A Joint Publication for U.S. Artillery Professionals

July — August 2014 Edition

Fires

Partners in Fires

Approved for public release; distribution is unlimited. • Headquarters, Department of the Army • PB644-14-3

THE FUTURE OF Fires IS COMING!

THE STAFF OF THE FIRES BULLETIN IS HARD AT WORK PREPARING THE TRANSITION FROM A PRINTED PUBLICATION TO A DIGITAL ONE.

THE MAGAZINE YOU HAVE COME TO EXPECT...
ON THE DEVICES THAT YOU USE EVERYDAY.

Fires

July - August 2014

On the cover:

PFC Jason Dore looks for any possible enemy contact in western Baghdad, Iraq. Dore is assigned as a forward observer with the 2nd Battalion, 5th Cavalry Regiment, 1st Cavalry Division. (Photo by Petty Officer 2nd Class Kitt Amaritnant, U.S. Navy)

DISCLAIMER: *Fires*, a professional bulletin, is published bimonthly by Headquarters, Department of the Army under the auspices of the Fires Center of Excellence (455 McNair Hall Road Fort Sill, OK 73503-7102), Fort Sill, Okla. The views expressed are those of the authors and not the Department of Defense or its elements. *Fires*' content doesn't necessarily reflect the U.S. Army's position or supersede information in other official Army publications. Use of news items constitutes neither affirmation of their accuracy nor product endorsements. *Fires* is printed by Publishers Press, a private firm in no way connected with the Department of the Army. *Fires* assumes no responsibility for any unsolicited material. By Order of the Secretary of the Army:

Raymond T. Odierno, General, United States Army, Chief of Staff.

Official:

Gerald B. O'Keefe
Administrative Assistant to the Secretary of the Army, 1333702

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

PURPOSE: Originally founded in 1911 as the *Field Artillery Journal*, *Fires* serves as a forum for the professional discussions of all Fires professionals, both active and Reserve Component (RC); disseminates professional knowledge about progress, developments 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, both active and RC, all of which contribute to the good of the Army, joint and combined forces, and our nation.

REPRINTS: *Fires* is pleased to grant permission to reprint; please credit *Fires*, the author(s) and photographers.

Contact *Fires* at http://sill-www.army.mil/firesbulletin/.

POSTMASTER: *Fires* (USPS 309-010) (ISSN 1935-4096) is published bimonthly; periodical postage paid by Department of the Army at Lawton, OK 73501 and an additional mailing post office. Send address changes to *Fires*, P.O. Box 33311, Fort Sill, OK 73503-0311.

SUBMISSIONS: E-mail to the Editor, *Fires*, at fires.bulletin@us.army.mil; mail to P.O. Box 33311, Fort Sill, OK 73503-0311; overnight to 455 McNair Road Room 105. Fort Sill, OK 73503-7102; or call at DSN 639-5121/1090 or commercial (580) 442-5121/1090.

Editor: Jennifer Allen
Art Director: Rickey Paape, Jr.
Assistant Editor: Paul Jiron

Joint Fires Interoperability

By MG John Rossi
Commanding General of the Fires Center of Excellence and Fort Sill, Okla.

> "Future Army forces will integrate the fires capabilities (sensors, weapons, effects) of joint, interagency, and multinational partners into the concept of operations to achieve synergy, develop a common operational picture, and enable joint interdependencies from the tactical to strategic levels."
>
> *–TRADOC Pam 525-3-4, The US Army Functional Concept for Fires*

It is a pleasure to address the Fires Force, in my first edition of the CG's Forward for our *Fires Bulletin*. Having taken command of the Fires Center of Excellence in June, I am honored and eager to help shape the world's most versatile Fires Force.

I thank everyone who participated in May's 2014 Fires Conference, either in person or online. Though not yet in command, I had the privilege of attending and paid close attention to those subjects concerning our force. One of the key discussions included the value and importance of joint and multinational partnerships.

We have themed this edition 'Partners in Fires' for the express purpose of emphasizing the overwhelming value in our multiservice and multinational partnerships. Providing security in a complex operational environment requires a group effort, increasingly relying upon partnerships. Our joint and multinational partners possess unique structures and capabilities. A key requirement within our war-fighting function is ensuring that those elements communicate and collaborate, and through seamless interoperability can conduct missions. Interoperability is defined as the ability of our systems to exchange information and possessing functional commonality of capabilities spanning shooter, sensor, and command and control system. The articles in this issue highlight the paramount importance of partnerships in missions ranging from helping the Afghan army effectively employ Fires to providing missile defense to our nation's homeland. Speaking from personal experience, during my time commanding in the Republic of Korea and southwest Asia, combined, joint, and multinational cooperation is essential to the future of our Fires.

Thank you again for investing the time to develop as a professional and read what your peers have to offer. I want everyone to take special notice that this is the last printed version of the *Fires Bulletin*. Rather than disappearing, the *Fires Bulletin* will transition to a fully digital application based platform that will offer more accessibility to Fires readers and a greater means of driving the content of the magazine through analytics. Since 1911, this publication has served as a forum for professional discussions and we will continue to provide you with relevant and timely Fires focused discussions that you have come to expect.

Fires Strong!

Top: Soliders, from the 2nd Battalion, 377th Field Artillery (Airborne), 4th Infantry Brigade Combat Team, 25th Infantry Division, get ready to perform a static line jump out of a Kentucky Air National Guard C-130 Hercules just north of Joint Base Elmendorf-Richardson, Alaska, on May 13, 2014. The 165th Airlift Squadron aircrews are training while participating in Red Flag-Alaska. (Photo by Master Sgt. Phil Speck, U.S. Air National Guard)

Middle left: A U.S. Marine Corps High Mobility Artillery Rocket System, assigned to the 5th Battalion, 11th Marine Regiment, conducts dry-fire exercises in support of infantry units in simulated scenarios July 12, 2014, during the Rim of the Pacific 2014 exercise at an urban operations facility at Marine Corps Base Hawaii in Kaneohe, Hawaii. RIMPAC is a U.S. Pacific Fleet-hosted biennial multinational maritime exercise designed to foster and sustain international cooperation on the security of the world's oceans. (Photo by Lance Cpl. Aaron S. Patterson, U.S. Marine Corps)

Bottom left: Soldiers from 210th Field Artillery Brigade, 2nd Infantry Division participate in a division-wide alert Jan. 27, 2014, on Camp Casey, South Korea. They were able to practice loading ammunitions and convoying to a secure location. The alert was to test and improve the unit's readiness to fight tonight to deter any aggressions towards the Republic of Korea. (Photo by PFC Song Gun-woo, U.S. Army)

The Field Artillery Reorganization to Conduct Operational, Joint and Multination Fires

By COL William A. Turner

It is with tremendous pride that I assume the responsibility as the 51st Chief of the Field Artillery and Commandant of the United States Field Artillery School. In the upcoming months, I look forward to working with the Fires team, and continuing to maintain momentum on our initiatives which include advances in precision Fires, fire support coordination at the Corps and Division level, the redesign of the Field Artillery Brigade, and the reintroduction of the new Division Artillery.

DIVARTY. The Army decision to implement DIVARTYs will provide field artillery capabilities (planning, synchronization, and coordination) in order to execute strategic, operational and tactical Fires in support of unified land operations and to provide effective mission command for the training and readiness of attached FA units.

The first DIVARTY became operational in July 2014 within 1AD. There will be a DIVARTY assigned to each active component Division, an active component Field Artillery brigade assigned to each corps, and one FAB assigned to the Eighth United States Army.

As we implement this Fires HQ redesign, it is important to note that it will not be a repeat of the 2004 DIVARTY. We are not merely pulling and implementing DIVARTY doctrine from days gone by, dusting it off and calling it good.

DIVARTYs will provide modernized relevance through focused implementation of emerging Fires technologies and expert integration of joint and combined Fires. BCTs will be empowered by enhanced Fires capabilities delivered by precision fire supporters with world-class training and certification, precision equipment, and leaders adept in the art of Fires and mission command. This embedded Fires capability reinforced by joint Fires and sensor management provides the division with Fires that meet the requirements within the full spectrum of unified land operations.

DIVARTYs will plan, prepare, execute and assess combined arms operations to provide close support and precision strike for the division employing joint, assigned and organic Fires capabilities and enablers to achieve distribution of effects in support of commanders' operational and tactical objectives.

This also includes the coordination of joint and multinational Fires. The DIVARTY will have no organic firing units, but may be allocated/task organized additional units based on mission requirements. This may include a combination of one to five rocket/missile and/or FA cannon battalions, as well as other enablers.

The DIVARTY consists of a headquarters and headquarters battery, a signal platoon, and a target acquisition platoon, initially consisting of two AN/TPQ-37 Radars and will transition to two AN/TPQ-53 Radars. DIVARTYs will provide command oversight for

training management and certification of the brigade combat team FA battalions and Fire support cells.

DIVARTYs will provide integration and synchronization of sensors such as Sentinel and counterfire radars organic to the division, as well as joint sensors. This sensor integration capability significantly strengthens the division's ability to support information collection and targeting for the division and brigade combat teams throughout the depth of the operational environment.

The DIVARTY will also function as the force Fires headquarters for the division. The DIVARTY commander is the division FSCOORD. It is anticipated that this organizational design will be completed across the force by first quarter FY16.

The U.S. Army Forces Command DIVARTY Implementation Order provides clear guidance on the implementation and the role of DIVARTYs. To read the full order log on to FKN https://www.

us.army.mil/suite/doc/42594219. DIVARTYs will provide operational-level Fires and better trained Fires formations BY, WITH, and THROUGH the brigade combat team and the modular force.

Field Artillery Brigade. Additionally, under this construct the Field Artillery brigade will take on new relevance going forward in the future. The primary task for the FAB includes coordination, integration, synchronization and employment of Fires as well as providing long range precision Fires to the corps. This includes the coordination of joint and multinational Fires. Initially, the active FABs will be composed of rocket battalions. The number and mix of FA battalions assigned to a FAB will vary depending on mission and number and type of divisions assigned to the corps. The FAB is the force Fires headquarters for the corps. The FAB commander is the corps fire support coordinator. The FAB consists of a brigade support battalion, an HHB, a signal company, and a target acquisition platoon. The FAB will train with and achieve the same regional focus as its assigned Corps. The FAB does not replace the corps fire support cell. The FABs subordinate FA battalions may be allocated/task organized to DIVARTYs or other FABs. This will be accomplished using command and support relationships, such as reinforcing to provide enhanced fire support capability.

The organization of the U.S. Army National Guard FABs will remain unaltered. ARNG FABs are to be aligned with ARNG divisions to facilitate training oversight and will enable them to support ARNG divisions during deployment and provide reinforcing and counterfire capability to a corps or joint task force.

Operational Level Fires. To quote TRADOC Pam 525-3-4, *the United States Army Functional Concept for Fires*, we have a responsibility to establish and maintain a fire support system that can, "enable the defeat of a wide range of threats, provide timely and responsive Fires in environmental and operational conditions, provide a range of precision to conventional scalable capabilities to engage ground targets, prevent fratricide and minimize collateral damage, and to provide access to and integrate joint, Army, and multinational Fires capabilities at the lowest appropriate levels."

Going forward we have proposed that operational Fires should be conducted as a part of the commander's operational design. This will allow the commander to achieve his desired effects on the enemy and provide shaping operations for subordinate commanders in a manner that does not interfere with those subordinate elements scheme of maneuver.

Operational-level Fires is the transition from the theater joint force air component command fight to the air-ground integration fight. Operational-level Fires are usually conducted at the operational level of war, but may be conducted at any level of war. Operational-level Fires generally integrate Army Field Artillery (surface-to-surface) Fires with joint and multi-national capabilities but could be conducted by any combination of available Fires assets. Field Artillery brigades and DIVARTYs focus on the conduct of operational-level Fires, including the integration of sensors and intelligence assets to support the targeting process, although they can also conduct close-support Fires that require detailed integration with the scheme of subordinate maneuver elements. Close-support Fires are usually planned, coordinated, integrated, synchronized and conducted by BCT Field Artillery battalions.

I'm confident we are not only 'self-correcting' as one esteemed audience member said during this year's Fires Conference by bringing DIVARTYs back online, but we are further defining our roles so the maneuver commander knows what we can and will bring to the fight. In closing I would like to say that we are continuing to encourage open dialogue as we build our DIVARTYs and fire support teams to maintain our position as the *King of Battle.*

Thank you and I look forward to working with you.

King of Battle!

Fires Strong!

COL William A. Turner

Members of the A Battery, 2nd Battalion, 4th Field Artillery operations center and a local observer from Fort Bliss, Texas, stand atop of a M1068 to watch as launchers fire a volley of rockets. The final day of training, June 21, 2014, consisted of a live-fire exercise in which more than 100 rockets were fired during four hours of individual launches and a time-on-target Fires. (Photo by SGT Joe Dees, 214th Fires Brigade PAO)

Fires and Strategic Landpower:

Achieving Mass with Less

By USMC Maj. Stephen Ford, USMC Capt. Christopher Cichy, and CPT Colin Marcum

The Secretary of Defense announced in a statement this March that the FY15 budget request matches our strategy to our resources and that continued fiscal constraints cannot be ignored. The budget request leaves senior leaders in each service with the challenging task of tailoring an optimal force within these constraints that balances end strength, modernization and training. U.S. Army leadership anticipates the need to reduce its active component to 450,000 or fewer in the coming years to achieve this balance while maintaining (in the words of LTG Keith C. Walker) "operational overmatch with leaner formations that have greater than or equal capability than we have today by 2025."

Reduction of forces while maintaining overmatch will require commensurate improvement in the Army's ability to mass its lethal and non-lethal capabilities. Joint Publication 3-0, identifies mass as one of the principles of joint operations and defines it as the ability to "concentrate the effects of combat power at the most advantageous place and time to produce decisive results." With this in mind, Fires will become more critical than ever to achieving this overmatch—affording a faster, lighter, and smaller force with disproportionate strike capability.

To help guide the Army's decisions on how to maintain this combat power with a smaller force, we need only look to our partners within the Strategic Landpower Task

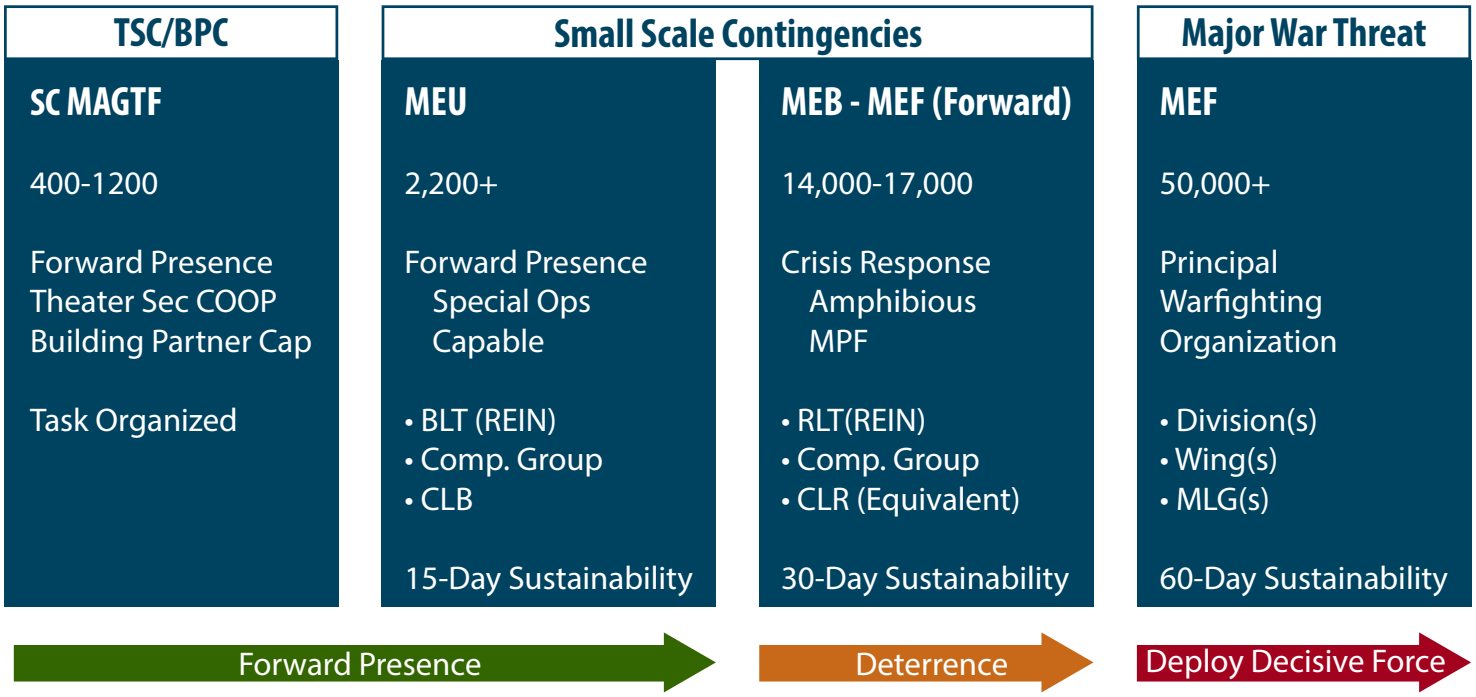


Figure 1. Marine air ground task force types and structures. (Information provided by USMC Maj. Stephen Ford, USMC Capt. Christopher Cichy, and CPT Colin Marcum)

Force that pride themselves in their ability to achieve the greatest effect with their Fires: the United States Marine Corps. As the smallest service, the USMC has consistently delivered effects disproportionate to their size through expeditionary mindset, scalability, and above all a mastery of achieving mass where and when needed. The Marine Fires professionals are able to synchronize their effects by focusing on interoperability, training as they fight, and requiring joint compatibility of the equipment they acquire.

Importance of Fires to a Small but Lethal Force. The USMC is the most expeditionary force within the DoD, small but uniquely scalable in their capabilities. The ability of the USMC to task organize into a variety of 'right-sized' combined arms teams allows it to deploy and conduct combat operations via a variety of means. The Marine air ground task force is the basis for this task organization and scalability. The MAGTFs exist from the Marine expeditionary force (20 – 90K personnel), Marine expeditionary brigade (3 – 20K personnel), Marine expeditionary unit (1.5 – 3K personnel), to the special purpose MAGTF . The basic construct for every MAGTF is the same regardless of size or mission. Common to all MAGTFs are the command element, the ground combat element, the aviation combat element, and the logistics combat element. The most well known MAGTF is the MEU. The MEU is built around the battalion landing team that comprises the GCE. The BLT consists of an infantry battalion (with all organic fire support capabilities), an artillery battery (6x M777A2s and/or 6x expeditionary fire support systems – 120 mm mortar), an amphibious assault vehicle company, a light armor vehicle platoon, and a M1A1 tank platoon. In addition to the ground based Fires capabilities that are organic to the GCE, the ACE of the MEU consists of a composite squadron including 4-6x AH-1W Super Cobra attack helicopters, 3x UH-1N/Y Twin Huey utility helicopters, 12x CH-46E Sea Knight medium lift assault helicopters, 4x CH-53E Super Stallion heavy lift assault helicopters, 6x AV-8B Harrier Jets, and 2x KC-130J Hercules re-fueler/transport aircraft. The LCE, while not directly a part of the combined arms team, does bring a wealth of capabilities to the MEU. The LCE for the MEU is usually the combat logistics battalion. Most importantly is the ability of the MEU to sustain itself in an austere expeditionary environment for up to 30 days. The LCE provides service support, medical and dental, intermediate maintenance, intermediate supply, transportation, explosive ordnance disposal, military police, utilities production and distribution, bulk fuels, internal communications, and various other technical support expertise.

Understanding the basic construct of the MAGTF will enable an understanding of the importance of the combined arms team of the MAGTF. Unlike the U.S. Army, the capabilities to employ surface based or aviation Fires exist within the MAGTF and does not require reliance on U.S. Air Force or coalition aviation support. Fires are heavily relied upon to achieve mass at the decisive point while executing economy of force elsewhere on the battlefield. There is also a unique relationship between USMC aviation and the JFACC in that the only USMC aviation assets that are allocated to the JFACC are 'leftover' sorties. All other Marine aviation is dedicated to supporting Marine ground operations. As a means to facilitate utilizing the full effect of the combined arms team, the BLT fire support team consists of a tactical air control party which is organic to the maneuver battalion an artillery liaison section and a shore fire control party. The TACP consists of three aviators (forward air controllers) and twelve field radio operators. The senior aviator acts in a dual capacity as the battalion's AirO (a special staff officer to the battalion commander in regard to all aviation matters) and as the officer in charge of the battalion TACP. As the OIC, he works within the fire support coordination cell as the air representative. Each of the other two aviators is the leader of a forward air control party with four communicators each. A FAC party requests and provides terminal control of close air support.

More than simply calling for and directing CAS, the TACP provides input to the company fire plan. The artillery liaison section

consists of a battalion fire support officer (captain)who is by doctrine a joint terminal air controller and an artillery liaison officer (LNO, Lieutenant) who is a JFO with a liaison chief (artillery scout observer/JTAC), three additional officer forward observer/ joint Fires observers, four additional scout observers who are JTACs, and nine field radio operators. The battalion SFCP is from the headquarters battery of the supporting artillery battalion. It includes a battalion NGF liaison team and an NGF spot team. The liaison team consists of an Nacal Gunfire Liaison Officer, an NGF chief, and three field radio operators. It performs liaison and coordination functions in the battalion FSCC. The spot team consists of an NGF spotter (Marine lieutenant), two SFCP men, and two field radio operators. Spot teams call for and adjust NGF. The maneuver battalion retains to comprise the battalion FSCC: the air officer, artillery battalion FSO, artillery LNO, artillery liaison chief, one artillery cout observer and NGF cheif, all led by the battalion fire support coordinator. This puts their warfighting capability at 3 JTACS, 3 Artillerymen who are also capable of coordinating airstrikes and naval gunfire and two dedicated NSFS personnel.

The air officer, artillery battalion FSO, artillery LNO, artillery liaison chief, one artillery scout observer, the NGLO and NGF chief, all led by the battalion fire support coordinator. This puts their warfighting capability at three JTACS, three Artillerymen who are also capable of coordinating airstrikes and naval gunfire and two dedicate NSFS personnel.

All of the remaining individuals are attached to the maneuver companies to form company fire support team which are comprised of an artillery FO team (JTAC and JFO) with two radio operators, a 81 mm mortar FO (from the mortar platoon of weapons company), the FAC team (JTAC with three radio operators) and a FIST team leader who is the infantry company, weapons platoon commander. The battalion will place the naval gunfire spot team where needed. The FIST concept allows for a fire supporter/JTAC at each platoon, JFO with each squad and a JTAC and artilleryman at the company FIST drastically increasing the speed and proficiency with which the MAGTF can de-conflict Airspace and bring Fires to bear on the enemy. This includes the ability to incorporate Naval Surface Fires in support of maneuver – especially early on in a forced entry/amphibious assault against adversaries employing anti-access/area denial techniques use Fires to offset their vulnerabilities.

From the beginning of a MEU work-up (usually six months prior to deployment) and throughout the MEU rotation, this fire support team continues to congeal and work closely together to ensure timely Fires integration in support of the MEU. Throughout the pre-deployment training cycle, the FIST will be able to effectively integrate Fires in both simulated and live fire training exercises at most USMC installations.

Keys to USMC Success with Fires Training to be Interoperable. Utilizing and training with the fire support platforms organic to the MAGTF uniquely enables the Marine Corps to effectively integration Fires in support of maneuver. Additionally, the unique capabilities of the FAC and JTAC enable the MAGTF to also employ joint and coalition Fires. This also includes employing the devastating capabilities that are brought to the fight by naval surface fire support assets.

While doctrinally there is little variance between the doctrinal employment of any of the services as it relates to fire support employment procedures, it is the organic fire support capabilities brought to bear by the MAGTF that give the Marine Corps flexibility, maneuverability, and the ability to mass those effects at the crucial moment. The amount of time spent training with all of the elements of the MAGTF creates a synergistic effect that resounds on the battlefield.

With the advent of the SPMAGTF, the Marine Corps has expanded its ever present role of conducting theater security cooperation training events. These events have brought on an entirely new set of skill to the Marine fire supporter. By conducting live-fire training with host and partner nations around the globe, the Marine fire supporter is able to hone his skills and advance them with the knowledge gained from working with those from different countries. This training usually involves the entire combined arms team available to the MAGTF, and usually involves Joint partners as well. It is this type of training, in addition to that conducted on a regular basis with joint partners, that allows the Marine Corps to continue to develop the necessary capabilities to operate in any environment of the range of military operations.

The biggest key to the Marine Corps success in employing Fires is our ability to de-conflict their own airspace at the lowest level. With at worst case having only a JTAC at the company level and at best one at each platoon, the maneuver company can assume control of its own airspace from the direct air support center by utilizing a preplanned or hasty restricted operating zone named a hotwall (used for cannon fire) or goal post (used for rocket fire). When airspace de-confliction is required, these preplanned ROZ's are 'activated' by request from the JTAC to the DASC. When the request goes to the DASC all aircraft in that airspace are placed in contact with the on-scene controller and when that controller has positive control of all aircraft local control is passed from the DASC to the controller. This allows a platoon or company to control its own airspace by moving the aircraft around with no requirement for de-confliction with higher echelons. This significantly decreases time in the kill chain. This allows more responsive surface Fires as aircraft can be separated from the gun target line with no need for higher approval.

Major Stephen Ford enlisted as a Marine Artillery fire direction control man and Marine Artillery operations chief in 1988 and commissioned in 1998 and was selected to be an Artillery officer following The Basic School. Stationed in 29 Palms from 2000-2002 and 2006-2010 with 3rd Battalion, 11th Marines and the MAGTF Training Command he held positions as a forward observer, battery executive officer, battalion logistics officer, battalion operations officer, battery commander, and G-3 current operations officer. Stationed in Okinawa, Japan from 2002-2005 and 2010-2013 with 3rd Bn, 12th Marines and HQ Battery, 12th Marines he held positions as the battalion assistant operations officer and battalion fire direction officer, regimental HQ battery commander, regimental logistics officer, regimental fire direction officer, assistant regimental operations officer, and regimental executive officer. He also was an instructor for the USMC Expeditionary Warfare School Distance Education Program. He is currently the chief of the Officer Instruction Group, 1-30 FA, Fort Sill, Okla.

Captain Chris Cichy enlisted in the United States Army in 1998. He inter-serviced transferred to the United States Marine Corps in 1999 as a Cannoneer and was selected for the Marine Enlisted Commissioning Program in 2003 from which he commissioned as a Artillery Officer in 2007. Stationed at Camp Pendleton from 2008-2012 Captain Cichy served as the Company FSO and Joint Terminal Attack Controller for Kilo Company 3D BN 4th MAR, Fire Direction Officer then Executive Officer of Battery A 2D BN 11th MAR, Fire Support Coordinator and JTAC for 1st Recon BN, JTAC for Task Force 66 and BN Air Officer for Task Force Belleau Wood. He is currently serving as the Fire Support Department Branch Chief at FA BOLC B and the senior JTAC and JFO Course Manager for the BOLC JFO program.

Captain Colin Marcum enlisted as an Infantryman with the Oregon Army National Guard in 2005, and commissioned as a Field Artillery officer in 2009 from Oregon State University. Stationed in Korea, from 2010 to 2013, with 1st Armored Brigade Combat Team, 2nd Infantry Division and held positions as a company Fires support officer, COLT and Paladin platoon leader, and assistant battalion S4. He was the executive officer for C Battery 1-30th Field Artillery before coming to the Fires Center of Excellence's STRATCOM office.

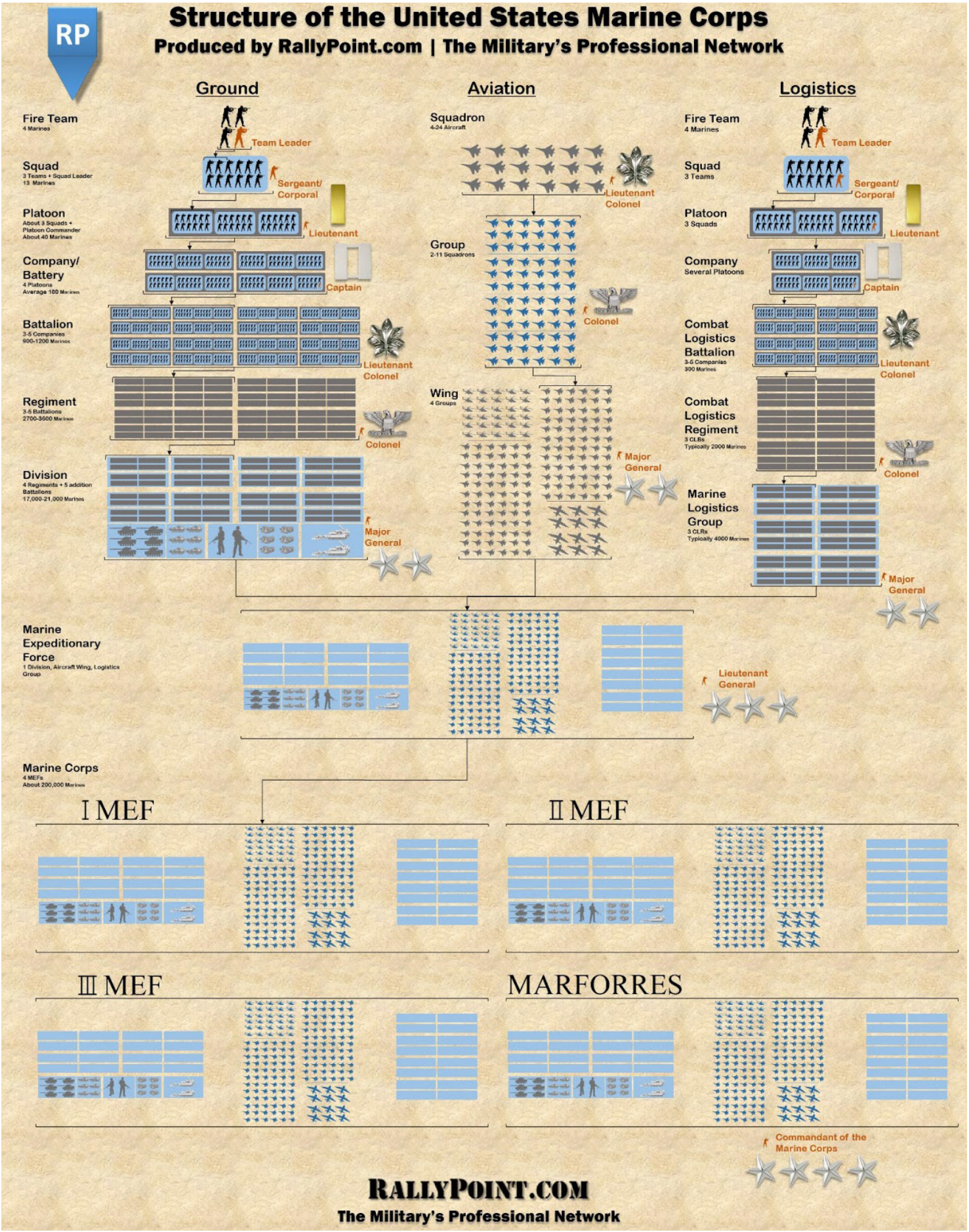


Figure 2. The organization and structure of the U.S. Marine Corps, as of June 10, 2013. (Figure produced by the community at RallyPoint.com)

Leveraging Intelligence in the Division Artillery

By CPT Justine Meberg

As the Army transitions from Fires brigades to the division artillery construct, the possibility arises for a similar structure for other specialty brigades and division-level enablers. When one considers the shift to DIVARTY and potential concept expansion, the function of intelligence in DIVARTY merits discussion. Interestingly, more deeply integrated and synergistic intelligence process emerges when placed into DIVARTY. As outlined in FM 2-0, *Intelligence Operations*, the Army's intelligence process consists of the following steps: plan and direct, collect, produce, disseminate, and the two continuing activities of analyzing and assess. Using these steps as a framework, one can explore the role of intelligence specific to DIVARTY.

The first step, plan and direct, involves coordination between the DIVARTY S2 and G2. The division-centric structure of DIVARTY plugs the DIVARTY S2 into a wider network of intelligence than the one immediately available to a Fires brigade S2. Whereas a FiB S2 might have to execute the full intelligence preparation of the battlefield process in addition to describing the Fires perspective to the commander, DIVARTY S2 works alongside the G2 shop and division analysis and control element fusion cell, enabling a more Fires focused intelligence process. Thus, the DIVARTY S2 has the time and resources truly to become the subject matter experts on Fires. Nesting artillery at the division level allows the DIVARTY S2 to center itself on the intersection of the Fires and intelligence war fighting functions, providing a comparative advantage. This means DIVARTY S2 can provide Fires analysis that translates operational objectives into tactical actions executed in the deep fight. Fires battalion S2s also benefit from this focused intelligence and can use it to guide their own intelligence processes, supporting the success of the close fight. In summation, the improved DIVARTY S2 construct and its interconnectedness with G2 allow DIVARTY S2 to employ a Fires focused intelligence methodology. This enables better coverage of the full spectrum of Fires, focused on the deep fight but also enhancing the close fight.

In the next step of collect, DIVARTY S2's focus on Fires, at the division level, allows a more multi-faceted approach to intelligence collection. For example, one benefit of the DIVARTY comes from of an increased ability to influence intelligence, surveillance, and reconnaissance synchronization and acquire assets to address Fires specific priority intelligence requirement. This aids in identification of key enemy systems, supporting the development of products like the high payoff target list. For example, using ISR to locate and target limited enemy artillery location radar systems severely degrades the enemy's ability to conduct counter fire. In this respect, DIVARTY S2 during the collect phase lobbies to identify systems in the deep fight. DIVARTY S2 then highlights that analysis within targeting forums, feeding into the deep operations coordination cell, as well as the target production section that feeds into the the joint air and ground integration cell and the 72-hour air tasking order cycle. With DIVARTY S2 contributing via these forums into the targeting process, it best shapes the battlefield to the advantage of friendly forces.

Further assisting the targeting process, DIVARTY S2 coordination with the ACE targeting cell and division Fires targeting officer also serve to check on targeting assessments, vetting targets through the Fires perspective to ensure targets and capabilities are properly matched and reflected in recommended attack guidance. DIVARTY S2 also provides information to the division on the location and orientation of organic radars so they serve as collection assets as in addition to use for counter fire. Similarly, forward observers would serve as collection assets to supplement available reconnaissance units. Through this give and take, exemplified by close interaction between DIVARTY S2 and division collection, the DIVARTY S2 ensures greater detail in the collection process. That detail provides a clear, detailed picture of targeting in the deep fight.

