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November — December 2013 Edition

Fires

A Focus on the National Guard & Reserves

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New this issue...

Acronym List		
ARNG	-	U.S. Army National Guard
ADA	-	Air Defense Artillery
AC	-	Active Component
AMD	-	Air and Missile Defense
RC	-	Reserve Component
FA	-	Field Artillery
MAMD	-	Maneuver Air and Missile Defense
OIF	-	Operation Iraqi Freedom
NORAD	-	North American Aerospace Defense Command
USNORTHCOM	-	U.S. Northern Command
FCoE	-	Fires Center of Excellence
GMD	-	Ground-Based Missile Defense

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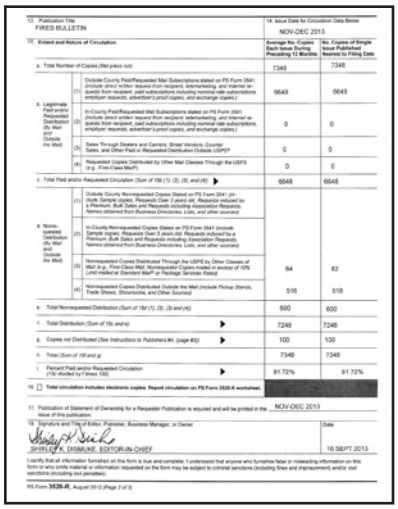

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PS Form 3526-R, August 2012 (Page 2 of 3)

We are trying something different with the acronyms this issue. Please provide feedback on what you think about the acronym list at the end of the articles. Send your comments by email to fires.bulletin@us.army.mil.

Also, budget cuts are are hitting organizations across the Army. If you have concerns or comments about *Fires* going totally digital, please email us or post a comment on our Facebook page http://facebook.com/FiresBulletin.

Fires

November - December 2013

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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.

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On the cover: MAJ Mark Almond, of the 5th Battalion, 113th Field Artillery, North Carolina U.S. Army National Guard, is greeted by his daughters upon returning to home after a nearly one-year deployment to the Sinai Peninsula, Egypt. Approximately 200 5th BN, 113th FA Soldiers returned home to North Carolina, on Sept. 7, 2013. The Soldiers conducted observation and reporting operations along the Egypt and Israeli border as Multi-National Force Observers in accordance with the Camp David Peace Accord of 1979. (Photo by SGT Mary Junell, U.S. Army National Guard)

The US Army National Guard & Reserve Fires Force

By MG Mark McDonald
Commanding General of the Fires Center of Excellence and Fort Sill, Okla.

> "The National Guard has served America as both a wartime force and the first military responders in times of domestic crisis. Hundreds of times each year, the nation's governors call upon their Guard troops to respond to fires, floods, hurricanes and other natural disasters."
>
> –LTG (Ret.) Russel L. Honore

Long before Hurricane Katrina, when the U.S. Army National Guard was in the worldwide media spotlight, they were the steady rock on which our country built its national defense strategy. Since the first Guard units assembled in Salem, Massachusetts, on Dec. 13, 1636, Citizen-Soldiers have answered the call, whether the call was to fill sandbags in New Orleans or patrol the streets of Baghdad.

Firmly rooted in our nation's military history, the Guard has the distinct honor of being the oldest branch of service. Normally regarded as a state emergency response team, they became federally funded under the Militia Act of 1903, Titles 10 and 32 of the U.S. Code. Although their primary mission remains in support of domestic emergencies, the Guard has participated in every war or conflict in which the U.S. has been involved since World War I. Their dedication to both state and federal government is unequalled by any other branch.

Without written orders from either state or federal agencies, many of the first responders

on 9-11 at the World Trade Center site were New York National Guardsmen. When U.S. forces invaded Afghanistan, on Oct. 7, 2001, it began the first of two wars in which the National Guard and Reserve were a key part of the fighting force. Since September 2001, almost 400,000 National Guardsmen have deployed to Afghanistan and Iraq, along with more than 300,000 Army Reservists. More than 35 percent of these

Utah National Guardsmen of the 65th Fires Brigade Security Force Advisor Assistance Team evacuate a casualty during their cumulative training exercise at the Combined Arms Collective Training Facility Aug. 23. (Photo by SPC Karen Sampson, U.S. Army)

Soldiers have seen multiple deployments to both Iraq and Afghanistan.

Far from being 'weekend warriors,' these Soldiers contribute more than we can ever repay. Although all service members share the hardships of deployment, these Soldiers are dual-hatted professionals, balancing two careers along with the other obligations Soldiers face, i.e., family and financial matters. Many of them are called to active duty from prestigious positions, put on the uniform, and assume their place in formation along-side the rest of us, never second-guessing their choice to serve. They come from all professions: teachers, scientists, firefighters, and maybe even a few custodial engineers. Some of them are Olympic medal winners, like SGT Shauna Rohbock of the Utah U.S. Army National Guard. Rohbock, a professional soccer player, won silver for bobsledding in the 2006 Winter Olympics, and many other medals for world cup and world championship events. As a voice for the National Guard, Rohbock tells her story of leadership and teamwork at http://buff.ly/19PUIMD.

This type of excellence is the standard for which all Soldiers should strive. We can't all be world class athletes, but we can all be great leaders or supportive team members. As we face inevitable force structure reductions in FY14, the standards for future retention are high for all branches of service. With the ARNG and U.S. Army Reserves forces making up more than 50 percent of the total Army strength for FY15-19, mentoring and developing the 'best-of-the-best' is critical for the future force.

We are proud to honor the USAR and ARNG Soldiers, especially during their 377th birthday celebration, with this issue of the *Fires Bulletin*. Many of the contributing authors are in the ARNG and USAR, and the *Fires Bulletin* provides a means for them (as well as the active component) to share their experiences and accomplishments. In their article, "Adapting the National Guard Training and Mobilization Model: Focusing on the Future," CPT Matthew J. Mangerson and 1LT John R. King explain how B Battery, 1st Battalion, 121st Field Artillery, conquered the challenging mission of preparing their unit for the first ever High Mobility Artillery Rocket System combat mission assigned to the ARNG. Documenting these processes not only preserves the historical significance of the deployment, it provides a map for future units to follow. I encourage all of you to leave this legacy to those who come after us.

As 2013 rapidly comes to an end, I want to thank all of you and your Families for what you do every day. It takes special people to endure and thrive in the post 9-11 military life. I am so very proud of our Fires Force! May you all have a safe and happy holiday season and may Saint Barbara protect us all.

Fires Strong!★★

Acronym List		
ARNG	-	U.S. Army National Guard
USAR	-	U.S. Army Reserves

A Great Time to be Air Defense in the National Guard & Reserves

By BG Don Fryc
Chief of the Air Defense Artillery and Commandant of the U.S. Army Air Defense Artillery School, Fort Sill, Okla.

Welcome to the latest issue of the *Fires Bulletin*, devoted to highlighting the great work being done by our Army National Guard. 2013 finds the Air Defense Artillery branch at a time where the active component and National Guard ADA forces have diverged greatly in terms of both mission and equipment. With this divergence of paths, it can sometimes be easy for those of us in the active component to lose sight of the great things being done by ARNG *Air Defenders*.

As the Fires community is aware, the active component has invested heavily in the Patriot and Terminal High Altitude Area Defense systems to meet the ever-increasing global demand for ballistic missile defense. At the same time, half of the AC's remaining maneuver air and missile defense forces, currently fielded with the Avenger system, are being converted to Counter-Rocket Artillery and Mortar systems. At the end of this conversion period, more than 80 percent of the Army's remaining MAMD forces, seven Avenger battalions, will be resident in the ARNG. The history of ADA in the ARNG tells us that this could be a time of potential risk; *Air Defenders* in the ARNG will recall a time of obsolete or 'orphaned' weapons systems in the branch's not-too-distant past. However, this same situation today also presents an even greater opportunity for ADA forces in the ARNG as they become the primary source for MAMD, not only in support of the homeland, but for expeditionary missions as well. A tremendous opportunity exists for the Avenger battalions in the ARNG to build habitual or training-aligned relationships with divisions and brigades both within their respective states and in the active force, and rebuild those MAMD capabilities that may have languished

with Operation Iraqi Freedom and Operation Enduring Freedom focused counterinsurgency operations. These relationships have been too long vacated since the restructuring of ADA that followed OIF-I under the modularity concept.

In the past nine years, the ADA forces in the ARNG have seized opportunities and taken the initiative in providing air and missile defense not only for the National Capital Region, but to North American Aerospace Defense Command/United States Northern Command as a whole. Whether enduring the brutal cold of an Alaskan winter with the 49th Ground-Based Missile Defense Battalion at Fort Greely, Alaska, or the eternal vigilance required of those in the 100th GMD Brigade in Colorado, or the Joint Air Defense Operations Center in our nation's capital as they stand ready to defend our homeland 24/7, 365 days-a-year, ARNG AMD Soldiers lead the way in protecting our way of life here in the United States.

Although the defense of the homeland traditionally lies within the domain of the ARNG, our AC and RC forces have had several opportunities to work together in this region. Air Defenders from both AC and ARNG units have come together in the embodiment of the 'Total Force' concept. In support of Joint Task Force-North on our southern borders and soon in support of the NCR, these ADA Soldiers have proven that in our branch, the component one represents is not as important as the ability to accomplish the mission. In fact, the

USNORTHCOM Theater will be the first to employ the new Joint Land Attack Cruise Missile Elevated Netted Sensor system. JLENS will start flying in support of Operation Noble Eagle next summer as part of a three-year operational test for this new capability. While JLENS will continue to be manned by AC Soldiers in the near term, it will be our ARNG ADA Soldiers, as well as Air Guard units serving as part of the NCR's Integrated Air Defense Systems, who will eventually realize the full benefits of this advanced sensor system.

The level of proficiency demonstrated by all ARNG forces in this increasingly sophisticated and complicated region show that the total force can expect great things from the ADA ARNG as they are called upon to expand into the expeditionary mission sets as well. While opportunities abound for the ARNG to take on ever more challenging and critical missions, we must stay on course with the development of future weapons systems to meet the MAMD requirements. The cancellation of the Surface Launched Advanced Medium Range Air-to-Air Missile program, scheduled to replace the Avenger, has certainly been felt most keenly by the ARNG. While work continues on the follow-on system, Indirect Fire Protection Capability Increment 2, we must ensure the Avenger platforms and Stinger missiles we rely on to provide air and missile defense to our maneuver forces and our nation's capital, are properly sustained.★★

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AC	-	Active Component
AMD	-	Air and Missile Defense
RC	-	Reserve Component
THAAD	-	Terminal High Altitude Area Defense
MAMD	-	Maneuver Air and Missile Defense
C-RAM	-	Counter-Rocket Artillery and Mortar
OIF	-	Operation Iraqi Freedom
NCR	-	National Capital Region
NORAD	-	North American Aerospace Defense Command
USNORTHCOM	-	U.S. Northern Command
JLENS	-	Joint Land Attack Cruise Missile Elevated Netted Sensor
GMD	-	Ground-Based Missile Defense

A Stinger missile is fired from the Avenger weapon system at an aerial target of the coast on Onslow Beach, March 15, 2013. The target scale is 1/5th the size of an actual aircraft, giving units a realistic target with which to train. Training at Camp Lejeune, N.C., allowed the Soldiers of 2nd Battalion, 263rd Air Defense Artillery Regiment, to set up in a deployment formation versus the usual static formation at other smaller training sites. (Photo by Cpl. Austin Long, U.S. Marine Corps)

The Field Artillery of the National Guard & Reserves

By BG Christopher F. Bentley
Chief of the Field Artillery and Commandant of the U.S. Army Field Artillery School, Fort Sill, Okla.

As I settle into my responsibilities as the chief of the Field Artillery and the commandant of the United States Field Artillery School, I clearly see where we are and I look forward to the challenges of training and developing the total force.

The title of the *Fires Bulletin* is "Focus on the National Guard and Reserves," but the theme really gets at ensuring a total force where our artillery meets the strategic priorities of being globally responsive, regionally engaging, and jointly interoperable. This FA force must be properly organized and equipped to fight as a part of a combined arms team in decisive action. It requires FA leaders and Soldiers to be grounded in core competences to deliver Fires, integrate Fires, and conduct targeting.

Through experimentation and analysis in Total Army Analysis 14-18, we have updated the FA force structure. As published in the recent Army Structure memorandum, we will have 18 Fires brigades, eight of which will be located in the U.S. Army National Guard. We will have 61 Fires battalions, of which 28 will be in the U.S. Army National Guard.

The end state is clear on force structure and leader development; we must have a versatile, operational force that is ready and prepared for decisive action as a part of a joint and combined arms team, and we must create competent and confident 21st century joint Fires professionals. The world expects nothing less. So we have to organize and sustain as one, train and develop as one, so we can employ as one.

Everyone is a Fires FA Soldier, regardless if on active duty or in the National Guard.

As the chief of the FA and the commandant of the U.S. Army Field Artillery School, I have a clear responsibility to the total force to provide

proper training. It is a critical part to the readiness of the Army's FA.

Working through the One Army School System, which is led by U.S. Army Training and Doctrine Command in close cooperation with Department of the Army headquarters, the U.S. Army National Guard and U.S. Army Reserve, OASS incorporates the three components to deliver TRADOC-certified training at the best location and time for Soldiers in the Army Force Generation, or ARFORGEN, cycle.

We are dedicated, both as a branch and school, that all commanders, leaders, and our Soldiers receive the best training, equipment and support possible.

The OASS standardizes Army individual education regardless of component and saves resources by offering geographical convenience at regional training institutes.

OASS also allows us to grow leaders as one force, whether you attend a course at an RTI located in Texas, or a specific course held here at Fort Sill – the geography might be different, but the quality of education is the same.

Currently, there are 13 RTIs located across the nation, nine of which are certified as Military Service Indicator teaching schools.

These RTIs are certified as Institutions of Excellence by the TRADOC quality assurance office and the QAO located here at Fort Sill. Further, many are located on or near Forces Command installations and deliver proponent-certified training

closer to a Soldier's home station – a great example of this is the 139th Regiment, North Carolina Military Academy.

It is my vision that we are the nation's premier Fires Force; organized, equipped, and trained to employ and deliver joint and combined arms Fires. I think it's important for everybody to know that the FA (branch) and the FA School is the premiere Fires Force for our country, and will continue to be. There's no taking the foot off the pedal. We are moving forward.

King of Battle!
Fires Strong!★★

Acronym List		
FA	-	Field Artillery
OASS	-	One Army School System
QAO	-	Quality Assurance Office
RTI	-	Regional Training Institute
TRADOC	-	Training and Doctrine Command

CPT Kevin McClure, front left, the commander of B Battery, 1st Battalion, 178th Field Artillery Regiment, South Carolina U.S. Army National Guard, instructs junior officers and enlisted personnel on the use of the M17 plotting board during annual training at Fort Stewart, Ga., March 10, 2013. (Photo by SGT Brian Calhoun, U.S. Army)


孫子兵法
SUN TZŪ
ON THE
ART OF WAR
THE OLDEST MILITARY TREATISE IN THE WORLD

Sun Tzu and Accurate Predictive Fires

By MAJ Keith R. Williams

Sun Tzu, a famous Chinese military general, 544–496 Before the Common Era, is known for his documentation of military strategy in the book, "The Art of War." His writings cover a wide variety of military tactics, which many argue still apply in today's operational environment. I am one of those who argue just that. In fact, I go even further and argue that Tzu was the first to develop the five requirements of accurate predictive fire. The five requirements of accurate predictive fire is the foundation of all fire support within both active duty and National Guard units. If these requirements are unaccounted for, artillery units will fail to deliver accurate Fires, or even worse, kill their own.

CPT Robert Chesnut, a student at the Captain's Career Course, Fort Sill, Okla., reads a copy of Sun Tzu's "The Art of War" at the Morris Swett Technical Library. (Photo by Rick Paape, Jr., U.S. Army)

Tzu understood the importance of Fires in support of maneuver operations. This understanding enabled him to develop version one of the five requirements of accurate predictive fire. One might ask how he could have done this when indirect fire was not prevalent in China during that time period. The answer is quite simple. The five requirements of accurate predictive fire apply in the use of actual fire the same way we use it for fire support today. Before there were catapults, artillery, rockets and missiles, armies in ancient China used actual fire to support maneuver in defeating enemy forces. To do this effectively, the ancient Chinese had to account for particular variables in order to achieve desired effects.

In "The Art of War," Tzu dedicated an entire chapter on how to attack the enemy by using fire. He understood that burning the enemy with fire had to be well thought out prior to its use. To achieve the desired effects, Tzu specified five requirements that military forces must consider prior to using fire on the battlefield. Tzu's requirements are not exactly the same as the current five requirements of accurate predictive fire; however, the similarities are quite obvious when analyzed side-by-side. (See Figure below.)

Tzu's first requirement was more concerned about timeliness rather than location. The primary reason for this is because during that time period, fire was used more as an area type of weapon, rather than for precision. Not only did they consider the hour in which to raise Fires, they considered the seasonal timeliness as well. Accounting for timeliness as the first requirement makes perfect sense as long as precision is not the primary concern.

On the other hand, accurate target location and size is a must in today's fight. The first requirement of accurate predictive fire is, without a doubt, the most important requirement; however, it is one the Fires community, both active duty and National Guard, still struggle with today. Within the current operating environment, it is imperative that forward observers precisely identify and locate where they intend to deliver Fires. Modern warfare will continue to occur within urban environments, and without proper training and implementation of the first requirement, the Fires community will accurately deliver Fires on inaccurate target locations.

Tzu's second requirement is actually quite similar to the Army's current second requirement. When using fire against an enemy's camp, he suggested to always coordinate your action from without. This implies to understand your location as it relates to where you want to attack. Accurate unit location and target location go hand-in-hand.

During Tzu's time period, this was important because prior to setting fire on an enemy location, they had to account for enemy recon elements, cover and concealment positions, wind, and multiple other variables prior to attacking the enemy's camp with fire.

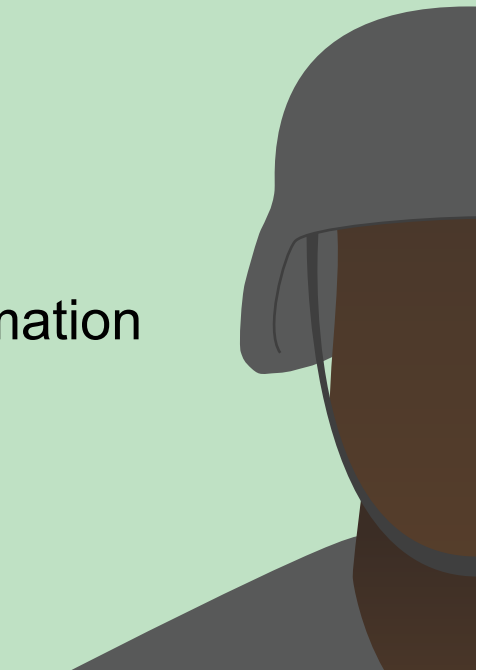
Tzu's third requirement accounts for the need to have the appropriate equipment to start Fires at a moment's notice. Tzu understood the importance of responsive Fires to support ground and/or maneuver forces. Active duty Army and National Guard forces structure their artillery units the same way. They are aligned with maneuver units to ensure immediate fire support when needed. Although Tzu's third requirement does not exactly align with the Army's third requirement, it still implies the same theme of accurate weapon and ammunition information, which is imperative for responsive Fires.

Tzu's fourth requirement accounts for weather conditions, in the same manner we do today. Whether a modern-day unit is shooting artillery rounds, or when ancient Chinese warriors attacked

A side-by-side comparison of the five requirements of accurate predictive Fires and Sun Tzu's five requirements of using Fires.

Five Requirements of Accurate Predictive Fires

1. Accurate target location and size
2. Accurate unit location
3. Accurate weapon and ammunition information
4. Accurate meteorological information
5. Accurate computational procedures



with actual fire, the basic principles in accounting for weather conditions remain the same. When the ancient Chinese attacked with fire on the battlefield, they had to account for rain, wind, fog, cloud coverage, and time of day. Although more sophisticated, the current Fires community accounts for meteorological data to ensure rounds impact on designated targets. This allows the firing solution to compensate for changing weather conditions to include wind variations, humidity, density, rain and temperature as it relates to time.

Because there were minimal computational procedures in using fire during the time of Tzu, his fifth requirement—or his version of computational procedures—was to prepare combustible materials beforehand. Whether it is firing data or actual equipment to initiate Fires, it is imperative to ensure accurate information and necessary equipment are present prior to attack.

Tzu was, without a doubt, one of the greatest military minds of all time. He understood timeless aspects of war that modern armies across the world implement on an everyday basis. In addition, his understanding of the five requirements of accurate predictive fire, although somewhat primitive, is still applicable in today's operating environment. We, as Fires leaders, need to take note and ensure we meet the five requirements of accurate predictive fire.

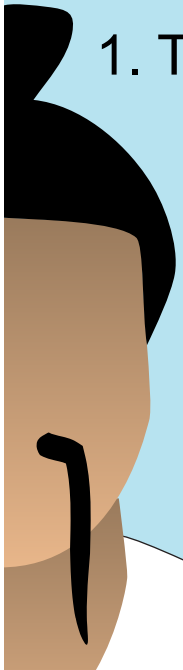
That being said, I believe it is appropriate to end this article with a question and a suggested solution to ensure the five requirements are met. If military leaders have been accounting for the five requirements of accurate predictive fire for thousands of years, why do active duty Army and National Guard units continue to struggle with meeting these requirements, especially requirement number one? To me, the answer is simple: leadership and fire support focused training. Fire support officers and forward observers primarily work with maneuver units. Often times within maneuver units, the focus of training tends to overlook fire support specific training. Fire support is arguably the most important part of battle, hence the nickname *King of Battle*. In order to maneuver effectively across the battlefield, Fires must be accurately delivered on enemy targets. To do this, rigorous fire support training must occur within the maneuver communities. The Field Artillery community has taken certain steps of improvement by bringing fire supporters back to artillery units to train; however, I personally believe the problem still needs to be addressed within the maneuver units.

The Fires community must take an active role in educating company-level maneuver officers before they take command. This would allow future maneuver commanders to take an active role in fire support planning, which would allow the Fires community to meet the requirements of fire as Tzu did in ancient China.★★

Author's Note: *The author wishes to thank Dr. David Hunterchester, history professor at the United States Army Command and General Staff College for his encouragement to write this article. These interpretations of Sun Tzu's writings are solely from my perspective and are not meant to detract from other academic interpretations.*

Major Keith R. Williams is currently the battalion operations officer for 2nd Battalion, 4th Field Artillery Regiment, 214th Fires Brigade, Fort Sill, Okla. His previous assignments include executive officer of the Fires Center of Excellence Office of Strategic Communications, commander of A Battery, 5th Battalion, 82nd FA (Iraq 08-09), battalion intelligence officer of 5-82 FA, mortar platoon leader of the 1st Battalion, 62nd Armor, and company fire support officer of B Battery, 1-64 AR (Operation Iraqi Freedom III). Williams was commissioned from Liberty University, holds a masters degree from the Naval Postgraduate School in National Security Affairs, and is a graduate of the United States Army Command and General Staff College.

Sun Tzu's Five Requirements for using Fires



1. There are suitable times and appropriate days on which to raise fires
2. When using fire in an enemy's camp, coordinate your action from without
3. Equipment for setting fires must always be at hand
4. All fire attacks must depend on weather conditions
5. Implements and combustible materials should be prepared beforehand

BSEP/FAST Support of FCoE Training and the ALC 2015

By Jim Gleckler

> "Education and training mutually support and enhance the combat readiness of the Army. Additionally, they are key elements in the Army's leader development program."
>
> –Army Regulation 621-5, *Army Continuing Education*

Each year at Fort Sill, Okla., approximately 150 Soldiers submit a GoArmyEd enrollment signed by their commanders, and attend the Basic Skills Education Program offered on at the Truman Army Education Center, Fort Sill. The Soldiers and their units are interested in improved scores on the Armed Forces Classification Test, but instruction in Fundamental Academic Skills Training goes beyond just improving test scores. Because much of the instruction and practice emphasizes critical, abstract thinking and problem solving skills, BSEP supports key areas of the new Army Learning Concept 2015, as well as functional and professional education offered at the Fires Center of Excellence.

ASVAB and the AFCT. Every Soldier takes the Armed Services Vocational Aptitude Battery before entering the Army. Often Soldiers were not aware of its importance, or took the exam under less-than-favorable circumstances. Line scores from the ASVAB are used to determine eligibility for military occupational specialty training and schools and are a good measure of future academic success in Army schools.

Several years may pass in which a Soldier matures, making the pre-induction ASVAB scores obsolete. The Army gives Soldiers with low and medium scores the opportunity to improve them by taking a similar test, the AFCT. Soldiers who improve their general technical and other line scores may be able to reclassify by attending a qualifying functional military occupational specialty course. Other Soldiers may qualify for the Warrant Officer Basic Course, Officer Candidate School or the Army's Green-to-Gold program. If the Soldier's commander approves, he or she may be able to attend FAST training, such as a BSEP class, before taking the AFCT.

Some of the AFCT sub-tests, such as general science and auto shop, examine a Soldier's knowledge and understanding of concepts. Other sub-tests such as arithmetic reasoning, paragraph comprehension and math knowledge, measure a Soldier's critical thinking and problem solving abilities. BSEP reviews all areas of the AFCT, but the emphasis is on improving critical thinking and problem solving skills.

Army Learning Concept 2015. The importance of the ALC 2015 is outlined in the forward to the TRADOC Pam 525-8-2. GEN Martin Dempsey writes, "...we have to learn faster and better than our future adversaries. Stated a bit differently, we must prevail in the competitive learning environment. ...The goal of the ALC 2015 is to ensure that the people of this great Army [the Soldiers] remain the competitive advantage over our adversaries."

In the January-February 2013 *Fires Bulletin*, BG Brian McKiernan, then chief of the Field Artillery and commandant of the Field Artillery School, wrote about implementation of ALC 2015 at the Fires Center of Excellence: "We are currently reviewing the programs of instruction for each course we conduct and are developing techniques to best support ALC 2015."

A key aspect of ALC 2015, which distinguishes it from earlier learning models, is an emphasis on critical thinking and problem solving. Problem solving for a Soldier involves abstract thinking as he or she faces complex, often unexpected situations, which requires simplification to correctly identify the problem. Seeing relationships, analyzing patterns, identifying solutions and the criteria to test solutions, requires considerable practice in disciplined mental exercises.

BSEP/FAST at Fort Sill. The key areas in which BSEP supports ALC 2015 and Fires Center education, is the opportunity to extensively practice solving complex mathematical word problems, geometric problems, algebra problems and in interpreting complicated reading passages.

BSEP is an on-duty course that is rigorous and demanding. One reason for this is that the AFCT is a challenging test. The analytical sub-tests are similar to the American College Testing college entrance exam: the sub-tests are so difficult that very few people can ever get a perfect score. The BSEP program at Fort Sill has proven to help Soldiers improve their AFCT line scores by reviewing key mathematical and geometry concepts, as well as English vocabulary and reading skills. After the review, Soldiers are required to practice solving problems in class and on graded homework assignments. All work is reviewed in class where discussions center on logical sequencing and computation methods to arrive at the correct answer to a problem.

