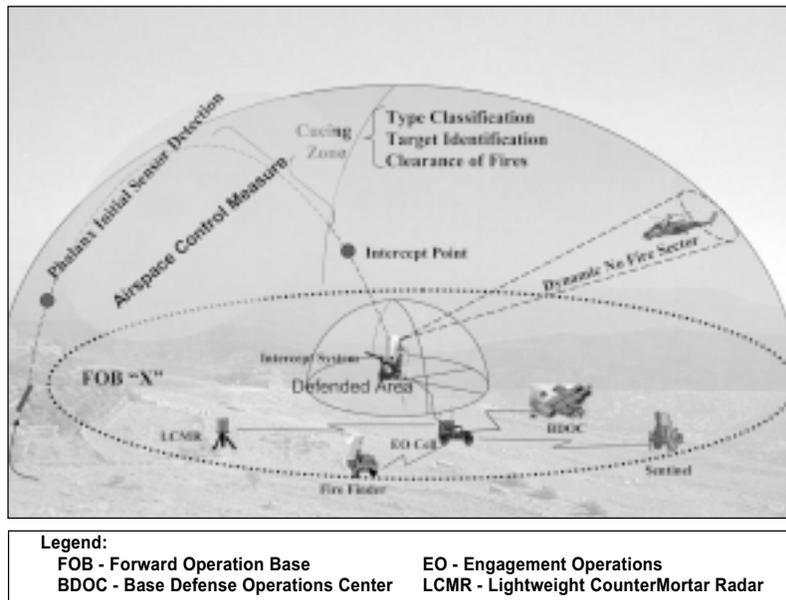


Figure 1. Counter-Rocket, Artillery and Mortar Concept.

As the branches continue to explore and identify commonalities, one clear example of synergy already exists in the fires brigade's fires and effects cell (FEC). The modular fires brigade is the primary executor of joint fires for the division- or corps-level ground force commander in those areas not assigned to his subordinate maneuver forces. The fires brigade provides counter, shaping and reinforcing fires, the latter as requested. (It replaces the division artilleries, Field Artillery brigades and the corps artilleries in the current force structure.)

The fires brigade FEC embeds the capabilities of lethal and nonlethal fires, airspace management and the Air Force tactical air control party (TACP) into a single cell. Having these capabilities in a common structure facilitates and enhances staff coordination, cooperation and provides the impetus to achieve full unity of effort.

However, other organizations are not as fully integrated. Although the air defense airspace management (ADAM) cell and brigade aviation element (BAE) have merged into a single cell, the activities of this union are not necessarily synchronized with the activities of the FEC and TACP. While the FEC may not be the proper location to conduct this staff synchronization, the fact that these functions may not be collocated presents a potential challenge for maneuver commanders at all levels.

Above the corps level, the Army component commander provides battlefield coordination detachments (BCDs) to air operations centers (AOCs) to plan, coordinate and deconflict air operations. The air and missile defense organization at the theater level is the Army air and missile defense command (AAMDC). The AAMDC is the Army's operational leader for Army theater air and missile defense and works closely with the BCD to nominate targets.

The AAMDC has a deputy area air defense command staff element in the AOC to support land-based active air defense force operations. It also has an attack operations cell that includes a Field Artillery, Special Forces and Aviation presence. (See Figure 2.)

Position	Grade	Branch/MOS
Operations Officer	O5	FA
Operations Officer	O4	FA
Aviation Officer	O4	AV
Operations Officer	O4	SF
Fire Support Sergeant	E7	15F40
Fire Support Sergeant	E6	15F30
Battery Display Operator	E5	15P20

Figure 2

But to truly capitalize on potential synergies between Air Defense Artillery and Field Artillery, why not align the functions of the AAMDC, BCD and AOC in each combatant command to promote cohesion and familiarity and provide greater access to the full spectrum of joint capabilities? The Army's three AAMDC units should be aligned habitually with the five BCDs and five Falconer AOCs as shown in Figure 3. This facilitates joint planning and interoperability and gives combatant commanders a more

cohesive structure to achieve these complex tasks.

Institutional Training

The two branches also have much in common institutionally. The Field Artillery Center continues to refine the Joint Fires and Effects Trainer System (JFETS), a virtual training system that replicates effects while simulating realistic conditions. JFETS is now operational at Fort Sill and enables individual and collective training on many tasks, including call-for-fire procedures, close air support, clearance of fires, and battlefield tracking and surveillance.

It is easy to picture incorporating air and missile defense training into JFETS as well, training tasks such as management of airspace and unmanned aerial vehicles, coordination of helicopter flight routes and air corridors, identification of friend or foe and other similar tasks.

The two branches already share common radar repair training. The Military Occupational Specialty (MOS) 94M, Radar Repairer, is trained to perform electronic maintenance on all Military Intelligence, Air Defense Artillery and Field Artillery radars and sensor systems. The 832nd Ordnance Battalion's training detachment, a tenant activity at Fort Sill, trains these Soldiers. The training provides the skills and knowledge to perform maintenance on radar systems, such as the AN/TPQ-36 and AN/TPQ-37 Firefinders, AN/MPQ-64 Sentinel, AN/PPS-5D ground surveillance radar and Military Intelligence's Remotely-Monitored Battlefield Sensor System II. Upon graduation, these MOS 94M Soldiers qualify for assignments to any type of unit that owns these systems.

As the Lightweight Counter-Mortar Radar system is fielded in late fiscal 2008, training on it should be incorporated into the existing MOS 94M program of instruction. A similar case can be made for the Multi-Mission Radar (MMR) when it is fielded in fiscal year 2013. This new radar will combine the capabilities of the Q-36, Q-37, Sentinel and Aviation's Air Traffic Navigation, Integration and Coordination System (ATNAVICS) radars.

Currently, MOS 94S, Patriot Radar Repairer, is the only radar system training for either branch not conducted at Fort Sill. This is taught at Fort Bliss because Fort Sill has no Patriot systems, an obstacle that will be remedied once the 6th Air Defense Artillery Brigade relocates to Fort Sill, as dictated by the Base Realignment and Closures (BRAC) Commission's recommendations. The relocation, projected for the 2007 to 2008 timeframe, will include approximately 15 Patriot launchers and 10 Patriot engagement control stations and radar sets providing the necessary equipment to train both MOSs 94M and 94S Soldiers at a single location, although using separate programs of instruction.

Consolidating radar repair training at Fort Sill would nest into the Army's transition to a two-level maintenance program. The transition will simplify procedures and result in more commonalities through implementation. The two-level maintenance concept envisions converting from the current multiple-echelon system to just two levels, field and sustainment. The radar sections of both branches are

already implementing this concept as embedded MOS 94Ms Soldiers provide all field maintenance on these radar systems. Having a single institutional training base for all radar repairmen, including Patriot radars, fits nicely into the two-level maintenance concept.

We also share many doctrinal similarities. Today's joint doctrine includes separate publications for countering air and missile threats: Joint Publication (JP) 3-01 Joint Doctrine for Countering Missile Threats and JP 3-09 Doctrine for Joint Fire Support. In the near future, we should combine documents to increase efficiencies where possible. For instance, these two publications could be combined into a single joint publication titled Fires, Effects and Protection. Army doctrine should be similarly merged to highlight branch commonalities.

The Future: A Protect and Strike (ProStrike) System of Systems

We have just described the synergistic effects that could be realized by task organizing existing or near-term fires and protection capabilities employed through ad hoc command and control arrangements at various echelons in the modular force.

But what if we take this concept one step further? What if we look toward a future in which we formalize these synergies through developing capabilities that allow the complete integration of Air Defense Artillery, Field Artillery and joint fires, so we can, as LTG (Retired) Jay Garner, a former chief of Air Defense Artillery, stated, "Kill everything in the air that is shot at us, and also kill the source from which it originated"? (The source of this quote is the JNE Independent Assessment Panel, 25 August 2005.)

What key enablers must be put in place across the doctrine, organization, training, materiel, leadership and education, personnel and facilities (DOTMLPF) domains to help achieve ProStrike?

Creating a fully integrated ProStrike system of systems requires the full commitment of the Air Defense Artillery and Field Artillery communities, subordinating single branch interests to achieve this greater combined capability. That commitment must include a willingness to rethink existing doctrine, further transform standing organizations and force structure, develop and execute combined training strategies, synchronize materiel develop-

ment efforts, and leaders' acceptance of the combined ProStrike. This may sound daunting, but we've already taken the most important first step—the "enabler of enablers."

In late August 2005, the BRAC Commission recommended sweeping changes to Department of Defense installations and organizations. The commission approved

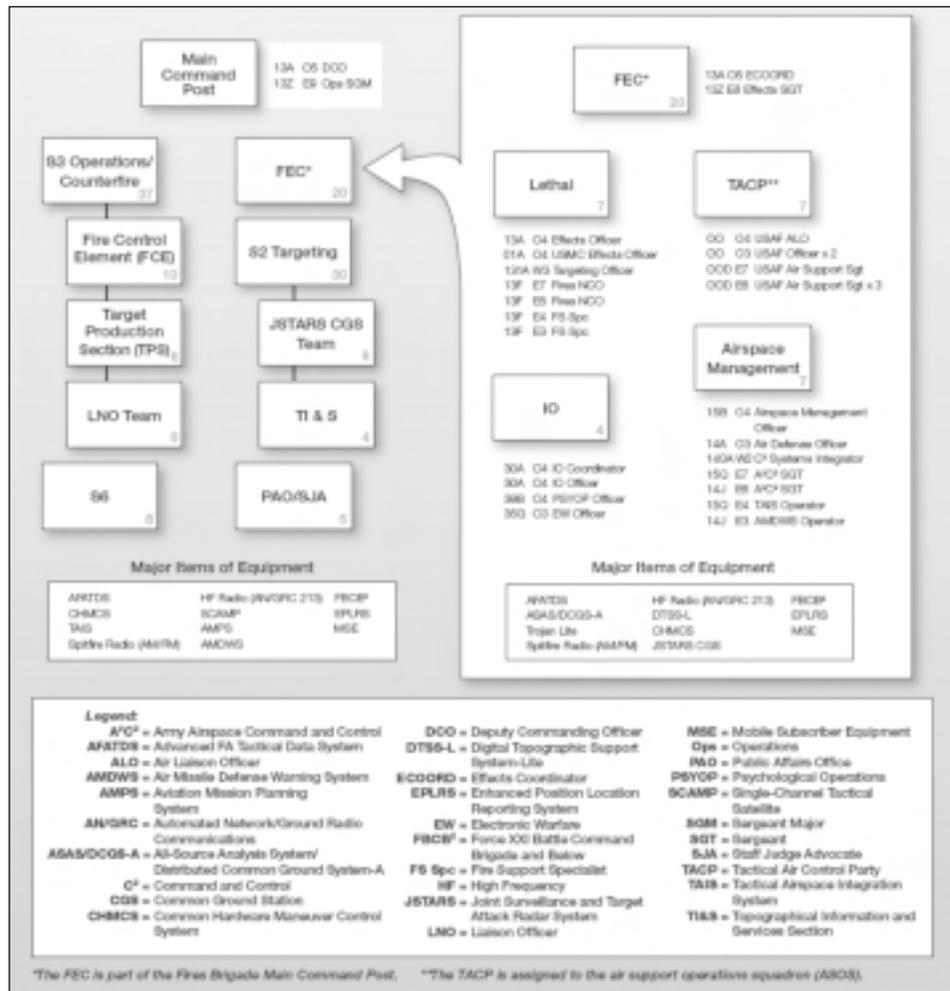


Figure 3. Fires Brigade Headquarters and FEC ("Modularity Organizational and Operational Plan," Part X, "Fires Brigade Operational and Organizational Plan").

most of the Department of Defense's original proposals, including the plan to relocate the Air Defense Artillery Center to Fort Sill and merge it with the Field Artillery Center to establish the Army Center of Excellence (CoE) for Joint NetFires. The president concurred in September and, with congressional approval in November, the path is clear to begin.

As leaders of the respective centers develop their combined vision for this new CoE, both have agreed to use the opportunity to further explore potential synergies that exist between the branches. Traditional center functions in the combat, training, doctrine and leadership development areas will experience some yet-to-be-determined degree of integration. Some subordinate organizations, such as the battle labs, will integrate completely, combining resources to support analysis, experimentation and

testing in both branches. As integration deepens across the DOTMLPF domains at the CoE, there will be a corresponding increase and acceleration of the exploration and formulation of more advanced JNE concepts that, in turn, will drive the creation of other key enablers needed to realize the awesome capability described by Garner.

These other key enablers must allow us to implement



Army Aviation's Air Traffic Navigation, Integration and Coordination System (ATNAVICs). The Multi-Mission Radar (MMR) will combine the capabilities of the Q-36, Q-37, Sentinel and ATNAVICs radars when the MMR is fielded in fiscal 2013.

the concept of "Seeing First, Understanding First and Acting First" in an integrated fashion to deliver decisive effects on air and missile threats and their originators. While each branch has been pursuing a system of systems capability independently, we must transcend those efforts to achieve a JNE system of systems.

Seeing First requires expanding and better leveraging the current capabilities of our combined family of sensors while continuing to pull the relevant data from national and joint assets. It also steers us toward continued MMR development and fielding to enhance operational flexibility and create efficiencies for both branches. Perhaps the most critical aspect of *Seeing First* is creating an effective and responsive sensor fusion and data distribution system, allowing ProStrike assets to perform sense, warn, intercept and counterstrike functions simultaneously.

Understanding *Seeing First* requires integrated processing of the information received, allowing the creation of a single, correlated, three-dimensional operational picture. To achieve this, we need to leverage existing global

positioning system capabilities to further develop a joint common grid.

With this operational picture, target designation becomes a collaborative, distributed function that is the culmination of force operations. These operations include short-range ballistic missile transporter erector launchers templating and engagement operations, feeding the state



At top, batteries of Surface-Launched Advanced Medium-Range Air-to-Air Missile System and High-Mobility Artillery Rocket System, shown below, could be task organized with Patriot batteries as part of a Protect and Strike Task Force.

vector and covariance data to algorithms that accurately back-plot inbound theater ballistic missiles or their launch sources. This is achieved through further enhancing operational software developed for Air Defense Artillery's common battle command capability.

