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Fires

Countering an Emerging Threat

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On the cover: Lance Cpl. Michael Farris, an Artillery cannoneer assigned to 1st Battalion, 12th Marine Regiment, A Battery, carries a round back to his gun to resupply before a fire mission in Pohakuloa Training Area, Hawaii. Members of 1st Battalion, 12th Marines are enhancing their skills of direct fire support in support of Operation Spartan Fury. Photo by Lance Cpl. Victor A. Mancilla, U.S. Marine Corps.

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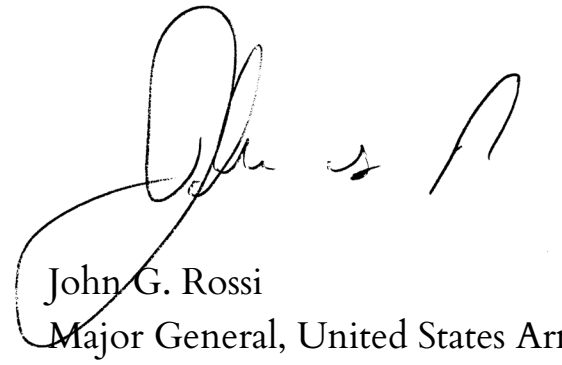


John G. Rossi
Major General, United States Army
Commanding General, Fort Sill, Oklahoma

Purpose

Originally founded as the Field Artillery Journal, Fires serves as a forum for the discussions of all Fires professionals, Active, Reserves and National Guard; disseminates professional knowledge about progress, development and best use in campaigns; cultivates a common understanding of the power, limitations and application of joint Fires, both lethal and nonlethal; fosters joint Fires interdependency among the armed services; and promotes the understanding of and interoperability between the branches, all of which contribute to the good of the Army, joint and combined forces, and our nation.

Proactive Fires

By Brig. Gen. William A. Turner,
Commandant, U.S. Army Field Artillery School

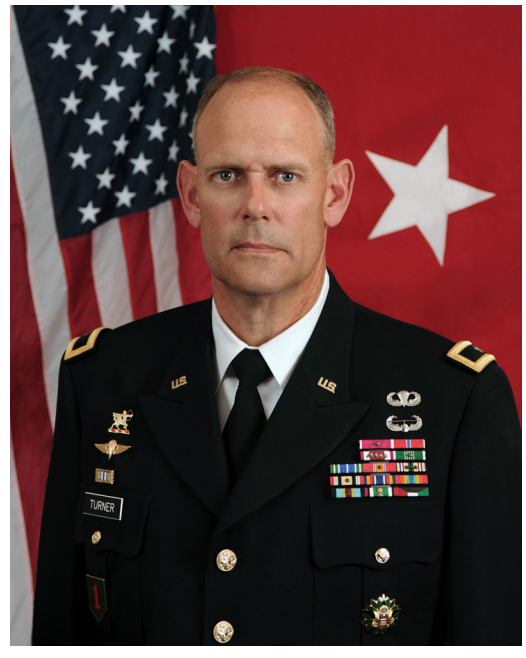
In this month's edition I want to focus on "Proactive Fires." I'll define Proactive Fires as actions taken within the artillery profession of arms to achieve battlefield dominance and overmatch. Proactive Fires requires mastery of the decide, detect, deliver and Assess (D3A) targeting methodology advanced by innovative and adaptive leaders who aggressively employ all resources available. Proactive Fires provides our maneuver forces uncontested freedom of movement to seize, exploit and retain the objective.

A method to achieve Proactive Fires is utilization of the rapidly expanding unmanned air frames within our formations to assist in our ability to D3A against the enemy's high payoff targets (HPTs). History is wrought with examples of technological advances that impact warfare.

Aircraft, since 1910, have provided field artillery formations the abilities to provide devastating Fires via reconnaissance, detection, observation of Fires and battle damage assessments.

With the downsizing of the Army, there is considerable concern we have reduced capability to mass indirect Fires. There are fewer cannons in the brigade combat team FA battalions, rocket battalions are now entirely in the active and National Guard field artillery brigades, along with all echelons above brigade cannon battalions in the Army National Guard.

However with our ability to accurately target, we can mitigate the reduction in indirect fire platforms with accurate Fires while simultaneously employing other types of effects, to include joint, coalition and non-lethal effects to achieve the maneuver commander's intent for Fires.



About the author.
Brigadier General William Turner is the 51st Chief of the Field Artillery and Commandant of the United States Field Artillery School. Turner is a 1986 graduate of the United States Military Academy and was commissioned as a Second Lieutenant of Field Artillery. He holds a Masters Degree in National Security and Strategic Studies from the National War College. Turner has been afforded many unique professional experiences and opportunities to include tours in the Federal Republic of Germany, the 1st Infantry Division, the 25th Infantry Division, 18th Fires Brigade, 1st Army, and the Pentagon.

We have intentionally set the target accuracy bar high for our fire supporters. Their mission for dynamic targets is to produce a CAT1: <6M target location error, at least 80 percent of the time. It is imperative that we, as both leaders and fire support subject matter experts, look across the Warfighting Functions to find innovative means to assist our fire supporters in delivering accurate target locations with expedited sensor-to-shooter links.

Dr. Boyd Dastrup, Field Artillery historian, produced an article chronicling the field artillery's quest to utilize aerial assets to proactively detect and destroy our enemies' warfighting capabilities.

I challenge all field artillerists to look at their means to utilize the Army's organic unmanned aerial systems capabilities (Raven/Shadow/Grey Eagle) to establish aerial observation as a means to accurately target and expedite mission processing through innovative sensor to shooter linkages. I encourage all of you to share your techniques, tactics and procedures (TTPs) and lessons learned with the entire force as we learn to use this rapidly expanding capability.

Today, we are regaining our proficiency through division artillery (DIVARTY) and by refocusing on specific field artillery training in support of the maneuver commander. Proactive Fires is a complex and graduate-level concept that artillerists across the force must learn and employ.

COIN operations allow us the time and space to relearn TTPs to fight an elusive enemy. However, to defeat a near-peer competitor it will require expert individual and crew efficiency and a complete understanding of proactive Fires. Anything less puts maneuver forces in grave danger and invites increased risks to our FA formations.

As a branch we need to challenge ourselves, challenge our professional understanding, and once again use every means to acquire and engage the enemy with all Fires to proactively engage the enemy; seize the initiative; set

our conditions; impose our will and win wars by ensuing freedom of movement for maneuver.

King of Battle!

Fires Strong!

Brigadier General William A. Turner

Innovation, technology keys to Army maintaining 'overmatch'

By J.D. Leipold, Army News Service

WASHINGTON — The U.S. Army needs to turn out innovation and technology faster than its enemies to maintain "overmatch," said Training and Doctrine Command's, or TRADOC's, deputy commanding general for futures.

"We really have to focus on the right priorities to develop the right capabilities… because we don't want any fair fights," said TRADOC's Lt. Gen. H.R. McMaster as he discussed the Army Operating Concept Sept. 10 at an Institute of Land Warfare breakfast. "We know that in combat a fair fight means barely winning … and barely winning is an ugly proposition.

In looking at future war, McMaster said the Army would have to innovate and think clearly about who the country would be up against. He said nation states, state actors as well as non-state and what he said were "so-called hybrid actors," are potential threats to national interests.

"We recognize that all these threats are essentially doing four things overall to contend with what they see as U.S. capabilities," he said. "There are two ways to fight the U.S. military … asymmetrically and stupid … and you want the enemy to pick stupid; but they're likely not to pick stupid, so we see our enemies evading; they see our overmatch capabilities; they evade capabilities with traditional counter-measures, dispersion, concealment, all intermingling with civilian populations and deception."

"They are disrupting what we see as our capabilities, especially our stand-off capabilities where we are able to identify the enemy from stand-off lanes and conduct precision strikes … and we see some of those capabilities in eastern Ukraine today," McMaster said.

He cited examples such as electronic warfare cyber

"We really have to focus on the right priorities to develop the right capabilities..."

Lt. Gen. H.R. McMaster, TRADOC Deputy Commander for Futures

skills and unmanned aircraft systems tied to area Fires and how those sorts of capabilities can challenge what has been a U.S. advantage in precision-strike capabilities. He said the enemy emulates U.S. capabilities, which show the ease of technology transfer to adversaries.

"Technology is probably the element of our differential advantage over future enemies … so we have to consider the technologies we need to make us more effective, but we also have to consider enemy countermeasures and technological capabilities they're developing," he said.

The differential advantage, he said, comes from combinations of well-trained Soldiers, cohesive teams and adaptive leaders with technology and this is why the Army can't focus on a couple of discreet technologies and say this is what is going to give us our advantage. "We have to develop a broad range of technological capabilities that can be used in combination to seize, retain and exploit the initiative over determined and capable enemies," he said.

The importance of the Army Operating Concept is that it's a starting point, not the answer to what the Army needs to know about future operations, said McMaster, adding the concept is meant to frame the problem of how to make sure the Army is capable of operating in sufficient scale, with duration and the right capabilities to accomplish future missions.

About the author.
J.D. Leipold has served as a photojournalist with Army News Service since 2006. Army News Service primarily covers the Secretary of the Army, the Chief of Staff of the Army, the Sergeant Major of the Army and other senior Army leadership at the Pentagon. He joined the Navy in 1976 and became a journalist. In his 10-years service, he attended the Defense Information School at Fort Benjamin Harrison, Ind., taking courses in print and broadcast journalism, photojournalism, editing and electronic news-gathering. He left active-duty in 1987 and also served as the Navy's civilian enterprise newspaper policy expert, ran the CHINFO Merit Awards for Journalism Excellence and several other programs at the Naval Media Center from 1988 until 2005.

Air, missile threats continue to evolve

Col. Clem Coward and Lt. Col. Bill Shavce

Soldiers with the 3rd Battalion, 2nd Air Defense Artillery Regiment talk after a routine inspection of a Patriot missile battery at a Turkish military base in Gaziantep, Turkey. U.S. and NATO Patriot missile batteries and personnel deployed to Turkey in support of NATO's commitment to defending Turkey's security during a period of regional instability. Photo by Master Sgt. Sean M. Worrell, U.S. Air Force.