Arithmetic practice problems require Soldiers to read quickly and accurately, identifying exactly what is asked for, separating relevant information from distracters, formulating a series of operational steps, and then performing the mathematical calculations to arrive at the correct solution. Some of these word problems require translating information into algebraic expressions, correctly relating the expressions to one another, then solving for the unknown variables. Many of the geometry problems require interpretation of figures and information using unrehearsed techniques similar to formulating geometric proofs. All exercises in BSEP are done without any aids to calculation, and most of the practice is, like the test, in a time-constrained environment.

The paragraph comprehension/reading improvement portion of BSEP requires Soldiers to rapidly read complex passages written at the 12th grade and higher level. Many of the practice problems ask Soldiers what they can 'infer' from the information written in the passage, what conclusion they could draw or what the author's point of view might be, or to identify the tone of the passage. Such questions require Soldiers to do more than merely read and gather information. They must process and interpret information, then draw a conclusion based on a reasoning process. This type of cognitive practice, whether mathematical or reading, has proven to increase brain power and mental processing speeds. The result is Soldiers are more successful in Army schools and better able to deal with uncertainties and complexities on the battlefield.

BSEP and the Fires Skill-Set. McKiernan wrote that the first fundamental requirement of ALC 2015 is that the Fires education system must develop adaptable Soldiers and leaders. Adaptable Soldiers are technically proficient in core skills and can apply these skills to varying circumstances.

Field Artillery and Air Defense Soldiers locate themselves and their targets on the battlefield. They aim and fire weapons that fly on a trajectory to their targets. Geometry and mathematical computations are at the heart of gunnery. Adaptable Fires Soldiers can look at an unexpected situation and formulate a successful course of action, independent of the digital read-out from a computer if necessary. Solving mathematical and geometry problems and molding the Fires skillset to uncertain situations is what adaptable *Redlegs* do. BSEP Soldiers at Fort Sill are given the opportunity to develop and extensively practice some of these critical thinking skills. In this way, BSEP training contributes to ALC 2015 goals and to academic success in Fires professional education.

Aside from helping Soldiers give the Army a true and current idea of their academic potential through scores on the AFCT, the BSEP program at Fort Sill provides opportunities to develop and practice skills that will serve the Fires Soldier well in Army professional education, as well as on-the-job critical thinking and problem solving in complex and uncertain environments.★★

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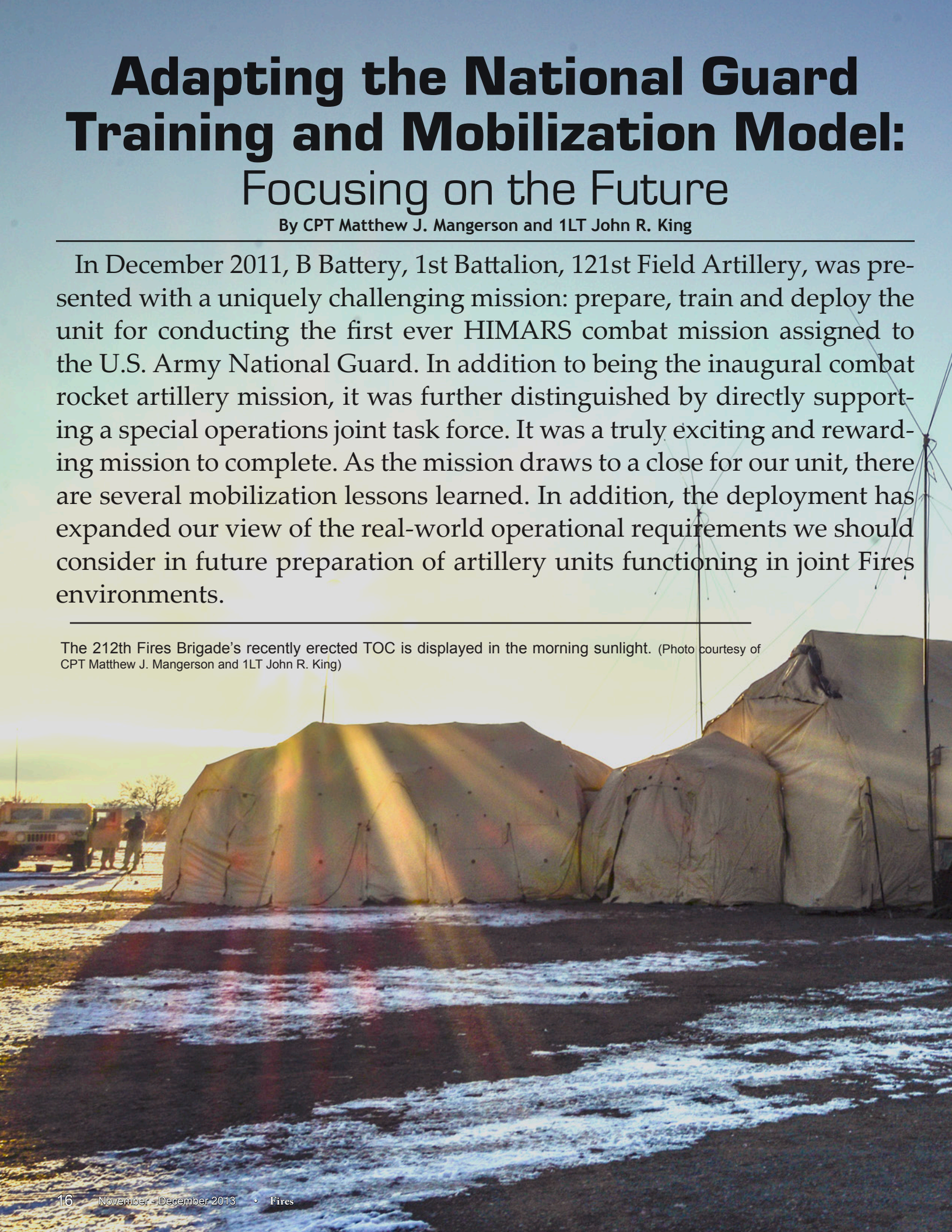
Acronym List		
AFCT	-	Armed Forces Classification Test
ALC 2015	-	Army Learning Concept 2015
ASVAB	-	Armed Services Vocational Aptitude Battery
BSEP	-	Basic Skills Education Program
FAST	-	Fundamental Academic Skills Training

Adapting the National Guard Training and Mobilization Model: Focusing on the Future

By CPT Matthew J. Mangerson and 1LT John R. King

In December 2011, B Battery, 1st Battalion, 121st Field Artillery, was presented with a uniquely challenging mission: prepare, train and deploy the unit for conducting the first ever HIMARS combat mission assigned to the U.S. Army National Guard. In addition to being the inaugural combat rocket artillery mission, it was further distinguished by directly supporting a special operations joint task force. It was a truly exciting and rewarding mission to complete. As the mission draws to a close for our unit, there are several mobilization lessons learned. In addition, the deployment has expanded our view of the real-world operational requirements we should consider in future preparation of artillery units functioning in joint Fires environments.



The 212th Fires Brigade's recently erected TOC is displayed in the morning sunlight. (Photo courtesy of CPT Matthew J. Mangerson and 1LT John R. King)

As we experience a drawdown of the active component, the ARNG will undoubtedly see more missions that are significantly different than the past 10 years. These will likely include more joint missions that bring specific requirements to the mobilization process. The mobilization of our unit required critical thinking, advanced planning, and cooperation throughout multiple organizations. Our revised process can be a template for the other ARNG units during preparation for future 'non-traditional' missions. Clearly, our training requirements were specifically tailored to our Field Artillery mission and each new mission will bring its unique requirements and challenges. This highlights the need to be prepared to embrace a more dynamic training model.

After a decade of mobilizing hundreds of thousands of ARNG for Operation Iraqi Freedom and Operation Enduring Freedom, the process has been honed, adjusted, and streamlined down to the last detail. The mobilization stations have become well-oiled machines for the traditional ARNG missions. The challenges arise when a particular mission is not served by the existing mobilization templates. In these situations, we must take a creative, collaborative, and conceptual approach.

This view is not an indictment of the current system. The current system has worked well and will continue to work well for traditional scenarios. However, as B Battery navigated its way from development, to preparation, to execution of our mobilization plan, we incrementally faced challenges we would not have encountered with a traditional mission. Hence, these lessons learned are presented to assist future National Guard units in identifying and overcoming these types of challenges. The most important element to our successful mobilization was the close, frequent communication with the supportive and engaged First Army training staff. With a common understanding of each challenge, we were able to identify and implement a solution.

Development. Early in the pre-mobilization process, we identified opportunities to prepare our battery for the requirements unique to operating independently of a traditional artillery command and support structure. First, select members of the battery participated in a brigade warfighter exercise hosted by the Wisconsin Army Reserve National Guard, 32nd Infantry Brigade Combat Team (Wisconsin ARNG's 32nd IBCT). Several Soldiers gained valuable experience working in a brigade-level tactical operations center, similar to the TOC we expected to operate within while overseas. Other Soldiers worked in additional supporting Fires roles. These included 105 mm, 155 mm, HIMARS, and radar units. The various units used tactics, techniques and procedures, which provided elements that were eventually incorporated into our new TTPs. Also, the warfighter utilized the military decision making process, which provided us training not typically experienced as a traditional firing battery. By executing multiple tactical scenarios, our Soldiers sharpened their military skills beyond traditional delivery of rocket artillery.

Finally, we sent key personnel to the Joint Fire-

B Battery vehicles are integrated into the ad hoc 'training facility' as the snow begins to pick up intensity. (Photo courtesy of CPT Matthew J. Mangerson and 1LT John R. King)

power Course at Nellis Air Force Base, Nev. This gave us vital training to operate in a joint Fires environment. These additional training events were critical to our pre-mobilization preparation. These newly added skills enabled us to successfully complete our post-mobilization certification and ultimately achieve mission success: operating independently in a joint Fires environment.

Concurrent to conducting these preparatory training events, the leadership tenaciously tracked down the explicit mission requirements for personnel, equipment, training, and security clearances. Although our mobilization order called for a battery (+) Modified Table of Organization and Equipment, we identified significant divergences from our organic composition. Through aggressive fact finding with the resident unit, we were able to craft a framework for all the administrative and logistical requirements of our mission that were not apparent at initial stages of our mobilization.

One of these challenges was identifying, justifying and acquiring appropriate security clearances for the battery personnel. As an ARNG unit, it was unusual to request such a large number of top secret clearances. Through perseverance by the leadership and continual coordination with the forward elements, we secured the appropriate clearances prior to mobilization. An additional challenge was composing the manning document. With the non-standard mission, the focus for developing the document was placed on mission required functionality. While assigning personnel to required duty positions, a critical constraint was to retain the battalion's operational readiness. Thus, a balance was required to fill the required positions while not depleting the battalion of its resources and degrading it's capability to meet its mission requirements. In the end, the battery absorbed 16, non-organic battalion Soldiers, comprised of five additional military occupational specialties, to complete the wide range of expertise needed for the mission.

Preparation. During post-mobilization preparation, it became critically apparent that our unit, the resident unit, Fort Bliss, Texas, and the 5th Armor Training Brigade, needed to work hand-in-hand to develop a tailor-made mobilization plan. Without the experience of deploying a National Guard unit for this mission, the training and certification process was just as unique for the mobilization station as it was for the battery. At this stage of the deployment process, five months prior to mobilization, we began interfacing with the 5th Battalion, 3rd Field Artillery, from Joint Base Lewis-McChord, Wash. At the time, 5-3 FA held the mission and proved to be an invaluable partner in the development of our training and certification plan. A planning cell from our battalion traveled to JBLM to review the mission, conduct a secure video teleconference with their forward element, and utilize their pre-deployment training strategy to develop our own exercise plan.

The training plan, developed with 5-3 FA, was then reviewed with the Fort Bliss Training Brigade. Once our training plan, including our proposal for the final validation exercise, was accepted by Fort Bliss, the preparation requirements increased. The plan required coordination with multiple agencies. First, the battery fire direction liaison cell conducted range safety procedures in close coordination with the Fort Bliss/Dona Ana Base Camp. Next, the battery leadership participated in numerous planning sessions. The communications network and logistical infrastructure was developed for a deployment capstone training exercise. This exercise was unique, larger and more complex than any exercise previously conducted by the Mobilization Training Brigade. Finally, the team dedicated additional focus to simultaneously integrate the validation of E Battery, 139th FA Target Acquisition Battery's capstone certification exercise. Ultimately, the capstone exercise required coordination and participation from the 5th Armor Brigade, E-139 TAB, the 212th Fires Brigade and the 402nd Field Artillery Brigade in order to plan the event.

Execution. After months of extensive development and planning, we felt confident and ready to execute the complex and unique training exercise. However, there were variables for which we could not account. Despite extensive review and revision of the plan, the battery was faced with additional, unexpected challenges. We conducted problem solving, utilized some critical thinking, and adjusted fire.

In an odd twist of fate, our battery was exposed to all four seasons during the last two weeks of December, in which we conducted our live-fire certification and our final culminating training exercise. No amount of preparation could have prepared us for the 60-mile an hour windstorm in the middle of the New Mexico desert. However, even with the gale-force winds and highly fluctuant temperatures, our sandblasted Soldiers continued to process and fire HIMARS missions until operations were finally halted due to the forward observers' inability to see the impact area amidst the sandstorms.

Only one week later, while establishing battery field operations for the CTE and preparing to integrate all the participating and supporting units, western Texas and southern New Mexico were stuck by a snow storm that prevented exercise participants from traveling. Since the 212th FiB was providing critical satellite communication support and we only had a limited number of days to complete our validation, we were forced to adapt and recreate our training. With the help of the 5-3 FA, who was stranded in their hotel, we created ad hoc battery headquarters from an administrative building and joint task force operations cells from a hotel conference room 20 miles away. Using networked Advanced Field Artillery Tactical Data System computers, the Defense Connect Online tool, hotel phones and personal computers, we cobbled together an impromptu exercise infrastructure. This scenario provided some of the best training we received prior to the deployment.

As valuable as this training was, it created a unique juxtaposition to the preplanned operations that kicked off days later. The 212th FiB constructed a fully capable, state-of-the-art brigade TOC to emulate the joint task force operations center. This, combined with the satellite communication capabilities, allowed for integrated field operations, over secure channels, from over 10 miles away. This breath of capability made the exercise truly impressive.

This culminating field exercise allowed the battery liaison section to work within the JOC in a realistic training scenario, validating their skills. Members of 5-3 FA, who had previously executed the combat mission and had supported us in our provisional operations training just days prior, played the roles of the JOC Fires and operations staff using the current theater TTPs. This training and validation exercise was essential in ensuring the battery provided the highly responsive Fires required by the joint task force.

The ultimate result of the pre and post mobilization training yielded a battery (+), with each individual Soldier, well prepared to take on the unique and challenging mission. The tasks of refreshing our basic artillery skills and becoming familiar with the intricacies of providing Fires for a joint operating en-

vironment were fully accomplished. After experiencing a smooth assimilation to this mission, we fully realized the value of the joint focused mobilization training. This extensive preparation motivated us to consider new methods to integrate joint Fires into our home-station training plans.

Future Training in Joint Fires. The opportunity to work in a joint Fires environment was unique for B Battery. The traditional Field Artillery education track focuses much on surface to surface Fires and employment in traditional Army formations. National Guard Field Artillery units take pride in the skills and capabilities we attain with the scarce resources we have available. With the lessons learned in our training leading to deployment, we can consider new Field Artillery missions to increase our capabilities and relevance in the military going forward with ever increasing resource constraints.

Joint Fires was an environment which we had little familiarity, yet the knowledge gained at the joint Fires course was the enabler for us to put the pieces together. We quickly realized we shared the Fires space with many assets, from all the services, to include lethal and non-lethal effects. The joint doctrine we were taught was academically interesting. However, the reality of operating in it gave us a stark appreciation for practical application of the theory. The complex airspace environment, acceptable target sets, and information operations all tied into our operational picture.

We formed relationships with the Fires cells of multiple commands and demonstrated the complement that rocket artillery brought to their Fires plans. Many had not had the opportunity to train with rocket artillery in the past. This was especially important for our Air Defense partners (since we share the space) to understand the capabilities we bring to the battlefield as well as communicating the precautions needed when working together.

The experience was rewarding and a rare opportunity for which we are very thankful. As leaders, we naturally look to the future to apply lessons learned and move our thoughts forward related to training and the role we can provide in the fight. In the National Guard, units are geographically separated and we often don't have the opportunity to see who is on our left and right until we go to annual training or longer weekend training drills. Even then, we often train with battalion-sized elements, split apart in battery formations. When we certify, again we are set up as a battalion. From a Fires perspective, we train and certify our fire direction centers from section to battalion. We can achieve certification of our Mission Essential Task List and incorporate innovative scenarios, but what more could we do? How do we apply what we've experienced? What does that look like?

Consideration of These Experiences. Do the Fires elements in your organization coordinate with other Fires assets outside of your command? Think of how comprehensive you could make a Fires plan given what is available in the entire Fires community. Are your Fires brigades actively working to support maneuver elements in training on a regular basis? For firing units, do fire supporters from maneuver elements have the opportunity to call the rounds when you are completing your certifications, or do you have an 'observer' that calls them safe? If you are in a maneuver element, how often do your fire supporters work with other artillery assets? Do your FDCs plan for air operations? Do they understand all the airspace players and requirements to clear airspace? The air side does not appreciate the 'big sky, little bullet' anecdotes. If you have not deployed for a Field Artillery mission or have not worked in a joint Fires environment, understanding these complex relationships is an absolute requirement when called to support joint Fires. When planning Fires exercises, planners should consider our state partners in the Air National Guard to understand the airspace picture and current TTPs. Consider airframes found in the ARNG which support close air support, as well as unmanned aircraft, as they are a significant component in the joint Fires environment overseas. Consider some practice in command and control.

Before we execute, we plan. Are we

Platoon Leader, 1LT David Kranz, delivers instruction to his operations center section. (Photo courtesy of CPT Matthew J. Mangerson and 1LT John R. King)

all planning joint training and does that joint training go farther down the levels in our respective organizations? Every state has a Joint Forces Headquarters. The National Guard was a joint organization long before we saw joint active duty bases. We found it surprising that our active duty counterparts are just as eager for training opportunities as we are. We had a couple of interested parties in the active component who would seriously look into sending small groups of Soldiers to work with us just to gain experience with our weapon system. With some proper planning, what else is stopping us from truly working across services and components? Joint operations don't have to be just in theater or in large exercises with a special name. They can be part of our regular training cycles. As our military looks at leaner numbers and funds in the future, how can we make the most of what we have and who we have? With the technology currently available, we can plan via teleconference or video conference and meet at the time of execution. We are already realizing the manpower cost so let's see what we can do in operating together.

B Battery, 1st Battalion, 121st Field Artillery, fires a round for culminating training exercise missions and for E Target Acquisition Battery, 181st Field Artillery to track. (Photo courtesy of CPT Matthew J. Mangerson and 1LT John R. King)

Finally, we should also consider the literal effects of Fires in the combat operating environment and potential theaters. In your Fires cells, you plan targets and scenarios, but do your leaders at all levels understand collateral damage estimate levels, percent of incapacitation, risk estimate distances, circular error of probability and probability of destruction? Do your maneuver partners know? This knowledge helps with the 'why' question and the satisfaction of commander's intent. We *Redlegs* are often happy just to shoot. What makes a target for you though? Why would one platform get a target over another when both could strike it? Can you come to an operations center knowing exactly what is in your target set and what is in other Fires' assets? Understanding these answers help the maneuver commander and the force as a whole. You'll have leaders who can streamline decision making and apply appropriate effects.

Beyond the lethal effects of your weapon system, what about the non-lethal effects? Consider the information operations mission and how they may need to react to your Fires plan. We understand that some targets are not lethal targets at all because of collateral damage concerns. What about the seemingly inconsequential details, such as when you shoot, who you shoot with (non-U.S.) and where geographically? Do you consider coordination needed with your potential host country partners? Do we all have an understanding of counterinsurgency and company intelligence support team and their effects on Fires? You've now just read a host of questions about what possible considerations should be taken in a joint environment. How do you stand with them? Is your organization ready? Opportunity awaits us and the efficiency of our resources should be at the front of our minds.

Ultimately, the experience of B Battery is only one example of the high quality training and valuable missions that the National Guard is conducting. The unit has been a proud representative of the National Guard and its capabilities. We truly believe that some of the unique components of our mobilization and the lessons that we learned along the way will serve as a guide to future units that will undoubtedly mobilize in support of 'non-traditional' National Guard missions and further cement the noble legacy of our organization.★★

Captain Matthew J. Mangerson is the commander of B Battery, 1st Battalion, 121st Field Artillery. Mangerson served as platoon leader for the battalion's 2006-2007 convoy security deployment, as the battery executive officer during the 32nd Brigade deployment in 2009, and as the battalion fire direction officer during the battalion's HIMARS fielding in 2010 and Annual Training/live-fire in Guernsey, Wyo., during the summer of 2011.

First Lieutenant John R. King is the operations officer for B Battery, 1st Battalion, 121st Field Artillery. King has 19 years in the military including 11 years in the Army Reserve, serving as an instructor in the 1/339th Infantry, 84th Division and later served as a railroad engineer in the 757th Transportation Battalion, 88th Regional Readiness Command. King has served the last eight years in the Wisconsin Army National Guard all within 1st Battalion, 121st Field Artillery. He first served as a gunner in a Multiple Launch Rocket System battery and after commissioning through the Wisconsin ARNG state Officer Candidate School program, commissioned as a Field Artillery officer with a return back to the 121st FA as a platoon leader. King's previous deployment was to Iraq for the beginning of Operation Iraqi Freedom, where he helped prove the rail line in a joint U.S./Great Britain effort, assisted with humanitarian efforts, prepared coalition supply trains and managed local nationals in rail operations. King took part in the fielding of HIMARS, performed as a platoon leader during Annual Training/live-fire at Camp Guernsey, Wyo., acted as a battalion commander of an M777 unit during the 32nd IBCT brigade warfighter, graduated from the Joint Firepower Course at Nellis AFB, Nev., performed as the unit movement officer throughout mobilization and deployment and operations officer/liaison for the battery during the deployment in support of Operation Enduring Freedom.

Acronym List

ARNG	-	U.S. Army National Guard
CTE	-	Culminating Training Exercise
FA	-	Field Artillery
FDC	-	Fire Direction Center
FiB	-	Fires Brigade
HIMARS	-	High Mobility Artillery Rocket System
IBCT	-	Infantry Brigade Combat Team
JBLM	-	Joint Base Lewis-McChord
JOC	-	Joint Task Force Operations Center
TAB	-	Target Acquisition Battery
TOC	-	Tactical Operations Center
TTPS	-	Tactics, Techniques and Procedures

Honing ADA Skills With Joint Partners

By 1LT Ryan Bayne

The 2nd Battalion, 44th Air Defense Artillery, conducted training at the Weapons and Tactics Instructor Course 2-13 as a field unit in support of the training of WTI students. WTI is a U.S. Marine Corps, seven-week training program conducted twice a year at Marine Corps Air Station Yuma, Ariz., and is run by Marine Air Weapons and Tactics Squadron. The purpose of this training was to plan and execute operations with joint partners as part of the Integrated Air and Missile Defense System against an uncooperative opposing force using fixed wing, rotary wing, unmanned aircraft system, electronic attack and cruise missile capabilities. The plan was executed through 14 major events.

The major evolutions, which involved 2nd Battalion, 44th Air Defense Artillery, were surface-to-air missile suppression attack flights one and two, ground-based Air Defense, assault support tactics one, anti-air warfare one and two, and offensive anti-air warfare. The battalion tactical operations center and C Battery command post were emplaced at Site 50 in the Barry Goldwater Air Force Range area. The CPs were co-located with the Marine's tactical air operations center and A Battery, 3rd Low Altitude Air Defense Battalion. The battalion established data connectivity

Soldiers from C Battery, 2nd Battalion, 44th Air Defense Artillery, emplace camouflage netting to minimize detection from low-level threat aircraft. (Photo courtesy of 1LT Ryan Bayne)

to Sentinel radars via enhanced position location reporting systems, as well as Single Channel Ground and Airborne Radio Systems, or SINCGARS, and was able to integrate Forward Area Air Defense 3D software to enhance the situational awareness display in the TOC.

WTI students attended a three and a half-week course on Marine aviation assets and deployment and employment tactics. The students were crucial in the planning phase of each evolution and rotated through different Marine aviation command, control and communication positions during these evolutions. The students were also responsible for briefing the concept of the operation before each evolution, assisting in

execution and conducting after action reviews with the field units after each evolution.

U.S. Marine Corps Capt. Keith Kozal attended WTI 2-13 as a student for 2-44 ADA. During the GBAD evolution, he served as the student S3 for the Marine Air Control Group and was overall responsible for planning and briefing the joint IADS. Additionally, he sat in as the student senior air controller in the tactical air command center. During his experience, Kozal stated, "Being part of a joint and coalition team in the C3 department (USMC Aviation equivalent to S3) was an exceptional experience. Planning with different subject matter experts for the USMC, U.S. Air Force, Navy, and Australian and British air forces broadened the scope of my ability to see the whole fight; deep, close and rear. The opportunity to plan and coordinate operations for both air and ground Air Defense forces was an incomparable training event."

The 2-44 ADA supported WTI 2-13 by integrating into the overall GBAD plan against 'enemy' threat aircraft. The Marine Air Wing served on the OPFOR side and conducted strike operations against the critical assets being defended by the GBAD team. The MAW employed F/A-18, AV-8B, EA-6B and AH-1W in a synchronized plan in order to suppress the GBAD team and strike selected targets.

During several iterations, there were multiple communication systems in operation including EPLRS, FM radios, joint capability release, and tactical satellite radios. All were operating securely and provided both data and voice communication between the battalion TOC, BCP, and platoon. JCR and TACSAT were exceptionally useful in the mountainous terrain because they both use satellite transmissions and are not hindered by long distances like FM and EPLRS transmissions. Therefore, C Battery and the battalion TOC were not disconnected from the platoons when they were beyond line of sight and had contingency communication capabilities throughout the exercise.

The 2-44 ADA also established Link 16 between the battalion TOC and the TAOC. Once the Link-16 connection was established, the battalion TOC was able to correlate the air picture using its two organic MPQ-64 Sentinel radars and the USMC's TPS-59 and TPS-63 radars. This robust air picture was pushed down to the fire units, where each team was able to view tracks out to 100 kilometers from their position, greatly enhancing the Avenger teams' early warning capabilities.

CPT Richard Lewis, of 2-44 ADA, worked as the liaison officer for coordination between the Marine TAOC and battalion TOC. He stated the following about his training, "Having the opportunity to interface with the Marine TAOC allowed me the ability to see the 'whole fight.' By expanding my tactical perspective, I was able to provide early warning, track identification, and weapon control status/Air Defense warning status updates to our battalion TOC efficiently and accurately. We also gained valuable insight into kill-chain procedure development, communication systems capabilities and limitations, and the advantage of having the entire scope of the air battle available at all times."

The battalion TOC validated their trained status under the Mission Essential Task List task, 'Conduct Mission Command' with the final OAAW iteration. Throughout the WTI evolutions, the battalion TOC was able to refine its battle drills, including the details of specific personnel and their assigned duties during the air battle management phase. A combination of planning, conducting battle drills, and executing Air Defense control measures culminated in successful integration of C Battery into the GBAD that included the Marine LAAD battery, two notional Patriot batteries, and a host nation SA-6 Air Defense site. Due to enemy jamming, attrition, and USMC maintenance issues, 2-44's Sentinel radars were occasionally the only early warning systems broadcasting on the Link-16 network. During all of the evolutions, the platoons were able to verify their recently received 'slew-to-cue' Avengers with the crew achieving tracking on the target from beyond visual range and maintaining tracking until engagement. Furthermore, WTI offered a unique opportunity for the Avenger platoons to co-locate with Marine LAAD platoon CPs, affording the rare opportunity to compare TTPs and command and control systems.