In fact, to further optimize battle command, a merger of functions being developed for the common battle command capability with those functions resident in the FEC could lead to developing a JNE (or similarly titled cell), enhancing the commander's ability to task organize fires and protect capabilities at all echelons.

Acting First is achieved through the creation of a joint integrated strike net (JISN) with Air Defense Artillery's

Integrated Fire Control System and Field Artillery's Advanced Field Artillery Tactical Data System working in tandem. A JISN would allow the entire suite of joint protect and strike "shooters" to use the fire control quality data available from a sensor fusion device to deliver the desired effects on designated targets.

With these enablers in place and a corresponding combined effort to rethink how we currently fight, e.g., kill chains, command and support relationships, organizational structures, etc., it is easy to imagine a future theater of operations in which a JNE located at the joint force land component command headquarters is charged with wartime oversight of an AAMDC and battlefield coordination detachment. For example this JNE organization might be tasked to put together a force package to protect a newly created division aviation assembly area against short-range ballistic missiles and cruise missiles while exploiting available platforms to destroy the source of those threats.

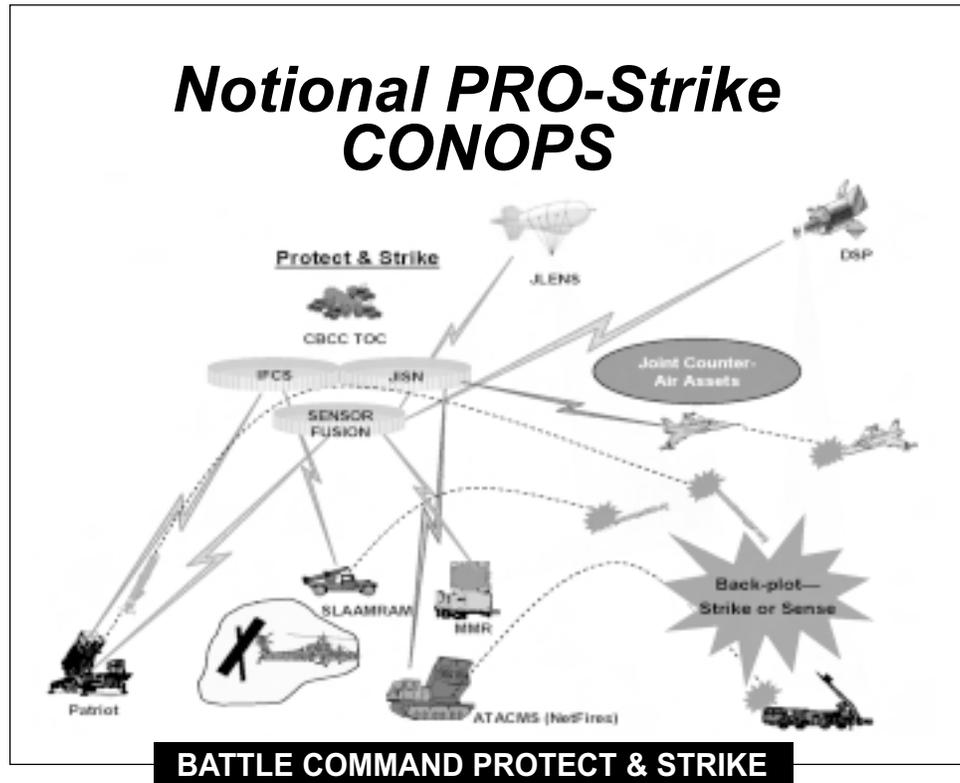
In this scenario, a quick mission analysis shows that the Air Defense Artillery brigade and fires brigade supporting that division have assets available to handle this mission. The two brigades are given a warning order to task organize one air and missile defense composite battalion (with its JNE tactical operations center) and create a ProStrike task force of two Patriot Advanced Capabilities-3 batteries, a Surface-Launched Advanced Medium-Range Air-to-Air Missile (SLAMRAAM) battery and a High-Mobility Artillery Rocket System (HIMARS) battery. In conjunction with the ADAM/BAE cell, the corps FEC receives the warning order at the same time and begins coordinating and planning. For example, the FEC would need to plan Army airspace command and control and initial defense design and coordinate with the JNE cell and AAMDC/BCD in the AOC.

Once the firing units are in position with a common network-ready capability, they initialize their systems and receive critical information from ProStrike task force planners concerning relevant force operations data and the finalized optimal defense design. Within hours, the task force and neighboring units receive early warning of a short-range tactical ballistic missile launch with a predicted impact point in the vicinity of the corps aviation assembly area.

Seconds later, one of the Patriot batteries picks up the track on its screens and immediately processes and executes an engagement. Almost simultaneously, after veri-

fying the enemy launch position and clearing fires through the corps JNE cell, the JNE task force tactical operation center sends a counterstrike command to the HIMARS battery.

As missiles and rockets leave the launchers at both



the HIMARS and Patriot batteries, the task force sees an inbound, air-launched cruise missile through data passed by Air Defense Artillery's Joint Land-Attack Cruise Missile Defense Elevated Netted Sensor (JLENS) to the sensor fusion net. The task force's tactical operations center again springs into action with the air and missile defense fire control officer sending engagement commands down to the SLAMRAM battery while the counterstrike officer cues the JNE officer at the AOC with track data on the cruise missile launch platform, acting on positive identification provided by the air surveillance officer. Offensive counterair assets in the vicinity are cued through the JISN and, within minutes, intercept all inbound missiles threatening the assembly area and destroy the systems from which they were launched.

Conclusion

So, do we suggest an immediate return to 1968 and a "one-artillery branch" future? While some may make that cognitive leap based on this article, the intent is to highlight some of the common ground the branches already occupy and identify other potential synergies worth further exploration.

We hope this article generates discussion and questions among members of both branches as to the second and third order of effects in trying to leverage those synergies. For example, C-RAM, as described earlier, nests

neatly into stability and support operations, but how does it fit into offensive major contingency operations?

The ProStrike task force concept seems viable under certain conditions, but the two branches typically operate at different levels of war: Field Artillery is focused largely at the tactical/operational level (with the exception of the Army Tactical Missile System [ATACMS], and Air Defense Artillery is focused more at the operational/strategic level. Is it really feasible or even desirable to "force" the design of common organizations or share operators when these constructs may create more problems than solutions?

We believe both branches gain much by exploring interoperability concepts. Although many challenges lie ahead, the opportunities are simply too tantalizing to pass up, and both branches must transform and adapt to the challenges of today's and tomorrow's battlefields. In doing so, we will be postured to capitalize on emerging concepts and technologies, ensuring Air Defense Artillery and Field Artillery remain relevant and ready at all times.



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SCANNING

THAAD Interceptor Successfully Completes Flight Test

Terminal High-Altitude Area Defense System Development Tests Resume

On 22 November 2005, Air Force Lieutenant General Henry "Trey" Obering, Missile Defense Agency director, announced the successful completion of a flight test today of the Terminal High-Altitude Area Defense (THAAD) element of the Ballistic Missile Defense system at White Sands Missile Range, New Mexico.

The test involved the launch of a THAAD interceptor missile, which is designed to intercept and destroy short- to intermediate-range ballistic missiles during their terminal phase of flight. The THAAD interceptor can intercept a ballistic missile inside the earth's atmosphere (endoatmospheric) or just outside the atmosphere (exoatmospheric). The test did not include a target missile, so no intercept was planned. The primary objectives for the test included the evaluation of high endoatmospheric flight environment effects on the THAAD Block 2004 interceptor design; demonstration of proper interceptor launch from its ground-transportable storage canister, validation of booster, and kill vehicle and shroud separation dynamics. The test objectives also included demonstration of the operation of the interceptor's divert and altitude control system consisting of small rocket motors to maneuver the kill vehicle to place it in the path of a target missile for a "hit to kill" intercept using only the force of the direct collision to destroy the hostile missile. Equipment on the test range also collected a large amount of interceptor telemetry data to help refine and improve THAAD technology.

While this flight test focused on interceptor fly-out and controllability, the continuing flight test program will progress to operationally realistic target intercepts at White Sands Missile Range and also at the Pacific Missile Range Facility on the Hawaiian island of Kauai.

The test completed today starts a new round of THAAD developmental testing that builds on the investment from earlier THAAD tests, which included two consecutive target intercepts in 1999. It is the first missile defense system that is capable of intercepting a target missile both inside and outside the atmosphere. An important capability of THAAD is its rapid mobility to where it is needed. A THAAD launcher (containing eight missiles) and its radar and command center can be airlifted and then trucked to forward locations to protect deployed U.S. forces overseas and our allies and friends.

The THAAD program is managed by the Missile Defense Agency in Washington, D.C., and executed by the THAAD Project Office in Huntsville, Alabama. Lockheed Martin Space Systems Company is the prime contractor.



The formation of air and missile defense composite battalions employing a mix of Patriot and Avenger systems is reshaping Air Defense Artillery's culture as well as its force structure.

Air and Missile Defense Transformation

Where We Were, Where We Are Today, and Where We Are Going

By CPT James B. Bird

The Army and Air Defense Artillery are in a state of transition to a more agile and lethal force. As the Army realigned itself to wage the Global War on Terrorism, Air Defense Artillery lost six battalion-size organizations. This created the illusion that Air Defense Artillery is shrinking. However, the number of ADA personnel requirements—the number of positions that need to be filled throughout the Army and joint air and missile defense community—has actually grown. Air Defense Artillery is alive and well!

Never, in recent history, has the Army documented as essential so many requirements for air defenders. The number of ADA units is decreasing as we inactivate our divisional short-range air defense (SHORAD) battalions for consolidation to air and missile defense (AMD) composite battalions, but what would have been a significant loss in personnel is more than offset by the growing number of requirements for air defenders at brigade combat team, division, corps, theater and joint echelons. The personnel challenges facing Air Defense Artillery are not those traditionally associated with a reduction in force. Our challenge is to "grow," promote and retain personnel to fill currently documented personnel requirements as well as those projected in the future for an array of new AMD weapon systems.

The purpose of this article is to chart the branch's future from a personnel perspective for the next five to 10 years. Its goal is to reduce the "unknown" factor that, un-

derstandably, creates anxiety in any organization, such as Air Defense Artillery, that embarks on a major force restructuring. It truly is an exciting time to be an air defender!

A look at the recent history of Air Defense Artillery is necessary to properly shape any discussion of AMD transformation. Prior to 2003 the ADA fighting force consisted of 10 short-range air defense (SHORAD) battalions and 10 high- to medium-altitude air defense (HIMAD) Patriot battalions assigned to U.S. Army Forces Command. The SHORAD battalions, which fielded Avengers, Bradley Linebackers and Bradley Stinger Fighting Vehicles, were organic to divisions while the Patriot battalions were corps or echelon-above-corps assets.

In 2004, MG Michael A. Vane, then chief of Air Defense Artillery, proposed creating AMD composite battalions to provide an interim AMD capability to the Army and joint communities. These five AMD composite battalions would each consist of four Patriot firing batteries and one Avenger battery. Beginning in fiscal year 2009, the Avenger batteries would begin gradually converting to the Surface-Launched Advanced Medium Range Air-to-Air Missile (SLAMRAAM) system. This proposal gained Army approval in fiscal 2005. During the same year, the 1st Battalion, 44th Air Defense Artillery, formerly organic to the 4th Infantry Division and stationed at Fort Hood, Texas, relocated to Fort Bliss, Texas, and became the Army's first composite AMD battalion. Shortly after-

ward the 1st Battalion, 43rd Air Defense Artillery, Suwon Air Base, Korea, became the second composite AMD battalion when it assumed control of an Avenger battery from the 5th Battalion 5th Air Defense Artillery, the 2nd Infantry Division's short-range air defense battalion.

As the creation of composite AMD battalions reshapes ADA force structure, it also is reshaping and redefining ADA culture. The old distinction between SHORAD and HIMAD Soldiers has lost relevance. Today, Patriot, Avenger and Sentinel radar Soldiers share common Air Defense Artillery School classrooms. They follow convergent, rather than divergent, career paths and train as they will fight—together. This will aid in the development of a more "well-rounded" air defense Soldier and create a more homogeneous branch culture instead of a SHORAD- or HIMAD-centric culture. Table 1 shows the ADA force structure as it is expected to exist before the end of the decade.

Depending on funding and the evolving air and missile threat, the future ADA force structure may grow to 16

impact of AMD transformation falls heaviest on SHORAD Soldiers.

Air Defense Artillery is creating the new AMD composite battalions by inactivating SHORAD battalions, turning in Bradley Linebackers and Bradley Stinger Fighting Vehicles in support of Army modularity, and reflagging their remaining Avenger batteries into the new AMD composite battalions. MOS 14R, Bradley Linebacker Crewmember, is being eliminated as Bradley Linebackers and Bradley Stinger Fighting Vehicles are removed from the Army inventory, forcing MOS 14R Soldiers to seek reclassification. Since the AMD composite battalions will have fewer Avenger fire units than inactivated SHORAD battalions, MOS 14S, Avenger Crewmember, is downsizing as well. MOS 14S Soldiers will make the transition to SLAMRAAM systems as SLAMRAAMs begin gradually replacing Avengers, but will face a further drawdown in the future because SLAMRAAM batteries require fewer personnel than Avenger batteries.

The profound restructuring described above created significant "friction" in our SHORAD organizations as divisional ADA units redeployed from Iraq and Afghanistan and inactivated, as in the case of 1-3 ADA, 3-62 ADA, 1-62 ADA, 1-4 ADA and 4-3 ADA. In response, Human Resources Command (HRC) and the Office, Chief of Air Defense

Artillery (OCADA), conducted unit visits to all divisional air defense battalions and separate batteries to inform the force about the personnel impacts of AMD transformation. HRC personnel even conducted some briefs in theater to ensure our Soldiers made the most informed decisions.

The picture HRC and OCADA representatives painted would have been a gloomy one, except they were able to ensure Soldiers being forced out of MOS 14R and Soldiers facing reduced promotional opportunities in MOS 14S that abundant opportunities await them in other ADA MOSs. The HRC and OCADA representative advised them to consider reclassifying into ADA MOSs strengthened, rather than weakened, by AMD transformation. In particular, they recommended MOS 14J, Air Defense Tactical Operation Center Operator.