The operational environment continues to challenge U.S. Army air and missile defense (AMD) forces. Ballistic and cruise missiles, large caliber rockets and unmanned aerial systems (UAS) technologies are becoming increasingly available to potential adversaries. Over the past 30 years, air threats transformed from primarily rotary- and fixed-wing aircraft to ballistic missiles. In the near future, there will likely be a further evolution towards UAS and cruise missiles. While their availability has increased, the cost of these systems has

decreased in recent years, making them attractive alternatives to manned aircraft according to the National Air and Space Intelligence Center. The joint force will continue to rely on AMD forces to counter such threats. Missiles, artillery and UAS also pose a significant challenge to the joint force's ability to enter an area of operations. AMD forces help to "keep the door open" for joint and coalition forces to gain access to potential operating environments. To meet these challenges, U.S. AMD forces must continue to expand integrated training and operations with partner nations in all combatant command areas of responsibility (AOR).

Portions of the United States Army Patriot forces have been overseas for 22 of the last 25 years. Today, on average, there are U.S. AMD forces in nine countries, across four combatant command AORs, with nearly half of the Army's Patriot batteries outside the continental U.S.

Terminal High-Altitude Air Defense (THAAD) force continues to grow even as batteries deploy to forward locations. The Army AMD force also supports deployments and forward stationing of Transportable Radar Surveillance-2 radars and joint tactical ground station elements. This year, the Army's 32nd Air and Missile Defense Command (AAMDC) will support more than 15 joint and multinational exercises, in four different combatant command AORs.

Adapting a quote from history, "The sun never sets on the 32nd AAMDC."

Previously, the benefits of maintaining a forward Patriot presence outweighed the costs in maintenance, personnel and modernization, making it the "go-to" force for different missions. Today, AMD remains the force of choice for combatant commanders, serving as critical theater enablers to reassure allies, ensure access to the AOR and deter potential adversaries. However, the AMD force is rapidly approaching an inflection point, with an increasing risk of breaking the U.S. AMD force. Equipment

About the authors.

Col. Clem Coward is the Chief, Strategic Initiatives Group for the Secretary of the Army. His previous assignments include the Deputy Commanding Officer of the 32d AAMDC and the Commander of the 11th ADA Brigade. He has served in a variety of Air Defense Artillery and Joint assignments in Germany and the United States and served in Operations Iraqi Freedom and New Dawn. Coward holds a Bachelor of Arts Degree from the University of North Carolina at Wilmington and Masters Degrees from the Naval and Army War Colleges.

Lt. Col. Bill Shavce is the Deputy G3 for the 32d AAMDC. His previous assignment was as the Deputy G3 for the Second Infantry Division. He has served in a variety of assignments in the United States and the Republic of Korea and served in Operations Iraqi Freedom and Enduring Freedom. Shavce holds a Bachelor of Science Degree from the United States Military Academy and a Master of Military Arts and Science from the School of Advanced Military Studies.

is likely to fail more frequently and continued forward presence can delay critical modernization efforts to keep pace with evolving threats. The force may begin to see adverse impacts on its personnel, especially in critical mid-career leadership positions, should personnel decide to leave the Army because of the unrelenting pace of operations.

Uncertainty in the global security environment is unlikely to lead to a reduction in the demand for AMD forces. However, ongoing theater security cooperation initiatives can help lessen the strain on U.S. Patriot forces and reduce the risk to the joint force, while setting the conditions to increase our AMD partners' capabilities.

The Evolving Threat

Air and missile threats continue to evolve. More than 20 countries now possess ballistic missile technology. Just as many countries could acquire cruise missile technology over the coming decade. Armed with conventional warheads or weapons of mass destruction, these systems could pose a significant threat to U.S. and partner nation forces. Potential adversaries continue to improve ballistic missile technology, increasing the accuracy and lethality of these weapons. Additionally, advancements in countermeasures will continue to challenge AMD forces.

The number of potential adversary ballistic and cruise missiles far exceeds the number of Patriot batteries and interceptors available to the joint force. This is, in essence, a new "missile gap," not unlike during the Cold War. A recent article by W.F. Bell argues that adversary missile capabilities have become a "game-changing revolution in military affairs" that will significantly alter the character of future conflict. U.S. AMD forces should prepare for this threat accordingly.

In addition to ballistic and cruise missiles, potential adversaries pursue UAS technology. The recent examples of drones flying near the White House underscore the

U.S. Marines assigned to 2nd Low Altitude Air Defense Battalion fire simulated surface to air missiles in support of Red Flag at Tonopah Test Range, Nev., July 23, 2015. Red Flag is an advanced aerial combat exercise to train U.S., NATO and other allied countries for air combat situations. Photo by Cpl. Derek L. Picklesimer, U.S. Marine Corps.

threat potential of these systems. UAS tested Israeli air defenses on several occasions in July and August 2014, forcing the Israelis to expend costly Patriot interceptors to counter the threat.

Manned aircraft still pose a threat to U.S. and allied forces. The April 2015 landing of a small gyrocopter at the U.S. Capitol illustrates the threat posed by relatively low technology systems. Additionally, the September 2014 Israeli engagement of a Syrian Sukhoi 24 fighter shows that conventional military aircraft are still relevant on today's battlefield.

Patriot batteries are larger, less maneuverable and considerably more expensive than the evolving theater missile and manned and unmanned aerial system threat. With a limited number of U.S. Army Patriot Batteries, AMD forces will increasingly rely on multilateral partnerships to counter these threats. AMD forces should continue theater security cooperation initiatives to maintain readiness against air and missile threats and to mitigate risks to forces deployed around the world.

AMD Theater Security Cooperation in the CENTCOM AOR

In 2013, General Raymond Odierno, then Army chief of staff, released the Army's five Strategic Priorities,

one of which is a “Globally Responsive and Regionally Engaged Army.” Within the “regionally engaged context,” he highlights that the Army will shape theaters with activities that foster trust and build relationships between the U.S. Army and regional partners. Activities include engagements with foreign militaries and combined training with partner countries. The 2014 Army Strategic Planning Guidance reiterates this strategic priority, identifying “Support to Security Cooperation” as an Army enabling role. In this role, the Army supports the broader Defense Department pillar of “Build[ing] Security Globally.”

The 2014 Army Operating Concept stresses the importance of partnerships with other nations’ security forces. These relationships can promote stability in different regions as described in the U.S. Army Training and Doctrine Command Pamphlet 525-3-1. Cooperation also supports the Army’s core competency of shaping the security environment, which can deter potential adversaries, while reassuring friends of American commitment to their security.

The 32nd AAMDC and its subordinate units, the 11th, 31st, 69th and 108th Air Defense Artillery brigades support theater security cooperation not only in the U.S. Central Command (USCENTCOM) AOR, but also around the globe. AMD partnership achieves several objectives. It helps to build partner AMD capacity and enhances interoperability between U.S. and partner AMD forces. Capacity building reinforces the technical and tactical proficiency of partner AMD forces, while interoperability deters potential regional adversaries from employing theater missile and unmanned aerial systems technologies to sow instability. Over time, increased AMD capacity and interoperability will lead to true integration of U.S. and partner nation AMD forces.

Within the USCENTCOM AOR, U.S. AMD forces have built relationships with members of the Gulf

Cooperation Council (GCC). In Kuwait, the U.S. Army has one of the longest established AMD partnerships in the region. Routine participation in exercises has established common tactics, techniques and procedures to respond to escalating threats. The U.S. and Kuwait established bilateral agreements to facilitate information and digital data sharing during operations.

Despite these efforts, U.S. and Kuwaiti AMD forces still need to continue work towards full integration. Some U.S. Patriot forces are in close proximity to Kuwaiti Patriot forces, but do not fight in a combined, integrated manner. Effectively, they are adjacent and interoperable, but not fully integrated. Operationally, AMD forces need to work to achieve better coordination and, over time, establish joint and combined kill chain procedures. This ensures that U.S. and Kuwaiti AMD forces can fight alongside each other.

Likewise, U.S. AMD forces have established partnerships with Bahraini and Qatari forces. As they work to build their AMD forces, U.S. Army AMD supports their efforts through advising on the establishment of their capability. As they grow their capability, these nations continue to support U.S. operations with critical security force enablers and other infrastructure.

A recent success story involves the United Arab Emirates (UAE) AMD forces. The Emiratis built a robust Patriot capability over a very short period, bringing several Patriot batteries into operation and becoming an effective AMD force. Recently, U.S. and Emirati forces demonstrated their ability to fight together with a combined live fire exercise, resulting in the successful engagement of two tactical ballistic missile and two air-breathing threat targets. This exercise also demonstrated the ability of U.S. and partner nation AMD forces to share a common air picture over a Link 16 network.

The 32nd AAMDC continues to build a strong partnership with Saudi AMD forces. Here, the focus is

on foundational AMD competencies, including training management, maintenance management and gunnery preparation.

The cornerstone for building and maintaining these relationships and successful partnerships was the formation of the Integrated Air and Missile Defense Center of Excellence in the UAE. The center of excellence provides a venue for combined training, defense design, crew training, exercises and leader development to promote interoperability and integration, increasing the effectiveness of GCC AMD forces. U.S. AMD forces routinely provide subject matter expertise in support of exercises and training at the center of excellence.

Within the USCENTCOM AOR, U.S. AMD forces work with their partners on a daily basis. This includes everything from basic combat skills training, such as first aid, communications and marksmanship, to larger exercises and senior leader engagements. This day-to-day cooperation builds trust between U.S. and our partner nation AMD forces. It also establishes the foundation for increased interoperability between all forces.

Additionally, the 32nd AAMDC hosted a Combined AMD Leader Development Forum at Fort Bliss, Texas, where all four U.S. Army AAMDCs and several coalition partners discussed best practices in training, operations and readiness across different combatant command AORs. The event culminated with a Patriot live fire exercise with crews from three different combatant command AORs firing.

The Future of AMD Partnership

The 32nd AAMDC proposes a three-pronged approach to full integration between U.S. and partner nation AMD forces. The first is the implementation of a seamless mission command network for AMD forces. The next step is in achieving efficiencies and reducing the costs of AMD operations. The final component is improved

offense-defense integration. These three components need a multilateral integrator-a Global AMD Enterprise to coordinate the efforts of all AMD partners.