WTI proved to be an unparalleled training opportunity for 2-44 ADA to participate in a joint exercise with the USMC. Overall, 92 individual aircraft were flown during the exercise. Enemy aircraft included the F4, F5, Mi-24, AN/2 Colt, and SMART-1 Jet (cruise missile simulation). Two of the most critical operational components honed were the battalion TOC's ability to conduct mission command and utilization of Forward Area Air Defense and Air and Missile Defense Work Station for air battle tracking through Link 16. WTI allowed C Battery to validate their new 'slew-to-cue' Avengers, both mechanically and operationally. Avenger crews were also able to refine their active Air Defense measures, battle drills, and provide reinforcement for the Air Defense principles on an unsurpassed scale. Upon completion of WTI, 2-44 ADA stands trained, confident, and ready to conduct joint integrated air and missile defense operations.

Strike Fear!★★

Acronym List		
ADA	-	Air Defense Artillery
BCP	-	Battery Command Post
CP	-	Command Post
EPLRS	-	Enhanced Position Location and Reporting System
GBAD	-	Ground-Based Air Defense
IADS	-	Integrated Air and Missile Defense System
JCR	-	Joint Capability Release
LAAD	-	Low Altitude Air Defense
MAW	-	Marine Air Wing
OAAW	-	Offensive Anti-Air Warfare
OPFOR	-	Opposing Forces
TACSAT	-	Tactical Satellite
TAOC	-	Tactical Air Operations Center
TOC	-	Tactical Operations Center
TTP	-	Tactics, Techniques and Procedures
USMC	-	U.S. Marine Corps
WTI	-	Weapons and Tactics Instructors

Skystriker Soldiers, from A Battery, 3rd Battalion, 4th Air Defense Artillery, air load their vehicles. (Photo courtesy of MAJ Jeff Porter and CPT Danielle DiCicco)

Skystriker Response

By MAJ Jeff Porter and CPT Danielle DiCicco

On July 11, 2013, the *Skystrikers* of 3rd battalion, 4th Air Defense Artillery loaded a C-17 Globemaster with the first lift of a Patriot Minimum Engagement Package. The battalion was charged to defend a critical asset in the fictional country of Madera. Only a few days earlier, the *Skystrikers* received their deployment order at Fort Bragg, N.C., and spent the remainder of the time alerting the batteries, rehearsing plans, and preparing Soldiers and equipment for an emergency deployment readiness exercise. The A Battery MEP flew from Pope Army Airfield to Camp Mackall, N.C.; the intermediate staging base for Operation *Skystriker* Response. There, the Soldiers staged equipment and rehearsed convoy battle drills with their short range Air Defense counterparts and their Avenger weapon systems equipped with .50 caliber machine guns and Stinger missiles. Their destination—a remote training area tucked inside sandhills of central North Carolina—held an asset critical to the joint force commander's power projection objectives, and time was short.

The emerging security environment requires a rapidly deployable Patriot air and missile defense capability. Patriot battalions protect critical force projection nodes and key geo-political assets in the initial phases of a campaign, and as the situation develops, they ensure the joint force commander's critical capabilities and freedom of action remain intact. Patriot air and missile defense helps mitigate the proliferation of anti-access technology—particularly ballistic missiles— and enables key operational and strategic reach for joint force commanders.

Preparing for the Global Response Force. Recently, 3rd Battalion, 4th Air Defense Artillery, assumed responsibility for the global response force's 168-hour Patriot air and missile defense readiness mission. However, planning for this responsibility began many months ago with a simple question. How do Patriot battalions develop and execute a culminating training event to demonstrate short notice deployment readiness? The 3-4 ADA's strategy represents a way for Air Defense Artillery leaders to conceptualize and operationalize a plan to build and demonstrate short notice deployment task proficiency.

The *Skystriker*'s strategy was conceptualized along three lines of effort. The first line of effort developed requisite knowledge among battalion commissioned and noncommissioned officers through the battalion leader development program. The second line of effort developed specific deployment task proficiency through air and rail load training and operations at Fort Bragg. The third line of effort—mission assumption—shared a clear correlation with the battalion's employ air and missile defense mission essential task and provided the framework for the capstone of the end-to-end demonstration.

Link to Leader Development. The first line of effort; structuring the battalion's leader development program to a deployment centric theme, functioned as a shaping operation for the EDRE. The leader development program of instruction was designed to provide necessary context for battalion and battery leaders to think through their deployment plans and actions. Battalion leaders took a top-down approach and began with Department of Defense

Skystriker Soldiers, from B Battery, 3rd Battalion, 4th Air Defense Artillery, rail load their vehicles. (Photo courtesy of MAJ Jeff Porter and CPT Danielle DiCicco)

Global Force Management, then examined U.S. Army Forces Command and 32nd Army Air and Missile Defense Command processes. Next, leaders conducted a reconnaissance of Fort Bragg's air and rail deployment nodes in order to build familiarity with both their staff and the processes they use to move equipment. The *Skystrikers* used the last leader development session before the EDRE to conduct a thorough rehearsal of concept drill. The primary tool for the ROC drill was a large canvas tarp painted and taped to replicate the grounds on which the exercise would unfold; this technique also enabled easy site sanitation and transportability without the duplication of work.

Deployment Task Proficiency. The second line of effort, training and rehearsing short notice deployment tasks, functioned as a sustaining operation during the EDRE. 3-4 ADA's four subordinate Patriot batteries and sections of the Airborne Avenger, E Battery, trained for and conducted the core tasks associated with a level-two EDRE: alert, assemble, conduct Soldier readiness processing, draw dummy loads, and move a representative sample of the unit. Time and resource constraints forced battalion leaders to select certain batteries to execute specific aspects of the level-two framework; subsets to these core actions were deliberately chosen to limit the number of tasks trained and increase focus on the battalion commander's deployment priorities.

A Battery, 3-4 ADA worked in close coordination with the battalion's S-3 air operations officer and NCOIC to coordinate C-17 aircraft, field landing strips, and the appropriate number of turns to air-lift no less than one half of a Patriot MEP. A Battery moved remaining

Skystriker Soldiers of 3rd Battalion, 4th Air Defense Artillery, perform a rehearsal of concept drill (Photo courtesy of MAJ Jeff Porter and CPT Danielle DiCicco)

equipment by convoy. B Battery, 3-4 ADA incorporated railload team training into their eight step training model, and loaded one half of a Patriot MEP at the Cape Fear Railway Complex during the EDRE. Maintenance Company, along with C, D and E Companies of 3-4 ADA, simulated barracks pack-up, personally owned vehicle storage and conducted an M-4 qualification range. *Skystriker* leaders designed this as a forcing function for Soldiers to take a personal inventory of those actions they would take if the order were real. These were later captured in end-of-month counseling sessions, and will later function as a checklist for the Soldiers. Maintenance Company was given an additional key task to process two Patriot MEPs through comprehensive movement preparation area operations to set condition for a smooth joint inspection at the arrival/departure airfield control group and railway complex. Concurrently, the battalion staff stood up an emergency deployment operations center to help the commander track progress towards the end-state, and function as the primary mission command node.

Mission Assumption. The third line of effort—mission assumption in a challenging air and missile defense environment—helped battalion and battery leaders conceptualize and operationalize the EDRE's decisive operation. A Battery was selected to provide Patriot air and missile defense of a selected asset in one of Fort Bragg's remote training areas. A deliberately stressful timeline was placed on the battery to achieve minimum engagement and alert state assumption in accordance with the battalion directed surface to air missile tactical order. Once met, A Battery conducted reticule aim level-11 air battles with the battalion's information and coordination central using real-world tabular settings. Despite how far they had come, A Battery crews knew that any hostile over-flight or over-run meant mission failure. The EDRE culminated with mission release from coverage of the asset and convoy closure on Fort Bragg's 108th ADA Brigade Spartan Complex.

Lessons Learned. The 3-4 ADA learned several valuable lessons from the EDRE. First, structuring the battalion's leadership development program to compliment the exercise not only provided context but familiarized the leaders with Fort Bragg's first-rate deployment nodes, deployment personnel and air/rail load procedures. This produced a synergy of confidence and coordination that paid dividends as the batteries finalized their eight-step training models and began moving equipment. Next month's leader development session will take a holistic look at the exercise, again using the terrain model kit to help the battalion fix inefficiencies.

Second, rehearsing MPA operations prior to the EDRE enabled Maintenance Company to validate the throughput concept and timing. This directly contributed to a comprehensive and efficient process during the EDRE. Details such as the continuity of movement for inspection packets through the joint inspection line still proved problematic, and left room for improvement during the next EDRE.

Third, leveraging Fort Bragg's outstanding A/DACG facilities and consistent availability of C-17 Globemaster aircraft added crucial realism and immense training value to the EDRE. Soldiers initially struggled under the stressful conditions presented when backing large equipment—such as the Patriot ADA—into the suddenly narrow confines of the C-17. Furthermore, rail loading a Patriot MEP at the Cape Fear Railway Complex enabled 3-4 ADA to rehearse and build proficiency in another deployment mode of transportation while physically executing the task on the same grounds as if the deployment order were real.

As with any operation, the devil is in the details, and undoubtedly 3-4 ADA could have expanded the scope of the EDRE to rehearse even more relevant and important deployment tasks. Some possibilities include: exercising Family care plans, organizing Family readiness group updates, and simulating off-post quarters pack-up in coordination with the transportation office.

The 3-4 ADA's GRF culminating training event attacked short notice deployment readiness from three angles: leader development, deployment task training, and mission assumption rehearsals. The strategy leveraged Fort Bragg's first rate force projection facilities and consistent aircraft availability to add crucial realism. The plan was deliberately simple and focused on a limited number of tasks in order to increase understanding and develop specific task proficiency. That simplicity became key to flexibility as opportunities developed, timelines shifted, and the demands of garrison routine threatened a singular focus. Operation *Skystriker* Response demonstrated deployment readiness, helped battery commanders isolate weaknesses in their plan, and target specific inefficiencies to address in follow-up EDREs. The GRF remains the nation's strategic response force, and the *Skystrikers* of 3-4 ADA stand ready to secure the strategic reach necessary to meet any challenge.★★

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Captain Danielle DiCicco graduated from Virginia Polytechnic Institute and State University in 2007, and was commissioned as a second lieutenant in the ADA. DiCicco's academic degrees include a Bachelor of the Arts in Interdisciplinary Studies (Science and Technology) from Virginia Tech and a Master of Science in Information Technology Management from Trident University International. She is currently the assistant S-3 operations officer of the 3rd Battalion, 4th ADA at Fort Bragg.

Acronym List

ADA	-	Air Defense Artillery
A/DACG	-	Arrival/Departure Airfield Control Group
EDRE	-	Emergency Deployment Readiness Exercise
GRF	-	Global Response Force
MEP	-	Minimum Engagement Package
MPA	-	Movement preparation area
NCOIC	-	Non-commissioned Officer In Charge
ROC	-	Rehearsal of Concept

263d ARMY AIR AND MISSILE DEFENSE COMMAND
ANDERSON, SOUTH CAROLINA

CAPABILITIES DEVELOPMENT INTEGRATION DETACHMENT
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Distributed Mission Operations Air Defense Artillery:

The Gold Standard in Leveraging Simulations to Overcome Time and Distance Challenges in Support of Homeland Air Defense

By Mr. Matthew J. Villa and LTC Kimberly D. McGavern

Soon after the devastating attacks of 9/11, National Guard *Air Defenders* assumed the mission to effectively deter, detect and, if necessary, defeat any potential airborne threats to critical assets within the National Capital Region as part of the Integrated Air Defense System. The operating environment in the homeland was then, and is today, unlike any other in which *Air Defenders* had trained to fight. Short range Air Defense forces down to Avenger crew level had to learn to integrate into an extremely centralized joint kill chain, under the immediate control of a SHORAD Air Defense Artillery fire coordination officer operating in the newly established joint Air Defense operations center in Washington, D.C. This was much different from the relatively de-centralized engagement procedures they had been trained on in support of expeditionary missions. In order to do this effectively, they needed to be highly trained in mission-specific tactics, techniques and procedures and netted operations prior to assuming the mission. Likewise, the units performing the command and control mission in the newly established JADOC in Washington, D.C., needed to be able to train on scenarios specific to the homeland, employing the unique battle management and situational awareness tools that are used only in this theater. This training effort is complicated by the fact that the mission is

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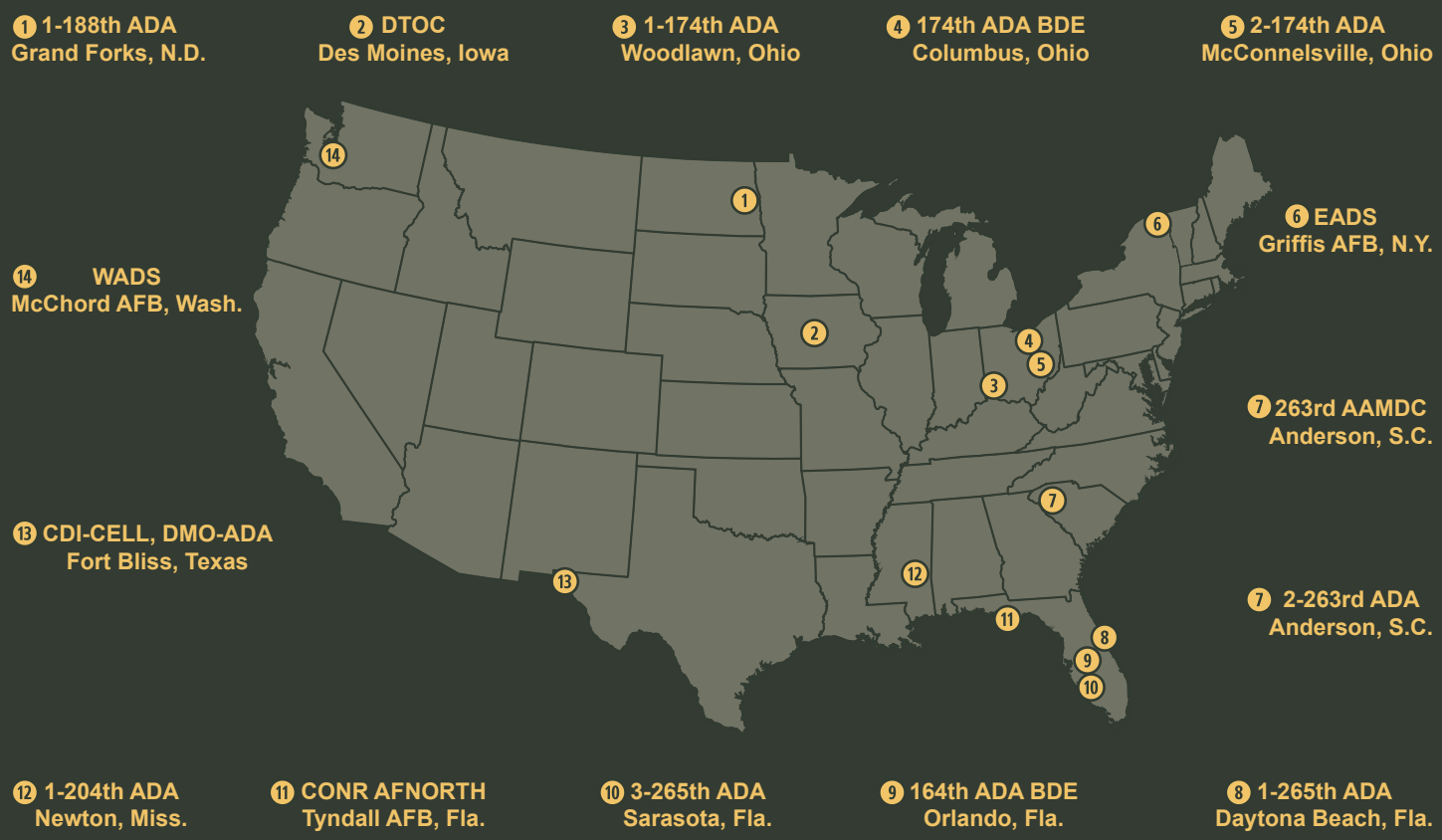
served on a rotational basis by units dispersed across five separate states; seven battalions support the 'shooter' element, two brigades and one Army air and missile defense command support the command and control rotation. How does a JADOC crew from one armory train with Avenger crews from another? Additionally, Army National Guard forces have a limited amount of time available for pre-mobilization training. Any additional training required at the mobilization station diminishes the boots-on-ground time for the unit to actually conduct the mission. How do we maximize the available pre-mobilization weekend drill periods and annual training to get the most 'bang for the buck' from unit rotation? The answer came in the form of the distributed mission operations – Air Defense Artillery.

'Many, so there will be none,' could be considered the unofficial motto of the DMO-ADA training program. DMO-ADA is a distributed simulation-based training tool set designed and developed for Army National Guard units tasked with NCR-IADS and Deployable Integrated Air Defense System missions. DMO was first introduced to ARNG ADA forces in 2005, by 1st Air Force NORTH who already used DMO capabilities to train fighters and air battle management crews on homeland defense scenarios. By extending their secure point-to-point network, the Air Reserve Component Network (ARCNet) to the brigade and battalion armories, all elements of the IADS are now able to train together from the respective home stations. This training comes in the form of realistic, repeatable scenarios provided by DMO-ADA prior to deployment. In the 12-18 months prior to assuming mission, DMO-ADA typically provides units with almost a thousand simulated threats in scenarios of varying complexity. Hence, the motto—units train on detecting and defeating an amazing number of threats in order to deter even a single one.

The DMO-ADA program is managed by the 263rd AAMDC, South Carolina Army National Guard (SCARNG), which has training and readiness authority for units mobilizing to perform the NCR-IADS and D-IADS missions. At the heart of DMO-ADA operations is the Fires Center of Excellence Capabilities Development and Integration Cell at Fort Bliss, Texas. Through DMO-ADA, the CDI-Cell supports the 263rd Army Air and Missile Defense Command and the brigades and battalions under its responsibility. The DMO-ADA team consists not only of several air and missile defense operations and simulation subject matter experts, but also a highly experienced joint training coordinator,



The Distributed Mission Operations-Air Defense Artillery Network.

a networking expert, and a data-link expert. All these skills are brought together to support the Soldiers' training. While providing a large quantity of realistic, repeatable simulated targets is the core of DMO-ADA, in the past several years the program has expanded to provide much more to National Guard Air Defenders.

Simulations and Training. DMO-ADA provides several key training enablers to the warfighter. One of the most important is home based training—units train in their home armories or in a deployed location of their choosing, and training is distributed nationwide via the ARC-Net. Second, even though the training is simulated, each operator trains on either the system they will fight or a very close representation. Accurate sensor models feed tactical systems for realistic situational awareness. Tactical voice and data circuits are accurately represented. Actual external civilian and joint participants may be included, or their parts may be emulated by role-players to provide a high level of fidelity to the scenario. Finally, scenarios are repeatable, reinforcing valuable lessons learned for the Soldier.

The homeland Air Defense mission is both unique and extremely important. The DMO-ADA training environment encourages warfighters to develop situational awareness, battle rhythm and tactical decision-making skills. It allows them to practice and perfect their tactics, techniques and procedures. An important and unique part of these TTPs is to operate 'non-standard' Air Defense equipment such as the Norwegian Advanced Surface-to-Air Missile System and the Tactical Display Framework and Situational Awareness System which is used for battle management and command and control. Another important and unique part of these TTPs is the ability to clearly and succinctly communicate directly with national command authorities. DMO-ADA provides a time- and cost-effective way for soldiers to continuously rehearse these skills until they are clearly understood and executed.

Unique Simulations for a Unique Situation. The tactical C2 cell for the homeland Air Defense mission is the JADOC. The JADOC contains a number of unique but very important C2 systems. In order to provide Soldiers as accurate of an environment as possible, the CDI-Cell has built a number of unique simulated systems that replicate the actual JADOC in every possible detail. It is here that mobilizing C2 elements will conduct their culminating training event, the capstone training and validation event prior to deploying to the actual JADOC.

The first system built was a simulated remote Avenger forward-looking, infra-red viewer. In the live JADOC, the Avenger ADAFCO can see the Avenger's FLIRs in real-time. Instead of real Avengers, the DMO-ADA program uses Avenger table top trainers. The CDI-Cell built a system to view the simulated FLIRs remotely.

The second one built was a simulated electro-optic infrared camera system. An important part of the JADOC's capability is to visually identify incoming aircraft. Since the DMO-ADA aircraft are simulated, the CDI-Cell built a system that could communicate with the simulations and present the Soldiers with a three-dimensional view of the aircraft type and surrounding environment (defended assets, terrain, clouds).

Most recently, the CDI-Cell integrat-

ed an in-house developed simulation called Airspace Mission Environment. One of the most critical tasks inside the JADOC is to correlate the joint track picture provided by higher echelon with the local track picture on the tactical weapon systems. In the JADOC, the forward area Air Defense is provided both the joint track picture and a feed from Sentinel radars. Since DMO-ADA uses simulated aircraft, the CDI-Cell developed and integrated AME to provide a tactically accurate Sentinel air picture to the FAAD so that every step in the prosecution of a track is fully replicated.

Support to Live Exercises. In the current budget-constrained environment, every unit is looking to be able to do more with less. In early 2012, the 263rd AAMDC anticipated this reality and looked for solutions. One area they identified to do 'more with less' is exercise support. Prior to 2012, for their two primary annual live exercises, Exercise America's Shield (EAS) and the culminating training event, the 263rd AAMDC utilized the support of an Air Force communication squadron and other datalink assets. While these assets brought immense capabilities, they also brought a large footprint and cost. The 263rd AAMDC realized that the required capabilities to support their live exercises resided within the DMO-ADA program brought by the CDI-Cell.

So besides providing simulations that increase the number of simulated hostile aircraft the training unit is presented with, the DMO-ADA program now is the key enabler for the EAS architecture. The CDI-Cell designs the network, programs the encryption and provides the critical C2 systems to make EAS happen. DMO-ADA also provides critical services such as a secure chat, secure VoIP telephony, and an air picture to live air controllers. All of this is done at no additional cost.

The CDI-Cell also has greatly enhanced the culminating training event. Prior to 2012, the JADOC for the event was set up in a remote field environment. This was not representative of the actual JADOC in which the unit would perform their mission, and also incurred a large travel cost back and forth to garrison for the trainers and evaluators. The CDI-Cell developed and executed a plan to utilize its training JADOC on Fort Bliss, which is very representative of the live JADOC, and also built a network to the Avengers and Sentinels located at their training location over 40 miles away. To enable this training, the CDI-Cell provides not only all the functions it performs for EAS but also supports twice daily distributed after action reviews via secure video teleconference.

In 2013, unlike most units who have rotated into mission several times, 1st Battalion, 188th ADA, North Dakota, ARNG assumed the NCR IADS mission for the first time. Recognizing this, the battalion leadership requested extra training to ensure they were prepared. The DMO-ADA program came through, providing an additional 470 simulated targets for the unit to train on before live air even started. Because of the versatility and resourcefulness of the CDI-Cell, this additional training was provided at no addition cost.

The Future. The CDI-Cell continues to support future developments. Most recently, the CDI-Cell led the effort to integrate the Joint Land Attack Cruise Missile Elevated Netted Sensor into the homeland defense architecture. In 2013's culminating training event at Fort Bliss, the CDI-Cell coordinated and conducted the first integration of a live JLENS feed into both the JADOC architecture and also the larger North American Aerospace Defense Command-Northern Command architecture. The lessons learned out of this exercise were a critical first step to potential future JLENS deployments in support of the homeland defense mission.

The CDI-Cell looks forward to working with the 263rd AAMDC to make future enhancements to the DMO-ADA training program. The CDI-Cell is always looking at ways to reduce costs and create efficiencies while increasing the level of training for the units. The CDI-Cell will be integrating more joint and Army participation into the DMO-ADA program. In first quarter 2014, DMO-ADA will be the key enabler for Vigilant Shield 14 which for the first time will integrate the 263rd AAMDC into a simulated scenario in the Alaska region and also tie in Patriot, Terminal High Altitude Air Defense, and Aegis simulations. Under the CDI-Cell, DMO-ADA will continue to be a world-class distributed virtual training and capability development support system.★★

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Matthew Villa received his commision from West Point and served as an Air Defense officer for over six years. He currently works as the lead contractor in the Capability Development and Integration Cell at Fort Bliss, Texas.

Acronym List

AAMDC	-	Army Air and Missile Defense Command
ADA	-	Air Defense Artillery
ADAFCO	-	Air Defense Artillery Fire Coordination Officer
AME	-	Airspace Mission Environment
ARCNeT	-	Air Reserve Component Network
ARNG	-	U.S. Army National Guard
C2	-	Command and Control
CDI-CELL	-	Capabilities and Development and Integration Cell
D-IADS	-	Deployable Integrated Air Defense System
DMO-ADA	-	Distributed Mission Operations-Air Defense Artillery
EADS	-	Eastern Air Defense Sector
FAAD	-	Forward Area Air Defense
FLIR	-	Forward Looking Infrared
IADS	-	Integrated Air Defense System
JADOC	-	Joint Air Defense Operations Center
JLENS	-	Joint Land Attack Cruise Missile Elevated Network Sensor
NCR	-	National Capital Region
NORAD	-	North American Aerospace Defense Command
NORTHCOM	-	Northern Command
SHORAD	-	Short Range Air Defense
TTP	-	Tactics, Techniques and Procedures
WADS	-	Western Air Defense Sector

Linking Fires and Intelligence:

Redefining the Brigade Fire Support Rehearsal

by MAJ David E. Violand and MAJ Charles E. Noll

Rehearsals are collaborative events. With any organization, collaboration works best when the individual sections of that organization, the people who spark the dialogue and interaction, understand what is expected of their participation in advance. For military organizations operating in the time-constrained decisive action training environment of the National Training Center, Fort Irwin, Calif., this necessity can become absolute. In this environment, using time well is just as important as knowing what the enemy will do. Managing rehearsals and defining attendees, along with their expected inputs and outputs, and defining the analog and digital products that are validated or updated as a result of the rehearsal becomes a critical task for brigade commanders and their staffs. These brigades cannot afford to waste time re-doing rehearsals or conducting rehearsals which do not increase the participants' understanding of the operation.

Recent observations on the execution of rehearsals by units conducting training within the DATE at the NTC add weight to this statement. Where units rushed the planning process to allow more time for rehearsals, they tended to rehearse in generalities which led only to more product creation and additional rehearsals, wasting both staff and subordinate unit time. If synchronizing the brigade's plan at echelon is the ultimate objective of rehearsals, each of the key brigade rehearsals must be sufficiently organized to allow for detailed dialogue and refinement to occur.

Put another way, what is a reasonable expectation for the amount of time a group of leaders can stand over a terrain model and rehearse? How many rehearsals can a brigade reasonably expect lower echelon unit leaders to attend before the time away becomes counterproductive to their own preparation? Leaving out the cost to subordinate unit timelines, how long can leaders spend in multiple rehearsals until the repetition becomes counterproductive? Observations suggest that there is a point of diminishing return, where additional detail becomes numbing and overwhelming and where additional rehearsals, while well-intentioned, become burdensome to the human beings involved.