The inactivation of SHORAD battalions is robbing lower-echelon commanders of a critical airspace management tool just as the proliferation of friendly and unfriendly unmanned-aerial vehicles are making already crowded airspace more congested. The Air and Missile Defense Work Stations (AMDWS) and Sentinel radars are departing the divisions along with inactivating SHORAD battalions' Avengers and Bradley Linebackers. Their departure leaves lower-echelon commanders without a critical airspace management tool—a near real-time air picture of where air assets are located in the area of operations and area of interest.

In its 2005 issue, *National Defense* magazine quoted BG Robert P. Lennox, chief of Air Defense Artillery, on

EMERGING ADA FORCE STRUCTURE	
Eight Pure Patriot Battalions	
Five AMD Composite Battalions	1-44, 1-43, 1-1, 4-5, 2-43 ADA
One Pure SLAMRAAM Battalion	5-5 ADA
Table 1	

AMD composite battalions. As systems currently in development reach the field, these composite battalions will have battery mixtures of Patriot/Medium-Extended Air Defense Systems (MEADS), SLAMRAAM, Joint Land-Based Cruise Missile Defense Elevated Netted Sensors (JLENS), and Enhanced Area Air Defense Systems (EAADS), which are envisioned as being direct-energy based or laser systems.

In addition, the Army is expected to assign Air Defense Artillery new roles and missions such as the Counter-Rocket, Artillery and Mortars (C-RAM) mission. The Army has selected the Land-Based Phalanx Weapon System, which C Battery, 5th Battalion, 5th Air Defense Artillery, tested in April 2005, as the interim C-RAM interceptor. The Army subsequently deployed two C-RAM systems to Iraq in August 2005. The ADA School's Directorate of Combat Development recently submitted a force structure update to the U.S. Army Training and Doctrine Command proposing C-RAM batteries, rather than platoons or battalions, as the optimum C-RAM organization. If the force structure update is approved, as expected, the C-RAM batteries will be assigned to our pure Patriot battalions for training and readiness oversight, but in the near-term they will be employed as separate batteries supporting brigade combat teams or base commanders. (See "C-RAM Battery," page 19)

These migrations to new weapon systems and new force structures translate into personnel changes for Air Defense Artillery. These changes impact Soldiers in every ADA military occupational specialty (MOS), but the

the airspace management problem that exist in the Operation Iraqi Freedom Theater of Operations.

"You might have missiles flying, UAVs (Unmanned Aerial Vehicles), communications relay systems, intelligence systems, all in the same airspace, staring at the same area on the ground," says Brig. Gen. Robert P. Lennox, commander of the U.S. Army Air Defense Artillery Center. To coordinate the traffic of low-altitude aircraft, Army is fielding six-person [ADAM cell] units, which are assigned to brigade command posts across Iraq. Their job is to "synchronize the airspace," Lennox tells *National Defense*.

Controlling the use of the airspace can be difficult, particularly in congested areas where U.S. troops may be searching for insurgents or weapons caches. "Everyone wants to look at the same piece of ground," Lennox says. "We are arming our commanders with hundreds of UAVs," he says. "How do they know how to manage the airspace, tell friendly from enemy UAVs?"

To fill the airspace management gap and provide air and missile defense interoperability with joint, multinational and coalition forces, Air Defense Artillery is rapidly creating, equipping and deploying air defense airspace management (ADAM) cells, staffed by MOS 14J Soldiers, in every brigade combat team, division and corps. As a result, the demand for MOS 14J Soldiers, who also crew Space and Missile Defense Command's Joint Tactical Ground Stations and fill other Army and joint requirements, is exploding.

Concurrently, requirements for Soldiers in MOS 14E, Patriot Fire Control Enhanced Operator/Maintainer, and 14T, Patriot Launching Station Enhanced Operator/Maintainer, are growing as the number of Patriot firing batteries increases from 50 to 52, a growth that increases the demand for warrant officers as well as enlisted Soldiers. Furthermore, it is widely anticipated that the number of Patriot units will experience further growth as the tactical ballistic missile threat proliferates and as more and more friendly and allied countries respond by agreeing to participate with the United States in developing theater missile defenses.

Following the HRC and OCADA briefings almost half

of MOS 14R Soldiers decided to stay within Air Defense Artillery and seek reclassification to MOS 14J and/or apply for the Warrant Officer Candidate School and eventual commissioning as ADA warrant officers in MOS 140A, Command and Control System Technician, or 140E, Patriot System Technician. There are still great opportunities and the odds are in favor of ADA Soldiers seeking warrant officer commissions. Air Defense Artillery plans to grow its warrant officer population through increased accessions. Currently, there is a programmed growth of 50 positions for MOS 140A warrants beginning in fiscal 2005 with a target fill completion in fiscal 2007. Other MOS 14R Soldiers opted to stay with the Bradley system and seek reclassification into mechanized infantry or armored cavalry MOSs.

ADA enlisted Soldiers are not the only air defenders affected by AMD Transformation. ADA Warrant Officers also will see vast changes in their assignment locations and duty positions. In the past, only a single MOS 140A represented Air Defense Artillery in the divisional structure. The new modular structure assigns six to eight 140As to each division: one in each of the division's four maneuver brigades, one in the aviation brigade, one in the fires brigade, two at division headquarters, and additional 140As as seen fit.

MOS 140E is also seeing tremendous change as 75 captain and lieutenant positions in the Patriot force are converted to 140E positions to increase continuity in such key positions as assistant fire control platoon leader and tactical director. This conversion, which will be accomplished over six years, will permit the Patriot force to more fully exploit the technical competence of ADA warrant officers while releasing captains and lieutenants to serve in more leadership-centric positions.

AMD Transformation is not impacting just ADA warrant officers and enlisted Soldiers. ADA officers are seeing revolutionary change in assignment opportunities and career paths. In formulating Army Transformation the Army Chief of Staff, GEN Peter J. Schoomaker, envisioned a less command-centric Army. This transition away from a "command or else" mentality allows officers

more choices, more assignment opportunities and the freedom to choose numerous "career paths" to attain personnel and professional goals.

Key to this cultural change is moving the officer from a "check the block" branch qualification mindset to a "key



Nearly half of Bradley Linebacker crewmen decided to stay within Air Defense Artillery.

developmental position" mindset that opens up numerous options. For example, a captain just out of the ADA Captains Career Course will be able to attain a "key developmental position" in either a battery command, in a brigade combat team ADAM Cell, or on division staff. (In the future, serving as an Air Defense Artillery fire control officer [ADAFCO] may qualify as a key development position as well.)

This shift away from command-centric career progression is a big, or better yet, massive "cultural shift" that many, concerned about its future implications, considered very controversial. However, this is where our Army and

our branch are headed in the future. ADA command opportunities, while less numerous than in the past, are still there for who desire them and who have proven their ability to command ADA organizations.

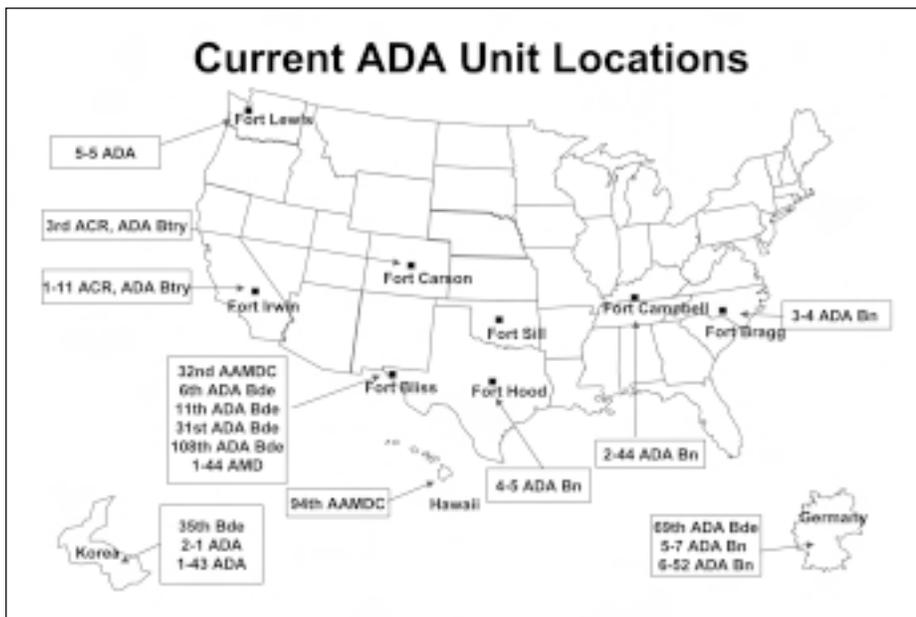
ADA officers who serve successfully in ADAM cell positions will be eligible to command in headquarter and headquarters batteries and companies in combat brigade teams and divisions. ADA majors who serve in ADAM cells, fill division or corps staff positions, or serve as battalion or brigade S-3s and executive officers will receive "key developmental position" credit. The Army is updating the ADA section of DA PAM 600-3-14, *Commissioned Officer Development and Career Management* in accordance with the chief of staff's guidance, to authenticate these new career progressions. Officers can review this document, which serves as a general guide to promotion and Centralized Selection Boards on Army Knowledge Online.

The Army and joint community have placed large demands on ADA officers. The move to a more modular Army is generating the largest increase in ADA requirements, but our joint brethren in the U.S. Navy and U.S. Air Force constantly ask when they will get their air defense officer aboard their Aegis cruisers and Advanced Warning and Control System aircraft, respectively. Assignment location opportunities for ADA officers in key positions throughout the "Modular Army" are too numerous to specify. Many ADA officers, of course, will continue to fill "non-branch material" positions, such as those available in ROTC, Recruiting Command and combat training centers.

The geography of Air Defense Artillery is also changing. The recent deployment of the 35th ADA Brigade from Fort Bliss to South Korea and the upcoming relocation of the Air Defense Artillery School from Fort Bliss to Fort Sill, Oklahoma, may be just the beginning of an Air Defense Artillery "diaspora" from its enclave in the Desert Southwest. The driving forces behind a projected dispersal of ADA units are changes in the contemporary operational environment and Base Realignment and Closure (BRAC) Commission recommendations, which have passed into law.



CPT Scott Helmore, 32nd Army Air and Missile Defense Command, Fort Bliss, Texas, answers a telephone during Exercise Roving Sands 2005.



Today, the preponderance of the U.S. air and missile defense force is assembled at Fort Bliss, Texas. However, the geography of Air Defense Artillery is about to change. The recent deployment of the 35th ADA Brigade from Fort Bliss to South Korea and the upcoming relocation of the Air Defense Artillery School from Fort Bliss to Fort Sill, Oklahoma, may be just the beginning of an Air Defense Artillery "diaspora" from its enclave in the Desert Southwest.

The "re-basing" of ADA units and organizations will create temporary turbulence in the personal lives of ADA families and federal civilian employees, but the broader array of possible geographic assignments will make Air Defense Artillery more attractive to future recruits. Air Defense Artillery will no longer be primarily a Fort Bliss-centric force. The branch will have units located throughout the world to better support the Army, joint communities and combatant commanders.

The projected growth in ADA personnel requirements presented in this article is based on existing requirements and near-term force projections. It does not factor in the full requirements for the "objective" AMD force that will be required to defend against the emerging air and missile threat at home and abroad, if present trends continue to alter the balance of powers.

As one can see from our modest estimate of requirements for ADA enlisted Soldiers, warrant officers and officers and our modest future projections, the air defender will continue to be a key asset in our nation's defense. As ADA leaders, we must inform our Army and joint brethren that our mission and branch are vital to our nation's security and interests. We are evolving to counter the threat and protect the force. First to Fire!



CPT James B. (Ben) Bird currently serves in the 4th Brigade Combat Team, 1st Cavalry Division, ADAM Cell at Biggs Army Airfield, Fort Bliss, Texas. Prior to his present assignment, CPT Bird served as chief, Personnel Proponent Division, Office, Chief of Air Defense Artillery, U.S. Army Air Defense Artillery School, Fort Bliss, Texas.

SCANNING

Army Activates New Air and Missile Defense Command 94th AAMDC Will Provide First Line of Defense in Asia-Pacific Theater

FORT SHAFTNER, Hawaii—As the U.S. Army continues its transformation to meet the security challenges of the 21st century it has now officially provided the Asia-Pacific theater a first line of air and missile defense with the recent activation of the 94th Army Air and Missile Defense Command (AAMDC).

The 94th AAMDC unfurled its colors during a ceremony 14 October 2005 at the historic Palm Circle on Fort Shafter. This ceremony marked the activation of the third Army air and missile defense command; two in the active component and one in the reserve component. The 94th AAMDC is the newest addition to the Modular Army and is tailored for joint and/or multinational operations. It is a command headquarters element that provides command and control for Army air defense units and assists in planning theater-level air and missile defenses.

"In this region of the world there is a rapid growth in the number of air-delivered weapons systems," said LTG John M. Brown III, the U.S. Army-Pacific commanding general and reviewing officer for the activation ceremony. "Things will change; we'll keep all our existing missions, but we will also become a warfighting headquarters. The 94th AAMDC is an integral part of the headquarters transformation."

The activation and stationing of the 94th AAMDC in the U.S. Pacific Command Theater of Operations ensures the Army's contribution to the theater air and missile defense fight and supports the joint forces commander's intent.

"Today, we join the U.S. Army-Pacific in its vigilant fight in the Global War on Terrorism. We support our commander in chief's overall plan in homeland security," said COL John E. Seward, 94th AAMDC commander, who has been nominated for promotion to brigadier general. "We are actively engaged in critical exercises preparing our forces, building cooperation with our coalition partners and ultimately preparing the 94th AAMDC for success in any future contingency."

During his remarks, Seward welcomed special guests COL (Ret.) David Casmus, the last commander of the 94th Air Defense Artillery Brigade in Darmstadt Germany, and his wife Socorro Casmus.