Seamless mission command systems will integrate U.S. and partner nation AMD operations. In the next few years, the U.S. will begin fielding the Integrated Air and Missile Defense Battle Command System, or IBCS. IBCS allows the U.S. to attain networked mission command, transforming how we employ AMD capabilities and providing unprecedented levels of flexibility and adaptability. All AMD sensors, shooters and command and control systems will connect to one common fire control network, allowing AMD forces to employ the optimal weapon systems against different threats. It supports defense design with multiple weapon systems and sensors. Over time, expanding such a system to encompass all U.S. and partner AMD systems in a theater of operations will create seamless mission command, enabling operations in a fully integrated fashion.

To achieve this degree of integration, Army AMD forces will need to address some potential obstacles. The largest gap in improving integration is data sharing. While combined training and tactical discussions help develop tactical standard operating procedures, the U.S. should implement policies and procedures to facilitate digital data sharing. U.S. AMD forces must be able to share a common air picture with its AMD partners to enable joint and combined kill chain procedures. Acknowledging that there is a need to protect certain capabilities from unauthorized disclosure, there is also a need to explore means to integrate operations with partner forces. As of now, the U.S. operates primarily with bilateral agreements with partner forces. These bilateral agreements can impede the ability to share data between more than two nations. Multilateral data sharing agreements could facilitate AMD interoperability and support seamless mission command.

Multilateral tactical data sharing agreements will

likely be difficult to negotiate and implement in the near term. A possible solution would be to help create more opportunities for multilateral cooperation and exercises to help build cooperation throughout the coalition. The Air and Missile Defense Center of Excellence would likely serve a key role in creating such opportunities. Working towards multilateral cooperation and agreements should be an objective of any theater security cooperation campaign. A regional operations guide could codify these agreements, leading to integration in tactical war fighting.

Another challenge to full integration and seamless mission command is the differing communications capabilities between some partner nation AMD forces. Some partners are able to share data via a Link 16 network. Other partners do not have this capability, relying on older tactical digital information link networks with secure terminal equipment connections. These communications architectures sometimes limit U.S. AMD forces' ability to receive a single integrated air picture for the theater as they may only receive data from partner nations, not from the combined air operations center. A worthwhile objective would be the establishment of a theater-wide air picture that integrates all sensors from all nations in a manner that all AMD forces can receive.

Over the next few years, the 32nd AAMDC will continue to seek multilateral data sharing agreements and develop supporting communications architectures. This will likely require a concerted effort among U.S. forces, our partners and industry. U.S. and partner nation AMD forces will develop the tactics and procedures to increase interoperability and integration. Industry could assist with developing the technical solutions to integrate the air picture.

In addition to seamless mission command, there is a need to improve efficiencies and reduce the cost of AMD operations. They are expensive – the cost of a Patriot Interceptor is in the millions whereas some threat

technology is in the tens of thousands. A drone similar to the one that crashed on the White House lawn costs between $50 and $400 and is available for purchase online. Fully integrated AMD operations can spread the cost among several partners. Industry could also assist in creating other efficiencies to reduce costs. In the fiscally constrained environments that many Western nations find themselves, costs matters.

AMD forces could create efficiencies in other areas. With the U.S. and some of our partners often using the same AMD systems, U.S. and partner nation AMD forces should explore the possibility of increased parts sharing for maintenance. Common supply support activities (SSAs) at key locations in the region could make it easier to replace parts and reduce non-mission capable time. U.S. and partner nations would have access to these SSAs.

The third component to evolving future AMD capability is improved Offense-Defense Integration. In a scenario where an adversary launches a ballistic missile, American ground-based sensors could identify the point of origin, a seamless, integrated mission command system could then pass the target data to a partner nation fighter that engages and destroys the Transporter Erector Launcher before it can move to a hide site. Another partner nation Patriot Battery destroys the TBM in flight. This entire process may take 10-20 seconds. Better integration of offensive counter-air and defensive counter-air operations makes it difficult for our adversaries to sustain a ballistic missile fight. It allows AMD forces to seize and retain the initiative by destroying the threat's missile forces before launch.

With the inherently complex nature of multinational AMD, it will be difficult to integrate all the differing activities. A global enterprise, with a single enterprise integrator, could serve as the focal point for tying these activities together. A model for such an enterprise exists in the U.S. Army, where the Army Space and Missile Defense

Command serves as the Army AMD enterprise integrator, synchronizing activities between industry, the institutional training base and the operational AMD force. Expanding this Army model to a Joint Force AMD integrator would be a crucial first step towards the establishment of a global AMD integrator.

Conclusion

AMD partnership is critical to integrating U.S. and partner AMD forces across the globe. The demand for AMD forces is unlikely to decrease in the near term. Potential adversaries continue to invest in low cost, high payoff systems, such as ballistic and cruise missiles and UAS, to provide an asymmetric advantage over the U.S. The proliferation of ballistic missile technologies creates a new "Missile Gap" with which the U.S AMD forces must compete. To counter these evolving threats, U.S. AMD forces must look to integrated air and missile defenses with partner nations around the world. Fighting in an integrated manner will offset some of the advantages adversaries have gained with their missile forces while also deterring conflict.

In the near term, U.S. AMD forces will likely continue with theater security cooperation initiatives to support and maintain professional, competent partner nation AMD forces. Full integration would use seamless mission command systems, increasing the effectiveness and lethality of AMD forces, while deterring potential threats. Expanding bilateral agreements and negotiating multilateral agreements will enable full integration. Reducing the costs of AMD systems and operations allows the building of more robust forces. Integrating Offensive counter-air and defensive counter-air operations reduces the threat's ability to use its air and missile forces, effectively negating those capabilities. AMD security cooperation helps to close the gap between the evolving threat and the ability to keep pace with that threat.

References

Bell, W. F. (2014, September-October). Have Adversary Missiles Become a Revolution in Military Affairs. Air & Space Power Journal, 47-70.

Israel Defense Forces. (2014, November 17). The Patriot Missile: Aerial Defense Against Enemy Infiltrations. Retrieved May 16, 2015, from idfblog.com: https://www.idfblog.com/blog/2014/11/17/patriot-missile-aerial-defense-enemy-infiltrations/

National Air and Space Intelligence Center. (2013). Ballistic & Cruise Missile Threat. Wright-Patterson AFB, OH: NASIC Public Affairs Office.

Odierno, R. T. (2013, October 16). CSA Strategic Priorities. Retrieved November 18, 2014, from http://usarmy.vo.llnwd.net/e2/c/downloads/316390.pdf

Odierno, R. T., & McHugh, J. M. (2014). Army Strategic Planning Guidance: 2014. Washington: Headquarters, Department of the Army. Retrieved from http://www.defenseinnovationmarketplace.mil/resources/ASPG2014.pdf

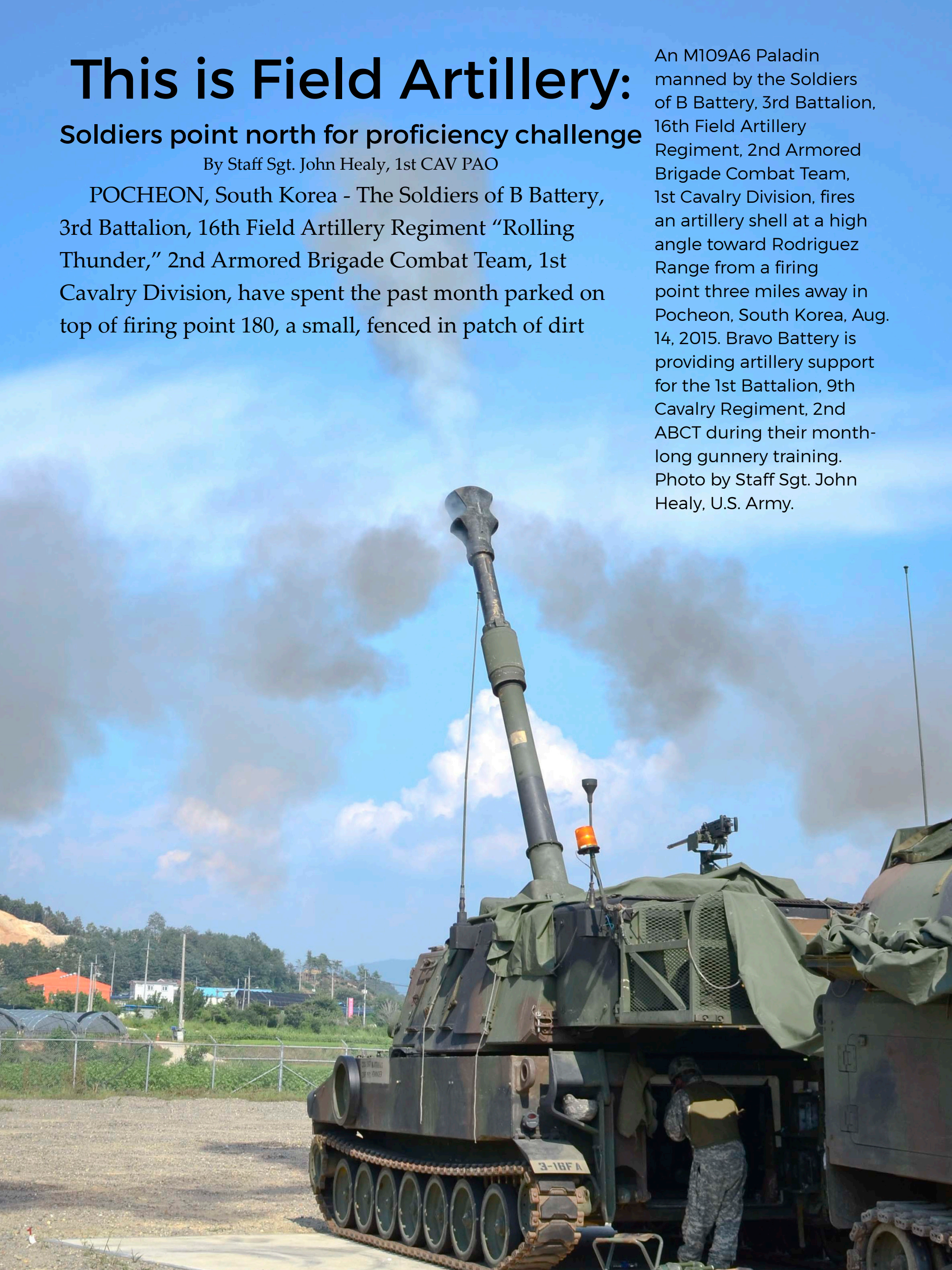
U.S. Army Training and Doctrine Command. (2014). TRADOC Pamphlet 525-3-1 The U.S. Army Operating Concept: Win in a Complex World 2020-2040. Fort Eustis, VA: Department of the Army, Headquarters U.S. Army Training and Doctrine Command. Retrieved from http://www.tradoc.army.mil/tpubs/pams/tp525-3-1.pdf