In the following step of produce, the DIVARTY format allows DIVARTY S2 to specialize in targeting specific intelligence relevant to Fires and outsource general intelligence support to G2. DIVARTY S2 assembles products that highlight enemy deep fight assets such as artillery and air defense along with their numbers and locations on the battlefield. DIVARTY S2 also analyzes deep asset capabilities, strengths and weaknesses in addition to basic system information. DIVARTY S2 leverages information gleaned during the collect phase to analyze enemy formations and demonstrate where enemy artillery batteries, ammunition resupply points and logistic nodes are, supporting the development of target selection standards. DIVARTY S2 produces tailored reference manuals for forward observers, scouts, pilots, and other reconnaissance assets describing indicators for enemy assets and formations. DIVARTY S2 also recommends prioritized targets in the deep fight, based on weak points identified in the enemy order of battle. These examples represent potential ways DIVARTY S2 boosts intelligence support to targeting. Additionally, these products highlight added value DIVARTY S2 provides in forums like the DOCC, and in targeting and collection working groups. Another possibility, to further synchronize the benefits provided by DIVARTY S2, is to physically locate DIVARTY intelligence and targeting Soldiers with the ACE and targeting cells. Alternately, DIVARTY presence in forums such as Command Post of the Future and tactical chat forums such as Mardam-Bey Internet Relay Chat supplements face to face interaction.

During the disseminate step, one advantage is that items produced by DIVARTY S2 are sent through division distribution lists. This ensures dissemination of DIVARTY produced intelligence across the formation, whereas in a Fires brigade dissemination is more limited, primarily serving the Fires community. When located at the division level, DIVARTY S2 better communicates its perspective to subordinate, adjacent, and higher units. By creating a bridge for the Fires community from division to battalion level, the DIVARTY also improves the flow of information across multiple echelons.

Finally, during the continuing activities step of analyzing and assess DIVARTY S2's ability in developing Fires expertise allows

See DIVARTY on page 24

Regional Experts

By LTC (Ret.) Jeffrey J. Gudmens

Regional alignment, security force assistance and building partner capacity have become linchpins in our nation's strategy. Our strategic leaders have, and continue to emphasize the importance of building partners and developing friendships.

Regional Expertise. For the Army to achieve the partnerships and friendships they have determined necessary, they must create and sustain a cadre of regional experts. Recent experimentation indicates the importance of regional expertise. Relationships are the key to worldwide partnering. Partnering with friends is not new to the Army and history may provide insights. RE are a selected group of conventional force Soldiers whose primary task is service in their basic branch.

"We are committed to strengthening existing alliances and partnerships and building new ones to confront current challenges."

-President Barack Obama

They receive extensive education, training and experience in languages and culture and are refreshed through continuing education, immersion and self-development. RE will develop friendships that will lead to successful worldwide partnerships. It is important to note that the requirement for each region is determined by the combatant command. RE will have a unique career pattern that will require a change to current Army policies and procedures.

Experimentation. The Joint/Army Experimentation Division of Training and Doctrine Command Army Capabilities Integration Center is responsible for conducting experiments to prepare the Army for the future. They also supervise numerous battle laboratories, as well as experimentation and

LTG Ken Keen, left, and Maj. Gen. Floriano Peixoto of the Brazilian army met nearly three decades ago as young officers, and both played leading roles in Haiti earthquake relief. Keen has served as commander of the U.S. Joint Task Force Haiti, and Peixoto as force commander for the United Nations stabilization mission in Haiti. (Photo by Maj. Betsy Ross, U.S. Air Force)

analysis elements, at the TRADOC centers of excellence, as they execute their experiments. For FY14, JAED experimentation is focused on supporting development of the Army Functional Concepts. The Mission Command Battle Laboratory at Fort Leavenworth, Kan., conducted the "Set the Theater" Seminar in January 2014, as an initial experiment in a series. Throughout the discussions, the importance of regional alignment, partnerships, and language/ cultural training was identified.

Relationships Matter. During the Association of the United States Army 2013 Annual Meeting's Contemporary Military Forum on Regionally Aligned Forces and Global Engagement, MG Patrick Donahue, commander of U.S. Army Africa, told a story about the African country of Botswana, which is partnered with the State of North Carolina in the State Partnership Program. GEN Carter Ham, then the commander of U.S. Africa Command, and Donahue were at a dinner when the adjutant general of North Carolina came into the room. Donahue described it as if a rock star had entered the room because all the Botswanan officers gathered around TAG. Ham then told Donahue, "I finally get it. It's about relationships. They have a personal relationship. The African generals have been to the TAG's house in North Carolina, and he's been to their house." Donahue summed up the experience "It is a sustained and personal relationship that really gives them access and influence"

A day after a massive earthquake hit Haiti on Jan. 12, 2010, the U.S. sent a joint task force to Haiti to provide assistance. The United Nations had a stabilization mission in Haiti since 2004, but the U.S. decided its JTF wouldn't operate under the U.N. On January 14, the commander of the U.S. JTF, LTG Ken Keen, met with the commander of the UN mission, MG Floriano Peixoto of Brazil. Because of the lack of a common headquarters, it would have been understandable if there were friction between the two commanders but the opposite was true. The commanders worked together and combined forces whenever possible. Why did this happen? The commanders had been friends for 26 years. They met during a unit exchange, spoke each other's language, had been immersed in the other's country, had served together over the years and remained friends. In 2010, when the commanders of two diverse units from differing nations met, it was not just a meeting of commanders, but a meeting of old friends.

> "Although language is important, it is not the key piece. It is understanding culture. It is understanding the underlying social-economic factors that affect the countries they are involved with."
>
> -GEN Raymond Odierno

The Past is Prologue. The current Army effort to partner with other nations is not new; the history of the Army is the history of advising and partnering with others like the Indians in the War of 1812, Korea and Japan at the turn of the 20th century, and to numerous nations just prior to and during World War II. After World War II, the Army had the Korean Military advisor group assigned in South Korea to partner with the South Koreans in counter guerilla operations. After the North Korean invasion, the advisors stayed with the Korean units with mixed results. The Army conducted different studies about the partnering effort and learned valuable lessons. Advisors assigned to Korean units received no special training on language, culture or even advising. American advisors tried to get the Koreans to act like Americans, clearly alienating them due to cultural differences. Very few of the advisors spoke any Korean and this lack of language expertise resulting in many misunderstandings due to translator failure.

After the French left Vietnam, Americans started using advisors to partner with the Vietnamese; both sides having the common goal of preventing the spread of Communism and defeating guerrilla activity in South Vietnam. While the partnering effort in Vietnam was improved over the Korean experience, there were still many issues. Initially, advisors again received no special training in language, culture and advising. While this did improve over the course of the war, it never reached a level that truly prepared an advisor to be a partner. The American advisors attempted to learn Vietnamese, but again, this effort was unsuccessful. The advisors depended on their partner speaking English, or they used translators with mixed results. A clear issue was that the U.S. Soldiers never formed friendships with their Vietnamese counterparts. The American would serve his one year tour and go home while the Vietnamese had no choice but to fight on. In a study conducted, some Vietnamese partners reported that in their history of fighting, they had 20-30 different military advisors with their unit.

In 1981, American advisors started partnering with elements of the El Salvadoran army. While this partnering effort seemed to learn from past experiences, there were still difficulties. There was still a difficulty in languages, but less than the past. Special Forces Spanish speakers were employed as advisors, and while they had a good grasp of Spanish, local dialect differences caused problems since the advisors were not experts in that particular region.

Additionally, support troops like military intelligence advisors did not have the requisite language skills. While having a general understanding of the Central American culture, the advisors, not being experts in this region, had difficulty with specific cultural issues. Like Vietnam, the short tour lengths hindered the ability of the partners to become friends.

The concluding chapter of the Combat Studies Institute's, Advising Indigenous Forces: American Advisors in Korea, Vietnam, and El Salvador, provides some interesting observations about recent historical partnering efforts by the U.S. Throughout the study, CSI identified language and cultural shortcomings as a major hindrance to partnering and recommended advisors receive much greater education and training on language and culture before employment. In the recent past, the Army has assigned advisors based solely on their military competence, and with no consideration for being able to be an advisor. Advisors need the patience of Job, the ability to accept and live in a foreign culture, and the ability to learn a second language. There are many outstanding Army officers that do not have the abilities to be a good advisor. While having military competence, they just don't have the required skill set that allows them to work with people that speak a different language and go through life with a different mindset. One of the major shortcomings of Army partnering has been the

ability to form friendships. The LTG Keen/MG Peixoto relationship, while the goal of any partnering effort, is an anomaly. Lifelong friendships do not happen quickly; they must be nurtured over a long time.

Cultural Training and Education. Many believe that the most difficult thing to educate and train for regional Soldiers is language. In fact, culture is the most difficult to train and educate. The primary problem is there is no common understanding of culture, and some of the accepted definitions do not meet the military's requirements. As a result, it is difficult for the Army to educate Soldiers when it doesn't know what education is needed.

Another obstacle to cultural training and education is cultural self-awareness. In 2013 *Fires Bulletin* article, "Understanding Culture: Implications for the United States Army Training and Education," retired COL Eric Stanhagan wrote, "…one's own cultural bias and appreciation of how cultures differ from one's own."

One of the biggest obstacles in understanding another's culture is to understand your own culture and apply that to how others view you. An example is the American frustration with the Arab concept of time. Americans meet with their Arab counterparts and expect an immediate answer. The Arab partner replies "Inshallah" and there is no decision and that frustrates the American. However, the American never considers his Arab partner: maybe the Arab is not too slow, but rather, the American is acting too fast.

Cultural knowledge is broken into general and specific. General cultural knowledge are the principles of understanding culture through knowledge of geography, political, military, history, economic, social, information and infrastructure. We derive general cultural knowledge from the commonalities of worldwide cultures, in the same way, the military deduces principles from multiple campaigns and battles. General cultural knowledge becomes the basis for specific area knowledge; the study of a specific group. An example is the study of the republic system of government. General cultural knowledge is the understanding of the principles that define a republic, while specific cultural knowledge is an understanding of how Zambia is governed as a republic.

Language Training and Education. The seven billion people of the world speak more than 7,000 languages. In some countries, there are hundreds of different languages and dialects. According to SIL International, "Ethnologue: Languages of the World," Indonesia as an example has 742 languages and distinct dialects. It is unrealistic to think we can come close to having Soldiers trained on each of these languages; however analysis allows us to select those languages that will allow us to partner with the most people and the most countries. More than 60 percent of the world speaks one of 11 languages as its primary or secondary language (Mandarin, English, Spanish, Russian, French, Hindu/Urdu, Arabic, Portuguese, Bengali, Japanese, and German).

While Mandarin is the language spoken by the greatest number of people in the world, only two countries in the world have it as their official language. Only 780,000 people speak Swahili as their primary language, but four countries have it as their official language, twice as many countries as Mandarin.

Priorities in language training shouldn't be based solely on the number of people who speak a particular language. This is why the COCOM's establishing the regional requirements is key to successful partnering.

Immersion: The Key Step. The most important aspect of creating an RE is immersion into the assigned region. While the RE might be fluent in the language and thoroughly knowledgeable of the culture, he will not become an expert in his assigned area until he lives among those he desires to know. In the classroom, a student can speak Arabic perfectly, but because there are more than 17 variants of Arabic, he will not be conversant with his partners until he lives and works with them. The same is true with cultural training and education. While the student will obtain general cultural knowledge in the classroom, learning the specific cultural knowledge can only be done in the region.

The Army can allow RE to take paid sabbaticals during their career. ROTC and West Point currently have programs where cadets travel to foreign countries to be immersed in the language and culture of the region. The Army should allow RE to take sabbaticals after professional military education courses in order to improve their skills.

Regional Expert Career Cycle. Regional expertise begins early during the assessment of officers. ROTC and West Point cadets would be required to take college language classes. Cadets take additional cultural electives (religion, history, politics, etc.) on their region. Based on the ability to learn the language and understand the culture, the cadet is assigned as an RE. RE cadets get an immersion event like the ROTC Cultural Understanding and Language Proficiency program, or a type of sabbatical. Upon commissioning, RE officers would have a language capability, and understanding of the culture aspects of their particular region.

Within the first six years of a career, an RE will attend Basic Officer Leader Course and the Captain's Career Course. For each region within a COCOM, there could be a small group composed of REs of the region, the international officers attending the course from the region, taught by an RE of the region. During these courses, the RE could continue their language and cultural education and immersion with the assistance of the IOs. After BOLC or CCC, the RE could be offered the opportunity for a sabbatical in their region. For one or two months, the officers could live in the region, taking language courses, meeting with local officials and military members, experiencing the cultural and people of the region first hand, and gaining valuable regional experiences.

During their early company grade years, RE would serve in regionally aligned units. As a lieutenant, the RE would gain experience in their basic branch while also gaining better regional experience under the mentorship of their senior leaders who are similarly regionally aligned. After completion of CCC, RE could serve on the staff of a regionally aligned brigade combat team or division, providing valuable experience to those units. Command of a company in a regionally aligned unit will continue the officer's experience in his basic branch, as well as in the region. During these years, the RE would

"...in the 21st century, military strength will be measured not only by the weapons our troops carry, but by the languages they speak and the cultures that they understand."

-President Barack Obama

experience exercises and unit exchanges with regional partner nations. Professional development programs in the unit could focus on the region and continue to prepare the RE. Personal relationships with Army and allied partners would continue to form and cultivate.

Upon completion of the company command, the RE, like other officers, would serve in nominative assignments. The RE could attend advanced civilian education related to their region, with a utilization assignment following completion of the education. RE would be prime candidates to serve in joint billets, either on the COCOM staff of their region, or in offices related to their region on the joint staff. RE could serve in Army assignments as well, working on the Department of the Army Staff in positions related to their region, serve as small group instructors for regional small groups at our schools, or serve as instructors at West Point or with ROTC. Nominative assignments could continue to help the RE obtain experience in their region, but they would need to be carefully managed to ensure the RE is assigned in pertinent regional related assignments, and a large investment the Army has made is not wasted.

The RE would have continuing professional military Education opportunities like attendance at Command and General Staff Course and the Army War College. Small groups could be regionally aligned. While at CGSC and AWC, RE could sponsor IOs attending the course. Allied officers attending these courses are many times the 'best and brightest' of their armies and are destined for high-level assignments in the future. The bonds formed in the classroom and the social settings at Fort Leavenworth, and Carlisle Barracks could pay dividends in a crisis area of the world in the future. At these institutions, RE would have the opportunity to attend electives that continue the regional education.

During field-grade assignments, the RE expands on his regional experience and contributes to BPC and other COCOM missions. To continue his basic branch qualification, the RE would serve in 'key development positions' in regionally aligned units, gaining additional branch experience while continuing his regional proficiency. He would again participate in unit exchanges and exercises within the region, but he would now mentor the junior officers in his units as experts in the region.

Field grade nominative assignments would give the Army an opportunity to capitalize on the experience of the RE as he serves in Joint and Army assignments. Additionally, the RE would serve in assignments in intergovernmental agencies or work in combined headquarters, broadening their strategic view of the world. As the RE becomes a battalion and brigade commander, he has spent a career becoming a legitimate regional expert, with nurtured friendships in the region, within U.S. agencies, and among allies and friends. REs would contribute to the military's long-range effort to gain and maintain friends and partners worldwide to prevent war and to ensure access should deterrence fail.

Where We Are. The Department of Defense and the Army have published policies and plans to guide language and culture training and expertise. There have been many summits, workshops and experiments to investigate the future of this critical education and training. The military has some of the best educational institutions to educate and train its leaders on language and cultural. Additionally, programs like the Defense Critical Language and Cultural Program have created partnerships with civilian education institutions. While this is a good start, it can be improved. The Government Accountability Office and congressional oversight like that provided by the Committee on Armed Services have identified a lack of a strategic plan for language and cultural training.

Where We Need To Go. If DoD and the Army desire to develop friendships and partners worldwide, they need to develop a detailed strategic plan that allows the COCOMs to select and prioritize regions, and best allow the Army to provide RE to the COCOMs.

As recommended by the "Language and Culture: A Strategic Imperative Summit," the Army should develop a three-tiered language, regional and culture-specific force management model that capitalizes on Tier 1 (language and regional professionals) leader's regional expertise. Regional experts should be repeatedly assigned to units aligned to their region and to positions that strategically support the region, such as COCOM staff, Pentagon desk officers, etc. Some of our future leaders will be outstanding basic branch officers, but they will not have the language capability or cultural sensitivity to be a regional expert, but they can still serve as a Tier 2 (surge capability) or Tier 3 (the bench) leader.

West Point and ROTCs provide excellent language and cultural education opportunities. The Army should make it mandatory that cadets take language courses in college. Additionally, the Army should mandate courses (history, religion, politics, economics, etc.) on the cadet's assigned region.

Since immersion is so critical for RE, the Army needs a sabbatical program to support RE. RE should have a sabbatical before commissioning and at least once after they enter the Army.

Maintaining RE will not be easy, and the Army needs to develop a program of career long education and training. Professional military education courses should have small groups focused on regions, with IOs from the region in the group. RE should be sent to advanced civil schooling that supports their expertise.

The Regional Expert. The RE is foremost, a basic branch officer of the conventional force. He receives extensive education and training before and after commissioning on a region as identified and prioritized by each COCOM. He repeatedly serves in units aligned to that region, in the region, or in positions that strategically support the region. Most importantly, throughout the repeated tours in regionally aligned units, in regionally focused small groups of professional military education courses, in normative assignments, the RE takes the opportunity to make friends that can result in cohesive partners for the Army. These partners not only include indigenous regional friends, but also include friendships with Unified Action Partners. The RE will make friends with personnel from other governmental agencies; the assistant attaché of today may be the chargé d'affaires of tomorrow. With repeated tours within the region, the RE will make friends with Special Forces Soldiers, who are also aligned to the region. Nongovernmental organizations assign people repeatedly to the region, and the RE will develop friendships with them, too.

The best way for the Army to develop partners worldwide is to have REs whose friendships provide the catalyst of those partnerships.

Retired Lieutenant Colonel Jeffrey J. Gudmens is a Booz Allen Hamilton contractor supporting the Joint/Army Experimentation Division at TRADOC, with duty at the Battle Command Battle Laboratory at Fort Leavenworth, supporting Army experimentation. He holds a BA is History from the University of Dayton and an MA in History from the American Military University. Gudmens was an infantry officer who served in the 82nd Airborne Division, 6th Division, 25th Division, XVIII Airborne Corps and I Corps. He was the Operations and Training Advisor to the Royal Saudi Land Forces for one year. He also taught history at the command and General Staff College and was the team leader of the Combat Studies Institute's Staff Ride Team.

Joint Deployable Integrated Air and Missile Defense

By LTC Glenn A. Henke

"We will continue to pursue effective and efficient methods to improve our ability to protect the homeland. Our citizens expect our vigilance and rigor to protect them from missile attacks on our soil. We work diligently to maintain their trust." GEN Charles H. Jacoby, Jr. Testimony to Senate Armed Services Committee, March 19, 2013.

Army Air and Missile Defense units have a long history of supporting homeland defense. Nearly all Air Defense Artillery units trace their lineage to the coastal artillery. Throughout the Cold War, Air Defenders manned the Nike-Hercules units throughout the continental U.S. and Alaska. In the current era, short range air defense units stand watch over the National Capital Region on a continuous basis.

North American Aerospace Command and U.S. Northern Command recently concluded a joint test to determine the feasibility of employing deployable AMD assets in concert with U.S. Air Force units currently executing Operation Noble Eagle. NORAD and USNORTHCOM are now moving forward to develop comprehensive plans to enable the employment of deployable Integrated AMD assets in the USNORTHCOM area of responsibility, similar to other geographic combatant commands. This could result in additional requirements to Army AMD forces.

In the 2011 National Defense Authorization Act, Congress expressed concern to the USNORTHCOM commander regarding homeland vulnerabilities to cruise missiles and short and medium range ballistic missiles. Congress tasked USNORTHCOM, in coordination with the Missile Defense Agency and the Joint Integrated Air and Missile Defense Organization to assess this vulnerability. In response, NORAD and USNORTHCOM coordinated with the Office of the Secretary of Defense to determine how to employ deployable IAMD assets in defense against this threat. USNORTHCOM and OSD named the resulting effort the Joint Deployable Integrated Air and Missile Defense Joint Test.

The OSD director of Operational Test & Evaluation chartered the JDIAMD Joint Test to develop tactics, techniques, and procedures to employ deployable IAMD packages inside the continental U.S. and Alaska; NORAD and USNORTHCOM. This was done in close coordination with the U.S. Army Space and Missile Defense Command sponsored the test activity. Since deployable IAMD assets have been successfully employed in other geographic combatant com-

Figure 1. Joint Publication 3-01, *Countering Air and Missile Threats,* March 23, 2012. (Information provided by LTC Glenn A. Henke)

Counterair Framework

Offensive Counterair

- Attack operations
  - –Attacks on missile sites, airfields, infrastructure, and command and control sites
- Suppression of enemy air defenses
- Fighter escort
- Fighter sweep

Defensive Counterair

- Active air and missile defense
  - –Air defense
  - –Ballistic missile defense
- Passive air and missile defense
  - –Detection and warning
  - –Chemical, biological, radiological and nuclear
  - –Camouflage, concealment and deception
  - –Hardening
  - –Reconstitution
  - –Dispersion
  - –Redundancy
  - –Mobility

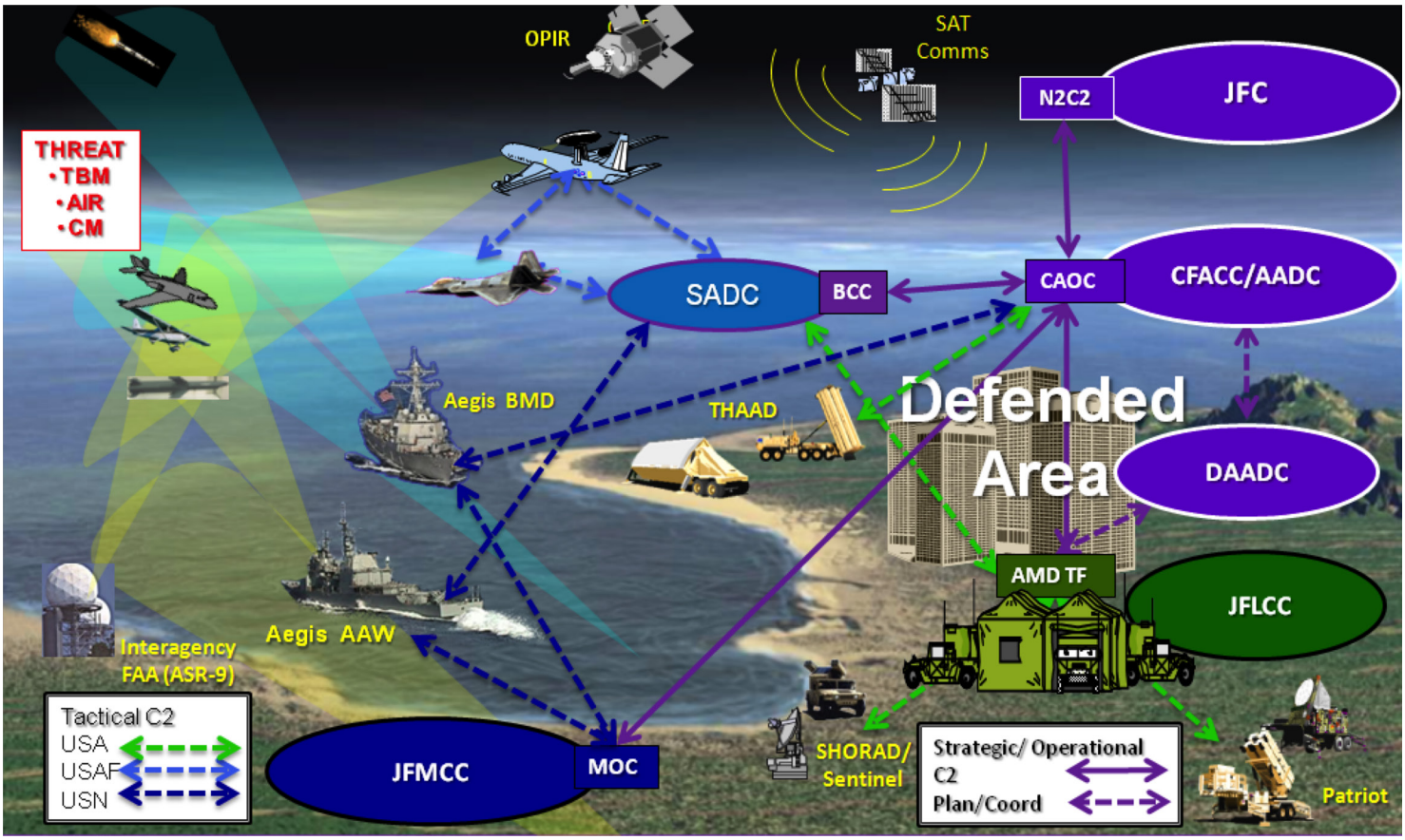


Figure 2. The Joint Deployable Integrated Air and Missile Defense operational view. (Illustration courtesy of LTC Glenn A. Henke)

mands for decades, the JDIAMD Joint Test team focused its TTP development efforts at the strategic and operational levels. The team further restricted its efforts to active AMD under the defensive counterair framework (see Figure 1).

The JDIAMD Joint Test addressed a discrete set of homeland threats: short and intermediate range ballistic missiles, cruise missiles, unmanned aerial systems, and the 'traditional' Operation Noble Eagle threat set, which includes civilian aircraft (both commercial and private) either hijacked or unwittingly violating restricted airspace. The team did not address intercontinental ballistic missiles since assets under U.S. Strategic Command's Combatant Command authority address that threat.

JDIAMD Execution. The JDIAMD operational view, as shown in Figure 2, is similar to most operational views associated with integrated AMD. However, two distinct differences drove the majority of the JDIAMD Joint Test problem set. The first difference is the role of the Joint Force commander. Unlike most theaters, the NORAD and USNORTHCOM command center is involved in the fire control loop for certain types of engagements, to include intercontinental ballistic missiles. As a result, some roles traditionally performed by an air operations center in other geographic combatant commanders' areas of responsibility are elevated to the NORAD and USNORTHCOM commander. This difference required the JDIAMD Joint Test team to closely coordinate strategic and operational execution TTP development to account for these theater-specific differences.

The second distinguishing feature on the JDIAMD operational view is the integration of radars operated by the Federal Aviation Administration. At first glance, this would appear to be largely a problem of link architecture, but this integration is indicative of the larger Operation Noble Eagle mission set. Since the 9/11 attacks, NORAD and its three regions have conducted active air defense fighter patrols (with ancillary support, as required) over the U.S. and Canada as part of the bi-national command's aerospace warning and airspace control mission. This operation, codified in a chairman of the Joint Chiefs of Staff execution order, provided a baseline for the JDIAMD Joint Test to integrate the operations. All JDIAMD related procedures needed to mesh with the existing and approved Operation Noble Eagle procedures.

Based on bilateral agreements with Canada, NORAD conducts aerospace warning and aerospace control, while USNORTHCOM conducts homeland defense. For practical purposes of deployable IAMD, NORAD executes the 'air breathing' fight (to include cruise missiles), while USNORTHCOM executes the ballistic missile battle and subsequent consequence management. Although they share the same commander and combined staff, NORAD and USNORTHCOM have separate authorities, as well as separate J3 (operations) directorates. As a result, the National Capital Region Air Defense is an NORAD mission, while intercontinental ballistic missile defense is a USNORTHCOM mission in concert with U.S. Strategic Command. In a JDIAMD scenario individual capabilities not commonly associated with Operation Noble Eagle, such as a Patriot battalion, could be required to simultaneously execute both NORAD air defense and USNORTHCOM ballistic missile missions.

TTP Development and Test Design. The JDIAMD Joint Test spent approximately 30 months developing, testing, refining,

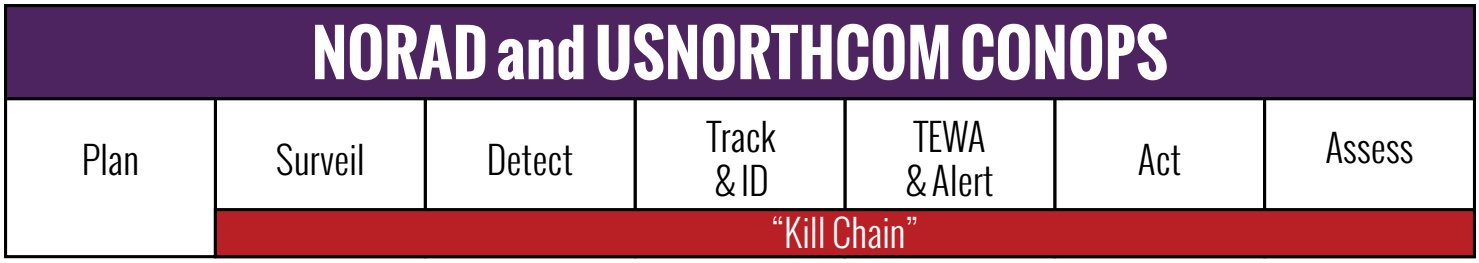


Figure 3. NORAD and USNORTHCOM Joint Engagement Sequence. (Information provided by LTC Glenn A. Henke)

and re-testing planning and execution TTPs. Two command post exercises served as the 'graded' test events for the execution TTP; each preceded by a tabletop exercise for TTP refinement. The second field test included a defense design planning exercise to assess the planning TTP.

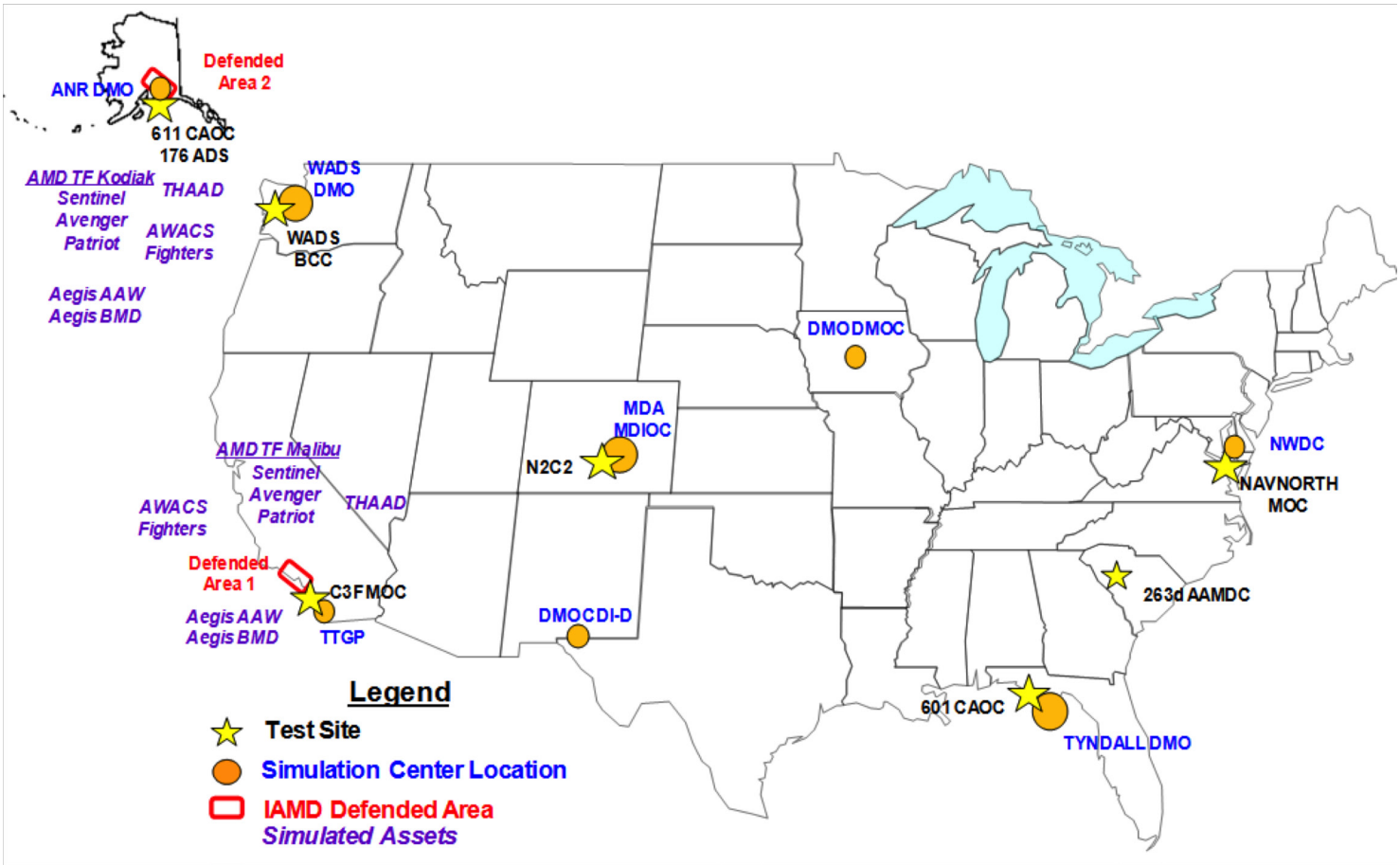
The NORAD and USNORTHCOM Joint Engagement Sequence, as outlined in the commands IAMD concept of operations and depicted in Figure 3, served as the JDIAMD execution TTP framework. These TTPs consisted primarily of checklists for command center watchstanders and decision aids for leadership within the N2C2 and the AOCs. In addition to those formally evaluated TTP, the team developed supporting TTPs for the U.S. Navy Forces North Maritime Operations Center, the Air Defense Sector, and the 263rd Army Air and Missile Defense Command. Although not formally evaluated, these supporting TTPs provided the crucial links between the tactical units and operational level command centers.