"It is a distinct honor to have you participate in our unit activation as the last commander of the 94th. You tie us to our past, and may you always find us faithful as we accept the torch you have passed us today," Seward said.

As guest speaker, Casmus said he was thankful for the invitation to attend and participate in the ceremony.

"I am extremely proud to witness the unfurling, once again, of the 94th's colors. I am darn proud that the 'First Line of Defense' patch is back in the active Army and worn on these Soldier's sleeves again. I am extremely confident that the Soldiers and their leaders will live up to the past glory of the 94th."

The ceremony featured the 25th Infantry Division Marching Band, 94th AAMDC Soldiers, and a traditional Polynesian Maori welcome. — *by SPC Kimberly A. Green*



C-RAM Battery

Proposal Would Place Majors in Command of Air Defense Artillery's Counter-Rocket, Artillery and Mortar Batteries

by LTC Christopher R. Mitchell

"Mortars and improvised rockets have become ideal weapons in the 'Sunni Triangle' for enemy insurgents conducting guerilla-style attacks against fixed sites such as FOBs [forward operating bases] and LSAs [logistics support areas]. These weapons allow the enemy to conduct missions with limited direct contact. This allows for greater survivability and increasing the chance for these small enemy elements to inflict casualties, damage equipment, and affect morale. —"Counter-Mortar Operations in the Sunni Triangle" by Darron L. Wright and Alexander G. Williams, Infantry Magazine, May-June 2004.

Camp Anaconda, the largest U.S. support base in Iraq, is nicknamed "Mortaritaville," after the Jimmy Buffet song, "Margaritaville," because of the frequency of mortar and rocket attacks on the base, which is home to more than 20,000 U.S. Soldiers and contractors. But insurgent mortar and rocket attacks are not just a problem in Mortaritaville; they inflict significant casualties throughout the theater of operations. For example, in 2004, a single mortar attack in the central Iraqi city of Samara killed five U.S. Soldiers and wounded 20 others.

In May 2004, the Army Chief of Staff, Gen. Peter J. Schoomaker, responded to the increasing number of friendly casualties attributed to rocket and mortar attacks by issuing a directive requiring combat developers at the U.S. Army Air Defense Artillery School, Fort Bliss, Texas, and Field Artillery School, Fort Sill, Oklahoma, to jointly develop a counter-rocket, artillery and mortars (C-RAM) organization. The directive tasked combat developers at the two service schools to devise a C-RAM system and organization that would provide combatant commanders a 360-degree sense-and-warn, three-dimensional, surveillance and integrated fire-control capability able to detect, track and engage rockets, artillery and mortar (RAM) threats.

The Army, working with industry teams, subsequently tested, selected and deployed the Land-Based Phalanx

Weapon System (LPWS), a reconfigured version of the U.S. Navy's Phalanx Close-In Weapon System, as the "near-term" C-RAM interceptor. CPT Scott Mace, commander of C Battery, 5th Battalion, 5th Air Defense Artillery, the "prototype" C-RAM battery, describes the LPWS in an article entitled "C:RAM: Air Defense Artillery Takes On New Counter-Rockets, Artillery and Mortars Intercept Mission," which appears in the July-September 2005 issue of Air Defense Artillery magazine. (The issue is available online in PDF format at <http://www.firststofire.com/adamag>.) The purpose of this article is to describe and explain the C-RAM battery concept proposed to satisfy the near-term need for a C-RAM organization.

Seven Pillars of C-RAM

The C-RAM mission is partitioned into seven functions, referred to as "pillars:" *shape, sense, warn, intercept, respond, command and control, and protect.* (*Shape* consists of actions taken to deny the enemy's use of tactically advantageous terrain or to channel enemy forces into areas where they can be observed. *Respond* is the application of lethal fires before or after RAM attacks. *Protect* is actions taken to harden sites or disperse assets to mitigate the effects of RAM attacks.)

The C-RAM interceptor is only one portion of a series of materiel solutions that fit into

a C-RAM "system of systems." The C-RAM battery employs four primary systems. The Army's Light-Weight Counter-Mortar system (LCMR) provides 360-degree capability to detect incoming RAM threats. The Sentinel radar is the primary system used to protect friendly aircraft operating near the C-RAM interceptor. The LPWS is a 20mm Gatlin-type gun that provides the intercept capability. The Wireless Audio Visual Emergency System (WAVES) takes input from the LCMR and other local sensors, such as the AN/TPQ-36 Firefinder 36, 37 or 46 radar, and warns Soldiers within the defended zone whose position places them within the predicted impact area of incoming attacks. The Forward Area Air Defense (FAAD) Command, Control, Communications and Intelligence

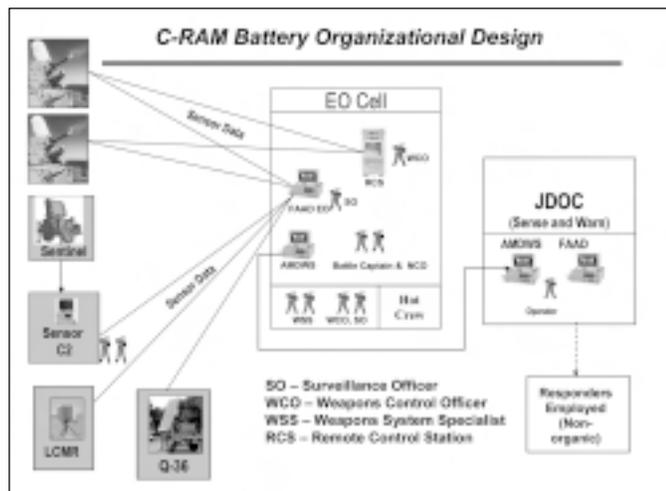


Land-Based Phalanx Weapon System

(C³I) system ties all of the data together, automatically cues the LPWS, notifies field artillery units of the attack's point of origin so they might fire counter-battery missions and sends the warnings to WAVES for announcement to the defended site.

In late November 2005, the Directorate of Combat Developments, U.S. Army Air Defense Artillery School, acting in its role as the "lead" C-RAM combat developer, forwarded a C-RAM force design update proposal to the U.S. Army Training and Doctrine Command that advocates a battery-level organization as an interim solution to the RAM threat. In formulating the proposal, we considered three different-sized organizations: platoon, battery and battalion. Based on our analysis, the battery is the best organization to meet the very near-term need. Although the battery solution does not meet "objective" C-RAM requirements in their entirety, it is the best option under current materiel availability constraints. In the future, we may need a battalion-sized C-RAM organization to fully capitalize on the array of sensors employed for C-RAM and to serve as the focal point for C-RAM employment within division-sized areas of operations (AO).

The C-RAM battery organization, with its three platoons, provides a commander the ability to completely accomplish four of the seven C-RAM functions: sense, warn, intercept, and command and control. These functions are executed by the combined efforts of a C-RAM battery and the brigade combat team it supports or in whose AO it is employed. The C-RAM battery indirectly supports the protect, shape and respond pillars. For example, over the course of a C-RAM battery mission, the sensors will ac-



cumulate precise data on the origin, time and type of attacks. This data will help analysts as well as commanders decide how and where to employ limited protect assets, how to focus response efforts at the right place and time, and determine where shape efforts will be the most effective. Additionally, the C-RAM battery commander will assist and advise the supported commander in determining how to deploy the C-RAM battery, how to prioritize critical assets and how to fuse C-RAM data to coordinate preparations for and reactions to RAM attacks.

C-RAM Battery Rank Structure

An ADA major will command the C-RAM battery and an ADA captain will serve as the executive officer. This higher-than-normal rank structure is necessary to facilitate the integration of the C-RAM battery into its supported unit structure. This is especially important when task organizing with additional platoons or when spreading out sense and warn sections over large areas. The C-RAM battery rank structure provides the experience necessary to command the unit and better assist supported unit commanders with critical asset prioritization. This rank structure also provides the depth of experience in air and missile defense operations necessary for an AO to benefit from, not only the C-RAM sensors, but from other employed air and missile defense assets. The ADA major will have a greater familiarity with air and missile defense operations based on previous assignments and overall experience.

Air and missile defense transformation is reshaping the ADA force structure. In the near future, Air Defense Artillery will deploy eight "pure" Patriot battalions, five composite air and missile defense battalions with a mix of Patriot and Avenger batteries. The soon-to-be-fielded Surface-Launched Advanced Medium-Range Air-to-Air Missile (SLAMRAAM) batteries will eventually replace the Avenger batteries. C-RAM batteries may be assigned to air and missile defense brigades for training and readiness oversight, but in the near-term will be employed as separate batteries supporting brigade combat teams or base commanders. The C-RAM batteries will depend on the units they support for combat health support as well as religious, legal, finance, personnel and administrative services. The C-RAM batteries will also require communication security equipment maintenance support.

We decided to recommend C-RAM batteries rather than platoons as the interim C-RAM organization because our analysis revealed the platoon-sized organization is not a feasible solution for accomplishing the complete set of C-RAM functions, including planning, preparation and execution. A C-RAM platoon would be completely capable of supporting the sense, warn, and intercept pillars of the C-RAM mission, but would not provide sufficient infrastructure to facilitate planning and integration of the multiple platoons necessary to protect a large operating base, critical assets such as airports or seaports, or other similar large or dispersed assets. The platoon structure lacks an engagement operations section needed to integrate into a supported unit's structure. It also lacks the manpower necessary to sustain operations for long periods of time. The C-RAM platoon leader serves as the weapons control officer/tactical control officer who makes the decision to engage RAM targets. The platoon leader's primary duty will be in execution. He or she would have little time for planning future moves or task organization changes.

Our recommendation for the C-RAM battery organization is not based on typical force design analysis alone, but also on lessons learned from current in-theater C-RAM operations. These operations are shaping the way C-RAM



Soldiers of C Battery, 5th Battalion, 5th Air Defense Artillery, perform maintenance on the Land-Based Phalanx Weapon System.

units will fight in future theaters.

The proposed C-RAM battery structure will meet our needs today. Air Defense Artillery can, with some difficulty, support the battery force structure requirements by drawing force structure from other ADA systems until the Army approves additional force structure. Deployed in sufficient numbers, LPWS-equipped C-RAM batteries can deal effectively with the RAM threat that we face into today's theaters of operation. However, we must resist the temptation to focus on the current situation and consider future theaters of operations in which the RAM threat may be more robust.

As C-RAM matures we will need to reevaluate the organizational structure based on performance, analysis of span of control issues and materiel advances. The trailer-mounted LPWS can be easily repositioned within static defensive positions, but lacks the mobility to defend maneuver units. The objective C-RAM capability will be mobile and could include kinetic-energy systems and, ideally, directed-energy systems. Mobile C-RAM systems will be able to defend a much broader array of assets than near-term systems presently deployed.

A Sense of Urgency

On 22 November 2005, Americans who turned on the evening news watched an insurgent mortar attack disrupt a ceremony staged to celebrate the return of Saddam Hussein's most majestic palace to Iraqi control. In the midst of the ceremony, the whistle of an incoming mortar round sent U.S. and Iraqi Soldiers and civilians scrambling for cover. Bodyguards dove atop GEN George W. Casey Jr. and Ambassador Zalmay Khalilzad—the two most powerful Americans in Iraq—to protect them from flying shrapnel. The mortar round turned out to be a dud, but it transformed a symbolically important ceremony into a minor propaganda coup for the insurgents. It also served as a reminder that, although improvised explosive devices have overtaken rockets, mortars and gunfire as the greatest threat to U.S. troops, RAM attacks remain a constant threat.

Accordingly, a sense of urgency has propelled work on the creation and fielding of the interim C-RAM capability. Less than two years has passed since the chief of staff issued his C-RAM directive, but we have already deployed the first C-RAM interceptors and sense and warn capabilities. This assumption of the C-RAM mission marks a historic milestone in the history of Air Defense Artillery.



LTC Christopher R. Mitchell is the Chief of Plans, Priorities and Forces in the Directorate of Combat Development, U.S. Army Air Defense Artillery School, Fort Bliss, Texas. He is a former commander of the 1st Battalion, 56th Air Defense Artillery.

SCANNING

Army Inactivates Oldest Air Defense Artillery Battalion

1st Infantry Division Air and Missile Defense Detachment Replaces 3-4 ADA

WURZBURG, Germany (Army News Service)— The 1st Infantry Division held an inactivation ceremony 15 September 2005 at Leighton Barracks for the 4th Battalion, 3rd Air Defense Artillery, the oldest air defense battalion in the active Army. The battalion's Soldiers and weapon systems will be merged with Patriot batteries to form an air and missile defense composite battalion employing a mix of Patriot and Avenger missile systems.

During the ceremony, the colors of 4-3 ADA were sheathed to signify the inactivation, while the colors of the division's new Air and Missile Defense Detachment were presented to the command. The Air and Missile Defense Detachment was created to serve as the 1st Infantry Division's commanding general's advisor on all matters related to air and missile defense, as well as provide early warning and perform airspace management functions for the division. The detachment will serve as an interim organization until the division receives an air defense airspace management (ADAM) cell. With the name change and restructuring, command of the detachment passed from MAJ Clark R. Denman to MAJ. John E. Labadini.

"This is a day to reflect on the long and illustrious lineage of 4-3 ADA," said BG James Barclay, 1st Infantry Division assistant division commander for maneuver. "It's also a day to look forward as we enter this time of transition."

The unit's history began in 1794 as the 3rd Company, 4th Battalion Corps of Artillerists and Engineers. The battalion's Soldiers have seen action in almost every major conflict in U.S. history, most recently in support of Operation Iraqi Freedom II.

"The Soldiers of 4-3 ADA have done their nation proud up until the very last day," Barclay said. —*SPC Joe Alger*



B Battery, 2nd Battalion, 1st Air Defense Artillery, Commander, CPT Joshua Tooke, briefs GEN Leon J. Laporte, U.S. Forces commander, who is shown looking down range at the Patriot missile launchers.

35th ADA Brigade Celebrates First Year in Korea

by CPT Jennifer Hurrle

On 15 December 2005, the 35th Air Defense Artillery Brigade celebrated the first anniversary of its mission assumption in the Republic of Korea (ROK). The day passed quietly, a silent testimony to the tremendous effort put forth to establish a brigade headquarters, two firing batteries and a maintenance company in the "Land of the Morning Calm."