How much, then, is too much, and which rehearsals are critical? Optimally, a single rehearsal would cover everything: maneuver, detailed Fires, information collection requirements and logistics. However, there are three challenges with this option. First, the total rehearsal time would likely be more than anyone could sufficiently endure and still pay attention. Second, the number of participants would be so large that it would be difficult for everyone to hear or for practical discussions to occur. Third, some personnel would not really be needed for the entire rehearsal and so would not be making optimal use of their own time by attending the entire event. The alternative is to have multiple rehearsals: a condensed, commander-led rehearsal providing the overview of operations and a series of technical rehearsals covering functional areas in greater detail. This increases the total amount of rehearsal time but frees up some personnel to attend only the rehearsals applicable to them.

At the NTC, brigades almost always execute combined arms rehearsals prior to mission execution. By and large, these forums bring commanders at echelon together and allow for 'a mental picture of the sequence of the operation's key actions' to be created as our doctrine suggests they should. Yet the CAR typically is not sufficient to ensure synchronization for all the brigade's warfighting functions and enablers. To handle these necessary 'nit-picky details,' brigades typically execute fire support and Field Artillery technical rehearsals, as well as a brigade sustainment rehearsal. And in recent DATE rotations, brigades have attempted to add an information collection rehearsal as well, acknowledging the growing need to synchronize in detail the organic and echelon-above-brigade collection assets that are so critical to enabling brigade commanders to make decisions.

This last idea—a rehearsal dedicated to the synchronization of the brigade's information collection plan—illustrates well the frictions between time available and need to synchronize. For the units which chose to add an IC rehearsal, the required attendees for the separate fire support and IC rehearsals were almost the same. The two rehearsals duplicated discussion of enemy actions, priority intelligence requirements, named areas of interest, sensors, and reporting. Despite all this common information, at the end of two, two-hour rehearsals the intelligence and Fires communities did not have a sufficient, and more importantly, common understanding of the operation.

What is necessary is a middle ground, an opportunity to invest time and dialogue into the topic of information collection without creating an additional rehearsal requirement in which brigade and battalion staffs must invest. Combining the conceptual information collection rehearsal with the standing brigade fire support rehearsal offers one such model. By re-shaping this pre-existing forum and establishing in detail the necessary stakeholders in attendance, along with their inputs, outputs, purpose and agenda, a model takes form that preserves time while enabling the detailed discourse that is critical to achieving the synchronization of collection and Fires at the brigade level.

Re-purposing the Brigade Fire Support Rehearsal. The most effective brigade fire support rehearsals happen before the combined arms rehearsal and lay the details that give structure to the later Field Artillery technical rehearsal, with its more selective audience. Current Army doctrine does not contain a 'one stop shop' for how to execute a fire support rehearsal. In fact, the most comprehensive fire support rehearsal guidance is found in a Field Artillery School white paper titled, "Fire Support Planning for the BCT and Below," from December 2008, that offers detailed best practices for

Soldiers from the 79th Infantry Brigade Combat Team, California U.S. Army National Guard execute a brigade combined arms rehearsal during a rotation at the National Training Center, Fort Irwin, Calif. (Photo by MAJ David E. Violand, U.S. Army)

who should attend, why they should attend, and what should be discussed. But even this document only covers a narrow scope concerning Fires planning. The key purpose of a fire support rehearsal is to 'practice essential tasks,' those tasks that are critical to successful mission accomplishment. Yet rotational units at the NTC routinely fail to rehearse the key fire support tasks for the operation, leaving Fires unable to achieve the commander's desired effects. The two greatest drivers for this failure are the inability of the participants to focus on validating the critical outputs of the rehearsal and the fact that the Fires rehearsal typically is executed after the CAR, as the sun is going down—a byproduct of poor time management.

The goals of the fire support rehearsal are not mutually exclusive from those of the IC rehearsal. Both rehearsals seek to identify the enemy in space and time, move information from sensors to decision makers and then deliver lethal or non-lethal Fires against that enemy in order to achieve effects. From a Fires warfighting function perspective, a union of the brigade fire support and information collection rehearsals is sound, provided that the five critical tasks; understanding commander's guidance for Fires, understanding of observation plan, review and validation of triggers, understanding of primary, alternate, contingency, emergency plan, and clearance of Fires, are retained in its revised structure.

For the intelligence warfighting function, the forum is equally acceptable, provided the discussion is expanded to include NAIs that are tied to commander's PIR or enemy decision points but do not trigger a Fires response. These NAIs, PIRs and DPs retain value for rehearsing in that they have the potential to trigger branches and sequels in planning or result in the commitment of reserve forces that may impact the movement of fires assets.

Setting the Baseline: Defining Inputs and Outputs. There are many tools and products developed during planning by the intelligence and Fires communities, but only a few will actually be used by commanders and staff to monitor and synchronize tactical efforts on the ground. From observation at the NTC, the products most valued are: the S3's decision support template and current operations synch matrix; the fire support officer's fire support execution matrix; the S2's event template complete with enemy decision points; and the collection manager's collection synch matrix and information collection overlay, which are usually presented as one product. Indeed, observation has shown that when units exit the mission orders production segment of the operations process with at least these products built and vetted through war-gaming, those units achieve more meaningful synchronization at their rehearsals and do markedly better against the contemporary enemy force.

Furthermore, the definition of products need not be defined only as analog PowerPoint printouts. If units have trained to execute their scheme of maneuver based on graphical templates off FBCB2 or Blue Force Tracker, then digital overlays and products will prove of equal value to analog. Whatever the form, the key is for the tool to be complete,

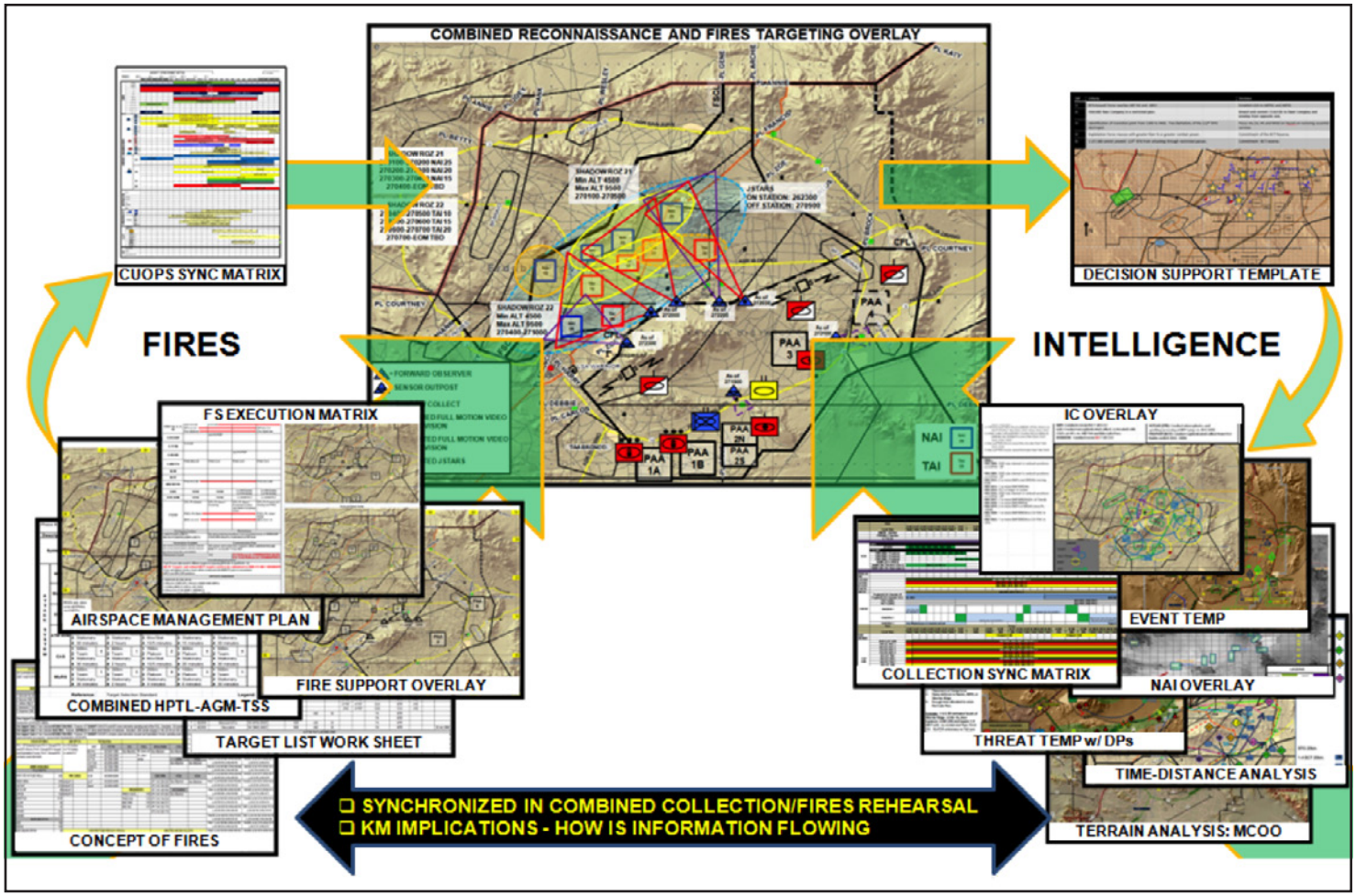

Figure 1. Creating the CRAFTO. (Illustration courtesy of MAJ David E. Violand and MAJ Charles E. Noll)

present and available to be validated and updated. Analog or digital products are of little value if they are not present at the rehearsal and supported by dedicated personnel who seek to confirm the accuracy and detail present within these items. A 'best practice' observed for digital products is the utilization of a vehicle from the tactical command post, parked next to the terrain table or map board, and manned to actively monitor the discussion in order to confirm/deny FBCB2 entries as the rehearsal is conducted.

In addition to the above mentioned products, another useful command decision tool that can prove effective when used as a fighting product is the combined reconnaissance and Fires targeting overlay. While non-doctrinal, this product finds its genesis in the reconnaissance and surveillance overlays prevalent in the older 34-series intelligence field manuals. The figure above shows the product is the culmination of collaboration between the brigade S2 and FSO during the planning process. Ideally, the CRAFTO grows out of the refined production build following the wargame and is a one-stop overlay that shows collector emplacement on the battlefield, their areas and times of collection, and the named areas of interest or target areas of interest that they seek to collect against. Used in conjunction with a CUOPS synchronization matrix and a DST, the CRAFTO can serve as the backbone of the sensor to shooter rehearsal, allowing the FSO to drive sensor and shooter linkages and confirm understanding of times, priorities and actions upon discovery for subordinate task forces and enablers.

Assigning Responsibilities and Creating an Agenda. Next it is important to identify those key participants who must be present to allow the sensor-to-shooter rehearsal to be of value, along with those staff whose presence and contributions would improve the overall quality of the rehearsal. Figure 2 links attendees with the inputs they are required to bring, their primary purpose in attending, and whether they have a designated speaking role in executing of the rehearsal. Observations of rehearsals conducted at the NTC reveal that an overly complicated list of attendees and inputs bogs down the rehearsal. It is far better in practice, to consider only five to six key products that will actually be used during operations at the mission command nodes. It is also for this reason the sensor-to-shooter rehearsal should be attended by the brigade's chief of operations and S3; those key officers who will control the mission command nodes charged with execution.

It is also worth noting that Figure 2 ties the purpose of attendance for the various players as validating concepts and/or products. This is a deliberate action meant to overtly tie the rehearsal back to the planning and orders production process. Planning staffs who understand the role their production efforts play in the actual execution of the operation have shown a greater attention to detail and collaboration than those who do not.

Attendee	Input (Product)	Purpose	Designated Speaking Role
S3	CUOPS Sync Matrix DST	Validate CUOPS Sync Matrix and ensure synchronization of Fires and the Operation	Yes
FSO	FS Execution Matrix, CRAFTO	Validate FS Exec Matrix and CRAFTO and ensure understanding of concept of Fires at subordinate echelons	Yes
S2	EVENTEMP with DPs	Validate DP-PIR-NAI linkages with Fires and the Operation	Yes
CM	CSM, ICO, Collection Plan	Validate CSM and ICO with CUOPS Sync Matrix	Yes
Targeting Officer	HPTL, AGM, TSS	Validate HPTL/AGM/TSS in space and time and ensure understanding at subordinate echelons	Yes
S6		Validate BCT PACE plan from sensor to mission command node to shooter	No
ALO		Validate Fixed Wing Aviation Plan (on CUOPS Sync Matrix)	By Exception
EWO		Validate Electronic Warfare plan (on CUOPS Sync Matrix)	By Exception
BAE		Validate Rotary Wind Aviation Plan (on CSM)	By Exception
ADO		Validate ADA asset locations for airspace de-confliction	No
FA BN FDO		Validate Field Artillery support plan	By Exception
MICO Commander		Validate ground collection and dissemination plan for BCT organic collectors	By Exception
BISE Chief		Validate analysis and dissemination plan	By Exception
UAS PL		Validate shadow collection and dissemination plan	By Exception
BJA		Respond to questions pertaining to ROE	No
CHOPS		Situational awareness and understanding	No
ARS S3	Recon Concept of Operations	Validate concept of operations and enabler integration with BCT Fires and IC plans	By Exception
Remaining TF S3s	TF CUOPS Sync Matrix	Validate concept of operations against BCT Fires and IC plans	By Exception
All TF S2s	TF CSM, ICO	Validate sensor-to-shooter linkages against BCT Fires and IC plans	Yes
All TF FSOs	TF FS Exec Matrix	Validate sensor-to-shooter linkages against BCT Fires and IC plans	Yes
Interested Parties		Situational awareness and understanding	No

Figure 2. Example list of attendees, inputs and purposes of attendance at collection/Fires rehearsal. (Illustration courtesy of MAJ David E. Violand and MAJ Charles E. Noll)

Given the assignment of designated speaking roles and the limited number of those who are expected to speak throughout the rehearsal, several considerations bear mentioning. First, the use of 'by exception' within the chart is meant to alert the participants to the likelihood that, as an observer and/or delivery agent with assigned requirements within the mission order, they will likely be called upon to speak and demonstrate their understanding of their roles and responsibilities per the operations order. They have not been designated as speakers so as to keep flexibility within the execution of the rehearsal. Secondly, the elimination of the 'inform and influence activities' as a briefing participant is a necessary evil, ensuring the rehearsal stays focused on the critical sensor-to-shooter details that must be synchronized. Finally, while the inclusion of task force level S3s, S2s and FSOs is encouraged, the ability to pull all these critical staff members may not occur, hence S2s and FSOs are designated as speakers, while the S3s are not.

Figure 3 displays a recommended agenda. Time remains a primary concern, as the bulk of attendees will (at a minimum) be participating in the CAR and task force rehearsals which commonly last two hours each. A tightly honed script is ideal for saving time and ensuring that maximum benefit is achieved by all participants. In that regard, Figure 3 is merely a starting point to enable units to develop an even more refined script. In conjunction with a terrain kit, the sensor-to-shooter script can be created as an off-the-shelf tool using the key planning products from the planning process, all in an effort to give time back to discussion and key product validation during the actual rehearsal.

Executing the Rehearsal. The brigade FSO begins by orienting the audience to the terrain model or map board and explaining key terrain features and graphic control measures. He is followed by the brigade S3, who succinctly explains the overarching concept of the operation, paying particular attention to the task organization of the brigade and status

Role	Topics	Time Limit
BCT FSO	Terrain board orientation	3 min.
BCT S3	General Concept of Operations • Task Organization and Status • Phases • CCIR	7 min.
BCT S2	Enemy Concept Overview • Disposition (at H-hour) • Composition (Task Organization) • Strength (Slant) - Regular Forces - Irregular Forces	5 min.
By Phase (minimum recon and main battle phases)		
BCT S2	Enemy disposition and DPs in time and space*	4 min.
BCT S3	Disposition of maneuver and DPs in time and space*	2 min.
BCT FSO	Applicable FSCMs and ACMs	2 min.
BCT Targeteer	High payoff target list	1 min.
BCT CM	NAI (one turn for each) • Location on ground • Associated IR, supported PIR • Primary and secondary observers	5 min.
Observer (In accordance with CUOPS sync matrix, CSM and collection plan)	NAI (Moving to point of observer) • Net collection time/NLT collection time • Commo plan for passing information	5 min.
Delivery (In accordance with fire support execution matrix and CUOPS sync matrix	NAI (Moving to point of delivery) • Action on enemy observation	5 min.
BCT Targeteer	TAI (Repeat above process for each)	5 min.
BCT FSO	Inducing Friction IOT Facilitate Synchronization	10 min.

Figure 3. Recommended agenda for brigade collection/Fires rehearsal. (Illustration courtesy of MAJ David E. Violand and MAJ Charles E. Noll)

of the key enablers and collection/Fires systems available. The S3 then discusses the phases of the operation, focusing on framing the phases in time (to h-hour) and space (limits of advance and anticipated task force locations in relation to h-hour). Finally, the S3 identifies those key commander's critical information requirements that should serve as the basis of the collection plan, Fires plan, and decision support template.

The S3 is followed by the S2, who quickly lays down the enemy disposition, composition and strength as it pertains to time (h-hour) and space (location of both regular and irregular forces at h-hour). For strength reporting, the S2 may use the slant method for simplicity and ease of discussion, unless referring to key weapons systems whose presence in a TAI will drive targeting per the high payoff target list. This entire portion of the rehearsal should not exceed 15 minutes in total length, again aided by the quality of the script and the planning products that should drive the discussion.

At this point in the rehearsal, the FSO assumes control of the remaining time. The FSO should set the conditions in time (h-hour) for the snapshot that will drive the phases of the rehearsal. This is critical, in that the location of enemy assets within NAIs and TAIs must be linked to time in order for products and templates to be validated. At a minimum, units should plan to rehearse the reconnaissance and main battle phases as time permits. Following the FSO, the S2 (assisted by a helper) physically places and briefs the disposition of enemy forces (companies and key systems) in their expected locations on the terrain model or map. The S2 also identifies any enemy decision points for this phase and the expected locations and time that they are likely to be made. The S2 is followed by the S3 who (assisted by a helper) physically places and briefs the disposition of friendly forces and any anticipated friendly DPs. In these efforts, the S2 should utilize the EVENTEMP with DPs and the S3 his CUOPS synchronization matrix and DST, validating the products in the process. The S3 is quickly followed by the FSO again, who, using the FS execution matrix, discusses any fire support coordination measures and air coordination measures that are in effect during the phase. Finally, the brigade targeting officer will brief the HPTL specific to that phase which provides framework to the collective audience. This portion should take no more than nine minutes.

The next phase of the rehearsal is the most critical. The brigade CM, armed with his CSM/CRAFTO, begins to discuss the key NAIs as they exist on the terrain model or map. This begins an iterative process, with the CM stating the NAI, the thing that is expected to be located there (information requirement), the priority information requirement, the IR answers and the primary and secondary collectors tasked to answer that information requirement. At this point, the primary collector moves to the observation point oriented toward the NAI on the terrain model, detailing their movement, the no earlier than and no later than times to collect against it, and the PACE plan for how to pass the information back to the

mission command nodes. Each secondary observer follows suit. In this way, the brigade CM validates that his/her collection plan is known and understood by the collectors. The link of sensor to mission command node has been made.

At this point, the FSO takes charge of orchestrating dialogue to ensure the NAI, or associated, TAI is covered by Fires. Identifying the delivery asset tasked with covering the TAI, the FSO directs the asset to move on the terrain model or map to its location and talk through actions upon notification and delivery of munitions onto target. The FSO has the flexibility to introduce friction for each NAI and TAI, or as time permits, provided that he feels delivery assets understand their responsibilities and actions upon notification by the collection system through mission command nodes. This process is repeated for every critical NAI, and then followed for every TAI. When conducted with a unit familiar with the expectations and process, each turn should take no more than five minutes.

This model enables 10 minutes to be allocated to the FSO with the specific purpose of inducing friction in the sensor to shooter movement of information. By forcing collectors and delivery systems to talk through scenarios such as navigating the PACE plan or cueing additional collection assets, the FSO will enable a dialogue that will achieve the type of synchronization that is critical to achieving success with collection and Fires. Assuming the unit identifies no more than 10 key NAIs and associated TAIs per phase, the entire rehearsal can be executed in a little over two hours.

Undoubtedly, brigades will continue to struggle with managing the aspects of planning, rehearsing, and executing at echelon while working through the inherent issues that arise from being in the harsh field environment of NTC. Units that seek to develop mechanisms for improving time-management and synchronization of enablers would be well served to adapt their brigade fire support rehearsal and incorporate more of the sensor-to-shooter linkages recommended here.★★

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Major Charles Noll is currently a student at the Command and General Staff College at Fort Leavenworth, Kan. Previously he was the brigade fire support officer trainer at NTC. Prior to that he served as the brigade fire support officer for 3rd Stryker Brigade Combat Team, 2nd Infantry Division, in Iraq, as part of OIF. He has commanded C Battery, 1st Battalion, 37th Field Artillery and Headquarters Company, 1st Battalion, 23rd Infantry in the 3rd Stryker Brigade Combat Team, 2nd Infantry Division at Joint Base Lewis-McChord, Wash. He has also served as a battalion fire support officer, battalion assistant operations officer, battalion ammunition officer, firing battery executive officer, and company fire support officer. He has deployed three times to Iraq, in support of OIF and has served as a fire support officer at the company, battalion, and brigade echelons during these combat tours.

Acronym List

ADA	-	Air Defense Artillery
ADO	-	Air Defense Officer
AGM	-	Attack Ground Matrix
ALO	-	Air Liaison Officer
ARS	-	Armored Reconnaissance Squadron
BAE	-	Brigade Aviation Element
BCT	-	Brigade Combat Team
BISE	-	Brigade Intelligence Support Element
BJA	-	Brigade Judge Advocate
BN	-	Battalion
CAR	-	Combined Arms Rehearsal
CCIR	-	Commander's Critical Issues Report
CHOPS	-	Chief of Operations
CM	-	Collection Manager
CRAFTO	-	Combined Reconnaissance and Fires Targeting Overlay
CSM	-	Collection Synchronization Matrix
CUOPS	-	Current Operations
DATE	-	Decisive Action Training Environment
DP	-	Decision Points
DST	-	Decision Support Table
EVENTEMP	-	Event Template
EWO	-	Electronic Warfare Officer
FA	-	Field Artillery
FBCB2	-	Force XXI Battle Command Brigade and Below
FDO	-	Fire Direction Officer
FS	-	Fire Support
FSO	-	Fire Support Officer
HPTL	-	High Payoff Target List
IC	-	Information Collection
ICO	-	Information Collection Overlay
IR	-	Information Requirement
MICO	-	Military Intelligence Company
NAI	-	Named Areas of Interest
NTC	-	National Training Center, Fort Irwin, Calif.
PACE	-	Primary, Alternate, Contingency and Emergency
PIR	-	Priority Intelligence Requirements
PL	-	Platoon Leader
ROE	-	Rules of Engagement
S2	-	Intelligence Officer
S3	-	Operations Officer
S6	-	Signal Officer
TAI	-	Target Areas of Interest
TSS	-	Target Selection Standards
UAS	-	Unmanned Aerial Sensor

PEO Soldier Supports the Next Forward Observer Generation: Precision Fires Warrior

By MAJ Alex Mora and Scott McClellan

A steely eyed sergeant wearing a 'steel pot' and holding a plastic-wrapped map to protect it from the elements looks through his binoculars. An enemy bunker is 'three-fingers' to the left of the road intersection. The sergeant estimates its 3,200 meters in front of him. He sees a single 155 mm artillery round impacts near the intended target moments later. The sergeant grabs the PRC-77 hand microphone from the nearby radio-telephone operator. "Drop five-zero, fire for effect!" he states.

For decades, forward observers used bracketing techniques to bring Fires on their intended targets. This proven method of adjustment was necessary as both target location and munitions were less than precise. FO equipment developed over the years. However, calling for and adjusting indirect fire remains very much the same in many cases. For various reasons, a precision capability hasn't been a viable alternative for the dismounted FO. With the advent of technological advances in both targeting and munitions, the Army has recently established requirements to use those advances and transform today's dismounted FO into a precision Fires warrior.

The Training and Doctrine Command Capability Manager Fires cell at Fort Sill, Okla., and the Program Executive Office Soldier at Fort Belvoir, Va., are revolutionizing the dismounted FO's mission with the PFW ensemble. PFW is an integrated, mobile, network-enabled system. It increases combat effectiveness by enabling precision Fires, situational awareness and a streamlined digital call-for-fire process. PFW addresses the Fires Center of Excellence's number one capability gap priority. It's that dismounted FOs lack the ability to locate rapidly ground targets with better than 10-meter accuracy in all conditions without target mensuration, preventing engagement with precision attack indirect fire systems.

The heart of the PFW ensemble is the forward observer Fires application. This application is specifically designed for use by the dismounted forward observer and is located on a ruggedized commercial-off-the-shelf smart phone known as end user device. Soldiers are very familiar with how to use a smart phone, which reduces training anxiety with new hardware. While running the Fires application, the EUD displays a digital map depicting selected situational awareness and fire support coordination measures on its five-inch screen. Previously, the capabilities inherent on the forward observer Fires application were only available when coupled with hardware far too heavy and cumber-

A photo of the Precision Fires Warrior system. (Photo courtesy of PEO Soldier)

some to carry in a dismounted configuration.

The forward observer Fires application software suite includes digital imagery called Precision Fires Imagery which is necessary for precision engagements. In the past, FOs used a map and bracketing techniques to get within 50 meters of a target. PFI enables the dismounted observer with a laser-range finder to locate targets within 10 meters or less. This allows the use of precision munitions for first-round effects.

The forward observer Fires application on a EUD is the heart of PFW ensemble. However, the backbone is the incorporation of a power/data hub and a 150-Watt conformal battery. Both fully integrate into the integrated outer tactical vest. Technological advances in power management and connectivity drive changes in precision targeting for the dismounted FO and make him more combat effective. The hub allows connectivity of peripherals for both data transmission and power. The peripherals include laser-range finders, radios, Defense Advanced Global Positioning System Receiver and the EUD. It provides FOs an integrated system of systems specifically designed for precision targeting. The hub's ability to tie peripherals together produces a synergistic combat power effect.

The PFW conformal battery/hub configuration extends the dismounted FO's mission profile. It provides longer battery life and reduces the percentage of carried battery weight per operational hour. Product Director Soldier Systems and Integration manages the program. Lightening weight carried is to the dismounted FO. The conformal battery continuously powers the smart phone and all the peripherals for up to 24 hours between recharges.

Nett Warrior is another program on the EUD. It's the Army's first Soldier-worn network capability. Nett Warrior uses COTS smart phone technology. Project Manager Soldier Warrior manages the program. Nett Warrior puts individual Soldiers in the network, and provides horizontal and vertical situational awareness to friendly forces. Using Internet Protocol-based radios, Nett Warrior gives dismounted Soldiers a more complete digital view of the battlefield.