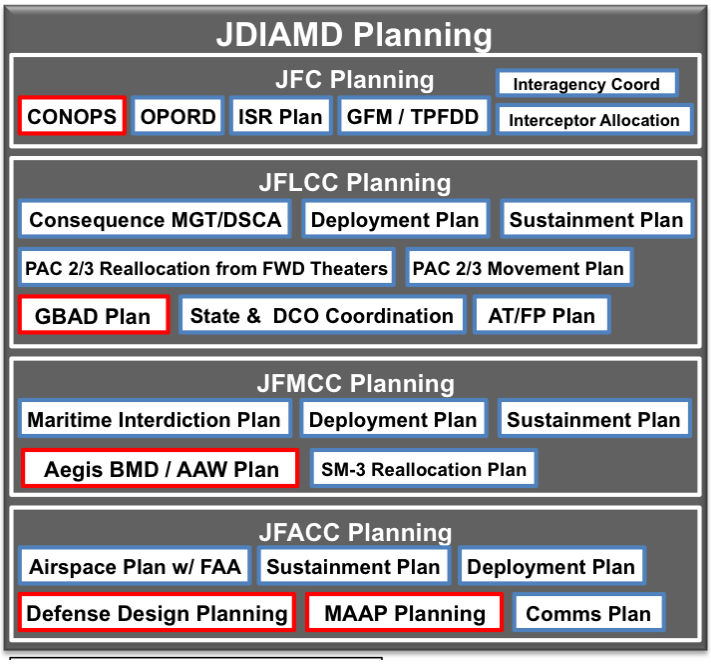
The JDIAMD Joint Test team formally tested the execution TTP during two distributed command post exercises conducted in conjunction with homeland defense exercises Vigilant Shield 13 (Field Test 1) and Vigilant Shield 14 (Field Test 2). The Field Test 1 scenario consisted of a robust IAMD threat to Houston during an international sports event. This 'threat' exercised the TTPs for the continental U.S. NORAD Region and the Western Air Defense Sector. In Field Test 2, two separate JDIAMD packages defended threats to conferences in Santa Barbara, Calif., and Anchorage, Alaska, thereby adding the Alaska NORAD Region and the 176th Air Defense Squadron into the IAMD fight.

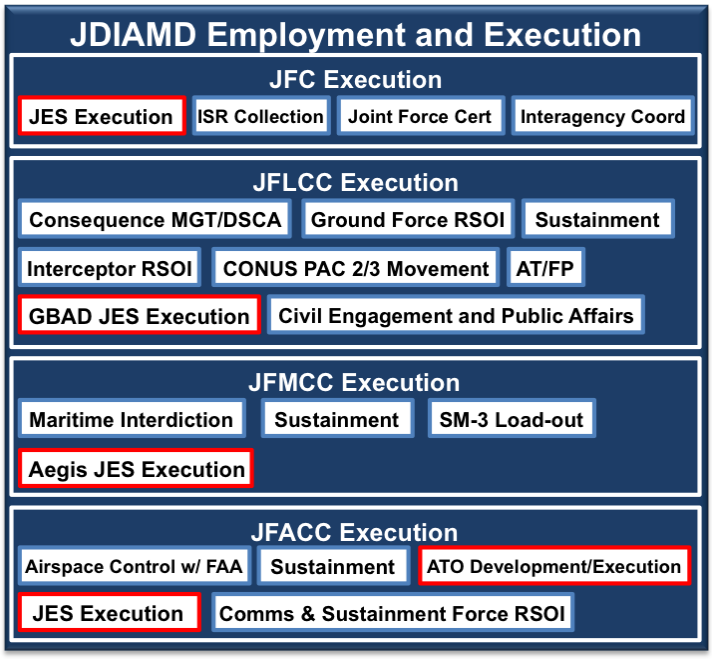
Figure 4 depicts the exercise design for Field Test 2.

The joint operations planning process, the joint operations planning and execution system, and existing command center battle staff standard operating procedures formed the basis for the Joint Test team's planning TTP development. In order to evaluate the

Figure 4. The JDIAMD field test 2 CPX Scope, objectives and participants. (Illustration courtesy of LTC Glenn A. Henke)







planning TTP, NORAD and USNORTHCOM conducted a planning exercise to develop the weapons defense designs to be used during Field Test 2. Each NORAD region headquarters served as a Joint Force Air Component Commander and developed distinct area air defense plans and their associated defense designs against an exercise threat set. Although there were two JFACCs, the same 263rd AAMDC and NAVNORTH planners developed the supporting Army and Navy defense designs for both JFACCs. Since co-locating planners was not possible in this situation, the planning TTP focused primarily on enabling the supported commanders (the JFACCs) to manage the information exchanges between the geographically distributed maritime and land components. Although a detailed discussion exceeds the scope of this article, the JDIAMD Joint Test team believes the process models developed to facilitate this collaborated planning are applicable to any planning effort between supported and supporting commands.

Joint Test Outcomes. Upon the conclusion of Field Test 2, the Joint Test team conducted a comprehensive statistical and operational analysis of data collected. The detailed findings of the test are available in the final test report upon release by OSD. This article is not intended to prematurely publish the test findings against specific measures of effectiveness, nor is it intended to discuss detailed recommendations. As a result, the outcomes described below are the broad observations of the test team outside of specific test measurements.

Generally speaking, the JDIAMD Joint Test team concluded that deployable IAMD execution is feasible within the NORAD and USNORTHCOM AOR. One crucial enabler to this execution is the delegation of weapons assignment to the air defense sector, which is normally retained at the NORAD Region in day-to-day Operation Noble Eagle execution. With the integration of tactical sensors from Aegis, Sentinel, and Patriot, the sectors are best positioned to serve as the weapons assignment authority, just like the control and reporting center or sector air defense commander in other geographic combatant commands.

Another crucial deviation from USNORTHCOM day-to-day operations is the prosecution of the short and intermediate range ballistic missile fight at the IAMD cell within the JFACC air operations center. The N2C2 retains the fight for the defense against intercontinental ballistic missiles in all cases.

An additional area requiring further investigation and testing is the beyond line-of-sight identification TTP for cruise missiles that maximize the capabilities of Patriot and Aegis weapons systems while controlling risk of mistakenly engaging civil aircraft in the national airspace. Further engagement and collaboration with the FAA is also required in order to more accurately define military airspace requirements for IAMD execution since the military is not the airspace control authority within the homeland. Finally, the JDIAMD Joint Test team recommends a formal analysis of the implications of this mission to IAMD doctrine, organization, training, materiel, leader development, personnel, and facilities beyond the ancillary findings from the official test effort.

In developing IAMD planning and execution TTP, the Joint Test team naturally looked at those TTPs used in U.S. Central Command, U.S. Pacific Command, and U.S. European Command. In many cases, these procedures could be used by the NORAD and USNORTHCOM IAMD enterprise. However, many TTPs required modification due to the peculiarities of the bifurcated NORAD and USNORTHCOM command structure, coupled with the inherent restrictions in the homeland such as FAA as the airspace control authority and other restrictions on the use of military forces. As the Joint Test team looked closer, we also discovered that TTPs used in one geographic combatant command were not directly applicable to another due to geography, threat sets, host nation considerations, the nature of day-to-day operations, and a multitude of other factors.

These differences among the geographic combatant commands require doctrinal solutions that are descriptive and enabling, as opposed to prescriptive. The command and control structure that works for USPACOM may not work for USNORTHCOM, and TTPs that are successfully employed in USCENTCOM may be inappropriate for use in USEUCOM. Just as a ground attack must be tailored to the particular enemy and terrain, IAMD doctrine and concepts of operations defy a 'one size fits all' approach.

Since most IAMD doctrine implicitly assumes these operations will be executed

See JDIAMD on page 27

Joint Counter Low, Slow, Small Unmanned Aircraft Systems Test

By MAJ (Ret.) F. Patrick Filbert and USAF Maj. (Ret.) Darryl Johnson

"Enemy unmanned systems will complicate air...operations by adding new low-altitude...threats to the force that must be countered. This concern will require the development of friendly countermeasures, including tactics, techniques, procedures, and training that enable the force to operate in the emerging environment." Office of the Under Secretary of Defense (Acquisition, Technology & Logistics) Strategic and Tactical Systems-Unmanned Warfare & Intelligence, Surveillance, and Reconnaissance Unmanned Systems Integrated Roadmap (2013-2038).

"The proliferation of low cost, tactical unmanned aerial systems demand we think about this potential threat now....We must understand the threat these systems present to our joint force and develop the tactics, techniques, and procedures to counter the problem..." GEN James N. Mattis, USJFCOM Commander.

"Counter UAS is a prevalent problem that we think is only going to get bigger." BG Jeffrey N. Colt, Commander, Joint Unmanned Aircraft System Center of Excellence.

In August 2012, the Director of Operational Test and Evaluation chartered the Joint Counter Low, Slow, Small Unmanned Aircraft Systems, joint test. This began to develop, test, and evaluate integrated air and missile defense operator TTPs to increase operators' ability to detect, track, and identify adversary low, slow, and small unmanned aircraft systems and provide timely notification to the area Air Defense commander.

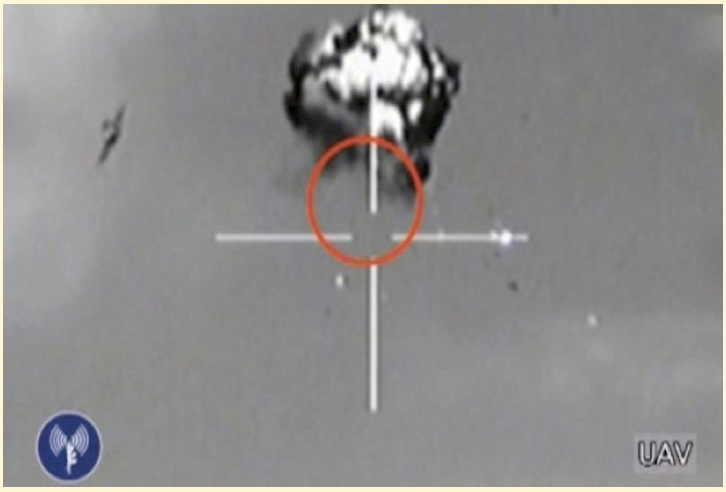
The JCLU joint test was established at and co-located with the U.S. Air Force Warfare Center, Nellis Air Force Base, Nev. The JCLU joint test reports to the DOT&E Joint Test and Evaluation Program office, which oversees projects that resolve issues in joint military operations. Additionally, the project receives support from the Joint Staff J8, Joint Integrated Air and Missile Defense Organization. The JCLU JT also receives on base support at Nellis AFB from the Air Force Joint Test Program Office and the 505th Test and Evaluation Group.

Over the course of two years, the JCLU Joint Test program will increase the integrated air and missile defense operator's ability to detect, track, and identify adversary LSS UAS and alert forces to their presence. The test team intends to do this by providing cross-domain intelligence to the operators to better allow them to tailor their systems to the adversary LSS UAS target set.

The Threat Problem. The JCLU JT program was conceived to develop operational architecture and organizational relationships that will increase the cross-sharing of tactical information to increase the operators' ability to execute the joint engagement sequence. Efforts to understand and address the adversary UAS threat began in the last decade as the use of UAS as combat multipliers in countries and areas covering the Middle East, Far East, and Eastern Europe occurred.

The proliferation of UAS worldwide has the potential to increase the threat against U.S. interests as technology advances make these systems cheaper and more accessible. Israel, in addition to the U.S., is a top producer and most frequent user of UAS and is a leading manufacturer and exporter of UAS globally. However, these two countries are not the only ones developing, exporting, and utilizing unmanned aircraft systems; there are at least 4,000 platforms worldwide. Currently, at least 75 countries are acquiring, operating, or have UAS programs in development.

Israel Defense Forces' video screen capture of a UAS shot down over southern Israel on Oct. 6, 2012. Another shoot down occurred in April 2013, off the coast of Israel; both UAVs apparently originated from Lebanon. (Photo courtesy of By MAJ (Ret.) F. Patrick Filbert and USAF Maj. (Ret.) Darryl Johnson)



Aviation Industry Corporation of China's Wing Loong UAS on display at the 2013 Paris Air Show. (Photo courtesy of By MAJ (Ret.) F. Patrick Filbert and USAF Maj. (Ret.) Darryl Johnson)

Iranian Ababil UAS conducting a launcher supported take-off for testing operations. (Photo courtesy of By MAJ (Ret.) F. Patrick Filbert and USAF Maj. (Ret.) Darryl Johnson)

Countries, besides the U.S. and Israel, either are or intend to export UAS to other countries and trans-national entities. The list of UAS exporting countries include China, South Africa, Iran, and, potentially, the United Arab Emirates, with China being the only country other than the U.S. to export UAS to a Middle Eastern country (e.g., the UAE).

Potential adversary UAS use is not limited to nation-states for military operations; "…the American use of UAVs during the last decade opened the door to a future where their unique capabilities are sought after by multiple nation-states, terrorist organizations and extremist/terror groups, such as the drug gangs along America's southern border."

The potential mission set of adversary UAS ranges from armed (e.g., external weapons or 'suicide' UAS used as a 'poor man's cruise missile'), information gathering and electronic warfare, to propaganda efforts demonstrating unapproved access to the U.S. National Airspace System.

UAS use is limited only by the imagination of the adversary. While the U.S. limits armed UAS operations to having a 'human in the loop,' to lower the risk of collateral damage and unintended civilian deaths, some adversaries do not have such limits.

Currently, integrated AMD operators are focused on threats that are significantly larger and faster, such as manned aircraft and ballistic/cruise missiles. To address this issue, the JCLU Joint Test will develop an integrated solution using intelligence to provide indications and warning to the tactical warfighter.

Efforts to Address the Problem. Prior to the existence of the JCLU Joint Test, the commander of the U.S. Joint Forces Command directed the Joint UAS Center of Excellence to address the adversary UAS threat by developing countermeasures to that threat. JUAS COE efforts began in 2010 through the development of a counter UAS concept of operations that focused on the emerging threat. The first edition of the CUAS CONOPS was tested, which resulted in a second edition being published in 2011; however the JUAS COE was disestablished in early 2012.

The lack of a joint entity to continue the next logical step of the JUAS Center of Excellence's counter UAS CONOPS—TTP development—led to the chartering of the JCLU Joint Test. The joint test is developing and validating TTPs focusing on adversary's low, slow and small UAS operating below 18,000 feet below sea level, flying at less than 250 knots, and having a small radar cross section.

The JCLU JT team will focus on TTP development providing the cross-correlation of indications and warning information supporting increased timeliness and accuracy in reporting low, slow, and small UAS threats.

Roadmap to Success. Current Air and Missile Defense programs focus on large, fast, and lethal platforms, relying heavily on radar as an electronic means of detection. The introduction of the low, slow, and small UAS, flying at low altitude, in high clutter areas, are difficult for fielded systems, as currently configured, to detect, and has created new challenges for these AMD systems.

Adversary low, slow, and small UAS can operate in all phases and environments of conflict, from attacks in the U.S. National Airspace System, to insurgencies, to total war in contested airspace overseas. Adversary LSS UAS also present specific challenges, such as positive identification within the joint engagement sequence.

Integrated AMD operators require comprehensive procedures to increase their ability to detect, track, and identify the low, slow, and small UAS providing notification to the area ADA commander. The joint test will strive to improve IAMD operator's capabilities by providing cross-domain intelligence better allowing them to tailor their systems to the LSS UAS target.

Way Ahead. As the JCLU JT efforts continue throughout its two year lifecycle, a series of products will be developed for the warfighters use. These include an interim TTP disseminated via tactical memoranda and bulletins and are revised and validated during joint test events, such as Black Dart. The final JCLU product is to be integrated into joint and multi-service publications, such as the Air Land Sea Application Center's Integrated Air Defense Systems Multi-Service TTP.

Mr. F. Patrick Filbert is a retired USAF major and is currently the JCLU JT Counter-UAS Overseas Scenario and Threat Analysis planner. His post-military career has encompassed support to U.S. Air Force intelligence squadrons and unmanned aircraft systems wing- level units and project manager for the U.S. Pacific Command J2 Socio-Cultural Analysis Team. Commissioned an armor officer in 1986, he transitioned to Military Intelligence in 1990 serving as an assistant brigade S2 during Operation Desert Storm, as well as holding command and staff positions from platoon through joint staff levels in the continental United States, Europe, Korea, and the Middle East during a 24-year Army career. These positions included a collection and jamming company commander, strategic reconnaissance operations planner in Korea, an intelligence analyst with NATO SFOR in Bosnia, the Army G8 Shadow UAS force integrator, Army G2 foreign intelligence watch chief, United States Amy Europe G2 plans chief, and concepts branch chief for the Joint UAS Center of Excellence. He is a 1986 graduate of the University of Hawaii-Manoa with a Bachelor of Arts in History and earned his master's degree in Strategic Intelligence, with Honors, in 2008 from the American Military University.

Mr. Darryl E. Johnson is a retired USAF major and is currently the JCLU JT task lead and test manager. Prior to serving in his current position, Johnson served as the Joint Unmanned Aircraft Systems Center of Excellence deputy chief, Counter-UAS Branch. While at the JUAS COE, he led the development of the Department of Defense's first Joint Counter-UAS CONOPS and a series of counter-UAS tests and studies. His military career spanned 20 years, serving in various test and evaluations positions; the chief flight test engineer for the 59th Test Squadron, Nellis AFB, Nev.; a test integrated product team lead for the Airborne Laser System Program Office, and test director for the AWACS 30/35 Radar System Improvement Program. Johnson is a Certified Test and Evaluation Professional.

Full Spectrum Operations and Coalition Partnerships

By 1LT Dwight Hicks

In today's operational environment, coalition partnerships are helping forge the way ahead in how the Army operates and will be operating in the future. The formation of alliances to combat a common foe has been utilized throughout military history. No country has ever gone to war without at least one other country assisting them. The mental dexterity for the U.S. Army to forget that we are no longer working in a country that we have invaded, but instead in a country that has welcomed us with open arms, will allow units to effectively establish a great relationship and strengthen the bonds between our coalition partners. Developing these ties is one way the Army can optimize their training and thoroughly prepare the military and our allies for the next conflict.

Over the last nine months, the Soldiers, noncommissioned officers, and officers of B Battery, *Bulldogs*, from the 3rd Battalion, 13th Field Artillery Regiment, have experienced this first hand. These warriors fully understand the meaning of partnership. In February 2012, the *Bulldogs* were notified that they would be detached from their organic battalion and reorganized to a 99-Soldier security force company, attached to 2nd Battalion, 18th Field Artillery, and deploying to the United Arab Emirates. With six months to reorganize, train, and prepare for the mission, CPT Rafael Chagolla and 1SG Cary Adams, developed and executed a detailed training plan that prepared the battery for the upcoming mission.

Despite the rigorous training and as prepared as the unit was, one thing was missing from the equation. No one could have known that once deployed, they would be located on an Emirate Air Base and would be working with their host nation and multiple coalition forces, including the Australian air force, British Royal Air Force Regiment, the Dutch and the New Zealand army. Prior to arriving at their camp, the *Bulldogs* and the battalion were unaware of what type of restrictions that the host nation would impose on them. Most of the Soldiers assumed that they would establish their camp in the desert and be able to establish their policies and procedures. Little did they know they would be living on a foreign military air base, and the restriction the Emiratis would place on them would keep them from working in the manner the Army had grown accustomed to, after 12 years of conflict. The freedom to arm their Soldiers, set up guard towers and conduct daily patrols, such as numerous units have done for many years, in Iraq and Afghanistan was now gone. The majority of Soldiers and leaders were shocked they were unable to have weapons and ammunition near the entry control point, or even carry weapons around on the camp.

> **"We have learned many lessons over the last 10 years, but one of the most compelling is that - whether you are working among citizens of a country, or working with their government or armed forces - nothing is as important to your long term success as understanding the prevailing culture and values."**
>
> **-GEN Ray Odierno**
> **Chief of Staff of the Army**

After receiving their Camp Redleg briefings and dropping gear into tents, the *Bulldogs* immediately set their minds to the mission. The *Bulldogs* posted sentries at the entry control point and established mission command. Adams began working with his platoon sergeants to establish a set of standard operating procedures to provide access onto

Australian Warrant Officer Tom Murdock, explosive ordnance disposal technician, conducts a visual inspection of a potential vehicle-borne improvised explosive device during a joint U.S. and Australian Force Protection exercise. The Australian EOD team assisted B Battery, 3rd Battalion, 13th Field Artillery during the training. (Photo by 1LT Patrick Maloney, U.S. Army)

the camp. 1LT Michael Green took the lead, ensuring the battery's equipment was accounted for and distributed accordingly. 1LT Lance Perez began operations officer duties, ensuring the accountability of all personnel that were moving into their new home. Adams and 1LT Dwight Hicks began working to meet 2-18 FA's security force requirements and developed request for information.

After establishing the standards for Camp Redleg, the leadership was presented to the Australian air force, force protection officer in charge, flying officer Joel Krulen, second in charge, James Notarious, and their host nation liaison officer, squadron leader Mark Weatherspoon. Adams and Hicks immediately began asking questions about the force protection operations that the Australians' were conducting to see if they were dealing with the same restrictions that were placed on the U.S. The *Bulldogs* were promptly asked to join their coalition force protection working group to be introduced to our coalition force protection counterparts. Upon receiving approval from the battalion, Adams and Hicks, along with Soldiers from the battalion intelligence section, began attending and receiving necessary information regarding the security and threat levels in the battalion's area of operation. This information allowed them to refine their SOPs to protect the battalion better while conforming to U.S. Army and host nation requirements.

They also developed friendships that assisted in strengthening the relationship throughout the coalition. Before they knew it, they were conducting weekly table-top discussions on security issues, visiting each other's camps to observe daily operations and to develop future joint training events. They developed plans to conduct joint patrols of the base, which is still in the process of being approved, conducted joint weapons introductions and ranges, and were given a demonstration of the Australian military self defense and gave a demonstration of Army Combatives Program.

SGT Matthew Fergione stated that training with the Australians "gives us a feeling of the way they operate compared to our way." He stated, "it also gives us a different approach to security in the event our systems fail, and we need to find a new approach."

The coalition even asked the U.S. to teach them American football, gridiron as they call it, and they taught them touch rugby. Shortly thereafter, the Soldiers from all forces were socializing or participating in any number of events happening on a weekly basis. Perhaps more importantly, they were taking the time to inquire about one another's lives and heritages. These simple interactions are the cornerstone of any alliance. All involved began to see the impact on day-to-day operations of developing and maintaining these strong bonds. One reason these relationships are so important to maintain and need to continue to grow, is the fact that everyone will have to deal with those who are threatened by our freedoms. These relationships, either positive or negative, can have a definite impact on the outcome of any mission. As we have seen at home station, Fort Sill, Okla., the interactions among Soldiers, whether it's a training or social event, builds a cohesion and unity that cannot be duplicated in a political agreement.

As the Army begins working under the new regional alignment program, the importance of developing relationships with our coalition partners is now taking a bigger role than ever. While the Army is used to working with the Iraqi and Afghanistan military and police for the past 12 years, the way ahead will be entirely different. Units will be operating on every continent, in different environments, and with different personalities. We will still be conducting training on everything from Skill Level I tasks to combined arms exercises, but it will be the relationships that will forge the future. The ability to work with new militaries to either help them build an Army or strengthen theirs will also teach us valuable lessons. We will learn how to operate in new environments, learn new languages and understand different cultures.

More importantly, it will teach Soldiers how to operate better with partners and to help expand the coalition. As long as the Army can transition from an Army of occupation, the coalition will be able to strengthen and expand. With a stronger coalition, the War on Terrorism and any future conflict will include more countries and more firepower, and this will enhance our ability defeat anyone who threaten our freedom.

Captain Dwight L. Hicks is currently the battalion fire direction officer for 3rd Battalion, 13th Field Artillery Regiment, 75th Fires Brigade, Fort Sill, Okla. His previous assignments include battery executive officer (UAE 12-13) and platoon leader of B Battery, 3-13th FAR, and fire team leader of 2nd Battalion, 505th Parachute Infantry Regiment, 3rd Brigade Combat Team, 82nd Airborne Division, Fort Bragg, N.C. (Iraq 08-09). Hicks, who was commissioned through Officer Candidate School, holds a bachelors degree in psychology from East Carolina University.

DIVARTY, **from page 12**

the artillery to shift to proactive Fires. Through the institution of battle drills based on enemy doctrine that include predictive analysis describing what a target's next location is likely to be, DIVARTY S2 develops the ability to template predicted locations of enemy artillery throughout all phases of the battle. This preparation translates into dynamic analysis of targets by distributing indicators for each predicted location to forward observers and other assets, so predictions are quickly confirmed or denied.

Furthermore, the DIVARTY S2 shop structure itself also promotes improved analysis due to the mix of Fires and intelligence series Soldiers within the shop. For example, the inclusion of a noncommissioned officer who operates the Advanced Field Artillery Tactical Data System allows the S2 shop internally to maintain situational awareness of the battlefield without occupying S3 assets. Moreover, the DIVARTY S2 shop's gain of two intelligence NCOs during transition from FiB to DIVARTY emphasizes the increased importance of intelligence to the DIVARTY construct. This combination of increased situational awareness and direct reception of information also saves time, allowing DIVARTY S2 to support targeting. A mixed branch S2 shop is also a connection between the operations element of DIVARTY and G2. This link supports an integrated division level structure to better merge Fires with the overall fight.

Ultimately, the DIVARTY S2 construct improves and focuses the ability of intelligence to drive artillery operations, whilst advocating the Fires perspective and contributing to the division-level picture. Specific advantages include the direct DIVARTY S2 connection to G2, the ability to develop a comparative advantage in Fires-centric intelligence, and an S2 shop that combines Soldiers from Fires and intelligence backgrounds.

In addition, the efficiency inherent in consolidating Fires at the division level indicates a prospective way ahead for other force multipliers, including military intelligence, signal, and engineers. These benefits combine to suggest the DIVARTY concept is relevant beyond the Fires and intelligence communities, and may in fact be a useful idea for managing a variety of assets across the Army.

Talk More Sustainment, Less Tactics With Afghan Forces

By Cpt Kyle Wolfley

Editor's note: *This article was first published in the Infantry magazine Jan.-Feb. 2014.*

Amateurs talk tactics; experts talk logistics — this is a common expression in the military that highlights the important but underrated task of planning sustainment in operations. As the U.S. military retrogrades its materials and draws down its forces from Afghanistan, the Afghan National Security Forces are taking the lead on the majority of missions.

Marine Corps Gen. Joseph F. Dunford Jr., the current International Security Assistance Force commander, reported in his Summer 2013 commander's update: "As the ANSF have assumed the lead in their first fighting season, they have proven capable of effectively securing the Afghan people." However, he continued, "ISAF continues to provide combat support and combat service support where there are remaining ANSF capability gaps."

Though the ANSF has made significant progress over the last few years regarding tactical proficiency against the insurgents, it appears the ANSF still needs improvement in the areas of logistics, maintenance, and medical evacuation.

As with any security force, the Afghan National Army and Afghan uniformed police will surely have internal discussions about how to best task organize to resupply and maintain its units in the field. Due to vast cultural and historical differences, the Afghan supply system will develop into something different from the U.S. military's. Perhaps the system will be more effective than any we have taught them. At the same time, there is reason for concern due to the level of dependence on our logistical system that we have allowed for the past 12 years. From my experiences as a rifle platoon leader and company executive officer partnered with various ANSF elements, I believe that company-level leaders should start prioritizing their counterparts' sustainment capabilities to ensure the ANSF is able to consolidate its gains and retain recently secured areas after ISAF retrograde.

Additionally, with the recent move to regionally-align certain Army brigades, the necessity for lower-level tactical leaders to instruct and mentor foreign armies to sustain them is more salient than ever.

My experience working with various AUP and ANA platoon- and company-level leadership in various districts of Paktika

A Soldier with the 1st Combat Aviation Brigade shows Afghan service members the different parts of a HMMWV's front axle during training at Kandahar Airfield. (Photo by CPT Andrew Cochran, U.S. Army)

province forced me to realize the importance of self-reliance in sustainment operations. When I arrived to my district in the summer of 2011, it was common practice to provide fuel for the AUP's trucks when they would patrol with our element. Instead of the AUP patrol leaders moving their convoy to the Afghan police headquarters located only 30 minutes away, they would simply ask us for fuel instead. The road to police headquarters was paved and secure, yet free fuel from our platoon living on the same combat outpost was more expedient.

In addition, when the AUP's generators became inoperable, they would expect us to fix the machines so patrolmen could resume enjoying the electricity generated by our fuel. At the heart of the issue is the tension between completing missions quickly and building a long-term sustainment capacity — that is, a choice between efficiency and sustainability. If we wanted the ANSF to patrol with us on every mission, which they were willing to do and would do effectively, we would have to provide them our fuel; if we wanted to force them to practice their own sustainment systems, we could risk them refusing to patrol.

Our company did not realize what we were encouraging until about midway through the deployment when it was apparent ANSF units could not sustain themselves. After a major joint operation with our company and an ANA company to establish outposts in a remote, mountainous area, the ANA company commander requested that we air-lift rice and bread to his position in the mountains. After our battalion coordinated several resupplies to their location, it became apparent that we were doing more harm than good; instead of the ANA learning how to resupply them during the fight, they relied on our support. The ANA leadership argued that the road winding the mountainside was too precarious to travel. Adding to the challenge was that this operation was occurring during the winter, making the roads even more difficult to traverse.

Working with our battalion security transition teams, we finally convinced the ANA leadership to force the company to resupply itself with trucks along the roads. We discovered that the ANA was very capable in sustaining itself through ground convoys for the remainder of our deployment.

Our success in this area was two-fold: not only did the ANA provide itself the materials it needed to continue its operations; the company also learned how to properly conduct a secure logistics patrol that was successful in resupplying its soldiers. Furthermore, when ANA company leadership realized the challenges that were present in conducting this convoy, it asked the local AUP for additional trucks to augment its security. The AUP agreed and both security elements conducted a successful joint patrol. As the ANA and AUP conducted multiple resupply operations without U.S. presence, the villagers could see that the ANSF was quite capable of protecting the populace independently. According to a colleague assigned to Regional Command-South, over the last year security force assistance teams have been successful in weaning their partners off American logistics. However, the ANSF's long-standing dependency on our support has further implications that reach into other areas such as maintenance and medical evacuation.

So what is the way forward to assist and mentor a foreign army in sustainment operations? There are a few lessons that we as a unit either succeeded or failed to accomplish with our Afghan counterparts, yet after reflection, may be useful for future joint operations with foreign security forces. First, just as in the U.S. Army, we should prioritize sustainment as a training objective in and of itself. In the initial stages of the deployment, we focused on training the ANA on clearing operations and the AUP on detainee operations. During the second half of the deployment, some ANA soldiers asked if we could help fix their high-mobility multipurpose wheeled vehicle, which was unable to start. After speaking with my lead mechanic, he replied, "Sir, we're not helping these guys by fixing things for them. Why don't I teach them how to preventive maintenance checks and services?"

The mechanic led a small patrol to the ANA combat outpost and taught a group of Soldiers how to identify issues and maintain their vehicles. Sadly, it took me this long to understand that we can train them to become proficient in tactics, but if they can't maintain their equipment, they will surely suffer in the long run.

Central to the issue is the ANSF's lack of a maintenance culture which sometimes even pervades units in our own Army. Due to high levels of illiteracy and unfamiliarity with mechanical systems, many Afghans lack the understanding of how important maintenance is to continue operations in the future.

An approach SFATs could take would be not only teaching how to, for example, change the wheels of a vehicle, but perhaps tell a personal story or vignette of how a vehicle became inoperable during a mission and led to failed objectives. By providing an understanding of the future implications of failing to take action on maintenance, the ANSF may realize they could be unable to fight during combat. With tightening budgets throughout the Army, the ANSF will suffer from our inability to provide logistical support. Thus, not only do SFAT leaders need to help the ANSF understand the implications of maintenance but also help devise solutions that are sustainable for the Afghans post-U.S. involvement.

Another example is at the Maneuver Captains Career Course we practiced creating training plans as SFAT commanders for a hypothetical upcoming deployment to Afghanistan. Our culminating event was an ANA squad live-fire, and we scheduled in all the necessary battle drills and collective tasks associated with accomplishing the live fire.

However, we did not discuss property accountability, maintenance, or resupply operations at all. After 12 years of fighting (and for some, even more), I would argue that most ANA soldiers are proficient in finding, fixing, and finishing the enemy. Yet to consolidate their gains and hold secured areas, the ANA will need to learn how to conduct resupply and maintain their equipment. If U.S. commanders want to see their counterparts in Afghanistan and elsewhere succeed when we transition responsibility, we as an Army should place more emphasis on sustainment operations.

Second, the ANA and AUP should consider reorganizing their units to ensure there are trained maintenance personnel at each company. One of the issues we encountered with our partnered ANA company, was that in order to have their vehicles maintained by Afghan mechanics, they would have to drive through three districts into another province where dedicated maintenance was conducted for multiple provinces.

In addition, there was only one mechanic for an entire Afghan kandak (battalion), which is clearly overwhelming for that soldier to conduct the necessary services for the entire kandak's vehicles. Clearly, the ANA will face tighter budgets in the coming years and will want to prioritize line soldiers over mechanics. Yet the ANA leadership should focus more on weapon, vehicle, and radio maintenance during initial training.

Furthermore, one soldier could be given the additional duty of mechanic and could be sent to a course that instructs him on the basics of PMCS. He could then bring this knowledge to his unit to instruct the

other soldiers how to properly maintain their equipment.

Third, SFAT commanders and small unit leaders in regionally-aligned brigades should resist the temptation to provide logistical and medical support for operations that the host nation forces could provide themselves. As mentioned earlier, though the foreign security forces will ask for logistical support and providing that support would surely optimize operational efficiency, each time we allow that force to rely on us for sustainment we miss a training opportunity to mentor on sustainment and undermine that security force in the long run. When my ANA executive officer counterpart asked me for oil for his trucks, I immediately contacted my security transition team's representative at the battalion and asked what we should do. He advised me to force the XO to use his channels and order the oil properly even though it would have been much easier for us just to give him our oil. Though there will certainly be frustrations (which even we encountered), working through the frictions is necessary in building long-lasting systems.

According to the colleague assigned to RC-South, medical evacuation is a difficult issue to address due to the high costs of refusing medical support. We are fighting alongside the ANSF and other regional partners and providing care and saving lives. Yet the ANSF will have to deal with medical evacuation after our departure and when we can allow them to ground evacuate their own casualties, we should. Commanders should prioritize which casualty types should be air evacuated by the ANSF or the U.S. and which others should be ground evacuated by the ANSF. We can help the ANSF reach sustainability by encouraging more medical personnel to be collocated with maneuver forces and incorporate deliberate medical planning into their decision-making process, which will allow them to provide better treatment en-route to a higher-level facility.