While the 35th ADA Brigade, commanded by COL John G. Rossi, is not the first ADA unit of its size to serve in Korea, it is the only Patriot brigade ever deployed to the Korean peninsula. Its predecessor, the 38th ADA Brigade, a Hawk surface-to-air missile unit, was stationed in Korea from 1961 until it was inactivated in 1981.

The 35th ADA Brigade's first year in the Korean Theater of Operations (KTO) was marked by change. From the air and missile community to local Korean neighborhoods, 35th ADA Brigade bore the standard for transformation and outreach.

From its initial moments on the ground, the 35th ADA Brigade led the peninsula's transition to joint basing. It is the only U.S. Army unit in Korea entirely based on joint ROK/U.S. air bases. Headquartered at Osan Air Base, just

30 miles south of Seoul, the brigade's focal point has been on integration with the Seventh Air Force and Eighth Army. To that end, the brigade participates in quarterly training exercises with the 51st and 8th Fighter Wings. The brigade also participates in the U.S. Forces Korea (USFK)-wide Reception, Staging, Onward Movement and Integration Exercise as well as Exercise Ulchi Focus Lens, the world's largest computerized command and control exercise.

In September 2005, the 1st Battalion, 43rd Air Defense Artillery, became the Army's first forward-deployed air and missile defense composite (Patriot/Avenger) battalion when it assumed control of an Avenger battery from the 5th Battalion 5th Air Defense Artillery, the 2nd Infantry Division's short-range air defense battalion. Delta Battery, 5-5 ADA, stayed behind when the battalion cased its colors at Camp Casey, ROK, in October 2005 and returned to the United States. (At Fort Lewis, Wash., 5-5 ADA Soldiers will field the Army's new Surface-Launched Advanced Medium-Range Air-to-Air Missile systems.) Delta Battery, which has 24 Avengers and Sentinel radars, was subsequently re-flagged as Echo Battery, 1-43 ADA.

During the re-flagging ceremony, LTC Terence M. Dorn, the commander of 1-43 ADA, said, "This is more than a simple re-flagging. This represents the further transition of air defense to meet the threat on the Korean Peninsula."

1LT David Marlow, the 1-43 ADA adjutant, observed that, while Eighth Army is in the midst of significant tran-



During a 15 September 2005 re-flagging ceremony at Camp Casey, Delta Battery, 5-5 ADA became Echo Battery, 1-43rd ADA. At right, an Echo Battery Avenger crew conducts gunnery exercises at Chulmae Sea Range on the Republic of Korea's southwest coast.

tages is that Soldiers arrive with their unit. Each carries his or her individual weapon and a full issue of TA-50, and all are ready to 'fight tonight.' Korea has become the new SWA [Southwest Asia]."

Unit rotations are rigorous events in keeping with brigade commander's deployment mentality. (See "Two Hundred and Twenty-One Days" by LTC Krewasky A. Salter,



sition, the 35th ADA Brigade is driving change that impacts not only the KTO, but the entire world of air and missile defense. "The [brigade] is setting a high standard in regards to its ability to transform itself to meet the requirements of the current operational environment. Maintaining a 'fight tonight' capability while in transition is simply a part of remaining relevant and ready."

This year, 35th ADA Brigade also revamped the KTO's Patriot maintenance organization and procedures. Re-flagging its two maintenance companies from 178th and 3rd to E/2-1 ADA and F/1-43 ADA, respectively, bears much more significance than a simple name change; it completely alters how Patriot maintenance is conducted.

All maintainers within each battalion were transferred from line batteries to the maintenance unit and reorganized into maintenance support teams (MSTs). A maintenance team chief leads each MST, and one MST is attached to each firing battery to provide services and parts installation on site.

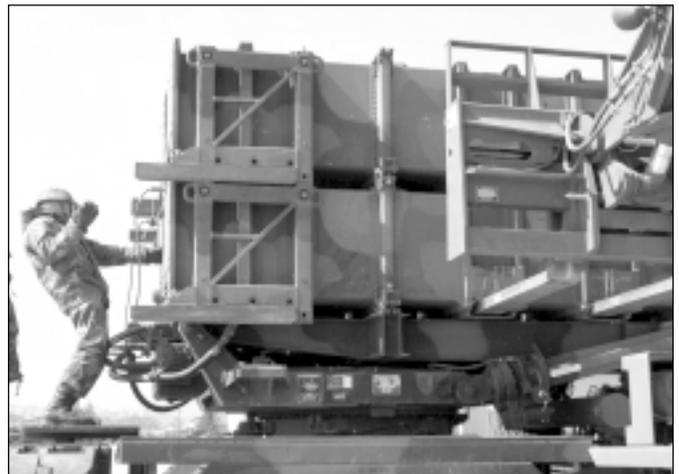
"The MST is an innovative way of conducting maintenance at battalion level," said CPT Dewauna Pope, F/1-43 ADA commander, "MSTs establish full-service capability while reducing maintenance backlog and enhancing vehicle readiness."

Within six months of its arrival, 35th ADA Brigade initiated the first armistice unit rotations USFK had ever witnessed.

"Rotations are great because they improve readiness and cohesion by eliminating the constant turnover of individual replacements," said brigade transportation officer, CPT David Harlan. "35th ADA Brigade's rotational units have several advantages over other USFK forces using the individual replacement system. Among these advan-

the former commander of 2-1 ADA, in ADA Magazine Online [airdefenseartillery.bliss.army.mil/adamag] for a step-by-step chronicle of a recent unit rotation.) The brigade facilitated the rotation of more than 300 personnel at four air bases in each of its first two semi-annual unit rotations.

A major challenge for the brigade is to complete the rotations within a 30-day window, beginning with the first



A newly deployed 2-1 ADA Soldier guides Patriot missiles onto a launcher.

departure of rotating personnel from the peninsula. To maintain trained and ready crews throughout the rotation, the operation is conducted in three phases. A small advance element consisting of commanders, key leaders and qualified fire-control crews begins each rotation. These soldiers must work at a furious pace to meet a demanding schedule that begins the day they arrive. They are followed

within seven to 10 days by the first of two main body elements with 20 to 30 soldiers per battery. The second main body flight containing the remainder of the unit's personnel arrives approximately one week later. Each new unit is immediately busy inspecting and inventorying unit

high, which we definitely needed to win against a great, competitive team."

As the only USFK brigade maintaining a footprint in all four Army areas (I through IV) and in two Air Force areas (V and VI), 35th ADA Brigade must interact with a



White water rafting and a championship-winning soccer team highlighted the 35th ADA Brigade's thriving Better Opportunities for Single Soldiers program.

equipment, preparing for operational readiness evaluations and adjusting to their surroundings.

While the brigade's mission is intense, its soldiers make time to enjoy themselves. Members of 1-43 ADA boast about their thriving Better Opportunities for Single Soldiers (BOSS) program. The battalion's BOSS program on Suwon Air Base recently took second place in the small-installation category during the Army-wide BOSS competition. BOSS events throughout the brigade range from cultural sight-seeing tours to more laid-back events. "We organized a ski trip, took a trip to Everland [amusement park], went white-water rafting, and held several picnics and barbecues," said PFC Charles Sloane, the 1-43 ADA BOSS vice president, "You can keep pretty busy and have a good time with the BOSS events that we have organized."

Sports are thriving within the brigade. Brigade sports representative 1LT Justin Fincham has organized numerous installation softball, football and basketball teams and several brigade-wide sports competitions, including a Turkey Bowl and the Commander's Cup Competition.

According to Fincham, "The basic goal of the brigade sports program is to enhance cohesion, fitness and moral within the brigade through challenging and rewarding sports programs, ultimately building teamwork and esprit de corps. It gives the Soldiers an opportunity to get out of the barracks on the weekends and have some fun at the same time."

In addition, the Suwon Air Base soccer team recently won the Eighth U.S. Army Soccer Championship. The victory served as a testament to the Soldiers' morale and competitive spirit. SGM Won Kyu Choi, the 1-43 ADA ROK sergeant major, stated, "I'm very proud of our team and our players, many of who played injured and with limited time to practice. It's amazing that, despite the injuries and other constraints, we kept our confidence level

broad spectrum of local communities. Even before its arrival, the brigade strived to set positive conditions for its integration with the Korean population and determined that a robust community relations (COMREL) program was essential to success.

This was especially true for 2-1 ADA in Gwangju, the site of a bloody uprising in 1980 that took the lives of

...we care not just for ourselves, but for the people on this peninsula...

hundreds of students and other protestors, leaving a legacy of anti-American sentiment throughout the city. Former Korean Ambassador to the United States Park Young-Chul and 2-1 ADA worked hand-in-hand to end 25 years of blame and misunderstanding. The unit quickly established relationships with local officials and organizations and has been conducting visits to orphanages and schools. SPC Paul Reitman, a 2-1 ADA intelligence section leader, attributes the decrease in attendance at anti-U.S. protests in the area in part to 2-1 ADA's outreach activities, "By our battalion's participation in numerous COMREL events, we have helped ease the tension between the Korean Nationals and the U.S. Forces stationed in Gwangju because we have demonstrated our intent to understand and respect the Korean people and their strong history. We have shown that we care not just for ourselves, but for all the people on this peninsula."

COMREL has been a major focus across the brigade. From conducting home stays as part of USFK's Home Visitation Program to entering runners in the Gangnam International Peace Marathon, 35th ADA Brigade has made a difference in its local Korean communities.

A particular success story is that of Songtan High



A 35th ADA brigade soldier instructs a weekly conversational English class at Songtan High School.

School. For many years, the principal of Songtan High School had tried in vain to establish a conversational English class run by American Soldiers. No one volunteered until 35th ADA Brigade offered its assistance. Since May 2005, several Headquarters and Headquarters Battery, 35th ADA Brigade, Soldiers and officers have instructed a weekly conversational English class at the school. Creativity defines the class. From teaching students the "Boot Scootin' Boogie" country-western line dance to explaining the origins of Halloween while passing out eyeball-shaped candy, brigade Soldiers offer young Koreans a glimpse of American life. That glimpse has made an impact. When one of the Soldier-teachers rotated stateside, the students threw her a surprise party complete with banners, flowers and balloons. "Teacher, we will remember you forever," said one student.

One of the keys to understanding 35th ADA Brigade's efforts on the Korean peninsula lies in the knowledge that the hard work is just beginning. As USFK experiences significant personnel drawdown 35th ADA Brigade is the only unit in the KTO that is increasing in personnel strength.

From Avenger gunnery to convoy live-fire training and comprehensive operational readiness exercises, the



In July and August 2005, 1-43 ADA Soldiers conducted convoy live-fire exercises at the 2nd Infantry Division's Warrior Base and Story Range.



way ahead includes many challenges. COL Rossi asserts that 35th ADA Brigade Soldiers will be "the best Patriot crews in the Army." However, according to COL Rossi, the brigade's bottom line is the same for any unit serving anywhere, "Our end state is great units ready to fight and win, motivated and confident Soldiers and proud and supportive families."

The Soldiers agree. "Remember, our motto is 'Ready in Defense,' which means just that," said SPC Christopher M. McGee, Headquarters and Headquarters Battery, 35th ADA Brigade. "We are here to defend. And we will."

The brigade chemical officer, CPT Aleta Escoto, reflected on her tour in Korea with the 35th ADA Brigade: "It's a challenge. I'm proud because we're doing something that hasn't been done before. We're here because we need to be. There's a definite sense of purpose. The mission happens everyday."



CPT Jennifer Hurrle, the 35th Air Defense Artillery Brigade public affairs officer, was scheduled to attend the Military Intelligence Captain's Career Course at Fort Huachuca, Arizona, beginning in January 2006.

SCANNING

Army Offers Patriot Recruits Increased Enlistment Bonuses

Recruits who sign up for MOS 14E, Patriot Missile System Enhanced Operator, will now receive \$8,000 for a four-year commitment, up from \$4,000; \$12,000 for five years, instead of \$6,000; and \$14,000 for six years, up from \$8,000. Those who sign up as MOS 14E, Patriot Launching Station Enhanced Operators, will receive \$3,000 for a two-year commitment, instead of \$1,000; \$5,000 for three years, instead of \$3,000; \$8,000 for four years, instead of \$4,000; \$12,000 for five years, instead of \$6,000 and \$14,000 for six years, instead of \$8,000.

Patriot Fratricides:

The Human Dimension, Lessons of Operation Iraqi Freedom Soldiers and Not the Automated System Must be the Ultimate Decision Makers in Air and Missile Defense Engagements

by John K. Hawley, PhD
Army Research Laboratory
Human Research and Engineering Directorate

Nearly everyone in the air and missile defense (AMD) community is aware of, and has formed opinions about, the Patriot fratricide incidents that occurred during Operation Iraqi Freedom. The U.S. Army has done much to address the perceived causes of these incidents. Now, more than two years after the fact, and with numerous hardware, software, training and procedural changes in the offing, there is a natural tendency to view the problem as "fixed," give a sigh of relief and get on with business as usual. However, before declaring the case closed, it may be instructive to look again at what the various official inquiries and the Defense Science Board (DSB) actually said about the fratricide incidents and explore the longer-term implications of those findings.

Personnel from the Army Research Laboratory's Human Research and Engineering Directorate started looking into Patriot system performance at the invitation of MG Michael A. Vane, then commander of the U.S. Army Air Defense Artillery Center, Fort Bliss, Texas. MG Vane was interested in operator vigilance and situation awareness¹ as they relate to the performance of automated AMD battle command systems. Following discussions with MG Vane, we structured an effort termed Patriot Vigilance with the charter to explore four broad topic areas: (1) vigilance and situational awareness; (2) trust in automation; (3) Patriot and AMD training effectiveness and efficiency; and (4) AMD leader development. We spent most of the summer and fall of 2004 reading documents, interviewing knowledgeable personnel from around Fort Bliss, and observing training and operations. Our initial report went to MG Vane in October 2004². Less than a month later, we were gratified to learn that several of our conclusions were mirrored almost exactly by the DSB.