The current PFW configuration accommodates various targeting devices using an integral Digital Magnetic Compass:

- Vector Mark VIIE
- Lightweight Laser Designator Rangefinder-LLDR
- Target Reconnaissance Infrared Geolocating Rangefinder-TRIGR

However, devices using DMC provide unpredictable azimuth errors that rule out the use of precision munitions. By the fall of 2013, hand-held precision targeting devices improvements will achieve a better than 10-meter target location error to 2,500 meters and still remain integrated with the PFW ensemble. Product manager Soldier precision targeting devices manages HHPTD.

With these technological improvements, here's what today's dismounted PFW-wearing FO can do:

- Check a digital situational map on a wrist-mounted smart phone
- Carry the devices and power/distribution equipment necessary for precision engagements
- Scan horizons with a laser-range finder
- Locate a target and
- Get an azimuth and distance

DAGR transmits updates to the FO's current location. Software automatically transforms the direction and distance into a 10-digit grid coordinate, and populates a digital call-for-fire. The FO adjusts the target location based on PFI for 10 meter or better accuracy. The FO then fills in the remaining information and sends the mission to the company fire support officer. The FO does this via the connected IP capable radio using the Soldier Radio Waveform. Moments later, a single Excalibur hits the exact grid location. This maximizes surprise and destroys the target. The FO achieves mission success without using a paper map or bracketing techniques. He moves to the next target.

Since August 2012, TCM Fires cell successfully completed two precision Fires warrior user assessments at Fort Sill. It also completed a record test at Network Integration Evaluation 13.1 at Fort Bliss, Texas. TCM Fires Cell continually improves and assesses the future of the precision Fires warrior system by participating in the Army Expeditionary Warfighting Experiment (Spiral H) at Fort Benning, Ga., from December 2012 to March 2013. Precision Fires warrior expects to field conventional Army units by Fiscal Year 2015, according to Scott McClellan, Fires Support Sensor Branch Chief. PEO Soldier plays a crucial role in advancing technologies associated with power/distribution, HHPTD and NETT Warrior.★★

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Acronym List		
COTS	-	Commercial-Off-The-Shelf
DAGR	-	Defense Advanced Global Positioning System
DMC	-	Digital Magnetic Compass
EUD	-	End User Device
FO	-	Forward Observer
HHPTD	-	Hand-Held Precision Targeting Device
IP	-	Internet Protocol
LLDR	-	Laser Designator Rangefinder
PEO	-	Program Executive Office
PFI	-	Precision Fires Imagery
PFW	-	Precision Fires Warrior
TCM	-	TRADOC Capabilities Manager
TRADOC	-	Training and Doctrine Command
TRIGR	-	Target Reconnaissance Infrared Geolocating Rangefinder

Ammunition Management in a Decisive Action Training Environment

By MAJ Andy Dugger, CPT J.J. Dwyer, CPT Norm Brem and 1LT Ryan Pretty

Ammunition management in a direct support Field Artillery battalion is not the sole responsibility of the battalion fire direction officer or the battalion S4. Ammunition management is the responsibility of leaders at every level to ensure they plan, distribute, track, manage and conduct resupply to sustain Fires throughout an operation. One of the most significant challenges faced by the 1st Battalion, 7th Field Artillery during its decisive action training environment at the National Training Center, Fort Irwin, Calif., rotation was ammunition management. We entered the rotation with procedures to request, track and distribute 155 mm ammunition developed during home station training. The DATE quickly exposed the gaps in our system, forcing us to rapidly adjust our procedures to track ammunition and plan for ammunition resupply.

Ammunition Tracking. Given an accelerated training timeline and gunnery cycle, we assumed risk in training ammunition management as we prepared for our NTC rotation. During home station training our ammunition management and tracking system basically accounted for lot management. The planning and command post exercise during the leader development program at NTC helped us to better refine our immature system as we approached our DATE rotation. Our entry argument for tracking ammunition at the beginning of the force-on-force phase of the rotation was for the firing platoon fire direction centers to report their ammunition status to the battalion FDC using an analogue ammunition tracking system. It seemed very simple in theory; however, it proved extremely challenging in practice given our struggles to communicate reports effectively and reconcile our ammunition tracking mechanism.

Tactical communications were a significant challenge for the battalion during the DATE rotation. We discovered that when we would receive the ammunition report it rarely came over a consistent means. Given the challenges of maintaining FM communications over extended distances, we did not have an adequate communications plan, i.e., primary, alternate, contingency and emergency in place. Our physical separation forced FDC to forward their initial ammunition reports over a combination of FM nets, Blue Force Tracker or using an Advanced Field Artillery Tactical Data System plain text message. Using tactical nets we quickly realized that reporting ammunition to standard, i.e., every fuze, projectile and propellant by type, was cumbersome and that our initial system was not designed for a high level of fidelity. Ammunition status reporting also conflicted and was often superseded by reports of higher priority, i.e. movement, situation reports, and contact, etc. as reporting became stove piped onto one or two of the battalion's nets. We would request an ammunition status or reach trigger that required a report and simultaneous events would take priority or delay sending and/or receiving the ammunition report inhibiting our ability to maintain an accurate running ammunition count. Platoon FDCs were also inconsistent in reporting on hand ammunition.

Some platoons accounted for what was inside the M109A6 Paladin turret only, while others tracked M109A6, M992A2 and the flat racks positioned forward with the platoons. Finally, having never trained to battle track ammunition at home station, the battalion FDC did not effectively track expenditures from the latest report resulting in large information gaps for logistical tracking, reporting and requesting resupply.

At mid-rotation it became clear that the battalion could not

Figure 1. An example of the Battalion Fire Direction Center's Mission Log. (Information provided by By MAJ Andy Dugger, CPT J.J. Dwyer, CPT Norm Brem and 1LT Ryan Pretty)

Fire Direction
BN FDC Mission Log/Ammunition Tracker

TGT#	TGT Location	TGT Description	Fire Order	Rounds Fired	BDA	HE	HE RAP	DPICM	BBDPICM	WP	SMK	ILLUM	EXCAL	RAAMS

rely on the platoons to maintain accurate accountability of on hand ammunition. We developed a hybrid mission log/ammunition tracker that would allow the battalion FDC to maintain a running count of ammunition on hand by type. Our adjustment allowed the battalion FDC to deduct quantities after recording standard mission data (target number, unit to fire, fire order). By no means a perfect system; we continued to experience challenges with tracking ammunition, but they were less severe. We learned we needed to assign responsibility for maintaining the analogue ammunition tracker to a member of the FDC. Because it was developed during the rotation, the mission log was never consistently handled by one person; sometimes the FDO took responsibility and at other times the fire direction noncommissioned officers as the radio telephone operator was not trained to maintain it. Beyond simple maintenance of the document we struggled to consistently and effectively hand off or brief the status of ammunition during shift change over of the FDC. This included passing control of fire direction from our main command post to our mobile command post as we repositioned forward to support the brigade's operations. Finally, we identified training shortfalls in our platoon FDCs as platoon FDOs, facing a volume of fire that home station training had not replicated, did not always make up volleys of fire orders when they were down a howitzer. When the battalion FDC attempted to reconcile its count, they often discovered discrepancies.

Following the rotation we adjusted our tactical standard operating procedures with the proven analogue system (Figure 1). This is the first step. The next is placing more training emphasis on using our digital system to track ammunition. As easy as this may sound, the challenge will be training ammunition tracking from individual gun sections (M109A6 and M992A2) to platoon FDC to the battalion FDC. And, this will only address the ammunition in the digital system. We must still account for the ammunition pre-positioned on flat racks in the battery or battalion trains.

Ammunition Resupply. Our inability to track ammunition challenged our capability to conduct ammunition resupply. However, more significant to our ability to conduct ammunition resupply was our failure to develop effective resupply triggers to provide the best possible responsiveness to mission requirements. Entering the rotation, we based the decision to trigger ammunition resupply on the percentage of ammunition remaining with an element compared to its unit basic load. We quickly discovered that this process was too reactive, resulting in emergency resupply and ammunition being handled multiple times at multiple levels. To improve our ability to plan more effective triggers, we needed a better understanding of the ammunition required versus what we could carry and the overall ammunition distribution and resupply system.

To gain a better appreciation and to forecast ammunition requirements, we learned to analyze the brigade commander's intent for Fires and the guidance provided by the fire support coordinator, while keeping in mind the constraints of the logistical system. We soon realized that this process required more than the FDO and S4 huddling during our planning process. It is essential that the direct support battalion staff – FDO, S2, S3 and S4 – understand the commander's intent to calculate the required ammunition quantities (shell, fuze, and propellant combinations) to achieve each Field Artillery task. The FDO must understand the volume of fire dictated by the Joint Weaponeering System to achieve the desired effect. No longer is a battalion, three rounds, dual purpose improved conventional munitions the standard. Entering the rotation, we were not accustomed to this volume of fire adding more friction to our ammunition resupply plan. The S2 must understand the threat to include the role of the battalion in the

Figure 2. An example of a preconfigured rack option provided by the 1st Battalion, 7th Field Artillery TACSOP. (Information provided by MAJ Andy Dugger, CPT J.J. Dwyer, CPT Norm Brem and 1LT Ryan Pretty)

Fire Direction Preconfigured Rack Options

Load Type	MTC1	MTC2	Defense 1	Defense 2	Offense 1	Offense 2
HE	0	0	0	32	88	56
HE RAP	48	0	0	24	88	48
DPICM	0	128	128	0	0	0
WP	0	0	0	0	0	0
SMK	0	0	0	0	0	0
ILLUM	0	0	0	0	0	0
EXCAL	0	0	0	0	0	0
RAAMS	0	48	0	120	0	72

counter-battery fight. Given the threat, planned targets, increased volume of fire and counter-battery responsibilities the S2, S3, and FDO can develop the battalion's consumption rate. The staff must also factor in any ammunition restrictions, the rules of engagement and fire support coordination measures when forecasting ammunition. We were challenged during our transition from the offense to the defense when the commander restricted the use of DPICM. At this point in the fight, DPICM made up a majority of our on hand ammunition. We stressed our distribution and hauling capabilities to resupply the gun line with traditional high explosive munitions, leading to our final lesson learned when planning ammunition resupply.

The S3, S4 and forward support company commander must understand the logistical resupply system and its capabilities. Given the logistical constraints and operational challenges in the DATE, the timeline from battalion submitting its DA Form 581, Request for Issue and Turn-in of Ammunition, to receipt of a combat configured load on the gun line was 72 to 96 hours. We developed this planning factor based on the time it took the brigade support battalion support operations ammunition section to process the DA Form 581, forward the request to the combat sustainment support battalion, pick-up the ammunition from the CSSB ammunition supply point, and transport the ammunition to the BSB ammunition transfer and holding point in the brigade support area. Our battalion ammunition section in the ATHP received the ammunition and combat configured complete rounds for pick-up from the BSA by our distribution platoon. Because of the time this process took, we learned to build flexibility in our resupply in the design and placement of combat configured flat rack loads. We developed a menu of combat configured loads to ease planning, provide flexibility, and anticipate requirements based on the mission type. We then positioned our combat configured flat racks in echelon in the battery trains, battalion combat trains, and BSA. Our limitation was that we could only man six of our 12 authorized Palletized Load Systems so our planning factor was 12 flat racks with six PLS and six PLS trailers. We placed two configured flat racks with each battery (one PLS with trailer), four configured flat racks in the battalion combat trains (two PLS with trailers), and four un-configured flat racks in the BSA (two PLS with trailers) with the crews set to configure based on need. This organization provided us with the capability to conduct immediate resupply from the combat trains while anticipating future requirements in directing flat rack builds in the BSA.

By the end of the eight-day force-on-force portion of the DATE rotation, our ability to manage ammunition improved. However, our process to track ammunition relied upon an analogue system and our means of planning ammunition remained, for the most post, reactive. As we continue to train, we will place a great emphasis on our digital systems to track ammunition using our tested analogue system as a secondary check. We will also continue to prepare our staff to plan and synchronize the resupply of ammunition from the BSA to the battalion trains to the gun line to ensure that we have the ammunition on hand to meet the brigade commander's intent for Fires.★★

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Captain Justin Dwyer was the forward support company commander in support of a 1st Battalion, 7th Field Artillery (155 mm Paladins), 2nd Armored Brigade Combat Team, Fort Riley. He had not previously worked with Field Artillery prior to taking command of Golf Company in February 2012. As a logistician, he had a diverse background serving as a movement control officer, platoon leader, executive officer, logistics advisor of a military transition team, and an assistant operations officer.

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First Lieutenant Ryan Pretty is the battalion logistics officer for 1st Battalion, 7th Field Artillery Regiment, 2nd Armored Brigade Combat Team, 1st Infantry Division at Fort Riley, Kan., where he also served as the battalion's human resources officer. Previously, Pretty served in 1-18 IN as a company fire support officer where he worked to integrate Field Artillery into joint Fires and effects with the 10th ASOS of Fort Riley. He deployed once to Iraq, in support of Operation New Dawn as a company fire support officer where he facilitated joint and multi-national Army and Air Force relationships with the Iraqi army and Special Forces.

Acronym List

ATHP	-	Ammunition Transfer and Holding Point
BSA	-	Brigade Support Area
BSB	-	Brigade Support Battalion
CSSB	-	Combat Sustainment Support Battalion
DATE	-	Decisive Action Training Environment
DPICM	-	Dual Purpose Improved Conventional Munition
FDC	-	Fire Direction Center
FDO	-	Fire Direction Officer
NTC	-	National Training Center
PLS	-	Palletized Loads Center

Survivability of Firefinder Radars During Unified Land Operations

By CW3 Chad A. Cavender and SSG Donald Cullen

At the Joint Multinational Readiness Center in Hohenfels, Germany, we recently concluded our second Decisive Action Training Environment rotation. The Field Artillery community is making progress on how we employ our Firefinder radar assets. The continued sharing of lessons learned and successful tactics, techniques and procedures helped the last unit improve the way it employs its radars. However, we still have a way to go. The major areas we are still struggling with are: location of the counterfire cell who positions the radars, counterfire quick fire nets, local security of the radars, radar position areas and radar site selection, sustainment of the radar, assessing and mitigating threats to Firefinder radars in the DATE, and target acquisition platoon leader duties and responsibilities. Many of these trends can be countered through home-station training which will help mitigate the risks of losing key components of the brigade combat teams fire support system.

Where Will the Counterfire Cell Reside? During the last DATE rotation, the BCT Fires coordinator pushed his CF cell to the BCT command post and was collocated with the BCT fire support cell. This is the best place for the CF cell because it gives them full access to all the enablers that facilitate the CF fight. The CF cell was able to establish relationships with the brigade aviation element and the Air Force liaison officer which gave them a better understanding of airspace control that is necessary to execute the counterfire fight. This also allows the counterfire officer to manage and disseminate zone data in support of the maneuver units as the situation unfolds. This greatly enhanced zone management across the BCT.

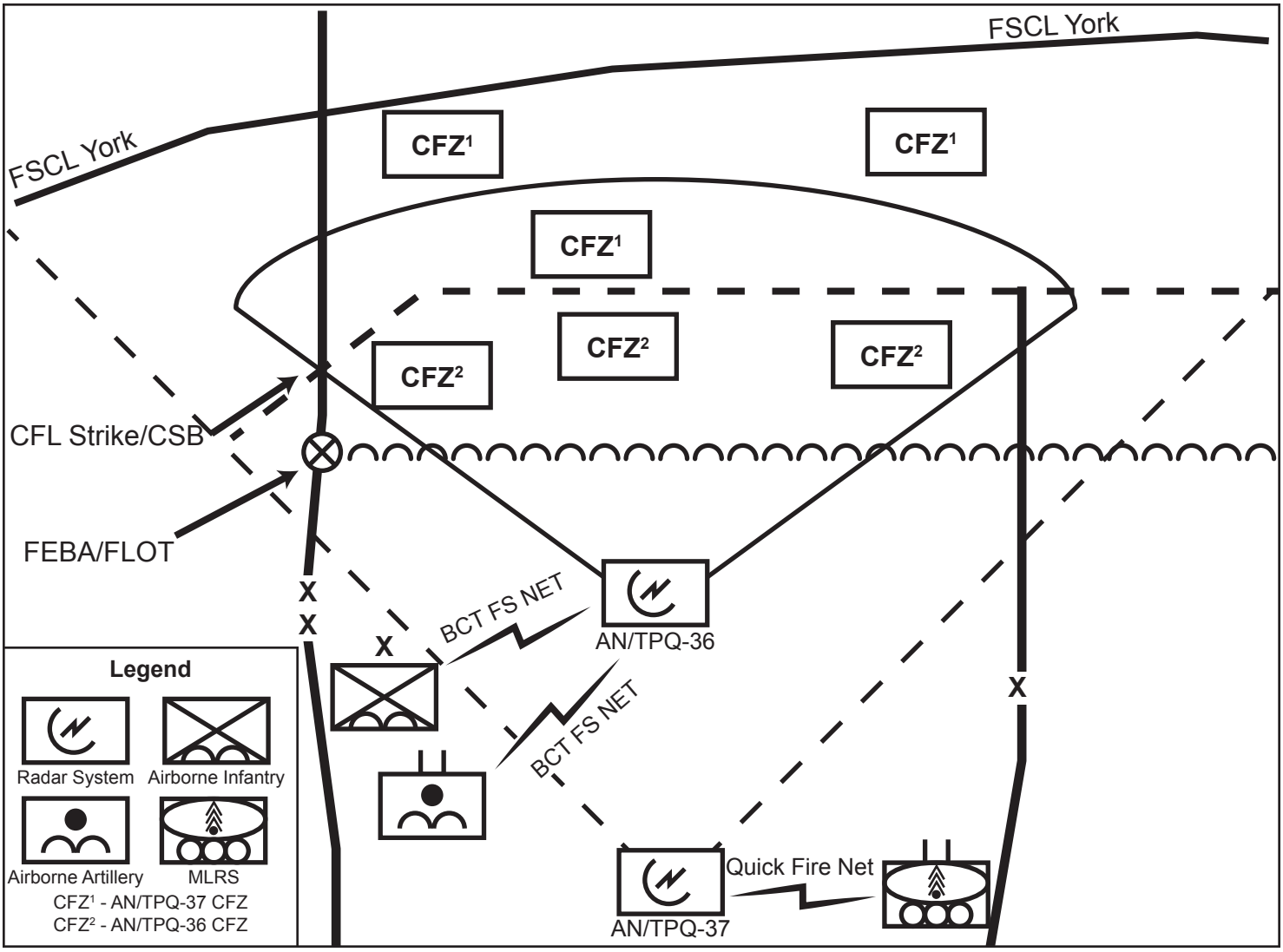
If BCTs integrate their CF cell into staff training, BCT command post exercises and other BCT collective training exercises, then this will establish their base line battle drills, allow them to gain a better understanding of how the staff works, and more importantly, establish the necessary relationships within the BCT staff to facilitate the counterfire fight.

Who Positions the Radar? During the last DATE rotation, the CFO in coordination with the TA PL positioned the radars, which worked well for the BCT. Because the CF Cell operated at the BCT fire support element, it was integrated into the BCT military decision making process, which facilitated the synchronization of the counterfire plan with the BCT commander's scheme of maneuver. However, when the CF Cell moves into the BCT CP they must ensure they stay abreast of the MDMP planning time line. The CFO did not participate in the wargame, which resulted in radar movement not being synchronized with the maneuver plan. The bottom line is target acquisition assets are positioned during the BCT course of action development and refined during the wargame. It is essential that the BCT targeting officer or the CFO be incorporated into the BCT planning effort to ensure that TA assets are integrated and synchronized with the maneuver plan.

Positioning authority should be codified in the battalion and brigade planning standard operating procedures. This should be practiced and rehearsed during home station training.

Counterfire Quick Fire Nets. As the rotational training unit progressed through their operation and began to move into the defense, they decided to use a quick fire net. They established a quick fire net with B Battery on the battery fire direction net. During this time

An example of appropriate use of the Quick Fire Net and supporting Fire Support Coordination Measures. (Information provided by By CW3 Chad A. Cavender and SSG Donald Cullen)



period they began to maneuver the radars independently. As the battery and radar began to conduct survivability moves, they became separated and lost communications with one another because the fire direction net was not a retransmitted net. Planning considerations that must be addressed to make a quick fire net effective are: ground clearance, airspace control, fire support coordination measures, appropriate triggers, radio net structure and timing of radar movement.

Units that want to explore this technique should do so during home station collective training. This will allow them to work out the bugs and mitigate many unforeseen holes in this TTP. Units will likely use this TTP often in the DATE environment. See the figure on page 46 for a graphical depiction of quick fire net and supporting fire support coordination measures.

Radar Position Areas and Radar Site Selection. Early in the rotation the CFO sent radar deployment orders with 10-digit grids, the search azimuth and applicable zone data. This did not allow the radar section chief much flexibility to select an appropriate site which ensured the radar had enough track volume to acquire enemy indirect fire. Once they realized the radar should maneuver independently, they began to assign position areas. Their ability to conduct solid reconnaissance of future sites was limited by their lack of local security. This kept them from being able to conduct manual terrain followings to ensure their site would have enough track volume before they occupied it with the radar. In many cases they had to occupy by force only to learn that a site was unsuitable due to lack of track volume. Consequently, radars were out of action much longer than necessary, because they had to select new positions.

During home station collective training, the TA PL should assign their section's position areas to occupy. This accomplishes two things: (1) it gives the section some flexibility in selecting their site, and (2) it allows the section to get a better understanding on how to select a site and the considerations that are involved.

Who Will Sustain the Radars? As the RTU expanded out of the intermediate staging base, they struggled with how to move their emergency repair parts list from the ISB into the BCT AO. They did not incorporate this logistic consideration into the planning process and only brought a small portion of the ERPSL with them. This did not cause a significant issue during the rotation because only the radars were almost always catastrophically destroyed when they were damaged.

The resupply plan for the radars was to have them move to a centrally located resupply point as they conducted survivability moves. This caused the radars to be out of operation for a couple hours at a time. Resupply of the radars should be a push package based on the radars consumption rates. This can be accomplished if the TA PL headquarters stays intact. This allows a dedicated element to ensure the radars have fuel, food and water as they maneuver to support the BCT commander's intent. During this rotation the TA PL was acting as the CFO when their TAC deployed. This was significant because the TAC controlled the fight about 75 percent of the time. This did not allow the TA PL to work the refuel issues, ERPSL delivery, or any site issues that his radars were having. Nor did it allow the TA PL to move about and check up on the radar sites to enforce site set up standards, or ensure proper emplacement of the radar sections.

Both of these issues need to be worked out during home station collective training. A baseline battalion standard operating procedure should be established prior to conducting major training events. The TA PL should be the voice ensuring radar sections are maintained and resupplied.

Assessing and Mitigating Threats to Firefinder Radars in the DATE. The principle threats that confront radar sections in the DATE are enemy forward observers, indirect fire, reconnaissance force in the rear area and insurgent forces. During the last rotation these threats challenged the rotational unit considerably. During the first four days of the rotation the RTU lost radar every 24 hours due to enemy IDF through direct observation. The unit learned from this and made some progress by increasing the survivability move criteria for their radars. During the last few days of the rotation they did not take into account the enemy still had reconnaissance forces operating in the BCT's rear area. This oversight had a significant impact on the regiment's operations due to the Q36 section being overrun by a recon element leading to a compromise of the BCT's communication network.

TA PL, radar section chiefs and CFOs should read through FM 3-09.12, *Tactics, Techniques, and Procedures for Field Artillery Target Acquisition*, chapters 4 and 5, when considering radar position areas. Applying the consideration given in FM 3-09.12 will help in deciding where they locate their radars, security posture of their radars and movement criteria.

Options Employed by Units to Keep Their Radars Alive. During a previous DATE rotation, the RTU made good use of available cover and concealment by occupying wood lines and using their camouflage nets appropriately. However, during this last DATE rotation, the unit did not bring nets and tended to occupy their radars in open fields along known enemy movement routes. This greatly increased their likelihood of detection by enemy forces and led to their radars being destroyed by enemy artillery Fires. In one incident a radar section was overrun by dismounted forces because they occupied the same position twice. This caused disruption across the BCT because the enemy captured a radio and SKL and actively monitored the BCT command net.

During the two DATE rotations, we have used various techniques to provide local security to our radars. Over the next few paragraphs I will discuss the various techniques we have observed:

- The RTU co-located their Firefinder radars with a firing battery. This technique absolutely provides the radar sections with local security; however, it puts two enemy high-pay targets together. Typically, a firing battery is prone to occupy a position that would be suitable for radar, since site considerations are similar. Throughout the last, rotation this technique led to the loss of radars due to acquisition of friendly artillery by enemy Firefinder radars.
- The RTU co-located the radars with a CP. This technique provides local security to the radar sections as well. However, site considerations are very different for a CP than for radar. During the first DATE rotation this caused significant challenges for the radar to gain enough track vol-

ume to be able to acquire enemy IDF. Furthermore, movement times of a battalion CP had a tendency to keep the radar out of the fight for several hours at a time.

Maneuver Radars Independently. During the second DATE rotation, the TA PL learned from earlier failures to keep the radars alive, and during the defense, had the radars maneuver on their own. This greatly enhanced the survivability against enemy observation and IDF. Consequently, they lost only one radar to IDF and none during the decisive battle. Since success breeds confidence, they continued to use this technique. Unfortunately, their TTP lacked local security which resulted in the loss of the Q36 and the subsequent communications security loss discussed earlier.

Use a Maneuver Force to Provide Local Security to Firefinder Radars. This brings me to suggest that if we give the radars local security through a military police section or mounted infantry squad and provide the radars with radar position area, it will provide them with the highest chance of survivability in the DATE environment. This technique must also be combined with sound movement criteria and cueing schedules commensurate with the threat the unit is facing.

Units should consider keeping a maneuver force with the radar during home station training. This will build necessary relationships and help the radar sections and maneuver elements develop internal TTP's on radar site security, radar occupation and radar displacement, as well as reconnaissance and surveillance of radar position areas. Radar sections need to understand that survivability moves under enemy pressure is their call. They need to develop this battle drill and the required reports during home station training and codify these reports and procedures in their SOPs.

TA PL Duties and Responsibilities. The TA PL position is a new position for the 131A field. Doctrine has not fully described what this roll entails, nor does it discuss how the TA PL integrates and supports the operations process. The TA PL during this rotation integrated himself into the BCT TAC as the CFO forward so to speak. He did pretty well in this roll but there were some responsibilities that did not get accomplished because his focus was elsewhere. The radar sections did not have additional security. They struggled to stay in operations because they had to move to a centrally located point in order to refuel and resupply themselves. The TA PL headquarters element was performing other duties. The TA platoon sergeant was with the Q37 section for the entire rotation due to short manning. This effectively left no one to work the resupply issues the TA PL was having during the rotation.