Clearly, there are circumstances that require the U.S. to provide logistical and medical support to the ANA; for instance, major operations that we would not expect the ANA to conduct unilaterally or a mass casualty situation. Commanders should use good judgment in determining which of those sustainment aspects they can assume risk, and higher commanders should support their decisions to trade short-term expediency for long-term success. Regardless, a command-directed policy at the division level or higher should dictate when the U.S. is authorized to provide support to avoid incentivizing a partner unit to seek out another battle space owner for assistance.

The ANSF have learned the hard lessons of tactics by simply fighting the enemy. The fact that the ANSF understands the culture and the insurgents far better than we ever will, along with their innate desire to survive, will drive them to find better ways to defend against and defeat the enemy. However, sustainment is challenging for every army, and U.S. forces should focus on teaching and mentoring the ANA on logistics, maintenance, and medical evacuations. After years of providing support, we must transition to forcing the ANSF to become a self-sustaining force.

Dunford understands the necessity to ensure that the Afghans can continue the fight after our eventual withdrawal: "Much work remains to be done on the systems, processes, and institutions necessary to make our progress enduring, and we are providing support at the ministerial level, as well as the corps level and below." I argue that the focus on sustainment should be made much lower: at the SFAT level where Soldiers and squad leaders understand best how to PMCS their equipment and platoon leaders and platoon sergeants know how to plan resupply and medical evacuations in advance. We should ensure our Soldiers mentor the ANSF on these basic soldiering tasks so we can be confident in their ability to conduct self-sustaining operations against an insurgency it is sure to face after our departure. Moreover, our recent emphasis on regionally aligned brigades means that our partnering and mentoring will continue beyond Afghanistan in the years to come and sustainment should be an immediate priority, not an afterthought.

Captain Kyle Wolfley is the brigade assistant S3, 4th Brigade Combat Team, 82nd Airborne Division, Fort Bragg, N.C. His previous assignments include serving as a rifle platoon leader and company executive officer with A Company, 2nd Battalion, 28th Infantry Regiment, Task Force 3-66 Armor, 172nd Separate Infantry Brigade, Grafenwoehr, Germany, and Paktika province, Afghanistan. He graduated from the U.S. Military Academy at West Point, N.Y., with a bachelor's degree in comparative politics and German.

JDIAMD, from page 20

outside the U.S., a detailed analysis is needed to ensure our combat development efforts adequately address homeland defense peculiarities. Although homeland defense is a Department of Defense core competency, DoD operations in the Homeland are usually executed in both exercises and real-world operations as defense support to civil authorities. Any scenario involving a ballistic missile or cruise missile attack against the continental U.S. or Alaska is clearly a homeland defense mission that would place the DoD in the role of lead federal agency. This core competency warrants the same consideration in planning and exercises given to likely DSCA scenarios such as hurricanes.

The JDIAMD Joint Test concludes in the third quarter of FY14. Prior to conclusion, the Joint Test team will transition the TTPs developed for deployable IAMD execution to the appropriate command centers and planning staffs. NORAD and USNORTHCOM planners are currently exploring a full force field training event to exercise the entire deployable IAMD architecture in the coming years. These planners are also integrating deployable IAMD into existing concept plans and service component plans. These plans could result in valid requirements for support from the Army, Navy, and Air Force. From a planning and execution perspective, the Joint Test team executed a small portion of the requirements of an actual IAMD deployment.

In an ideal scenario, theater shaping operations executed by the forward deployed geographic combatant commands will preclude the need to use deployable IAMD assets within the homeland. As joint doctrine codifies within the counterair framework, eliminating the 'archer' is always preferable to intercepting the arrow. However, given the continued advancements and proliferation in unmanned aerial systems, cruise missiles, and ballistic missiles, prudence suggests the U.S. needs to be prepared to defend against these threats.

The transition of a general capability to a particular threat is rarely gradual, and as the USNORTHCOM commander stated in his 2013 testimony to Congress, "Our citizens expect our vigilance and rigor to protect them from a missile attack on our soil."

Lieutenant Colonel Glenn A. Henke commands 1st Battalion, 43rd ADA at Fort Bliss, Texas. He has served in troop and staff positions in Fort Bragg, Germany, Kosovo, Iraq, the National Capital Region, Afghanistan, and Colorado Springs. His most recent assignment was as the Army Air and Missile Defense Integration lead for the Joint Deployable Integrated Air and Missile Defense Joint Test in support of NORAD and USNORTHCOM. He is a graduate of Command and General Staff Officers Course and the School of Advanced Military Studies. He has previously written for Army Magazine, Military Review, and the Fires Journal.

The Evolution of Fires Expansion in Afghanistan

By CPT Joshua P. Hollingsworth

As the drawdown of U.S. and coalition troops begins in Afghanistan, so does the drawdown of the enablers (close air support, intelligence, Fires, etc.) supporting those forces that remain. The 201st 'Saleb' Corps of the Afghan National Army (ANA), located at FOB Gamberi in the Laghman province have partnered with international security assistant forces with in Regional Command East (RC-E), since its creation in 2004. The current 201st Corps commander, MG Mohammad Waziri, recognizing that ISAF enablers will reduce named Fires his priority line-of-effort, as it is the one resource he and his subordinates directly control that provides him overmatch against the enemies of Afghanistan. The 5th Battalion, 82nd Field Artillery, 4th Brigade Combat Team, 1st Cavalry Division deployed as part of a security forces assistance brigade in late 2012. The battalion, commanded by, LTC William T. Johnson, began a journey which would ultimately lead to the development of a standardized Fires certification, rooted in Afghan artillery doctrine. This certification, centered on the Afghan D-30 howitzer, fire support, fire direction and survey, helped transition the Afghans throughout RC-E into unilateral operations utilizing their own indirect and direct fire support systems.

We inherited a solid training system from our predecessors, 2nd Battalion, 77th Field Artillery, 4th Brigade Combat Team, 4th Infantry Division, from Fort Carson, Colo. Throughout their deployment, 2-77 FA trained inexperienced artillerymen through a 14-week introduction to Field Artillery course. This course focused on the individual specialties of fire support, fire direction, section certification, and survey. The course culminated with a live-fire exercise and graduation ceremony. 2-77 FA transitioned this course to us during our relief-in-place. We were fortunate enough to complete the training of the last brigade within the 201st Corps. By training the 4th Brigade's Artillerymen right after RIP we got intensive hands on experience training with our Afghan counterparts and their Fires systems. At the conclusion of the course we were humbled and surprised to see how far the Afghans had come as artillerymen and how far we came as trainers. Just one month prior we had never trained a host nation force on a former Warsaw Pact weapon system, but in front of us were Afghan artillerymen calling for, adjusting, processing, and delivering accurate Fires.

Afghan National Army, 4th Brigade, 201st Corps artillery certification live-fire exercise. (Photo by SPC Hilda Clayton, U.S. Army)

Now that each of the brigades within the corps completed their initial training we asked ourselves "What's next?" The answer was quite literally staring us in the face as we looked through the ANA artillery doctrine. For the last decade U.S., Australian, French, Germans, and other North Atlantic Treaty Organization countries trained and partnered with ANA artillery units; using their respective doctrine to help create what would become ANA artillery doctrine. The result is the ANA 6-50 and the 3.9 series from 3.91 – 3.94. These five publications cover everything for each of the specialties within the artillery branch. It was clear after reviewing this publication that they have the baseline doctrine but lacked a centralized certification process. So we studied their doctrine and over the course of a month we were able to develop, rather package, a certification program that is derived solely from Afghan doctrine. These tasks were then packaged into a phased approach and process for executing a certification. We took this certification concept, had it translated and sent it to the School of the Artillery in Kabul. While we believed we had a good product, without endorsement from some sort of higher or academic entity, we were worried it would be just another U.S. led effort. The SoArty seemed like the best institution to get this endorsement, as it has an established training curriculum and positive reputation.

While we waited for the approval from the SoArty, we developed an alternative means to train the ANA. The mobile Field Artillery training team was created and manned in order to bring the training to the client rather than have the client come to us. This technique proved useful as we were able to broaden the reach of the artillery training across the corps. The team comprised of forward observer, fire direction, D-30 howitzer, and survey instructors (their term for gunnery sergeant under 3-9.2, *Artillery Duties in Action*) traveled through the entire 201st Corps's AO, training artillerymen in each of the four brigades. We trained, validated, and ensured that the firing units were firing safely and accurately. We pushed and tested the les-

Afghan National Army Lt. Azmarai Watandost, as part of phase one to the instructor certification, teaches other soldiers how to do a simulated call for fire mission after he successfully accomplished the task as taught to him by U.S. Soldiers with the 5th Battalion, 82nd Field Artillery at Forward Operating Base Gamberi, Laghman province, Afghanistan on May 6, 2013. (Photo by SPC Hilda Clayton, U.S. Army)

sons that the ANA learned during the basic course in order to show the full capabilities that indirect fire support brings to the battlefield. During the first training event soldiers from 3rd Brigade, 201st Corps conducted the first recorded coordinated illumination shoot since the creation of the Afghan army. The ANA shot, adjusted, and marked illumination rounds all while setting fuzzes, calculating data, and transmitting messages between the forward observers and the fire direction center. This event showed that the Afghans are capable of conducting offensive and defensive Fires and can use special munitions. We found that this type of success needed to be continually reinforced, for if they lost their confidence to shoot such missions then they also lost their competence.

After receiving verbal approval from the SoArty for our ANA Fires certification plan, we conducted the first proof of principle within 1st Brigade, 201st Corps at Forward Operating Base Mehtar Lam. The certification is conducted over a five-day period, covering the complete call-for-fire including land navigation, fire direction, both manually and using the Afghan Gunnery Computer, the artillery skills proficiency test, gunner's test, leader's test for the D-30 howitzer, and aiming circle procedures with and without survey. The soldiers from 1st Brigade tested well and certified at the completion of the event with a live-fire exercise. This opportunity provided a means for improvement within the certification. Changes were made to the length and the type of materials needed for the certification following

SGT Kham Thao, serving with 5th Battalion, 82nd Field Artillery, 4th Brigade Combat Team, 1st Cavalry Division, certifying Afghan National Army soldiers serving with 1st Brigade, 201st corps on the D-30 howitzer on Forward Operating Base Mehtar Lam, Laghman province, Afghanistan, March 12, 2013. (Photo by SPC Andrew Claire Baker, U.S. Army)

the after action review while waiting for the signed approval of our plan from the SoArty. Following the written approval from the SoArty, we conducted the second certification with the brigade that our team first trained when we arrived in Afghanistan; 4th Brigade, 201st Corps. We saw the many faces of the soldiers that we had trained so many months before and briefed them on the tasks that must be completed in order to be certified. The soldiers tested well and certified in each of the four specialties. This proved that the ANA retained the information that was taught during the basic course and could be pushed further into a self-sustaining artillery force.

After two successful certifications, we again went to the drawing board in order to develop a system in which Afghan soldiers could certify themselves. In order to accomplish this ANA first had to recognize the need for a certification team. Johnson, with the help of the ANA Corps FSO advisor, CPT Steve Chesser, conducted a series of meetings with the 201st Corps FSO, ANA COL Ahmed Jan. During one of these meetings, Ahmed Jan was shown how to certify soldiers using soldiers. He watched as a U.S. senior noncommissioned officer; MSG Joe Flores mentored young forward observers during call-for-fire training. He observed as the fire direction NCOIC taught his new lieutenant a refresher course on manual fire direction. He saw firsthand the level of detail that our Soldiers are required to know in order to be labeled certified. Ahmed Jan watched with enthusiasm throughout the completion of the different tasks. He asked many questions and realized the opportunity before him; the opportunity to form the first ANA led certification team in Afghanistan.

With the direct support from the 201st Corp FSO, we developed a systematic approach to developing an Afghan certification team. The first step was selecting the trainers in order to organize a team qualified to certify the artillery Kandaks. Ahmed Jan issued a corps-level cipher (order) to each of the brigades requiring them to send four soldiers in each of the Fires specialties: forward observer, fire direction, and survey (their term for gunnery sergeant under 3-9.2; *Artillery Duties in Action*). As the cipher was disseminated across the 201st Corps, and the facilities were prepared for the instruction, we developed a course specifically to identify the most qualified soldiers to become instructors; we needed the best of the best. The course was broken into three phases. Phase one included a four-week refresher course on each of the specialties. Phase one was key because it identified those soldiers not confident in their abilities or not interested in becoming instructors. Towards the end of phase one, four forward observers, two fire direction center operators, and three survey members were selected to continue their training into phase two. Phase two consisted of one-on-one training with coalition members covering all aspects of their particular specialty. This phase was conducted over a two-week period with emphasis being placed on disseminating information accurately. The trainees were tested on their individual knowledge, given guidance on how to train using the material, and presented with the necessary equipment required to conduct training.

Following phase two, the course transitioned into phase three, instructor qualification. The qualification phase was conducted over a two-week period in which the instructors taught untrained artillerymen from across the 201st Corps. This training reinforced the lessons learned throughout phase one and two and presented the instructors with the opportunity to define themselves as instructors and develop their own teaching methods. The course was very successful in identifying, training, and certifying Soldiers at the corps level as artillery instructors and has left the corps with the means to train itself throughout the Fires spectrum.

The way ahead for the 201st Corps depends on its ability to reinforce the skills and lessons taught by our trainers over the last nine months. The 201st Corps is scheduled to receive a Call-for-Fire Trainer in mid July in order to train the next generation of forward observers and facilitate the instructor's ability to teach. The fire direction trainers will continue to focus on computing fire direction using the Afghan shooting form and the AGC. The aiming circle sections will continue to emplace with and without survey on both the 6400 and 6000 mil systems. The D-30 howitzer sections continue to conduct maintenance, provide indirect and direct Fires, and move without assistance. The Corps, as a whole, currently conducts unilateral operations using the D-30 howitzer independently.

The framework is complete; the ANA have qualified instructors capable of teaching within the four specialties of Afghan artillery. The next step towards independent operations will be to ensure the artillery sections from across the corps are certified according to the Afghan certification, and the artillerymen are confident in their abilities to provide accurate Fires in order to establish fire supremacy on the battlefield.

Captain Joshua P. Hollingsworth was commissioned from the University of Alabama Reserve Officer Training Corps in the Fall of 2008. Following the completion of the Basic Officer Leader Course II and BOLC III he was assigned as a company FSO in A Company, 2nd Battalion, 7th Cavalry Regiment. In 2010, as an FSO, Hollingsworth deployed in support of Operation New Dawn, Nineveh province, Mosul Iraq. During the deployment Hollingsworth transitioned to the 5th Battalion, 82nd Field Artillery Regiment as a platoon leader responsible for escorting provincial reconstruction team members throughout the province. Following the deployment, Hollingsworth was selected to become the assistant operations officer for plans responsible for operation's orders, battalion events, and Paladin certifications. Hollingsworth deployed in November 2012 to Laghman province, Regional Command East Afghanistan as the Afghan Field Artillery and mobile MFATT officer in charge, responsible for the training, validation, and certification of artillerymen across the ANA 201st Corps. Upon re-deployment, Hollingsworth is scheduled to attend the Maneuver Captains Career Course.

A Warhorse Joint Fires Observer

By MAJ Timothy Gatlin, CW3 Christopher Meekins, CW2 Daniel Padilla and SFC Spencer Polwort

In 2013, the 2nd Armored Brigade Combat Team, 4th Infantry Division was presented with an operational deployment to Kuwait in support of Operation Spartan Shield. The problem set 2ABCT faced was unique—it required the BCT to maintain a high state of readiness to support all United States Army Central concepts of operations plans, as well as maintaining proficiency in its core competencies to support operations across an area of responsibility that spanned three countries. In order to meet this requirement, the *Warhorse* Fires Team developed a 'Pillars of Excellence' plan based on a foundation of training and events, which nested under a roof of 'Readiness' (See Figure 1) that aligned with the brigade's readiness line of effort (See Figure 2).

Figure 1. The Pillars of Excellence. (Information provided by MAJ Timothy Gatlin, CW3 Christopher Meekins, CW2 Daniel Padilla and SFC Spencer Polwort)

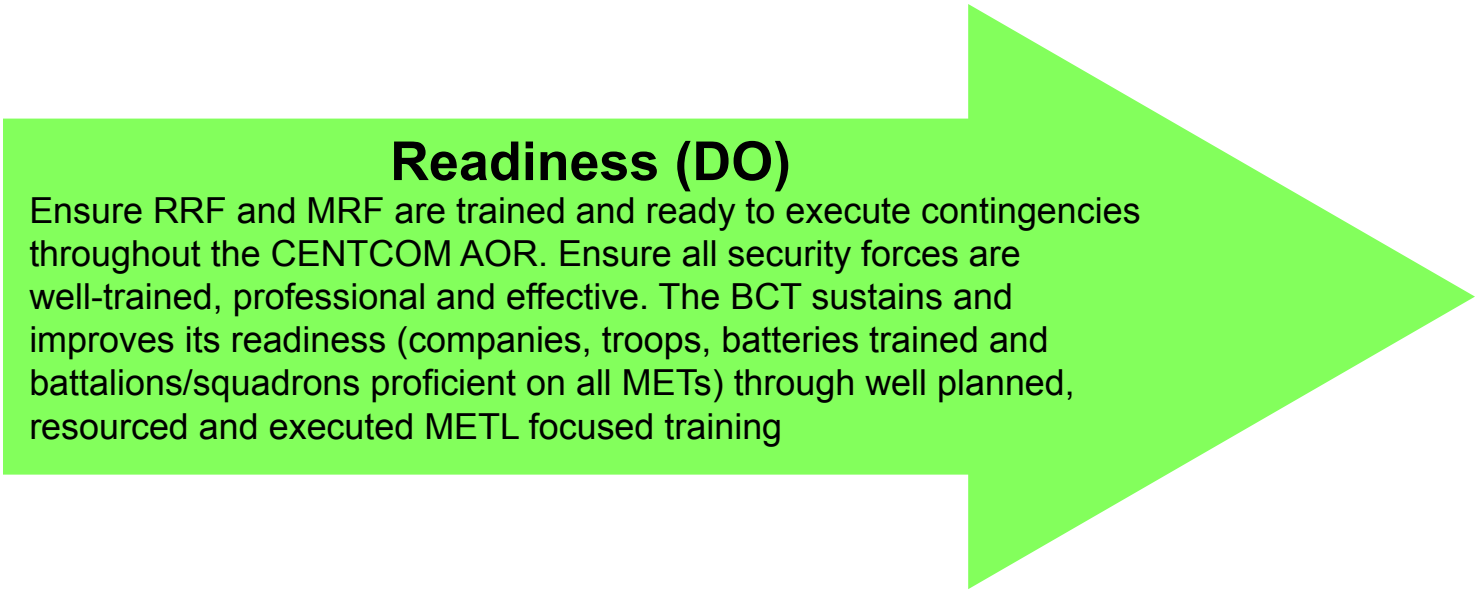


Figure 2. Line of effort. (Information provided by MAJ Timothy Gatlin, CW3 Christopher Meekins, CW2 Daniel Padilla and SFC Spencer Polwort)

The foundation was set at the division level with the procurement of the Joint Fires Observer Mobile Training Team Course which was brought to Fort Carson, Colo., in April 2013. The 2ABCT was given priority of slots to fill our operational requirement needs, which were identified during our pre-deployment site survey to Kuwait. After the foundation was set, it was determined that three 'Pillars of Excellence' were needed in order to support our readiness roof.

Pillar one was digital fire support sustainment training. The 2ABCT defined digital as any piece of equipment which would facilitate the sensor-to-shooter path on a digital battlefield. Pillar two was joint training with the 82nd Expeditionary Air Support Operations Squadron on an event which would later be titled 'Friday Night Lights.' This event allowed JFOs and joint terminal attack to work together in a controlled environment talking close combat attack assets onto moving targets at Ali Al Saleem Air Force Base, Kuwait. Finally, pillar three was identified as the fire support coordination exercise. This event would force the 2ABCT fire support system to utilize the lessons learned in pillars one and two, and finish stabilizing the 'readiness' roof.

Foundation Building. In August 2013, 25 handpicked forward observers from across the brigade were sent to the JFO MTT as part of the BCT's deployment preparation; the BCT experienced a 96 percent passing rate. They were trained to effectively control air-to-surface Fires, surface-to-surface Fires, and facilitate the targeting process. Additionally, they were now equipped to properly request airframes using the DD1972 Joint Tactical Air Request to support the maneuver plan. Throughout the course, the confidence level of the observers elevated because they were receiving the advance training needed to be a combat multiplier on the battlefield. Additionally, JFOs and JTACs are able to work in tandem to provide maneuver commanders with timely planning, synchronization, and responsive joint Fires and effects to support any exercise, combat or contingency operations throughout the 2ABCT AO.

Pillar One – Digital Fire Support Sustainment Training. One of the most important pillars identified was establishing and maintaining our digital proficiency. The 2ABCT established a robust Digital Fire Support Sustainment Training program that occurred on a weekly basis to exercise digital systems at all levels from the individual FO thru USARCENT Fires coordination cell. The focus of the training was aimed to enhanced communication readiness, test battle drills, process fire mission threads and decrease fire mission processing time. The training encompassed the use of field service representative support to update all digital systems, followed by enhanced training at all levels. As new levels were achieved more systems were added to the link, allowing the brigade to systematically add digital networks without troubleshooting the entire chain. Each week, 2ABCT fire supporters were able to enhance their proficiency and responsiveness with the Pocket-Sized Forward Entry Device, Lightweight Forward Entry Device and Advanced Field Artillery Tactical Data Systems.

The 2ABCT forward observer learned to properly use the Forward Observer System software on their held hand digital equipment at all levels. This expanded knowledge base would allow company and battalion level FSOs and fire support noncommissioned officer's to conduct more robust Field Artillery technical rehearsals, call-for-fire missions, and adjustments strictly utilizing digital systems. The enhanced connectivity between the AFATDS, Command Post of the Future, Tactical Airspace Integration System, and Distributed Common Ground System-Army provided all the sections within the 2ABCT tactical operation center with an opportunity to exercise their role in airspace clearance, proper dissemination of the common operating picture, and the management of all fire support systems. We hoped this new found synergy would facilitate the synchronization of lethal effects in time, space, and purpose.

Pillar Two – 'Friday Night Lights.' Throughout the nine-month deployment, the *Warhorse* team partnered with the 82nd EASOS to conduct joint live-fire training with an initial aim of successfully conducting air-to-ground integration. At the conclusion of the nine month rotation, the BCT fire support cell facilitated training for 75 observers, 25 JFOs, 19 JTACs, four firing platoons from 3-16 Field Artillery, and numerous attack weapons teams from the 36th and 42nd Combined Arms Battalions. The first training exercise took the FOs and qualified JFOs to participate in a weekly event specifically

tailored to meet their military occupational skill training objectives.

A counterinsurgency operations urban air-to-ground integration centric was introduced on Tuesday and Friday evenings to evaluate the ability of the FOs and JFOs to employ close air support and close combat attack on an asymmetric battlefield. This training event quickly grew in popularity and soon adopted their nickname 'Friday Night Lights' and later renamed 'Tuesday Night Terror.' A typical scenario would take place under the Kuwaiti moonlight where the JFOs would work hand-and-hand with the JTAC search for enemy opposing force that would be reported in an updated intelligent situation.

These updates would indicate OPFOR were embarking on their position by moving from building to building. The JFOs were impaired with limited lighting, and blacked out conditions where the JFOs were forced to trust their internal and outside sensors to find and identify targets. Once positive identification was established on enemy forces, JFOs transmitted the CCA five-line or CAS nine-line while simultaneously deconflicting the airspace to facilitate the engagement and destruction of the enemy. Throughout our deployment JTACs and JFOs participated in multiple iterations of the air-to-ground integration training in preparation for the monthly FSCX.

Pillar Three – Fire Support Coordination Exercise. The FSCX was the second training exercise developed and incorporated to evaluate the fire support planning capacity within the battalion fire support elements and integrate the JFOs in support of battalion level fire support plan. This occurred on monthly basis and started with the publication of a training order to the combined arms battalion FSO. During the planning cycle the BCT Fires and effects coordination cell would monitor the battalion FSE's fire support plan development by establishing planning and operational mile stones to ensure training stayed on the right glide path.

For the duration of the planning cycle the battalion FSO would work closely with their battalion air liaison officer to integrate CAS, CCA, and electronic warfare to create the fire support plan with the aim of meeting the commander guidance. The battalion FSE would exercise all aspects of a FSE in a field environment by executing the following tasks such as, advising the maneuver commander on all fire support capabilities and limitations, maintaining a common operational picture by posting information on a situation overlay, clearing indirect Fires, implementing fire support coordination measures, and employment of simultaneous joint Fires. During the training exercise, the battalion FSE and JFO would be evaluated by an established 'White Cell' comprised of the BCT fire support cell (BCT FSO, BCT targeting officer, BCT FSNCO, ALO, and the Senior JTAC). The purpose of the 'White Cell' was to ensure safety was enforced throughout the FSCX, insert training injects that would force a change in the tempo of the exercise, and force the battalion FSO to make various tactical decisions such as shifting priority of fires and reallocating assets that allowed company fire support teams, JFOs and JTACs to engage targets on the high pay off target list.

Roof – Readiness. The *Warhorse* Fires team had built a complete structure of fire support readiness with a solid foundation built and three sturdy pillars of excellence in place for 2ABCT. The foundation of the fire support structure allowed the fire support community to plan, train, and assesses their efforts together with common understanding. The pillars of the structure placed emphasis on the importance of truly being a 'digital brigade' and incorporating the DFSST program to enhance the BCT's digital proficiency. The brigade commander's emphasis on integrated training between U.S. Army JFOs and U.S. Air Force JTACs facilitated the TNT and FNL training opportunities.

Finally, the collaborative planning efforts between the CAB FSO and Air Force BALO tied the events and pillars together to support our overall objective, which was readiness. The BCT's deployment provided a unique opportunity for 2ABCT fire supporters to gain more confidence in their fire support knowledge, demonstrate technical and tactical proficiency, and provide fire support utilizing digital communications thereby increasing the lethality of the *Warhorse* Brigade and making a vital component in the overall success of the USARCENT Command.

Major Timothy D. Gatlin is a 1999 graduate of the United States Military Academy at West Point, N.Y., where he earned a Bachelor of Science degree in Economics. In 2010, he earned a Master of Arts Degree in Organizational Psychology and Leadership from Columbia University. Gatlin's previous assignments include: platoon leader and executive officer of B Battery, 2nd Battalion, 20th Field Artillery Regiment, 4th Infantry Division, Fort Hood, Texas; Southwest Regional Project Outreach Officer for the United States Military Academy, West Point, N.Y.; assistant battalion operations officer for the 2nd Battalion, 8th Field Artillery Regiment, 1st Stryker Brigade Combat Team, 25th Infantry Division; battalion fire support officer for the 1st Battalion, 5th Infantry Regiment, 1st SBCT, 25th Infantry Division, Joint base Lewis McCord; brigade fire support officer for 1st SBCT, 25th Infantry Division; commander of C Battery, 2nd Battalion, 8th Field Artillery Regiment, 1st SBCT, 25th Infantry Division, Joint base Lewis McCord; commander of C Battery, Fires Squadron, 2nd Stryker Cavalry Regiment, Vilseck, Germany; deputy and regimental fire support for the 2nd Stryker Cavalry Regiment, Vilseck, Germany; company and battalion-level tactical officer at the United States Military Academy, West Point, and he currently serves as the BCT fire support officer for the 2nd Armored Brigade Combat Team, 4th Infantry Division, Fort Carson, Colo.

Chief Warrant Officer Three, Christopher Meekins has served in the United States Army since 1996, his past duty positions include Target Acquisition Battery sensor platoon leader, Fort Bragg, N.C., 4th Infantry Division counter fire officer MND-Baghdad, 3rd Battalion, 27th FA HIMARS Battalion targeting officer, 18th Fires Brigade target liaison officer and brigade targeting officer, Fort Bragg, D Battery, 26th Target Acquisition Battery commander, RC-E, 2ABCT 4th Infantry Division Armor Brigade Combat Team targeting officer, Kuwait. Meekins has completed two combat tours in support of Operation Iraqi Freedom, two combat tours in support of Operation Enduring Freedom, one tour in support of KFOR, Kosovo, and several operational support missions ranging from Operation Unified Response, Haiti to Operation Key Resolve, South Korea.

Chief Warrant Officer Two Daniel Padilla was appointed in 2008 from the Warrant Officer Candidate Course, Ala. Following warrant officer basic course training at Fort Sill, Okla., he was assigned to Fires Squadron, 2nd Calvary Regiment, where he led the target acquisition platoon, served as a battalion targeting officer, and deployed to Afghanistan in support Operation Enduring Freedom. He next served on the regimental staff as the targeting officer. Padilla has deployed in support of Operation Iraqi Freedom and conducted combat operations in Baghdad, Fallujah, and Mosul. Padilla currently serves as the targeting analyst for the brigade combat team, 4th Infantry Division, and is deployed to Kuwait in support of Operation Spartan Shield. Padilla's military awards and decorations include the Bronze Star Medal, Meritorious Service Medal the Army Commendation Medal with five oak leaf clusters, and the Army Achievement medal with five oak leaf clusters. He has earned the Combat Action Badge, Air Assault Badge, and Drill Sergeant Badge.

Enhancing Fires with Next-Generation Narrowband SATCOM

By CPT Patrick A. Schrafft

New military satellite communications capabilities may drive the development of updated Field Artillery tactics, techniques and procedures. At the very least, they will provide commanders with additional options for effective command and control.

During recent years of conflict in Iraq and Afghanistan, fire support providers have become accustomed to the luxuries of well-prepared battle spaces, fixed firing positions and communication architectures enhanced with extensive terrestrial fiber networks and access to high throughput wideband satellite communications systems. It can be argued that their ability to effectively support maneuver units with cannon, rocket and mortar Fires would be significantly degraded in the absence of these assets, particularly in areas where range and terrain constraints influence the usefulness of ordinary combat net radios.

Furthermore, as the ability of modern indirect fire weapons systems steadily increases, their concept of employment should also change. Split-battery and even distributed single launcher/howitzer operations are the way of the future. Manufacturers recognize this and are designing weapon systems to meet the demands of these new employment concepts. While advances in mesh networking techniques have, to some degree, alleviated the problems associated with communicating between distributed weapons systems, range, terrain and available retransmission node constraints still apply. As such, more options for establishing effective, tactical, command and control links on the modern battlefield are needed.

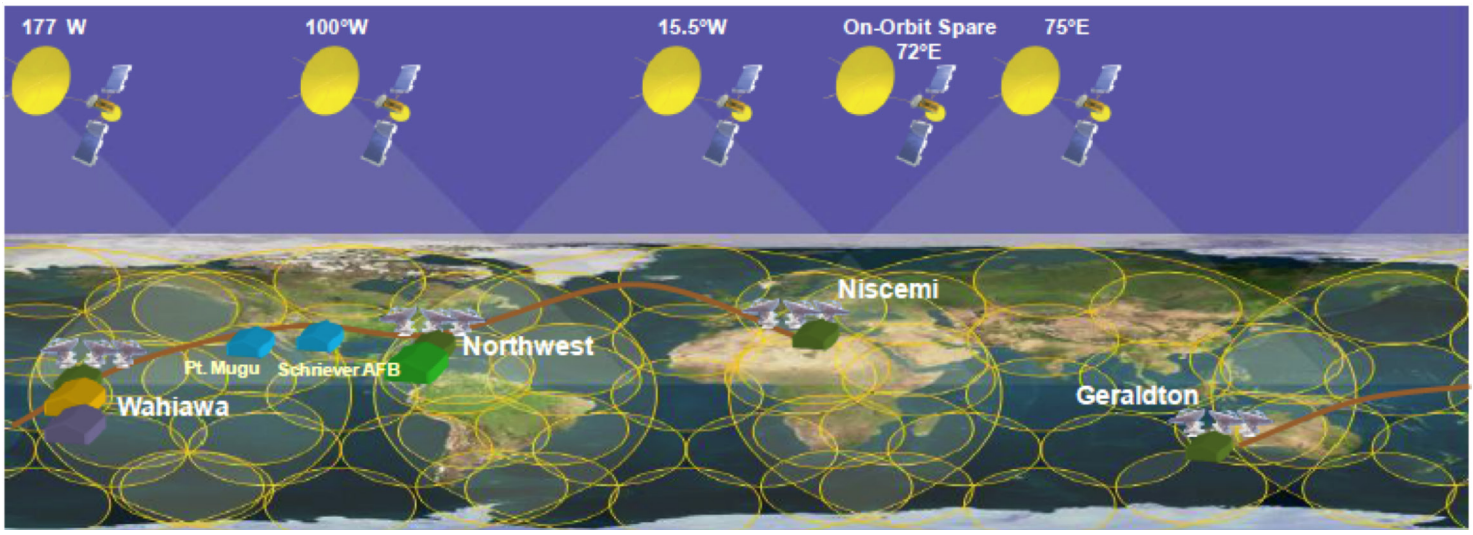
The Mobile User Objective System provides an internet protocol-based communications architecture, with global coverage and third-generation voice and data transmission capabilities that could be used to enhance existing communications architectures. Consequently, maneuver commanders would be given another option in bringing effective and reliable voice and data services to all players in the call-for-fire process.

The Mobile User Objective System. The MUOS space segment will consist of five satellites, built by Lockheed Martin, in geosynchronous orbit. At an altitude of 35,786 kilometers, this orbital regime enables each satellite to match the earth's rotational rate, allowing them to essentially remain 'stationary' at a specific longitude. Four of the satellites will be actively employed at 15.5 degrees west, 100 degrees west, 177 degrees west and 75 degrees east longitude, respectively. The fifth one, at 72 degrees east longitude, will act as on-orbit spare, allowing operators to respond to system outages and or increased user requirements as necessary.

Each MUOS platform will carry two payloads and can essentially be considered a cell-phone tower in space, adapting a commercially available third-generation wideband code-division multiple access waveforms to significantly increase ultra-high frequency military satellite communications capabilities. The MUOS primary, WCDMA, payload is advertised to provide a range of services, including 'free dialogue' cell-phone-like voice communications, short digital messaging, imagery transfer, digital file transfer / electronic mail, remote computer access, video streaming and video teleconferencing. Additionally, the WDCMA payload is able to maximize system capacity by employing adaptive power control technology to satisfy diverse user requirements.