Prior to continuing the present discussion, I must express one caveat concerning using hindsight in problem solving: Studying incidents such as the Operation Iraqi

Freedom fratricides does create opportunities for rapid learning and organizational change. However, hindsight is not foresight. After an incident, we have all of the critical information necessary to understand most of what happened.

But that information was not available to participants before the fact. In looking back, we tend to oversimplify the situation that the actual participants faced. This "hindsight bias" can block our ability to see the deeper story behind the events. Our objective in the Patriot Vigilance project was not to conduct another exercise in Monday morning quarterbacking. Rather, we wanted to look into the deeper story behind events leading to the fratricides from a human performance perspective. Our focus is on the path forward rather than a further dissection of the incidents of the past.

Our objective in the Patriot Vigilance project was not to conduct another exercise in Monday morning quarterbacking. Rather, we wanted to look into the deeper story behind events leading to the fratricides from a human performance perspective. Our focus is on the path forward rather than a further dissection of the incidents of the past.

The Story Behind the Inquiry Conclusions

Two recommendations from the DSB report on Patriot system performance summarize the path forward from a human performance perspective. Although the full report is classified, the following extracts are not:

- *"The Patriot system should migrate to more of a 'man-in-the-loop' philosophy versus a fully automated philosophy—providing operator awareness and control of engagement processes."*
- *"Patriot training and simulations should be upgraded to support this man-in-the-loop protocol, including the ability to train on confusing and complex scenarios that contain unbriefed surprises."*

The central notion in the first DSB recommendation is captured in the phrase "providing operator awareness and control of engagement processes." Simply put, soldiers



Patriot batteries shot down every Iraqi tactical ballistic missile that threatened U.S. forces, but were involved in friendly fire incidents involving U.S. and British aircraft.

and not the automated system must be the ultimate decision maker in AMD engagements. Decisions to shoot or not to shoot must be made by crews having adequate situational awareness for the situation at hand and the expertise to understand the significance of the information available to them.

Putting human decision makers back into the control loop does not mean that we try to turn the clock back to the good old days of Nike Hercules and Hawk and merely re-emphasize traditional control strategies and procedures. The situation with Patriot is too complex for that simplistic solution. Driven by advances in technology and mission changes, Patriot crewmember roles have evolved from traditional operators to supervisors of automated processes. The job of supervisory controller is different from that of traditional operator, and these differences must be reflected in system design, performance support features (decision aids), and training and professional development. Moreover, system designers and users are not free to opt for or against casting operators as supervisory controllers. Operators must be augmented by technology in the form of automation. The contemporary AMD environment is simply too complex and demanding to consider any other approach.

Stakeholders across the AMD community have not ducked these issues. Various organizations have conducted considerable work on the problem of developing an effective man-in-the loop strategy. Specific products in this regard include Post Deployment Build 6, a new software build, that emphasizes and facilitates positive human control, including tactical standard operating procedures and

tactics, techniques and procedures revisions to complement software changes. The next step in this change process will be to validate and debug the resulting revisions in a series of operational tests and usability assessments. Human Research and Engineering Directorate staff members will be lending their technical expertise to these events.

The second DSB recommendation having major significance for human performance in contemporary AMD operations concerns training. Here, the DSB was reacting to the AMD community's own conclusion that it is necessary to re-look the "level of expertise necessary to operate such a lethal system on the modern battlefield." The AMD community has responded to this challenge with the new Master Gunner and Top Gun Courses. Other training changes are also in process or under consideration.



John K. Hawley, PhD, is assigned to the Army Research Laboratory Human Research and Engineering Directorate, Army Research Laboratory, Adelphi, Maryland.

¹ *Situational awareness is defined technically as the perception of elements in the environment within a volume of space and time, the comprehension of their meaning, and the projection of their status in the near future.*

² *We also prepared a companion report titled "The Human Side of Automation: Lessons for Air Defense Command and Control" (ARL-TR-3468). This report is available from the Army Research Laboratory's Fort Bliss Field Element or through the Defense Technical Information Center.*

SCANNING

SLAMRAAM Completes Two Successful System Reviews

Surface-Launched Advanced Medium-Range Air-to-Air Missile System Moves Closer to Eventual Fielding

TEWKSBURY, Mass.— The Raytheon Company received authorization to continue Surface-Launched Advanced Medium-Range Air-to-Air Missile (SLAMRAAM) software build and fire unit development following a successful system/software requirements review and a successful critical design review. The SAMRAAM system of systems will provide commanders a tailorable, state-of-the-art air defense system that can defeat the current and emerging cruise missile threat and a wide range of air breathing threats.

"These reviews were the result of close collaboration with our government partners to provide an effective and fully-integrated mobile air defense solution to the warfighter," said James Wells, Raytheon Integrated Defense Systems' SLAMRAAM program manager. "This system is very important to our joint warfighter because it maximizes the warfighter's capability against the current and evolving low-altitude cruise missile threats, improves system survivability and provides growth capabilities through an open architecture-based integrated fires control network."

Members from the U.S. Army, Marine Corps and Raytheon Joint Product Team conducted the two-day system/software requirements review. After the review, the SLAMRAAM program received authorization to proceed with Software Build 2, which will provide SLAMRAAM integrated fire control network capabilities.

"We're very, very satisfied where the program is to date," said LTC Walt Jones, U.S. Army SLAMRAAM product manager. "The successful reviews are a reflection of committed teamwork to ensure our warfighters get the system they need."

Following the system/software requirements review, the SLAMRAAM development team conducted a successful two-day fire unit critical design review, resulting in approval to proceed into fabrication, assembly and testing of five SLAMRAAM prototype fire units. The SLAMRAAM fire unit, derived from the Marine Corps' Complementary Low-Altitude Weapons System Program, is designed to integrate into the SLAMRAAM open architecture-based integrated fire control network to provide enhanced capability against the cruise missile and unmanned aerial vehicle threats for Army and joint forces.

Mission Readiness Exercise Validates ADAM Cell Concept

Air Defense Airspace Management Cell Soldiers Prevail Despite Staffing Shortfalls

by Captain Wayne Rush

The 3rd Brigade Combat Team (BCT), 10th Mountain Division, Air Defense and Airspace Management (ADAM) Cell recently deployed to the Joint Readiness Training Center (JRTC) at Fort Polk, Louisiana, with its brigade to conduct its Operation Enduring Freedom Mission Readiness Exercise. JRTC Rotation 05-08 was a true combined joint operation with Republic of Singapore Air Force helicopters (AH-64 Apaches and CH-47 Chinooks) and U.S. Air Force A-10 Warthogs providing close air support to the brigade.

Composed of a brigade aviation element (BAE) and an air and missile defense (AMD) section, the ADAM cell provides greater Army airspace command and control than the brigade S-3 air section it replaces. In accordance with the modified table of organization and equipment (MTOE), the BAE is manned by an Army Aviation major, a captain, a warrant officer and two enlisted soldiers. They plan, coordinate and monitor rotary and fixed-wing flights throughout the 3rd BCT's airspace in cooperation with the Aviation Brigade and the G3 army airspace command and control (A²C²) cell at division.

Also by MTOE, the AMD section is manned by an ADA major, a captain, a warrant officer, two noncommissioned officers and two enlisted soldiers, who deconflict manned and unmanned flights in the brigade's airspace and provide reliable situational awareness of the third dimension.

During this mission readiness exercise, our ADAM cell manning consisted only of an Army Aviation major and a captain, along with an ADA major, a captain, three noncommissioned officers and two enlisted soldiers. The personnel shortage severely tested the capabilities of all team members.

Air Force combat air support (CAS) and transport missions, Army lift and attack aviation missions, Singapore rotary wing support, and small unmanned aerial vehicle (SUAV) flights as well as other assets required deconfliction over a tiny 30 kilometer by 15 kilometer piece of airspace. The Air Force brought B-52s, A-10s, F-16s and F-15s for CAS missions, along with C-130s, which conducted multiple air drops each day.

Our BAE had to plan, coordinate and monitor air missions for Army Aviation (10 UH-60s and eight OH-58s)

and the Singapore rotary wing support (six AH-64s and four CH-47s). This frantic pace eventually prompted the JRTC aviation observer/controller to comment, "The only thing you're not doing is flying the birds."

Along with this, the ADAM cell processed and monitored airspace restricted operating zone requests for three Raven SUAVs operating over the JRTC "box." As the multiplicity of airspace users grows, deconfliction becomes more intense and detailed.

For this rotation, the ADAM cell's equipment consisted of an engagement operations box and the Air and Missile Defense Workstation (AMDWS). The latter was directly wired to a Sentinel radar, loaned to the cell by the 101st Airborne Division. The MTOE does not allot the ADAM cell at BCT level a Sentinel radar, but throughout the rotation the Sentinel proved vital in providing reliable situational awareness of the third dimension to the brigade commander. Without a real-time air picture, deconfliction of manned and unmanned flights is much more difficult, especially when ADAM cell personnel lack a positive control for airspace management. Without the positive control of real-world airspace that the Sentinel provided, the ADAM cell would have been forced to rely on the combat training center's simulated air track feed.

Through this exercise of coordinating real air missions, we learned that the ADAM cell must be further subdivided into future operations and current operations sections. The ADAM future operations cell was located in the fire and effects coordination cell next to the air liaison officer to provide a real-time air picture of the Air Force CAS flights. This allowed expeditious deconfliction of airspace for clearance of all fires.

The current operations cell was located in the BCT current operations fusion pit to control immediate requests for rotary wing support and ongoing air missions. Future and current operations must be separated to allow uninterrupted planning and rapid airspace deconfliction to occur concurrently without any spillover to hamper either.

Our training objectives ranged from validating the ADAM standard operation procedure to passing air tracks from the Sentinel to cross training BAE/ADAM tasks. First, we achieved Sentinel radar link-up with our air defense computer systems, allowing the passing of air

tracks to the Aviation Brigade's ADAM cell AMDWS and the BCT Maneuver Control System-lite (MCS-lite). Next, we used the BCT tactical net (TACNET) to disseminate information and establish a system to provide units situational awareness of all aircraft in their battlespace. Several times a day, the BAE updated the air mission request list on the TACNET, providing all users timely information on rotary wing mission approval or disapproval.

In addition, the ADAM cell translated the air tasking order and airspace coordination order into two new Army airspace command and control products: the Air Tasking

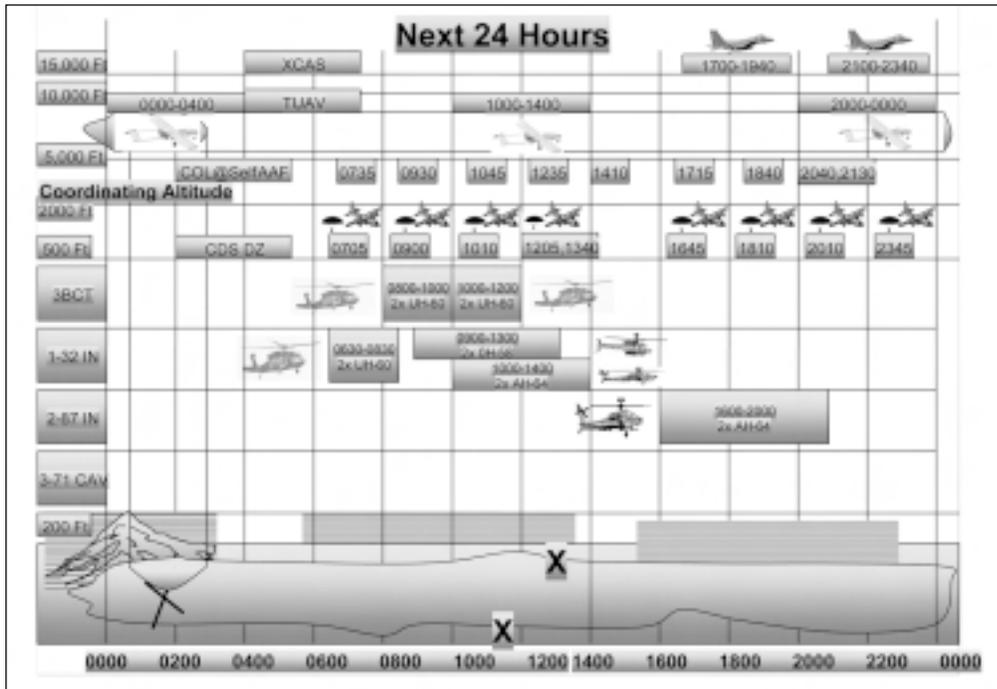
and provides the operator situational awareness of where the UAV is currently flying.

The BAE uses the FalconView software on its laptops for aviation planning. A possible solution is for the ADAM cell to establish a link to the UAV operator's terminal to see the same real-time air picture. Until then, the lateral procedural control "keypad" system worked well over the tiny JRTC box and has been incorporated into our cell's standard operating procedure.

Throughout the JRTC mission readiness exercise, we identified many lessons learned and incorporated them into our daily operations. First, we realized that passing air

tracks to the MCS-lite is not enough; we need the capability to display them real-time on the Force XXI Battle Command, Brigade-and-Below (FBCB2) system, which provides the common operating picture for the brigade.

Second, we validated the ADAM concept of both the BAE and AMD sections working together. Since each cell was not fully manned to provide 24-hour operations capability, both cells relied on each other's personnel to accomplish surge work. For instance, due to the nature of air movement for every action in Operation Enduring Freedom, Army aviation is vital, resulting in many air mission requests and planning meetings for the BAE.



Aviation Assessment for the Next 24 Hours Battle Update Briefing Slide

Control Measures Matrix and the Aviation Assessment for the Next 24 Hours Battle Update Briefing slide. These products provide visualization and details of all aircraft in the commander's battlespace and illustrate how each planned mission will impact the planned airspace control measures. If it flew over the JRTC box, the ADAM cell tracked it and disseminated that air track information via digital means throughout the BCT.

Deploying to JRTC, our primary concern was unmanned aerial vehicle (UAV) airspace control measure request processing and the execution of manned/unmanned deconfliction. In accordance with JRTC exercise rules, UAV deconfliction was done through the "keypad" system, a lateral procedural control measure. Grouping nine-kilometer grid squares into larger numbered "keypad" blocks that were activated when a UAV flew that requested path allowed fast blanket restricted operations zone request processing and rapid airspace deconfliction. Though procedural control was accomplished, positive control of the Raven UAV by the Sentinel was not possible due to its small radar cross-section. A future solution lies with the FalconView software that programs the Raven's flight path

As a result, the AMD section handled current operations and future airspace planning while the BAE section dealt primarily with Army aviation planning and coordination.