Based on these issues, here are the recommended base line duties and responsibilities for the TA PL:

- Responsible for the training and certification of the TA PL
- Ensures the target acquisition platoon is deployed and functioning in accordance with the FASP
- Ensures the platoon elements receive proper administrative, logistic, and maintenance support
- Coordinates higher-level maintenance support to facilitate mission requirements
- Monitors the deployment of the radar sections, survey teams and metrological section and recommends general position areas, search areas, and cueing guidance to the S2/S3
- Facilitates maintenance support for TA radars, meteorological section and survey equipment
- Monitors the operations, status, and current and proposed locations of FA radars in zone
- Performs other duties as directed by the commander
- Manages implementation of radar zones in TA assets as directed by RDO published by counterfire operations cell
- Monitors the terrain management plan for the positions of each section
- Maintains crosstalk between the section and the battalion
- Establishes a position to best manage assets within the area of operations
- Performs necessary tactical coordination for weapons locating radars (WLRs) in the area of operations
- Coordinates communications, security, Air Defense Artillery, positioning (engineers and land clearance), logistics, and administration for assigned radars, survey teams and metrological section as required
- Inspects maintenance conducted by the platoon
- Monitors staff channels for related activities between the counterfire operations cell and TA personnel

Additional Home Station Training Focus. Site selection for primary and alternate sites: During the last rotation, proper radar site selections were not being conducted. There were times the radars had limited to no-track volume which greatly decreased probability of detection of enemy artillery systems. This caused the radars to miss many enemy IDF events and exposed the BCT to additional enemy IDF, while allowing the enemy to further its goals as they prepared for the next battle.

During home station training, the TA PL and TA PSG should enforce site recon within a radar position area. Each site recon should include a security sweep and a manual terrain following to determine if the site has enough track volume to allow the radar to effectively observe the assigned azimuth of search and any designated priority zones.

Radar Operations. During the rotation, the sections were taking too much time to call up counterfire targets to the fire direction center. It is important for the sections to understand they are the first to know from where the enemy is shooting, so it is important that sections call the targets in the most efficient and expeditious manner possible. You can do this by creating your own drop cards along with a simulated alarm indicating the radar has tracked a round and pass the card to the operator. Running through drills like this will decrease the time it takes to call up a fire mission.

Emplacement and Site Improvement. During the rotation, the sections were not focusing on the proper emplacement of the system. The sections had their equipment next to each other not utilizing the full length of the cables to maximize displacement. During multiple attacks by opposing forces the sections were losing multiple pieces of equipment and took more casualties because the equipment and personnel were too close together. The radar sections were in the open with no cover or concealment and this resulted in OPFOR taking their positions by either direct or indirect fire. Furthermore, the radar sections were not properly utilizing cover and concealment which led to

direct observation and calls for fire on their positions.

Running through what each Soldier's job is while you are emplacing and march-ordering is an effective way to train to standard and meet time. If the section's focus is more on what to do while emplacing the system, they will find that the time will be met and the equipment will be emplaced in the proper set up "V" configuration. Using the wood line to put your shelter and generator, or to utilize camouflage netting, is the most ideal way of setting up your radar and decreasing your visibility to the enemy. Using all these techniques will enhance the survivability of the radar section by increasing dispersion of the system and decreasing visibility by the enemy.

Battle Tracking. There were multiple times during the rotation that the radar section had no visibility on enemy activity in their position areas. The section was constantly moving in and around enemy territory without knowing the enemy was there. The radios were on but not being monitored, resulting in the section missing needed information that could have prevented them from being engaged on several occasions. Not only should the section listen more to what is being put out over the radio, but they should be asking questions as well. Before movement to a new location the section chief should get on the radio and ask for an intelligence report that covers the area in which he plans to move. The sections should be marking everything they see and hear on their map to see if there is a pattern of enemy movement in the area. This will allow the section chief to take the appropriate security measures to ensure the section can continue to effectively track enemy artillery systems in support of the counterfire fight.

During home station training intelligence updates should be passed with each RDO. When the radar section conducts a survivability move part of their battle drill for displacement should be a request for enemy update by the section chief. This will allow the section chief to update his movement brief prior to moving to his new location.

Leadership Responsibilities. It is the responsibility of the TA PSG and the TA PL to check on the sections while they are training for the fight. This is the time when the platoon sergeant and platoon leader should be making on-the-spot corrections to enforce the standards outlined in the appropriate field and technical manuals. The radar section chief should be incorporated into the planning events to ensure all technical considerations are accounted for, ensuring that all assigned position areas are suitable. The TA PL and TA PSG need to ensure they give the TA PL a good mission brief prior to LD. This will allow the section chiefs to prepare the sections for the mission and the threats they will be facing. This should be followed by pre-combat checks/pre-combat inspections to ensure each section understands the mission and has the necessary equipment to accomplish it. The PSG should be making constant checks on his Soldiers during battle field circulation to ensure the sections are meeting the standards to achieve mission accomplishment.

Survey and the Radars Piece of the Five Requirements. The TA PL did a decent job of coordinating to get the survey section out to all the battalions to get the BCT on common survey. However, he left the radars out of his survey plan. The radars are the most likely observers to acquire enemy indirect fire assets. Since part of the five requirements of accurate predictive fire is accurate observer location, this should have been one of the key considerations when employing survey.

During home station training, the TA PL should ensure radar sections are requesting and receiving survey. The benefits to this are accurate first round fire for effects and greater effects on enemy artillery. It will also get the unit used to thinking about survey for the radars as they prepare for DATE.

In summary, we are making progress towards regaining our competency in counterfire operations. We as Field Artillery men and women must continue to publish lessons learned with each DATE rotation in order to cross pollinate successful and unsuccessful TTP's that we employ during our Combined Training Center rotations.★★

Chief Warrant Officer Three Chad A. Cavender's first assignment was to 2nd Battalion, 319th Airborne Field Artillery Regiment, Fort Bragg N.C., where he served as a radar section leader and battalion targeting officer during Operation Iraqi Freedom from Jan. 07- Feb. 08. He later moved to Headquarters and Headquarters Company, 2 Brigade Combat Team, 82nd Airborne Division, where he served as the brigade targeting officer for 18 months. He is now stationed at the Joint Multinational Readiness Center, Hohenfels, Germany, as a radar/battalion targeting observer/controller-trainer.

Staff Sergeant Donald R. Cullen's first assignment was with A Battery, 1st battalion, 377th Field Artillery in Fort Bragg, N.C,. serving as a gun truck gunner for convoy logistic patrols in Iraq, from Nov. 05 – Nov. 06. Following deployment he was moved to 234th Field Artillery Detachment which later became D Battery, 26th Target Acquisition Battery. With this battery, he has two 12-month combat deployments to Afghanistan, where he served as a radar section chief for the first deployment and as a radar section leader for the second deployment. He is currently stationed at the Joint Multinational Readiness Center, Hohenfels, Germany, as a radar observer/controller-trainer.

Acronym List		
ALO	-	Air Force Liaison Officer
AO	-	Area of Operations
BAE	-	Brigade Aviation Element
BCT	-	Brigade Combat Team
CF Cell	-	Counterfire Cell
CFO	-	Counterfire Officer
CP	-	Command Post
DATE	-	Decisive Action Training Environment
ERPSL	-	Emergency Repair Parts List
FSC	-	Fires Support Cell
FSCM	-	Fire Support Coordination Measures
FSCOORD	-	Fires Coordinator
IDF	-	Indirect Fire
ISB	-	Intermediate Staging Base
MDMP	-	Military Decision Making Process
OPFOR	-	Opposing Forces
PL	-	Platoon Leader
PSG	-	Platoon Sergeant
RTU	-	Rotational Training Unit
SOP	-	Standard Operating Procedures
TA	-	Target Acquisition
TAC	-	Tactical
TTP	-	Tactics, Techniques and Procedures

Is HIMARS a new Direct Support Weapon?

By MAJ Pablo F. Diaz

The 5th Battalion, 3rd Field Artillery Regiment returned to Joint Base Lewis-McChord, Wash., from a 12-month deployment in Afghanistan, in October 2010. The unit just finished a difficult deployment, conducting an in-lieu-of route clearance mission, and subsequently received orders to provide High Mobility Artillery Rocket System Fires for Operation Enduring Freedom. The mission called for HIMARS to support a given unit in a direct support capacity. The problem set presented was to take a unit whose role traditionally centered on providing general support, directed by a force Field Artillery headquarters, and train it to provide Fires in a direct support role. Based on current weapon systems capabilities, a HIMARS/Multiple Launch Rocket System battalion can provide any of the roles/missions of the Field Artillery (direct support, reinforcing, general support, and general support reinforcing). However, the traditional employment has never really centered on the DS role. As the capabilities of HIMARS expanded through the development of the MLRS family of munitions with unitary precision guided munitions, so did its ability to fill the role of providing direct support to a joint task force.

The battalion's answer was to adopt a non-traditional training model with specific emerging tactics, techniques and procedures for a HIMARS/MLRS battalion in a non-linear battlefield. The training model emphasized HIMARS in a direct support capacity, providing Fires in support of a JTF, through decentralized and distributed operations. The plan was based on existing models used by several HIMARS units previously deployed to OEF. These training opportunities evolved into a training plan that emphasizes joint training and integration with the Air Force and provides artillery support to Stryker brigade combat teams at the National Training Center, Fort Irwin, Calif. This training concluded with one final field training exercise before deployment, focused on the batteries' independence from the battalion's command and control structure in a DS role. The battalion finished deployment preparation for the battery with a mission readiness exercise. After the final exercise, the battalion was able to capture invaluable lessons learned using the DS support distributed operations model. With minor modifications to training, manning and equipping, 5-3 FA prepared B Battery for its deployment to OEF.

HIMARS Training and Integration into the SBCT. The first major training event for the battalion occurred during 3rd Battalion, 2nd SBCT's train up for their NTC Rotation 11-09. A decision had to be made on how to employ a HIMARS battery, in support of SBCT operations. After considering traditional roles under doctrinal definitions, 3-2 decided to attach B Battery to its DS cannon battalion. The battalion furnished a liaison team and the team was placed in the brigade Fires and effects coordination cell and coordinated Fires with the DS battalion fire direction cell during the fire control exercise. Logistical and maintenance support was furnished by the organic FA battalion, 1st Battalion, 37th FA. The FCX ended with B Battery interlinked with the brigade, ready to provide HIMARS artillery support for the NTC rotation. The rotation put B Battery through live-fire lanes and a seven-day counterinsurgency intensive exercise. During the live-fire, the battery commander, with the assistance of the controllers, was able to modify lane training to be suitable for HIMARS live-fire. Unfortunately, because Guided Multiple Launch Rocket System rounds are still not available in training accounts, 5-3 FA was unable to provide 3-2 SBCT a GMLRS live-fire accurately replicating HIMARS support they could expect while deployed.

The second portion of the rotation centered on the battery working distributed operations in a nonlinear battlefield. This was the first time the battalion had an opportunity to provide HIMARS in support of a task force sized element in two distinct areas of operations. B Battery placed a platoon consisting of four M142 HIMARS launchers at two different forward operating bases (FOBs). The battery operation center was co-located with the brigade headquarters and the DS battalion on a separate FOB. Fire missions originated at the brigade FECC, were sent via the Advanced Filed Artillery Tactical Data System to the organic DS battalion fire direction center, then to the BOC, and finally to the platoon operations center. Observations from controllers and from within the battalion determined that the fire mission flow was unresponsive to the commander's needs. The additional step of sending digital call-for-fire through the DS battalion FDC from the brigade headquarters added an additional step, adding several minutes to the CFF. B Battery's attachment to 3-2 SBCT, and the lessons learned from their NTC rotation, encouraged 17th Fires Brigade planners to request another HIMARS rotation in support of another SBCT rotation to NTC. C Battery was selected to support 4th Battalion 2nd SBCT's summer 2012 rotation. From the onset, the C Battery commander integrated into 2nd Battalion 12th FA's mission planning for two, 30-day rotations to Yakima Training Center, Wash., followed by a scheduled August 2012, rotation to NTC. During both YTC rotations, C Battery was directly attached to 2-12 FA for operational implementation and logistical oversight. Training with the brigade was subsequently cut short after the battery received orders to deploy to Kuwait in the summer of 2012.

B and C Batteries attachment to the SBCTs allowed for some needed adjustments to the established training plans. Both units refined their ability to plug into a brigade-size element and provide HIMARS support. Additionally, the batteries operated decentralized away from battalion oversight. The gradual application of distributed operations allowed the battalion to gain insight on how to apply lessons learned to future operations. It also allowed for the battalion to develop TTPs and determine the correct level of integration and attachment for task force/brigade level operations.

HIMARS Joint Air Integration. Throughout the year, 5-3 FA trained in its core competencies and pursued additional events to maximize deployment training gates. Previously established relationships with Air Force planners allowed for HIMARS to integrate their training into Air Force events. Two events were identified and 5-3 FA was able to integrate HIMARS in a DS role using joint terminal attack controllers, controlling multiple service air platforms. The firing platoons were integrated into a JTAC's arsenal of weapons at his disposal and executed targets based on his control. The JTACs deconflicted air space by establishing a target restricted operating zone, a HIMARS firing point ROZ, and the air corridor for the Army Tactical Missile System or GMLRS. The battalion established a liaison team to work closely with the JTACs to provide employment advice to Air Force elements. This role expanded when the United States Air Force Weapon School, at Nellis Air Force Base, Nev., agreed to integrate HIMARS into their bi-annual capstone training event: Mission Execution. ME is designed to train midgrade U.S. Air Force officers (mostly captains) to employ all fire support assets, in support of joint operations. The battalion's training objectives were based on three points. The first objective was to integrate surface Fires digitally

Left: A High Mobility Artillery Rocket System launcher belonging to the Wisconsin U.S. Army National Guard's B Battery, 1st Battalion, 121st Field Artillery, conducts a fire mission at a military base in Afghanistan. (Photo by SGT Sean Huolihan, U.S. Army National Guard)

within USAF infrastructure and provide near-real time airspace de-confliction.

Second, to develop and provide C2 architecture and TTP's for future employment of HIMARS. Lastly, to develop partnerships between USAFWS and the Army HIMARS force for future exercises. The first two ME iterations were used to test and refine HIMARS in a DS role under decentralized execution. As the relationship developed, the next step was to integrate an artillery raid using air platforms known as a HIMARS 'hot panel' mission. ME and HIMARS executed a HIMARS hot panel raid during the offensive counter-air iteration. During OCA, HIMARS landed on an airstrip, moved to a firing point, and executed several 'suppression of enemy Air Defense missions' by destructive and/or disruptive means. Future integration into ME will continue to build upon HIMARS emphasizing decentralized operations in a DS role in support of Air Force requirements.

MRX: DS Role, Decentralized Command, 3 x 2 Distributed Operations. As the battalion progressed in its plan for execution of a MRX, they used lessons learned from previous culminating training events for HIMARS batteries from 3rd Battalion, 27th FA and the 5th Battalion, 11th Marine Corps. The MRX was not only an event to prepare the unit for deployment, but it was also a culmination of what we learned through all of the exercises leading up to a final validation of employing HIMARS in a DS role, providing Fires for a JTF, through decentralized distributed operations. The battalion had existing models, considered 18th FiB's previous deployment validation exercises, and used LTC Joseph J. Russo's article, from the March-April 2010, *Fires Bulletin*, entitled, "3x2 Distributed Rocket Artillery Operations," to set the foundation and begin the framework of B Battery's MRX. Based on these exercises, B Battery was task-organized into three platoons of two HIMARS (3x2). Each platoon had its organic infrastructure, distributed across three platoon locations with attachments. The battalion selected three locations, across two states, ranging over 280 miles. The purpose for the wide distribution of locations was to better simulate a potential distribution of assets while deployed. The three locations were McChord Air Field, YTC, and Umatilla Army Depot, Ore. Additionally, the MRX was planned in order to integrate aircraft for movement to platoon

Artillerymen, from A Battery, 1st Battalion, 158th Field Artillery, fired rockets from their High Mobility Artillery Rocket System during a training event at Oro Grande, N.M. Several of the Oklahoma U.S. Army National Guard Soldiers were certified on their weapon system during the event. (Photo by SFC David Parish, U.S. Army)

locations. A McChord Airfield specific mission oriented trainer's request, facilitated by the I Corps air mobility liaison officer, enabled the battalion to integrate six hot-panel artillery air raids using C17 aircraft. This scenario enhanced unit preparedness and trained the unit in a potential mission set that could arise during the deployment.

The MRX was designed for HIMARS to provide DS Fires to a joint task force and to harness independent distributed operations of HIMARS platoons throughout a nonlinear battlefield. Leaders from 18th Fires Brigade (Airborne) were invited as guest 'trainer-mentors' to help facilitate institutional knowledge of 3x2 distributed operations. The structure to the operations was the JTF headquarters at YTC. The JTF's areas of operations were McChord Field, Umatilla Army Depot, Moses Lake, Wash., and Pasco Air Field, Wash. Using satellite capabilities, the battalion was able to facilitate a long-range network that enabled secure internet protocol router connectivity. The MRX utilized two captains and one joint-network node linking SIPR laptops, SIPR voice-over internet protocol and AFATDS connected by SIPR linking operations center. Communication between locations was enhanced to mirror 'in theater' TTPs by using myInternet Relay Chat software, while digital fire missions were processed through AFATDS. The JTF headquarters served as a notional brigade-size task force, which was conducting counterinsurgency COIN operations in a fictional country. In the JTF HQs was a HIMARS liaison cell comprised of the battalion S3, battery executive officer, BOC chief and AFATDS operators. The HIMARS liaison officer cell served as the expert on HIMARS operations, executed fire missions under the direction of the task force commander and acted as the C2 element for platoon operations. Built into the training plan were long distance artillery raids via C17 over the course of three days. The MRX began at a crawl phase where platoons at distant locations executed fire missions in support of the JTF HQs. The MRX progressed into the walk-run phase during the raids. The JTF issued orders for each location to execute a long distance raid. This created a 'round robin' effect in which two launchers conducted a fire mission and moved to a different FOB, via ground upon raid completion. Once the mission was complete, another platoon loaded onto the C17 and departed to the next airfield. The long distance raids reinforced the decentralized execution emphasis, ensuring HIMARS launcher platoons are interchangeable with any POC within the 3x2 structure and can provide C2 in order to execute fire missions. A live-fire was written into the scenario in which 1st platoon launchers from McChord landed at Moses Lake, conducted a tactical movement to Yakima, fell under the C2 of 3rd Platoon's POC, uploaded reduced-range practice rocket and immediately moved to their firing point and executed a mission. This process

reoccurred five more times during the next two days, with the final platoon landing back at McChord Air Field and executing the final mission.

Lessons Learned. During the battalion's MRX, six C17 HIMARS long-distance artillery raids were conducted in support of operations. Before the operation, HIMARS crews were given their fire mission and firing point locations. Confusion arose when a launcher landed on the airfield and was unable to find its initial firing point. As a result, the next mission included a final validation of mission execution prior to take off. Without the crew having the ability to interact with its C2, crewmembers had to rely on whatever pre-coordinated measures were established to receive final validation. A solution to solve most of these issues is to assign a liaison with satellite communications capabilities to give final validation orders to the crew for execution. A solution to the long-distance communication issue is to field a more suitable long-range communications platform. For example, outfitting every HIMARS with an AN/PRC-117 would allow for seamless execution between launcher and controlling FDC. The Harris 117 would meet all operational requirements for HIMARS operating decentralized over long distances.

In addition to the final validation conflict, a known technical issue persisted; the HIMARS were unable to execute missions that were sent line-of-sight by the FDC. All missions were kept in the buffer, but dropped in mid C17 flight as the software recognized an error within the fire control panel due to current location and desired firing point location. HIMARS air raid missions require this capability and new software should allow the unit to execute these specific missions. The battalion went through several software upgrades, such as the 7.09 Lima Plus Software. This upgrade proved most important because it allowed the battalion to conduct an air movement via aircraft while the launcher maintained situational awareness of its location utilizing the Global Positioning System signals sent by the Air Force's Joint Precision Airdrop System.

With increased involvement with Air Force mobility and mission execution, a further enhancement of air operations would require additional support personnel to help coordinate all Army-Air Force operations. A solution to this issue is to add a Modified Table of Organization and Equipment assigned S3 air (career course captain graduate) who is trained in Army-Air Force operational integration to each HIMARS/MLRS battalion. The S3 air would serve as the officer in charge for all HIMARS air operations and serve as the liaison to the Air Force for tactical execution of missions. Additionally, he could provide the tactical mission brief to the air crews and deconflict any issues that arise in order to attain the desired ground disposition. The S3 air would also pass on critical information to the launcher crew and final mission execution orders.

The distributed operational capability of HIMARS allows a smaller size platoon to plug into any TF size element and operate independently of battalion C2 structure. One important lesson learned from the MRX, hot panel raids, and from our training with the SBCTs is the continual need to furnish a robust liaison team. The continual problem of not having positive control with the launcher crew persists during these types of operations. Liaison teams can be formed, depending on mission requirements. The battalion would have the option of furnishing an OIC, with a liaison team, and integrate the team into the TF. This liaison team would help facilitate HIMARS operations, assist in tactical fire planning, and finally serve as the TF commander's advisor for HIMARS integration into the battle space. Modifications to MTOE and doctrinal descriptions would be needed in order to enhance this capability.

In FM 3-09.60, *Multiple Launch Rocket System Operations*, the liaison team is described as a two-personnel section. Under the FY12 MTOE, the liaison team is a three-man section, consisting of a first lieutenant, a staff sergeant and a Soldier. In both instances, the team solely serves in an advisory capacity and at best, helps coordinate Fires. They are not intended to provide C2 capability, tactical fire direction control, or serve in a DS capacity. The FM specifically states, "the MLRS battalion lacks the organic fire support coordination personnel normally associated with a DS FA battalion. There is mention of assigning the BOC to a TF HQs where they could act as the liaison element. The liaison sections organic to corps MLRS are not designed to satisfy this function."

The evolution of HIMARS Fires requires a more robust team with additional capabilities. They must be able to act as a C2 node to the supported unit, especially while serving in a DS capacity. They should have the ability to send firing data to the POCS or serve as the FDC for special missions. Additionally, battalion furnished liaison teams should be qualified in target mensuration, collateral damage assessment, and weaponeering. This enhanced capability will give the JTF/brigade commander the expertise needed in every aspect of HIMARS utilization.

The final lesson learned is the need for the liaison team to have top secret clearances. As unit requirements become more specialized, it's imperative for all HIMARS battalions to have the immediate capability to support units that require enhanced security clearances. The battalion had nearly 18 months to prepare for deployment and it took nearly all that time to meet their deployment security requirements. The solution to this issue is to require all POC/BOC chiefs, platoon leaders, battery commanders, staff planners and anyone serving in a liaison capacity capable to maintain a top secret clearance for possible future integration into billets that require the handling of classified information.

After nearly 18 months of intense training, the unit was able to master the definitive nature of DS support, decentralized command, and distributed HIMARS operations. Little is written in a doctrinal format to show how HIMARS is suited for employment in a DS role, requiring decentralized execution, and operating across a large nonlinear battlefield. FM 3-09.60 briefly identifies the tactical employment of MLRS using the 'shoot and scoot' definition in the offense and has it operating as close to the forward line of troops as possible in the defense in order to maximize the use of its range capabilities. To the credit of FM 3-09.60, it clearly states HIMARS/MLRS, "range, mobility, and lethality allow it to execute the full spectrum of fire support—providing close support to maneuver units, protecting the force with counter fire, and attacking operational targets for the division, corps, Marine air-ground task force (MAGTF), or joint

task force commander." These definitions have been proven valid in a linear high-intensity conflict emphasizing general support; however, in a nonlinear fight, more doctrinal consideration is needed in emphasizing a DS role for HIMARS/MLRS. The current doctrine is written to be broad and ambiguous in the employment of HIMARS in a nonlinear battlefield, during a time when emerging doctrine needs to be specific to possible employment methods based on current requirements. Even when a relationship is defined as DS, the doctrine clearly states that, "when possible, MLRS units should reinforce the habitually associated DS cannon unit rather than assuming the DS mission on their own," which was the case of our relationship with 3-2 SBCT and the potential relationship with 4th Battalion, 2nd SBCT that never transpired. As 5-3 FA discovered through extensive pre-deployment training in preparation for OEF, HIMARS can best support a JTF through direct interaction with the supported unit.

In a close fight, HIMARS can provide DS capabilities if properly positioned and the battle space is clearly defined. HIMARS range rings would have to interlock to provide mutual support. What cannot be ignored are the minimum strike distances for GMLRS or ATACMS. The minimum distance would prevent a HIMARS platoon associated with a unit to provide close Fires, but the supported unit could request artillery support, and another platoon at another location could provide artillery support through the C2 liaison team at the JTF headquarters. New MTOE configuration for a HIMARS battery allows a battalion to have the option to organize one battery into four distinct firing platoons. A battery can be assigned to a task force or brigade-size element and the battery can potentially disburse into four distinct platoons in a 4 x 2 array across the battlefield. A battalion liaison team and the associated BOC would be assigned directly to the JTF or organic brigade and serve to synch, deconflict Fires, and act as the C2 for all HIMARS platoons. One challenge with this would be the manning and equipping of the additional POCs needed from this configuration. Modification of doctrinal models could be based on the current fight in OEF and use methods employed previously by 3-27 FA and 5-11 Marines. Both units excelled in the role of operating in a distributed format in which Fires were provided in a DS capacity. Distributed employment in the DS role to a higher headquarters would greatly enhance the supported unit's ability to use HIMARS in strike force packages. In the case where the supported unit is a conventional force, the model could be modified to a brigade sized element assigning one platoon (4 x HIMARS) to support contingency operations in a distributed, linear or non-linear fight. That platoon could be arrayed to support a unit's AOR in a 2 x 2 format. Whatever decision is made on HIMARS' implementation in a distributed role, doctrinal revision using existing models can be modified and applied to emerging requirements that position HIMARS in a DS capacity.

The 5-3 FA continued a trend of training and deploying a HIMARS battery in a DS role set forth by its fellow HIMARS battalions in the Army and Marine Corps. The innovative adaptation of newly created operational employment and its subsequent training applications helped bring forth needed doctrinal review for HIMARS/MLRS in a DS role. The traditional employment of HIMARS has evolved into an assimilation of multi-faceted demands through the use of PGMs, allowing HIMARS/MLRS to move into a DS role. As the battalion developed a blueprint to deploy, the existing models allowed for a successful implementation that further validated the dynamic capability of HIMARS. With minor modifications to training, manning, and equipping, HIMARS/MLRS battalions could permanently add the DS role into its doctrinal employment. Furthermore, the train up leading to the MRX created an environment where leaders at the platoon and battery level were encouraged to operate independently of battalion oversight. Operating in a distributed manner is a legitimate employment method for HIMARS. Usage during persistent conflict has allowed for evolutionary steps in strategic considerations and tactical application. Its precision, lethality, mobility, and ability to operate in a distributed array across a battlefield make HIMARS the weapon of choice for future conflicts.★★

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Acronym List

AFATDS	-	Advanced Field Artillery Tactical Data System
ATACMS	-	Army Tactical Missile System
BOC	-	Battery Operations Center
C2	-	Command and Control
CFF	-	Call-For-Fire
COIN	-	Counterinsurgency
DS	-	Direct Support
FA	-	Field Artillery
FCX	-	Fire Control Exercise
FDC	-	Fire Direction Center
FECC	-	Fires and Effects Coordination Cell
GMLRS	-	Guided Multiple Launch Rocket System
HIMARS	-	High Mobility Artillery Rocket System
JTAC	-	Joint Terminal Attack Controllers
JTF	-	Joint Task Force
ME	-	Mission Execution
MLRS	-	Multiple Launch Rocket System
MRX	-	Mission Rehearsal Exercise
MTOE	-	Modified Table of Organization and Equipment
NTC	-	National Training Center
OCA	-	Offensive Counter Air
OEF	-	Operation Enduring Freedom
OIC	-	Officer in Charge
PGM	-	Precision Guided Munitions
POC	-	Platoon Operations Center
ROZ	-	Restricted Operating Zone
SBCT	-	Stryker Brigade Combat Team
SIPR	-	Secure Internet Protocol
TF	-	Task Force
TTP	-	Tactics, Techniques and procedures
USAF	-	U.S. Air Force
YTC	-	Yakima Training Center

Partnering to Set the Future:

The Battalion Perspective on Operation Spartan Shield's Partnership Paradigm

By MAJ Jason W. Atkinson and MAJ Joseph W. Ruzicka

Partnership provides United States forces the ability to enhance existing capacity and interoperability within the United States Army Central Command area of responsibility.