Global WCDMA coverage is attained through the application of a 14-meter multi-beam-reflector antenna to aim the 16 spot beams on each satellite. The antenna is used for both transmission and reception. This configuration yields additional antenna gain not provided by other systems and enables the use of smaller, handheld, MUOS

The Mobile User Objective System Network. (Illustration courtesy of CPT Patrick A. Schrafft)



functional transmitter/receiver terminals with less transmit power.

Available WCDMA uplink and downlink bandwidth is divided into four 5 MHz channels, which can be reused on each of the 16 beams, resulting in 64 WCDMA channels per satellite which can be shared by thousands of users. Each of these 64 channels is referred to as a satellite beam carrier. It is important to note that satellites and their corresponding spot beams have been placed to provide overlapping coverage. This ensures system redundancy and gives users in most geographic locations the ability to choose between two overhead MUOS satellites. Coverage by multiple satellites is especially beneficial when terrain limits the line of sight of tactical users. The four operational satellites provide a total of 64 spot beams, 256 beam carriers, which can be adjusted, activated and or deactivated through beam-carrier management.

MFTs will be equipped with Common Air Interface software that enables the employment of the MUOS WCDMA waveform. Using a bent-pipe system, data are transmitted between user and satellite via the allocated portions of the UHF spectrum. While legacy frequency-division multiple access systems use frequencies between 292 and 318 MHz for uplink and 244 and 270 MHz for downlink, MUOS waveform users will be able to exploit 300 to 320 megahertz for uplink and 360 to 380 MHz for downlink, respectively. Satellites communicate with radio access facilities in view using Ka band, 20.2 to 21.2 GHz for uplink and 30 to 31 gigahertz for a downlink.

Simply put, the sequence of events for MUOS employment is as follows: A mobile tactical user with access to an MFT wishes to gain access to Defense Information Systems Network services. Uplink between MFT and MUOS takes place on the prescribed UHF frequency, while downlink between MOUS and RAF takes place on the available Ka band frequencies. Rather than employing a cross-link technique to pass data between satellites for communication between users in different parts of the world, message traffic is passed between RAFs, using conventional terrestrial networking techniques, before uplink to an MUOS satellite in view of the recipient and final downlink to the recipient.

Advertised Services and Data Rates. MUOS data transfer rates are managed through a process called orthogonal variable spreading. OVS allows multiple users to share the same frequency through the allocation of Orthogonal Variable Spreading Factor codes. Essentially, the more codes are assigned to a single user, the higher the data rate available to that user. Each MUOS spot beam carrier contains 512 available OVSF codes, 18 of which are used for administrative purposes, leaving 494 codes for MUOS users. In theory, the available 494 OVSF codes could support 494 users at 2.4 kilobytes per second on a single carrier frequency. However, a typical spot beam will most likely support several users at 384 kbps, a few more at 64 kbps, and so on, thereby distributing service capability based on the user's priority.

Service Applications	Available Data Rates (kbps)
Conversational Voice	2.4
Recognition Voice	9.6
Short Message	384, 64, 32 or 9.6
Interactive Transactions	384, 64, 32 or 9.6
Circuit Emulation	64, 32 or 9.6
Video Streaming	384, 64, 32 or 9.6
Data Streaming	384, 64, 32 or 9.6
File Transfer	384, 64, 32 or 9.6

MUOS Data rates. (Illustration courtesy of CPT Patrick A. Schrafft)

OVSF codes are allocated by the MUOS Network Management Segment based on user's priority and mission requirements in an effort to maximize system performance and user satisfaction. NMS also reserves the authority and ability to change data rates available to users as necessary. For example, the same tactical user mentioned earlier, accessing DISN services from Afghanistan, may be allocated additional OVSF codes as they become available when other users leave the net. Likewise, he may find his data rate allowance decreased to as low as 9.6 kbps when high priority users in the same geographic location access MUOS services during a critical operation.

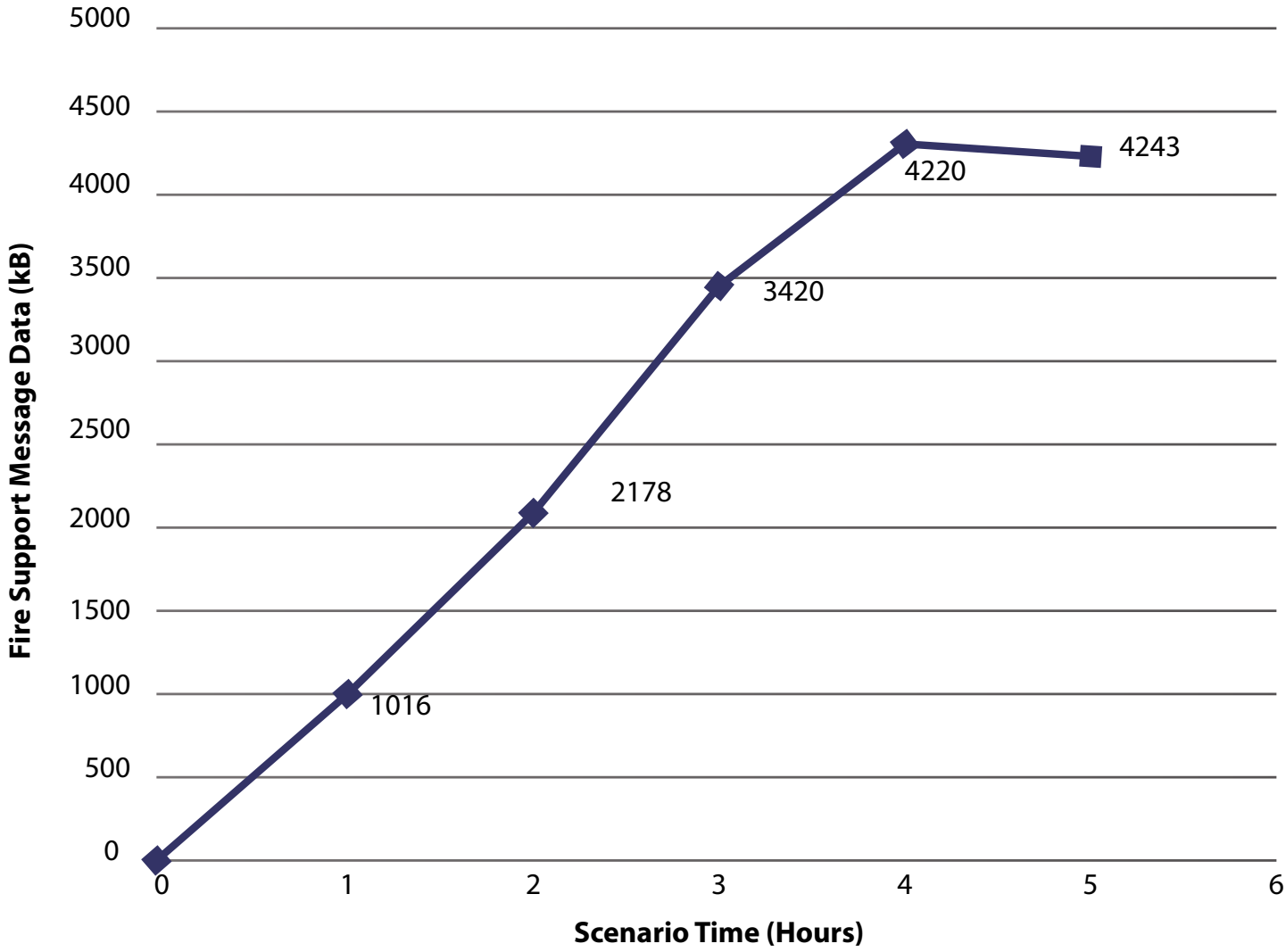
Point-to-Point Service. Point-to-point service implies a tactical user, such as an artillery forward observer operating in support of a maneuver battalion, using an MFT to pass data to another MFT or data terminal at the supporting artillery battery, i.e., two party full-duplex communications. To initiate voice communications with fire direction personnel at the artillery battery, the forward observer simply enters the phone number of the receiving party and waits for the connection to be established. Once established, this connection is full-duplex, meaning both users can communicate simultaneously in free dialogue without the traditional waiting periods associated with half-duplex UHF communications. Similarly, the Internet protocol address can be used to transfer data to the receiving MFT.

Point-to-Network Service. Should the user decide to access DISN services on a computing device connected to his MFT, he would be using point-to-network services instead. This service makes non-secure internet protocol router and secret internet protocol router connectivity readily available to expeditionary forces lacking complex, large and expensive communications infrastructure. This not only significantly eases the logistical burden associated with establishing an effective command and control node and conducting effective operational planning, but also allows forward deployed units to continue working administrative matters, a process normally put on hold during combat deployments and training exercises.

Group Service. Group service, in turn, describes a user transmitting data to multiple receiving MFTs. Receiving MFTs do not have to use the same beam carrier, spot beam or even MUOS satellite. Instead, data are routed as required; using the bent-pipe process described in the MUOS system architecture overview, to ensure it reaches the correct re-

Data rates versus number of assigned OVSF codes. (Illustration courtesy of CPT Patrick A. Schrafft)

Kbps	2.4	9.6	32	64	384
Codes	1	2	8	16	128



Data transmitted during the brigade fire support operation. (Information provided by CPT Patrick A. Schrafft)

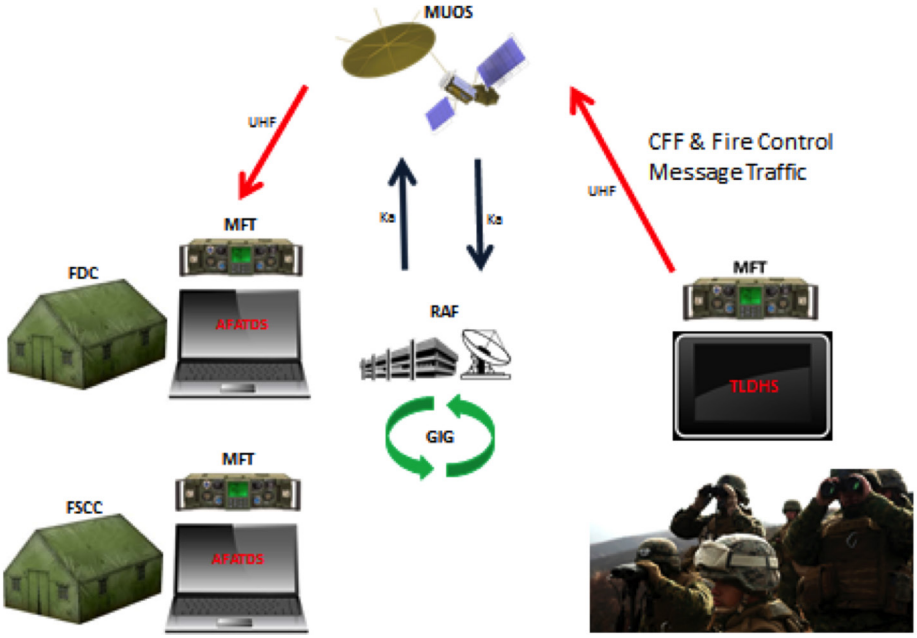
cipient. In theory, users will be able to access group services by simply entering a group identification number into their MFT. Tactical applications of this service will include conference calls and digital chat rooms which are both essential to effective C2 operations on the modern battlefield. As long as group members are within the coverage area provisioned by at least one of the four operational MUOS satellites, the respective service can be provided.

Integration Factors and Maximum Expected Fire Support Data Rates. Pending any compatibility impediments between the Advanced Field Artillery Tactical Data System, the Target Location, Designation and Hand-off System/StrikeLink and the range of possible MFTs, MUOS integration into the fire support community requires little to no change to standard operating procedures. The goal is to simply replace existing communications terminals, attached to various fire support tools, with MFTs. This would allow fire support personnel to carry out their duties without changing the traditional user interface provided by AFATDS, StrikeLink and other C2 applications while simultaneously increasing the capability and flexibility of respective systems. Re-configuring and or updating currently employed multi-channel, multi-mission, terminals to accept the MUOS WCDMA waveform is also an option.

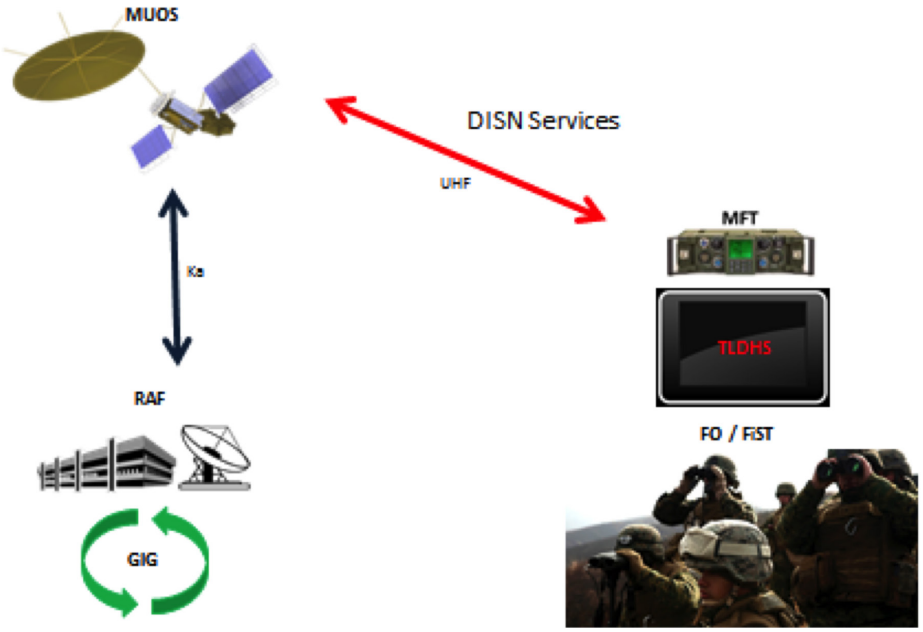
Fire Support Data Rates. In order to verify data rate compatibility, up-to-date fire support message characteristics were provided by the U.S. Army's Fires Test Directorate, Fort Sill, Okla. Data and metadata were collected during a government confidence demonstration of the most recent AFATDS software update. Using a scenario called Time Ordered Events List, built using the Extensible C4I instrumentation Suite – Fire Support Application, FTD and Raytheon engineers are able to analyze high fidelity simulations that model fire support message traffic at the brigade level and below. Pertinent units are depicted either by living operators, using actual fire support tool, or simulated by ExCIS FSA. This allows the Operational Mode Summary/Mission Profile for AFATDS to be portrayed accurately through surge and peak periods with the associated Fires and ire support mission threads.

For research purposes, statistics from the ExCIS FSA simulation were used to derive maximum expected fire support data rates (It was assumed that the data set's sampling rate is adequate for trend analysis). A curve was fitted to the graphically displayed data points. A third-order polynomial function provided the best fit. Conveniently, the polynomial nature of the best-fit function allowed for the use of derivatives to calculate maximum data rate.

The first derivative of the best-fit polynomial function yields data rate as a function of time. The data rate function, a second order



CFF and Fire Control Commands are passed from FO to FDC and FSCC. (Illustration courtesy of CPT Patrick A. Schrafft)



FO / FIST receives access to DISN services as required. (Illustration courtesy of CPT Patrick A. Schrafft)

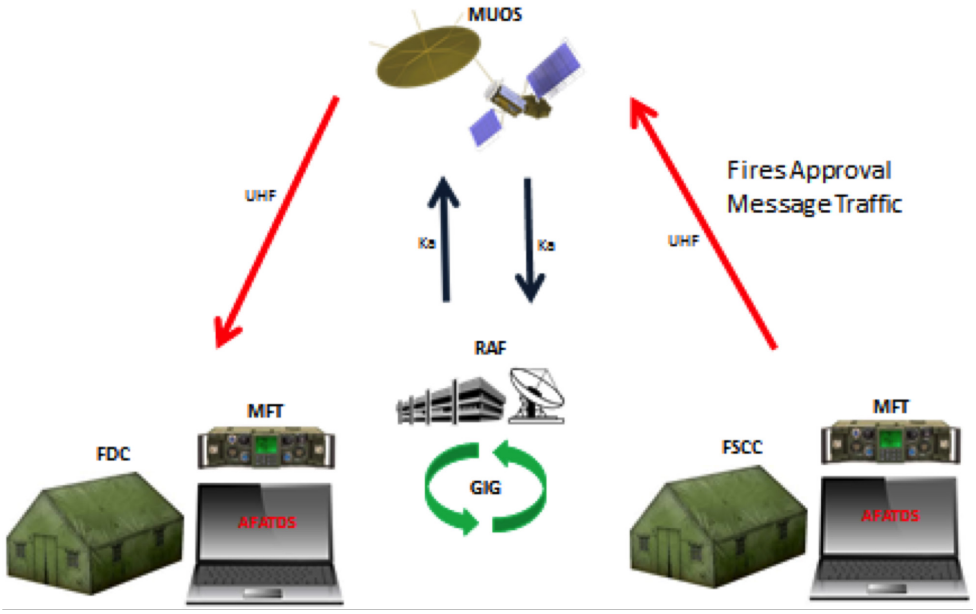
polynomial, forms a parabolic curve that reaches a maximum at 1277 kilobits per hour. Furthermore, the second derivative of the best-fit function, the first order polynomial, can be graphed to verify the exact point at which the maximum data rate is reached. A root at hour two of the scenario confirms a maximum data rate, assuming average message sizes, of 1277 kB/hr (Unit conversion yields a maximum data rate of 10,216 kb per hour or 2.837 kbps). As it turns out, this peak in data rate is achieved immediately prior to a climax in combat intensity, as fire-mission related messages surge. Of note, this data set summed up fire support message traffic data normally distributed across several communications channels/nets. Additional FTD data sets allowed for data rate analysis on a net-by-net basis. As expected, all derived data rates were well below 2.8 kbps.

Plug-and-Play. As long as proposed MFTs support traditional tactical networking connections, establishing a physical link between fire support tools and MFTs should not be an issue. Furthermore, the IP-based nature of MUOS and the advertised plug-and-play capabilities of the fire support tools in question fully suggest interoperability (i.e., as long as the MUOS WCDMA waveform can relay AFATDS and Variable Message Format messages encapsulated in Transfer Control Protocol and IP headers, non-physical interface requirements should be met). Lastly, pending any major variations in typical message sizes and message/data rates, the throughput provided by an MUOS connection should adequately support responsive digital conduct of fires and fire support coordination nets.

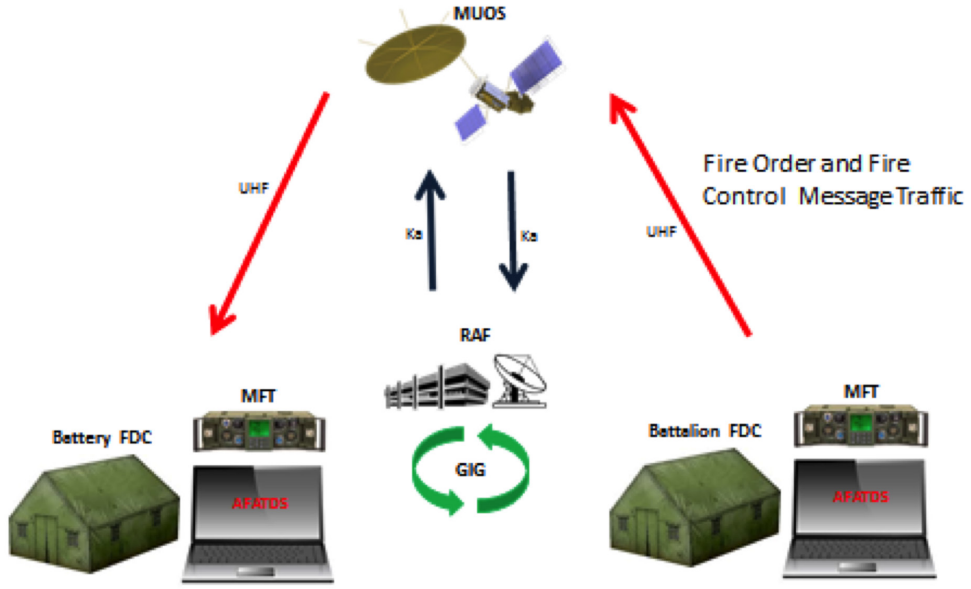
Proposed Concept of Operations: The Forward Observer / Fire Support Team and Reconnaissance Personnel. TLDHS/StrikeLink operators join a 'Tactical Conduct of Fires Net' by entering a group ID on the MFT, establishing connectivity with key players in the operation's fire support process. CFF and fire control message traffic is then passed to an MUOS satellite overhead, through the MFT, via an assigned UHF uplink frequency. The satellite, in turn, passes the message traffic to one of two RAFs in view via a Ka Band downlink. After determining that the message recipients are in view of the same MUOS satellite, message traffic is immediately sent back up to the satellite, via Ka Band uplink, and down to the battery fire direction center and Battalion fire support coordination center, via a UHF downlink, for action.

Since each MUOS RAF maintains global information grid connectivity, DISN services are provided to operators at the lowest tactical level. Pending user priority and data rate availability, i.e., the number of assigned OVSF codes, FOs and reconnaissance personnel access SIPRNET SharePoint site to download the latest fragmentary orders, threat briefs, spot reports and target list worksheets as soon as staff members make them available for access. This ensures warfighters are provided with the latest intelligence and aids in 'on-the-fly' distribution of planning products while maintaining strict version control.

The Fire Support Coordination Center. Fire support requests and fire control message traffic enter the FSCC via direct UHF downlink from MUOS, through the MFT. AFATADS' operators then examine target location and proposed weapons effects against existing fire support coordination



FSCC approves or denies CFF/Fire control commands. (Illustration courtesy of CPT Patrick A. Schrafft)



Battalion FDC passes fire order to battery FDC. (Illustration courtesy of CPT Patrick A. Schrafft)

measures and the commander's engagement criteria. Critical fire support data are used to supplement the FSCC's common operational picture via the effects management tool, a program that allows fire support coordinators to access mission-field geometry, target and friendly unit locations and fire support coordination measures for planning, manipulation and display in other C2 systems such as Command and Control Personal Computer and Command Post of the Future. Once fire support coordinators approve requests for fire support, subsequent corrections or the prosecution of pre-planned targets as per the fire support plan, respective message traffic is forwarded to the battery FDC.

As required, FSCC personnel may access NIPRNET and SIPRNET services via MUOS link. Since the battalion command post also has GIG connectivity through a wideband global SATCOM link that provides much greater throughput and bandwidth, this capability is only used as a secondary means. Of note, WGS connectivity brings additional capability to FSCC personnel as they are able to communicate with FOs and FDC personnel through cross-domain transfers of files and messages to the GIG. Full-duplex voice channels, for supplemental communication with FOs and FDC personnel, are also available [9].

The Fire Direction Center. AFATDS operators in the FDC also connect their workstations to AN/PRC-155s via the provided Ethernet ports. By entering the aforementioned group ID into the MFT, a network connection is established, and the laptops are also connected to the Tactical Conduct of Fires Net. As approved CFFs, fire-missions and fire control message traffic is sent by the FSCC, operators are able to receive, manipulate and approve message traffic directly in the AFATDS interface and calculate firing solutions, respectively.

Just like the FOs or any other MUOS user, pending the number of assigned OVSF codes, FDC personnel are able to exploit NIRPNET and SIPRNET services. This allows them to also access email, download planning products from SharePoint sites and run external IP based chat applications that are not organic to the fire support tools system interface.

The Weapons System: M777A2 Lightweight Towed Howitzer. Cannon Field Artillery weapons systems have historically been operated in close proximity to fire direction personnel and equipment, allowing fire commands to be passed verbally via a dedicated, full-duplex, tactical field telephone network often referred to as the 'gun loop.' Although safe from most environmental interference and jamming, the propensity for critical errors introduced by human factors such as stress and fatigue have been key drivers in the implementation of a digital communications system to pass fire commands from the FDC to the gun-line. Additionally, tactical vehicles and heavy equipment that regularly move about in a firing position damage lines of communication, initiating laborious troubleshooting processes at the most inopportune moments.

By supplementing digital fire control terminals with MFTs, the artillery battery's communication section enables split-battery and even single howitzer operations with unlimited range restrictions (in regards to distance from the FDC). As mentioned previously, fire commands would leave the FDC via a designated UHF uplink frequency. Relay is conducted between MUOS satellite and RAF via Ka-Band and fire commands are downlinked to the howitzer via UHF downlink frequency. An audible tone then alerts the howitzer's section chief of available fire-mission data on the ruggedized DFCS display.

M142 High Mobility Artillery Rocket System. The M142 High Mobility Artillery Rocket System platform was specifically designed to operate independently or in small

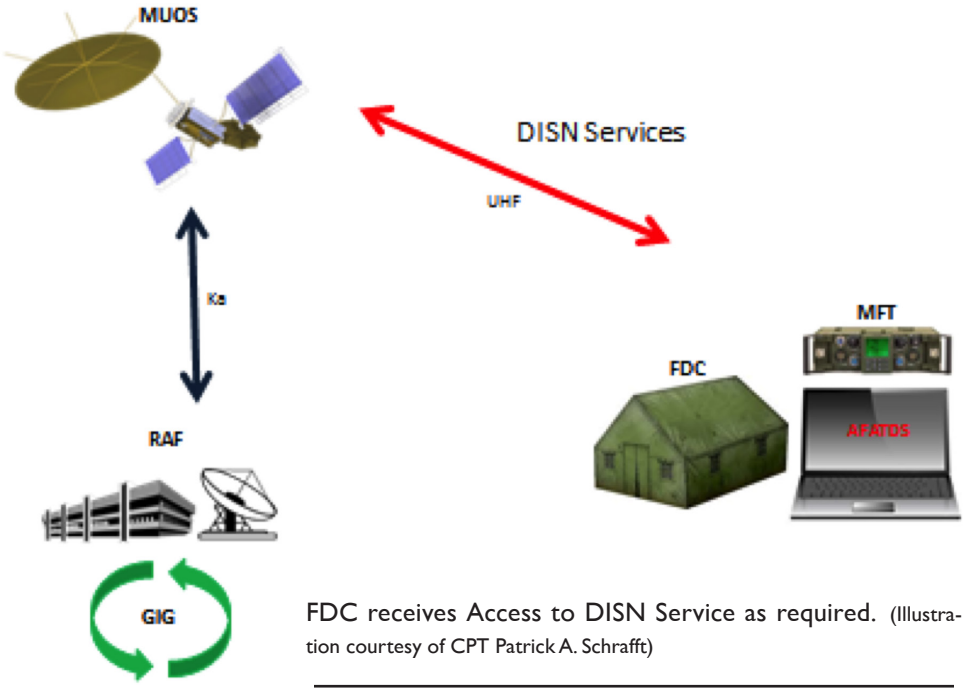
teams. The traditional HIMARS concept of operations has launcher vehicles remaining undetected in camouflaged hiding positions, 'hides,' until fire commands are received from the FDC . Once a fire-mission has been initiated, launchers rapidly displace to a firing position, fire the weapon system and displace again to another hiding position or re-supply point for re-armament. This scheme of maneuver has made wireless methods for passing fire control commands a requirement from the beginning.

MUOS would allow HIMARS launchers to operate exactly as intended, maintaining hide positions well behind the forward line of troops. Since the HIMARS FDC is located a considerable distance away from either launcher, both the HIMARS FDC and launchers can use MFTs to access the conduct of Fires net. The launcher's section chief receives the fire-mission on his vehicle display and is notified by an audible tone that fire commands are available for execution. He instructs the vehicle's driver to displace to the pre-designated firing position, applies azimuth and elevation to the weapons system and launches the indicated ordnance before rapidly displacing back to the hide position.

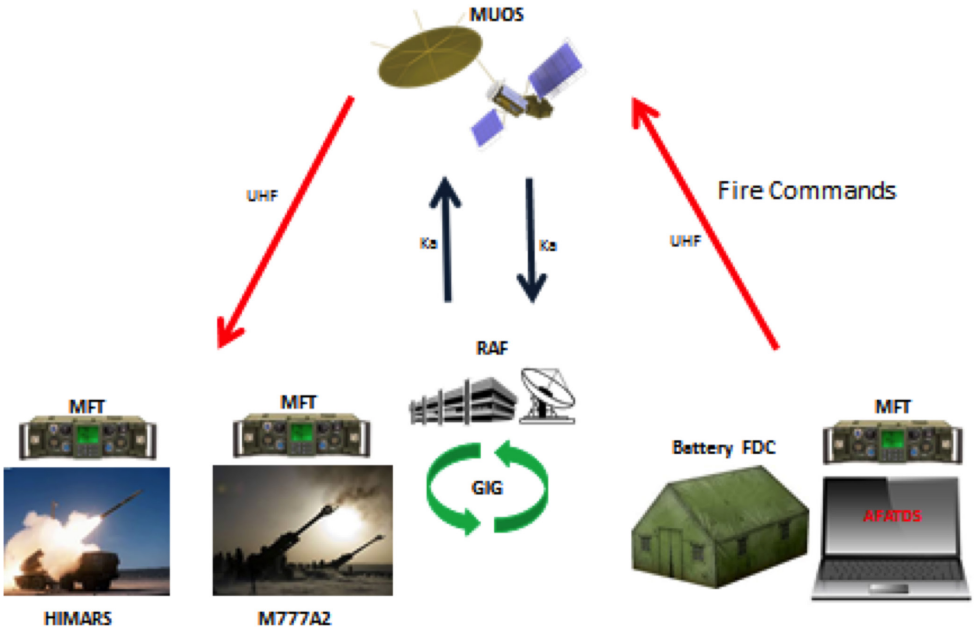
Hybrid Networking. Naturally, considering the low data rates associated with fire support message traffic, not every weapon system requires a direct link to the MUOS network. In some instances, it may be more practical to implement a single MUOS uplink/downlink and relay fire support message traffic to final destinations using terrestrial means.

For example, an FDC may receive CFFs over MUOS links and pass fire commands to individual weapons systems using DFCS, Adaptive Networking Wideband Waveform, or traditional Single Channel Ground and Airborne Radio System equipment. Or, a single weapons system may receive fire commands from the FDC via an MUOS link and forwards fire commands to nearby weapons systems using terrestrial means.

Pending the final configuration of MFTs, analysis of the physical and non-physical requirements for system compatibility suggests that fire support tools, currently in use by operating forces, will be able to exploit MUOS services in a plug-and-play fashion. Furthermore, data provided by the U.S. Army's FTD suggests that, depending on the fire support net, maximum fire support data rates for a brigade size maneuver element conducting combat operations are not expected to exceed 2.9 kbps. Consequently a 2.4 kbps MUOS data links could be adequate



FDC receives Access to DISN Service as required. (Illustration courtesy of CPT Patrick A. Schrafft)



Fires commands are passed from battery FDC to weapon systems (Illustration courtesy of CPT Patrick A. Schrafft)

to support smaller maneuver units, such as Marine expeditionary unit ground combat elements using indirect fire support operations to supplement their scheme of operation. Pending availability, a 32 kbps or 64 kbps channel would most certainly suffice.

The concept of operations described above shows one of many tactical applications of MUOS. While one may argue that more capable opponents will most likely deny the use of UHF and super-high frequency SATCOM assets through the use of high powered jamming equipment and other anti-satellite technology, given the right conditions, advanced narrowband SATCOM assets can be a remarkable force multiplier. As mentioned before, MUOS simply provides another method of establishing effective C2 links. As commanders see fit and as the tactical situation dictates, other methods may be applied.

Author's Note: *The text contained in this article is sourced directly from thesis work conducted at the Naval Postgraduate School. For reference, the original document ([9], Schrafft, P. A., Tactical employment of the Mobile User Objective System to enhance indirect fire support capabilities, Naval Postgraduate School, Monterey, CA, Jun 2014.) provides additional conceptual and technical details.*

Fire Support Conversion BCT 2020

By LTC Cory J. Delger and 1LT Anthony R. Padalino

With the implementation of the U.S. Army's Brigade Combat Team 2020 concept, the fire support personnel in the brigade combat teams are once again assigned to the brigade's Fires battalion. The Fires battalion commander, in the role of the brigade's fire support coordinator, is responsible for training and certifying every node of the brigade's fire support system. In the years since the Army underwent transformation, there is a perception both inside and outside the artillery community that the skills and competencies of our fire support personnel have degraded, resulting in significant target location errors and our inability to meet the five requirements for accurate Fires. With the fire support coordinator providing oversight to fire support training, it may be possible to correct these deficiencies with a focus on returning to core competency proficiency, specifically digital systems and fire support planning in support of the maneuver commander. Underlying this effort is a necessity to establish a solid relationship and trust between the maneuver commanders and the Fires battalion at all levels from start to finish.

The 3rd Armored Brigade Combat Team, 4th Infantry Division completed its transition to the BCT 2020 organization in March, 2014. The 3-4 ABCT's organic Fires battalion, 3rd Battalion 29th Field Artillery Regiment took the task to bring all fire supporters under the Fires battalion umbrella and provide a more proficient, responsive, and lethal fire support system to the maneuver commander. In designing how the BCT would conduct this transition, we framed the way ahead by answering these questions: first, how should we consolidate all of the fire support personnel and equipment under the Fires battalion? Next, how do we establish a certification standard and training program across the ABCT for the fire support teams and battalion-level fire support elements? Third, once our FISTs and FSEs are trained and certified, at what point do we attach them to the supported maneuver battalion or squadron and maintain their proficiency? Finally, once attached to the maneuver unit, how does the FSCOORD maintain oversight of their training and certification and ensure the proficiency of the fire supporters and our ability to meet the five requirements for accurate Fires consistently and responsively?