Third, through discovery learning, the ADAM cell became the single proponent for anything that flew (reference the battle update briefing slide). Be it CDS C-130 airdrops or on-station F-16 CAS missions, situational awareness of any airspace user or penetrator was essential and was expected throughout the brigade.

At the conclusion of the mission readiness exercise, all of our training objectives were met, greatly surpassing our initial expectations of what a functioning ADAM cell should be capable of accomplishing when deployed in support of Operation Enduring Freedom. We look forward to validating ADAM cell tactics, techniques and procedure in an actual theater of operation during our brigade's deployment to Afghanistan.



CPT Wayne Rush is the ADAM cell plans officer for the 3rd Brigade Combat Team, 10th Mountain Division, Fort Drum, New York.



A warrant officer recruiting briefing started WO1 Heather Anne Mosolovich on the path from enlisted Solder to warrant officer.

Overcoming Fear of Failure is the First Step in the Transition From ADA Enlisted Soldier to ADA Warrant Officer

by WO1 Heather Anne Mosolovich

When most people hear about warrant officers, they envision an older person, near retirement, who is referred to as a technical "god." He is pictured as a chain-smoking caffeine addict. Those are the days of old. I write this article to shed some light into the world of becoming a warrant officer in today's "Army of One," starting from the very day the idea popped into my head up until the day I reported to the Warrant Officer Basic Course.

I remember that I first thought about becoming a warrant officer after my first encounter, as a young private, with my Patriot battery's two warrants. They knew the Patriot launching system inside and out. My system maintenance personnel were pretty green, so I turned to my battery warrants for advice on how to fix my equipment.

Later in my career, I made the transition from Military Occupation Specialty (MOS) 14T, Patriot Launching Station Enhanced Operator/Maintainer, to MOS 14J, Air Defense Tactical Operations Center Operator. While I was attending my Q3 Additional Skill Identifier course, I attended a warrant officer recruiter briefing at the U.S. Army Air Defense Artillery Center's headquarters building. The recruiter told me all of the basics that I would need for my

application and, when the briefing ended, directed me to the Office, Chief of Air Defense Artillery (OCADA). Luckily for me, OCADA, which manages ADA force structure and career architecture, happened to be upstairs in the same building as the briefing room. So there I was, a fairly new NCO, still attending advanced individual training and thinking about applying for a new life.

I spoke to both of the chief warrant officers assigned to the warrant office section of the OCADA. I wasn't sure at that time if applying for Warrant Office Candidate School was a step I wanted to take at that point in my career. I kept discouraging myself because I was in a MOS only recently opened to females, and I had completed just four years of service. They reassured me that if I put my application in, I would be ranked as competitive with other candidates. Both of them encouraged me to take the next step and start building my packet. But, in my head, I kept thinking that warrant officers are wiser and older than me. "They are experts right out of school," I thought. "They know everything."

I kept thinking like that for quite some time, until I came to the revelation that nothing was keeping me from

reaching my full career potential except a fear of failure. About five months after I had spoken to the proponent and recruiter, I decided I was going to do it. I had procrastinated too long and felt that if I didn't submit my application right then and there, I would never do it. No matter whether I would be selected or not, I was not going to give up without trying. I didn't want to live with letting myself down like that. Another reason I decided to forge ahead with the application process was to show the Soldiers in my charge that I wasn't afraid of trying. I loved being a tactical operations center operator and being a part of the 3rd Battalion, 43rd Air Defense Artillery. I was devoted to Soldiers under my supervision, and I had always taught them never to quit trying.

So where do you start? The application process looked overwhelming. I started with the small things that I could do, like the Department of the Army photo, physical and security memos. I then typed up all of my paperwork while on charge of quarters one night and asked my commander if he would review them and give me a letter of recommendation. My battery commander was extremely supportive of my decision and encouraging. He told me to go see the battalion commander and ask him for a letter as well. My senior warrant officer letter was a little bit harder to get, though. CW4 Robert Reed of the Personnel Proponent Office told me the names of a couple of warrant officers who might be able to help me out. So I called them as soon as possible and set up times to bring them my resume and talk to them personally.

While I was waiting on my letters of recommendation, I tweaked up my resume and prepped it for finalization. A lot of people were supportive along the way. I ordered my microfiche before leaving for a battalion field training exercise. By the time I returned from the exercise, my microfiche was in my mailbox, ready to be reviewed and placed in my packet along with the completed forms and letters of recommendation. The last thing that I did was finish up my memorandum requesting a prerequisite waiver. I still had one week to get my packet completed before the deadline for submissions.

I put everything together and went back to see the chief warrant officers at OCADA. They showed me what needed to be done and in what order, how my picture and my microfiche should be placed within my packet, and gave me their approval for my request for a waiver. Off went the packet to Fort Knox, Kentucky.

The week after mailing my packet, I made another trip to the field with my unit. I returned from the field to conduct two days of airload operations. During this time, I checked my e-mail, and to my surprise, there was an e-mail message from OCADA stating that my packet was a "B" status, meaning that it was ready to be reviewed by the next board.

I had about a month and a half before the board would convene. I tried to keep myself busy and not distracted with the upcoming event. I did all right up until the week the board convened. I was stressed out from waiting for the results to be posted. I was so anxious that I couldn't

sleep at night and was having nightmares that I hadn't made it. It was really taking a toll on me right up until the moment the board results came out.

During the week after the board convened, I must have checked the Internet at least every five minutes to see if the selection results had been posted. The people around me were getting stressed out because of my behavior. On the Tuesday afternoon the results finally appeared on the website, I broke down in tears. I called my boyfriend and told him, thanked my commander and first sergeant for their support, and immediately sprinted down the hallway to my battalion S-3 office where my battalion warrant officer, an MOS 140A, Command and Control Systems Technician, worked. I was still shaking as I told him the news. The last thing that I was thinking about was the challenge that awaited me at Warrant Officer Candidate School (WOCS).

Later that week, the battalion 140A, CW2 Michael Gilman, dropped by and gave me a pair of brass rising eagle insignias and his sock-rolling board, which he had used when he attended WOCS, telling me that the items were my selection gift. Others gave me brass and subdued warrant officer candidate rank insignia. Now came the frustrating part: the long wait between my selection and my assignment to WOCS.

Exactly 90 days after the board, I e-mailed my assignment manager and asked when I would be attending school. She told me that she didn't have the dates at that time, but that I would receive my request for orders later the following week. She e-mailed me the request for orders as soon as she received them. I learned that I had been scheduled to attend WOCS from December 2005 to February 2006. December was 10 long months away, an interval that seemed to stretch to eternity. Two weeks later, to my surprise, my orders changed, and I discovered I would be attending school three weeks from the date the change had been issued. Wow! Talk about quick.

I took two-and-a-half weeks of leave before school. I went to my computer and clicked on the Warrant Officer Candidate Course website to see what items I would need for school.

I gathered all the items, except for some small ones with mysterious names that I figured I could pick up after arriving at WOCS. I received my travel orders, activated my travel credit card, made hotel reservations and picked up my roundtrip plane tickets to fly from El Paso, Texas, to Dothan, Alabama. I was ready to go, or so I thought.

I had never experienced a place as hot as Alabama at the beginning of summer. I had grown accustomed to the Desert Southwest where low humidity makes even the hottest day bearable, as long as you can find some shade. It had been five years since I had been in a hot environment with low elevation and high humidity. Alabama's tall trees and green grass offered little respite from the sweltering heat.

I took a taxicab from the airport to Fort Rucker, which was about 30 miles from the airport. I checked into Army lodging and conducted a hasty recon to locate WOCS,

where I was to report in a couple of days. Before reporting for duty, I went to the mini-mall on post, where I purchased the last of the items I needed for school, thinking it would be easier to pick them up before starting the course. I also reviewed all my records to ensure that I had all of my paperwork that I would need and re-inventoried all of the required items for school.

I wore my enlisted Class A's for the last time when I reported into Headquarters and Headquarters Company. During in-processing, I received a copy of the Warrant Officer Candidate Guide, which served as the "bible" for all candidates. It taught you how to eat, display your items, handle the majority of all situations and forewarned you exactly what you should expect to encounter in 1st Warrant Officer Company. The guide also listed the minimum requirements for graduation.

During in-processing, I encountered people from all walks of military life. There were service members from the Air Force, Marines, Navy, Reserve, National Guard, Night Stalkers, Rangers and Special Forces in my class. Out of 64 personnel, 10 were in the "high-school-to-flight school" program, and their only military experience prior to WOCS had been basic training. The experience opened my eyes to aspects of the military that I never before knew existed.

Training Day Zero certainly wasn't the easiest day we would experience at WOCS, but it wasn't the hardest day either. We took an Army Physical Fitness Test and were reassigned from Headquarters and Headquarters Company to 1st Warrant Office Company, where we began our Junior Phase of training.

During the Junior Phase, in addition to academic lessons, we received briefings about the challenges that lay ahead and the standards we would be expected to meet. We went through our fire drill exercise as a team and, naturally, failed as a team. The next day we encountered our extended physical training day. Affectionately known as "D-Day," it was one of the course's hardest days.

Two weeks later, we moved into the Intermediate Phase of training, which placed more emphasis on academics and team building. As we prepped for our "Commander's Walk-Thru," we learned to work together as a team. We also participated in the Leadership Reaction Course, first as the evaluated and later as the evaluators.

The last two weeks was Senior Phase, which most considered the easiest part of the course. We had pretty much earned all of our normal privileges back, and we knew we had only two weeks left before graduation. For some of us, though, the last phase was the hardest. Our teamwork diminished as candidates refocused on themselves as individuals rather themselves as members of a team. More emphasis was placed on external discipline than internal discipline. Prior to graduation, we completed the Land Navigation Course, took our final exams and endured another Army Physical Fitness Test.

Graduation day was exhilarating! I had never felt so much pride in my life as I felt when I took the Oath of

Appointment and CW4 Tom Green and CW3 Randy Pegram pinned my WO1 bars on my shoulders. But I was ready to move on. As soon as possible after the ceremony, I made an exit for the door, returning to Headquarters and Headquarters Company to pick up the last of my paperwork and sign out.

Later that afternoon, I flew back to El Paso. I was home, but things were different. Something seemed missing, and I felt that I wasn't where I was supposed to be. I missed the people who were in my WOCS class. We had become a team, and some us had made lifetime friends.

The next day, I reported to my unit and went back to work. I was given the choice of taking leave or staying with the unit until time to report to the Air Defense Artillery Warrant Officer Basic Course, where my technical training as a command and control systems integration expert would begin. I decided to stay at work.

From a female perspective, everything about my transition from enlisted Soldier to warrant officer had been a challenge. Some people said I had made it because of my gender. I realized later on that these were the people who had always wanted to make the same career transition, but never did. When I attended WOCS, I was in a class of 64 personnel. Sixty-one were males, and just three, including me, were females. It was challenging. There were times when I wanted to quit, but I didn't. I had counseled Soldiers under my supervision to never quit. They never quit on me, and I will never quit on them.

Since my graduation, WOCS has dropped some traditions that tended to make life "irritating" for candidates. Today, candidates can report to WOCS in appropriate civilian clothes as opposed to Class-As and can wear their hair in accordance with Army regulations that apply to all Soldiers. Candidates are no longer subjected to cadre-led inspections of personal areas. They no longer roll socks, T-shirts or underwear; they fold them. Candidates are even allowed, within standard operations procedures, to use cell phones. These modifications are part of a WOCS change of focus that emphasizes officer roles and responsibilities more and individual activities less. These changes are complemented by an increased emphasis on practical learning activities that provide leadership opportunities and better prepare warrant officers to operate in the contemporary operational environment.

I thought the Warrant Officer Candidate Course was a great course when I attended, and I am confident that it will be an even better experience for future ADA Soldiers willing to make the transition from ADA enlisted Soldier to ADA warrant officer.



WO1 Heather Anne Mosolovich recently graduated from the Air Defense Artillery Warrant Officer Basic Course, U.S. Army Air Defense Artillery School, Fort Bliss, Texas. Look for an article recounting the final phase of her transition from enlisted soldier to warrant officer in a future issue of Air Defense Artillery.

Warrant Officer Candidate School Transformation

The Warrant Officer Candidate School is No Longer Basic Training on Steroids

by CW4 Tom Green

The Army's only Warrant Officer Candidate School, (WOCS), located at Fort Rucker, Alabama, is going through the most significant transformation in its 50-year history. The reason for the transformation is to ensure that graduating warrant officers are better able to survive and operate while fighting the Global War on Terrorism on today's ever-changing battlefield. The school is changing, as it must, to remain relevant to the Army. This school is no longer, "Basic Training on Steroids" but a leadership school designed to imbue warrant office candidates with the skills necessary to become tomorrow's "technical leaders."

Some of the changes transforming warrant office candidate training are common sense changes. Candidates report in appropriate civilian clothes as opposed to Class-As. They adhere to Army standards for saluting and wear their hair in accordance with Army regulations. Candidates are no longer subjected to cadre-led inspections of personal areas. This is now a candidate leader function and is totally candidate-led. Candidates no longer roll socks, T-shirts or underwear; they fold them. There is no longer a command Inspection that must be passed prior to graduation. Cell phone usage is allowed in accordance with the Warrant Officer Candidate Standard Operating Procedures. These are only a few of the many positive ongoing



A cadre member pins an insignia on a newly commissioned warrant officer during a graduation ceremony at the U.S. Army Warrant Officer Candidate School, Fort Rucker, Alabama

decisions and actions. This understanding forces candidates to think three to five steps ahead and plan for the reactions to, and repercussions of, their decisions.