U.S. Air Force 1st Lt. Drew Parks, joint terminal attack controller, 82nd Expeditionary Air Support Operations Squadron, communicates with a U.S. Navy F/A-18 Super Hornet supporting Operation Spartan Shield in Southwest Asia. JTAC's establish and maintain command and control communications, control air traffic, naval gun fire and provide precision terminal attack guidance of U.S. and coalition close air support. (Photo by Staff Sgt. Jonathan Snyder, U.S. Air Force)

Upon completion of Operation New Dawn, USARCENT leveraged combat power within Kuwait to revisit historical partnerships throughout the Kuwaiti land forces. Operation Spartan Shield provided the operational and strategic framework for the 3rd Armored Brigade Combat Team, 3rd Infantry Division to build partnership with respective KLF maneuver and Fires brigades. Partnering battalions from 3ABCT included the Combined Arms Battalion, the Fires battalion, and the Brigade Special Troops Battalion These habitually partnered battalions' emphasis on establishing initial rapport and engaging senior leaders through key leader engagements facilitated the trust necessary to execute combined training. However, friction points, predicted and unforeseen alike, hampered the HPB's overall partnership effectiveness. Although friction occurred in the various forms and degrees, patience and persistence proved invaluable as combined training provided the mechanism for capacity building within the KLF. The HPB's clearly defined way ahead provides follow-on units deployed in support of OSS to continue the progress made during this inaugural rotation.

After eight years of conflict in Iraq and the closure of OND, USARCENT realigned resources across the Arabian Peninsula to promote operational and strategic objectives within a post-OND environment. In accordance with USARCENT's campaign plan, the decisive operation, partnership, leverages USF to build military capacity and interoperability throughout the Gulf Cooperation Council region. To achieve these aforementioned objectives, USARCENT revived historical partnerships reminiscent of Operation Desert Spring focusing extensively on regional allies critical to success within the AOR. To this end, OSS provides the tactical and operational framework necessary to achieve the Combatant Command and U.S. government's strategic objectives. The decisive operation's overall success relies upon USF's ability to create, build, and maintain persistent brigade and below level partnerships. As the first brigade to deploy in support of OSS post-OND, 3ABCT provided this partnership capability. To maximize capacity development at a tempo that supports USARCENT's objectives, lessons learned from this inaugural rotation provides a foundation for subsequent rotations to utilize. This article addresses the scope, successes, friction points and a way ahead for future ABCTs sourced to deploy in support of OSS and outlines the path HPBs took to establish a perennial partnership with the KLF brigades.

Avenues to Success. Though still in infancy, OSS clearly demonstrates potential for great success in partnering with KLF and other militaries across the region. With minimal large-scale military-to-military partnering over the past decade, significant questions existed as to the KLF's level of professionalism and capabilities. Although addressed through reliefs in place, HPB's initial engagements would confirm or deny 1st Brigade, 1st Cavalry Division's (1/1 CAV) assessments. After initial engagements, battalions quickly realized that the vast majority of the KLF represented a fully capable military with a professional corps of Soldiers. Unlike the necessary skills and methods utilized to train Iraqi and/or Afghan Security Forces at their inception, battalions quickly adjusted their approach to build upon existing KLF competencies. Due to the KLF's capabilities and professionalism, HPBs' elements quickly learned their partnership efforts should focus extensively on collective training and combined arms maneuver at the KLF maneuver brigade and below levels. To assist future HPBs in establishing an initial partnership start point, USF must enter KLF partnerships focused on assisting a near-peer military more effectively integrate their respective warfighting functions. Prior to achieving progress on any of the forenamed areas, partnering units must establish a genuine rapport with their KLF counterparts.

As with any partnership, establishing rapport predicates the partnership's success or failure. Similar to previous partnerships in Iraq and Afghanistan, relationships built upon trust and mutual respect provide access to a vast array of cultural and tactical exchanges. HPBs committed significant time and energy during KLEs to establish the prerequisite rapport required for potential future tactical exchanges. In addition to KLEs, cultural exchanges extended beyond the key leadership in the battalion and often times included Soldiers at the lowest levels. Whether partnering units and counterparts held combined sports days, toured Kuwait City, or participated in Kuwaiti cultural events, the partnership's social aspect provided the necessary access each battalion required to facilitate large-scale tactical partnership events. By establishing the requisite rapport, HPBs enhanced their ability to influence their respective partnerships and frame combined training. In addition to building rapport, partnering elements achieved success by generating combined partnership objectives.

As an initial step towards establishing combined training opportunities, HPBs worked in conjunction with their counterparts to identify target goals for each KLF brigade. To fully capitalize on combined training opportunities, units established a base framework of coordination, shared objectives, and planned training. Although requiring weeks of focused engagements and KLEs, both parties agreed on processes by which to conduct combined planning and training. HPBs utilized a variety of methods to achieve consensus on combined planning and training dictated by the rapport, personalities between USF and KLF commanders. Concurrence occurred primarily due to battalions' leadership maintaining consistent dialogue to achieve buy-in from their Kuwaiti counterparts. For example, some KLF units requested assistance on individual skill training (gunnery skills, basic marksmanship, basic medical training) while others requested assistance on collective training (operations in urban areas and platoon and company level, combined live fire exercises) objectives. Ultimately, HPBs worked, in concert with their counterparts, to create a scalable training regimen focused on achieving shared objectives. This decision would prove beneficial in establishing base line tactical exchanges that would result in 'quick wins' for the battalions. The CAB partnership with the 15th Mubarak Brigade depicts such an example.

During the RIP/TOA process, the outgoing unit briefed the CAB on details surrounding their combined live-fire event with the 15th Mubarak, consisting of one USF company and one Kuwaiti platoon. Although the CAB broached the subject of expanding the scope of the previous combined live-fire during some of the initial engagements, the 15th Mubarak initially resisted. With this realization, the CAB shifted the training strategy to more closely align with the 15th Mubarak's focus of individual and platoon level training. Through constant dialogue and consistent KLEs, the idea of a combined

live-fire event remained a talking point, as relationships and training progressed. The tipping point in the effort to execute a large scale, combined live-fire event was the execution of Operation Hammer Strike. Operation Hammer Strike was a USF company-level joint, combined arms live-fire demonstration supported by fully integrated Fires, rotary wing aviation, and fixed-wing attack aircraft. This event impacted the 15th Mubarak's and the Kuwaiti Land Force Artillery Regiment's training objectives significantly. The demonstration proved critical to increasing both units' confidence and drive to execute a combined live-fire. As a result, the 15th Mubarak planned, led and executed a combined live-fire event, Operation Saweyan Shield. The exercise built upon the previous rotation's combined live-fire, and included a Kuwaiti Land Force Artillery Regiment's company, Kuwaiti fixed and rotary wing assets, a U.S. mechanized company team and platoon from the Fires battalion. Operation Saweyan Shield displayed the KLF's ability to plan and resource a large scale combined live-fire exercise. The patience displayed by both HPBs, efforts to present a common to the Kuwaiti partners, and the commitment to execute a Kuwaiti planned and lead exercise set conditions to achieve USARCENT's operational and strategic objectives within the region. Although determining combined partnership objectives with each partnered element can prove time consuming, the benefits far outweigh the associated time and manpower costs. Despite such successes, each partnered unit experienced unforeseen and predicted friction points impeding potential gains.

Points of Friction. Despite the partnership objectives HPBs achieved throughout their deployment, several issues hindered the brigade's ability to achieve greater results. These limiting factors included partnering with a restricted task organization, operating within an emerging campaign plan, possessing a limited knowledge of counterpart mission command, and failing to understand how KLF organizational culture would impact partnering.

Deploying to Kuwait as an ABCT minus one combined arms battalion, one cavalry squadron and portions of the BSTB and brigade support battalion dictated a less than optimal partnership alignment with Kuwaiti brigades. Prior to 3ABCT's arrival, 1/1 CAV employed the same model utilized during OND with forces partnering up one echelon (i.e.- one U.S. CAB partnering with one Kuwaiti maneuver brigade). 1/1 CAV's task organization facilitated this configuration as the brigade deployed with all organic elements, plus its attached advise and assist brigade augmentation. This task organization equated to additional manpower that the 1/1 CAV leveraged to accelerate relationship building with the KLF. While 1/1 CAV's partnership framework provided a starting point for 3ABCT, the disparity in task organization required significant analysis to re-align partnership responsibilities.

Upon 3ABCT's assumption of the mission and control of KLF partnerships, the brigade generated a model that would continue to build upon the numerous relationships inherited with the limited forces available. Derived from 3ABCT commander's guidance and subsequent mission analysis, the decision was made to align the one deployed CAB with three Kuwaiti maneuver brigades, the BSTB with two Kuwaiti maneuver brigades, and the Fires battalion with the Kuwaiti Land Force Artillery Regiment. Moreover, the ABCT's CAB, BSTB, and Fires battalion would provide the same partnership coverage level that an augmented ABCT previously provided.

Although this model provided habitual partnership at

A U.S. Navy F/A-18 Super Hornet hits its designated target with an inert laser guided bomb marked by a U.S. Air Force joint terminal attack controller, supporting Operation Spartan Shield, Sept. 11, 2012, Southwest Asia. JTAC's establish and maintain command and control communications, control air traffic, naval gun fire and provide precision terminal attack guidance of U.S. and coalition close air support. (Photo by Staff Sgt. Jonathan Snyder, U.S. Air Force)

the brigade level, various ABCT elements found partnering below the Kuwaiti brigade level extremely challenging. For example, the CAB's personnel end strength restricted the level of partnership employed with their three Kuwaiti maneuver brigades. The battalion commander established a robust partnership with each KLF brigade commander, but due to manpower, could not habitually commit forces down to the KLF battalion and company levels. Although the CAB established a staff level battle rhythm with its KLF brigades, the staff found difficulty in creating a habitual, lasting relationship at the KLF battalion level. Notwithstanding the multiple contributing factors (lack of transportation resources, distance between Camp Buehring and KLF brigades) preventing a company to KLF battalion level partnership, the primary constraint correlates directly to the lack of available forces. Regardless of difficulties, the brigade built upon the aforementioned relationships and succeeded in building capacity within each partnered unit. Even with clear delineation in partnership alignment, the battalions experienced significant ambiguity in aligning KLF centric partnership objectives with AOR-wide emerging partnerships.

Battalions continually redefined their partnership objectives to enhance emerging partnerships across the USARCENT AOR. The continual updating process created periodic friction while planning combined engagements with the KLF. Initially, USARCENT's campaign plan outlined partnership objectives for the ABCT that focused extensively on capacity building and interoperability within the KLF. However, the perpetually expanding partnership scope, across the AOR, required battalions to consistently reallocate limited resources against emerging partnerships. The emerging partnership between the Fires battalion and the Jordanian Armed Forces radar battalion and JAF High Mobility Artillery Rocket System (HIMARS) elements highlight such an instance. Shortly after deployment, the Fires battalion provided a radar tactical exchange team to the JAF radar battalion. Although existing contractor support provided necessary coverage, RTET modular packages provided much needed technical and maintenance assistance necessary to accelerate JAF electronic warfare and fire support capabilities. Usually deployed for two-week rotations, RTETs became a habitual monthly partnership requirement for the Fires battalion. In addition to RTETs, the Fires battalion also deployed select leaders from the attached HIMARS battery to support theater security cooperation events. Battery leadership engaged Jordanian counterparts during a HIMARS symposium designed to share insight and lessons learned with Jordanian HIMARS leadership. Akin to the radar teams, the symposium support mission materialized during the deployment as USARCENT identified and developed emerging partnership requirement. Even though these tactical exchanges proved valuable, they highlight the evolving partnership role that USARCENT has throughout the AOR. Subsequently, partnering units incrementally realigned their battalion's efforts to achieve a 'new' way ahead. In addition to deconfliction of support for emerging partnerships, HPBs also experienced friction in maximizing available time to partner.

Although each battalion experienced a variety of friction points throughout partnership, a number of constraints can be derived from KLF's mission command, organizational structure and cultural influences. Similar to many Arab led militaries in the GCC region, the KLF's mission command functions through higher headquarters' directives. Without appropriate guidance from KLF command, several Kuwaiti brigades proved reluctant in conducting initial partnership engagements. Even as relationships and trust developed throughout the deployment, execution and timing of combined training events often hinged on direct guidance from KLF. Despite the constraints of this style of mission command, some of the more contentious initial meetings between key leaders developed into some of the most productive partnerships within the ABCT. Despite the Kuwaiti's timeliness or tardiness in partnering earnestly with the HPBs, the persistent requirement from partnered units' higher headquarters to approve training requests hampered partnership. As partnering units overcame this particular friction point, several other factors must be considered in the development and timing of all partnership efforts.

Environmental considerations and cultural norms, for the most part, drive KLF's organizational design and training methodology. The effect of Kuwait's climate on the training cycles cannot be underestimated. Due to the region's weather cycles, the KLF avoids exposure to the desert's excessive heat and the corresponding difficulties that such extreme weather creates. KLF, therefore, utilize summer months for administrative actions and winter months for field training. In addition to regional climate, Kuwaiti's emphatically embrace family traditions, national holidays and Islamic religious dictates; consequently, the KLF's training cycle is significantly reduced. Rarely do units train beyond the standard work week, reducing the effective training window to four days that includes transit to and from training sites. Throughout the year, multiple religious holidays shape the times available for partnership opportunities. For example, Eid al-Fitr (EID) and Eid al-Adha (EIA) observances condense already constrained partnership windows in August and October, respectively. With the traditions of daily fasting and nightly family celebrations, interaction with the KLF dwindles during Ramadan and subsequently EID's conclusion in the July and August timeframe. That said, the Kuwaitis remain willing to execute cultural and staff exchanges during such windows. Taken holistically, however, KLF's annual training cycle and organizational norms necessitate a focused tactical exchange plan to maximize available time.

The Way Ahead. The aforementioned progress can be significantly increased through implementation of lessons learned from this inaugural OSS rotation. The observations mentioned, henceforth, can be implemented at the battalion level and can substantially improve partnership efforts. HPBs can enhance partnering efforts by establishing combined partnership objectives, integrating staff at the battalion level, learning specific foundational knowledge prior to deployment, and evolving partnership objectives within an AOR-wide strategic framework.

First, combined partnership objectives provide the framework for the battalion and KLF engagements. This process, facilitated from the bottom up, requires battalion leadership to conduct assessments and translate those assessments into achievable objectives. Units should proceed cautiously when executing these assessments unilaterally and without "buy-

in" from the Kuwaiti counterparts. Battalions must resist the urge to simply measure success against a previous unit's partnership objectives without their counterpart's input. Effective partnerships adopt a holistic goal setting strategy that avoids viewing partnership through a singular prism focused on increasing capstone training event difficulty. For example, capacity building requires subsequent increases in overall effectiveness to be sustained and implemented throughout the organization. By elevating training objectives for a single event, capacity might be exercised but not permanently adopted by counterpart forces. However, a clearly defined objective, agreed upon by respective counterparts, enables battalions to develop training strategies that focus the ABCT's efforts towards a common end state. Likewise, OSS rotational success should be assessed against a truncated spectrum of objectives that aligns the ABCT's partnership end state against a set of USARCENT directed strategic and operational goals for the deployment window. The alignment would focus partnership efforts along a narrow, but achievable, operational spectrum. Likewise, battalions must understand the dynamics of their rotation as related to the USARCENT campaign plan, cultural and environmental considerations, and the KLF training cycle. Capacity built through nested efforts affords a higher level of sustainability and acceptance throughout that partnered unit's echelon. With partnership objectives established, staffs must dialogue and build rapport to execute partnered objectives.

Battalion and KLF brigade staff integration must increase to build the necessary rapport critical in planning complex combined partnership training. Although the battalion commander establishes intent for partnership efforts, the staff must work in concert to support those efforts. Through consistent staff exchanges, units would increase familiarity and simultaneously work towards achieving a common partnership strategy. Despite the difficulties involved in establishing staff exchanges, future forces must allocate the proper amount of personnel to achieve this objective. For example, each battalion established a robust partnership with the KLF brigade commanders and the KLF operations officers through the battalion commanders and the operations officers, respectively. These two individuals conducted the majority of the KLEs as well as the planning sessions. These 'planning sessions' often resulted in office calls between both KLF brigade and HPBs operations officers to synchronize calendars and establish future tactical exchanges. Although effective at achieving necessary consensus on some matters, the planning efforts necessary for combined training required significant staff dialogue. As previously mentioned OSS highlighted such an event. The minimal rapport between staffs, across all elements, hampered initial planning efforts and synchronization. Although eventually successful, existing staff relationships would have minimized planning friction between the various units involved. To mitigate potential friction and enhance combined staff operations, staff exchanges would provide the foundation necessary to facilitate future complex, combined training exercises. In addition to staff integration, battalions would benefit from developing a baseline of knowledge in defensive operations, combined arms maneuver, and British doctrine to better assist partnered units.

A prerequisite U.S. and British doctrinal foundation would enhance the battalion's partnership activities. Primarily, the HPBs should possess a robust knowledge of defensive operations and the integration of enablers to support combined arms maneuver. The increased understanding of this operational facet provides partnering elements a mental framework that more closely aligns to KLF's defensive paradigm. Although USF's competency across the decisive action spectrum of operations is necessary, units can enhance their partnership by assisting their counterparts in their defensive centric strategy aligned with protecting population centers. The defensive mindset, somewhat foreign to an offensive minded army, would aid partnering units in understanding terrain from the KLF's perspective. In addition to having a more thorough understanding in defensive operations prior to arrival, partnering units would do well to become versed in combined arms operations.

KLF clearly understands how to execute individual elements of combat power as a single entity. Due to limitations in their communication capabilities and joint training familiarity, the KLF integrates combat power sequentially instead of utilizing the more advanced simultaneous methodology. Although skilled in collective tasks within their own warfighting function, the KLF's simultaneous integration of combat power remains one of their next organizational milestones. Although incremental in nature, progressive improvements in the KLF's lethality through combined arms operations would greatly enhance their ability to maximize combat power, in depth, throughout defensive operations. As a result, the KLF's potential to increase their lethality through simultaneous integration is exponential. By entering partnership efforts with an acute understanding of defensive operations and providing refinement guidance to their combined arms operations, battalions can accelerate partnership gains. In addition to entering partnership with foundational knowledge of defensive operations and combined arms maneuver, HPBs should review British military doctrine prior to partnering.

The KLF utilize British doctrine throughout their organization. From a staff perspective, the KLF utilizes the British operational planning process. This planning process differs somewhat from the United States military decision making process, although both planning processes achieve the desired end state. Also, artillerymen must be familiar with the roles and responsibilities within the British artillery as they conduct partnering at the battalion and below levels. Superficially, for example, the influence can be seen in their naming conventions and their organization structure. However, the influence goes further, and although similar, subtle differences do exist. In spite of numerous officers attending the United States Field Artillery School, the KLFAR has maintained roles and responsibilities that align with a British model within their cannon battalions. For example, KLFAR battery commanders act as Fire support coordinators for their supported maneuver battalions. Therefore, the KLFAR has no need for fire support officers since that role is fulfilled by the battery FSCOORD. Understanding these nuances decreases the Fires battalion's learning curve and facilitates understanding Kuwaiti artillery operations. Furthermore, understanding roles and responsibilities within both organizations assists with interoperability and the execution of combined training.

In efforts to nest campaign plan objectives with AOR-wide

partnership efforts, a more holistic approach must be taken by all USF identified to partner within the OSS framework. Due in large part to OSS's infancy, USARCENT's campaign plan objectives regarding partnership should include periodic revision and updating to achieve operational and strategic success. The revision could potentially include Kuwaiti ministry of defense and USARCENT leaders to identify Kuwait's future security concerns. The discussion would set the framework for future partnership objectives. Initially, campaign plans must be updated to nest emerging partnerships with existing operational and strategic objectives. Without devising a common pathway inclusive of all AOR partnerships, efforts will struggle to effectively achieve the desired end state. Once established, brigades must devise a framework to meet objectives and concurrently build capacity to engage emerging partnerships throughout their deployment. An ABCT, aligned with USARCENT partnership objectives, allows HPBs to maximize existing resources to achieve success. Without a synchronized approach that accounts for existing and emerging AOR wide partnerships, HPBs will haphazardly execute partnership that may or may not achieve ABCT tactical objectives and/or USARCENT's regional goals. Given an all encompassing, strategic paradigm, HPBs can establish the foundation necessary to outline their respective partnership objectives while simultaneously devising an armature for emerging partnerships. While forging a way ahead for future ABCTs that deploy in support of OSS, the potential to increase capacity and interoperability throughout the region remains achievable as USF continue to strengthen pre-existing and emerging relationships across the AOR.

Without question, HPBs achieved substantial progress in developing enduring partnerships with KLF and other nations throughout the USARCENT AOR by working with and within our partnered units pace and cultural differences. As the first unit to deploy for a complete nine month OSS rotation, HPBs identified and mitigated critical frictions points that potentially inhibited progress in capacity and interoperability development. As partnerships throughout the AOR mature, the associated USARCENT campaign plan requires reassessment and potential revision providing brigades the necessary framework to best use available forces. At the ABCT level, the resulting partnership strategy should be evaluated and refined based on each individual partnered unit's progress or lack thereof. Battalions must continue to incorporate partnered units' objectives and corresponding USARCENT's end states as they define success for their element. Without addressing previously agreed upon combined partnership objectives, potential exists to stifle momentum and hamper future gains. Candid feedback from partnering units should inform planners across all echelons and ensure that the ABCT's tactical partnership objectives facilitate USARCENT's way ahead for the region. With a common understanding of the way ahead, HPBs and the KLF can exploit the available training opportunities and mitigate atypical training constraints to enhance security throughout the region.★★

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Acronym List

ABCT	-	Armed Brigade Combat Team
AOR	-	Area of Responsibility
CAB	-	Combined Arms Battalion
FSCOORD	-	Fire Support Coordinators
GCC	-	Gulf Cooperation Council
HPB	-	Habitually Partnered Battalions
JAF	-	Jordanian Armed Forces
KLE	-	Key Leader Engagement
KLF	-	Kuwaiti Land Forces
MCCC	-	Maneuver Captains Career Course
MCoE	-	Maneuver Center of Excellence
OND	-	Operation New Dawn
OSS	-	Operation Spartan Shield
RIP	-	Relief in Place
ROMAD	-	Radio Operator Maintainer and Driver
RTET	-	Radar Tactical Exchange Team
TOA	-	Transfer of Authority
USARCENT	-	United States Army Central Command
USF	-	United States Forces

Left: U.S. Air Force Airman 1st Class Matthew Perry, right, a radio operator maintainer and driver from 82nd Expeditionary Air Support Operations Squadron, and U.S. Army SFC Darryl Honick, left, a joint Fires observer from 3rd Battalion, 159th Attack Reconnaissance Battalion, work together controlling a U.S. Navy F/A-18 Super Hornet supporting Operation Spartan Shield in Southwest Asia. (Photo by Staff Sgt. Jonathan Snyder, U.S. Air Force)

Partnered ANSF Targeting in a Joint Environment

By CPT Steven Kournianos

It is difficult, if not impossible, to think of any doctrinal process either inside or outside the military world, which consumes more time or requires as much analytical thought as targeting.

At a time in Afghanistan when coalition staffs at both battalion and brigade level fixate their collective gaze from traditional Global War on Terror battle-space ownership to present-day advisory and retrograde endeavors, it is imperative to impart the tenets of our targeting process on our Afghan National Security Forces counterparts as they transition from partnered to unilateral operations.

In the 12 years since Operation Enduring Freedom commenced, we artillerymen have become so familiar with the degree of importance placed on both lethal and nonlethal targeting that it is difficult to believe how little emphasis was placed on introducing our doctrinal D3A (Decide-Detect-Deliver-Assess) to our host-nation partners at the grass roots level prior to standing up the Afghan National Security Forces.

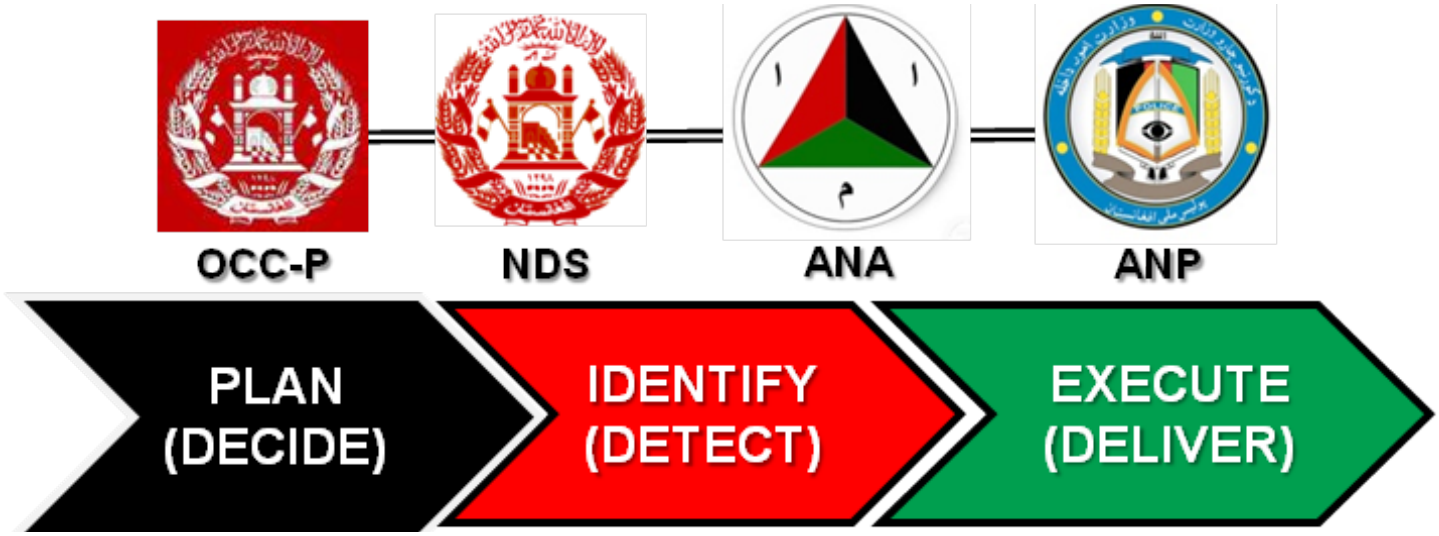
Equally, hindsight renders it absurd that the few leaders whose innovative ideas on introducing host-nation forces to the modern-day targeting process were either ignored or cast off as idealists.

Nevertheless, as brigade combat teams transition to advisory and assist brigades, the emphasis on mentoring ANSF on a hybrid targeting process at the Kandak (battalion) and Tolai (company) levels have never been greater. At the Logar Operational Coordination Center-Provincial, the joint ANSF multi-agency information hub, human intelligence based intelligence reports furnished by the National Directorate of Security provide the foundation for daily impromptu targeting meetings, lasting anywhere from 30 minutes to three hours. Surprisingly to some, these meetings encompass all the requirements of a traditional U.S. Army targeting cycle, which from start to finish can take up to 14 days until courses of action are approved, prioritized and resourced.