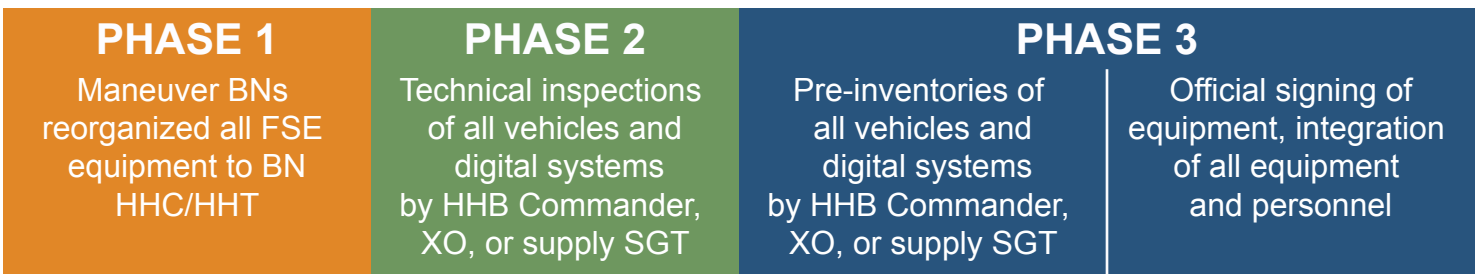
Fire Support Personnel and Equipment Consolidation. Once we had the approved Modification Table of Organization and Equipment and effective date, the Fires battalion staff conducted a military decision making process session on the transition, coordinating with the 3-4 ABCT staff and the maneuver units on the way ahead. This staff effort identified multiple friction points well ahead of the transition date and allowed us to anticipate issues with enough time to react. In order to synchronize our efforts, the FSCOORD along with the Fires battalion S3, conducted a 'Fires road show' where we met with each combined arms battalion and reconnaissance squadron commander accompanied by their fire support officer and S3.

During these sessions, we laid out our proposal for the transition, the timing, and our commitment to training and supporting combined arms maneuver. Following these sessions, the commander of Headquarters and Headquarters Battery met with each company and troop commander and discussed details on the transition, concentrating on property transfers and personnel issues. These discussions were essential to our success later as they laid the foundation of trust between the units and reinforced our commitment in supporting our maneuver brethren. We wanted to be clear that a once the fire supporters transitioned to 3-29 FA, that they would still be heavily involved in planning and executing training with their supported maneuver unit. Company, troop, and battalion FSOs would attend training meetings on a weekly basis and maintain frequent communications with their supported commander. The priority would be to support the maneuver unit, even if that conflicted with HHB or 3-29 FA training.

When our transition began, property integration was the most time consuming and greatest challenge that we faced. The entire process was completed in three months; from initial technical inspections to signed primary hand receipts to the end user. We integrated each maneuver battalion and the brigade FSE in one-week increments over five weeks. During the final phase, the HHB commander conducted the equivalent of a change of command property inventory before signing for all equipment. Figure 1 illustrates the entire process and each of the three phases of the transition: Reorganization, Technical Inspections and Reception and Integration.

Phase 1: Reorganization. The reorganization process started with the maneuver battalions and squadron identifying all equipment and personnel that would transfer to the Fires battalion. Our brigade staff facilitated this process by producing an operations order that authorized lateral transfers between the battalions and squadron. The

Figure 1. An illustration of the three phases of the transition, reorganization, technical inspections and reception and integration. (Information provided by LTC Cory J. Delger and 1LT Anthony R. Padalino)



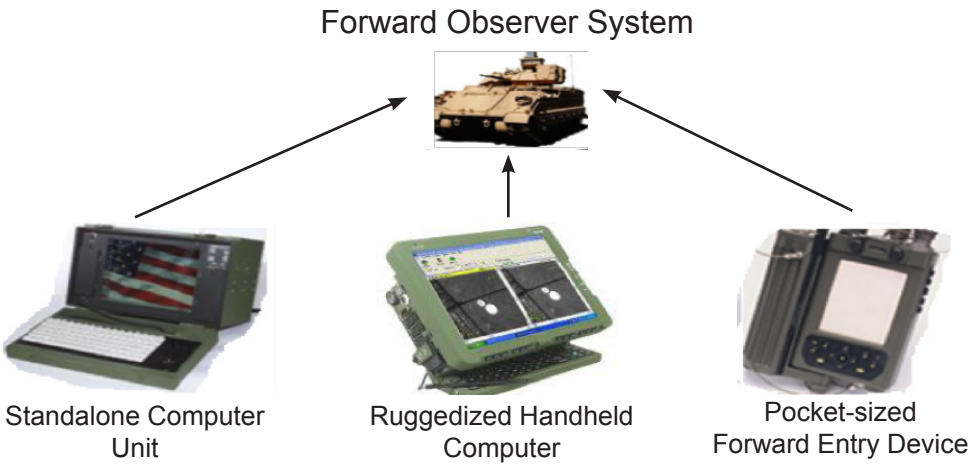


Figure 2. Illustrates the FOS and its components used in an ABCT. (Illustration provided by LTC Cory J. Delger and 1LT Anthony R. Padalino)

order stated that all equipment and personnel be organized into one single headquarters and headquarters company or troop prior to scheduled technical inspections. This was important for two reasons; first it allowed units an opportunity to identify shortages prior to pre-inventories, giving commanders more time to reconcile all end item deficiencies of equipment. The second reason was that it made the official signing of the equipment significantly more efficient process for the Fires battalion in that the HHB commander signed for the equipment from five company or troop commanders instead of 15. During the reorganization process, our goal was for the maneuver companies and troops to bring all equipment to the 10/20 standard, initiate and complete any financial liability investigations of property loss, and conduct annual services on vehicles and equipment that would be due within the 90 of the transition date.

Phase 2: Technical Inspections. Technical inspections, conducted several weeks before each battalion and squadron transitioned, were our first look at the equipment that we would receive. It allowed us to check all aspects of the vehicles and ensure there were no major deficiencies. For our TIs, we had the following personnel from both HHB and the maneuver company or troop: track mechanic (E5 or above), maintenance control officer/ maintenance control sergeant, S6 representative, unit supply sergeant, along with the HHB executive officer and at least one platoon sergeant from HHB. These personnel were responsible for evaluating the status of the equipment in their specific field to the HHB XO. Over the course of a week, we conducted TIs for each battalion and squadron and the brigade FSE.

When vehicles and personnel arrived at the TI location, the M3A3 Bradley Fire Support Vehicle or M1068A3 command post carrier dropped their ramps and personnel laid out all their section equipment. Supply sergeants began with property accountability, mirroring a pre-change of command inventory. Following this, the mechanics would inspect each vehicle for major faults or issues. The MCO/MCS contacted each maneuver unit and discussed the paperwork that was required and any updates on equipment (i.e. service packets, oil samples, and equipment on order). S6 personnel conducted long-range radio checks and 'Force XXI Battle Command Brigade and Below' test messages ensuring communication equipment was fully mission capable. Our platoon sergeants completed individual equipment layouts of all incoming personnel to identify shortages and initiate any FLIPLs or statement of charges prior to integrating Soldiers. The HHB XO coordinated with the losing unit's executive officer to discuss coordination and answer any questions on re-integration of FSEs.

Phase 3: Reception and Integration. In the final phase of the transition, each battalion or squadron had a one-week block to move equipment to the Fires battalion and integrate personnel. The first day of the integration week consisted primarily of personnel in-processing and individual equipment layouts and inventories. For the remainder of the week, all fire support equipment and vehicles were moved to the Fires battalion with the HHB commander conducting property inventories with a final update of the shortage annexes and signing for the equipment. The HHB XO inspected each forward observer system during pre-inventories. The inspection consisted of identifying who the primary operators of the systems were and the systems' operational status. We identified deficiencies across the brigade on the FOSs including missing components and a lack of baseline operator training and knowledge. These pre-inspections were critical for us to understand our training needs and develop a fire support certification program.

Fire Support Training and Certification. In addition to our task of integrating all of the fire support equipment and personnel, we also have the requirement of ensuring the maintenance and sustainment of our fire support digital systems. It was apparent from the beginning of our transition that most fire supporters were proficient in conducting calls-for-fire with voice communications, but abysmal in the use of digital systems. As a result, we worked diligently to change the 'voice over digital' mindset that existed across the brigade's fire supporters. We asked our company FSOs "what is the main weapon on your M3A3 BFIST?" The most common answer was, "Bushmaster 25 mm," but the correct answer should be the Fire Support Sensor System. Any Fires battalion going through this process must adapt this digital mindset from the onset if they desire to be successful with its fire support systems and stress Fires and mission command into a culture that breeds combined arms approaches. Battalion leaders have to emphasize a digital culture strongly from day one of integration, or fire supporters will not succeed with the complexity of sustaining digital systems and will revert to their comfort using only voice communications.

Figure 2 illustrates the FOS and its components used in an ABCT. Since our integration, we made great improvements in the operational status of our FOSs. The number of fully-mission capable Standalone Computer Units increased from 60 percent when we started reorganization to 91 percent and the Rugged Handheld Computer-2 (RHC-2) increased from 47 percent to 78 percent fully-mission capable. The readiness rates for these systems continue to improve as we identify faults and receive missing parts.

Digital Sustainment. Digital sustainment is a mindset; the attitude for success must be: "if you can't use your digital systems, then you are your failing at your basic mission." Our fire direction personnel are traditionally exceptional in establishing digital communications, and we found the FSOs who previously served as fire direction officers were better in FOS operations. We wanted to establish the same digital proficiency in our fire supports as fire direction personnel, and we used weekly digital sustainment training as a method to meet this

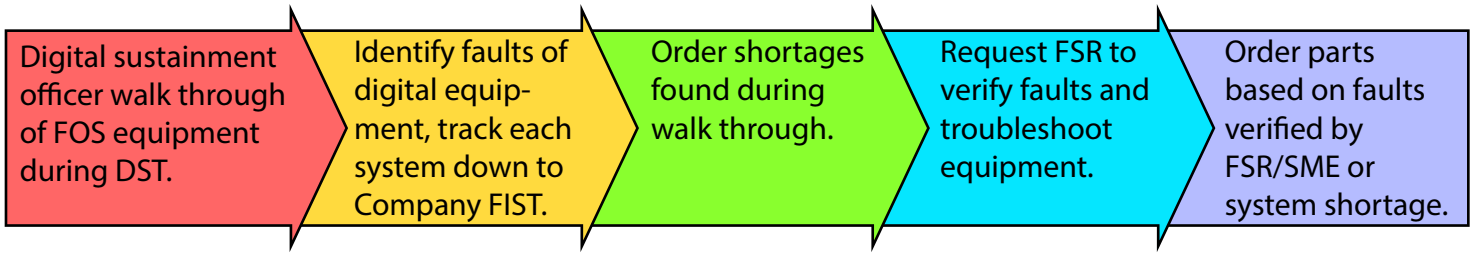


Figure 3. An illustration of the process developed to bring the fire support systems to fully-mission capable status. (Illustration provided by LTC Cory J. Delger and 1LT Anthony R. Padalino)

objective. Facilitated by the battalion FDO, our DST program had a weekly focus, such as obscuration Fires planning and execution, family of scatterable mines employment, or coordinated illumination. Additionally, during one DST session a month, the battalion fire direction center would position at least 20 kilometers from the platoon FDCs and battalion FSEs in order to exercise our digital retransmission capabilities and long range communication proficiencies.

DST also gave us an opportunity to work on identifying and correcting faults on the FOSs. Figure 3 illustrates the process we developed to bring the fire support systems to fully-mission capable status. The HHB XO walked to each BFIST and FSE command post carrier during DST, talking to operators about their systems' status and had the FSNCO explain faults. If required, the unit ordered parts shortages, and would contact a field service representative to assist in verifying faults.

FIST Certifications. Without a concerted effort to certify all FISTs based on a common standard across the brigade, there will inevitably be disparities in the abilities and skills of the fire supporters. The 3-4 ABCT was in a position where it had not conducted FIST certifications in recent memory due to the nature of the unit's deployment cycle. As a result, the brigade's fire supporters integrated into 3-29 FA with varying degrees of proficiency in operating their assigned digital systems and ability to plan Fires at the company level. Immediately upon reintegration, we conducted a week-long FIST assessment, evaluating the teams on the tasks that they must show proficiency to be considered certified. We found that the FISTs were well trained in their ability to call for fire utilizing voice communications; however, only a handful could effectively use their digital systems. More concerning was a lack of digital competencies in our 13F NCO corps. Fortunately, a handful of fire support NCOs showed strong technical skills on the digital systems and we used them as subject matter experts in order to increase proficiency across the FISTs. This emphasizes one of the most positive results of fire support consolidation under the Fires battalion. Instead of disparate proficiency across the brigade, consolidating fire supporters allows the FSCOORD to assess deficiencies and identify technical experts that can train Soldiers in their basic skills. At the conclusion of this assessment, we were able to identify our deficiencies and truly understand our equipment status.

Several weeks after the conclusion of this assessment, the battalion held its first FIST certifications after reorganization with a focus on the company and troop fire support teams' to conduct company-level fire support planning. The key enabler was the inclusion of all company and troop commanders who participated in this assessment. Each commander would provide their FSO and FSNCO a commander's guidance for Fires. Over the course of the day, the FSO would develop his concept for Fires given a battalion-level operations order and Annex D (Fires) along with his commander's guidance, and then brief the commander and evaluator from the brigade FSE on the Fires plan. This incorporation not only trained the FSOs on what their commanders thought with regards to Fires, but it assisted the commanders in formulating their thoughts to effectively articulate guidance for Fires.

During the second week, we focused on the ability for fire supporters to demonstrate proficiency on digital fire support systems to include the SCU and RHC-2. We sought also to include the Pocket-Sized Forward Entry Device in the certifications, but we have limited operator knowledge in this piece of equipment. The long-term objective is to train enough soldiers on the PFED to include it in future certifications. All teams showed a marked improvement from where they were during our initial assessment, and were well positioned to support company-level live Fires.

FSE Certifications. Often overlooked is certifying the battalion and squadron FSE's ability to integrate Fires in support of the maneuver commander. Can the battalion FSE plan Fires in support of a battalion-level operation, integrating organic mortars, artillery, and joint assets? Are FSE's personnel proficient in operating an Advanced Field Artillery Tactical Data System? Can they effectively communicate with their FISTs and the brigade FSE? To ensure that our FSEs had the proper skills necessary to support the maneuver commander, we developed a two-week FSE certification prior to their attachment back to the maneuver units. This certification consisted of two separate week-long externally evaluated events: fire support planning followed by fire support execution in a constructive environment.

To evaluate our FSEs on their ability to plan Fires, in support of a battalion-level operation, each battalion and squadron FSE was given a brigade operations order with Annex D (Fires). One of the keys to our success in this evaluation is that, similar to our FIST certifications, the battalion and squadron commanders played a central role by providing the FSO their guidance for Fires before any planning effort took place. Over the course of a 48-hour period, the battalion and squadron FSOs would develop the Fires plan and give a back brief to the commander who would provide feedback as part of the evaluation. Following the commander's approval of the concept for Fires, the FSO would develop the battalion Annex D with appendices to include a high-payoff target list, battalion target list worksheet, fire support execution matrix, and target selection standards. With a published plan, the FSE would conduct a battalion-level fire support rehearsal with company FSOs and mortar platoon leaders. At the conclusion of the first week, the FSCOORD and brigade FSE conducted a brigade fire support rehearsal and provided feedback to the FSOs on their planning efforts.

For the second week of the FSE certification, we utilized the Joint Conflict and

Tactical Simulation software program as a constructive battlefield simulation of a brigade-level attack. This took place in conjunction with 3-29 FA command post exercise to replicate artillery support in addition to organic mortar Fires. We started the week with set up of the FSEs in their M1068A3 command post carriers and 3-29 FA tactical operations center, followed by a technical Fires rehearsal to validate all digital systems before execution. Over the course of the evaluation, each FSE received calls for fire from company and troop FISTs set up in the JCATS simulation. We evaluated the FSEs on their ability to integrate Fires, execute a fire plan, conduct dynamic targeting, and execute joint air attack team operations in support of the commander's scheme of maneuver. At the conclusion of this certification, we provided the maneuver commanders an assessment of their FSE, strengths, weaknesses, and recommendations for future training in conjunction with the maneuver battalion staff. This was the culmination of the fire support training as part of the fire battalion. From this point forward, the FISTs and FSEs would be attached to their maneuver unit, and our focus would shift to integrating the fire supporters into combined arms training at the company and battalion-level and sustaining the proficiency gained during a part of the Fires battalion.

Attaching FISTs and FSEs to Maneuver Units. The 3-4 ABCT's training progression for combined arms maneuver provides a natural transition point for the FISTs and FSEs to attach back to the BCT's combined arms battalions and reconnaissance squadron. When maneuver companies and troops begin their externally evaluated combined arms live-fire exercises, we will attach their FISTs along with the FSEs and will maintain this attached status through the brigade's National Training Center, Fort Irwin, Calif., rotation and eventual deployment. The 3-29 FA will maintain administrative control of fire support personnel and equipment as part of HHB even though they will work full-time and locate their equipment with their supported maneuver unit. This relationship (attached minus ADCON) may change depending on the mission of the brigade and its subordinate battalions. For example, if a combined arms battalion has a contingency mission that places it in a geographical area where the HHB commander cannot physically travel to, we may temporarily transfer property to the maneuver unit for accountability purposes. Our way ahead is meant to reduce the amount of turbulence resulting in attaching units while providing a trained fire support team to the maneuver commander.

As with our initial transition in bringing the fire supporters to 3-29 FA, the relationship between commanders is crucial to establishing trust during the attachment process. The 3-4 ABCT will start the company CALFEXs in the summer of 2014. To set the conditions for the transition and successfully attach the FISTs and FSEs, the FSCOORD and HHB commander are conducting another 'Fires road show' with each of the battalion and company-level maneuver commanders. The intent is to show clearly how the attachment will work, when it will take place, what our responsibilities are as the Fires battalion, and what a maneuver commander can expect when they receive the attached FIST.

Additionally, we will lay out the training events to maintain proficiency, future certifications, and digital sustainment training in order to come to mutually beneficial understanding of the way ahead. Our goal is that by the time a company or troop enters its CALFEX; their FIST is certified in its fire support tasks, section live fire qualified on the BFIST, individuals are qualified on their assigned weapon, and the team has a solid understanding of its digital systems to maintain proficiency.

Maintaining Proficiency. Our responsibility to maintain a trained fire support system cannot end once FISTs and FSEs are attached to their maneuver units. Digital sustainment, certifications, and individual fire support skills training will continue with the FSCOORD's oversight throughout the brigade's deployment. We are confident that with the positive relationships we have established with maneuver commanders we will be able to maintain Fires planning and digital proficiencies. FISTs and FSEs will continue to participate in digital sustainment training. To enhance our digital knowledge, we are taking advantage of the Fires Center of Excellence's 13F Master Gunner Course, sending our best 13F40s to this exceptional training. Ideally, we are striving to every qualified battalion or squadron fire support NCO to this course, but will likely only be able to send two NCOs before the brigade's NTC rotation.

Longer term, we are striving to establish our own BFIST gunnery program. This is a problem, which until solved, inhibits us from having the right focus on combined arms and digital systems as leaders are consumed with trying to understand BFIST gunnery and qualification. This limited understanding of the direct fire weapon system drives our FISTs to focus on the wrong tasks instead of fire support planning and execution. We will have difficulty balancing personnel management with maintaining stable BFIST live fire qualified crews until we are able to start this program. The major hurdle is having a Bradley master gunner to manage our BFIST gunnery program. We have an NCO scheduled to attend the 14-week course at Fort Benning, Ga., but he will not be in a position to establish solid BFIST gunnery training until the battalion deploys. In the meantime, we have support from the maneuver battalions who are assisting us in moving our crews through section live fire qualification until we establish our own program. At that point, we will have more flexibility in conducting section live fire qualification and the ability to maintain qualified crews.

BCT 2020 provides the artillery community a chance to become the maneuver commander's fire support platform of choice by correcting the perceived deficiencies in our ability to provide accurate and responsive Fires. The responsibility is on us, as artillerymen, to change in the way we train our fire supporters, uncompromising in enforcing digital competencies and proficiency in fire support planning. Through our experience in this transition, a solid and trusting relationship between the Fires battalion and the maneuver commanders will set the conditions for a smooth transition and continuing success in establishing and maintaining fire support proficiencies.

Lieutenant Colonel Cory J. Delger currently commands 3rd Battalion, 29th Field Artillery. Prior to his current assignment, he was an executive officer to the U.S. European Command J3. He has served in a variety of positions to include brigade fire support officer, battalion executive officer and S3, and battery commander. Delger holds a Master of Business Administration from the Kellogg School of Management, Northwestern University and a Bachelor of Science in Aerospace Engineering from Embry-Riddle Aeronautical University.

First Lieutenant Anthony R. Padalino is currently serving as the Headquarters and Headquarters Battery executive officer, 3rd Battalion, 29th Field Artillery, 3rd Armored Brigade Combat Team, 4th Infantry Division, at Fort Carson, Colo. He graduated from the Field Artillery Officers Basic Course, Fort. Sill, Okla., in 2012. Padalino served as a security forces advising team S4 while deployed to Tarnek-wa-Jaldek, Zabul, Afghanistan, mentoring Afghan National Police in support of Operation Enduring Freedom. Upon redeployment in December 2012, Padalino was assigned as a platoon leader in B Battery, 3rd Battalion, 29th Field Artillery. Padalino graduated from Western Michigan University in 2011 with a bachelor's degree in Aviation Science and Administration and is currently pursuing a master's in Aeronautical Science at Embry-Riddle Aeronautical University.

Awakening the King

By 1LT Neel Vahil

SGT Robert Fisher, right, a combat observation and lasing team chief with 1st Battalion, 76th Field Artillery, 4th Infantry Brigade Combat Team, 3rd Infantry Division, evaluates the performance of 1LT Christopher Collins, a fire support officer with 1-76 FA, attached to 3rd Battalion, 15th Infantry Regiment, 4th IBCT, on the operation of the lightweight laser designator/rangefinder, a system used to identify targets, during 1-76 FA's Fires support team certification exercise on Fort Stewart, Ga. (Photo by SGT Bob Yarbrough, U.S. Army)

Fire support teams are frequently viewed as 'the outsiders' in maneuver battalions. This damaging perception is rooted in three primary causes. First, the planning process for the incorporation of indirect Fires and close combat attack into a maneuver plan rarely reflects the actual use of such assets in a training environment. Fire support leaders must solicit the task and purpose of Fires, clearly present the capabilities and limitations of the indirect Fires and CCA planned for the mission, as well as seek to standardize asset employment available to the company for a variety of different combat situations. Second, there is a lack of understanding between company-level Field Artillery and maneuver officers. In order to bridge the knowledge gap that exists between Fires and maneuver, we must understand the intricacies of maneuver doctrine and seek to educate company leaders on the complexities of fire support. Finally, as company-level fire support leaders, we must capitalize on brevity, simplicity, and a comprehensive depiction of Fires nested within the task and purpose of the larger operation. By doing these, company fire support officers can reverse the degradation of our effectiveness and begin to display the value of successful Fires integration.

Our perception as 'outsiders' is only worsened by the fact that these teams are rarely evaluated on realistic criteria. Ground commanders must recognize that, particularly in a training atmosphere, close combat air and 155 mm rounds abide by certain restrictions that commonly interfere with the flow of company maneuvers. Simply briefing the 'rangisms' and developing a company-level standard operating procedures for defining the circumstances in which

particular assets are used will reflect a narrowing of the cultural gap that currently exists between artillery and maneuver. This will allow the commander and FSO to have a measure of predictability in a frequently erratic combat environment. Additionally, discussing the limitations of these assets prior to beginning the lane is necessary for commanders to accurately evaluate how they are utilized during the lane. By standardizing how and when we employ the indirect fire and CCA assets available to us as fire supporters, we can make sure our teams are training, in a way, that enhances the proficiency of our units.

It is apparent to me that we have to understand how our maneuver units operate because this will inform the process of target development. For example, because I know that the tank is likely going to be moving at a particular speed through a breach, I can plan a target and trigger, in a way, that will be effective in a high-paced mechanized fight. Similarly the more we understand about armored and infantry movement and maneuver, the more capable we are of planning targets and both technical and tactical triggers that are effective in a variety of different situations and environments. Furthermore, fewer and better developed preplanned targets should be used as an abundance risks over-complicating an already nuanced company scheme of maneuver. Moreover, these targets should be mindfully placed in locations that, if possible, do not impede the maneuver company's rate of movement (this was especially critical for me as tempo is vital in a mechanized fight). I found that walking my commander through every step of my planning process allowed us to align our expectations for the prosecution of indirect Fires in the battle. I am certain that this will help us improve as fire supporters and bridge the ever present cultural gap between us and maneuver leaders.

When I returned from my first company field-training exercise, I realized by giving all the tank commanders and gunners a more detailed class on fire support, I helped them understand the process that informs target development, the organization of our fire team, basic fire support coordination measures, and the architecture of the Fires approval process. I alleviated much of the confusion and misunderstandings that frequently arise during the operations order at the company and battalion levels. They are all receptive to learning about it and it does not take very long to organize and give a class like this. It is easy to say that they only need to know a limited amount about fire support and call for Fires in general, but by trying to get them to understand the specifics of our job as fire supporters it makes them more effective as maneuver leaders.

Conversely, it is equally important for us to understand the intricacies of maneuver doctrine, it is crucial for us to present a comprehensive description of fire support in the company OPORD. However, it is still important to balance this wide-ranging description with brevity and simplicity. We are ambassadors from the Field Artillery battalions and as such have to discard complex terminology in favor of plans and processes that are easily understandable. Failure to do this erodes valuable time in company OPORD briefs. Tank commanders who act as observers, for instance, do not understand the anatomy of a message to observer, so I simply gave them the pertinent information in simple and understandable parlance. When they were observing CCA or artillery rounds, I told the observer how many rounds he was going to see, where he would see them, and when they were expected to land.

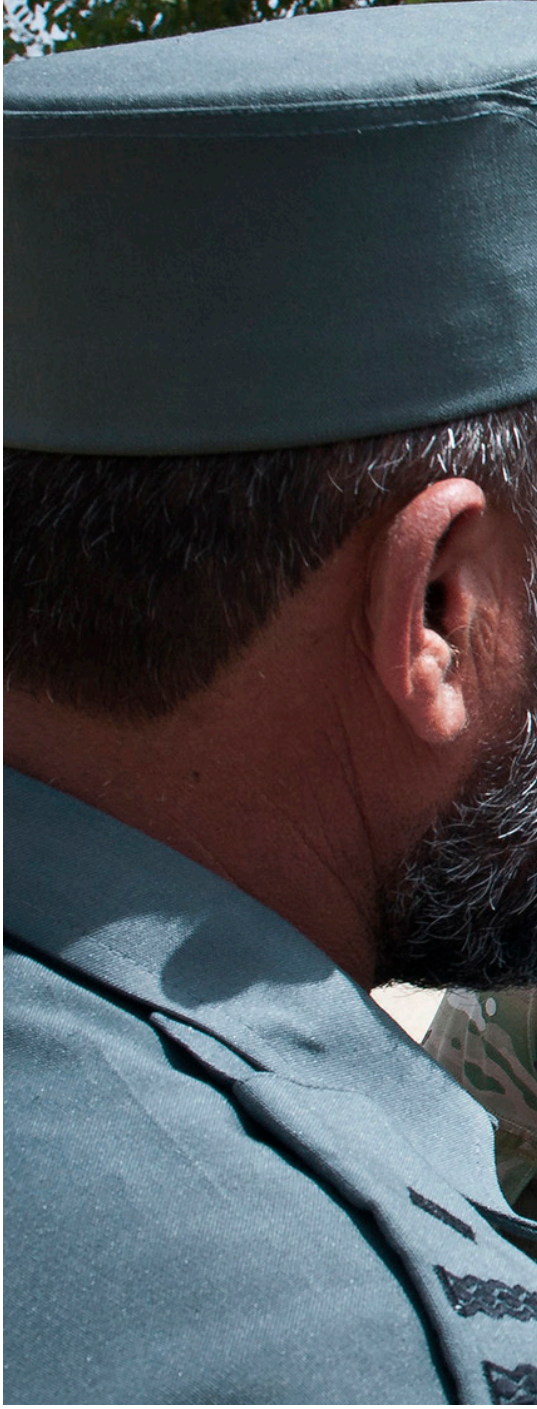
Although activating preplanned targets and facilitating the employment of fire support assets is our primary role, the realization that sometimes the FSO can be very effective when he is not calling in artillery. There are times that the best role he can play is providing the commander with information on the Fires being initiated in other companies, giving him a broader and more detailed common operating picture. This will, in turn allow him to make more informed decisions on the battlefield.

There are many things we can do as fire support leaders to mitigate the effect of being crowded out by an overemphasis on maneuver doctrine and skill. Ultimately, the solution lies in aggressively providing comprehensive information and knowledge to the commander, exploiting the opportunity to be useful in other roles if fire support is not necessary and encouraging brevity and simplicity. If we can do this at the company level, we can ensure our usefulness is understood and appreciated at higher levels.

PFC Daniel Rodriguez, a forward observer with 1st Battalion, 76th Field Artillery, 4th Infantry Brigade Combat Team, 3rd Infantry Division, attached to 3rd Battalion, 15th Infantry Regiment, 4th IBCT, draws a terrain sketch of his intended target area, used to aid in the description of his hidden position to friendly forces, during 1-76 FA's fire support team certification exercise on Fort Stewart, Ga. (Photo by SGT Bob Yarbrough, U.S. Army)

Repairing a Damaged Partnership

By CPT Seth Hildebrand



Editor's note: *This article was first published in the Infantry Magazine Jan.-Feb. 2014 issue.*

Emerging tactics used by an adaptive and creative enemy have forced our Soldiers to be in a state of high alert 24 hours a day.

In February 2012, an enemy combatant wearing an Afghan National Army uniform shot and killed two U.S. Soldiers inside a joint forward operating base. This single act of violence nearly destroyed a partnership that had been built with blood, sweat, and tears over a period of 10 months.

With the Army's continued focus in Afghanistan on partnership and advising the Afghan National Security Forces, leaders must understand how to prevent insider threats and not let them destroy the fabric of relationships built between U.S. and Afghan forces. The article will discuss why insider threats and attacks are so devastating, what leaders and Soldiers can do to prevent them, what steps can be taken to repair a damaged partnership after an insider attack, and how we can better prepare for a mission solely based on partnership.

Protests. By February 2012, *Comanche* Troop, 3rd Squadron, 4th Cavalry Regiment, had been deployed in Afghanistan's Nangarhar province for 10 months. I had served the majority of the deployment as the troop executive officer. *Comanche* Troop spent the first six months of the deployment in eastern Nangarhar at FOB Shinwar and the remainder of the deployment at FOB Connolly in western Nangarhar. In both locations, the troop's primary focus was developing an active partnership with the ANSF.

Toward the end of February, tensions were running high throughout Regional Command-East as word spread that Qurans were being burned at Bagram Airfield. Regardless of the truth or validity to the story, an aggressive anti-coalition force campaign by the Taliban sent many locals into a rage, sparking protests and violence within days. On February 22, large gatherings outside FOB Connolly's front gates turned into small riots. Angry protesters set fires to abandoned structures just outside of the FOB, destroyed cars belonging to local nationals working on the base, and randomly fired weapons to elicit a coalition response.

The 3rd ANA Kandak (battalion) immediately responded to the protests by attempting to disperse the crowd. Simultaneously, *Comanche* Troop increased security inside the base and kept its defensive posture elevated until late that evening when the crowd was fully dispersed.

Early in the afternoon of February 23, the second day of protests, I heard more shots fired. Previously, the gunfire had sounded distant, coming from outside the FOB. These shots, however, sounded different and much closer. I ran toward where I thought the sounds were coming from only to see mass confusion at the quick reaction force staging area. Over the troop radio, I heard even more confusion but was able to gather that there were, in fact, shots fired near the QRF staging area and that two U.S. Soldiers had been injured.

After seeing that the first sergeant was en route to the staging area, I took up position with our snipers in a tower overlooking the FOB. It was there that the transmissions on the radio became clear as I could see some of the aftermath. The shots had come from the ANA platoon at the staging area. It appeared that an ANA soldier had fired at *Comanche* Troop's 4th Platoon, which was part of the joint QRF. From the tower, I observed a crowd to the south of the FOB along the outer perimeter. The gunman must have coordinated this gathering and used it as part of his escape route. I watched as U.S. forces and contracted security personnel fired at the man, posing in an ANA uniform, wounding him as he made it over the gates before dissolving into the large body of protesters.

The two Soldiers were transported to the FOB aid station, but shortly after we learned that both had died. This was *Comanche* Troop's second 'green-on-blue' incident of the deployment. The first resulted in nothing more than a scare, but this time a man in an ANA uniform had shot and killed two U.S. Soldiers on the very FOB he shared with them. Initially, it was unclear if the gunman had acted alone. It was also unclear if this was a result of the Quran burnings or an act planned well in advance just waiting for an opportune time.

Developing Partnership. When *Comanche* Troop, 3-4 CAV deployed to Afghanistan in April 2011, the focus for all ground forces was to build successful partnerships with the ANSF. This period marked the initial phases of the ANSF taking a more active role in the security within their own environment and coalition forces conducting all operations as joint missions. Battalion and company-level command teams partnered with Afghan leadership within the ANA, Afghan uniformed police, Afghan border patrol, and governmental leadership at the district and provincial levels. Security force assistance

An Infantry platoon leader assigned to C Troop, 3rd Squadron, 4th Cavalry Regiment, discusses strategy with Afghan Uniformed Police chief before assisting in a clearing operation on July 19, 2011. (Photo by SFC Mark Burrell, U.S. Army)

teams were becoming the norm throughout RC-East as the demand for advise and assist roles grew.

Although there was direct emphasis being placed on partnership during this time, the reality was that we still didn't quite understand the best ways to develop those relationships. Many of our Soldiers in 3-4 CAV had previous deployments to Iraq and, right or wrong, carried with them some level of disdain for working with a host national security force. We followed the guidance to place Afghans in the lead by creating the illusion that all patrols and missions were joint and evenly partnered. In reality, U.S. forces controlled every patrol. Because we had not developed any sort of relationship, least of all trust, and because we believed in our own tactical superiority, we decided on everything from mission planning to execution.

The difficulties with the partnership were often a matter of misunderstandings between coalition forces and the ANSF primarily because of our preconceived notions of how they should operate. A lack in understanding the different roles and responsibilities of the different entities that made up the ANSF, coupled with initial expectations of the ANSF operating at our level, created an early struggle for a successful partnership.

Although it was clear that each entity of the ANSF was independent of one another, oftentimes at the Soldier level, opinions of our partners were consolidated, regardless of their different skill set, organizational structure, funding, equipment, or levels of perceived laziness and corruption. *Comanche* Soldiers initially saw undisciplined security forces that couldn't adhere to timelines, proper uniform, or the ability to conduct patrols without U.S. fuel. These compounding problems caused our Soldiers to not

fully trust our partners. Additionally, it was obvious to them that there was a severe lack of trust between the different entities of the ANSF. Information was rarely shared between two organizations, and AUP or ANA leaders would often not speak openly in front of one another. Early on, this distrust resulted in an unwillingness to work together and made it difficult for *Comanche* Troop, leaders and Soldiers alike, to understand ANSF as a whole.