This is Field Artillery:

Soldiers point north for proficiency challenge

By Staff Sgt. John Healy, 1st CAV PAO

POCHEON, South Korea - The Soldiers of B Battery, 3rd Battalion, 16th Field Artillery Regiment "Rolling Thunder," 2nd Armored Brigade Combat Team, 1st Cavalry Division, have spent the past month parked on top of firing point 180, a small, fenced in patch of dirt



An M109A6 Paladin manned by the Soldiers of B Battery, 3rd Battalion, 16th Field Artillery Regiment, 2nd Armored Brigade Combat Team, 1st Cavalry Division, fires an artillery shell at a high angle toward Rodriguez Range from a firing point three miles away in Pocheon, South Korea, Aug. 14, 2015. Bravo Battery is providing artillery support for the 1st Battalion, 9th Cavalry Regiment, 2nd ABCT during their month-long gunnery training. Photo by Staff Sgt. John Healy, U.S. Army.

located directly beside Pocheon, a rural town in South Korea.

Three M109A6 Paladins, a massive self-propelled howitzer firing 155mm shells, sit on concrete pads stationed across the fire point. Their turrets point north towards Rodriguez Range, where the 1st Battalion, 9th Cavalry Regiment, 2nd ABCT, is completing their gunnery cycle on the peninsula. The cannon crews spend most of their time trying to stay out of the sun or picking at field rations.

Spc. Antoine Sheppard from Compton, Calif., currently serving with B Battery, 3rd Battalion, 16th Field Artillery Regiment, 2nd Armored Brigade Combat Team, 1st Cavalry Division, pulls the ripcord inside his teams M109A6 Paladin self propelled howitzer, firing a 155mm explosive artillery shell at a high angle toward Rodriguez Range, South Korea, from a firing point three miles away, Aug. 14, 2015. Photo by Staff Sgt. John Healy, U.S. Army.

Sgt. Bernard Poole, a cannon crew chief from Miami, Fla., half-listens to his Soldiers making jokes while radio chatter fills in the background. All conversation stops when they hear one phrase come in on the wire.

"Fire mission."

Poole doesn't have to speak; his Soldiers already know what to do. Each crew member has a specific task and purpose, their efforts synchronized to near perfection.

"It's the speed that makes artillery fire so deadly," said Poole. Within seconds, Poole and his team can annihilate a hillside from up to 15 miles away. It's also one of their favorite things to brag about.

"When they send the mission down, 'Fire when ready,' it's like a big competition for who can get the rounds out the fastest," said Sgt. Bernard Pool with B/3-16th FA.

The best crew in the 2nd ABCT, is in B Battery. Unfortunately, Sgt. Poole is not the leader of the best cannon crew. He is the leader of the second best.

"I guess that makes us the first place losers," Poole says with a laugh. "We're right behind them by about two seconds."

“It’s the speed that makes artillery fire so deadly”

“You can associate certain things that happen in the gun,” said Poole. “Like if the number one man can’t get the primer out of the belt fast enough, that’s two seconds. The time it’s taking to read back data to the driver, that’s two seconds. Waiting on the tube to travel from load to high angle is two seconds.”

Regardless of who has the fastest crew, Poole is still proud of what his Soldiers have accomplished.

“We’re pretty hot over here on this gun line,” said Poole. “Our crew is pretty tight.”

Poole’s reason for choosing field artillery was largely influenced by his time spent as a football coach before joining the Army.

“They told me it was a team sport, and I said, ‘That’s the job for me,’” said Poole. “It’s all fun competition. You push the rest of the crew to be better.”

Poole’s gunner is Spc. Leonard Garcia from Augusta, Texas, and the second most senior of the crew. His job is to verify targeting data and check the fuse on each round before it fires. Garcia also finds the most rewarding part of the job to be working with his fellow crewmembers.

“I’ve been shooting artillery my whole career,” said Garcia. “I love it; the camaraderie within the section, and how close we get. We have such a close bond.”

The crew’s loader, Spc. Antoine Sheppard from Compton, Calif., is the youngest. His job is to prepare the shells to fire. Each round weighs more than 95 lbs. and must be hand-loaded into the breech of the weapon.

Sheppard also gets to pull the ripcord that fires the Paladin, an experience he finds exhilarating.

“Once you actually get hands-on-rounds and you actually shoot, I don’t know, I get this chill going through my body,” said Sheppard. “My wife complains because it’s all I talk about now.”

An M109A6 Paladin manned by the Soldiers of B Battery, 3rd Battalion, 16th Field Artillery Regiment, 2nd Armored Brigade Combat Team, 1st Cavalry Division, fires an artillery shell at a high angle toward Rodriguez Range from a firing point three miles away in Pocheon, South Korea, Aug. 14, 2015. B Battery is providing artillery support for the 1st Battalion, 9th Cavalry Regiment, 2nd ABCT during their month-long gunnery training. (U.S. Army photo by Staff Sgt. John Healy, 2ABCT PAO, 1st Cav. Div.)

Sheppard thinks of the entire process as a sport. Before he even went to advanced individual training to learn his job, He was watching videos on YouTube of other crews conducting fire missions, challenging others to beat their time.

"Like you watch your favorite player, I'd watch fire missions," said Sheppard. "I'd think, I believe I can beat that section, or, I know my section can beat that section."

Poole doesn't record his crew drills. If anyone critiques his Soldiers he wants it to be him.

"I've been on every artillery piece," said Poole. "I know what right looks like."

Poole takes every available opportunity to train his Soldiers, even if that means running drills while their Paladins are parked in the motor pool.

"You get to the point where when you sleep, you wake up in the middle of the night and you think you're still working," said Sheppard. "You just practice it all day. It

becomes a natural habit."

Now that 1-9's gunnery cycle has concluded, the Soldiers of B Battery may return to their barracks on Camp Casey for a much-needed break, but not for long. Poole is already planning their next training exercise.

"After all," as Garcia said, "This is not garrison artillery. This is field artillery."

Paperwork bridges gap from necessity to capability

Article and photos by Marie Berberea, Fires Bulletin Editor

High Mobility Artillery Rocket System (HIMARS) units partner with the Air Force to fly into enemy territory, roll out and destroy the desired target and roll back into aircraft to quickly ascend into the skies. To do so effectively the HIMARS navigation system has to be ready to go as soon as the plane lands.

This type of loading mission is called a hot panel.

“A hot panel is hot; you’re ready to go, but a cold start means the launcher did not have that connection to the aircraft’s [Joint Precision Airdrop System (JPAS)] so it did not maintain its location. When it gets off the aircraft it doesn’t know where it’s at so you have to reinitialize the whole entire [Position Navigation Unit (PNU)],” said 1st Lt. David Williams, 3-321st FAR assistant S3.

Soldiers in 3rd Battalion, 321st Field Artillery Regiment turned in their M777s and switched to HIMARS a year ago. They began training on the system immediately and

About the author.
Marie Berberea is currently the editor of the Fires Bulletin. She was a staff writer for the award winning Cannoneer newspaper on Fort Sill, Okla., for six years. She has numerous awards including the Army Keith L. Ware award for the best “Picture Page” category in 2012.

found they weren't able to practice hot panels on C-130J Super Hercules planes.

"By making our request known we identified a vacuum in capabilities between the Air Force and HIMARS units," said Williams.

The reason for the disparity was because the Army lacked a memorandum of agreement with the Air Force after a software update to the launcher's PNU.

"The Air Force Air Mobility Command came back to us around the first of the year and said because of the software updates they needed to conduct testing at Air Mobility Command (AMC) to make sure it didn't interfere with any of the onboard systems for the C-130," said Williams.

The testing was done through a slew of coordinating offices and Williams said Air Force Master Sgt. Kenneth Olson, AMC at Scott Air Force Base, was integral to making the approval happen.

AMC approved the modification proposal Sept. 23 for HIMARS airlift certification on a C-130J.

"It took some time. The engineers had to do their due diligence. Thankfully, they got it done and informed us last week that we could do it."

"It is a victory for us and it's really a victory for the HIMARS community," said Capt. Jonathan Hicks, A Battery, 18th Field Artillery Brigade.

Hicks said the modification approval also means more flexibility on the battlefield.

"Artillery is all-weather systems. We can shoot in rain, snow, sleet and we can do it accurately. Sometimes, especially when there's weather conditions out there, the Air Force can't fly and drop bombs because they can't see what they're looking at, so that's a capability HIMARS has that the Air Force doesn't always have," said Hicks.

The field artillery has precision munitions with the Guided Multiple Launch Rocket Systems and Army

Tactical Missile System which Hicks said “are comparable to the bombs the Air Force drops.”

But, he added the use of Air Force C-17s and C-130s make those field artillery munitions go a lot farther in their attacks.

“HIMARS have a limited range. With the hot panel it extends our range by getting us forward into field landing strips. We can pull off, we can shoot, and then we can pull back on the aircraft and fly away,” said Hicks.

The Five Requirements for Accurate Fires: accurate firing unit location

“You have to know where you are in order to be able to hit what you want to hit,” said Williams.

Soldiers in 3-321st had done six hot panel training missions on C-17s before they requested the use of a C-130. Williams submitted the request as the air movement officer for the battalion.

“If you’re not doing any kind of airborne operations you can fit three HIMARS launchers on a C-17

comfortably. A C-130 is much smaller. It's a tight fit," said Williams.