The partnered advisors at the Logar OCC-P, led by LTC Antonio Austin, realized this in earnest, opting to introduce Afghan National Army and Afghan National Police to simple link diagram construction for a few hours rather than force feed the ANSF targeting cell D3A or the friendlier F3EAD (Find-Fix-Finish-Exploit-Analyze-Disseminate) from a translated Center for Army Lessons Learned manual for days on end. The results were instantaneous. Within an hour of constructing a blank inverted link diagram, the ANSF filled in the provincial Taliban/Haqqani hierarchy starting from the top down. Following the completion of the link diagram—replete with ranks and/or titles—the ANSF went to their detailed common operating picture and associated each suspected enemy agent with a corresponding district within Logar. In just under two hours, the ANSF introduced their OCC-P commander to the first enemy situation template ever designed in the four years since the OCC-P opened its doors.

The joint targeting synch cell at the OCC-P represents both the hopes for the future of the ANSF and the proud traditions of wars past. Moreover, it carries the stamp of the personality of its most dynamic intelligence officer, ANA LTC Ramatullah. A grizzled veteran of the Soviet occupation, LTC Ramatullah speaks in an academic tone when briefing his contemporaries on indirect fire pattern analysis, taking as his theme a dictum of his ANA S-3, COL Habib, "facts mean little without analysis."

With specific guidance from their OCC-P commander, the S2/S3 current operations sections began their drive towards identifying targeting priorities in earnest. For several weeks, both NDS and ANA developed recommendations for courses of action and then took the approved courses of action determined by the provincial governor and OCC-P commander to develop an executable operations plan. Once complete, the OPLAN was briefed by the OCC-P at a security shura (meeting) to the key political and military leadership within Logar. Within days, they disseminated the approved COA to the tactical unit level for rehearsal and execution. Rather than deliberately plan operations during the winter lull in enemy activity, the ANSF in the OCC-P began their planning process just weeks before the start of the



Fire support and targeting advisors at OCC-P Logar listen in on a joint ANSF targeting meeting. (Photo courtesy of CPT Steven Kournianos)

Afghan fighting season, which kicked off with an elephantine brigade-size clearance operation in the Tangi Wardak Valley. Dubbed Operation Shaheen, this endeavor was the result of several impromptu intelligence sharing sessions conducted weekly at both the OCC-P and at 4th ANA Brigade headquarters. It was at these meetings where joint ANSF targeting took root, and link analysis diagrams and targeting priorities were determined and/or refined based off information from previous engagements.

Synthesizing operations and intelligence in a joint ANSF forum may sound like a new concept. For senior ANSF leaders in Logar, however, the process is far from introductory. Most senior NDS and ANA intelligence officers working in OCC-P's throughout Afghanistan have conducted lethal and non-lethal targeting before, during and after the decade-long Soviet occupation of the late 20th century. In fact, LTC Faizanullah, one of the NDS' senior intelligence officers at OCC-P Logar, scoffed at the idea that the ANSF did not conduct formal targeting.

"Our system does not have fancy names, and we don't hold fancy meetings," he said through a translator. "It is a tradition in Afghanistan to identify and neutralize the enemy in the same day. When we have meetings about individuals, they're usually neutralized anywhere from a few hours to a few days later. As far as I remember, this has been the way we Afghans conduct targeting."

Targeting conducted by ANSF is an evolving process. Although effects-based targeting and intelligence collection being conducted via security shuras hosted by OCC-P Logar have borne fruitful results, the intent is to have OCC-P's work in conjunction with ANA brigade and the provincial headquarters towards prosecution-based targeting and evidence collection. For now, the OCC-P in Logar is willing to perfect their current methods via feedback from their security force advise and assist team partners while building towards the adaption of a refined Afghan-centric targeting process.★★

Captain Steven Kournianos has served 10 years in the Field Artillery, both as an enlisted 13B and key staff and leadership positions as an artillery officer. He is currently the commander of HHB, 2nd Battalion 15th Field Artillery, 2nd BCT, Commandos, 10th Mountain Division, deployed to Paktika province in RC-East in support of OEF XIII-XIV. Prior to taking command, he served as the senior operations and Fires advisor for the OCC-P in Logar province. Additionally, he was the squadron fire support officer for 1st Squadron, 89th Cavalry, 2 BCT, where he also served as a troop fire support officer following his 15-month deployment as a rifle platoon leader in south Baghdad during the 'surge' of Operation Iraqi Freedom 06-08. Kournianos completed the Field Artillery Officer Basic Course and the Field Artillery Captains Career Course, and is a graduate of Northeastern University in Boston with a B.S. in Journalism. He also holds a Master's of Arts degree in Military Science and Land Warfare from American Military University.

Acronym List		
ANA	-	Afghan National Army
ANSF	-	Afghan National Security Forces
COA	-	Course of Action
NDS	-	National Directorate of Security
OCC-P	-	Operational Coordination Center-Provincial
OPLAN	-	Operations Plan

A M109A6 Paladin fires a round down range during gunnery operations at the 139th Regional Training Institute. (Photo by CPT Rick Scoggins, U.S. Army National Guard)

Regaining the Fires Edge:

An Artillerized Model for Post OIF/OEF Fires Training

By COL Brian R. Nesvik and LTC Gregory S. Phipps

Over the past 10 years, the Fires community has spoken loudly regarding the degradation of core competencies consequential to service in non-standard missions in the Global War on Terror. The artillery has proven abilities to be agile and react to any mission assigned with professionalism, precision and lethality when necessary. Their effectiveness in performing other than artillery missions had broad influence, instilling confidence in the Army leaders that artilleryman are Soldiers first and have the ability to be pentathletes with a moment's notice. Artillery Soldiers are proud of their accomplishments and opportunities to contribute to the fight, however, it all came at a price. The *Fires Bulletin* published several articles highlighting this issue and the measurable impacts to Fires proficiency at the individual and collective level across the service in both active and reserve component units.

The intent of this article is to summarize our efforts to develop a vision and a model intended to align a Fires brigade training plan focused on re-establishing core competencies, within Army Force Generation. Secondly, we will attempt to evaluate its effectiveness through Train/Ready Year Two through the lens of Fires battalion and a brigade headquarters. Prior to discussion of the model, we will address the concept of the five requirements for accurate predicted battle-focused training and their criticality in making any training model work.

The Five Requirements for Accurate Predicted Battle Focused Training. Many will agree that there are common threads between the key ingredients to forecast effective training and those required to predict accurate artillery fire. Additionally, there are similarities in the trouble shooting process in both areas.

1. Accurate Unit Location: It is impossible for a commander to develop a path to achieve a specific training objective if he/she doesn't have an accurate unit assessment. This is as essential to designing a training plan as unit location is to the five requirements. And as an inbound commander, completing your own assessment and evaluating the results against your predecessor's assessment remains valuable. Starting with accurate Mission Essential Task List assessments reflective of all subordinate units, to include sustainment and firing units is a hinge pin to a successful start.
2. Accurate Target Location/Training Objectives: Visualizing the target and identifying measures of success allow leaders to set expectations for Soldiers and leaders. The ARFORGEN aim points serve this purpose.
3. Training Environment: Command-

ers must create an environment conducive to learning. Resilient Soldiers and a healthy command climate set the conditions for success.

4. Planned and Resourced: Commanders and planners must ensure training has focus and pre-determined goals. ARFORGEN position establishes resourcing levels, but commanders must ensure that funding allocations and planned training are aligned. Commanders and staffs that can develop creative solutions to resourcing short falls in a manner transparent to the training audience are bound to reap the training dividends.
5. Accurate Computational Procedures/Measurement of Results: The training audience must know what standard they are shooting for. Artillerymen are masters of using standardized checklists and evaluating individual, collective and leader tasks. The precision required to effectively deliver Fires is borne in our abilities to train to a precise standard and to accurately measure our progress or lack thereof.

Alignment. High demand for smaller units that could rapidly deploy and assume non-standard missions, sometimes referred to as 'in lieu of' missions, created a situation where many brigades and even battalions were deployed 'piece meal' in smaller chunks, particularly in the reserve component. As the GWOT developed, combatant commanders and Forces Command facilitated more deployments of battalion-sized elements. Whether intentional or not, this move to deploying larger units with mission command structure in place helped to synchronize units in the ARFORGEN cycle post Operation Iraqi Freedom.

A hinge-pin to successful and predictable training strategy at the brigade level is the ARFORGEN alignment of all organic and aligned for training battalions as well as the alignment with an AFT division headquarters. Multi-echelon training and evaluation coupled with synchronized readiness aim points requires that all units are calibrated at a common anchor point and remain aligned through the training cycle.

Regaining the Fires Edge. This model nests within ARFORGEN for a variety of reasons including: the ability to align resources with training objectives, to establish common aim points and to effectively plan in accordance with Army directives. The stepped and phased increase in collective training focus described in the model represents an approach based on key tenants of ARFORGEN. Sustaining the training relationships with AFT units, even through reset, provides a necessary bridge to a more intense and collectively focused training strategy later in the cycle.

Phase I: Reintegration, Refit and Reset Right. Ensuring Soldiers are allowed time and allocated resources to reintegrate with their Families, employers, churches and communities is a first step in setting the conditions for success. Training time in this phase focuses at the individual and section level. Leaders at all levels are not excluded from these requirements of reintegration. Re-establishing core competencies at the individual level on equipment fielded prior to deployment is another key component to refit and reset. A new look at unit METL and development of mission essential tasks occur during this phase. Individual leader training must begin during this phase. Leaders must identify equipment fieldings that were incomplete prior to deployment or new inclusions in Modified Tables of Organization and Equipment occurring during deployment. Ensuring that all required equipment is on hand early in the training strategy serves to create environments ripe for learning.

Phase II: Regain the Fires Edge. The beginning of this phase overlaps with phase I in that emphasis on obtaining necessary equipment is a cornerstone. Individual training remains a priority to include duty military occupational specialty and additional skill identifier training. Collective focus remains at the section level in the beginning but transitions to training at higher levels towards the end, particularly for Fires battalions. The unit must identify new doctrine and develop a vision for how the brigade will fight on a new battlefield. Leaders must define lines of communication and lines of logistics that maximize the use of organic resources and AFT battalions. Understanding support relationships, digital systems required to communicate and how the unit moves around the battlefield is pivotal in visualizing the future training environment. Simply put, the brigade has to secure a vision of what right looks like and articulate this to all units and Soldiers. Equipment must be brought to fully mission capable status during this phase.

Phase III: Sharpen the Fires Edge. As the brigade continues to regain Fires competency in all applicable war fighting functions throughout all units, this phase marks transition to a focus on sharpening skills and attaining METL proficiency of at least needs practice on all METs. This phase marks significant increase in collective level training focus. Development of company and battery level 'go to war' lists of METs are a critical outcome of this phase. Battalions conduct larger scale collective field problems and battle staffs train with more intensity. The brigade conducts short field exercises and command post exercises that validate standard operating procedures. This phase includes, to a much greater extent, training with AFT battalions and at the division level. These opportunities help to identify leader strengths and weaknesses and build command teams and battle staffs that are synchronized and organized for deployment. This is the brigade's opportunity to regain the competency and respect as a premier fires unit. Leaders evaluate collective training at the platoon level in a deliberate, quantifiable and battle focused manner. Units conduct innovative leader training focused on preparing leaders at all levels to adaptively lead. The Fires brigade organic brigade support battalion conducts a logistics training exercise at a sustain training center to build proficiency preparing them to be ahead of the Fires battalions ensuring they are poised to support them in future phases. Maintaining individual training proficiency, Military Occupational Specialty Qualification and professional education remains important but requires less time and focus than it did during the first two phases.

Phase IV: Shine the Fires Edge. The Fires brigade will use this phase to analyze unit needs and execute collective training at the platoon and battery/company level that closes gaps in METL proficiency. Units attain METL proficiency at the trained level for at least 50 percent of all METs. This phase builds toward a large scale collective training exercise where all brigade elements come together for annual training. The

brigade seeks external resources to conduct training evaluation and provide observer, controller and training support. Battalion commanders use this event to assess their units and identify post mobilization training requirements. Post annual training evaluations will validate that the Fires brigade has attained proficiency to a level of readiness required to mobilize, train, deploy and perform as a fully functional Fires brigade. The brigade secures resources so the headquarters is able to participate in a division level training exercises, outside of annual training. Leader training remains key to the unit's ability to achieve lofty goals and objectives.

Phase V: Draw the Fires Sword. This phase represents culmination of the training strategy. Obviously, there are two potential courses of action, deploy or prepare to return to year one of ARFORGEN. With no notice of sourcing for deployment, we intend to execute training that will successfully cap a five-year effort with an externally evaluated major training exercise. Additionally, we intend to develop year-one training plans that reflect a reduction in training resources, but also recognize the inefficiencies and wastefulness of allowing training proficiency to return to a pre-model state. To mitigate the risk of core competencies skills erosion, the training operation tempo should remain challenging, but the focus of training and evaluations shifts towards the new phase I at the end of the ARFORGEN cycle.

Evaluation. Sitting atop the end of train/ready year two and the end of the 'Sharpen the Fires Edge' phase of our training model, we have certainly used hindsight to look at this model and analyze what aspects worked well and those that could be changed.

Firstly, alignment up and down has been critical to our success to this point. This model would require significant modification if we were unable, as a brigade, to maintain ARFORGEN alignment with our higher headquarters, the 34th Infantry Division, and our three AFT battalions. Our abilities to conduct training planning, communications training using all Army Battle Command Systems and mission command training during command post exercises has greatly enhanced our abilities to achieve training objectives. Receiving division operation orders, working them through the brigade military decision making process and providing them to subordinate units for subsequent training, continues to be critical in our predictive and battle-focused training plans.

An assumption early in the planning stages that battalions would attain core mission proficiency at similar rates to the BSB and the brigade headquarters was flawed. Fires battalions were able to quickly move through section certification on rocket launchers, cannon systems and fire direction centers while the BSB lagged behind. In hindsight, sending the BSB to the Sustainment Training Center at Camp Dodge, Iowa, earlier in the training cycle would have enhanced the entire brigade's ability to assimilate logistics and sustainment operations into all training events.

The brigade consciously decided to expedite fire control training early in the process. Due to the complexities of digital systems and newly evolving tactics, techniques and procedures this proved critical in the brigade's ability to support subordinate unit training. The Fires battalions could not have collectively trained nearly as quickly without accelerated support and expertise from the brigade fire control cell.

Regardless of command relationships and task organization for forward support companies, it is imperative they coordinate and interact with BSBs early in the training cycle. Lines of sustainment are complicated and require significant planning and synchronization. Leaders have a responsibility to share TTP's, establish key leadership teams, and provide critical Military Occupational Specialties skilled personnel to achieve both the training environment and desired results. Young Soldiers learn ABCS operations quickly. The challenge lies with more senior leaders learning functionality, synchronization and applicability. All of the tools to develop a clear common operating picture exist in the Fires tactical operating center. The expertise to organize and coordinate these systems requires focused training and analysis.

In conclusion, leaders across the brigade believe our model has served its purpose in providing units with a road map to a point where we are well on our way to re-gaining and validating on our Fires core competencies. While most of our captains and staff sergeants haven't served pre-GWOT, we have created a strategy that capitalizes on the strengths of their generation simultaneous to re-invigorating legacy methods of operation that continue to be effective. We provide this as an idea realizing that each unit must evaluate their own needs and experiences and base their training strategy on a complex set of variables. All *Redlegs* hold great pride in our profession and in our abilities to master Fires on any battlefield. We can say with confidence that we will be the Fires community who is ready for today's fight, and flexible enough to adapt to any mission assigned tomorrow.★★

Colonel Brian R. Nesvik has commanded the 115th Fires Brigade, Wyoming Army National Guard since June 2010. He previously commanded the 2nd Battalion, 300th Field Artillery Regiment, deployed to OIF in 2009 and 2010, with a force protection/convoy security mission. Previously, he commanded a 180 Soldier slice of the battalion deployed to OIF in 2004 and 2005, also in a non-standard mission.

Lieutenant Colonel Gregory S. Phipps commanded the 2nd Battalion, 300th Field Artillery Regiment from June 2010 to July 2013. Previously, he commanded a 150 Soldier slice of the battalion deployed to OIF in 2006 and 2007, in a non-standard mission. Phipps currently serves as the Wyoming Army National Guard's G1.

Acronym List

ABCS	-	Army Battle Command Systems
AFT	-	Aligned For Training
ARFORGEN	-	Army Force Generation
BSB	-	Brigade Support Battalion
GWOT	-	Global War on Terror
MET	-	Mission Essential Task
METL	-	Mission Essential Task List
OEF	-	Operation Enduring Freedom
OIF	-	Operation Iraqi Freedom
TTP	-	Tactics, Techniques and procedures

75th FiB Soldiers meeting King Abdullah in Amman, Jordan, after the Jordanian Armed Forces' first HIMARS live-fire. The brigade's subject matter experts spent a number of weeks with the Jordanians exchanging TTPs on live-fire techniques for the HIMARS. (Photo by Colonel Alfredo Najera)

SOLD ON SPACE

By MAJ Brian J. Gerber and MAJ Dirk P. Crawford

The 75th Fires Brigade received a functional area-40 space operations officer in July 2012. At the time, two of seven FA40 positions in FiBs across the Army were resourced. Currently, all seven have an FA40 assigned. Integrating space operations was a decision already made for the FiB, but learning how do to it was the lingering challenge for the brigade's leadership. A blunt article in the *Army Space Journal* in 2009, suggested many of these integration challenges would not be overcome. The article notwithstanding, there was little reach-back or institutional knowledge available for FiB FA40s on specific duties or products. When 75th FiB received its FA40, the brigade was preparing to deploy as the Force Field Artillery Headquarters for United States Army Central. With an opportunity to integrate space operations in training and deployed environments, the FA40 and brigade S3 uncovered some solutions to integrating space throughout the entire staff. By sharing this information and lessons learned, FA40s and their supported FiBs can rapidly integrate space operations to either their training or wartime mission. Our lessons in education, systems integration and staff integration

may benefit both the Fires and space communities and ultimately turn the FiB assignment into a critical, premiere assignment for the FA40.

Education. The space community's skepticism as to the utility and benefits of assigning an FA40 to a FiB can only be overcome with education and understanding. At the brigade, the FA40 and brigade operations officer must each understand what the other does in order to fully integrate space capabilities into the FiB mission. Two courses in particular benefit the team and are suggested to help develop a clearer common operating picture: the Tactical Space Operations Course and space enabler training.

TSOC is a three-week course offered by Space and Missile Defense Command. This course offered 75th FiB FA40 knowledge in the areas of tactical space missions, providing an introduction into the use and application of various tools for developing space products. One of those systems, available now to the FA40, is the Space Operations System, which is incorporated into Distributed Common Ground System - Army. SOS is a suite of software programs, enabling sophisticated space-based analysis at the brigade level. The Integrated Space Situational Awareness software aides in the development of a satellite reconnaissance advance notification report, providing time and location information on space-based collection assets capable of collecting on friendly units and activity.

Space enabler training (additional skill identifier-3Y) is available in conjunction with Command and General Staff College or as a stand-alone two-week course. The 75th FiB operations officer gained both exposure to and information about capabilities and terms associated with space operations. Attendance at this two week, top-secret course is essential for operations officers to develop a base level of understanding of space-based assets available at the brigade level and higher.

Integration. The FA40 and brigade S3 can integrate space operations with mutually shared space and Fires information. The core challenges to integration are knowing how to employ the space officer and keeping him working in his functional area despite temptation to utilize him in other ways. The following unclassified functions are common-core for the FA40 and can be implemented within warfighting functions to enhance existing capabilities within the FiB staff:

Intelligence. integration of space capabilities within the S2 section resulted in enhanced production of intelligence summaries to provide greater fidelity of the current operational picture. Products previously not used by the S2 became a daily requested intelligence source. Space-based acquisition data and imagery products greatly increased situational awareness for the command. Additionally, tailored SATRAN reports provided a level of strategic situational awareness not found in any other non-FiB in the Army. The FA40 provided confirmed information that the brigade intelligence officer could use to verify front-trace unit reports, battle damage assessment feedback, and enemy collection and observation measures. These three key pieces of battlefield intelligence assisted in providing significant foresight to situational awareness and situational understanding—important metrics for mission command.

Topographical section. The FA40s augmentation of the organic TOPO element within the FiB broadened the range of products that the TOPO element could provide. The TOPO section was exposed to resources not previously used, such as the Ossim Mapping Archive, which allowed the production of enhanced imagery products that included data on firing points and operational area analysis.

Air Defense Airspace Management. FA40s possess the capability to validate Air Defense Artillery assessments on theater ballistic missile launches. Space officers can bridge limited data on initial receipt of launch notification by providing quick analysis of points of origin or points of impact, once obtained from both ADAM and the fire control officer. The FA40 can also provide satellite imagery to aid in battle damage assessment.

Signal (S6). The FA40, working with the communications officer, can rule out environmental impacts on FiB communications equipment, allowing troubleshooting efforts to be focused in other areas. He can provide situational awareness of non-organic communications systems, including information about outages that may impact satellite communications.

Interagency. Interagency (e.g., National Geospatial Intelligence Agency and National Reconnaissance Office) integration and reach-back capability is the cornerstone of what an FA40 can provide to the FiB. Timely access to imagery collected via both national technical means and commercial satellites is a significant capability in both training and deployed environments. Access to the Web-Based Access and Retrieval Portal, as well as OMAR, provides an FA40 with the capability to provide imagery collected within hours.

FA40 products are only relevant if they are useful to the end-user. The key to integrating space operations into a FIB, and supporting the staff across all warfighting functions, relies on education. A demonstration of capabilities and utility of space products opens lines of communication and support. Maintaining a close-hold on resources hurts the overall integration of space capabilities. The FA40 must help educate various staff sections on how and where space based products are obtained so the staff develops a knowledge that is carried forward to future assignments outside the FiB.

Force Field Artillery Headquarters: a Roadmap. The recent deployment of 75th FiB as the U.S. Army Central Command Force Field Artillery Headquarters provided numerous opportunities to access national technical means in the USARCENT area of operation. This prolific environment of space assets greatly enhanced the products the FA40 produced. With forces arrayed across four countries in the USARCENT area of responsibility, 75th FiB remained responsible for integrating joint and partner Fires in support of contingency plans.

Space products produced for a FiB require tailoring and refinement to enhance the specific mission supported. Presenting a broad-stroke product that omits the higher-fidelity details fails to adequately support the commander and could potentially present the FA40 community poorly. Products require development and refinement based on the feedback given by the staff across all warfighting functions.

The inclusion of SATRAN was often questioned by individuals outside the brigade. However, the strategic applications of HIMARS in the Arabian Gulf, in conjunction with the secrecy that some countries placed on information about their HIMARS, made this a valuable report for the 75th FiB.

One of the essential daily reports developed was the assess-

ment of global positioning system accuracy for a specified fire mission window. Providing the commander with the optimal window to fire precision-guided munitions was beneficial to both the rocket and cannon units in the AOR. This was true for both readiness exercises and Digital Systems Sustainment Training.

Detailed information about the Iridium constellation and service coverage gaps was disseminated across the formation, which relied on the Iridium communications device in numerous deployed locations. This provided enhanced situational awareness both for mission planning and execution. Additionally, the overhead persistent infrared analysis was critical for situational awareness and pattern analysis during operations.

Recommendations for Both Communities. There are many more topics of consideration for both the Fires and space communities that should continue to be discussed in order to better integrate FA40s. In addition to the previously discussed courses of value for the FA40 and Fires officers, other courses should be expanded to include space information. The courses offered at Fort Sill (e.g., Field Artillery Captains Career Course) should include a class covering space capabilities to the Field Artillery's future fire direction officers and fire support officers. Developing knowledge of this capability suggests a long-term solution for greater integration of Fires and space capabilities. Similarly, the space community could better prepare FiB FA40s by including a block of instruction from a Field Artillery officer at the TSOC. The information would benefit all FA40s and help educate those assigned to integrate staffs at other echelons.

FA40s and the FiB S3 could consider augmenting a culminating training event or mission rehearsal exercise at one of the combat training centers. Short of a deployed mission, interacting with or augmenting Army space support teams (i.e., Marine Expeditionary Force, division, etc.) could provide the level of access an FA40 receives while deployed, further enhancing his integration at home station field training exercises and command post exercises.

The 75th FiB's experience with integrating an FA40 was a positive one. The FA40 was aggressive and determined to optimize his time and talent within the brigade. As levels of education and experience vary, an FA40, who is first assigned to a division space support element, may be better equipped and possess more tactical or operational experience to serve at the brigade level. The peer and superior mentorship received at a space support element may best serve a senior captain or junior major before he becomes the sole space integrator for a FiB.

FiB FA40s can enhance support by providing Fires-specific space capabilities to the brigade combat team direct support Field Artillery battalions. Even those FiBs geographically separated from their division headquarters can provide circular error probability/spherical error probability based on GPS analysis for optimal times to fire in preparation for precision munitions live-fire exercises, digital systems sustainment training, or field training exercises. Such activities could be incorporated into FiBs' 'Red Books,' with the aim to serve the entire division's artillery units.

Integration of the FA40 has not been fully achieved. Mindsets in the space and Fires communities must continue to shift with respect to consuming and integrating space capabilities in a FiB. Leaders external to 75th FiB have questioned the necessity of integrating particular space capabilities with operations, and some have further questioned the presence of the FA40 in a FiB altogether. The space capability is there to be integrated by any means. The 75th FiB's experience is that open, candid, knowledge-based discussions have made inroads with the skeptics of the Fires-space integration effort. While much change needs to continue, opportunities exist within the FiB's missions to advance Fires-space integration with some preparation and creative application by the operations officer.

An assignment to a FiB should be rewarding to both the FA40 and the FiB staff. An assignment to the FiB marks the only time an FA40 can be assigned to a brigade outside the 1st Space Brigade; this experience does not exist in a brigade combat team or any other functional brigade. As such, the FiB has one chance to get this right for the benefit of its own organization and the FA40 assigned. Planning is paramount to preparing the FA40 through educational courses and staff integration. Deployments certainly provide instances where integrating space is much easier, but many training opportunities similarly exist that will provide exposure for all formations. Our FA40s need an advocate. While some in the greater space community 'think' they do not support this assignment, 75th FiB's experience in having an FA40 well-integrated into the FiB staff may be the best proponent to change their minds. We cannot miss this opportunity if we want to keep this amazing capability in our brigade.★★

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Acronym List

ADAM	-	Air Defense Airspace Management
AOR	-	Area of Responsibility
FiB	-	Fires Brigade
HIMARS	-	High Mobility Artillery Rockey System
OMAR	-	Ossim Mapping Archive
SATRAN	-	Satellite Reconnaissance Advance Notification
SOS	-	Space Operations System
TOPO	-	Topographical
TSOC	-	Tactical Space Operations Course
USARCENT	-	U.S. Army Central Command

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Marines with 5th Battalion, 14th Marine Regiment, prepare 155 mm rounds to be loaded into an M777 A2 howitzer during a series of integrated firing exercises at the Combat Center's Quakenbush Training Area, Twentynine Palms, Calif. (Photo by Cpl. Ali Azimi, U.S. Marine Corps)

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