Our mission at WOCS is to provide the Army with the best new warrant officers possible. We not only intro-

The Warrant Officer Candidate Course Curriculum Grows More Relevant

Weekly Ruck Marches	Close-Quarters Combat Training
Room-Clearing Techniques	Combatives
Week-Long Field Leadership Exercise Conducted From a Forward Operating Base	Candidate-Led Warrior Tasks and Battle Drill Training
Tactical Operations Center Familiarization	Urban Orienteering

changes at WOCS.

However, WOCS is not getting easier; it is becoming more relevantly rigorous. WOCS is undergoing a complete evaluation for relevancy and change to support the overall Army mission. The table above shows some of the recent add-ons that have strengthened the academic and field-training portions of the WOCS curriculum.

WOCS will not teach candidates what to think but rather how to think strategically. Candidates must understand that, as officers, their decisions influence much more than the decisions they made as an NCO or civilian. Candidates must also understand the tertiary effects of their

duce the basic skills needed to think like an officer, but we also stress the absolute need for young warrant officers to be able to think on their feet, remaining flexible and adaptive to ever-changing environments. Candidates enter WOCS not knowing what to expect and leave WOCS as competent, confident, more self aware Warrant Officers.

The New Course

WOCS is developing two new courses, which cover the same material. One is a two-phase course consisting of (Phase I) a two-week distributed learning phase and

(Phase II) a four-week resident phase. We have designed this course for soldiers who are E-5 and above and have attended the Warrior Leader Course, formerly known as the Platoon Leadership Development Course.

Phase I consists of refresher courses aligned with the Warrior Leader Course that candidates complete at their duty station or home through their Army Knowledge Online accounts. After successful completion of Phase I, candidates will attend the resident Phase II portion of the course. Phase II consists of academic classes in leadership, "officership," ethics, history, communications and other topics relevant to today's contemporary operating environment. Candidates also receive one-on-one leadership counseling and mentorship from training, advising and counseling (TAC) officers. TAC officers assess candidate leadership skills and potential using a series of leadership positions, a five-day field leadership exercise, situational training exercises, leadership reaction courses, land navigation and urban orienteering exercises, "360-degree" leadership evaluations and peer evaluations.

The second course is a full six-week resident course for candidates who are inter-service transfers, soldiers in the grade of E-5 and below who have not attended the Warrior Leader Course or Platoon Leadership Development Course, or civilians entering the military and coming from Basic Combat Training.

The difference between the first and second courses is that distributed learning courses taught during the Phase I four-week course are taught, during the second course, in residency at WOCS. Candidates attending the six-week course have greater interface with cadre and are mentored more intensively to ensure they know the standards required to be successful as a Warrant Officer.

WOCS provides an environment that allows candidates to demonstrate and improve time management, task prioritization and leadership skills. WOCS looks at the whole soldier, striving to ensure their morals, values, ethics and character are above reproach. We seek to ensure candidates have the ability to make the "tough right decisions" as opposed to the "easy wrong decisions" when confronted with stress and little time to make critical decisions. We emphasize that candidates must use common sense and experience to make decisions based on the best, most factual information available and morally grounded in Army values.

WOCS is a tough and demanding course. The cadre is committed to adhering to high ethical, moral, physical fitness and academic standards. The cadre provides candidates a view of what "Right Looks Like" from a warrant officer's perspective. Cadre members are, many times, the first warrant officers candidates have ever interacted with. Cadre members of the 1st Warrant Officer Company and Warrant Officer Career Center are among the Army's best and brightest warrant officers, each an expert in their respective fields.

If you are considering becoming a warrant officer, you should go to the Warrant Officer Recruiting homepage (<http://www.usarec.army.mil/hq/warrant>) to see if you

meet the minimum qualifications set forth by your proponent branch and the Army. This website and your branch proponent office will assist you in preparing your packet for submission to become a warrant officer. ADA Soldiers interested in applying for WOCS should contact Personnel Proponent Division, Office, Chief of Air Defense Artillery, U.S. Army Air Defense Artillery School.

Once selected, candidates must visit the Warrant Officer Career Center homepage, <http://usawocc.army.mil/WOES/wocs.htm>, and become very familiar with the candidate school prior to arrival. The information contained in the links is valuable to know and understand prior to arriving at WOCS. You will find the WOC SOP, formerly known as the WOC Guide, on line at this site. Read and study this SOP prior to arrival and you will greatly increase your effectiveness and decrease your apprehension. You will also find a wealth of other resources that will help you prepare to become the next generation of Army Warrant Officers. Please check the AKO WOCS forums for specific answers to question you might have or call the Headquarters and Headquarters Company where you will in-process at (334) 255-1287 or DSN 558 -1287.

Opportunities continue to grow for warrant officers as we expand the Corps by approximately 30 percent and are fighting for incentives to fill our ranks. Warrant officers serve in not only technical positions but in many leadership positions such as platoon leaders, detachment and company commanders and trusted advisers to company commanders through the highest level senior leaders in the Army.

If you are looking for a challenge and want to serve your country as a leader and expert in your field, look no further. Becoming a warrant officer is your destiny. Please follow the guidance above and you will be on your way to becoming one of the "Quiet Professionals"

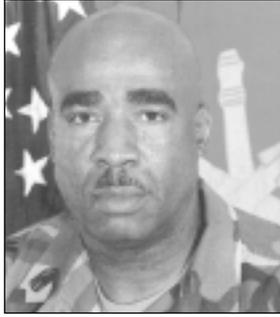


CW4 Tom Green, an ADA warrant officer, is commander of the 1st Warrant Officer Company, Warrant Officer Candidate School, Fort Rucker Alabama.

SCANNING

5-5 ADA Departs South Korea

In October 2005, the 5th Battalion, 5th Air Defense Artillery, returned to the United States from South Korea, where it had served as the 2nd Infantry Divisions short-range air defense battalion. In Korea, the battalion operated Avenger systems units. At Fort Lewis, Washington, the unit will field the Air Defense Artillery's new Surface Launched Advanced Medium-Range Air-to-Air Missile system. Delta Battery, 5-5 ADA, stayed behind and was re-flagged as Echo Battery, 1-43 ADA, 35th Air Defense Artillery Brigade. Combined with 1-43 ADA Patriot batteries, Delta Battery's Avengers and Sentinel radars make 1-43 ADA the first overseas air and missile defense composite battalion.



STRIPES

by CSM Stanley L. Davis

Does the Army personnel system stand in the way of Army Transformation? According to a recently published pamphlet titled "Transforming the Rewards for Military Service," the answer is "yes."

"Transforming the Rewards for Military Service" captures recruiting, retention, family support, military pay and compensation issues for all military services within the backdrop of the contemporary operational environment. The pamphlet's author, Cindy Williams, previously established her reputation as editor of the renowned publication *Filling the Ranks: Transforming the U.S. Military Personnel System*. Her book and pamphlet are important to ADA noncommissioned officers because they provide dynamic personnel management discussion which is currently helping to shape the debate on military personnel transformation.

One of the pamphlet's conclusions, which many young ADA Soldiers struggling to make monthly car payments and pay the rent on a one-bedroom apartment would agree with, is that "too much of the nation's spending for military personnel goes toward deferred benefits." Hence, I would like to address two of the study's most controversial recommendations: military retirement reform and military pay reform.

Noting that, in recent years, military services had shortages in about 30 percent of their enlisted military occupational specialties (MOSs) while they were overstaffed in 40 percent of the rest, "Transforming the Rewards for Military Services" blames these "deep and systemic" imbalances on two features of the military personnel and compensation system: the 20-year retirement system and the "one-size-fits-all" pay structure. Proposals to make fundamental changes to the military retirement system and military pay are sort of the "improvised explosive devices" of military personnel management and they get everyone's full attention. My purpose in writing this column is to frame these issues rather than advocate any specific courses of action.

Retirement System

Our present Army retirement system provides an immediate annuity for Soldiers who decide to retire after 20 years of service, but provides no benefits for those who leave after fewer than 20 years in the military. Consequently, it provides a strong incentive for Soldiers to stay in for 20 years, whether the Army needs them or not. Plus, it also provides an equally strong incentive for Soldiers to get out after 20 years; even if the Army desperately needs their services. In contrast, this system differs significantly with retirement plans in the civilian sector, where most employees are covered by retirement contribution schemes that vest within five years and can be carried from one employer to the next.

Williams concedes that "overturning the existing retirement system will not be easy," but suggests an alternative: "One way to protect a new system from repeal would be to keep the current system for members who prefer it, or those whom the services wish to keep for twenty years or more. By adding a voluntary defined-contribution plan, with a generous government matching contribution available only to those who depart before 20 years on a schedule preferred by the government, the nation could revamp the incentive structure to keep the right people for the right length of time, without harming the retirement prospects of members who prefer the existing system."

The Office of Personnel Management adopted a similar strategy for federal employees, including Defense Department civilians who worked at the U.S. Army Air Defense Artillery School in the mid-1980s. Federal employees with the requisite number of years of service were permitted to stay within the existing retirement plan, which offered them full pensions upon completing 30 years of service, when their age plus number of years of service totaled 80 years. Federal employees with fewer years of service and new employees were required to enroll in a retirement plan similar to those in the civilian sector.

Pay Scales

A Soldier's pay is determined by rank, length of service, family status and location; in essence, Soldiers of equal rank and equal time in service receive equal pay. Williams views this "lack of disparity" as a major, perhaps fatal, flaw. "The private sector offers far greater variability in cash pay, with employees in some occupations earning substantially more than those in others," she asserts. "The lack of variation in military pay can make it difficult for the services to reward individuals whose skills bring top dollar in the private sector or whose contributions inside the military are particularly crucial without also, at great expense, increasing the pay of all service members through across-the-board raises."

The Army offers recruiting and reenlistment bonuses designed to fill critically short MOSs. For example, recruits who enter MOS 14E, Patriot Missile System Enhanced Operator, receive bonuses of \$8,000 for a four-year commitment, \$12,000 for five years, and \$14,000 for six years. Those who sign up as for MOS 14T, Patriot

Launching Station Enhanced Operator receive \$3,000 for a two-year commitment; \$5,000 for three years, \$8,000 for four years, \$12,000 for five years, and \$14,000 for six years. In effect, Soldiers who receive bonuses upon enlistment or reenlistment into shortage MOSs make more than Soldiers of equal rank and lengths of service in MOSs for which bonuses are not offered. However, spread across all military services; bonuses account for less than four percent of total payroll expenditures. Those who favor pay reform consider cash bonuses as a symptom of, rather than a solution to, problems embedded within the military's pay and compensation system. Thus, they propose letting the job market determine pay differentials, regardless of rank, between MOSs.

To many, the notion that a Sergeant First Class assigned to a Patriot battery should earn more than a Sergeant First Class assigned to an Avenger battery, or vice versa, seems absurd; since all who wear the uniform are "Soldiers first" and MOS specialists second. However, the possibility of this happening is not far beyond the realm of reality. Citing recruiting shortfalls, some critics of the current military pay and compensation system argue this is the only way to save our nation's All-Volunteer Force.

Federal civilian employees who work for the Department of Defense, including those employed by the Air Defense Artillery School, are already experiencing fundamental changes in their pay and compensation system. Within the Department of Defense, a new National Security Personnel System is replacing the "General Schedule," which for decades provided periodic "step" pay increases to federal white-collar workers. This new system, scheduled to go into effect this year, will categorize white-collar civilians into four major career groups, place them into "pay bands," and use numerical scores to rate their job performance.

The recent switch from the General Schedule to the National Security Personnel System is generating considerable controversy among federal employees of the Air Defense Artillery branch, just as the switch to a different retirement system did more than two decades ago. Henceforth, any equivalent changes to the military pay and retirement systems seem certain to generate even greater controversy. *Parameters*, in its July 2005 review of "Filling the Ranks," warned of the dangers of applying rules of supply and demand that govern the civilian job market to military pay and compensation.

There are good reasons why major changes in the military personnel system are approached with caution. Unlike civilian personnel management systems, the military personnel system is ingrained in every aspect of the military profession, traditions, and culture. It serves as both the lubricant and the glue of the profession. It both encourages and facilitates the men and women of the U.S. military in accomplishing their missions and tasks while bonding them collectively in a selfless life calling. No one should ever approach changing this system with a cavalier attitude, because it affects the very fabric of the quality of our national military power—the human dimension. With that caveat, Cindy Williams and the 13 other authors who contributed to this book have done the military a good service. Under the rubric of change, they have compiled an in-depth assessment and critique of that range of benefits, compensation, structure, privileges, training, and rewards that constitute the current personnel management system.

As we are fighting the Global War on Terrorism, Defense Transformation is also redefining roles and missions and reshaping our fighting force. Can military pay and compensation transformation be far behind? "Transforming the Rewards for Military Service" is available online at http://web.mit.edu/ssp/Publications/working_papers/OccasionalPaper9-05.pdf. It provides an excellent "capsule" summary of the military's personnel management system and is an essential reading resource for NCOs who seek to understand the issues facing today's military personnel managers and how their resolutions may impact Soldiers in our charge.

Stanley L. Davis

Stanley L. Davis
CSM, USA

SCANNING

Tenth Interceptor Emplaced for the Ballistic Missile Defense System

The Ground-based Midcourse Defense (GMD) element of the Missile Defense Agency emplaced the eighth interceptor missile designed to intercept and destroy a long-range ballistic missile into its underground silo at Fort Greely, Alaska, on 18 December 2005. Two interceptors are emplaced at Vandenberg Air Force Base, Calif. This was the final interceptor emplacement planned for Fort Greely during 2005. Another interceptor missile will be emplaced in January 2006, followed by additional interceptors by the end of 2006.

The interceptors, which are crewed by ADA Soldiers, are part of an integrated system of ground-, sea- and space-based sensors, ground- and sea-based radars and an advanced command and control, battle management and communication system designed to detect and track a hostile ballistic missile, then launch and guide an interceptor to destroy the target warhead before it can reach its intended target in any of our 50 states. The system is continuing with an extensive "shakedown" of all components prior to attaining full-time operational status.

The Missile Defense Agency, U.S. Army Space and Missile Defense Command, U.S. Strategic Command and U.S. Northern Command are all involved in the "shakedown" process. In the interest of operational security, future interceptor emplacements will not be announced.

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 its 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 TIF or JPEG files.

Sending Your Photos to Air Defense Artillery

The best way to send you 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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