It takes longer to load and offload the launcher, but Hicks said having the choice of aircraft creates wider options for fielding HIMARS.

"We have a great capability for the C-17 as well, but it's restricted to the size of the airfield it can land at. The C-130 can land in a much smaller, more austere environment, and then take off in that environment," said Hicks.

Williams said the modification approval is great news for both services because it allows both "to be a little more efficient on how it apportions its aircraft for different missions. Now we don't need an entire C-17 to transport a HIMARS for a hot panel raid. It lets them commit that C-17 to perhaps other missions which would require that much cargo space."

Air defense capabilities unified under new battle system

By David Burge, El Paso Times

FORT BLISS , Texas — A Patriot battery is shaping the future of air defense with a special test mission.

Soldiers from A Battery, 1st Battalion, 43rd Air Defense Artillery Regiment, 11th Air Defense Artillery Brigade, have been in the Fort Bliss, Texas training area since June and are testing the Integrated Air and Missile Defense Battle Command System.

Spc. Kevin Johnson, A Battery identification operator, said the mission is a "huge stepping stone for Patriot."

"It allows for the integration of such systems that would normally never be seen together, like the Sentinel and Patriot," Johnson said. "It allows for the integration of different air defense capabilities in one unified bundle."

Capt. Andre Clayburn, A Battery commander, said the long-term goal is to be able to add other air defense capabilities like the Terminal High Altitude Area Defense system, or THAAD, and weapons capabilities developed by the sister services.

"The mission is to verify that this system of systems can do what we need it to do to fight down range," Clayburn said. "Right now, the way we fight, all the pieces are controlled separately. What this allows us to do is share the picture, get a common picture of what is going on in the sky."

He said the testing, which is scheduled to last until May 2016, dovetails nicely with the current generation of Soldiers who are coming into the Army.

"This generation is computer savvy; they are software savvy. They are able to take that knowledge they have coming into the Army and apply it to the system. They are picking it up really quickly and are very comfortable with it."

About the author.
David Burge covers Fort Bliss and the Army for the El Paso Times. He has served in this role since May 2011. During a 30-year journalism career, he has worked at newspapers in California, New Mexico and now Texas. Throughout his career, he has also covered sports, government, police, living or lifestyles, business and a host of other topics. He is passionate about covering the Army and telling soldiers' stories. He has been to the National Training Center twice at Fort Irwin, Calif., and has covered numerous other field exercises including the division-level Iron Focus at Fort Bliss three times. He is planning to go to Joint Readiness Training Center at Fort Polk, La., this January. He considers covering the Army the best assignment of his career.

Part of the process is to get feedback from Soldiers and make improvements to how this new capability will be used.

First Lt. Kristina Martens, A Battery trainer and future operations officer, said it's exciting and rewarding to be taking part in a "groundbreaking mission that will change the way air defense fights."

"The Soldiers are the ones who are going through each step, each crew drill and fighting with it and red-lining it and saying, 'This doesn't work. It makes more sense to do it this way.'"

A Battery, or the "Assassins," have joined their 80 Soldiers with a detachment of approximately 30 others in 3rd Battalion, 6th Air Defense Artillery Regiment, which is headquartered at Fort Sill, Okla. The Soldiers from Fort Sill are currently residing at White Sands Missile Range, N.M.

Soldiers from this task force are in the field doing their test mission every week, but get to go home at night. Later, however, a three- to four-week field exercise is scheduled in which they will do 24/7 operations. A culminating live-fire exercise is also scheduled.

Clayburn said this system will also give the Army more flexibility on the battlefield.

Currently when the Patriot system is required for an overseas deployment, an entire battalion of about 500 Soldiers is necessary. The new system would allow air defenders to deploy in different size units more tailored to a particular mission or threat.

"This is an exciting time for us," said 2nd Lt. Sofia Robinson, A Battery fire control platoon leader. "We are making history. We are revolutionizing air defense and the way we fight. This is really a cool thing. We have a lot of new Soldiers and for them to come in and have such a significant impact at such an early stage of their career is a big deal."

Cpl. Chris Upshaw is training to become a weapons control operator. He said the Assassins are "setting the

standard" on how this new system will be used by the Army.

"The biggest thing, each process has to be repeatable," Upshaw said. "If we do it today, we should be able to do it tomorrow and the next day without having to revamp everything."

First Lt. Chris Kelley, A Battery operations officer, said while they are influencing the future of air defense, their mission will have a wider impact on the entire Army.

"That means that Soldiers who are infantry and are in the bunkers can sleep easier at night because we have a better capability of defending them," Kelley said.

"When it becomes part of the Army in the future, we can say A Battery made that happen," said Sgt. Chelsea Glover, Headquarters Platoon noncommissioned officer.

Spc. John Loftis, with E Troop, 1st Battalion, 230th Air Cavalry Squadron, 10th Mountain Division, Tennessee Army National Guard, prepares an OH-58D helicopter for flight. The OH-58D is used for observation, utility and direct support. Photo by Senior Airman Kamaile O. Chan, U.S. Air Force.

Aerial observation gives ‘new eyes’ to target acquisition

By Dr. Boyd Dastrup, U.S. Army Field Artillery Historian

Before World War I, American Field Artillerymen employed ground observation as their primary method of target acquisition which only gave them observation capabilities to the visible horizon and were examining the possibilities of employing balloons, dirigibles, and aircraft for aerial observation to see on the other side of the hill or behind enemy lines.

Even though aviation was in its infancy and untested in combat, a number of officers eagerly sought to exploit it for acquiring targets. As early as 1910, the publication of the War Department’s Field Service Regulations (1910) specified the formation of an aerial company in each corps-size unit upon mobilization, but left the mission open. Four years later, the new edition of the Field Service

Regulations (1914) proclaimed strategic reconnaissance, tactical reconnaissance and Field Artillery observation as the fundamental missions of aviation and implied the use of armed aircraft to protect friendly observation aviation as a fourth mission. To this end, the First Aero Squadron arrived at Fort Sill July 28, 1915 to conduct experiments in aerial observation of artillery fire.

In an article published in the Field Artillery Journal during the first months of 1916, Maj. William S. McNair, a Field Artilleryman who later earned the rank of major general, enthusiastically endorsed aerial observation and aviation and focused his attention on the ease of adjusting fire onto targets employing terrestrial or aerial observers.

"If a battery [or any other enemy position for that matter] can be brought … under the observation of an observer provided with a means of communicating his observations to the adjusting battery … the target will be in great danger of annihilation," he wrote.

Continuing with the drive to make aerial observation a reality, in 1917 the Air Service, then part of the Signal Corps, constructed an airdrome south of Fort Sill and called it Henry Post Army Airfield after Lt. Henry B. Post who had been killed in an airplane accident near San Diego, Calif., in 1914 in an attempt to establish an altitude record. Subsequently, the War Department sent the 3rd Aero Squadron and opened the School for Aerial Artillery Observers in the fall of 1917 and later the Air Service School in August of 1918 to train Field Artillery aerial observers.

Combat action early in the war attested to the optimism and conclusions about aerial observation and target acquisition. Even though a balloon or a dirigible provided observers with an unprecedented view of the battlefield, aircraft during the war spotted Field Artillery positions and other targets for the first time from angles never considered possible before.

About the author.
Dr. Boyd Dastrup is the historian at the U.S. Army Field Artillery School at Fort Sill, Okla. He holds a Doctor of Philosophy (PhD), Military History from Kansas State University and a Master's degree in History from Utah State University. He has worked as the historian for the U.S. Army for over 31 years and he researches, writes, publishes and teaches military history for the U.S. Army Field Artillery School. He has published "King of Battle," "Modernizing the King of Battle," "Cedat Fortunis Peritis," and numerous articles and other books.

Balloons and dirigibles generally hovered high in the air behind friendly lines; were tethered to the ground; had limited mobility; and had difficulties spotting shell bursts from such distances. Aircraft actually ventured over enemy territory to give commanders the ability to attack deep targets that previously had been unseen and invulnerable to enemy action; to exploit long-range Field Artillery; and to spot shell bursts more easily.

Even before World War I had ended, Field Artillery commanders confronted aviators over the quality of aerial observation. Insisting the Air Service was more concerned with making aces than furnishing responsive aerial observation, Maj. Gen. Ernest Hinds, American Expeditionary Force chief of artillery, wanted aviators to make aerial observation a higher priority.

The inability to rectify the problem led to reforms after the war. As a part of a larger War Department effort to examine recent military operations and to glean lessons learned, Hinds assembled a board of officers in December 1918 to study the experience gained by Field Artillery units during the war. Under the direction of Brig. Gen. Andrew Hero, Jr., the Hero Board met from December of 1918 through March of 1919.

According to the board, aerial observation offered extensive capabilities for locating deeply defiladed targets and adjusting fire on them. However, it failed to fulfill the needs of the Field Artillery Branch. Aircraft assigned to furnish Field Artillery observation missions flew from airfields in the rear up to the front where they contacted division artillery by radio. Upon completion of a mission, partially trained observers and pilots flew back to their airfields to await another assignment. Given this system of aerial observation which provided positive results in isolated cases, Field Artillerymen never met and knew the observers and pilots and lacked any control over them because they belonged to the Air Service. Also, shortages of aircraft and competition from other pressing missions

prevented Field Artillery units from getting timely air observation because aircraft were being diverted from Field Artillery missions to higher priority missions.

In view of the problems with aerial observation that persisted throughout the war and in agreement with the AEF's Superior Board and the Infantry Board that were meeting at the same time, the Hero Board outlined a solution that contrasted remarkably with the remedy proposed by the Chief of Artillery of the AEF. The board advised:

That an observation squadron be permanently assigned as a part of each combat division and that the aerial artillery observers … be officers of artillery trained as observers and members of the unit for which they are adjusting. … For observation and adjustment of artillery fire, the necessary aeroplanes should be under the direct orders of the artillery brigade commander and should be trained with the brigade.

The Hero Board urged making aerial observation organic to the division. This arrangement would give the division commander the ability to allocate critical and often limited aerial observation resources as he saw fit for target acquisition, adjustment of Field Artillery fire, reconnaissance and liaison. It also removed command and control from the aviators who often had a conflicting agenda with ground forces because they did not understand the Field Artillery's nor the Infantry's requirements.