Midway through the troop's deployment, positive changes took place between the relationships of U.S. forces and the ANSF. Our Soldiers witnessed as Afghan forces fell victim to the same improvised explosive devices that cause significant damage to our own forces. Our company commander and first sergeant stressed the importance of active partnership, and junior leaders within the formation were teaching their Soldiers to understand that cultural differences didn't make us, as Americans, any better — but simply different. The realization that the ANSF were a valuable asset to have in understanding the operational environment as a whole was beginning to set in, and within a short time, the average Soldier's individual mindset started to shift.

In addition to the opinion shift and efforts to understand a foreign culture's differences, *Comanche* Troop leaders set the example in partnering at the command and staff levels. The company commander worked daily with the ANA kandak commander and executive officer while the first sergeant developed strong relationships with the S3, command sergeant major, and operations sergeant major. As the XO, I worked closely with the SFAT at FOB Connolly, which gave me the opportunity to see the inner workings of the kandak's staff sections. We exercised the ANA's logistical supply system and assisted with developing maintenance lessons and schedules for all equipment. Additionally, we formed a joint tactical operations center where together ANA soldiers and *Comanche* Troop's battle captain were able to track force movement and coordinate mission support.

Comanche's commander continued the success of an active ANA partnership by extending our efforts to the AUP and ABP by holding weekly district security meetings with the local government and every faction of the ANSF. He also held multi-district meetings, bringing together multiple district governors and police chiefs in a forum that provided open dialogue and active partnerships with one another. Ultimately, it seemed

An all-wheeled vehicle mechanic assigned to C Troop, 3rd Squadron, 4th Cavalry Regiment, explains how to fix an Afghan Uniformed Police HMMWV at Forward Operating Base Shinwar in eastern Afghanistan's Nangarhar province. (Photo by SFC Mark Burrell, U.S. Army)

that little could cause a divide in the progress we had made, and at the time of the attack, we were determined not to let it cause irreparable damage to our formation and relationships.

Rebuilding Trust. By late afternoon on the day of the attack, our troop commander, along with all troop leadership, had addressed *Comanche* Soldiers throughout the day, but there was a sense of disbelief among the majority of the Soldiers. After being so successful in developing an active partnership, the attack struck us harder than any IED or mortar attack did up to that point.

We then received word that two high ranking officers — U.S. Marine Corps Gen. John R. Allen, commander of International Security Assistance Force – Afghanistan and United States Forces – Afghanistan, and General Sher Mohammad Karimi, ANA chief of staff — would be visiting the FOB to address the incident with our Soldiers and the ANA officers. That night, both leaders stressed the importance of not allowing a single unfortunate event carried out by a lone gunman to set us back in the progress we had made. Allen primarily focused his remarks to the ANA officers and praised them for their ability to take the lead in security operations and assured them the incident that took place was understood as an act of one, not the will of many. Karimi then focused his comments toward *Comanche* troops. He was sympathetic and apologetic for the events that took place. He, too, stressed that was not how he or his formation felt about American Soldiers and was adamant that he would not tolerate anti-American thoughts and actions in his army.

Despite this, the legitimacy of the ANA became quickly unraveled in many of our Soldiers' eyes. This forced the command to put an immediate stop to thoughts and comments that would severely degrade the progress we had made with our partners over the past few months. Our company commander and first sergeant continued a very open partnership with the ANA battalion's leadership to show a united front by both formations. The ANA leadership engaged platoon leaders and platoon sergeants, expressing condolences in a way that was very visible to our Soldiers. Seeing the leaders stand together during a devastating period empowered our Soldiers to handle their emotions with a unique maturity. Although pain and anger remained, our Soldiers understood their duties and remained both mission and task oriented.

The command's initial focus was on the mental state and morale of the troop, specifically the platoon to which the two deceased Soldiers had belonged. The company commander's goal in this was to create a balance between allowing the Soldiers an appropriate amount of down time to recover from their loss and sending them back into sector performing day-to-day operations. Having the platoon execute a normal patrol schedule after 48 hours prevented the Soldiers from

sitting around the FOB, isolating themselves and dwelling on their loss. It was a mental challenge initially sending the platoon out into sector after such little time had passed to conduct joint patrols with those in the uniform that just attacked our own, but our Soldiers understood that if we weren't partnering then there was no purpose in us being there in the first place.

Immediately following the attack, we made every possible asset available to our Soldiers to help them move forward. Combat stress, mental health, and the brigade's chaplains all responded and maintained a steady presence at our FOB. Every Soldier in 4th Platoon was required to meet with one of the available assets to evaluate his current state. The squadron held a memorial at FOB Shinwar for our fallen brothers, giving the organization an opportunity to come together and pay respects for those we lost. We developed an extensively open and active dialogue which allowed our Soldiers to vent to one another, their leaders, and whoever else would listen in regard to the past events, and through this we were able to convey to our formation that this was the act of one, a single individual, and did not represent the ANA as a whole.

In addition to the intense focus we gave to our Soldiers following the attack, we also had to address our ANA counterparts. The *Comanche* commander initially spoke with all of the ANA leaders to gain an understanding of their current state and move toward closure. This also opened the doors for our leaders within the troop to have a formal dialogue with the ANA kandak's leaders, providing a format for both the ANA and U.S. Soldiers to speak to one another and help repair a bond that was nearly shattered in a matter of minutes. It was obvious that the ANA soldiers were deeply affected by everything that happened and were utterly embarrassed by it.

In an effort to show their commitment to us as a partnered force, the ANA became obsessed with finding the gunman who was once in their formation. Records of past postings, family ties, and known associates were made available. Through their intelligence networks, the ANA kandak leadership and staff investigated possible locations for him in district. Two weeks later during a routine partnered operation, Soldiers found a cell phone on an insurgent combatant that had videos from the February 23 attack. The information from the ANA, along with the cell phone, was given to task force intelligence.

Through this, the caliber of our Soldiers was put to an extreme test, and the command was exceptionally proud of their composure, military bearing, and professionalism. *Comanche* Troop was able to continue a partnership with the ANSF during a very trying time. To say that there was a full sense of trust following the attack would be a lie, but to the credit of every Soldier there at FOB Connolly, we remained a mission-first organization.

When leadership is strong and united, it can set a tone that is easily followed despite whatever challenges are faced, both big and small. It was these leadership bonds built throughout the troop that allowed us to come together and move forward.

At the time this article was written, CPT Seth Hildebrand was attending the Maneuver Captains Career Course at Fort Benning, Ga. He served as executive officer of Troop C, 3rd Squadron, 4th Cavalry Regiment, 3rd Brigade Combat Team, 25th Infantry Division, during the unit's deployment to Afghanistan in 2011-2012.

Soldiers from the 3rd Squadron, 4th Cavalry, 3rd Brigade Combat Team, 25th Infantry Division, gather around a terrain model during the rehearsal. (Photo by SGT Trey Harvey, U.S. Army)

Targeting in Support of a Regionally Aligned Force

By MAJ Timothy Gatlin, CW3 Christopher Meekins and CW2 Daniel Padilla

Targeting is based on four critical functions: decide, detect, deliver, and assess, which is a cyclical process performed at fixed time intervals over the course of the engagement, battle, or campaign. D3A was designed to assist maneuver commanders in the prioritization and synchronization of assets in time, space, and purpose.

Additionally, the targeting process is designed to provide commanders with the costs and benefits of servicing various targets and drive the decision as to which targets are most critical to mission accomplishment. Commanders at all levels have utilized this targeting mythology in Iraq and Afghanistan to predict, select, action, and evaluate the effects on high value targets and high value individuals that operate within a given area of responsibility. Numerous articles have been written over the past decade about D3A. This paper offers a new perspective on how the targeting methodology can facilitate operations as the Army transitions to a regionally aligned force concept.

The U.S. military's ability to effectively and efficiently target HVI in Iraq and Afghanistan played a crucial role in defeating the insurgency. Targeting was utilized by conventional and special operations units methodically to dismantle networks with limited assets. As units begin to implement the counterinsurgency doctrine in 2006, they expanded their targeting efforts to include non-lethal entities such as government and essential services, and economics. As a result, the targeting process began to effect staff sections outside of maneuver, Fires, and intelligence war-fighting functions.

As Operations Iraqi Freedom and Enduring Freedom close, the Army has adopted the RAF concept to provide combatant commanders with forces that can respond decisively to the crisis while simultaneously working to enhance the interoperability of host nation forces. With this new strategy in place, it begs to question: can the traditional targeting methodology, D3A, be used in environments where operational requirements and routine Army business share the same space?

In 2012, the Army Strategic Planning Guidance announced a new strategy to gain balance throughout the Middle East and Pacific regions. The new strategic guidance focused on the transition of security responsibilities to the host nation, and refocused the Army's efforts on building partnership capacity to enhance the security situation throughout the Middle East and Pacific regions. The RAF concept was created to enable combatant commanders to achieve four main strategic goals:

1. Maintain commitment to the current fight through its successful termination
2. Downsize the force
3. Adaptation to the new security environment
4. Meeting the requirements of the new Defense ASPG

The Army has adopted a new readiness model and redeveloped training with limited non-essential capabilities and missions for each selected RAF brigade combat team. The BCT operating as an RAF will be forced to reinvigorate existing capabilities, develop new capabilities for the changing environment, and adapt processes to reflect the broader range of requirements, while carefully managing resources in this time of decreasing budgets.

At the nucleus of Operation Spartan Shield is United States Army Central, which remains relevant to the Army for operations throughout Southwest Asia. In addition to its Title X obligations as an Army Service Component Command, USARCENT has been allocated subordinate units to respond to contingency missions throughout the AOR while simultaneously executing persistent partnership throughout the region. USARCENT operates across five lines of effort to focus its efforts and prioritize its finite resources. USARCENT's strategy focus on security, political transition, and enduring regional partnerships throughout the USCENTCOM AOR. Their regional partnerships serve to enhance the access and flexibility for our combatant commanders while improving the partnered nation's interoperability and military-to-military relationships. Partnership within each region is executed by persistent military-to-military engagements, such as key leader engagements and senior leader engagements with senior land forces commanders. USARCENT uses partnerships with land forces commanders cement the groundwork for future partnered exchanges between U.S. and host-nation forces. The RAF BCT, which serves as an action arm for contingency operations, security cooperation exercises and military-to-military engagements, executes the brunt of the operational tasks with limited fighting force—this construct is the 'new normal' for the BCT and the driving force behind the creation of the RAF concept.

Fast forward to October 2013, when the 2nd Armored Brigade Combat Team, 4th Infantry Division deployed to Kuwait in support of OSS, a new RAF mission. The 2-4 ABCT was faced with a unique problem set, one that required the BCT to maintain a high state of readiness to support all USARCENT concept of operations plans. They had to achieve this while simultaneously executing a more strategic partnership mission that would strain the BCT's limited resources. An operational approach was needed closely managing the myriad of operational requirements assigned to the BCT using the finite resources effectively and efficiently to meet the commander's intent.

The 2-4 ABCT commander wanted to focus the BCT's resources across four LOEs:

- Decisive Operation Readiness, to ensure the organic forces are well trained, professional and prepared to execute contingencies throughout the USCENTCOM AOR:
- Supporting Operation1 Partnership, to create an environment of mutual respect between U.S. and partnered forces, to enhance the flexibility and access for our operational and strategic military leadership;
- Shaping Operation 2 Ready & Strong, to continue to implement the Army's Ready and Resilient campaign, instill a culture of discipline and climate of dignity and respect while aggressively eliminating sexual harassment and sexual assault;
- Shaping Operation 3 Fort Carson, Colo., Operations, to ensure families are well prepared, execute Department of the Army realignment initiatives.

The 2-4 ABCT's targeting process was based on a four-week targeting cycle, which was driven by four major battle-rhythm events that would occur during week four of the process. The events consisted of LOE working groups, targeting fusion huddle, targeting board and the targeting decision brief to the BCT commander.

During this deployment, the term 'targets' was changed to 'events' to better suit this new effort and facilitate a shift in mindset from the enemy-based environments of Iraq and Afghanistan to the most stable region of the Gulf Coast Community (See Figure 1). Each LOE chief conducted a bi-weekly working group meeting to assess the previous month's targeting cycle events from both a BCT and a battalion perspective. Each BCT and battalion LOE representative presented proposed event (target) nominations that we hoped would provide the BCT with best opportunity to achieve the desired end states within the various LOEs.

The LOE chiefs applied an event value analysis to each event to rank order events on a high payoff event list. The EVA was developed by the BCT fire support cell to help each LOE chief evaluate each event by category level, last approved meeting, and time to execution (See Figure 4). The EVA would provide the BCT commander with the objective/quantitative analysis to inform his qualitative analysis in the 'decide' phase of this process.

In week four of the targeting process, the LOE chiefs presented their LOE-specific HPELs during the monthly targeting fusion huddle. During this meeting, LOE chiefs addressed any issues discovered in the LOE working group meetings. The LOE chiefs presented their nominations to the group for discussion to determine which nominated event best supported the objectives within the BCT's operational approach. Once the BCT fire support officer built consensus within the group, selected events would move forward as the BCT combined HPEL for the next targeting cycle.

The next step in this vetting process was the targeting board, which was chaired by the BCT deputy commander and also took place on the fourth week of the targeting cycle. The intent of this meeting was two-fold: 1) provide the DCO with assessments by LOE and 2) allow the DCO to use his experience and understanding of the commander's intent to apply the first subjective/qualitative analysis to the BCT HPEL. In theory, this is significant because the commander's decision-making process has been influenced by the EVA's objective analysis. This is intended to prevent the organization from making decisions based purely on the subjective analysis of the commander, which is often inherently biased. These biases can create blind-spots, which sometimes go unaccounted for in decision-making. At the close of the targeting board meeting, a revised BCT

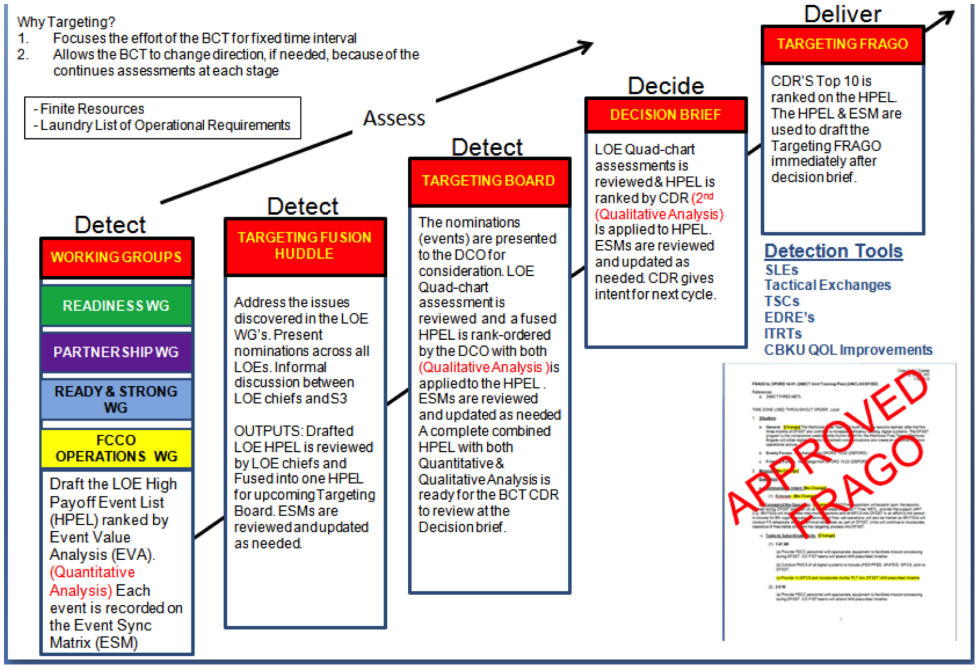


Figure 1. RAF Targeting Framework. (Illustration courtesy of By MAJ Timothy Gatlin, CW3 Christopher Meekins and CW2 Daniel Padilla)

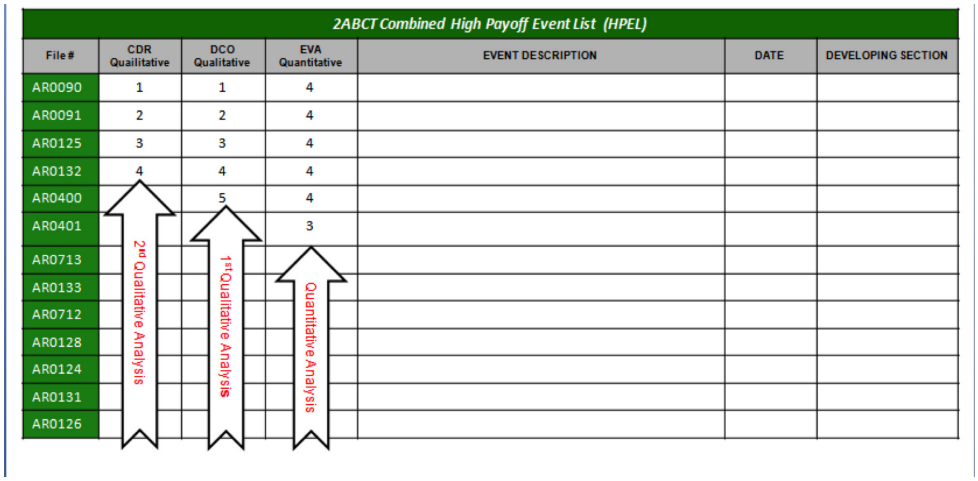


Figure 2. Combined High Payoff Event List with quantitative and qualitative analysis. (Illustration courtesy of By MAJ Timothy Gatlin, CW3 Christopher Meekins and CW2 Daniel Padilla)

HPEL was formed with the EVA and DCO's rank ordered listing (See Figure 2).

The targeting decision brief to the BCT commander was the culminating event for the targeting process. The intent of this final meeting was to determine which events would receive the highest priority and resources for the next four weeks. The LOE chiefs provided an assessment of last four weeks to the BCT commander and proposed priorities and nominations for the next targeting cycle. The intelligence war-fighting function also presented analysis that would drive decisions associated with the readiness of the BCT.

At the close of the briefing, the BCT commander evaluated the merit of each event based on the targeting board's quantitative and qualitative analysis, staff recommendations, and his own understanding of the current environment. At the close of the targeting decision brief, the BCT FSC drafted the monthly targeting fragmentary order with the commander's top 10 events for the next cycle. The targeting fragmentation order was produced using the HPEL and the event synchronization matrix. Each event required an ESM to codify the task, purpose, execution, and assessment associated with each event (See Figure 3). The targeting FRAGO functioned as the delivery mechanism that tasked each subordinate unit and staff sec-

LOE: (WHO) | Total Cost for Event:

TASK: (WHAT)
PURPOSE: (WHY)

The event's situation, task and purpose to be added to OPORD.

The purpose of this form is to (1) answer any questions about a specific event for the BCT CDR/DCO (2) Assist with writing of the monthly targeting FRAGO. (3) Tracks the assessment of the event's effectiveness (4) Tracks and files each event from start to finish.

EXECUTION: Event execution and desired end state.

KEY TASKS: Key tasks to staff/ subordinate units answered here.

File #	Type of Event	Time of Rehearsal	Location	Time of Event	Delivery	BCT Assets Needed
		Coordinating instructions answer here			Service and Support answered here	

Resources outside of BCT Needed:

Restrictions:

ASSESSMENT:

The Assessment to be conducted after the event is completed. Answer any AAR notes, highlight needed refinement or request the event be reengaged.

Does the event need to be reengage? YES or NO

Figure 3. Event Synchronization Matrix (Illustration courtesy of By MAJ Timothy Gatlin, CW3 Christopher Meekins and CW2 Daniel Padilla)

Event Category Level

Event Value Analysis

Category		Level of Events		Start of Event	
Involvi y of the following: Nationa der, State Dept, Media, ure & Climate, Vulnerab Assessment	1	Approved By BCT CMD At Decision Brief	1	1-30 Days	0
Involving y of the following: Senior Le der, ARCENT level leader, Ba e Defense Plan	2	App Board	2	s	1
Involving any of the following: DIV Level Leader, Religious or Community Leader	3	Approved Targeting Fusion Huddle	3	61-90 Days	2
Involving any of the following: BDE Level Leader	4	Approved Working Group	4	91-120 Days	3
Involving any of the following: BN Level Leader & below, MWR Event	5	Approved by BN Representative	5	121-150 Days	4
				+150 Days	5

Last level meeting that event was approved

Time remaining until event starts

NOTE: Match the target to the proper title in each column. Add the total numbers and use this as the EVA ranking, which determines a score value of each event. The lower the score the higher the value. This document is to be used as a guide in order to value all events using one common set of event value analysis. This EVA/TSS simplifies the prioritization of targets.

Figure 4. Event Valuation Analysis. (Illustration courtesy of By MAJ Timothy Gatlin, CW3 Christopher Meekins and CW2 Daniel Padilla)

tion within the BCT to plan, coordinate, and execute all assigned events for the next 30 days. Once the FRAGO was approved by the S3 and the commander, it was published by the BCT chief of operations.

The RAF concept represents an innovative and expanded approach to the Army's security cooperation mission and force management process. Soldiers maintain core combat skills and capabilities while furthering the important business of training and mentoring partner nation security forces. This concept improves Army support to geographic combatant commands and capitalizes on the ongoing contributions of the Total Force to improve partner capacity, sustain strong relationships, and to assist our joint, interagency, intergovernmental and multinational partners in building a stronger global security environment. This 'new normal' forces the BCT commander to make tough, timely decisions to properly balance operational requirements and partnership capacity under more restrictive force manning levels. Now, more than ever, the aforementioned variables in this new operational environment require commanders and their staff to place the 'right' person in the 'right' place at the right' time. We believe the Army's targeting methodology gives the force a solid foundation to facilitate this decision-making process. Moreover, we believe the framework outlined above can serve as a starting point for U.S. Army BCT's now serving as regionally aligned forces.

Major Timothy D. Gatlin is a 1999 graduate of the United States Military Academy at West Point, N.Y., where he earned a Bachelor of Science degree in Economics. In 2010, he earned a Master of Arts Degree in Organizational Psychology and Leadership from Columbia University. Gatlin's previous assignments include platoon leader and executive officer of B Battery, 2nd Battalion, 20th Field Artillery Regiment, 4th Infantry Division, Fort Hood, Texas; Southwest Regional Project Outreach Officer for the United States Military Academy, West Point, N.Y.; assistant battalion operations officer for the 2nd Battalion, 8th Field Artillery Regiment, 1st Stryker Brigade Combat Team, 25th Infantry Division, Joint base Lewis McCord, Wash.; battalion fire support officer for the 1st Battalion, 5th Infantry Regiment, 1st SBCT, 25th Infantry Division, Joint base Lewis McCord; brigade fire support officer for 1st SBCT, 25th Infantry Division, Joint base Lewis McCord; commander of C Battery, 2nd Battalion, 8th Field Artillery Regiment, 1st SBCT, 25th Infantry Division, Joint base Lewis McCord; commander of C Battery, Fires Squadron, 2nd Stryker Cavalry Regiment, Vilseck, Germany; deputy and regimental fire support for the 2nd Stryker Cavalry Regiment, Vilseck, Germany; company and battalion-level tactical officer at the United States Military Academy, West Point, and he currently serves as the BCT fire support officer for the 2nd Armored Brigade Combat Team, 4th Infantry Division, Fort Carson, Colo.

Chief Warrant Officer Three, Christopher Meekins has served in the United States Army since 1996, his past duty positions include Target Acquisition Battery sensor platoon leader, Fort Bragg, N.C., 4th Infantry Division counter fire officer MND-Baghdad, 3rd Battalion, 27th FA HIMARS Battalion targeting officer, 18th Fires Brigade target liaison officer and brigade targeting officer, Fort Bragg, D Battery, 26th Target Acquisition Battery commander, RC-E, 2nd ABCT, 4th Infantry Division Armor Brigade Combat Team targeting officer, Kuwait. Meekins has completed two combat tours in support of Operation Iraqi Freedom, two combat tours in support of Operation Enduring Freedom, one tour in support of KFOR, Kosovo, and several operational support missions ranging from Operation Unified Response, Haiti to Operation Key Resolve, South Korea.

Chief Warrant Officer Two Daniel Padilla was appointed in 2008 from the Warrant Officer Candidate Course, Ala. Following warrant officer basic course training at Fort Sill, Okla., he was assigned to Fires Squadron, 2nd Calvary Regiment, where he led the target acquisition platoon, served as a battalion targeting officer, and deployed to Afghanistan in support Operation Enduring Freedom. He next served on the regimental staff as the targeting officer. Padilla has deployed in support of Operation Iraqi Freedom and conducted combat operations in Baghdad, Fallujah, and Mosul. Padilla currently serves as the targeting analyst for the brigade combat team, 4th Infantry Division, and is deployed to Kuwait in support of Operation Spartan Shield. Padilla's military awards and decorations include the Bronze Star Medal, Meritorious Service Medal the Army Commendation Medal with five oak leaf clusters, and the Army Achievement medal with five oak leaf clusters. He has earned the Combat Action Badge, Air Assault Badge, and Drill Sergeant Badge.

CPT William Kern briefs CJTF-1 commander MG Mayville on the Afghan Gunnery Computer and how 3-201st Corps Fire Direction soldiers were able to use the equipment to process data and fire the first coordinated illumination mission since the D-30 was reintroduced into the ANA arsenal at FOB Nahglu High, Afghanistan on Jan. 7, 2013. (Photo by SFC Bobby Brewster, U.S. Army)

Apaches and Afghan Gunnery Computers

By CPT William R. Kern

Afghan National Army units began fielding Afghan Gunnery Computers in December 2012. What makes this handheld device a universal ballistic computer is a software program developed by the Ukrainian Defense Company. This software is designed to calculate quadrant and deflection data for the D-30 howitzer. Artillery trainers from 5th Battalion, 82nd Field Artillery, 4th Brigade Combat Team, 1st Cavalry Division, witnessed astounding results while training Afghan fire direction centers within the 201st Corps of the ANA in support of Operation Enduring Freedom XIII-XIV. Units utilizing the AGC to process fire missions are taking the fight to the enemy like never before, firing in support of troops in contact, even calling U.S. air assets off station so they can continue shelling the enemies of Afghanistan with lethal indirect Fires. However, for a 122 mm piece of steel to find its mark, there is a process that begins long before the lanyard is pulled, long before the observer passes coordinates to the FDC, and long before the firing battery is laid. There is a level of proficiency that must be demonstrated prior to rounds leaving the tube. The following is an account of that process.

We are all taught during train up for deployments the importance of building rapport. It was not very hard for me to find 'common ground' with the Afghans. As the battery was spread across three forward operating bases, in two provinces that were very different in their terrain, I was constantly flying to check on training or to support ANA led operations. I often found myself lost in the sublimity of the mountains that encompassed the firing points. For a brief moment, I was home in the Mogollon Mountains of Southwestern

Soldiers of 1-201st Corps fire a direct fire engagement from COP Xio Haq, Afghanistan Nov. 14, 2012 as 5th Battalion, 82nd Field Artillery trainers observe. (Photo by SFC Bobby Brewster, U.S. Army)

New Mexico. I found similarities far more reaching than the 'ground' itself. As a kid I would climb the mesa near my grandparent's farm and play amongst the mounds of dirt that once formed the walls of Fort West, a U.S. Cavalry outpost over watching the Gila River valley during the Apache Wars in the late 1800's. I tried to imagine what it would be like to be stationed at this remote outpost fending off the likes of Geronimo and Mangus Coloradus. After spending a couple of months at FOB Tagab, I will not have to contemplate such things anymore.

Much like the enemies of Afghanistan do today, Apache insurgents mastery of the treacherous terrain in the region allowed them to decisively engage, ambush and out-maneuver their foes, then seemingly vanish into deep canyons and mountain passes. They cached weapons, ammunition and sustenance in caves, and controlled the key terrain. Apache war chiefs strategically took advantage of the U.S./Mexico border. When they could not easily evade their pursuers, or when the mountain passes were blocked by snow, the bands retrograded into Mexico to recuperate, recruit and re-supply.

A U.S. enabler that played a prominent role in neutralizing the terrain advantages held by the Apache was artillery. CPT John C. Cremony, commander of Company B, 2nd Regiment California Volunteer Cavalry, accompanied by a section of 12-pound mountain howitzers, successfully defeated a band of 500 Chiricahua Apache's at the battle of Apache Pass in 1862. According to CPT Cremony,

a prominent Apache who was present in the engagement testified that 63 warriors fell in the battle to artillery Fires, while a mere three were killed by small arms. He proclaimed, "We would have done well enough if you had not fired wagons at us." Having never contended with the fire power that the *King of Battle* brings to a fight, Apaches were caught off guard and forced to re-evaluate their tactics.

Fast forward 150 years. Units from the *Long Knife* Brigade of the 1st Cavalry Division were dispatched to an equally remote and rugged corner of Afghanistan to advise and assist the ANA presently engaged with an enemy using similar tactics. There are capillary valleys nestled in the mountains where no ANA unit and few special operations forces units dare to venture. However, an artillery round will go where you tell it, no questions asked. Artillery does not have to navigate steep and narrow routes reinforced with improvised explosive devices and choke points. Therefore the artillery plays a vital role in establishing dominance and eliminating terrain advantages afforded to the enemies of Afghanistan. Perhaps it is also no coincidence that Apache's are still influencing battles waged in the mountains.

A Battery, 5th Battalion 82nd Field Artillery, *Apache*, arrived in Regional Command-East: north of Kabul in October 2012. While 1st and 2nd Platoons manned M777A2's, 3rd Platoon was assembled with a D-30 training mission in mind. Platoon members certified on the D-30 howitzer, learned manual fire direction techniques, and began instructing Afghan artillerymen from the ANA 4/201st Corps at the Afghan Field Artillery Training Center at FOB Gamberi, a sprawling regional training center 15 miles north of Jalalabad. The 201st Corps commander deemed Fires as his first line of effort, and we were tasked with the responsibility of ensuring that artillery units were trained and proficient at performing their wartime functions.

To earn Afghan's respect, you have to establish upfront that you are an expert. As the officer in charge of the AFATC, I inherited a 14-week Artillery Basic Course designed to take raw Afghan artillerymen, and build competent D-30, fire support and fire direction sections. Our predecessors, 2-77 FA, 4th BCT, 4th Infantry Division, developed a solid training regimen and trained 1st and 2nd Brigades of the 201st Corps earlier in 2012. The 2-77 FA was in the middle of training 4th Brigade when we assumed the mission. Shortly thereafter, 1LT Yousef Mohhamed, the battery executive officer, brought in a peculiar piece of equipment. He proclaimed that it was a global positioning system and wanted me to teach him how to use it. I put it in my cargo pocket and took it back to our command post, we unpackaged the device, charged it, and when it powered up, discovered it was much more than a GPS; it was an AGC.

Had we known at the time to reach out to the Australian contingency of advisors at the School of Artillery in Kabul, we could have requested a user's manual and PowerPoint slides with instructions on how to process every fire mission that the AGC is capable of processing. Unaware of the Australians' effort, my team and I learned how to operate it through trial and error. Lucky for us, we had the time, forum, and the right personnel assembled for the task. We found the gunnery software to be basic and quite user friendly. Anyone with a general understanding of fire direction and Windows can use it to compute firing data. As the fire direction students of 4th Brigade practiced manual prediction methods of fire direction, our fire direction team compared their solutions to data calculated by the AGC. SSG Donovan Swain and 1LT John Driscoll eventually cracked the code when they figured out where to input the common deflection of 5200 mils in the setup menu. Instantly our quadrants and deflections began to match (+/- 1-2 mils) with what the FDC was computing with tactical firing tables, maps, range protractors, and calculators. Although we were eager to instruct the ANA students on how to process missions with the AGC, they had completed their 14 weeks of training and were needed in the fight as 4th Brigade was immediately employed. However we knew we were on to something that could not only help us (201st Corps) but other security force advise and assist advisors. As a result we compiled training products on our portal and share drive and distributed links to SFATT advisors and other training units throughout the RC-E Fires community.

An opportunity to teach the AGC presented itself soon enough with 3rd Brigade. Diligent searching confirmed that 3rd Brigade was issued the AGC at the same time as 4th Brigade, although the unit had no idea what they were issued. The AGC's were discovered in a storage container in the supply room of the Combat Service Support Kandak. 3rd Brigade received artillery training from the French, who recently had turned Kapisa province over to U.S. forces. We assembled a mobile Field Artillery training team, an exportable training

SGT Raymond Montellongo evaluates the ANA fire direction chief's ability to process fire missions using the Afghan Gunnery Computer during the validation portion of the FDC certification at FOB Mehtar Lam Afghanistan, March 11, 2013. (Photo by SPC Andrew Baker, U.S. Army)

team consisting of D-30 and FDC experts from A Battery, along with fire support personnel from Headquarters and Headquarters Battery. We packed the 1:12 Call For Fire Trainer that we brought forward from home station and a Gun Laying and Positioning System and arrived at FOB Naghlu High in early January 2013. Our initial task was to assess the unit's level of proficiency and see if we could successfully teach the FDC how to incorporate the AGC into mission processing. We had no idea the impact the training would have.

We were briefed by the SFATT that ANA fire direction personnel were extremely proficient at manual fire direction. They received fire missions and processed firing data in about 10 minutes. Although skeptical at first, after a week of AGC training, these same fire direction sergeants could process fire missions with the AGC in less than two minutes. During the live-fire exercise, the platoon fired the first coordinated illumination mission according to RC-E since the D30s were reintroduced in Afghanistan! The next day in the presence of two U.S. Field Artillery battalion commanders, the platoon processed and fired a four-gun linear smoke mission that was 100 meters in length to perfection! It quickly became apparent what a valuable asset the AGC was in the hands of a competent FDC. Not only were missions getting from the FDC to the guns faster, rounds were more accurate as a result of firing data processed from each gun's GPS location as opposed to the center of battery location plotted on a map. Based on the type, distribution and number of targets, the fire direction officer could choose a sheaf, (linear, circular, or converged) that would produce maximum effects on that target. Furthermore, the AGC gave the unit the confidence to try more complex missions and to transition from primarily direct fire engagements, to over the horizon indirect Fires. I would argue that this increased confidence played the biggest role in the proficiency and skill set of 3rd Brigade's artillerymen. Word quickly spread throughout RC-E and up the reporting channels to the International Security Assistance Forces Joint Command. The message from top level commanders was clear; track down the AGC's and teach ANA fire direction personnel how to use them. It looked as if our hard work was paying off not only for the Afghans but for coalition forces as well. The AGC gave the training team much needed credibility, helping to validate the mobile training team concept, but more importantly it had earned us respect and favor in the eyes of our Afghan counterparts.