Late in 1918, an anonymous contributor to the Hero Board wrote, "All aerial observers and the entire FRS [Flash Ranging Service] and SRS [Sound Ranging Service] must be composed of artillery personnel and must be absolutely under the control of the artillery. We shall never get successful results by the methods that have been pursued in this war."

Another contributor to the study, Brig. Gen. Adrian S. Fleming, 158th Field Artillery Brigade and School of Fire

for Field Artillery commandant in 1917-1918, advised, "The only solution I see is to assign certain aeroplanes and balloons to the artillery for the purpose of observing and permit them to do no other work."

Like the anonymous contributor, Fleming championed organic Field Artillery air observation. It would ensure responsive and aggressive target acquisition because the aircraft and aerial observers would be under the command of Field Artillery officers and could not be diverted to other missions without permission.

New Field Artillery technology that was appearing in the 1920s made organic Field Artillery air observation even more critical for effective target acquisition and adjustment of artillery fire. First Lt. William B. Leitch, Field Artillery School student, wrote in 1925:

With constant improvements in our ordnance and munitions, the Field Artillery is able to reach out further and further into enemy territory. Because of this increase in the range of our weapons and of our natural desire to see the other side of the hill, the need for more and better observation becomes apparent. Few [ground] observation posts approach the ideal. Good ones are very often hard to find. Frequently the best available are useless for the full accomplishment of the mission of Field Artillery. It is such a situation as this last that has caused us to turn to the airplane as an auxiliary means of observation. … The Field Artillery has simply acquired another eye.

Besides visualizing the importance of aerial observation, Leitch advocated using Field Artillerymen as aerial observers because they understood Field Artillery requirements.

The range of field guns of the early 1930s forced the enemy to locate its position farther away and to camouflage them more extensively for protection and prompted Field Artillerymen to intensify their efforts to obtain organic aerial observation. To find and hit such deeply defiladed targets required aviators and Field

Artillerymen to cooperate more than they had previously done because terrestrial observers could only see to the visible horizon and could not see as far as the friendly guns could shoot.

In the fall of 1931, Gen. Charles P. Summerall, Field Artilleryman and former Chief of Staff of the Army (1926-1930), composed an article entitled "Organization, Armament and Employment of Field Artillery" in the Field Artillery Journal. In the article he explained the requirement for organic aviation for the division but never advocated organic aerial observation for the Field Artillery. Four years later, Maj. Gen. Harry G. Bishop, Chief of Field Artillery (1934), condemned the policy that prohibited Field Artillery officers from "taking to the air and commanding their fire units directly." Such a practice of aerial observation would not stand the test of war, according to Bishop, and it should be replaced by Field Artillerymen serving as observers and organic Field Artillery observation aviation.

Later the Chief of Staff of the Army Gen. Malin Craig (1935-1939), expressed his dissatisfaction with existing aerial observation practices and the small number of observation aircraft to Maj. Gen. Stanley D. Embick, Deputy Chief of Staff (1936-1938), in his effort to ensure the availability of aerial observation to support the ground forces. In a letter to Embick in June of 1938, he complained:

I suppose there is no doubt about the value of controlling fire from the air. This requires rapid and accurate transmission of information from the Artillery Observer to the firing unit so that changes can be made instantly.

With this in mind, Craig directed Embick to ensure Maj. Gen. Oscar Westover, Chief of the Air Corps (1935-1938), provided the appropriate aircraft for Field Artillery aerial observation. When Westover failed to accomplish the directed assignment, Maj. Gen. Robert M. Danford, Chief

of Field Artillery (1938-1942), increased his pressure to improve Field Artillery aerial observation in 1939.

This pressure continued unabated as the Field Artillery agitated for better air observation and as the debate intensified over the proper use of airpower.

The Air-Ground-Procedure Board, convened by Brig. Gen. Augustine McIntyre, Field Artillery School commandant (June 1936-July 1940), concluded in May 1940 that Field Artillery should have its own observation aircraft with pilots and mechanics who were Field Artillerymen. Equally important, the board urged creating organic Field Artillery observation aviation and organizing a school for air observers at Fort Sill.

Col. Fred C. Wallace, Executive to the Chief of Field Artillery, wrote Maj. Gen. Emory S. Adams, Adjutant General of the Army (1938-1942), in July of 1940 at the direction of Danford about the Field Artillery's interest in an airplane for use in observation. Aerial observation was crucial because ground observers could be pushed forward with infantry or cavalry, but they could not see beyond the visible horizon. In the defiladed areas in the rear of the hostile lines, targets, such as troop concentrations, Field Artillery batteries, and headquarters, would present a threat to front line troops.

Continuing along the same line, the colonel noted the requirement for each Field Artillery battalion to have at least one aircraft ready for use or immediately available at all times. "One flight of not less than seven aircraft with pilots and maintenance crews should be an organic part of the equipment and personnel of each artillery brigade headquarters (square division and corps artillery) or regimental headquarters (triangular or armored division)," Wallace outlined.

The general staff resisted proposals for organic Field Artillery air observation during the rest of 1940 and into early 1941 even though the Germans were having success with it and even though the British were

seriously considering implementing it. In response to Danford's repeated requests for organic Field Artillery observation aviation, Adams explained in February of 1941 that maintaining specialized arms and organizing them into units was the most economical on personnel, material and operating facilities. Before any changes to Army organization would be made, the Field Artillery had the burden of proving the current organization to be unsatisfactory and unable to provide adequate support.

Shortly afterwards, the Field Artillery School convened a committee under Col. P.M. Hanson in May of 1941 to consider the rationale for organic observation aviation once again. The committee called organic observation aviation the best means of meeting the Field Artillery's aerial observation requirements.

To the committee, the increased mobility of the combat forces in recent years demanded organic Field Artillery air observation. Such observation would give the Field Artillery the ability to track a mobile enemy more easily over a greater distance and detect more targets for massed indirect fire than ground observation, sound ranging or flash ranging.

Supporters of organic air observation for Field Artillery, such as Hanson's group, and their opponents agreed on one major issue, but disagreed on another. To accomplish its mission with effectiveness and speed under conditions of modern warfare, Field Artillery units required aerial observation to take advantage of long-range weapons. No one really challenged that. The debate, however, raged over ownership.

The Field Artillery strongly wanted ownership because it feared a repetition of its World War I experience where Field Artillery units had inadequate air observation support from the air service, and this concern was justified. From the Field Artillery's perspective, this reinforced the existing anxiety of being dependent upon another arm for aerial observation.

Air observation for Field Artillery missions could easily be superseded by others given the limited number of aircraft available; and the Air Corps's preoccupation with strategic bombardment and pursuit aircraft certainly reinforced the concern.

Prompted by the dissatisfaction expressed by the Field Artillery School, the Office of the Chief of Field Artillery, and other Field Artillerymen, Aeronca, Piper, and Taylor aircraft manufacturers offered their light aircraft complete with pilots to senior commanders participating in the Louisiana army maneuvers of 1941 for testing in Field Artillery observation and liaison roles. Maj. Gen. Ennis P. Swift, 1st Cavalry Division commanding general, dubbed the light aircraft "Grasshoppers" because they hopped down the makeshift runways like grasshoppers. During the maneuvers, the aircraft flew more than 400,000 miles, completed more than 3,000 missions without losing one plane, and demonstrated the ability to conduct air observation, courier and reconnaissance missions.

Although the light aircraft proved their worth, Field Artillery officers who participated in the Louisiana maneuvers of 1941 still expressed their dissatisfaction with existing air observation practices and organization. Because air observation belonged to the aviators, they never knew when it would be available. Aviators disrupted observation by diverting aircraft to other missions at the last minute or by ignoring Field Artillery requirements. Moreover, there were never enough airplanes for Field Artillery missions.

Danford came away impressed after visiting the artillery school in England in the summer of 1941. There they were teaching the use of light aircraft for organic air observation. He renewed his bid for this type of aviation Oct. 8, 1941 after his observation of the erratic Louisiana Maneuvers in 1941, coupled with the fire direction center calling for the exploitation of organic Field Artillery. His original request in 1940 met with intransigence by the War

Department who had opposed decentralizing aviation and strongly championed strategic bombardment at the expense of other missions.

In the pointed correspondence of Oct. 8, 1941 Danford outlined his solution. He wanted at least seven airplanes with pilots and maintenance crews to be authorized as an organic part of each unit in Field Artillery, infantry, motorized, armored, and cavalry division and corps artillery brigade. Equally important, he desired to organize organic Field Artillery aviation immediately to test the concept.

Danford continued lobbying intensely for organic Field Artillery aviation with strong support from the Field Artillery School; Field Artillerymen as a whole; and from Henry Stimson, Secretary of War, who had been a Field Artillery regimental commander in the Great War; and John J. McCloy, Assistant Secretary of War.

He made another formal proposal Dec. 5, 1941 to the War Department to test such aviation. After receiving permission to test organic aerial observation, Danford issued a directive Dec. 23, 1941 to the Field Artillery School to test the concept.

After the pilots had undergone six weeks of training early in 1942 under Lt. Col. William W. Ford, Field Artillery School Department of Air Training director, field trials of organic Field Artillery observation followed as debates over the merits continued in the War Department.

The trials produced positive results during actual field maneuvers at Fort Bragg, N.C., and Camp Blanding, Fla., in March and April of 1942. Participants enthusiastically supported organic Field Artillery air observation. A board of officers convened to pass judgment and found it to be essential for effective Field Artillery operations.

Subsequently a War Department directive established organic Field Artillery observation aviation to supplement, but not replace the Army Air Force's responsibility for aerial adjustment of Field Artillery fire from high-

performance aircraft in its observation squadrons June 6, 1942.

The department directed a team of two liaison airplanes, with two pilots and a mechanic organic to each light and medium Field Artillery battalion, and two teams in each Field Artillery brigade headquarters and headquarters battery and division artillery headquarters and headquarters battery to satisfy. Over the next two decades following the war, the Field Artillery employed fixed-wing and rotary-wing aircraft to conduct aerial observation missions in the Korean and Vietnam Wars.

Although the Field Artillery School never seriously questioned the demise of organic Field Artillery air observation in 1979-1980, with the creation of the new aviation organizations in the corps and division, it challenged fielding priorities of the OH-58D.

Maj. Mark Ison, Directorate of Training and Doctrine Program Management and New Systems Division chief as well as a Field Artilleryman and aviator, recognized the helicopter's potential for Field Artillery use and enrolled the support of the school's assistant commandant, Brig. Gen. Thomas J.P. Jones, in 1983-1984 to boost the Field Artillery mission to a higher position on the list of priorities.

From the school's perspective, supplying and using the aircraft primarily in a Field Artillery role made more sense than employing it to support air cavalry or attack helicopters because it could obtain a maximum effect against an enemy with an economy of force. Rather than using a team of costly AH-64s and OH-58Ds to locate and destroy enemy armor with laser-guided munitions, one OH-58D in a Field Artillery role could coordinate enough indirect fire on the same target with the same effectiveness at far less expense by tying up fewer men and less equipment.

In addition, using a single OH-58D in a Field Artillery role afforded a better chance of exploiting the element of

surprise against an enemy than a team of aeroscouts and attack helicopters would.

Tests of the OH-58D in 1984-1985 and the lack of a compelling argument from the Field Artillery School, however, prompted the Army to restructure fielding priorities. Ironically, the tests showed the helicopter was satisfactory in its Field Artillery role. In view of this, the Army revamped its priorities for the helicopter. It made the Field Artillery mission the top priority and planned to give the OH-58D to Field Artillery units before attack helicopter and air cavalry units received their aircraft.

Regardless of fielding priorities, the Field Artillery School and a subordinate organization of TRADOC, the U.S. Army Combined Arms Center at Fort Leavenworth, Kan., clearly understood the OH- 58D's potential. In a 1986 white paper, the school wrote the combination of aerial fire support observer and the OH-58D would enhance fire support significantly and magnify the total force's ability to execute Air-Land Battle doctrine.

As the U.S. Army Combined Arms Center explained in May 1987, the combination of the aerial observer and the OH-58D "has the potential to significantly enhance fire support for the tactical commander." Ultimately, the OH-58D would render timely and accurate observed fire for conventional and semi-smart munitions for the deep, main, and rear areas of combat operations; would provide real-time information for targeting and intelligence to the division commander; would supply fire support coordination for attack helicopter battalions; and would furnish fire support coordination across the spectrum of conflict.

Over the next several years, further testing, operations, budget cuts, and the decision to arm all OH-58Ds and reconfigure some as multi-purpose light helicopters prompted the Army to rearrange the helicopter's mission priorities. In 1988 budget cuts forced the Army to reduce its purchase of OH-58Ds to 477. When budget cuts in

January 1989 reduced the procurement to 207 aircraft, the need to review fielding priorities definitely arose.

In the face of fewer aircraft, the Army re-examined its distribution plan. In June of 1989 the Army directed TRADOC to develop an aircraft distribution plan and to consider the OH-58Ds slotted for Field Artillery missions for redistribution.

Threatened with loss of helicopters dedicated to Field Artillery missions Brig. Gen. Fred F. Marty, Field Artillery School assistant commandant (1987-1989), fought to retain the aircraft. He solicited support to keep the Field Artillery mission and retain a Field Artilleryman as the observer if the Field Artillery mission could not be salvaged in a message to the Aviation School in July of 1989. The Aviation School accepted Marty's proposal and agreed to work with the Field Artillery School in satisfying their respective, but conflicting needs.

In mid-September of 1989, just a month before the Field Artillery completed fielding its allotted OH-58Ds, the Army's revised fielding and employment plan drastically undercut the Field Artillery School's position. The plan removed Field Artillery OH-58Ds from all but one division artillery support platoon. Faced with losing 75 of 81 aircraft, Maj. Gen. Raphael J. Hallada, Field Artillery School commandant (1987-1991), argued strenuously against such action. In a message to TRADOC Sept. 15, 1989 he cautioned the action "would seriously degrade the division commander's ability to acquire and engage the enemy with indirect fires and maintain a current intelligence picture of the enemy situation."

In early October of 1989 a revised fielding and employment plan outlined distributing all of the Field Artillery's OH-58Ds to the air cavalry mission. Although Hallada vigorously protested this decision, TRADOC responded that arming the OH-58D, using it as a multi-purpose light helicopter, and purchasing only a limited number forced a re-examination of fielding priorities and

chose not to support the general. In addition, the Army was also thinking of optimizing the use of its scarce OH-58D assets by scrutinizing the possibility of expanding the OH-58D's combat role to include scout and armed reconnaissance.

The revised OH-58D fielding and employment plan recognized increased competing demands for the aircraft and effectively canceled the Field Artillery mission. Top priority now went to fielding armed OH- 58Ds to air cavalry units for armed reconnaissance, to the XVIII Airborne Corps and 82nd Airborne Division for critical multi-purpose light helicopter needs, and to corps target acquisition reconnaissance companies and training units. In light of the new priorities, the Army opted to redistribute all Field Artillery OH-58Ds to satisfy the other pressing concerns and decided to use OH-58A/Cs to the division aviation brigade for the Field Artillery mission. Although the FA still had access to aerial observation in the division aviation brigade, it lacked the capability of lasing over-the-hill targets for precision munitions.

The Field Artillery School and the Army also lacked the luxury of depending upon expensive manned aircraft loitering near or over enemy territory, defended by sophisticated air defenses, for reconnaissance and target acquisition as they had done since World War II. This noted deficiency prompted the school and the Army to initiate work in 1974 on a remotely piloted vehicle called the Aquila.

Upon fielding, the Aquila would provide real-time target acquisition information and lase targets for the Cannon-Launched Guided Projectile, commonly called Copperhead, a precision 15mm munition under development. Although tests revealed the Aquila's ability to provide reconnaissance and to acquire and designate targets for Copperhead, escalating costs prompted Congress to deny further funding. Rather than having several remotely piloted vehicles being developed for each

of the services, it wanted only one effort and directed the Secretary of Defense in December of 1987 to consolidate the various efforts into one to provide an affordable remotely piloted vehicle. This decision effectively forced the Army to abandon the Aquila.

With the demise of the OH-58D for artillery targeting and the ambitious Aquila remotely piloted vehicle program the Field Artillery lost aerial target observation capabilities. It faced the reality of depending upon other branches for that crucial capability after having it since World War II and shifted its focus to ground-based target acquisition system that would culminate in the yet to be fielded Joint Effects Targeting System and other sensors.

A look at excellence

By Monica Wood, Fires Bulletin Assistant Editor

U.S. Army Training and Doctrine Command was born of innovation and agility, and quickly adapts to shifting world, national, and institutional situations, in both peace and war. TRADOC's adaptive character and culture ensures our Army remains the nation's "force of decisive action."

TRADOC oversees 32 Army schools organized under eight Centers of Excellence, each focused on a separate area of expertise within the Army. These centers train over 500,000 Soldiers and service members each year.

In the future, the Fires Bulletin will give readers the high points from some of these centers with a new section called 'A Look at Excellence.' Here's this issue's highlights:

The Maneuver Center of Excellence

At the Maneuver Conference at Ft. Benning in October, Lt. Gen. H.R. McMaster, deputy commanding general of TRADOC, spoke about how the Army needs more fire

About the author.
Monica Wood is an editor for the Fires Bulletin. Before joining the Fires Bulletin staff, she wrote articles for the Cannoneer Newspaper for more than 25 years in her position as the photojournalist and public relations specialist for Family and Morale, Welfare and Recreation. During that time she won numerous awards for photojournalism including several Keith L. Ware awards and the 2010 Thomas Jefferson Award in the print division for photojournalism.

U.S. Army Ranger students make the final push in a rubber boat across a lake during the swamp training phase at Camp Rudder on Eglin Air Force Base, Fla., Feb. 15, 2011. Photo by John D. Helms, U.S. Army.

power across formations. “And so what we are trying to do now is ensure that every formation in our Army has the appropriate combination of mobility, protection and lethality to overmatch the enemy,” he said. “We don’t want 14-hour firefights. We want four-second firefights.”

He focused on the four areas that are the theme of this year’s Maneuver Warfighter Conference: smart, fast, lethal and precise.

“What does smart mean?” McMaster asked. “It has a lot to do with leadership. It’s the fundamentals. Are your Soldiers ready to fight? Are they ready to use their weapons with precision and speed under all conditions of battle? Are they able to close with and destroy the enemy? Are they able to fight together as a team? Are leaders able to train teams to that high level of proficiency?”

Leaders must be able to understand how to seize, exploit and retain initiative against the enemy, McMaster said. And that means being able to fight on literal battlegrounds as well as the battlegrounds of perception and information. Developing highly capable reconnaissance forces is a big part of that, he said.

“We have to be prepared for hybrid threats - state and non-state actors,” he said. “We need reconnaissance forces that can develop the situation through stealth techniques but also fight for information when necessary.”

Being fast means the ability to move rapidly between positions and to be able to conduct reconnaissance, think ahead and consolidate gains, McMaster said.

“Speed is not an end in itself, but a tool you have to seize, retain and exploit the advantage over the enemy,” he said.

Over the past 14 years of war, the Army has tended to emphasize protection on the battlefield over lethality, McMaster said. Now, it’s seeking more of a balance.

“We’re trying to make sure every formation has the right combination of mobility, protection and lethality to overmatch the enemy,” he said.

While precision is important, McMaster said, it can't be the only factor the Army relies on. "I think what we need to do is recognize the limits of precision," he said. "In certain circumstances, we need to be precise and we need to be overwhelming."

The Aviation Center of Excellence

Last week, the Army asked industry to provide preliminary design review proposals for the Improved Turbine Engine Program, or ITEP, which will eventually replace the existing General Electric T700-GE-701C/D engines that now power AH-64 Apache and UH-60 Black Hawk aircraft.

Engine manufacturers have until Nov. 9 to submit those design proposals. The Army will then select from those submitted proposals up to two manufacturers who will compete for 24 months to be chosen as the single manufacturer of the Improved Turbine Engine.