Over the next six months following this key training event, our team transcended language barriers and traveled to the far reaches of RC-E to train ANA artillery sections as counter fire units outside of the *Long Knife* Brigade asked us to come and share our training experience. Meanwhile, the battalion endeavored to develop a certification program that was rooted solely in ANA artillery doctrine. CPT Josh Hollingsworth took over the MFATT and I was charged with leading the certification development efforts. Given the opportunity to develop the fire direction portion, I compiled and incorporated

both manual and AGC standards into the certification. In early March 2013, LTC Will Johnson, commander of 5-82 FA briefed the newly developed certification plan to COL Amin, the commandant of the SoArty, in Kabul, Afghanistan. The schoolhouse approved the D-30, fire direction and fire support programs of instruction, and endorsed them as the standard by which all Afghan D-30 sections, FDCs, and fire support teams would subsequently be evaluated across Afghanistan. Our reputation preceded us from that point on, and units that did not have the subject matter experts, products, or necessary training resources reached out to us to request our services. A select team was even invited by Regional Command-North in May 2013, to train a German artillery platoon to replicate our training plan with the 209th Corps.

Our trainers stood on common ground, built rapport, earned respect, and therefore accomplished outstanding results, but what if we had just settled for 'Afghan good enough.' We could have easily shrugged our shoulders and tossed the GPS back into the hands of the executive officer on that fateful day back in December. Imagine if we had said that manual gunnery is good enough, there is not enough time, there is no operator's manual, the FDC will never be able to use the AGC. As it stands today, every unit in the 201st Corps is equipped with, certified on, and implementing the AGC as the primary method of processing fire missions. Were it not for leaders unafraid to take some initiative and pioneer training, the AGC would still be sitting in a CSS Kandak supply room collecting dust. I will admit that some units are far more proficient than others. It has also been brought to my attention that the AGC has problems when processing missions across grid zone designators. Every once in a while all characters on the screen change to Cyrillic for no apparent reason, requiring a hard reset. The system has its quirks, but in my opinion, they are far outweighed by the capabilities the AGC has to offer, and we only skimmed the surface.

Artillerymen prepping to deploy in the role of D-30 advisors or partnered firing platoons should be proficient with the AGC prior to deployment either through hands on experience at the Joint Readiness Training Center/National Training Center or a formal class at Fort Sill, Okla., or Picatinny Arsenal. Proper use of the AGC allows units to meet the majority of the requirements for accurate Fires. The GPS function locates each gun to within plus or minus 10 meters and plus or minus one meter in altitude. Our training missions confirm that computational procedures are faster and more accurate when the AGC is used to process fire missions by trained FDC personnel. The computer stores weapon and ammunition data, and applies projectile weight, fuze type, and propellant temperature to the firing solution. It is equipped with a met function that downloads met data from an on-line weather station, although I was never at a firing point in Afghanistan where Wi-Fi is available. Met data is capable of being input manually. I was able to find a website: freemeteo.com that had meteorological data for all of the D-30 firing positions in our area of responsibility. By building a simple excel spreadsheet that converted the units of measure from the website into the units required by the AGC and we were able to manually input wind speed, wind direction, atmospheric pressure, and temperature. The AGC does not have a function to account for muzzle velocity variations. The newest D30 I saw had a data plate from 1984, with many built in the 1960's I can only hazard a guess as to how many rounds have passed through these tubes. Any good artilleryman knows that if the five requirements for accurate Fires cannot be met a registration can be conducted to compute data to compensate for non standard conditions. The AGC does have the capability to store registration data and apply those corrections to fire missions within the registration limits. As FOBs transition to the ANA and D-30's begin to replace U.S. artillery systems on those firing points, artillery advisors need to sell the importance of conducting registration missions to their ANA partners. Getting training ammunition for a registration will be tough. Finding a forward observer capable of conducting a proper registration might even be harder. However, at the tail end of our deployment ANA units began to receive Call for Fire Trainers. Simulated registration missions prior to execution would greatly enhance the effort. No matter how difficult to plan and resource, I believe that registered D-30's should be the primary training focus of any Afghan firing unit. I wish we had more time and leverage to pursue this endeavor.

Another function of the AGC that would be extremely beneficial for Afghan artillery units to master is a feature that accounts for intermediate crests. In most places in Afghanistan, an artillery unit will inevitably be required to fire over a mountain. Anyone who has been a fire direction officer at NTC understands that it is easy to account for that mountain out in front of the gun line, not so easy to account for the ridge 10 kilometers away on the downward trajectory of the round. The crest tab of the AGC allows the operator to enter the coordinates and altitude of hilltops, or a series of hilltops that form a ridgeline that may impede effective Fires. Once the data is input, if the trajectory of the round will not clear a crest, the mission is rejected.

I whole heartedly believe that as Afghan artillery accuracy increases, so will the confidence of ANA commanders to employ Fires in support of operations, and as ANA victories over the enemies of Afghanistan become more decisive, so too will the people's confidence grow in Afghan National Security Forces' abilities to secure the population. While we live for the roar of the cannons, it is our ultimate goal for the tubes to one day go cold. Not due to lack of training and proficiency, but because the enemies of Afghanistan have been defeated. Advisors and trainers still have a lot of work to do to accomplish that goal. As I said in the beginning, this is a process, one that we carried as far as we could in the time we were allotted. Rounds are landing on target for now. We know that artillery is a perishable skill and if training does not continue to progress, if the ANA does not take ownership of certification, it will only be a matter of time before the skills we worked so hard to develop fall by the wayside. I cannot adequately express how proud I am of the role that we played in the development of D-30, fire direction and fire support teams throughout RC-E, the friendships that we forged, and the programs we drafted to ensure the future success of Afghan artillery. I hope for a day in the future when an Afghan boy, having heard stories about American Soldiers from his grandfather, playing freely amongst the mounds of dirt where a FOB once stood, gazes across the valley below and tries to imagine what it must have been like to fend off the enemies of Afghanistan.

This is the second of three Articles written by Soldiers and leaders of 5-82 FA documenting our role training the Afghan Artillery in support of OEF XII – XIII. The first article, an overview of the entire training process written by the battalion commander, LTC William Johnson, set for publication in the August edition of *The Redleg Update* and is entitled "Enduring Artillery Fires in Afghanistan." The third article authored by CPT Josh Hollingsworth, is tentatively entitled "Evolution of Fires in Afghanistan" and is expected to be published in the near future.

American and Dutch Air Defenders pose for a photo during a multinational Patriot tactics, techniques and procedures exchange engagement with Dutch Patriot Missile operators in Gaziantep Turkey. The U.S. Air Defenders are currently deployed near Gaziantep, Turkey defending Turkish Air Space from potential ballistic missile threats from Syria. (Photo courtesy of CPT Felipe Albino)

Operation Active Fence

By CPT Felipe Albino

Opportunities to engage in multi-national partnerships at the company/battery-level of leadership are a rare occurrence; units should seize these opportunities when presented. These opportunities allow units to establish open lines of communication at the lowest possible level in support of sharing tactics, techniques, and procedures at the tactical level of operations.

Currently, B Battery, *Bounty Hunters,* 5th Battalion, 7th Air Defense Artillery, 10th Army Air and Missile Defense Command, is conducting air and missile defense operations in support of U.S. Operation Active Fence, the North Atlantic Treaty Organization led Patriot missile support mission, in Gaziantep, Turkey since December 2013. As we passed our 60-day mark in country, we seized the opportunity to conduct our first partnership engagement with the Dutch Patriot Firing Unit 2, deployed to Incirlik Air Base, Turkey.

OAF is the U.S. contribution to a NATO air and missile defense mission consisting of three nations: the United States, Germany, and the Netherlands, each providing two Patriot firing units each, at three distinct locations, Gaziantep, Kahramanmaras and Adana, Turkey. Original contact between our two NATO firing unit commanders, myself, CPT Felipe Albino and CPT Floris Bruinsma, began telephonically and via email, which quickly developed into an invitation for the B Battery team to visit their Dutch partners. Coordination for this effort became an operational need in the eyes of our battery first sergeant, 1SG Jackson and I, as the Dutch Patriot firing unit 2 was in the process of a transfer of authority to a new firing unit. This visit became extremely beneficial as we were able to meet both out-going and in-coming firing unit command structures within the same visit.

My thoughts were that having the opportunity to meet with the guy that has been on the ground and leaving to return, plus the guy getting on ground, to me was the hallmark of this visit. I got the best of both worlds; I got the opportunity to gather lessons learned and the ability to form a new partnership while serving as some form of continuity within the NATO relationship as they rotate through their assignments in support of OAF. Who wouldn't want that opportunity?

The Engagement. In late January 2014, 1SG Jackson and I departed with four key leaders of our primary Patriot site crew: 1LT

U.S. and Dutch Air Defenders conduct a site visit during a multinational Patriot tactics, techniques and procedures exchange engagement with Dutch Patriot Missile operators in Gaziantep Turkey. The U.S. Air Defenders are currently deployed near Gaziantep, Turkey defending Turkish Air Space from potential ballistic missile threats from Syria. (Photo courtesy of CPT Felipe Albino)

Seth J. Kadavy, tactical control officer, SSG Ryan K. Winters, site noncommissioned officer in charge, SGT Kasey J. Wilson, battery command post NCO, and SGT William F. Perkins, hot crew NCO. Apart from myself and the first sergeant, and the B Battery engagement team was an integral part of the unit's OAF advance echelon, and the most knowledgeable on NATO tactics, techniques, and procedures, having conducted Patriot operations in country for almost 90 days. The engagement crew traveled by vehicle approximately 230 kilometers northwest of Gaziantep to Incirlik Airbase where Dutch Patriot Firing Unit 2 currently executes their Patriot mission.

Kick Off. Upon arrival at Incirlik Airbase, the Dutch Patriot firing unit commander, Floris Bruinsma, met with us and escorted them to their tactical site within the compounds of Incirlik Air Base where they currently defend the city of Adana against tactical ballistic missile threats. Both teams took the opportunity to congregate over some coffee, make introductions, and break the ice before engaging in mission specific conversation.

Sharing Tactics, Techniques, and Procedures. Personnel broke into smaller teams based on assigned duty positions to effectively engage in comprehensive dialogue and compare TTPs. The intent was to find best operational practices for the improvement of all NATO Patriot operations in support of OAF. The teams spent several hours discussing common trends regarding equipment maintenance, operational procedures, and manning cycles. At the end of the day, all U.S. and Dutch Soldiers felt very appreciative for the opportunity to conduct the visit and felt that it was extremely beneficial. Not only was the U.S. firing unit able to see the Dutch Patriot tactical site but we made coordination for access to the command and control element's tactical control station as well. Having the opportunity to compare NATO and unit specific reporting procedures as it relates specifically to OAF was an essential part of the visit. Our unit was able to return to our area of operations and further share the lessons learned with the Soldiers for better situational awareness and a greater understanding of how they contribute to the NATO Patriot mission.

1SG Jackson noted that for the Soldiers, the more they understand about how important their individual jobs are and how it particularly contributes to the mission, the more involved they become, thus minimizing complacency and increasing capability and response.

Lessons Learned. Lessons were learned from both firing units as they were able to discuss maintenance preventative techniques and operational procedures that could enhance their abilities to maintain situational awareness and focus on their abilities to sustain operations for the air and missile defense of Turkey. Our battery compiled the data and used it to make adjustments to improve our own operations, in areas such as intelligence, sharing at the lowest level, morale practices, and site improvements.

CPT Floris Bruinsma stated after the visit with Albino that although it was our first meeting, it was already very beneficial. We're using your lessons learned on how you handle the launchers, to fuel our own ideas and discussions. I think that our meeting and the partnership with our German colleagues shows that there is more that connects us in this alliance than there are differences that divide us.

The Way Ahead. B Battery and Dutch Patriot firing unit 2, are committed to the partnership they have established and are already working together for future events that will not only bring the multi-national forces together for a stronger operational capability but for the greater good of the cultural bonding and team building that is rarely seen at the battery and company level. The same concept of partnership has already been established between the Dutch and German firing units with the intent to partner the United States and German firing units in the near future. The end state is that all the NATO Patriot firing units are engaged in the partnership program to build a stronger NATO alliance and improve operations in support of OAF.

Captain Felipe Albino is a native of Chicago, Ill. and a 2008 direct commission Air Defense Artillery Officer. He currently serves as commander of B Battery, 5th Battalion, 7th Air Defense Artillery Regiment, 10th Army Air and Missile Defense Command, deployed to Gaziantep, Turkey from Rhine Ordnance Barracks, Kaiserslautern, Germany. He has previously served as an operations officer with 10th AAMDC and 5-7 ADA.

Fires Bids Farewell to Print

By Rick Paape, Jr.

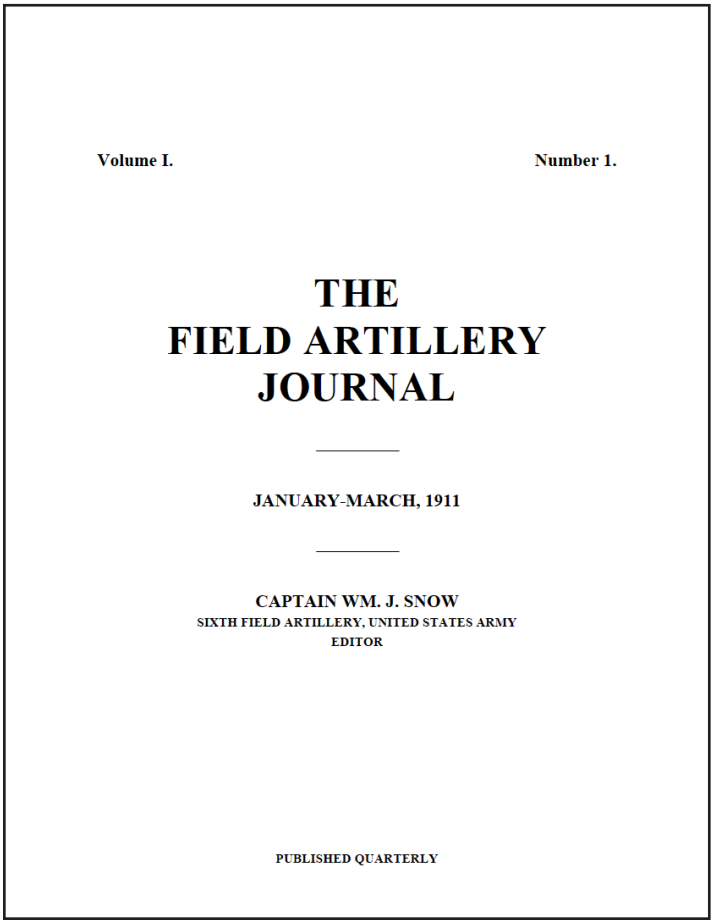
The year 1911 marked the first issue of the *Field Artillery Journal*, the predecessor of the current *Fires* magazine. As the journal was developed, the School of Fires was stood up at Fort Sill, Okla. The School of Fires, much like the Fires Center of Excellence today, had a mission of training and maintaining a standard level of occupational knowledge for the Fires Force. *Fires* is a professional magazine fostering shared knowledge and discussion, with articles written by the Soldiers, Marines, Airmen and Sailors, as well as leaders that have gained knowledge through experience, whether through training or combat operations, was originally initiated by the Field Artillery Journal's first editor, CPT William J. Snow, later achieving the rank of major general.

For more than a century, a professional journal has created an informative environment by keeping our readers abreast of current trends in the field, as well as updates to doctrine, tactics, techniques and procedures. Through transition of forces and changes with the Fires mission, the magazine transitioned to meet the needs of the force.

Fires now stands poised for another transition, moving from a traditional printed magazine format to a digital publication. Our mission will not change; *Fires* will provide Artillerymen with the same professional topics and discussions. The transition is also an opportunity, as we now have the ability to incorporate multimedia, such as videos, interactive content, integrate social media and other tools into Fires.

It is with pride that the staff announces that *Fires* will be delivered to you on devices that you already be familiar with. Our website will continue to host copies of the current and historical versions of the magazine. Mobile apps will be available on the Apple iOS, Google Play, Amazon and Windows app stores. These apps will notify you of new issues as they are published and will be available for you to read when, where and how you want.

We want to thank you for your continued support of the Fires mission and look forward to working with the Fires Force for another 100 years.



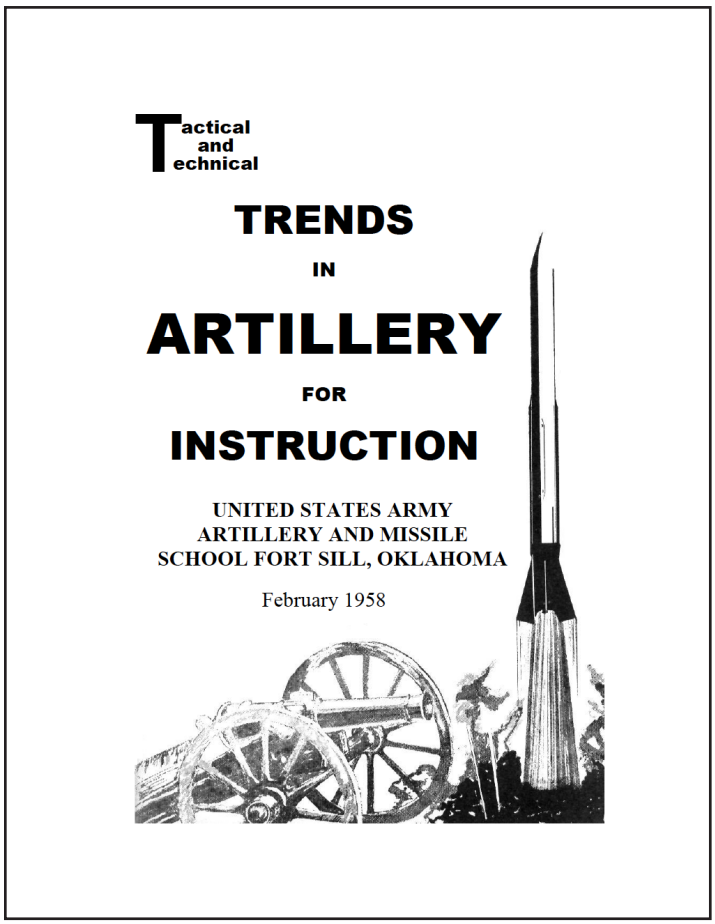
Volume I. Number 1.

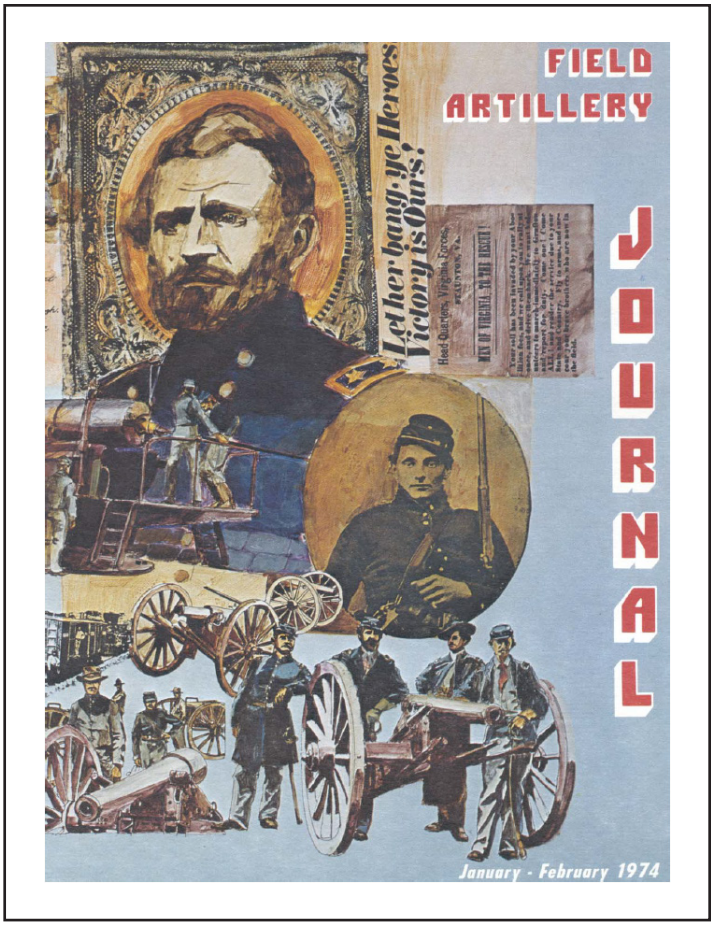
THE
FIELD ARTILLERY
JOURNAL

JANUARY-MARCH, 1911

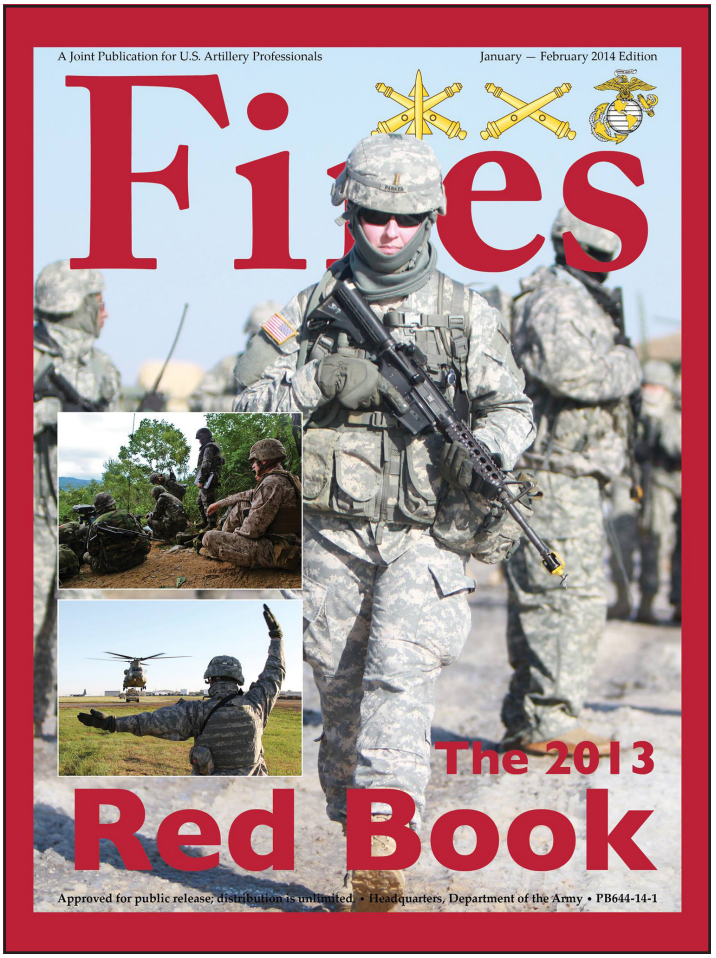
CAPTAIN WM. J. SNOW
SIXTH FIELD ARTILLERY, UNITED STATES ARMY
EDITOR

PUBLISHED QUARTERLY


Tactical and Technical
TRENDS
IN
ARTILLERY
FOR
INSTRUCTION
UNITED STATES ARMY
ARTILLERY AND MISSILE
SCHOOL FORT SILL, OKLAHOMA
February 1958


FIELD
ARTILLERY
JOURNAL
January - February 1974


A Joint Professional Bulletin for US Field & Air Defense Artillerymen
Fires
sill-www.army.mil/firesbulletin/
January-February 09
Approved for public release; distribution is unlimited. • Headquarters, Department of the Army • PB644-09-1


A Joint Publication for U.S. Artillery Professionals
January — February 2014 Edition
Fires
The 2013
Red Book
Approved for public release; distribution is unlimited. • Headquarters, Department of the Army • PB644-14-1

Acronyms

AADC – Area Air Defense Commander
AAMDC – Army Air and Missile Defense Command
AAV – amphibious assault vehicle
ABCT – Armored Brigade Combat Team
ABP – Afghan Border Patrol
ACE – Aviation Combat Element
ACE – analysis and control element
ACG – Afghan Gunnery Computer
ADA – Air Defense Artillery
ADCON – administrative control
AFATC – Afghan Field Artillery Training Center
AFATDS – Advanced Field Artillery Tactical Data Systems
AFB – Air Force Base
AGC – Afghan Gunnery Computers
AGI – air–to–ground integration
ALO – air liaison officer
AMD – Air and Missile Defense
ANA – Afghan National Army
ANR – Alaska NORAD Region
ANSF – Afghan National Security Forces
AO – area of operations
AOC – air operations center
AOR – area of responsibility
ARNG – Army National Guard
ASPG – Army Strategic Planning Guidance
ASR–9 – Airport Surveillance Radar
AT/FP – Anti–Terrorism/Force Protection
ATO – air tasking order
AUP – Afghan uniformed police
AWACS – Airborne Warning and Control System
AWC – Army War College
AWT – attack weapons teams
BALO – battalion air liaison officer
BCC – Battle Coordination Center
BCP – Building Partner Capacity
BCT – brigade combat team
BCT 2020 – Army's Brigade Combat Team 2020 Concept
BDE – brigade
BFIST – Bradley Fire Support Vehicle
BLT – battalion landing team
BMD – ballistic missile defense
BN – battalion
BOLC – Basic Officer Leader Course
BPC – building partner capacity
C2 – command and control
C4I – command, control, communications, and computers – instrumentation
CAB – combined arms battalion
CALFEX – combined arms live–fire exercise
CAOC – Combined Air Operations Center
CAS – close Air Support
CAV – Cavalry
CCA – close combat attack
CCC – Captain's Career Course
CDR – commander
CE – command element
CFACC – Combined Forces Air Component Commander
CFF – call–for–fire
CGSC – Command and General Staff Course
CM – cruise missile
COCOM – Combatant Command
COE – Center of Excellence
CONOPS – concept of operations
CPOF – command Post of the Future
CSI – Combat Studies Institute
CUAS – counter unmanned aircraft systems
D3A – decide, detect, deliver, and assess
DA – Department of the Army
DAADC – Deputy Area Air Defense Commander
DASC – direct air support center
DCGS–A – Distributed Common Ground System
DCO – deputy commander
DFCS – digital fire control
DFSST – Digital Fire Support Sustainment Training
DISN – Defense Information Systems Network
DIVARTY – division artillery
DMO – Distributed Mission Operations
DO – Decisive Operation
DOCC – deep operations coordination cell
DoD – Department of Defense
DoD – Department of Defense
DOT&E – Director of Operational Test and Evaluation
DSCA – defense support to civil authorities
DST – digital sustainment training
EASOS – Expeditionary Air Support Operations Squadron
EDRE – Emergency Deployment Readiness Exercise
EOA – enemies of Afghanistan
ESM – event synchronization matrix
EVA – event value analysis
ExCIS FSA – Extensible C4I instrumentation Suite – Fire Support Application
FA – Field Artillery
FAA – Federal Aviation Administration
FAB – Field Artillery brigade
FAC – forward air control
FBCB2 – Force XXI Battle Command Brigade and Below
FDC – fire direction center
FDMA – frequency–division multiple access
FDO – fire direction officers
FDU – force design update
FiB – Fires Brigade
FIST – fire support team
FLIPL – financial liability investigations of property loss
FNL – Friday Night Lights
FO – forward observer
FO – forward observer
FOB – Forward Operating Base
FOS – Forward Observer System
FRAGO – fragmentation order
FS3 – Fire Support Sensor System
FSA – Fire Support Application,
FSC – fire support coordinator
FSC – fire support cell
FSCC – fire support coordination center
FSCOORD – fire support coordinator
FSCX – fire support coordination exercise
FSE – fire support elements
FSNCO – fire support noncommissioned officer
FSO – fire support officer
FSR – field service representative
FTD – Fires Test Directorate
GBAD – ground based air defense
GCE – Ground Combat Element
GFM – Government Furnished Material
GIG – Global Information Grid
GPS – global positioning system
HHB – Headquarters and Headquarters Battery
HHC – Headquarters and Headquarters Company
HIMARS – High Mobility Artillery Rocket System
HMMWV – high–mobility multipurpose wheeled vehicle
HPEL – high payoff event list
HPTL – high payoff target list
HQ – Headquarters
HVI – high value individuals
HVT – high value targets
IAMD – Integrated Air and Missile Defense
IBCT – Infantry Brigade Com¬bat Team
ID – Infantry Division
IED – improvised explosive devices
IO – international officers
IP – Internet protocol
ISAF – International Security Assistance Force
ISR – intelligence, surveillance, and reconnaissance
JAED – Joint/Army Experimentation Division
JAGIC – joint air and ground integration cell
JCATS – Joint Conflict and Tactical Simulation
JCLU – Joint Counter Low, Slow, Small Unmanned Aircraft Systems
JDIAMD – Joint Deployable Integrated Air and Missile Defense
JES – Joint Engagement Sequence
JFACC – Joint Force Air Component Commander
JFC – Joint Forces Commander
JFLCC – Joint Forces Land Component Command
JFMCC – Joint Force Marine Component Commander
JFO – joint fires observer
JFT – joint task force
JT – Joint Test
JTACs – joint terminal attack controllers
JTAR – joint tactical air request
JTF – joint task force
JUAS COE – Joint UAS Center of Excellence
Kb – kilobyte
Kbps – kilobytes per second
KLE – key leader engagements
LAV – light armor vehicle
LCE – Logistics Combat Element
LFED – Lightweight Forward Entry Device
LNO – liaison officer
LOE – lines of effort
LSS – low, slow, small
MAAP – Master Air Attack Plan
MAGTF – Marine Air Ground Task Force
MCO/MCS – Maintenance Control Officer/ Maintenance Control Sergeant
MDA – Missile Defense Agency
MDIOC – Missile Defense and Operations Center
MEB – Marine Expeditionary Brigade
MEF – Marine Expeditionary Force
MET – mission essential tasks
METL – mission essential task list
MEU – Marine Expeditionary Unit
MFATT – mobile Field Artillery training team
MFT – MUOS functional transmitter/receiver terminals
MGT – management
MILSATCOM – military satellite communications

MLRS – Multiple Launch Rocket System
MOC – Maritime Operations Center
MRF – mobile reconnaissance force
MTT – mobile training team
MUOS – Mobile User Objective System
N2C2 – NORAD and USNORTHCOM command center
NATO – North Atlantic Treaty Organization
NAVNORTH – Navy Northern Command
NCO – noncommissioned officer
NGF – Naval Gunfire
NGLO – Naval Gunfire Liaison Officer
NIPRNET – nonsecure internet protocol router network
NMS – network management segment
NORAD _ North American Aerospace Command
NSFS – Naval Surface Fire Support
NTC – National Training Center
NWDC – Navy Warfare Development Command
OAF – Operation Active Fence
OEF – Operation Enduring Freedom
OIC – officer in charge
OPFOR – opposing force
OPIR – overhead persistent infrared
OPORD – operations order
OSD – Office of the Secretary of Defense
OSS – Operation Spartan Shield
OVS – orthogonal variable spreading
OVSF – Orthogonal Variable Spreading Factor
PACT – ROTC – Reserve Officer Training Corps
PDSS – pre–deployment site survey
PFED – Pocket–Sized Forward Entry Device
PMCS – Preventive maintenance checks and services
QRF – quick reaction force
RAF – radio access facilities
RAF – regionally aligned force
RC–E – Regional Command – East
RC–South – Regional Command–South
RE – Regional Experts
RHC–2 – Ruggedized Handheld Computer–2
RIP – relief in place
ROZ – restricted operating zone
RRF – ready reserve force
RSOI – Reception Staging Onward Movement and Integration
SADC – sector air defense commander
SATCOM – satellite communications
SCU – standalone computer unit
SFAB – security forces assistance brigade
SFAT – security force assistance teams
SFCP – shore fire control party
SHORAD – Short–Range Air Defense
SIPERNET – secure internet protocol router network
SLE – senior leader engagements
SM–3 – Strategic Missile – 3
SME –subject matter expert
SoArty – School of Artillery
SPMAGTF – Special Purpose MAGTF
TACP – tactical air control party
TAG – adjutant general
TAIS – Tactical Airspace Integration System
TBM – theatre ballistic missile
TCO– tactical control officer
TCS– tactical control station
TEWA – Threat Evaluation & Weapons Assignment
TF – task force
THAAD – Terminal High Altitude Area Air Defense
TI – Technical inspections
TLDHS – Target Location, Designation and Hand–off System
TNT – Tuesday Night Terror
TOC – tactical operation center
TOEL – Time Ordered Events List
TPFDD – time–phased force and deployment data
TPS – target production section
TRADOC – Training and Doctrine Command
TSS – target selection standards
TTGP – Tactical Training Group Pacific
TTP – tactics, techniques, and procedures
U.N. – United Nations
UAE – United Arab Emirates
UAS – unmanned aircraft systems
UAV – unmanned aerial vehicles
UHF – ultra–high frequency
ULO – Unified Land Operations
USAF – United States Air Force
USARCENT – United States Army Central
USCENTCOM – U.S. Central Command
USEUCOM – U.S. European Command
USJFCOM– the U.S. Joint Forces Command
USMC – United States Marine Corps
USN – United States Navy
USNORTHCOM – United States Northern Command
USPACOM – U.S. Pacific Command
USSTRATCOM – U.S. Strategic Command
WCDMA – wideband code–division multiple access
WGS – wideband global SATCOM
WGS – Wideband Global SATCOM
XO – executive officer

Fires
(USPS 309-010)
P.O. Box 33311
Fort Sill, OK 73503-0311

Periodicals Postage
PAID
Shepherdsville, KY

Indiana National Guard 1LT Aaron Conklin, commander of B Battery, 2nd Battalion, 150th Field Artillery speaks with French army Maj. Michelle Pipier, at Camp Atterbury, near Edinburgh, Ind., September 14. The Soldiers worked together with the French army to coordinate fire missions, part of part of Bold Quest 13.2, a joint staff sponsored multinational capabilities demonstration held at military installations across Indiana. (Photo by John Crosby, U.S. Army)

PIN 103906-000