"This is Army aviation's No. 1 modernization program. Ultimately, the warfighter needs the ITEP," said Lt. Col. Curt Kuetemeyer, product manager, Improved Turbine Engine Program, during a Sept. 28 press conference.

Kuetemeyer said the ITEP's increased engine power means further range for the Black Hawk, more time on an objective, and more troops or equipment that can

A AH-64D Apache helicopter rolls into the parking area at Ech Stagefield, Fort Rucker, Ala., as a second aircraft completes a final approach during the "bag" portion of the Apache helicopter course. In the bag phase of training, a student's cockpit windows are completely covered. Photo by Sgt. 1st Class Andrew Kosterman, U.S. Army.

be carried, “all resulting in more lethal, more effective missions.”

The more efficient ITE will mean fewer fuel convoys needed on dangerous missions, and that reduces risk to Soldiers who would be involved in those logistics convoys. Additionally, in the last 10 years, there have been 36 AH-64 and UH-60 Class A and B mishaps that have occurred where inadequate power and/or power management were contributing factors. The ITE engine closes that engine margin gap. An aircraft with an ITE will no longer be engine limited.

The Sustainment Center of Excellence

More than 90 U.S. Army leaders in logistics and Army networks came together for the conclusion of a two-week integration effort aimed at modernizing Army logistics at Joint Base McGuire-Dix-Lakehurst, New Jersey, Sept. 23-24.

During the Army G-4 Logistics Innovation Agency’s inaugural Logistics Integration Capstone Event 2015, or LogIC E15, senior leaders got a firsthand look at operational scenarios that digitally captured asset logistics data at the source, then demonstrated how they moved that data to where it could be used, leveraging sustainment and mission command systems.

“The purpose of LogIC E15 was to identify innovative uses of current technology to improve sustainment management, emphasizing reduced Soldier touch points, process efficiencies and improved data quality,” said Robert C. Klass, LIA acting director.

The effort was not only useful in tracking fuel, but by leveraging sensors already embedded in vehicles -- though not currently active, the LogIC capstone event demonstrated the ability to automate a number of manual processes for maintenance, said Chief Warrant Officer 5 Paul McLaughin, Combat Arms Support Command Automotive Capability Developer.

"Currently, I have to wait for a platform to come back; the operator to identify there's a fault, write it down and turn it into me," McLaughlin said. "A self-reporting platform is going to tell me automatically that it sees a fault on the equipment data bus and that gives me insight into what is the fault.

If the platform is reporting there's a problem, then there is value in knowing what the platform sees as an issue on its own network."

Enabling this type of visibility into tactical logistics assets across the tactical environment requires moving significant amounts of data across already constrained tactical and strategic networks. This has been a key focus for several years now as part of the Condition-Based Maintenance Plus program.

The venue chosen for the capstone was the Communications-Electronics Research, Development and Engineering Center, or CERDEC, C4ISR Ground Activity, a field-based risk reduction site CERDEC uses as an extension of its laboratories. The CERDEC CGA is designed specifically for the assessment and validation of command, control, communications, computers, intelligence, surveillance and reconnaissance, or C4ISR, technologies on the network.

Soldiers from the Combat Arms Support Command, participated in the capstone event in order to ensure ground truth, and to capture what worked well in order to help develop specific requirements, which is part of the next phase of the project.

LIA will develop a roadmap by the end of 2015 for delivering these capabilities to the Warfighter.

The Cyber Center of Excellence

Network defense is job No. 1 for the Army.

"The greatest threat I face as a brigade commander on the battlefield is not [enemy] tanks, snipers or [improvised explosive devices]... [but]defending the network," Col.

Photo courtesy of U.S. Army Cyber Center of Excellence.

Chuck Masaracchia, commander of 2nd Armored Brigade Combat Team, 1st Armored Division, said prior to the start of this fall's Network Integration Evaluation.

The Army's network defense capabilities were on display during NIE 16.1 - a semi-annual exercise that evaluates new and current network equipment to determine if it works with joint and coalition partners. NIE began Sept. 25 and ran through Oct. 8.

The NIE network carries unclassified, classified and top-secret traffic, everything from voice and digital to video and databases. In addition to all of that, there's the coalition network, which is the primary means of communications during this NIE. "That is totally new to us," Masaracchia said.

Another new feature is increased wireless networking, which not only reduces the need for cable but also saves setup time.

According to Masaracchia, this year's NIE used "about a third of [the cable] we'd normally have, so we're running secure wireless in here and we're going to be growing as we gain fidelity of the system. As we gain confidence in [wireless's] ability to hold more systems we continually add more systems to the wireless, reducing the cable.

Hopefully in the future you'll see hardly any wiring in here."

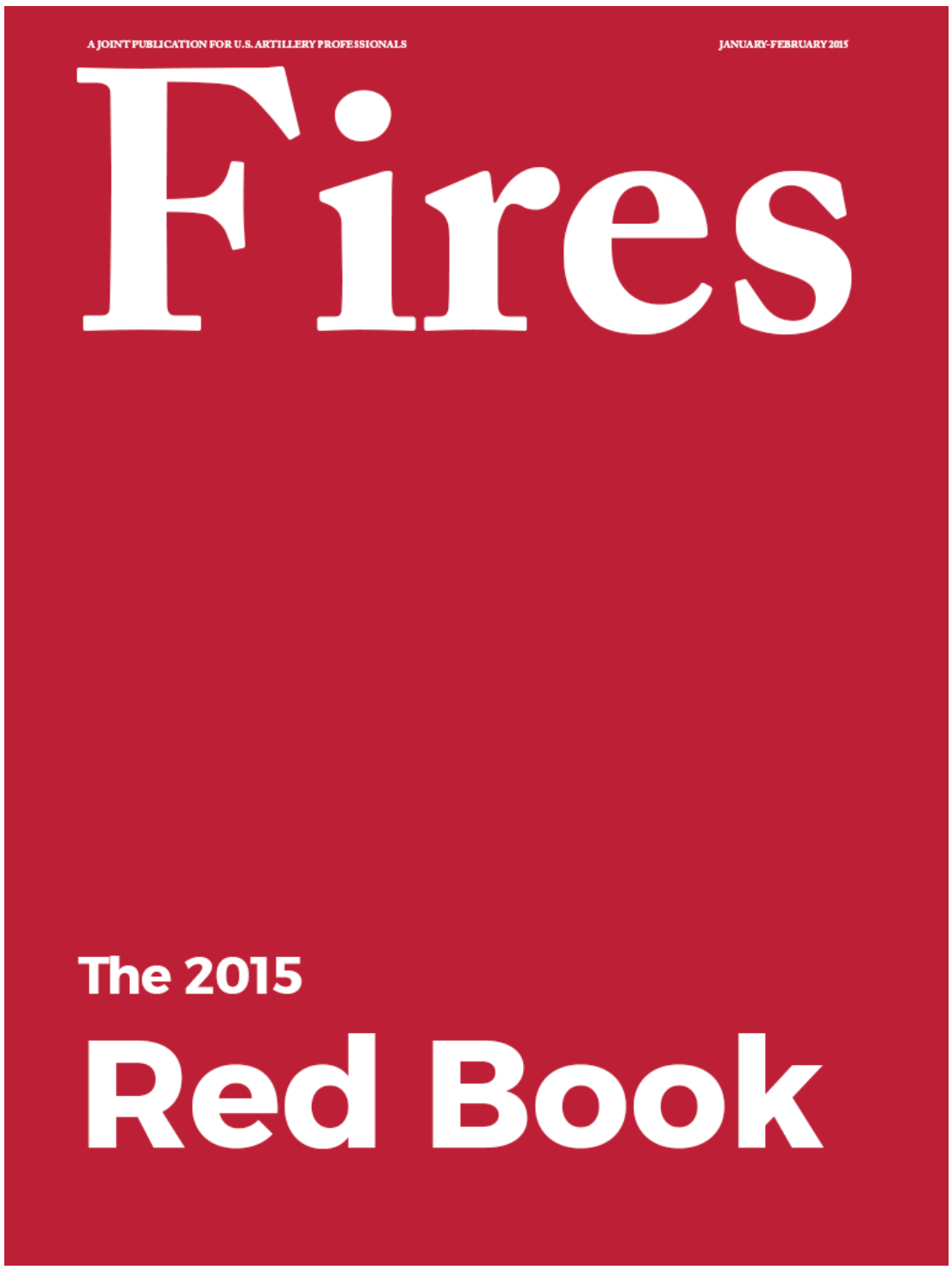
This year's NIE is billed as the largest ever, with more than 9,000 U.S. and coalition Soldiers and some 3,000 civilians taking part - a significant increase from the 3,500 to 3,800 participants in the past.

With the increase in numbers, the force can afford to create a larger and more formidable red team. "We have a division worth of live and simulated bad guys on the battlespace, which makes this not a near-peer, but a peer or superior threat," said Maj. Robert Richardson, brigade intelligence officer. Red teams "can bring all these systems to bear simultaneously," he said in regards to modern radios, optics, advanced fire controls, intelligence, reconnaissance and surveillance suites, micro-unmanned aerial vehicles, electronic warfare and threat-computer operations.

"I am more than confident of our force's capabilities to destroy any force on the battlefield -- as long as we can provide mission command," Masaracchia said. "'How we try to defend ourselves and not allow [the enemy] to corrupt the network' will be crucial to determining the outcome."

Author's Note: A Look at Excellence used information from articles written by Caroline Keyser, Kristen Kushiyama and Kashia Simmons, Richard Whittle and Mark Pomerbau.

IN THE NEXT ISSUE:



The 2015 Red Book. The yearly Red Book is used as a year-in-review; giving our Fires force an opportunity to share through story and video submissions any unit achievements, highlight training success, community relation events, and lessons learned in 2015. The commanding general's forward is included to discuss the way ahead for Fires as well as a medium to congratulate the units who are the recipients of the Henry A. Knox Award, Alexander Hamilton Award, Edmund L. Gruber Award and the James A. Shipton Award. The commandants for the respective artillery branches also discuss what they expect to see in 2016. Submissions are due by Dec. 1, 2015. Send your submissions to usarmy.sill.fcoe.mbx.fires-bulletin-mailbox@mail.mil or call (580)442-5121 for more information.

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